A PRELIMINARY APPRAISAL OF THE EFFECTS OF AGRICULTURE ON STREAM QUALITY IN SOUTHWEST GEORGIA

U. S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS
OPEN-FILE REPORT 80-771

Prepared in cooperation with the
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UNITED STATES
DEPARTMENT OF THE INTERIOR
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CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

Open-File Report 80-771

For additional information write to:

U.S. Geological Survey
Suite B
6481 Peachtree Industrial Boulevard
Doraville, Georgia 30360

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Multiply	By	To obtain
foot (ft)	0.3048	meter (m)
inch (in.)	25.4	millimeter (mm)
mile (mi)	1.609	kilometer (km)
acre	4,047	meter squared (m^2)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
pound (lb)	0.4536	kilogram (kg)
ton per square mile per year (ton/mi^2 per year)	350.26	kilogram per square kilometer per year (kg/km^2 per year)
ton per day (ton/d)	907.18	kilogram per day (kg/d)

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ABSTRACT

Water-quality and suspended-sediment samples were collected in two basins in southwest Georgia to determine whether water-quality problems have resulted from agricultural practices. Samples were collected monthly and during periods of storm runoff from December 1976 through July 1978. Concentrations of chemical constituents relevant to agricultural practices were found to be low, even during periods of storm runoff. Concentrations of total nitrogen and total phosphorus ranged from 0.30 to 1.60 and 0.01 to 0.42 milligrams per liter, respectively. Copper, arsenic, lead, mercury, and zinc concentrations were low and did not exceed Georgia Department of Natural Resources (1977) or U.S. Environmental Protection Agency (1977) standards for safe drinking water. Concentrations of suspended sediment and total nitrogen were found to remain relatively constant over a wide range of water discharge. Concentrations of total phosphorus showed a better relation to water discharge at Little River near Lenox than at Spring Creek near Iron City. Dissolved-solids concentrations in both streams generally decreased with an increase in water discharge. Average annual yields of selected constituents were low. Total nitrogen and total phosphorus yields were 0.60 to 0.63 and 0.04 to 0.06 tons per year per square mile in Little River and Spring Creek basins. Atrazine, butylate, and ethroprop pesticides were detected in concentrations up to 0.91 micrograms per liter in storm-runoff samples collected during the active farming season.

INTRODUCTION

Southwest Georgia continues to experience phenomenal agricultural growth, predominantly in cultivated crops. Crop production is becoming more intensified as additional large-acreage irrigation systems are installed. Multiple "cropping" during the long growing season is now a common practice, and this expansion of crop production has resulted in increased potential for soil erosion and the increased use of commercial fertilizers and pesticides. A consequence of the increased farm activities is a greater potential for contamination of streams, lakes, and ground-water reservoirs.

Water samples were analyzed for selected organic compounds which included common agricultural pesticides recommended for monitoring because of their persistence in the environment, and common pesticides currently applied in southwest Georgia. Table 1 includes many of these commonly applied pesticides. Among these selected pesticides are the chlorinated hydrocarbons, organophosphates, carbamate compounds, and chlorophenoxy and other herbicides.

Although these compounds have been useful in improving agricultural yields, they also create both real and potential hazards in the environment.

Table 1.--Agricultural pesticides commonly used in southwest Georgia, 1976-77

[Data from F. T. Ott, County Extension Agent, Decatur County, written commun., 1977]

Chemical name	Class	Crop	Pounds of active ingredients/acre	Residual
HERBICIDES				
Translated (systemic) herbicides				
2,4-D	Phenoxy acid	Corn, grain sorghum	0.5	1 week.
2,4-DB	do.	Peanuts	.25	1 week.
Atrazine	Triazine	Corn, grain sorghum	2-3	3-12 weeks.
Proazine	do.	Grain sorghum	2	2-8 weeks.
Simazine	do.	Corn	2-3	2-3 weeks.
Chloroxuron	Substituted urea	Soybeans	1-1.5	1-2 weeks.
Linuron	do.	Grain sorghum, soybeans	1	3 weeks.
Butylate	Carbamate	Corn	3-6	3-8 weeks.
Vernolate	do.	Peanuts	2-2.25	3-8 weeks.
Alachlor	Substituted aniline	Peanuts, corn, soybeans	3	3 weeks.
Benefin	do.	Peanuts	1-1.5	2-4 months.
Trifluralin	do.	Soybeans, vegetables	.5-1	
Contact herbicides				
Dinoseb	Phenol	Peanuts, soybeans	2	2 weeks.
Paraquat	Pyridylium	Corn	.25	none.
INSECTICIDES				
Dicofol	Chloronated hydrocarbon	Peanuts, soybeans	.8	
Carbofuran	Carbamate	Peanuts	1.5	
Diazinion	Organophosphate	Peanuts, soybeans	1.5	
Malathion	do.	Peanuts, tobacco	1.0	
Disulfoton	do.	Peanuts	.75	
NEMATOCIDES				
Dibromochloropropane	Fumigant	Peanuts	6 qts.	
Ethoprop	Nonfumigant organophosphate	Peanuts, corn, soybeans	2	
Carbofuran	Nonfumigant carbamate	Peanuts, corn	1.5	
FUNGICIDES				
Benomyl	Carbamate	Vegetables, peanuts	.5	
Chlorothalonil	Chloronated hydrocarbon	Peanuts	1.0	
Quinrozene	Chloronated benzene	Peanuts	10.0	

Major sources of hazardous pesticides in water are often found in local areas where applications overlap streams, in streams receiving runoff from recently treated areas, and where misuse or spillage has occurred. All organic pesticides are subject to degradation in the environment. However, specific compounds vary widely in rate of degradation, and some form degradation products that may be both persistent and toxic. Some organochlorine pesticides (DDT, DDD, DDE, aldrin, dieldrin, endrin, chlordane, heptachlor, toxaphene, and lindane) are considered especially hazardous because of their persistence and their potential for accumulation in the environment.

Inorganic chemicals are also a reason for concern, since many of these are hazardous or biologically active. The samples collected during this study were analyzed for agriculturally relevant minor elements, including arsenic, lead, mercury, copper, and zinc, because of their potential acute and chronic toxicity to man. All of these minor elements were major components of the first generation pesticides utilized around the 1930's. Even today many of the fungicides contain large quantities of copper and mercury. Arsenic has been added in small amounts to animal fodder as a growth stimulant, and arsenicals are also used as herbicides and insecticides (U.S. Environmental Protection Agency, 1977). Zinc and copper are also used as trace nutrients in animal fodder and plant fertilizers.

Another serious concern is the potential contamination of streams by excessive concentrations of nutrients resulting from the runoff of chemical fertilizers and stock-animal wastes. Since nitrogen, potassium, and phosphorus are required in relatively large amounts for maximum crop yields and are easily leached from the soil, fertilizers containing these nutrients are the most heavily applied. Because of the manner by which such nutrients are utilized by plants and the manner in which crops are harvested, 50 to 95 percent of the applied nutrients may remain in the soil, potentially available for leaching and erosion (Loehr, 1974). Phosphorus as phosphate is one of the major nutrients required for algal nutrition; therefore, large quantities in streams can lead to nuisance algal growths. This is particularly true if there are sufficient amounts of nitrate or other nitrogen compounds in supplement. The serious and occasionally fatal poisoning in infants called methemoglobinemia has occurred following ingestion of water containing nitrate-nitrogen concentrations greater than 10 mg/L (milligrams per liter) or nitrite-nitrogen concentrations greater than 1 mg/L (U.S. Environmental Protection Agency, 1977).

Purpose

This study was concerned specifically with stream quality and was a preliminary water-quality appraisal of two streams receiving runoff from two relatively large, primarily agricultural, watersheds. The objectives of the study were: (1) to define the present water-quality conditions of two streams in an agriculturally impacted area of southwest Georgia, and (2) to assess water quality during periods of base-flow and storm-runoff conditions.

The specific purpose of this report is to present and interpret the water-quality data collected from December 1976 through July 1978.

Scope

Concentrations of chemical constituents in streamflow from two watersheds were used to assess the significance of agricultural land-use practices on stream quality. Analyses were completed for standard inorganic and organic constituents and for selected minor elements and organic pesticides relevant to agricultural practices.

In this study, the main sites monitored for the various water-quality parameters were located on Little River near Lenox and Spring Creek near Iron City, whose drainage areas are 208 and 485 square miles, respectively (figs. 1 and 2). Some stream-quality data were collected at four additional sites on Little River upstream of the station near Lenox (fig. 1), and at two sites upstream of the station near Iron City (fig. 2). The information from the additional sites was compared with data from the two main sites to determine whether runoff from several urban areas in the basins significantly affects the stream quality.

Previous Studies

In 1938 and 1941, water-quality analyses were made by the U.S. Geological Survey on samples from Spring Creek and Little River (Lamar, 1944). During 1957-58, a reconnaissance-type stream-quality survey was also carried out by the U.S. Geological Survey (Cherry, 1961) in southwest Georgia. More recently, the U.S. Geological Survey (1970) collected a small amount of water-quality data in the Little River watershed. The data from the three U.S. Geological Survey reports demonstrate that water from the Little River, a stream draining the lower Coastal Plain, was siliceous, of low mineral content, and soft. The cations calcium and sodium were found in nearly equal amounts, and bicarbonate was the principal anion. Water from Spring Creek, a stream draining a limestone area in the upper Coastal Plain, was a carbonate type, of moderate mineral content, and of moderate hardness.

Several reports have been published in conjunction with the Agricultural Research Service, U.S. Department of Agriculture, on a series of water-quality studies conducted in the agricultural region of the Georgia Coastal Plain. One report describes the concentration of nitrate in surface and subsurface flow from a small agricultural watershed in the Georgia Coastal Plain (Jackson and others, 1973). The investigators concluded that subsurface flow accounted for 80 percent of the total runoff during this study period. Thus, greater amounts of nitrate-nitrogen were discharged in subsurface flow than in surface flow from this watershed.

Asmussen and others (1975) describe the streamflow from the complex rural-agricultural watersheds in the Coastal Plain as "...being of good quality". Their report concludes that the quality should remain good if Coastal Plain agriculture remains diversified. The authors indicate that the diverse native flood-plain plant communities undoubtedly were, in part, responsible for maintaining the good quality of streamflow by providing a natural filtering system for sediment and chemicals associated with sediment.

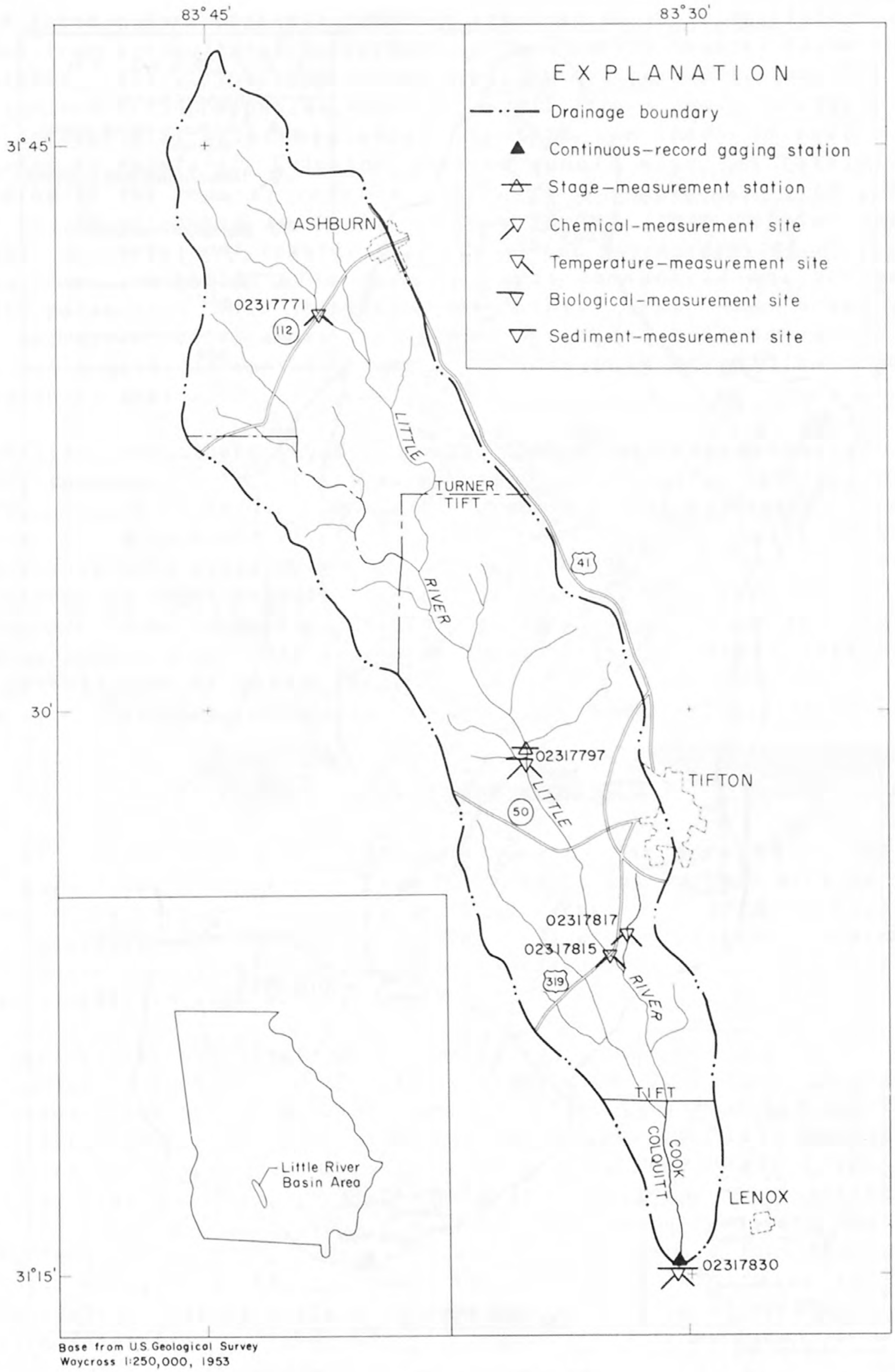

Figure 1.—Little River basin above the gaging station near Lenox.

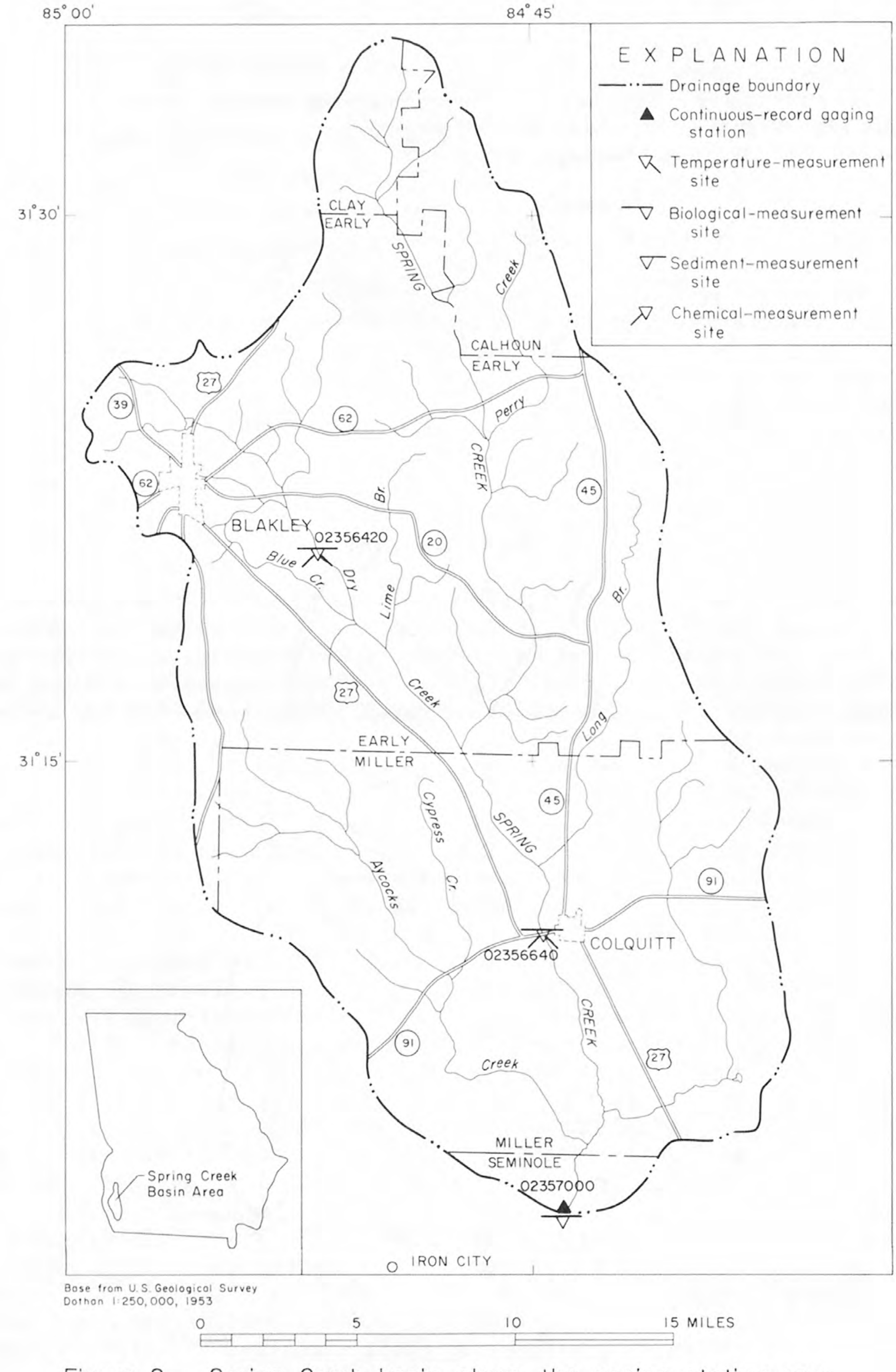

Figure 2.—Spring Creek basin above the gaging station near Iron City.

A third report presents baseline information about nutrient movement in streams from agricultural watersheds in the Georgia Coastal Plain (Asmussen and others, 1976). The report concludes that nitrate-nitrogen plus nitrite-nitrogen and orthophosphorus loads in runoff from a small southern Coastal Plain agricultural watershed were less than the loads introduced to the watershed by rainfall. Chloride load in runoff exceeded rainfall input. According to the report, this reduction of nitrogen and orthophosphorus loads by the watershed to levels that were less than rainfall input was probably the result of heavily vegetated flood plains typical of the Coastal Plain. Asmussen (1975) also reported that concentrations of the water-quality parameters, with the exception of total iron, from urban-suburban areas and agricultural areas with definite urban influence varied seasonally. This seasonal variation was not observed in streamflow from rural-agricultural areas.

Pollard and others (1978) reported that no concentrations of selected organic compounds or minor elements used in agricultural chemicals exceeded the recommended limits for public consumption in ground water. This conclusion was based on the analysis of water from 19 water wells in southwest Georgia that were cased from 6 to 800 ft below land surface. However, concentrations of total nitrate-nitrogen plus nitrite-nitrogen ranged from 0.3 to 7.8 mg/L in wells cased to depths of 75 to 100 ft below land surface in the Dougherty Plain. This indicated to these investigators that the downward percolation of water through sandy soils may have carried soluble nitrate, a fertilizer byproduct, into the ground-water reservoir.

DESCRIPTION OF STUDY AREA

The agricultural area of southwest Georgia is located in the Coastal Plain physiographic province (fig. 3). Two basins in this area were selected for study because: (1) they were experiencing a rapid increase in the use of large-acreage irrigation systems, (2) urban influence on stream quality in these basins was limited, and (3) streamflow data were available at the main sites in each basin.

The watersheds selected were the Spring Creek basin above the gaging station near Iron City and the Little River basin above the gaging station near Lenox. The Spring Creek basin is in the Dougherty Plain and the Little River basin is in the Tifton Upland. The Dougherty Plain and the Tifton Upland are physiographic divisions of the Coastal Plain (fig. 3). The Dougherty Plain is the most important area in terms of total irrigated acreage. The land is flat to gently rolling, has few streams, and therefore is adaptable to large pivot-irrigation systems. Sinkholes form the karst surface of the Dougherty Plain. The Tifton Upland, in contrast, is a rolling upland having numerous surface streams and an absence of sinkholes and other solution features.

The Coastal Plain is characterized by permeable sandy soils and low relief. Rain falling on these permeable soils and gentle slopes generally arrives at receiving channels through ground-water seepage rather than by surface runoff. Streams in this environment respond slowly to precipitation and characteristically take several days to complete their runoff cycles.

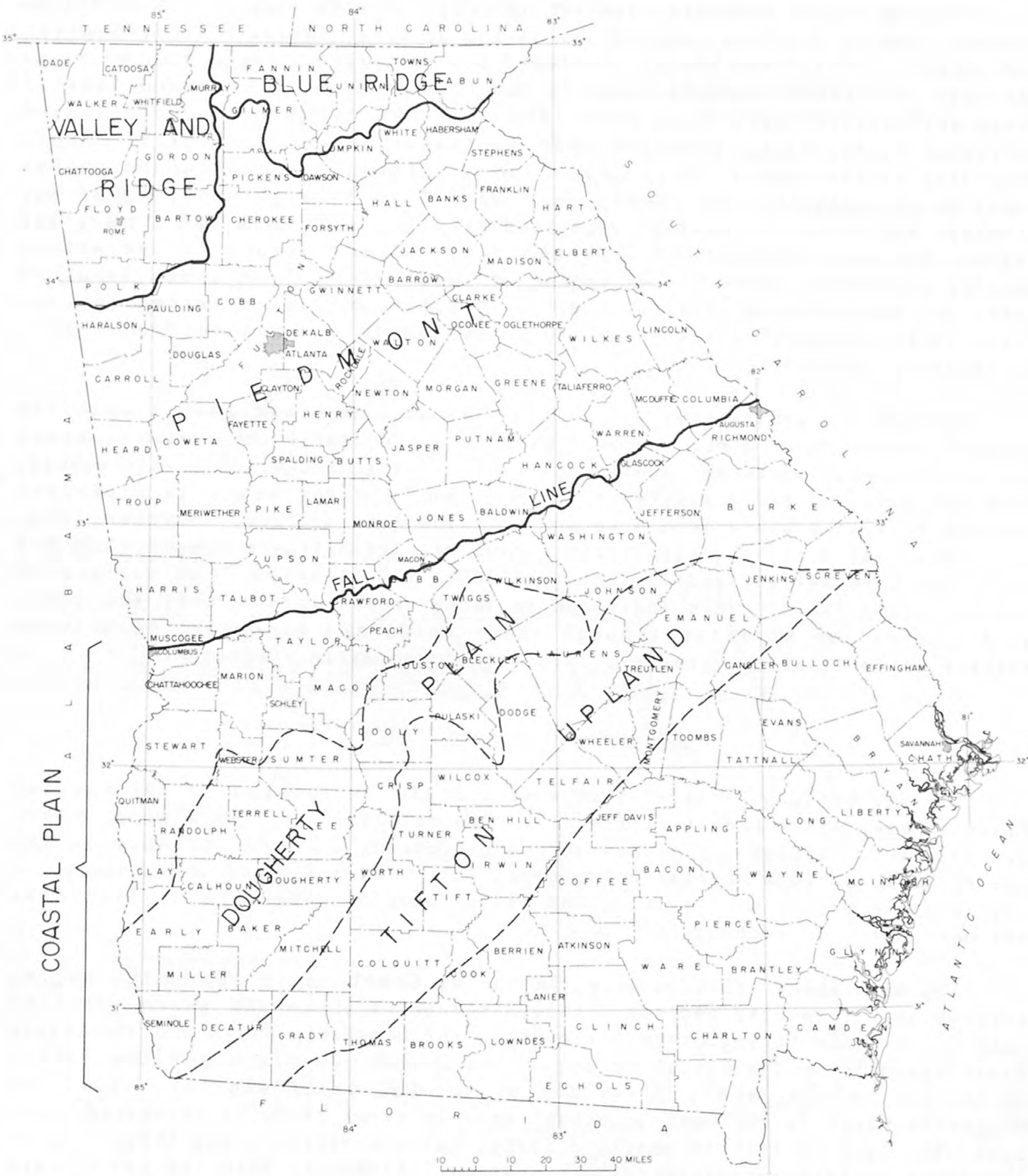

Figure 3.—Physiographic provinces of Georgia and location of Dougherty Plain and Tifton Upland (from LaForge and others, 1925).

Asmussen and others (1976) estimated that less than 20 percent of streamflow in the Little River basin can be attributed to direct surface runoff. Similarity of soil type and generally low relief imply that the Spring Creek basin exhibits the same behavoir.

The Coastal Plain is comprised of complex-cover agricultural watersheds having a great diversity of land use. This land use varies from idle woodlots to multicropped, intensively fertilized areas. Because the area has relatively low relief and poorly defined stream channels, the uplands are mostly cultivated, or covered with pine-grass communities, while the wide alluvial stream valleys are covered by relatively dense native hardwood-pine and swamp-hardwood communities. The principal cultivated crops include peanuts, corn, cotton, tobacco, soybeans, truck crops (assorted vegetables), and pecans.

The major land-use categories for each basin for 1978 are presented in table 2. Cropland comprised 48 and 46 percent of the Little River and Spring Creek basins, respectively. Urban land use accounted for 4.8 percent of the Little River basin and 2.1 percent of the Spring Creek basin.

Table 2.--Major land-use categories for the Little River and Spring Creek basins, 1977

Land-use category	Expressed as percent of total basin	
	Little River basin	Spring Creek basin
Grass	2.9	3.4
Roads	1.3	2.3
Stream channels	.2	6.2
Ponds	.6	.6
Urban	4.8	2.1
Woodland	37.7	31.4
Irrigation	-	.5
Cropland	48	45.8
Quarries	-	.1
Miscellaneous	4.5	7.6
Total	100	100

The lack of historical quantitative land-use data for these basins precludes the possibility of establishing any historical land-use water-quality relationships. It is hoped that the land-use analysis presented in table 2 will provide a base for future investigations.

Agricultural land use in the study area has been changing drastically as a result of the phenomenal increase in the use of irrigation. Since there are no historical data related to irrigation in the individual basins, table 3 presents the increase in irrigated acreage for all of Georgia. According to this information, total irrigated acreage in the State increased from 144,629 acres in 1970 to 586,019 acres in 1977, a 300-percent increase over the 7-year period.

Table 3.--A summary of agricultural irrigation in Georgia

[Data from Cooperative Extension Service, University of Georgia College of Agriculture, written commun., 1970, 1977]

Land use	Acres under irrigation		
	1970	1975	1977
Corn	30,418	76,996	250,227
Cotton	2,627	1,116	9,270
Peanuts	38,227	91,334	190,544
Tobacco	42,402	54,518	46,081
Soybeans	795	4,725	21,728
Truck crops	20,061	26,223	39,727
Pasture	5,440	4,613	10,668
Peaches	1,542	721	1,995
Pecans	485	1,356	4,662
Nursery	1,453	424	602
Other	1,179	2,418	10,515
Total number of irrigated acres	144,629	264,444	586,019

Data presented in table 4 reflects an increase in irrigation in the individual counties comprising each basin. The Little River basin includes predominantly Turner and Tift Counties, as well as parts of Colquitt, Cook, and Worth Counties. The two major counties exhibited an increase in irrigated acreage from 9,950 acres in 1976 to 18,960 acres in 1977, a 90-percent increase. Similarly, Miller and Early Counties, comprising most of the Spring Creek basin, experienced slightly more than a 140-percent increase from 23,510 acres in 1976 to 56,710 acres in 1977.

Table 4.--Irrigated acreage in the Little River and Spring Creek basins

[Data from Pollard and others, 1978]

Year	Little River basin					Spring Creek basin		
	County: Turner	Tift	Colquitt	Cook	Worth	Miller	Early	Seminole
1976	4,760	5,190	2,850	30	2,990	13,610	9,900	17,600
1977	11,200	7,760	8,330	4,780	6,740	40,210	16,500	27,190

DATA COLLECTION AND ANALYSIS

The data collection encompassed the unusually dry period of weather that occurred in 1977. The lack of rain during this period prevented evaluation of seasonal quality characteristics of storm runoff. Significant storm runoff did not occur in the basins until January 1978. Subsequent to that time, three runoff events were sampled in each basin.

During storm runoff, samples were collected during the rise, on the peak, and during the fall of the stream stage. This was done at the two main sites in order to establish potential discharge-concentration relationships. The remaining sites were also sampled during storm runoff to provide comparative data. Baseflow samples were collected at all sites throughout the study period. The distribution of sampling during the study period is shown in figures 4-7.

Suspended-sediment samples were obtained with a DH-59 sampler using the recommended depth-integrating techniques described by Guy and Norman (1970, p. 21-40). Each sample was analyzed for concentration, percentage of sand, and percentage of silt-clay. Water-quality samples were obtained by using the same sampling techniques and a depth-integrating water-quality sampler. These samples were analyzed for an extensive list of chemical constituents, including pesticides.

For this study, average annual yields of suspended sediments, dissolved solids, total phosphorus, and total nitrogen were calculated for the two main sites. Average annual constituent yield is defined as the average amount of a constituent per unit area that is annually exported from a basin and it is generally reported in tons per year per square mile. The values given in this report were computed by the sediment-transport flow duration curve method described by Miller (1951), Colby (1956), and Simmons (1976).

This method requires flow duration data. Flow duration can be directly computed only at sites where long-term, continuous-discharge records are

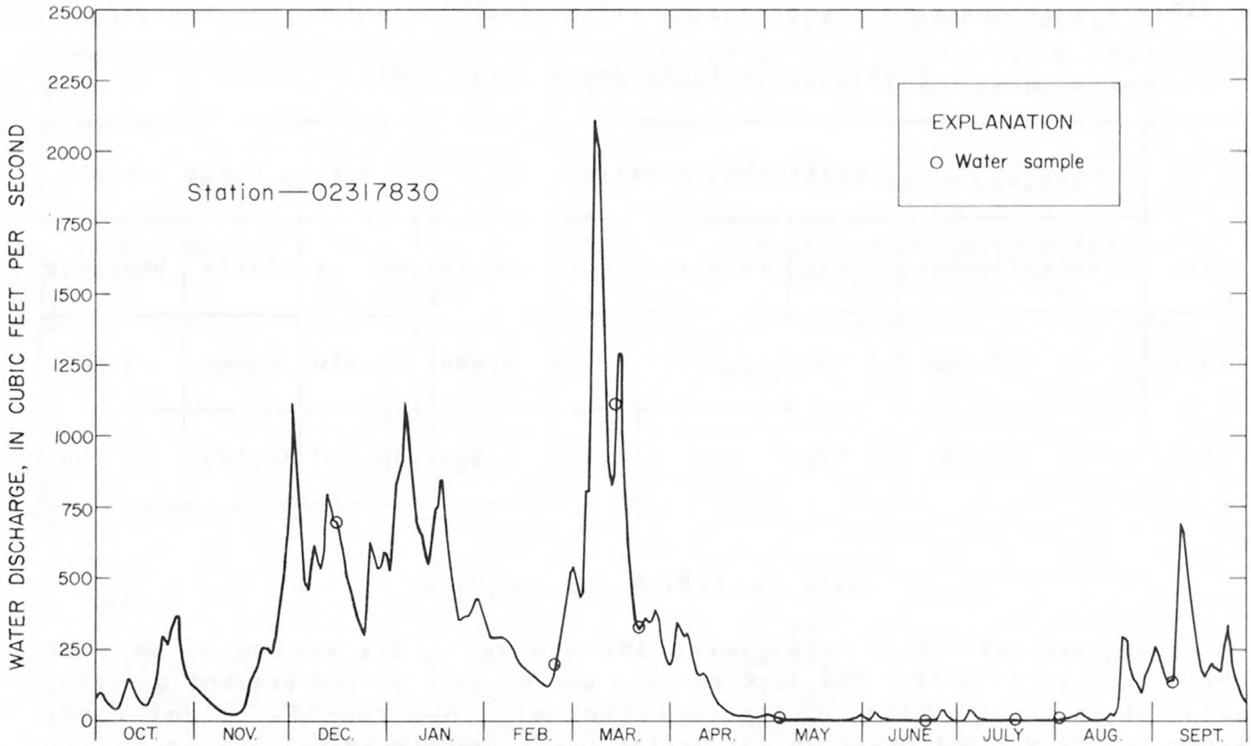

Figure 4.—Water discharge and distribution of water-quality samples at Little River near Lenox, October 1976—September 1977.

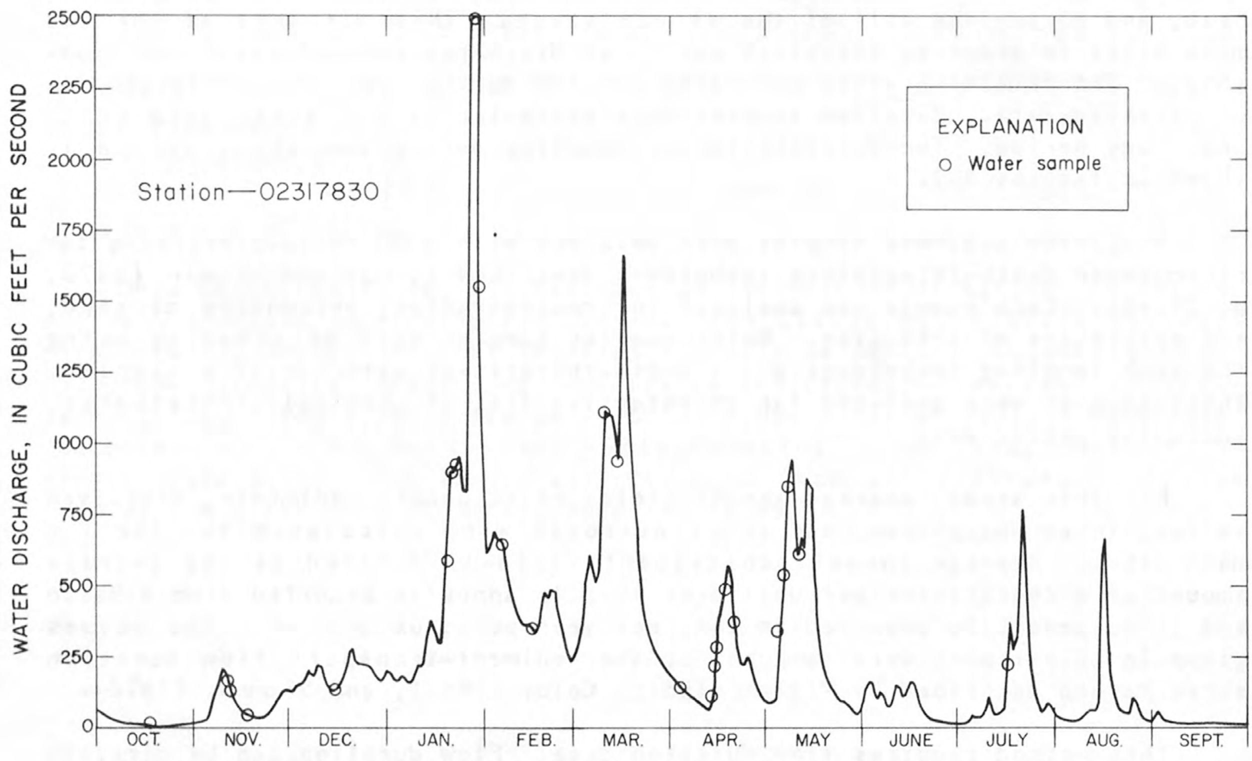

Figure 5.—Water discharge and distribution of water-quality samples at Little River near Lenox, October 1977—September 1978.

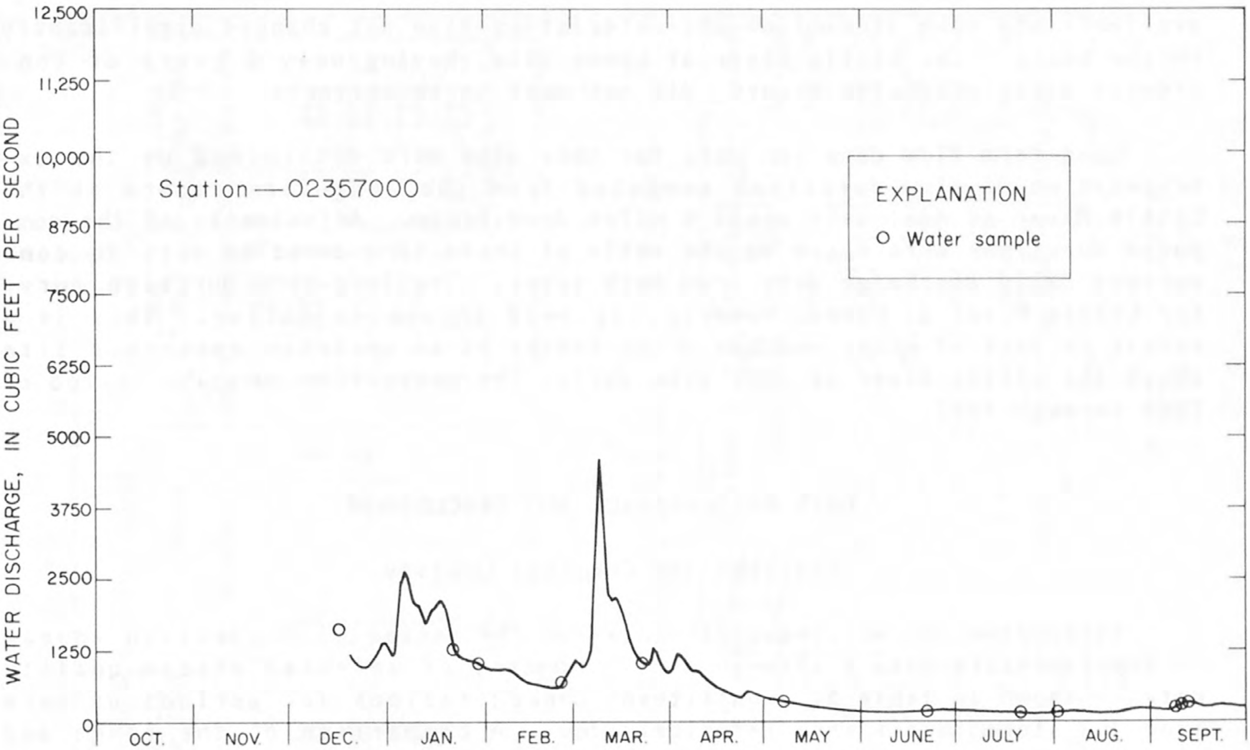

Figure 6.—Water discharge and distribution of water-quality samples at Spring Creek near Iron City, October 1976 – September 1977.

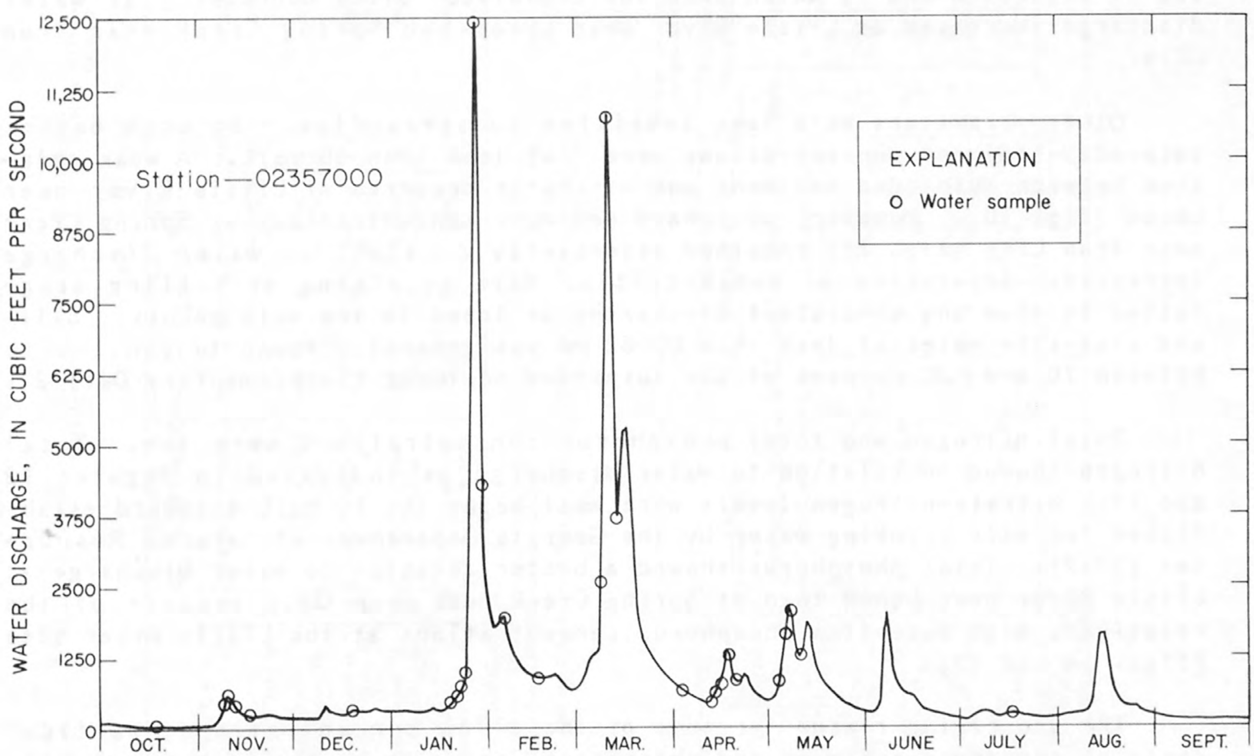

Figure 7.—Water discharge and distribution of water-quality samples at Spring Creek near Iron City, October 1977—September 1978.

available and when streamflow characteristics have not changed significantly in the basin. The Little River at Lenox site, having only 6 years of continuous daily discharge record, did not meet these criteria.

Long-term flow duration data for this site were determined by the extrapolation of flow durations computed from the long-term record at the Little River at Adel site about 9 miles downstream. Adjustments of the computed durations were based on the ratio of short-term duration data to concurrent daily discharge data from both sites. The long-term duration curve for Little River at Lenox, however, is only an approximation. This is a result in part of minor manmade disturbances at an upstream reservoir site above the Little River at Adel site during the short-term duration period of 1968 through 1971.

DATA PRESENTATION AND DISCUSSION

Physical and Chemical Quality

Streamflow and water-quality data for the period of collection appear in Supplementary Data 1 through 4. A summary of selected stream-quality data is shown in table 5. Constituent concentrations for periods of base flow and storm runoff were relatively low. A comparison of the range and the mean dissolved-solids concentrations for baseflow and streamflow indicates that, in general, a slight dilution of dissolved constituents occurred during storm runoff. The dilution effect of stormflow is further illustrated in figures 8 and 9, which show the dissolved solids decreasing as water discharge increased at Little River near Lenox and Spring Creek near Iron City.

Other parameters were less sensitive to streamflow. In both basins suspended-sediment concentrations were low; less than 60 mg/L. A weak relation between suspended sediment and discharge occurred at Little River near Lenox (fig. 10). However, suspended-sediment concentrations at Spring Creek near Iron City (fig. 11) remained essentially constant as water discharge increased. Separation of concentration data by rising or falling stage failed to show any consistent clustering or trend in the data points. Silt- and clay-size material less than 0.062 mm was generally found to constitute between 70 and 100 percent of the suspended sediment (Supplementary Data 2).

Total nitrogen and total phosphorus concentrations were low. Total nitrogen showed no relation to water discharge as indicated in figures 12 and 13. Nitrate-nitrogen levels were well below the 10 mg/L standard established for safe drinking water by the Georgia Department of Natural Resources (1977). Total phosphorus showed a better relation to water discharge at Little River near Lenox than at Spring Creek near Iron City because of the relatively high base-flow phosphorus concentrations at the Little River site (figs. 14 and 15).

The underlying reason for some of these low concentrations, particularly of suspended sediment and phosphorus, seems to be the high permeability of the soil, which reduces overland flow and subsequent upland erosion.

Table 5.--Ranges of concentrations for selected water-quality constituents from the Little River and Spring Creek basins, December 1976 - July 1978

[SR, storm runoff; BF, base flow; <0.1, less than 0.1; 0, below minimum detection level]

Sample sites		Streamflow, at time of sampling (ft^3/s)			Temperature (°C)			pH		Dissolved oxygen (mg/L)			Alkalinity as $CaCO_3$ (mg/L)			Dissolved solids (mg/L)			Suspended sediments (mg/L)		
		Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean
Little River near Tifton, Ga.	SR	–	–	–	15	4.5-25.0	12.7	13	5.2-7.2	13	3.5-11.0	7.8	–	–	–	14	35-820	54	–	–	–
	BF	–	–	–	1	21.0	–	1	5.9	1	7.8	–	–	–	–	1	72	–	–	–	–
Little River near Lenox, Ga.	SR	34	4-2,520	500	33	4.0-25.0	15.7	29	5.4-8.3	28	5.3-13.0	7.7	23	4-25	12	31	46-88	67	32	2-42	18
	BF	5	1-9	5.3	5	12.5-27.0	22.2	4	5.8-6.4	5	3.6-7.6	5.7	5	21-30	27	5	65-122	97	5	2-18	10
Spring Creek at at Iron City, Ga.	SR	36	156-12,800	6,619	33	6.0-25.0	15.2	27	5.4-8.1	29	6.0-13.2	8.4	22	10-98	54	31	51-135	95	33	2-36	20
	BF	5	24-268	85.6	5	14.5-27.5	23.0	4	6.5-7.1	5	6.0-8.6	7.0	5	98-107	100	5	114-130	121	5	4-23	15
Spring Creek at Colquitt, Ga.	SR	2	114-400	257	23	6.0-25.0	15.5	19	5.4-8.4	21	5.3-10.6	7.7	–	–	–	21	58-139	92	22	6-46	21
	BF	4	18-60	37.6	5	13.0-25.0	22.0	4	6.4-7.4	4	5.6-7.4	6.8	–	–	–	4	104-120	110	4	8-24	18
Dry Creek near Blakely, Ga.	SR	2	38-150	93.9	21	4.5-24.5	15.5	13	5.7-7.1	15	4.0-11.2	7.8	–	–	–	16	37-101	73	21	5-60	24
	BF	4	4-22	11.8	5	10.5-25.0	20.9	4	6.1-7.6	4	6.3-7.3	6.8	–	–	–	4	42-176	86	5	7-22	14
Recommended maximum concentration for public water-supply sources[1]																	500				

[1] Georgia Department of Natural Resources (1977, p. 627, 641).

Table 5.--Ranges of concentrations for selected water-quality constituents from the Little River and Spring Creek basins, December 1976 - July 1978--Continued

Sample sites		Nitrogen, total as N (mg/L)			Nitrate, total as N (mg/L)			Phosphorus, total as P (mg/L)			Arsenic, total as As (μg/L)			Copper, total as Cu (μg/L)			Mercury, total as Hg (μg/L)			Zinc, total as Zn (μg/L)		
		Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean	Number of samples	Range	Mean
Little River near Tifton, Ga.	SR	15	0.50-1.30	0.79	15	0.00-0.34	0.15	15	0.02-0.07	0.04	10	0-1	<1.0	9	4-22	9	10	0.0-0.6	<0.5	10	0-30	20
	BF	1	.88	–	1	.04	–	1	.08	–	–	–		–	–	–	–	–	–	–	–	
Little River near Lenox, Ga.	SR	32	.47-1.60	.92	32	.00-0.51	.19	32	.03-0.15	.08	17	0-1	<1.0	23	1-25	5	23	.0-0.5	<.5	23	0-80	20
	BF	5	.50-1.00	.74	5	.12-0.37	.22	5	.16-0.42	.28	5	1-2	1.5	5	0-7	3	5	.0-0.5	<.5	5	0-50	10
Spring Creek at at Iron City, Ga.	SR	31	.38-1.20	.66	30	.01-0.35	.18	32	.02-0.08	.04	16	0-1	<1.0	22	1-18	5	22	.0-0.5	<.5	22	0-110	20
	BF	5	.46-0.81	.67	5	.33-0.59	.49	5	.01-0.05	.03	–	–		5	0-2	1	5	.0-0.5	<.5	5	0-10	10
Spring Creek at Colquitt, Ga.	SR	22	.35-1.10	.62	22	.00-0.31	.14	22	.01-0.14	.04	14	0-1	<1.0	13	2-22	6	13	.0-0.5	<.5	13	0-40	20
	BF	4	.51-0.94	.69	4	.42-0.44	.43	4	.01-0.04	.02	–	–		–	–	–	–	–	–	–	–	–
Dry Creek near Blakely, Ga.	SR	17	.30-0.88	.62	17	.00-0.22	.11	17	.03-0.19	.07	8	0-1	<1.0	8	4-45	12	8	.0-0.5	<.5	8	0-60	20
	BF	4	.47-0.79	.59	4	.10-0.34	.23	4	.03-0.08	.05	–	–		–	–	–	–	–	–	–	–	–
Recommended maximum concentration for public water-supply sources						10						50			1,000			2			5,000	

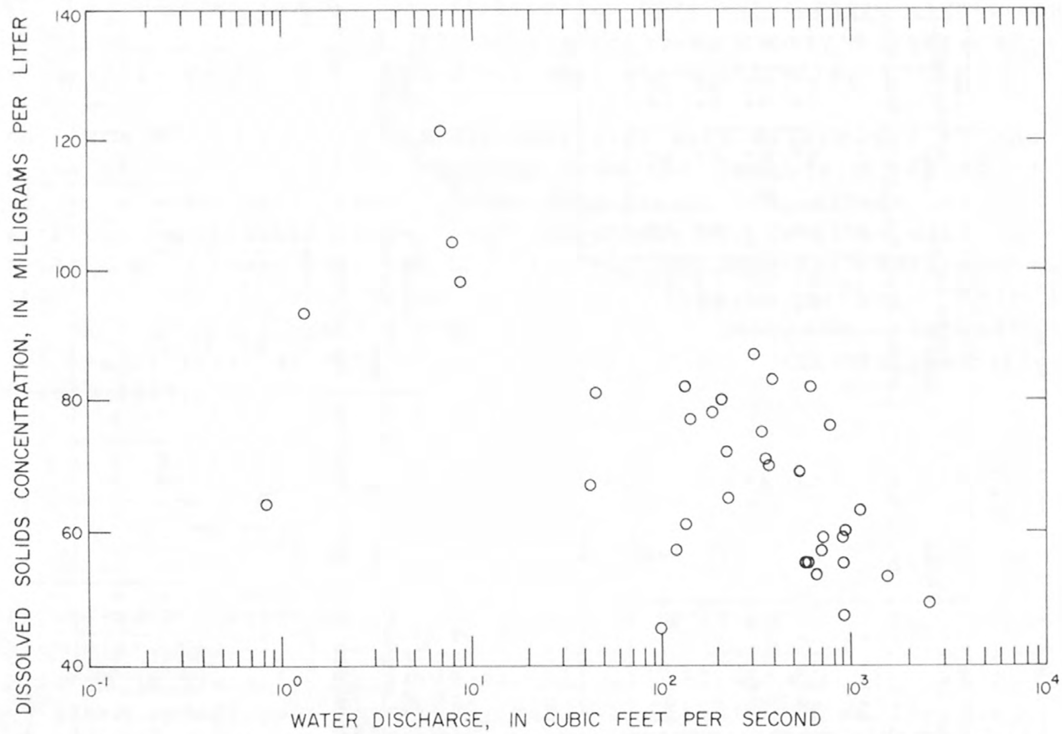

Figure 8.—Relation of dissolved-solids concentration to water discharge for Little River near Lenox, December 1976—July 1978.

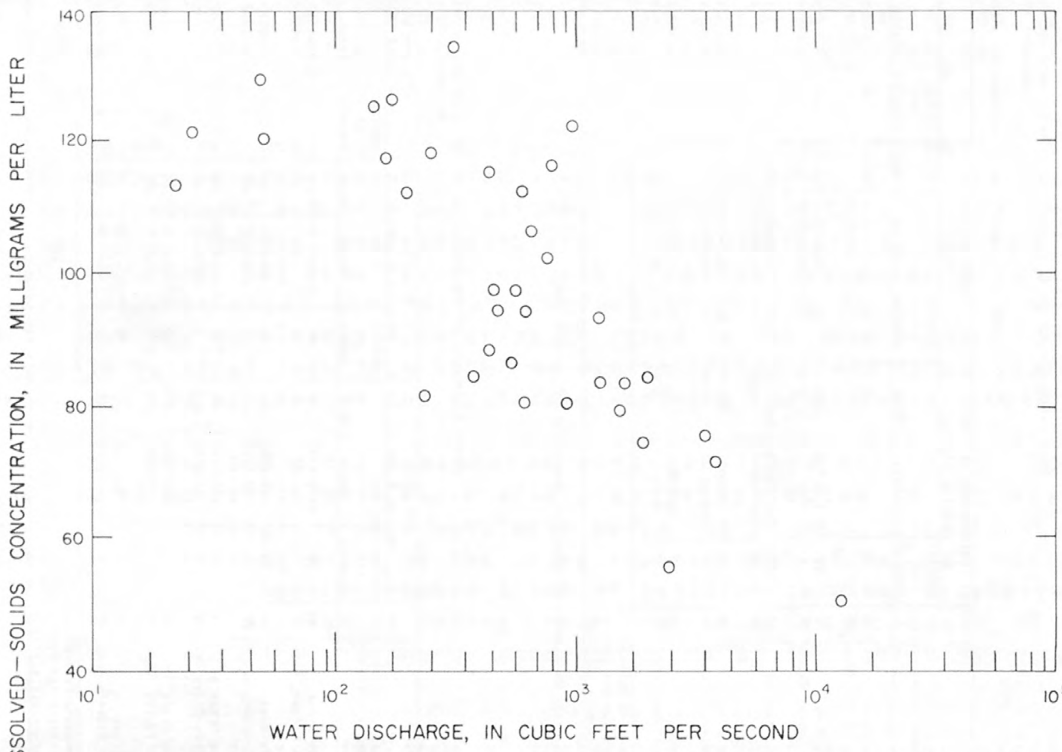

Figure 9.—Relation of dissolved-solids concentration to water discharge for Spring Creek near Iron City, December 1976—July 1978.

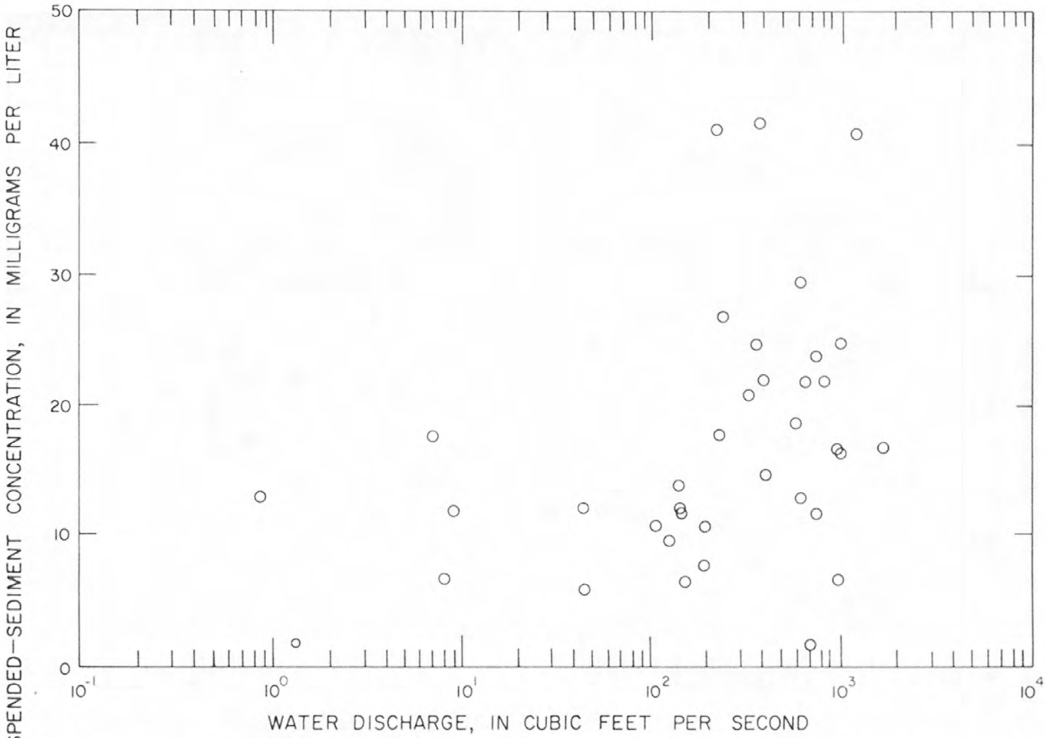

Figure 10.— Relation of suspended-sediment concentration to water discharge for Little River near Lenox, December 1976— July 1978.

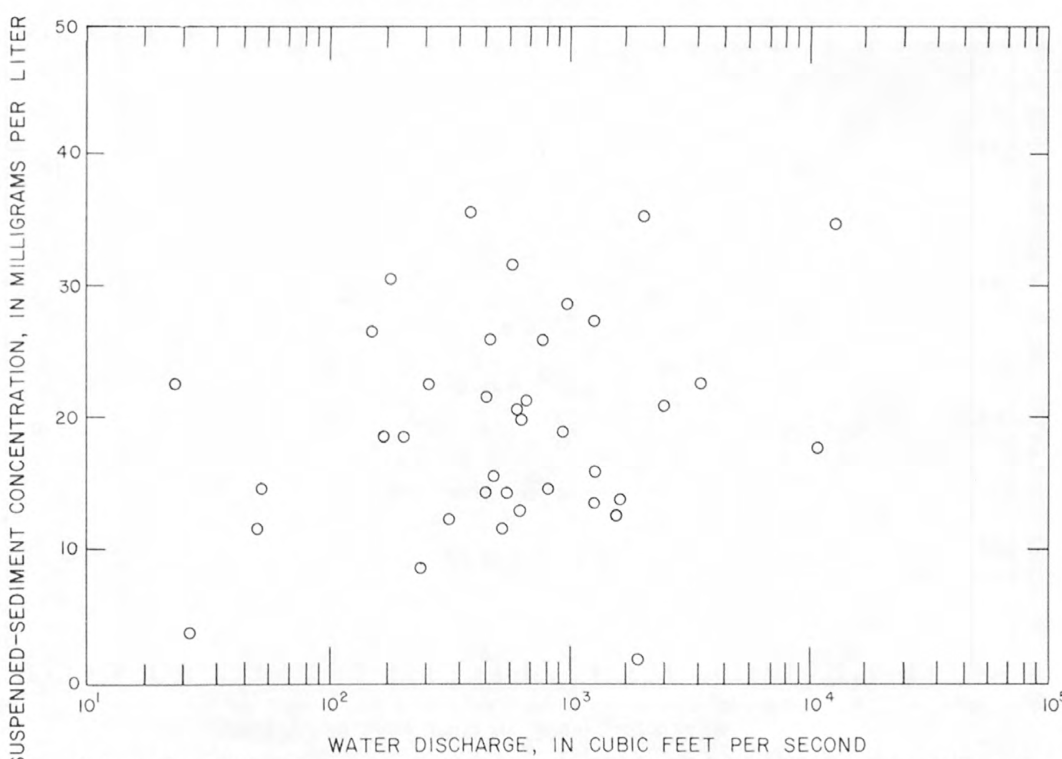

Figure 11.—Relation of suspended-sediment concentration to water discharge for Spring Creek near Iron City, December 1976 - July 1978.

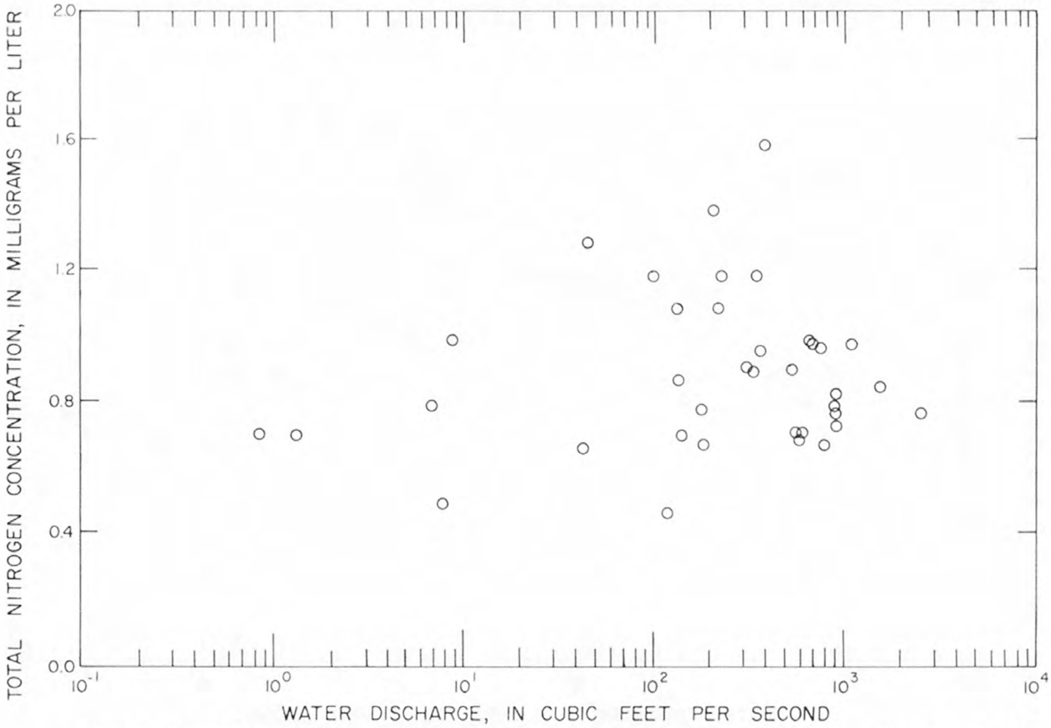

Figure 12.—Relation of total nitrogen concentration to water discharge for Little River near Lenox, December 1976—July 1978.

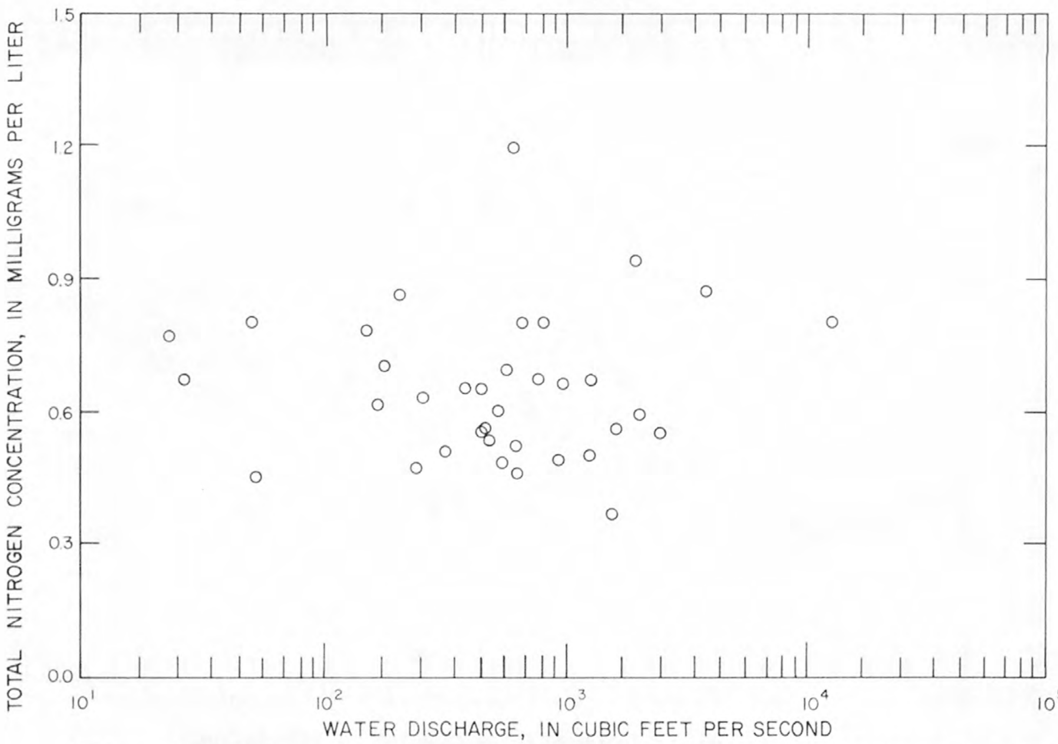

Figure 13.—Relation of total nitrogen concentration to water discharge for Spring Creek near Iron City, December 1976—July 1978.

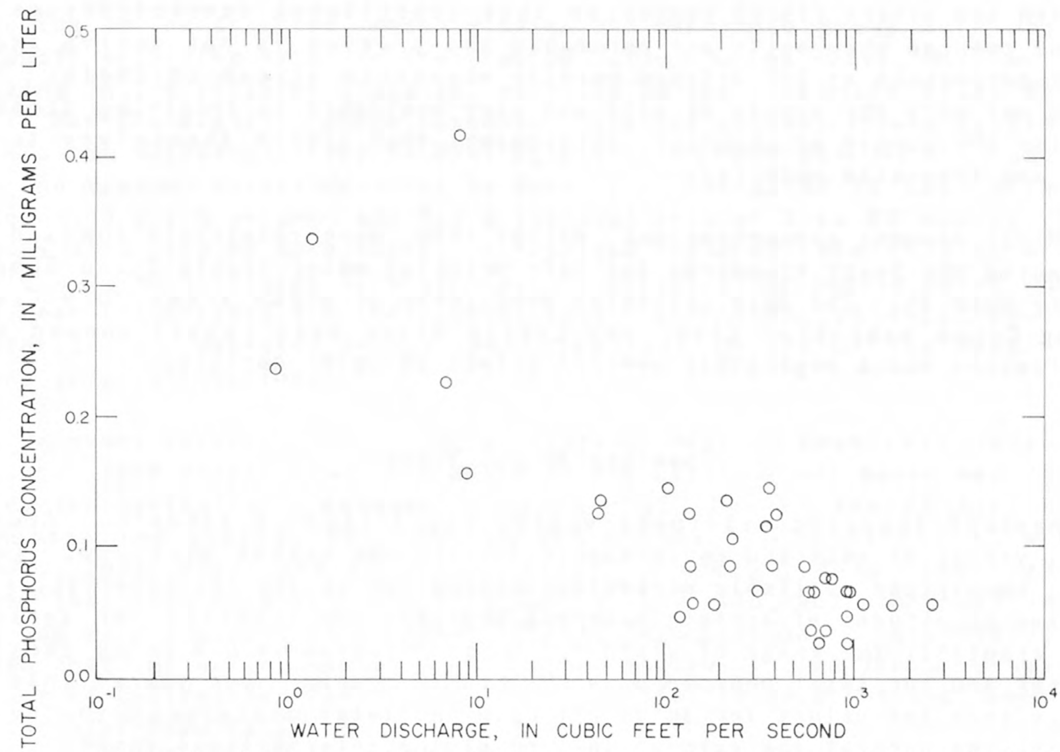

Figure 14.—Relation of total phosphorus concentration to water discharge for Little River near Lenox, December 1976—July 1978.

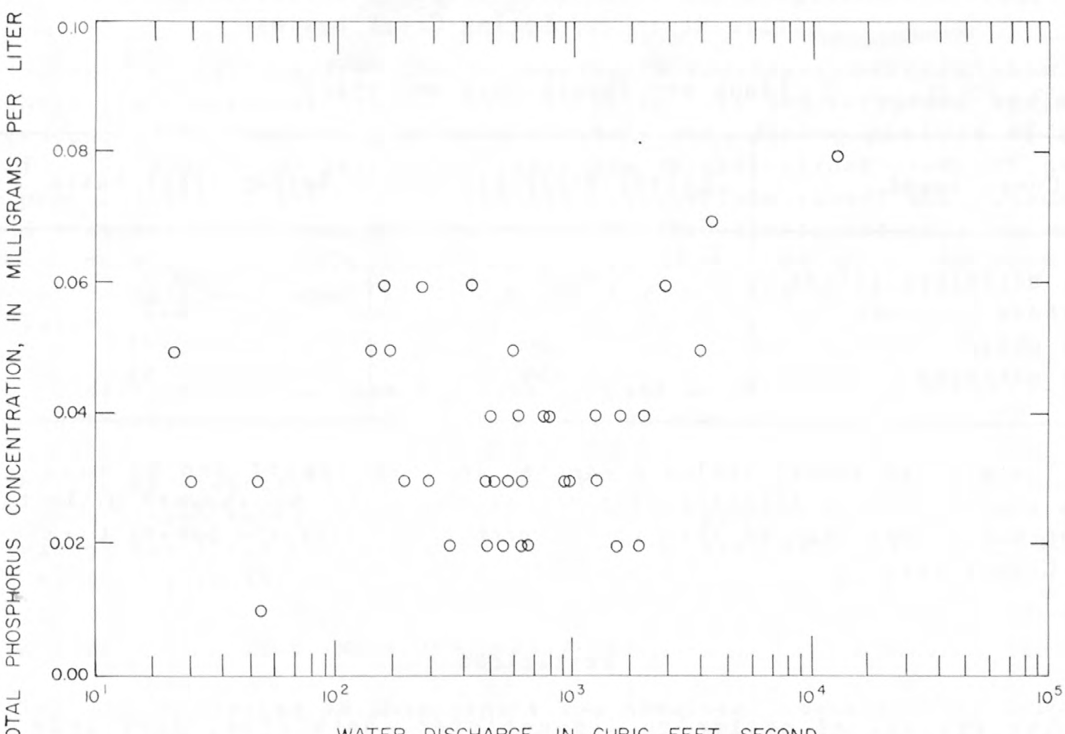

Figure 15.—Relation of total phosphorus concentration to water discharge for Spring Creek near Iron City, December 1976—July 1978.

Asmussen and others (1976) suggested that constituent concentrations can also be reduced when soils are permeable and erosion is not active and by the preponderance of ill-defined heavily vegetated stream channels. This limits not only the supply of silt and clay available to receiving streams, but also the supply of chemical constituents that attach themselves to the silt- and clay-size material.

Minor element concentrations, except iron, were relatively low and did not exceed the State standards for safe drinking water (table 5 and Supplementary Data 3). The data collected downstream of urban areas (Dry Creek, Spring Creek near Iron City, and Little River near Lenox) showed that urbanization had a negligible overall effect on water quality.

Average Annual Yield

Average annual constituent yields are listed in table 6. Average annual yields of selected constituents for the two basins were low. Loehr (1974) summarized available worldwide information on the characteristics and relative magnitudes of certain nutrient sources. He reported for agricultural croplands the range of yield for total nitrogen as 0.4 to 49 tons/mi^2 per year and for total phosphorus as 0.2 to 11 tons/mi per year. This indicates that the values for total nitrogen and total phosphorus in the two study basins were at the extreme low end of the international range.

Table 6.--Average annual yields of selected constituents in the Little River and Spring Creek basins

[Tons per square mile per year]

Constituent	Little River basin	Spring Creek basin
Total dissolved solids	46.0	89.4
Suspended sediment	11.0	18.2
Total phosphorus	.06	.04
Total nitrogen	.60	.63

The average annual yields presented in this report can be used as an index that will help establish the effect of future man-induced disturbances in the basins upstream of the Little River near Lenox and Spring Creek near Iron City sites.

Pesticides

The results of pesticide (insecticide, herbicide, fungicide, and nematocide) analyses are shown in Supplementary Data 4. Most samples collected through February 1978, the beginning of the active farming season, contained pesticide concentrations below the level of detection. Herbicides belonging to the triazine, phenoxy acid, and carbamate group were observed in runoff occurring later in the growing season during April, May, and July. Atrazine in the triazine class and butylate in the carbamate class consistently had the highest concentrations. Atrazine concentrations ranged from the minimum detection level to 0.47 μg/L (micrograms per liter); butylate from the minimum detection level to 0.91 μg/L. Atrazine is used primarily on corn and grain sorghum and has a residual life of 3 to 12 weeks. Buytlate is also used on corn and has a reported residual life of 3 to 8 weeks (table 1). No standards or water-quality criteria for public water supplies have been established for these herbicides. Ethroprop, an organophosphate nematocide, was detected at low concentrations in the Little River basin during this same period.

Relevant research concerning the fate of organic chemicals in surface and subsurface runoff from test plots in the Little River basin was conducted by the Agricultural Research Service, U.S. Department of Agriculture (Asmussen and others, 1977; White and others, 1976; Asmussen, written commun., 1978; Rhode and others, written commun., 1978). Their results showed that the concentrations of 2,4-D, trifluralin, and ethroprop in surface and ground waters were insignificant. Asmussen and others (1977) concluded that the effectiveness of vegetated waterways used for many years as a means of controlling runoff may also be useful in reducing the movement of agricultural chemicals.

SUMMARY AND CONCLUSIONS

Water-quality data from the two basins in southwest Georgia show consistently low concentrations of chemical parameters and suspended sediment. The concentrations remain relatively constant even during periods of storm runoff. The underlying reason for these low concentrations seems to be the high permeability of the soil, which reduces overland runoff and subsequent upland erosion. This reduction in upland erosion limits not only the supply of silt and clay available to receiving streams, but also the supply of chemical constituents that attach themselves to the silt- and clay-size material.

The data reveal that the small percentage of urban land in each basin is not detracting from the overall quality of the streams.

Pesticide (insecticide, herbicide, fungicide, and nematocide) samples collected through February 1978, prior to the beginning of the active farming season, contained concentrations below the level of detection. Herbicides belonging to the triazine, phenoxy acid, and carbamate groups were detected during storm-runoff events later in the growing season. Triazine and carbamate herbicides were the most prominent.

The data presented in this report and Asmussen's data show that current agricultural practices in the two study basins, with the possible exception of the use of some pesticides, are having no significant effect on water quality.

RECOMMENDATIONS

This report provides a data base from which future water-quality investigations in southwest Georgia can draw historical information. It concludes that agricultural practices are having no significant effect on water quality in terms of criteria or standards for public water-supply sources. However, there may be a need to continue and to expand water-quality monitoring in this region to ensure compliance with all aspects of multiple-use water-quality criteria.

Future studies could consider determining the percentage contribution to streamflow of the different components of the hydrologic cycle. In view of the conclusion of Asmussen and others (1976) that only 20 percent of streamflow can be attributed to direct surface runoff, attention could be given to the quantity and quality of ground-water contributions to receiving streams. This could include monitoring the quality of both the shallow and deep aquifer systems. For example, Pollard and others (1978) indicate that some agricultural practices may need to be monitored more closely, especially in areas where the connection to the underlying limestone aquifer is direct.

Many pesticides and minor elements have a low water solubility, which favors their rapid sorption on suspended or sedimented materials after introduction to receiving waters. In streams, these contaminants are in continuous transport on suspended particulate material or in sediments. The continuous downstream transport tends to reduce levels in the upper reaches of streams while increasing them in the downstream areas and eventually in major receiving basins, especially lakes, reservoirs, and estuaries. Accumulation of these contaminants in sediment may lead to toxicity to aquatic organisms or bioaccumulation within the food chain. Determining their fate in the aquatic environment could be important because these processes may affect human health. Therefore, future studies could emphasize the collection and analysis of suspended-sediment and bed-material samples to determine the fate of these contaminants, especially in major receiving basins like Lake Seminole.

Consideration could also be given to an intensive sampling program in small manageable basins during periods of heavy rainfall and baseflow conditions, especially during the active farming season. By using data collected during these periods, constituent discharges and average annual yields could be computed for both dissolved and suspended constituents. Suspended constituent discharges may be important, particularly with respect to phosphorus, which is easily converted to an insoluble form and may later become soluble to serve as an available nutrient source.

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SUPPLEMENTARY DATA

02317830 LITTLE RIVER NEAR LENOX, GA.

[B AND K, RESULTS BASED ON COLONY COUNTS OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)]

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
15...	1450	702	10.8	9.9	6.0	9	13	4	60	--	2.9	1.5
FEB , 1977												
23...	1645	182	9.0	7.7	6.5	15	18	3	--	--	4.3	1.8
MAR												
21...	1345	336	18.5	6.0	5.9	13	15	2	76	--	4.0	1.3
MAY												
05...	1120	9.1	23.0	7.4	5.8	21	28	6	99	9.7	6.6	2.7
JUN												
20...	0915	.90	24.5	3.6	6.0	30	32	2	65	14	8.3	2.7
JUL												
19...	1830	1.4	27.0	4.9	6.0	27	31	4	94	--	8.2	2.5
AUG												
02...	0940	8.2	24.0	4.8	6.4	29	29	0	105	21	7.3	2.5
SEP												
07...	0745	134	23.5	5.8	--	16	23	6	83	8.4	6.1	1.8
OCT												
17...	0930	7.1	12.5	7.6	--	30	37	7	122	16	10	2.9
NOV												
11...	0930	185	13.5	8.9	5.4	14	17	3	79	8.5	4.2	1.5
12...	1215	143	12.5	10.1	6.2	17	17	0	78	8.4	4.2	1.5
17...	1300	44	12.5	9.2	--	--	--	--	68	10	--	--
DEC												
15...	1130	121	11.0	8.2	6.6	11	--	--	58	--	--	--
JAN , 1978												
20...	1300	584	7.0	11.2	6.7	--	--	--	56	5.8	--	--
21...	0810	897	5.5	9.4	6.9	7	14	8	60	5.1	3.5	1.3
22...	0920	900	5.5	10.1	6.6	--	--	--	56	4.9	--	--
28...	1610	2520	7.5	9.5	6.9	--	--	--	50	3.5	--	--
30...	0825	1550	4.0	13.0	6.0	4	10	6	54	3.7	2.3	1.0
FEB												
06...	0900	654	5.0	--	7.1	6	14	8	54	5.0	3.3	1.3
15...	1450	357	--	--	--	--	--	--	--	--	--	--
MAR												
10...	1200	1100	10.0	--	5.4	--	--	--	64	3.0	--	--
14...	1200	912	14.7	7.8	6.1	8	12	4	48	--	3.0	1.2
APR												
03...	1230	137	18.5	--	--	--	--	--	--	--	--	--
03...	1236	137	18.5	--	6.6	--	--	--	62	2.3	--	--
13...	1525	102	17.5	5.8	6.6	16	21	4	46	4.4	5.2	1.9
14...	1240	208	17.5	7.1	6.9	14	21	7	81	4.9	5.0	2.0
15...	1100	382	16.5	6.3	6.2	11	23	12	84	5.1	6.2	1.9
18...	1210	572	19.0	7.0	6.6	--	--	--	56	3.9	--	--
20...	1300	366	17.5	7.2	6.6	11	17	6	71	4.9	4.2	1.5
MAY												
04...	1525	350	19.5	6.2	5.7	16	17	0	72	5.0	4.1	1.6
06...	1250	540	19.0	8.3	8.3	25	16	0	70	4.7	4.2	1.4
08...	1445	928	19.0	--	7.8	--	--	--	61	4.3	--	--
11...	1425	687	20.0	6.8	--	8	16	8	58	4.6	4.1	1.4
JUL												
17...	1820	221	24.5	5.9	6.3	11	19	7	73	6.6	4.8	1.6
18...	0910	227	25.5	6.4	6.0	--	--	--	66	6.5	--	--
20...	0830	756	24.0	5.5	6.1	8	17	8	77	5.9	4.3	1.4
21...	0800	604	23.5	5.6	6.1	16	15	0	83	4.9	3.9	1.3
22...	0905	308	24.5	5.4	6.2	11	17	6	88	5.5	4.3	1.5
26...	0800	46	23.5	5.3	6.4	21	24	4	82	8.6	6.5	2.0

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./100 ML)
DEC , 1976											
15...	4.4	2.2	9.8	--	--	.00	.18	.040	.010	10	8260
FEB , 1977											
23...	5.0	2.2	--	--	24	.02	.23	.060	.030	--	848
MAR											
21...	4.2	2.5	8.5	.1	42	.10	.13	.120	.030	18	816
MAY											
05...	11	2.5	16	.1	33	.06	.38	.160	.100	5.7	--
JUN											
20...	13	2.4	14	.2	30	.10	.20	.240	.150	5.1	92
JUL											
19...	12	2.5	16	--	30	.07	.17	.340	.290	5.0	820
AUG											
02...	13	2.5	13	.2	20	.04	.12	.420	.380	2.3	120
SEP											
07...	5.3	2.4	9.5	.1	85	.04	.06	.130	.070	4.5	80
OCT											
17...	16	3.0	20	.1	40	.03	.26	.230	.190	3.6	130
NOV											
11...	4.8	2.2	10	.0	45	.02	.01	.060	.030	5.4	320
12...	5.0	2.2	11	.0	55	.04	.04	.060	.020	5.2	270
17...	--	--	--	--	50	.04	.12	.130	.050	3.5	220
DEC											
15...	--	--	--	--	37	.01	.12	.050	.030	5.0	210
JAN , 1978											
20...	--	--	--	--	44	.00	.15	.040	.020	12	K1800
21...	4.5	2.0	8.2	.0	51	.01	.30	.070	.020	32	K3400
22...	--	--	--	--	53	.01	.24	.050	.020	21	K790
28...	--	--	--	--	67	.03	.22	.060	.020	48	480
30...	3.0	2.1	5.7	.1	48	.03	.30	.060	.020	50	250
FEB											
06...	3.6	2.1	8.6	.1	52	.07	.52	.030	.030	14	K60
15...	--	--	--	--	--	--	--	--	--	--	--
MAR											
10...	--	--	--	--	50	.13	.39	.060	.030	22	1100
14...	30	1.9	6.6	.0	30	.03	.29	.030	.010	15	K80
APR											
03...	--	--	--	--	--	--	--	--	--	7.0	--
03...	--	--	--	--	50	.05	.16	.090	.040	7.0	K50
13...	6.3	2.6	11	.1	50	.02	.39	.150	.090	8.0	560
14...	5.8	2.7	10	.1	60	.09	.25	.140	.070	17	K2900
15...	6.3	3.0	11	.1	50	.27	.40	.130	.050	12	470
18...	--	--	--	--	45	.05	.09	.070	.030	11	180
20...	3.8	2.3	8.9	.1	50	.07	.18	.090	.040	8.0	110
MAY											
04...	5.0	2.2	7.7	.1	45	.05	.21	.150	.050	34	--
06...	4.2	2.1	7.4	.1	45	.05	.19	.090	.040	16	--
08...	--	--	--	--	40	.03	.07	.070	.020	18	--
11...	4.0	2.1	7.4	.1	50	.10	.19	.080	.080	14	--
JUL											
17...	5.0	2.1	7.2	.1	50	.02	.10	.090	.040	7.4	--
18...	--	--	--	--	52	.03	.21	.110	.040	7.6	--
20...	3.9	2.0	6.4	.1	54	.08	.17	.080	.030	12	--
21...	3.3	1.9	6.1	.1	55	.03	.09	.070	.030	14	--
22...	3.9	2.0	6.8	.1	58	.05	.13	.070	.040	12	--
26...	5.8	2.4	9.5	.1	51	.06	.29	.140	.110	4.4	--

02317797 LITTLE RIVER AT UPPER TY TY ROAD, NEAR TIFTON, GA.

[B AND K, RESULTS BASED ON COLONY COUNTS OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)]

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
15...	1250	--	--	--	--	--	--	--	--	--	--	--
15...	1645	--	10.8	8.9	5.8	6	12	6	48	--	2.6	1.3
FEB , 1977												
23...	1530	--	10.0	8.1	5.7	--	--	--	--	--	--	--
MAR												
21...	1125	--	18.0	--	5.7	--	--	--	57	--	--	--
MAY												
05...	0945	--	21.0	7.8	5.9	--	--	--	72	5.1	--	--
SEP												
07...	0930	--	24.0	6.0	--	--	--	--	49	6.3	--	--
NOV												
11...	1035	--	13.5	3.5	5.2	--	--	--	78	8.7	--	--
DEC												
15...	1250	--	12.0	5.8	6.8	--	--	--	62	7.0	--	--
JAN , 1978												
20...	1400	--	7.0	11.0	7.2	--	--	--	43	4.8	--	--
22...	0745	--	4.5	10.6	6.7	--	--	--	46	4.7	--	--
26...	0900	--	10.0	9.0	7.1	--	--	--	48	3.5	--	--
28...	1705	--	7.0	9.8	--	--	--	--	42	3.5	--	--
MAR												
10...	0930	--	10.0	--	5.4	--	--	--	35	2.4	--	--
11...	0830	--	9.5	9.2	5.6	--	--	--	53	2.9	--	--
APR												
03...	1500	--	--	--	--	--	--	--	--	--	--	--
13...	1630	--	19.0	6.0	6.5	--	--	--	82	1.4	--	--
14...	1335	--	17.0	7.3	6.7	--	--	--	62	3.8	--	--
15...	1220	--	18.0	6.2	6.1	--	--	--	56	2.9	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./100 ML)
DEC , 1976											
15...	--	--	--	--	--	.03	--	--	--	--	--
15...	3.7	1.8	9.2	--	--	.00	.16	.020	.000	--	110
FEB , 1977											
23...	--	--	--	--	20	.02	.17	.040	.010	--	610
MAR											
21...	--	--	--	--	42	.10	.09	.060	.020	--	76
MAY											
05...	--	--	--	--	33	.14	.04	.080	.020	--	--
SEP											
07...	--	--	--	--	60	.02	.01	.030	.010	--	96
NOV											
11...	--	--	--	--	45	.05	.01	.040	.020	--	--
DEC											
15...	--	--	--	--	38	.01	.24	.030	.010	--	--
JAN , 1978											
20...	--	--	--	--	49	.00	.14	.030	.010	--	K660
22...	--	--	--	--	41	.00	.24	.040	.020	--	--
26...	--	--	--	--	54	.01	.29	.040	.030	--	K2100
28...	--	--	--	--	48	.03	.35	.060	.020	--	800
MAR											
10...	--	--	--	--	40	.02	.23	.040	.010	--	1200
11...	--	--	--	--	40	.01	.26	.040	.030	--	300
APR											
03...	--	--	--	--	--	--	--	--	--	--	K90
13...	--	--	--	--	65	.28	.06	.070	.030	--	K6300
14...	--	--	--	--	50	.07	.10	.030	.020	--	K2600
15...	--	--	--	--	50	.07	.05	.030	.020	--	410

02317771 LITTLE RIVER AT STATE HIGHWAY 112, NEAR ASHBURN, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
16...	0800	--	10.2	10.2	5.3	2	8	6	39	--	1.4	1.0

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./100 ML)
DEC , 1976											
16...	2.9	.7	7.1	--	--	.01	.12	.010	.010	--	--

02317815 Little River at U.S. Highway 319, near Tifton, Ga.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
15...	1530	--	11.0	10.2	6.0	8	14	6	56	--	3.3	1.4

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML)
DEC , 1976											
15...	4.1	2.0	9.8	--	--	.01	.14	.020	.000	--	--

02317817 Bussells Creek near Oak Grove Church, near Tifton, Ga.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
15...	1550	--	12.0	8.7	6.4	27	34	7	93	--	10	2.2

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML)
DEC , 1976											
15...	11	3.7	13	--	--	.10	1.2	.300	.170	--	--

02356420 Dry Creek near Blakely, Ga.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
16...	1615	--	11.7	9.2	7.0	46	45	0	76	--	17	.6
FEB , 1977												
24...	1120	--	11.5	8.1	6.2	--	--	--	--	--	--	--
MAR												
22...	1145	150	17.0	4.0	6.0	--	--	--	101	--	--	--
MAY												
06...	1220	22	21.5	6.3	6.7	--	--	--	71	4.8	--	--
JUN												
21...	0820	11	23.5	6.5	6.1	--	--	--	57	6.1	--	--
JUL												
20...	1030	10	24.0	7.3	6.6	--	--	--	176	--	--	--
AUG												
01...	1325	4.0	25.0	7.0	7.6	--	--	--	42	4.9	--	--
SEP												
08...	0945	37	24.0	5.6	--	--	--	--	92	8.8	--	--
09...	1030	--	24.5	6.1	--	--	--	--	91	8.8	--	--
11...	1000	--	24.5	6.1	--	--	--	--	78	8.0	--	--
OCT												
18...	1030	--	10.5	--	--	--	--	--	--	--	--	--
NOV												
09...	1400	--	18.0	6.6	5.7	--	--	--	59	6.8	--	--
10...	1200	--	16.0	6.9	5.8	--	--	--	77	7.0	--	--
DEC												
19...	1245	--	11.0	9.2	6.8	--	--	--	81	6.5	--	--
JAN , 1978												
20...	0930	--	6.0	11.2	6.9	--	--	--	76	4.2	--	--
21...	1115	--	4.5	10.4	--	--	--	--	71	4.5	--	--
26...	1400	--	10.0	8.9	6.6	--	--	--	37	1.7	--	--
MAR												
09...	0900	--	12.5	--	6.8	--	--	--	43	1.8	--	--
10...	1600	--	10.0	--	6.1	--	--	--	74	2.5	--	--
APR												
03...	1000	--	16.5	--	--	--	--	--	--	--	--	--
13...	1010	--	17.0	7.3	6.6	--	--	--	68	3.5	--	--
14...	0740	--	15.0	10.4	7.1	--	--	--	74	3.5	--	--
15...	0710	--	15.5	7.6	6.9	--	--	--	68	4.1	--	--
MAY												
04...	1030	--	18.0	--	--	--	--	--	--	--	--	--
06...	0810	--	17.0	--	--	--	--	--	--	--	--	--
JUL												
17...	1245	--	24.0	--	--	--	--	--	--	--	--	--

02356420 DRY CREEK NEAR BLAKELY, GA.

[B AND K, RESULTS BASED ON COLONY COUNTS OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)]

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM- ICAL (LOW LEVEL) (MG/L)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	TUR- BID- ITY (NTU)	COLI- FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML)
DEC , 1976											
16...	3.7	1.1	5.7	--	--	.01	.10	.030	.010	--	--
FEB , 1977											
24...	--	--	--	--	19	.03	.23	.050	.010	--	81500
MAR											
22...	--	--	--	--	39	.05	.16	.080	.010	98	8780
MAY											
06...	--	--	--	--	12	.04	.35	.040	.010	6.4	--
JUN											
21...	--	--	--	--	20	.03	.11	.080	.030	10	520
JUL											
20...	--	--	--	--	10	.04	.27	.030	.030	7.0	--
AUG											
01...	--	--	--	--	15	.02	.19	.050	.050	6.6	710
SEP											
08...	--	--	--	--	40	.01	.13	.070	.040	8.0	510
09...	--	--	--	--	40	.00	.01	.060	.030	6.2	250
11...	--	--	--	--	35	.00	.06	.050	.020	4.4	310
OCT											
18...	--	--	--	--	--	--	--	--	--	3.7	--
NOV											
09...	--	--	--	--	30	.02	.00	.040	.020	8.8	190
10...	--	--	--	--	40	.01	.00	.030	.020	6.3	220
DEC											
19...	--	--	--	--	33	.01	.09	.040	.010	4.8	220
JAN , 1978											
20...	--	--	--	--	43	.02	.19	.070	.030	24	K2500
21...	--	--	--	--	42	.01	.13	.040	.010	20	650
26...	--	--	--	--	55	.08	.22	.180	.030	180	K6600
MAR											
09...	--	--	--	--	30	.08	.21	.190	.020	230	--
10...	--	--	--	--	35	.06	.22	.120	.060	140	970
APR											
03...	--	--	--	--	--	--	--	--	--	8.1	K80
13...	--	--	--	--	45	.04	.16	.090	.020	31	K3300
14...	--	--	--	--	40	.05	.10	.070	.020	33	K2300
15...	--	--	--	--	40	.03	.07	.040	.010	31	560
MAY											
04...	--	--	--	--	--	--	--	--	--	22	--
06...	--	--	--	--	--	--	--	--	--	50	--
JUL											
17...	--	--	--	--	--	--	--	--	--	7.0	--

02356640 SPRING CREEK AT U.S. HIGHWAY 27, AT COLQUITT, GA.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	PH (UNITS)	ALKA- LINITY (MG/L AS CACO3)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SILICA, DIS- SOLVED (MG/L AS SIO2)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
DEC , 1976												
16...	1400	--	13.2	8.6	6.2	49	55	6	81	--	21	.6
FEB , 1977												
24...	1330	--	13.0	9.2	6.2	--	--	--	--	--	--	--
MAR												
22...	1400	400	18.0	7.4	6.5	--	--	--	110	--	--	--
APR												
03...	0845	--	--	--	--	--	--	--	--	--	--	--
MAY												
06...	1125	60	23.0	7.4	6.6	--	--	--	120	5.7	--	--
JUN												
21...	0930	37	24.0	5.6	6.4	--	--	--	104	4.8	--	--
JUL												
20...	1200	35	25.0	7.3	7.4	--	--	--	106	--	--	--
AUG												
01...	1240	18	25.0	6.8	7.4	--	--	--	109	5.8	--	--
SEP												
08...	0845	114	22.0	7.0	--	--	--	--	131	7.6	--	--
09...	0930	--	24.0	5.8	--	--	--	--	139	8.2	--	--
11...	0745	--	23.5	5.3	--	--	--	--	127	8.8	--	--
11...	1745	--	--	--	--	--	--	--	--	--	--	--
OCT												
18...	0945	--	13.0	--	--	--	--	--	--	--	--	--
NOV												
09...	1000	--	16.0	6.2	5.4	--	--	--	72	6.9	--	--
10...	1100	--	17.0	6.2	5.4	--	--	--	82	7.0	--	--
DEC												
19...	1005	--	10.0	7.9	6.4	--	--	--	120	6.5	--	--
JAN , 1978												
20...	0830	--	6.0	10.6	6.7	--	--	--	82	4.5	--	--
22...	1145	--	6.0	9.5	6.6	--	--	--	77	4.7	--	--
26...	1300	--	11.0	7.8	6.9	--	--	--	60	2.8	--	--
28...	0815	--	6.5	9.8	6.6	--	--	--	58	2.5	--	--
MAR												
09...	1030	--	13.0	8.2	6.2	--	--	--	60	2.1	--	--
11...	1230	--	12.0	9.8	--	--	--	--	--	2.3	--	--
APR												
03...	0845	--	17.0	--	6.5	--	--	--	99	3.2	--	--
13...	1115	--	18.0	6.4	6.6	--	--	--	102	3.8	--	--
14...	0900	--	16.0	7.9	6.8	--	--	--	95	3.9	--	--
15...	0800	--	16.0	6.7	6.8	--	--	--	93	4.2	--	--
MAY												
04...	1130	--	19.0	7.0	6.0	--	--	--	65	3.9	--	--
06...	0900	--	17.5	8.2	7.9	--	--	--	88	4.1	--	--
08...	1040	--	17.5	--	8.4	--	--	--	78	4.5	--	--
JUL												
17...	1355	--	25.0	6.7	7.2	--	--	--	123	6.2	--	--

SUPPLEMENTARY DATA 1.--WATER-QUALITY DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS--CONTINUED

02356640 SPRING CREEK AT U.S. HIGHWAY 27, AT COLQUITT, GA.

[B AND K, RESULTS BASED ON COLONY COUNTS OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)]

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./100 ML)
DEC , 1976											
16...	2.6	.7	5.0	--	--	.01	.09	.010	.010	--	230
FEB , 1977											
24...	--	--	--	--	18	.08	.31	.070	.020	--	B2400
MAR											
22...	--	--	--	--	38	.06	.14	.030	.000	12	B76
APR											
03...	--	--	--	--	--	--	.14	--	--	--	--
MAY											
06...	--	--	--	--	10	.04	.44	.020	.000	12	--
JUN											
21...	--	--	--	--	7	.04	.45	.040	.010	8.0	250
JUL											
20...	--	--	--	--	6	.04	.43	.010	.010	--	240
AUG											
01...	--	--	--	--	10	.03	.44	.020	.020	5.0	B190
SEP											
08...	--	--	--	--	30	.01	.13	.020	.010	6.0	300
09...	--	--	--	--	30	.01	.08	.030	.010	4.6	220
11...	--	--	--	--	35	.00	.08	.030	.010	--	220
11...	--	--	--	--	--	--	--	--	--	2.8	--
OCT											
18...	--	--	--	--	--	--	--	--	--	2.6	--
NOV											
09...	--	--	--	--	45	.02	.01	.040	.020	20	260
10...	--	--	--	--	45	.01	.01	.030	.020	17	300
DEC											
19...	--	--	--	--	23	.00	.03	.020	.000	6.1	440
JAN , 1978											
20...	--	--	--	--	30	.01	.21	.030	.010	16	K2000
22...	--	--	--	--	28	.00	.12	.020	.010	12	K400
26...	--	--	--	--	46	--	.16	.080	.030	85	K2900
28...	--	--	--	--	43	.06	.24	.140	.020	170	K7200
MAR											
09...	--	--	--	--	31	.06	.23	.120	.020	120	K1800
11...	--	--	--	--	--	--	--	--	.020	160	540
APR											
03...	--	--	--	--	30	.03	.14	.030	.010	8.0	K90
13...	--	--	--	--	25	.05	.25	.040	.020	14	K11000
14...	--	--	--	--	35	.05	.16	.020	.010	11	K1300
15...	--	--	--	--	35	.04	.14	.020	.010	11	310
MAY											
04...	--	--	--	--	25	.04	.15	.050	.010	26	--
06...	--	--	--	--	25	.03	.14	.040	.020	20	--
08...	--	--	--	--	20	.03	.14	.040	.010	25	--
JUL											
17...	--	--	--	--	21	.02	.29	.020	.010	6.3	--

02357000 SPRING CREEK NEAR IRON CITY, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	ALKA-LINITY (MG/L AS CACO3)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SILICA, DIS-SOLVED (MG/L AS SIO2)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1976												
16...	1250	1600	11.8	10.1	6.9	50	52	2	80	--	20	.6
JAN , 1977												
21...	1325	1310	--	--	--	--	--	--	--	--	--	--
28...	1255	1050	--	--	--	--	--	--	--	--	--	--
FEB												
24...	1400	546	13.0	8.4	6.5	77	78	1	--	--	30	.7
MAR												
22...	1300	1010	19.0	6.8	6.2	65	76	11	123	--	29	.9
MAY												
06...	1005	268	22.0	6.5	6.5	98	110	11	119	5.5	42	1.0
JUN												
21...	1100	53	26.0	6.0	6.6	107	110	1	130	5.2	42	.6
JUL												
20...	1330	28	27.6	8.6	7.7	98	110	9	122	--	42	.6
AUG												
01...	0930	24	25.0	6.1	7.0	98	100	6	114	5.1	41	.6
SEP												
08...	0800	156	24.5	8.6	--	82	87	5	126	6.3	34	.6
09...	0850	176	24.0	6.8	--	--	--	--	118	6.5	--	--
11...	0830	185	24.0	6.0	--	58	95	37	127	7.7	37	.6
OCT												
18...	0830	55	14.5	7.6	--	98	110	7	121	4.9	41	.7
NOV												
09...	1130	400	17.5	7.2	5.4	29	50	22	85	7.5	19	.7
10...	1005	595	17.5	6.2	5.5	--	--	--	98	7.5	--	--
12...	0840	484	11.5	10.2	6.7	31	44	13	98	6.7	17	.4
17...	1000	251	12.5	10.2	--	--	--	--	82	6.8	--	--
DEC												
19...	1050	329	12.0	8.7	7.1	66	65	0	135	5.4	25	.6
JAN , 1978												
20...	0700	463	6.5	10.4	6.3	--	--	--	89	4.4	--	--
21...	1325	500	6.5	10.1	6.4	58	67	9	95	4.6	26	.6
22...	1310	570	6.0	9.2	6.5	58	65	7	87	4.7	25	.6
23...	1215	646	6.5	11.0	6.4	--	--	--	81	4.9	--	--
25...	1055	965	9.5	9.6	--	39	50	10	81	4.2	19	.5
28...	1255	12800	7.0	10.4	6.9	--	--	--	51	2.5	--	--
30...	1230	3910	6.0	13.2	6.7	24	30	6	72	3.1	11	.5
FEB												
06...	1130	1980	6.0	--	7.2	34	45	10	75	4.4	17	.6
16...	1100	874	--	--	--	--	--	--	--	--	--	--
MAR												
09...	1230	2520	13.0	--	6.0	--	--	--	56	2.2	--	--
11...	1400	10800	12.0	9.4	6.4	--	--	--	--	2.2	--	--
14...	1530	3540	16.9	7.4	6.6	25	30	5	76	--	11	.5
APR												
03...	0730	653	18.0	--	6.8	--	--	--	95	3.5	--	--
13...	1245	468	19.0	7.1	6.7	98	95	0	116	4.3	37	.7
14...	0940	626	17.5	7.7	6.7	78	82	4	113	4.0	32	.5
15...	0850	684	17.0	6.6	6.3	71	78	7	107	4.0	30	.7
18...	0910	1300	23.0	6.6	6.7	--	--	--	94	4.3	--	--
20...	1015	836	17.5	7.4	6.1	63	68	5	117	4.3	26	.7
MAY												
04...	1300	800	19.5	6.1	6.1	30	73	42	103	4.2	28	.7
06...	0950	1660	18.0	7.3	8.1	18	55	37	84	4.0	21	.6
08...	1150	2070	20.5	--	8.1	--	--	--	85	4.2	--	--
11...	1100	1310	20.0	8.3	--	51	57	7	84	4.0	22	.6
JUL												
17...	1500	213	27.0	7.5	7.2	90	90	0	113	5.6	35	.7

SUPPLEMENTARY DATA 1.--WATER-QUALITY DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS--CONTINUED

02357000 SPRING CREEK NEAR IRON CITY, GA.

[B AND K, RESULTS BASED ON COLONY COUNTS OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)]

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	TUR-BID-ITY (NTU)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./100 ML)
DEC . 1976											
16...	2.5	.7	4.9	--	--	.01	.09	.020	.010	10	180
JAN . 1977											
21...	--	--	--	--	--	--	--	--	--	15	--
28...	--	--	--	--	--	--	--	--	--	120	--
FEB											
24...	2.4	.6	--	--	9	.03	.32	.020	.000	--	290
MAR											
22...	2.9	1.0	4.8	.0	25	.04	.22	.030	.000	13	856
MAY											
06...	2.2	.4	4.1	.0	8	.03	.58	.030	.010	4.8	--
JUN											
21...	2.5	.5	3.7	.0	10	.04	.60	.030	.030	4.8	240
JUL											
20...	2.6	.5	3.7	--	10	.02	.45	.030	.030	3.0	820
AUG											
01...	2.7	.5	3.7	.0	10	.03	.55	.050	.040	7.2	160
SEP											
08...	2.6	.9	4.2	.0	25	.03	.32	.050	.020	13	390
09...	--	--	--	--	25	.00	.21	.060	.020	9.8	450
11...	3.0	.7	5.4	.0	30	.01	.16	.050	.010	7.4	400
OCT											
18...	3.2	.6	4.2	.1	10	.01	.33	.010	.010	2.4	130
NOV											
09...	3.3	1.1	6.6	.0	55	.02	.03	.060	.030	19	270
10...	--	--	--	--	55	.01	.01	.050	.030	21	420
12...	3.0	.7	6.2	.0	35	.03	.01	.040	.010	16	290
17...	--	--	--	--	35	.02	.05	.060	.010	6.7	290
DEC											
19...	3.0	.7	5.2	.0	30	.01	.07	.020	.010	5.9	560
JAN . 1978											
20...	--	--	--	--	24	.01	.25	.030	.010	15	K1800
21...	2.5	.6	4.5	.0	45	.01	.26	.030	.010	15	K1300
22...	2.6	.5	4.2	.0	47	.01	.21	.030	.030	12	280
23...	--	--	--	--	18	.00	.15	.020	.010	13	230
25...	2.3	.7	4.2	.1	39	.02	.21	.030	.010	22	K920
28...	--	--	--	--	57	.04	.21	.080	.020	120	K2200
30...	1.6	1.1	3.3	.1	45	.03	.25	.070	.030	80	390
FEB											
06...	2.0	.9	4.5	.0	52	.03	.35	.020	.010	2.0	K90
16...	--	--	--	--	--	--	--	--	--	--	--
MAR											
09...	--	--	--	--	25	.03	.21	.060	.010	45	K3300
11...	--	--	--	--	--	--	--	--	--	85	1000
14...	1.7	1.0	2.8	.0	25	.03	--	.050	.010	40	450
APR											
03...	--	--	--	--	25	.05	.24	.030	.010	6.8	K30
13...	2.3	.6	3.8	.0	35	.03	.35	.020	.010	10	700
14...	2.2	1.4	4.4	.0	30	.12	.36	.040	.020	9.0	K2600
15...	2.3	1.1	4.1	.0	40	.04	.27	.020	.010	8.5	430
18...	--	--	--	--	30	.03	.13	.040	.000	21	230
20...	1.8	.9	4.1	.0	35	.05	.24	.040	.000	11	K80
MAY											
04...	2.2	.8	1.7	.0	25	.04	.23	.040	.020	13	--
06...	2.1	.9	2.0	.0	30	.02	.15	.040	.020	19	--
08...	--	--	--	--	25	.02	.13	.040	.010	25	--
11...	2.1	.9	3.9	.0	30	.03	.21	.030	.030	17	--
JUL											
17...	2.0	.6	3.4	.0	20	.02	.32	.030	.010	7.0	--

SUPPLEMENTARY DATA 2.--SEDIMENT DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS

02317830 LITTLE RIVER NEAR LENOX, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TUR-BID-ITY (NTU)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SEDI-MENT, SUS-PENDED (MG/L)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
DEC . 1976												
15...	1450	702	10	76	12	--	--	--	--	--	--	--
FEB . 1977												
23...	1645	182	--	94	8	--	--	--	--	--	--	--
MAR												
21...	1345	336	18	94	25	--	--	--	--	--	--	--
MAY												
05...	1120	9.1	5.7	100	12	--	--	--	--	--	--	--
JUN												
20...	0915	.90	5.1	100	13	--	--	--	--	--	--	--
JUL												
19...	1830	1.4	5.0	100	2	--	--	--	--	--	--	--
AUG												
02...	0940	8.2	2.3	100	7	--	--	--	--	--	--	--
SEP												
07...	0745	134	4.5	100	14	--	--	--	--	--	--	--
OCT												
17...	0930	7.1	3.6	100	18	--	--	--	--	--	--	--
NOV												
11...	0930	185	5.4	100	11	--	--	--	--	--	--	--
12...	1215	143	5.2	100	6	--	--	--	--	--	--	--
17...	1300	44	3.5	100	6	--	--	--	--	--	--	--
DEC												
15...	1130	121	5.0	100	10	--	--	--	--	--	--	--
JAN . 1978												
20...	1300	584	12	68	13	--	--	--	--	--	--	--
21...	0810	897	32	85	17	--	--	--	--	--	--	--
22...	0920	900	21	94	7	--	--	--	--	--	--	--
28...	1610	2520	48	--	--	--	--	--	--	--	--	--
30...	0825	1550	50	98	17	--	--	--	--	--	--	--
FEB												
06...	0900	654	14	96	2	--	--	--	--	--	--	--
15...	1450	357	--	--	--	0	2	13	55	84	94	100
MAR												
10...	1200	1100	22	26	41	--	--	--	--	--	--	--
14...	1200	912	15	100	16	--	--	--	--	--	--	--
APR												
03...	1230	137	7.0	100	12	--	--	--	--	--	--	--
03...	1236	137	7.0	--	12	--	--	--	--	--	--	--
13...	1525	102	8.0	100	11	--	--	--	--	--	--	--
14...	1240	208	17	90	41	--	--	--	--	--	--	--
15...	1100	382	12	94	15	--	--	--	--	--	--	--
18...	1210	572	11	81	29	--	--	--	--	--	--	--
20...	1300	366	8.0	80	22	--	--	--	--	--	--	--
MAY												
04...	1525	350	34	93	41	--	--	--	--	--	--	--
06...	1250	540	16	88	19	--	--	--	--	--	--	--
08...	1445	928	18	93	25	--	--	--	--	--	--	--
11...	1425	687	14	100	24	--	--	--	--	--	--	--
JUL												
17...	1820	221	7.4	89	18	--	--	--	--	--	--	--
18...	0910	227	7.6	89	27	--	--	--	--	--	--	--
20...	0830	756	12	88	22	--	--	--	--	--	--	--
21...	0800	604	14	79	22	--	--	--	--	--	--	--
22...	0905	308	12	91	21	--	--	--	--	--	--	--
26...	0800	46	4.4	82	12	--	--	--	--	--	--	--

02356420 Dry Creek near Blakely, Ga.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TUR-BID-ITY (NTU)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SEDI-MENT, SUS-PENDED (MG/L)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
FEB , 1977												
24...	1120	--	--	98	16	--	--	--	--	--	--	--
MAR												
22...	1145	150	98	90	22	--	--	--	--	--	--	--
MAY												
06...	1220	22	6.4	65	22	--	--	--	--	--	--	--
JUN												
21...	0820	11	10	91	22	--	--	--	--	--	--	--
JUL												
20...	1030	10	7.0	100	7	--	--	--	--	--	--	--
AUG												
01...	1325	4.0	6.6	87	13	--	--	--	--	--	--	--
SEP												
08...	0945	37	8.0	70	13	--	--	--	--	--	--	--
09...	1030	--	6.2	90	11	--	--	--	--	--	--	--
11...	1000	--	4.4	85	7	--	--	--	--	--	--	--
OCT												
18...	1030	--	3.7	100	7	--	--	--	--	--	--	--
NOV												
09...	1400	--	8.8	100	15	--	--	--	--	--	--	--
10...	1200	--	6.3	100	15	--	--	--	--	--	--	--
DEC												
19...	1245	--	4.8	100	12	--	--	--	--	--	--	--
JAN , 1978												
20...	0930	--	24	69	28	--	--	--	--	--	--	--
21...	1115	--	20	88	21	--	--	--	--	--	--	--
26...	1400	--	180	96	36	--	--	--	--	--	--	--
MAR												
09...	0900	--	230	92	55	--	--	--	--	--	--	--
10...	1600	--	140	83	30	--	--	--	--	--	--	--
APR												
03...	1000	--	8.1	--	14	--	--	--	--	--	--	--
13...	1000	--	--	--	60	--	--	--	--	--	--	--
13...	1010	--	31	83	5	--	--	--	--	--	--	--
14...	0740	--	33	91	26	--	--	--	--	--	--	--
15...	0710	--	31	88	27	--	--	--	--	--	--	--
MAY												
04...	1030	--	22	85	35	--	--	--	--	--	--	--
06...	0810	--	50	94	28	--	--	--	--	--	--	--
JUL												
17...	1245	--	7.0	75	17	--	--	--	--	--	--	--

02356640 Spring Creek at U.S. Highway 27, at Colquitt, Ga.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TUR-BID-ITY (NTU)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SEDI-MENT, SUS-PENDED (MG/L)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
FEB , 1977												
24...	1330	--	--	100	18	--	--	--	--	--	--	--
MAR												
22...	1400	400	12	97	29	--	--	--	--	--	--	--
MAY												
06...	1125	60	12	96	24	--	--	--	--	--	--	--
JUN												
21...	0930	37	8.0	89	23	--	--	--	--	--	--	--
JUL												
20...	1200	35	--	--	--	--	--	--	--	--	--	--
AUG												
01...	1240	18	5.0	90	15	--	--	--	--	--	--	--
SEP												
08...	0845	114	6.0	91	12	--	--	--	--	--	--	--
09...	0930	--	4.6	89	11	--	--	--	--	--	--	--
11...	1745	--	2.8	98	7	--	--	--	--	--	--	--
OCT												
18...	0945	--	2.6	100	8	--	--	--	--	--	--	--
NOV												
09...	1000	--	20	100	21	--	--	--	--	--	--	--
10...	1100	--	17	100	17	--	--	--	--	--	--	--
DEC												
19...	1005	--	6.1	100	6	--	--	--	--	--	--	--
JAN , 1978												
20...	0830	--	16	67	19	--	--	--	--	--	--	--
22...	1145	--	12	65	15	--	--	--	--	--	--	--
26...	1300	--	85	79	45	--	--	--	--	--	--	--
28...	0815	--	170	95	40	--	--	--	--	--	--	--
MAR												
09...	1030	--	120	94	17	--	--	--	--	--	--	--
11...	1230	--	160	92	19	--	--	--	--	--	--	--
APR												
03...	0845	--	8.0	100	16	--	--	--	--	--	--	--
13...	1115	--	14	87	25	--	--	--	--	--	--	--
14...	0900	--	11	94	20	--	--	--	--	--	--	--
15...	0800	--	11	87	18	--	--	--	--	--	--	--
MAY												
04...	1130	--	26	90	29	--	--	--	--	--	--	--
06...	0900	--	20	100	20	--	--	--	--	--	--	--
08...	1040	--	25	87	23	--	--	--	--	--	--	--
JUL												
17...	1355	--	6.3	82	22	--	--	--	--	--	--	--

SUPPLEMENTARY DATA 2.--SEDIMENT DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS--CONTINUED

02357000 SPRING CREEK NEAR IRON CITY, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TUR-BID-ITY (NTU)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SEDI-MENT, SUS-PENDED (MG/L)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
DEC , 1976												
16...	1250	1600	10	50	13	--	--	--	--	--	--	--
JAN , 1977												
21...	1325	1310	15	74	16	--	--	--	--	--	--	--
28...	1255	1050	120	--	--	--	--	--	--	--	--	--
FEB												
24...	1400	546	--	89	12	--	--	--	--	--	--	--
MAR												
22...	1300	1010	13	93	29	--	--	--	--	--	--	--
MAY												
06...	1005	268	4.8	100	23	--	--	--	--	--	--	--
JUN												
21...	1100	53	4.8	100	12	--	--	--	--	--	--	--
JUL												
20...	1330	28	3.0	14	4	--	--	--	--	--	--	--
AUG												
01...	0930	24	7.2	100	23	--	--	--	--	--	--	--
SEP												
08...	0800	156	13	96	27	--	--	--	--	--	--	--
09...	0850	176	9.8	94	19	--	--	--	--	--	--	--
11...	0830	185	7.4	54	31	--	--	--	--	--	--	--
OCT												
18...	0830	55	2.4	97	15	--	--	--	--	--	--	--
NOV												
09...	1130	400	19	98	36	--	--	--	--	--	--	--
10...	1005	595	21	100	32	--	--	--	--	--	--	--
12...	0840	484	16	100	26	--	--	--	--	--	--	--
17...	1000	251	6.7	100	9	--	--	--	--	--	--	--
DEC												
19...	1050	329	5.9	100	12	--	--	--	--	--	--	--
JAN , 1978												
20...	0700	463	15	89	14	--	--	--	--	--	--	--
21...	1325	500	15	75	16	--	--	--	--	--	--	--
22...	1310	570	12	69	14	--	--	--	--	--	--	--
23...	1215	646	13	65	13	--	--	--	--	--	--	--
25...	1055	965	22	45	19	--	--	--	--	--	--	--
28...	1255	12800	120	96	35	--	--	--	--	--	--	--
30...	1230	3910	80	92	--	--	--	--	--	--	--	--
FEB												
06...	1130	1980	2.0	90	2	--	--	--	--	--	--	--
16...	1100	874	--	--	--	0	0	7	31	95	100	--
MAR												
09...	1230	2520	45	85	21	--	--	--	--	--	--	--
11...	1400	10800	85	82	18	--	--	--	--	--	--	--
14...	1530	3540	40	100	23	0	0	0	44	92	99	100
APR												
03...	0730	653	6.8	100	20	--	--	--	--	--	--	--
13...	1245	468	10	84	22	--	--	--	--	--	--	--
14...	0940	626	9.0	80	21	--	--	--	--	--	--	--
15...	0850	684	8.5	74	21	--	--	--	--	--	--	--
18...	0910	1300	21	82	27	--	--	--	--	--	--	--
20...	1015	836	11	91	15	--	--	--	--	--	--	--
MAY												
04...	1300	800	13	83	26	--	--	--	--	--	--	--
06...	0950	1660	19	100	14	--	--	--	--	--	--	--
08...	1150	2070	25	75	35	--	--	--	--	--	--	--
11...	1100	1310	17	100	14	--	--	--	--	--	--	--
JUL												
17...	1500	213	7.0	85	19	--	--	--	--	--	--	--

SUPPLEMENTARY DATA 3.--MINOR ELEMENT DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS

02317830 LITTLE RIVER NEAR LENOX, GA.

DATE	TIME	TEMPER-ATURE, WATER (DEG C)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	ARSENIC TOTAL (UG/L AS AS)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)
DEC , 1976										
15...	1450	10.8	702	--	20	25	720	160	0	.1
FEB , 1977										
23...	1645	9.0	182	--	10	4	830	120	1	.1
MAR										
21...	1345	18.5	336	--	20	3	2200	1100	1	.0
MAY										
05...	1120	23.0	9.1	--	10	2	1600	730	1	.0
JUN										
20...	0915	24.5	.90	--	10	3	950	630	1	.1
JUL										
19...	1830	27.0	1.4	--	0	0	900	660	2	.0
AUG										
02...	0940	24.0	8.2	--	0	3	600	210	1	.1
SEP										
07...	0745	23.5	134	--	0	2	2100	790	0	.2
OCT										
17...	0930	12.5	7.1	--	50	7	2400	1400	1	<.5
NOV										
11...	0930	13.5	185	--	10	1	1500	790	1	<.5
12...	1215	12.5	143	--	0	1	1400	550	1	<.5
17...	1300	12.5	44	--	--	--	--	--	--	--
DEC										
15...	1130	11.0	121	--	20	8	1100	--	0	<.5
JAN , 1978										
20...	1300	7.0	584	--	--	--	--	--	--	--
21...	0810	5.5	897	--	20	6	1400	250	0	<.5
22...	0920	5.5	900	--	--	--	--	--	--	--
28...	1610	7.5	2520	--	--	--	--	--	--	--
30...	0825	4.0	1550	7	10	6	1200	260	0	<.5
FEB										
06...	0900	5.0	654	8	20	8	670	200	1	<.5
15...	1450	--	357	--	--	--	--	--	--	--
MAR										
10...	1200	10.0	1100	--	--	--	--	--	--	--
14...	1200	14.7	912	--	10	3	800	630	1	<.5
APR										
03...	1230	18.5	137	--	--	--	--	--	--	--
03...	1236	18.5	137	--	--	--	--	--	--	--
13...	1525	17.5	102	--	20	5	2200	290	1	<.5
14...	1240	17.5	208	--	10	4	2300	1400	1	<.5
15...	1100	16.5	382	3	10	4	1800	790	1	<.5
18...	1210	19.0	572	--	--	--	--	--	--	--
20...	1300	17.5	366	3	0	5	1500	800	1	<.5
MAY										
04...	1525	19.5	350	11	80	4	3300	990	1	<.5
06...	1250	19.0	540	4	30	4	2100	700	1	<.5
08...	1445	19.0	928	--	--	--	--	--	--	--
11...	1425	20.0	687	2	10	4	1800	490	1	<.5
JUL										
17...	1820	24.5	221	2	10	5	1100	630	0	.5
18...	0910	25.5	227	--	--	--	--	--	--	--
20...	0830	24.0	756	2	20	3	1500	280	1	.5
21...	0800	23.5	604	--	20	11	1500	640	1	.5
22...	0905	24.5	308	--	10	2	1700	890	1	.5
26...	0800	23.5	46	0	20	2	1600	1500	1	.5

SUPPLEMENTARY DATA 3.--MINOR ELEMENT DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS--CONTINUED

02317797 LITTLE RIVER AT UPPER TY TY ROAD, NEAR TIFTON, GA.

DATE	TIME	TEMPER-ATURE, WATER (DEG C)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	ARSENIC TOTAL (UG/L AS AS)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)
DEC , 1976										
15...	1645	10.8	--	--	20	22	670	360	1	.1
FEB , 1977										
23...	1530	10.0	--	--	--	--	--	--	--	--
MAR										
21...	1125	18.0	--	--	--	--	--	--	--	--
MAY										
05...	0945	21.0	--	--	--	--	--	--	--	--
SEP										
07...	0930	24.0	--	--	--	--	--	--	--	--
NOV										
11...	1035	13.5	--	--	--	--	--	--	--	--
DEC										
15...	1250	12.0	--	--	--	--	--	--	--	--
JAN , 1978										
20...	1400	7.0	--	--	20	7	930	290	1	<.5
22...	0745	4.5	--	--	20	--	1000	150	0	<.5
26...	0900	10.0	--	8	30	19	1300	170	0	<.5
28...	1705	7.0	--	11	20	6	940	240	0	<.5
MAR										
10...	0930	10.0	--	--	20	5	810	500	0	<.5
11...	0830	9.5	--	15	20	5	910	560	0	<.5
APR										
13...	1630	19.0	--	--	20	5	3800	2000	1	<.5
14...	1335	17.0	--	2	0	4	2000	750	1	<.5
15...	1220	18.0	--	3	10	5	2100	920	1	<.5

02356420 DRY CREEK NEAR BLAKELY, GA.

DATE	TIME	TEMPER-ATURE, WATER (DEG C)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	ARSENIC TOTAL (UG/L AS AS)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)
DEC , 1976										
16...	1615	11.7	--	--	--	--	--	--	--	--
FEB , 1977										
24...	1120	11.5	--	--	--	--	--	--	--	--
MAR										
22...	1145	17.0	150	--	--	--	--	--	--	--
MAY										
06...	1220	21.5	22	--	--	--	--	--	--	--
JUN										
21...	0820	23.5	11	--	--	--	--	--	--	--
JUL										
20...	1030	24.0	10	--	--	--	--	--	--	--
AUG										
01...	1325	25.0	4.0	--	--	--	--	--	--	--
SEP										
08...	0945	24.0	37	--	--	--	--	--	--	--
09...	1030	24.5	--	--	--	--	--	--	--	--
11...	1000	24.5	--	--	--	--	--	--	--	--
OCT										
18...	1030	10.5	--	--	--	--	--	--	--	--
NOV										
09...	1400	18.0	--	--	--	--	--	--	--	--
10...	1200	16.0	--	--	--	--	--	--	--	--
DEC										
19...	1245	11.0	--	--	--	--	--	--	--	--
JAN , 1978										
20...	0930	6.0	--	--	30	5	1200	150	1	<.5
21...	1115	4.5	--	--	20	4	--	150	0	<.5
26...	1400	10.0	--	10	60	45	6500	120	0	<.5
MAR										
09...	0900	12.5	--	--	20	9	5700	130	0	<.5
10...	1600	10.0	--	20	20	14	3400	210	0	<.5
APR										
03...	1000	16.5	--	--	--	--	--	--	--	--
13...	1010	17.0	--	37	20	6	1900	200	1	<.5
14...	0740	15.0	--	8	0	5	1600	860	0	<.5
15...	0710	15.5	--	2	0	4	1700	270	0	<.5
MAY										
04...	1030	18.0	--	--	--	--	--	--	--	--
06...	0810	17.0	--	--	--	--	--	--	--	--
JUL										
17...	1245	24.0	--	--	--	--	--	--	--	--

02356640 SPRING CREEK AT U.S. HIGHWAY 27, AT COLQUITT, GA.

DATE	TIME	TEMPER-ATURE, WATER (DEG C)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	ARSENIC TOTAL (UG/L AS AS)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)
DEC , 1976										
16...	1400	13.2	--	--	--	--	--	--	--	--
FEB , 1977										
24...	1330	13.0	--	--	--	--	--	--	--	--
MAR										
22...	1400	18.0	400	--	--	--	--	--	--	--
MAY										
06...	1125	23.0	60	--	--	--	--	--	--	--
JUN										
21...	0930	24.0	37	--	--	--	--	--	--	--
JUL										
20...	1200	25.0	35	--	--	--	--	--	--	--
AUG										
01...	1240	25.0	18	--	--	--	--	--	--	--
SEP										
08...	0845	22.0	114	--	--	--	--	--	--	--
09...	0930	24.0	--	--	--	--	--	--	--	--
11...	0745	23.5	--	--	--	--	--	--	--	--
OCT										
18...	0945	13.0	--	--	--	--	--	--	--	--
NOV										
09...	1000	16.0	--	--	--	--	--	--	--	--
10...	1100	17.0	--	--	--	--	--	--	--	--
DEC										
19...	1005	10.0	--	--	--	--	--	--	--	--
JAN , 1978										
20...	0830	6.0	--	--	30	4	330	280	1	<.5
22...	1145	6.0	--	--	20	4	650	230	0	<.5
26...	1300	11.0	--	12	30	22	2000	110	0	<.5
28...	0815	6.5	--	13	40	10	4200	100	0	<.5
MAR										
09...	1030	13.0	--	--	10	9	1500	90	0	<.5
11...	1230	12.0	--	--	--	--	--	--	--	--
APR										
03...	0845	17.0	--	--	10	3	1100	280	0	<.5
13...	1115	18.0	--	--	20	4	1000	150	1	<.5
14...	0900	16.0	--	16	10	3	1000	290	0	<.5
15...	0800	16.0	--	2	0	4	1100	390	1	<.5
MAY										
04...	1130	19.0	--	8	20	2	1600	180	0	<.5
06...	0900	17.5	--	3	30	2	1500	270	1	<.5
08...	1040	17.5	--	2	10	2	1900	130	1	<.5
JUL										
17...	1355	25.0	--	5	0	2	570	60	1	.5

Supplementary Data 3.--Minor element data for the Little River and Spring Creek basins--Continued

02357000 Spring Creek near Iron City, Ga.

DATE	TIME	TEMPERATURE, WATER (DEG C)	STREAMFLOW, INSTANTANEOUS (CFS)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	ARSENIC TOTAL (UG/L AS AS)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)
DEC , 1976										
16...	1250	11.8	1600	--	10	18	350	120	1	.4
JAN , 1977										
21...	1325	--	1310	--	--	--	--	--	--	--
28...	1255	--	1050	--	--	--	--	--	--	--
FEB										
24...	1400	13.0	546	--	10	3	470	100	1	.1
MAR										
22...	1300	19.0	1010	--	30	3	930	440	1	.0
MAY										
06...	1005	22.0	268	--	0	2	300	30	0	.0
JUN										
21...	1100	26.0	53	--	0	0	150	30	1	.0
JUL										
20...	1330	27.6	28	--	10	0	110	0	2	.0
AUG										
01...	0930	25.0	24	--	10	2	--	10	1	.0
SEP										
08...	0800	24.5	156	--	10	5	410	50	0	<.5
09...	0850	24.0	176	--	--	--	--	--	--	--
11...	0830	24.0	185	--	10	7	390	90	0	.0
OCT										
18...	0830	14.5	55	--	10	2	160	60	1	.5
NOV										
09...	1130	17.5	400	8	10	8	510	180	0	<.5
10...	1005	17.5	595	--	--	--	--	--	--	--
12...	0840	11.5	484	4	10	1	590	170	0	<.5
17...	1000	12.5	251	--	--	--	--	--	--	--
DEC										
19...	1050	12.0	329	--	10	3	440	130	0	<.5
JAN , 1978										
20...	0700	6.5	463	--	--	--	--	--	--	--
21...	1325	6.5	500	--	20	4	490	40	0	<.5
22...	1310	6.0	570	--	20	4	520	140	0	<.5
23...	1215	6.5	646	--	--	--	--	--	--	--
25...	1055	9.5	965	8	20	15	680	110	0	<.5
28...	1255	7.0	12800	--	--	--	--	--	--	--
30...	1230	6.0	3910	9	20	6	2000	110	0	<.5
FEB										
06...	1130	6.0	1980	11	20	2	70	60	0	<.5
16...	1100	--	874	--	--	--	--	--	--	--
MAR										
09...	1230	13.0	2520	--	--	--	--	--	--	--
11...	1400	12.0	10800	--	--	--	--	--	--	--
14...	1530	16.9	3540	--	10	3	900	240	0	<.5
APR										
03...	0730	18.0	653	--	--	--	--	--	--	--
13...	1245	19.0	468	--	110	4	750	120	0	<.5
14...	0940	17.5	626	5	0	3	590	180	0	<.5
15...	0850	17.0	684	2	10	4	790	260	0	<.5
18...	0910	23.0	1300	--	--	--	--	--	--	--
20...	1015	17.5	836	6	0	5	720	180	1	<.5
MAY										
04...	1300	19.5	800	4	50	2	780	110	1	<.5
06...	0950	18.0	1660	2	30	3	1200	210	1	<.5
08...	1150	20.5	2070	--	--	--	--	--	--	--
11...	1100	20.0	1310	3	10	2	810	120	1	<.6
JUL										
17...	1500	27.0	213	1	10	3	400	80	1	.5

Supplementary Data 4.--Pesticide data for the Little River and Spring Creek basins

02317830 Little River near Lenox, Ga.

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	DDD, TOTAL (UG/L)
DEC , 1976										
15...	1450	702	.00	.00	.0	.00	.00	.00	.00	.00
FEB , 1977										
23...	1645	182	.00	.00	.0	.00	.00	.00	.00	.00
MAR										
21...	1345	336	.00	.00	.0	.00	.00	.00	.00	.00
MAY										
05...	1120	9.1	.00	.00	.0	.00	.00	.00	.00	.00
JUN										
20...	0915	.90	.00	.00	.0	.00	.00	.00	.00	.00
JUL										
19...	1830	1.4	.00	.00	.0	.00	.00	.00	.00	.00
AUG										
02...	0940	8.2	--	--	--	--	--	--	--	--
SEP										
07...	0745	134	--	--	--	--	--	--	--	--
OCT										
17...	0930	7.1	.00	.00	.0	.00	.00	.00	.00	.00
NOV										
11...	0930	185	.00	.00	.0	.00	.00	.00	.00	.00
12...	1215	143	.00	.00	.0	.00	.00	.00	.00	.00
17...	1300	44	--	--	--	--	--	--	--	--
DEC										
15...	1130	121	.00	.00	.0	.00	.00	.00	.00	.00
JAN , 1978										
20...	1300	584	--	--	--	--	--	--	--	--
21...	0810	897	.00	.00	.0	.00	.00	.00	.00	.00
22...	0920	900	--	--	--	--	--	--	--	--
28...	1610	2520	--	--	--	--	--	--	--	--
30...	0825	1550	.00	.00	.0	.00	.00	.00	.00	.00
FEB										
06...	0900	654	.00	.00	.0	.00	.00	.00	.00	.00
15...	1450	357	--	--	--	--	--	--	--	--
MAR										
10...	1200	1100	--	--	--	--	--	--	--	--
14...	1200	912	.00	.00	.0	.00	.00	.00	.00	.00
APR										
03...	1230	137	--	--	--	--	--	--	--	--
03...	1236	137	--	--	--	--	--	--	--	--
13...	1525	102	.00	.00	.0	.00	.00	.00	.00	.00
14...	1240	208	.00	.00	.0	.00	.00	.00	.00	.00
15...	1100	382	.00	.00	.0	.00	.00	.00	.00	.00
18...	1210	572	--	--	--	--	--	--	--	--
20...	1300	366	.00	.00	.0	.00	.00	.00	.00	.00
MAY										
04...	1525	350	.00	.00	.0	.00	.00	.00	.00	.00
06...	1250	540	.00	.00	.0	.00	.00	.00	.00	.00
08...	1445	928	--	--	--	--	--	--	--	--
11...	1425	687	.00	.00	.0	.00	.00	.00	.00	.00
JUL										
17...	1820	221	.00	.00	.0	.00	.00	.00	.00	.00
18...	0910	227	--	--	--	--	--	--	--	--
20...	0830	756	.00	.00	.0	.00	.00	.00	.00	.00
21...	0800	604	.00	.00	.0	.00	.00	.00	.00	.00
22...	0905	308	.00	.00	.0	.00	.00	.00	.00	.00
26...	0800	46	.00	.00	.0	.00	.00	.00	.00	.00

02317830 Little River near Lenox, Ga.

DATE	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)
DEC , 1976									
15...	.00	.00	--	.00	.00	.00	0	.0	.00
FEB , 1977									
23...	.00	.00	--	.00	.00	.00	0	.0	.00
MAR									
21...	.00	.00	--	.00	.00	.00	0	.0	.00
MAY									
05...	.00	.00	.00	.00	.00	.00	0	.0	.00
JUN									
20...	.00	.00	.00	.00	.00	.00	0	.0	.00
JUL									
19...	.00	.00	.00	.00	.00	.00	0	.0	.00
AUG									
02...	--	--	--	--	--	--	--	--	--
SEP									
07...	--	--	--	.00	.00	.00	--	--	--
OCT									
17...	.00	.00	.00	.00	.00	.00	0	.0	.00
NOV									
11...	.00	.00	.00	.00	.00	.00	0	.0	.00
12...	.00	.00	.00	.00	.00	.00	0	.0	.00
17...	--	--	--	--	--	--	--	--	--
DEC									
15...	.00	.00	.00	.00	.00	.00	0	.0	.00
JAN , 1978									
20...	--	--	--	--	--	--	--	--	--
21...	.00	.00	.00	.00	.00	.00	0	.0	.00
22...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
30...	.00	.00	.00	.00	.00	.00	0	.0	.00
FEB									
06...	.00	.00	.00	.00	.00	.00	0	.0	.00
15...	--	--	--	--	--	--	--	--	--
MAR									
10...	--	--	--	--	--	--	--	--	--
14...	.00	.00	.00	.00	.00	.00	0	.0	.00
APR									
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
13...	.00	.00	.00	.00	.00	.00	0	.0	.00
14...	.00	.00	.00	.00	.00	.00	0	.0	.00
15...	.00	.00	.00	.00	.00	.00	0	.0	.00
18...	--	--	--	--	--	--	--	--	--
20...	.00	.00	.00	.00	.00	.00	0	.0	.00
MAY									
04...	.00	.00	.00	.02	.01	.00	0	.0	.00
06...	.00	.00	.00	.06	.01	.02	0	.0	.00
08...	--	--	--	--	--	--	--	--	--
11...	.00	.00	.00	.03	.00	.01	0	.0	.00
JUL									
17...	.00	.00	.00	.00	.00	.00	0	.0	.00
18...	--	--	--	--	--	--	--	--	--
20...	.00	.00	.00	.00	.00	.00	0	.0	.00
21...	.00	.00	.00	.00	.00	.00	0	.0	.00
22...	.00	.00	.00	.00	.00	.00	0	.0	.00
26...	.00	.00	.00	.00	.00	.00	0	.0	.00

02317797 Little River at Upper Ty Ty Road, near Tifton, Ga.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	DDD, TOTAL (UG/L)
DEC , 1976										
15...	1645	--	.00	.00	.0	.00	.00	.00	.00	.00

DATE	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)
DEC , 1976									
15...	.00	.00	--	.00	.00	.00	0	.0	.00

02356420 DRY CREEK NEAR BLAKELY, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	DDD, TOTAL (UG/L)
MAR , 1977										
22...	1145	150	--	--	--	--	--	--	--	--
MAY										
06...	1220	22	--	--	--	--	--	--	--	--
JUN										
21...	0820	11	--	--	--	--	--	--	--	--
JUL										
20...	1030	10	--	--	--	--	--	--	--	--
AUG										
01...	1325	4.0	--	--	--	--	--	--	--	--
SEP										
08...	0945	37	--	--	--	--	--	--	--	--

DATE	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)
MAR , 1977									
22...	--	--	--	--	--	--	--	--	--
MAY									
06...	--	--	--	--	--	--	--	--	--
JUN									
21...	--	--	--	--	--	--	--	--	--
JUL									
20...	--	--	--	--	--	--	--	--	--
AUG									
01...	--	--	--	--	--	--	--	--	--
SEP									
08...	--	--	--	--	--	--	--	--	--

02356640 SPRING CREEK AT U.S. HIGHWAY 27, AT COLQUITT, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	DDD, TOTAL (UG/L)
MAR , 1977										
22...	1400	400	--	--	--	--	--	--	--	--
MAY										
06...	1125	60	--	--	--	--	--	--	--	--
JUN										
21...	0930	37	--	--	--	--	--	--	--	--
JUL										
20...	1200	35	--	--	--	--	--	--	--	--
AUG										
01...	1240	18	--	--	--	--	--	--	--	--
SEP										
08...	0845	114	--	--	--	--	--	--	--	--

DATE	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)
MAR , 1977									
22...	--	--	--	--	--	--	--	--	--
MAY									
06...	--	--	--	--	--	--	--	--	--
JUN									
21...	--	--	--	--	--	--	--	--	--
JUL									
20...	--	--	--	--	--	--	--	--	--
AUG									
01...	--	--	--	--	--	--	--	--	--
SEP									
08...	--	--	--	--	--	--	--	--	--

SUPPLEMENTARY DATA 4.--PESTICIDE DATA FOR THE LITTLE RIVER AND SPRING CREEK BASINS--CONTINUED

02357000 SPRING CREEK NEAR IRON CITY, GA.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	DDD, TOTAL (UG/L)
DEC. 1976										
16...	1250	1600	.00	.00	.0	.00	.00	.00	.00	.00
JAN. 1977										
21...	1325	1310	--	--	--	--	--	--	--	--
28...	1255	1050	--	--	--	--	--	--	--	--
FEB										
24...	1400	546	.00	.00	.0	.00	.00	.00	.00	.00
MAR										
22...	1300	1010	.00	.00	.0	.00	.00	.00	.00	.00
MAY										
06...	1005	268	.00	.00	.0	.00	.00	.00	.00	.00
JUN										
21...	1100	53	.00	.00	.0	.00	.00	.00	.00	.00
JUL										
20...	1330	28	.00	.00	.0	.00	.00	.00	.00	.00
AUG										
01...	0930	24	.00	.00	.0	.00	.00	.00	.00	.00
SEP										
08...	0800	156	.00	.00	.0	.00	.00	.00	.00	.00
09...	0850	176	--	--	--	--	--	--	--	--
11...	0830	185	--	--	--	--	--	--	--	--
OCT										
18...	0830	55	.00	.00	.0	.00	.00	.00	.00	.00
NOV										
09...	1130	400	.00	.00	.0	.00	.00	.00	.00	.00
10...	1005	595	--	--	--	--	--	--	--	--
12...	0840	484	.00	.00	.0	.00	.00	.00	.00	.00
17...	1000	251	--	--	--	--	--	--	--	--
DEC										
19...	1050	329	.00	.00	.0	.00	.00	.00	.00	.00
JAN. 1978										
20...	0700	463	--	--	--	--	--	--	--	--
21...	1325	500	.00	.00	.0	.00	.00	.00	.00	.00
22...	1310	570	.00	.00	.0	.00	.00	.00	.00	.00
23...	1215	646	--	--	--	--	--	--	--	--
25...	1055	965	.00	.00	.0	.00	.00	.00	.00	.00
28...	1255	12800	--	--	--	--	--	--	--	--
30...	1230	3910	.00	.00	.0	.00	.00	.00	.00	.00
FEB										
06...	1130	1980	.00	.00	.0	.00	.00	.00	.00	.00
16...	1100	874	--	--	--	--	--	--	--	--
MAR										
09...	1230	2520	--	--	--	--	--	--	--	--
11...	1400	10800	--	--	--	--	--	--	--	--
14...	1530	3540	.00	.00	.0	.00	.00	.00	.00	.00
APR										
03...	0730	653	--	--	--	--	--	--	--	--
13...	1245	468	.00	.00	.0	.00	.00	.00	.00	.00
14...	0940	626	.00	.00	.0	.00	.00	.00	.00	.00
15...	0850	684	.00	.00	.0	.00	.00	.00	.00	.00
18...	0910	1300	--	--	--	--	--	--	--	--
20...	1015	836	.00	.00	.0	.00	.00	.00	.00	.00
MAY										
04...	1300	800	.00	.00	.0	.00	.00	.00	.00	.00
06...	0950	1660	.00	.00	.0	.00	.00	.00	.00	.00
08...	1150	2070	--	--	--	--	--	--	--	--
11...	1100	1310	.00	.00	.0	.00	.00	.00	.00	.00
JUL										
17...	1500	213	.00	.00	.0	.00	.00	.00	.00	.00

02357000 SPRING CREEK NEAR IRON CITY, GA.

DATE	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR, TOTAL (UG/L)
DEC. 1976									
16...	.00	.00	--	.00	.00	.00	0	.0	.00
JAN. 1977									
21...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
FEB									
24...	.00	.00	--	.00	.00	.00	0	.0	.00
MAR									
22...	.00	.00	--	.00	.00	.00	0	.0	.00
MAY									
06...	.00	.00	--	.00	.00	.00	0	.0	.00
JUN									
21...	.00	.00	.00	.00	.00	.00	0	.0	.00
JUL									
20...	.00	.00	.00	.00	.00	.00	0	.0	.00
AUG									
01...	.00	.00	.00	.00	.00	.00	0	.0	.00
SEP									
08...	.00	.00	.00	.00	.00	.00	0	.0	.00
09...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
OCT									
18...	.00	.00	.00	.00	.00	.00	0	.0	.00
NOV									
09...	.00	.00	.00	.00	.00	.00	0	.0	.00
10...	--	--	--	--	--	--	--	--	--
12...	.00	.00	.00	.00	.00	.00	0	.0	.00
17...	--	--	--	--	--	--	--	--	--
DEC									
19...	.00	.00	.00	.00	.00	.00	0	.0	.00
JAN. 1978									
20...	--	--	--	--	--	--	--	--	--
21...	.00	.00	.00	--	.00	.00	0	.0	.00
22...	.00	.00	.00	.00	.00	.00	0	.0	.00
23...	--	--	--	--	--	--	--	--	--
25...	.00	.00	.00	.00	.00	.00	0	.0	.00
28...	--	--	--	--	--	--	--	--	--
30...	.00	.00	.00	.00	.00	.00	0	.0	.00
FEB									
06...	.00	.00	.00	.00	.00	.00	0	.0	.00
16...	--	--	--	--	--	--	--	--	--
MAR									
09...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
14...	.00	.00	.00	.00	.00	.00	0	.0	.00
APR									
03...	--	--	--	--	--	--	--	--	--
13...	.00	.00	.00	.00	.00	.00	0	.0	.00
14...	.00	.00	.00	.03	.00	.00	0	.0	.00
15...	.00	.00	.00	.10	.00	.00	0	.0	.00
18...	--	--	--	--	--	--	--	--	--
20...	.00	.00	.00	.00	.00	.00	0	.0	.00
MAY									
04...	.00	.00	.00	.00	.00	.00	0	.0	.00
06...	.00	.00	.00	.01	.00	.00	0	.0	.00
08...	--	--	--	--	--	--	--	--	--
11...	.00	.00	.00	.00	.00	.00	0	.0	.00
JUL									
17...	.00	.00	.00	.00	.00	.00	0	.0	.00

02317830 - Little River near Lenox, Ga.

[Results in micrograms per liter]

Minimum detection level for each respective compound: DBCP, 0.005 ug/L; butylate, 0.5 ug/L; vernolate, 0.5 ug/L; ethoprop, 0.3 ug/L; and disulfoton, 0.3 ug/L. +, none detected. Minimum detection level for each respective compound: butylate, 0.25 ug/L; vernolate, 0.25 ug/L; ethoprop, 0.02 ug/L; and disulfoton, 0.02 ug/L. x, none detected.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL DBCP	TOTAL TRIFLURALIN	TOTAL BENEFIN	TOTAL ALACHLOR	TOTAL PROPAZINE	TOTAL ATRAZINE	TOTAL SIMAZINE	TOTAL BUTYLATE	TOTAL VERNOLATE	TOTAL ETHOPROP	TOTAL DISULFOTON
July 1977													
19...	1830		+	0.00	0.00	0.00	0.02	0.00	0.00	+	+	+	+
Sept.													
7...	0745	1.4	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Oct.													
17...	0930	7.1	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Nov.													
11...	0930	185	+	.00	.00	.00	.00	.00	.00	+	+	+	+
12...	1215	143	+	.00	.00	.00	.00	.00	.00	+	+	+	+
17...	1300	44	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Dec.													
15...	1130	121	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Jan. 1978													
20...	1300	584	+	.00	.00	.00	.00	.00	.00	+	+	+	+
21...	0810	897	+	.00	.00	.00	.00	.00	.00	+	+	+	+
22...	0920	900	+	.00	.00	.00	.00	.00	.00	+	+	+	+
28...	1610	2,520	+	.00	.00	.00	.00	.00	.00	+	+	+	+
30...	0825	1,550	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Feb.													
6...	0900	654	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Mar.													
10...	1200	1,100	+	.00	.00	.00	.00	<.01	.00	+	+	+	+
14...	1200	912	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Apr.													
13...	1525	102		.000	.000	TR	.00	TR	.00	x	x	TR	x
14...	1240	208		.000	.000	TR	.00	TR	.00	x	x	.04	x
15...	1100	382		.000	.000	.00	.00	.09	.09	x	x	.08	x
18...	1210	572		.000	.000	.00	.00	.09	.00	x	x	x	x
20...	1300	366		.000	.000	TR	.00	.09	.00	x	x	x	x
May													
4...	1525	350		.000	.003	.01	.00	.11	TR	.91	TR	TR	x
6...	1250	540		.000	.000	.04	.00	.30	.06	TR	TR	TR	x
8...	1445	928		.000	.000	.06	.00	.20	TR	TR	TR	TR	x
11...	1425	687		.000	.000	.05	.00	.47	.05	x	x	x	x
July													
16...				.000	TR	TR	.31	.37	.00	x	x	x	x
17...	1820	221		.000	.000	TR	.20	.40	.00	x	x	x	x
20...	0830	756		TR	.000	.04	.02	.17	.02	x	x	x	x
21...	0900	604		TR	.000	.05	.10	.23	.09	x	x	x	x
22...	0905	308		.000	TR	TR	TR	.11	.00	x	x	x	x
26...	0800	46		.000	.000	.07	.11	.22	.00	x	x	x	x

02317797 - Little River at Upper Ty Ty Road, near Tifton, Ga.

[Results in micrograms per liter]

Minimum detection level for each respective compound: DBCP, 0.005 ug/L; butylate, 0.5 ug/L; vernolate, 0.5 ug/L; ethoprop, 0.3 ug/L; and disulfoton, 0.3 ug/L. +, none detected. Minimum detection level for each respective compound: butylate, 0.25 ug/L; vernolate, 0.25 ug/L; ethoprop, 0.02 ug/L; and disulfoton, 0.02 ug/L. x, none detected.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL DBCP	TOTAL TRIFLURALIN	TOTAL BENEFIN	TOTAL ALACHLOR	TOTAL PROPAZINE	TOTAL ATRAZINE	TOTAL SIMAZINE	TOTAL BUTYLATE	TOTAL VERNOLATE	TOTAL ETHOPROP	TOTAL DISULFOTON
Sept. 1977													
7...	0930		+	0.00	0.00	0.00	0.00	0.00	0.00	+	+	+	+
Oct.													
17...	1330		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Nov.													
11...	1035		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Dec.													
15...	1250		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Jan. 1978													
20...	1400		+	.00	.00	.00	.00	.00	.00	+	+	+	+
22...	0745		+	.00	.00	.00	.00	.00	.00	+	+	+	+
26...	0900		+	.00	.00	.00	.00	.00	.00	+	+	+	+
28...	1705		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Mar.													
10...	0930		+	.00	.00	<.01	.00	TR	.00	+	+	+	+
11...	0830		+	.00	.00	TR	.00	TR	.00	+	+	+	+
Apr.													
13...	1630			.000	.000	.00	.00	TR	TR	x	x	TR	x
14...	1335			.000	.000	TR	.00	.12	.00	x	TR	.03	x
15...	1220			.000	.000	.00	.00	.12	TR	TR	x	.02	x
July													
17...													
18...													

Supplementary Data 4.--Pesticide data for Little River and Spring Creek basins--Continued

02356640 - Spring Creek at Colquitt, Ga.

[Results in micrograms per liter]

Minimum detection level for each respective compound: DBCP, 0.005 ug/L; butylate, 0.5 ug/L; vernolate, 0.5 ug/L; ethoprop, 0.3 ug/L; and disulfoton, 0.3 ug/L. +, none detected. Minimum detection level for each respective compound: butylate, 0.25 ug/L; vernolate, 0.25 ug/L; ethoprop, 0.02 ug/L; and disulfoton, 0.02 ug/L. x, none detected.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL DBCP	TOTAL TRIFLURALIN	TOTAL BENEFIN	TOTAL ALACHLOR	TOTAL PROPAZINE	TOTAL ATRAZINE	TOTAL SIMAZINE	TOTAL BUTYLATE	TOTAL VERNOLATE	TOTAL ETHOPROP	TOTAL DISULFOTON
July 1977													
20...	1200		+	0.00	0.00	0.00	0.00	0.00	0.00	+	+	+	+
Sept.													
8...	0845	114	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Oct.													
18...	0945		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Nov.													
9...	1000		+	.00	.00	.00	.00	.00	.00	+	+	+	+
10...	1100		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Dec.													
19...	1005		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Jan. 1978													
20...	0830		+	.00	.00	.00	.00	.00	.00	+	+	+	+
22...	1145		+	.00	.00	.00	.00	.00	.00	+	+	+	+
26...	1300		+	.00	.00	.00	.00	.00	.00	+	+	+	+
28...	0815		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Mar.													
9...	1030		+	.00	.00	TR	.00	.01	TR	+	+	+	+
11...	1230		+	.00	.00	TR	.00	.02	.00	+	+	+	+
Apr. 1978													
13...	1115			.001	.001	.02	.00	.13	TR	x	TR	x	x
14...	0900			.001	<.001	.00	.00	.11	TR	x	x	x	x
16...	0800			.000	.000	.02	.00	.10	.00	TR	x	x	x
July													
17...	1355			.000	.000	TR	.00	.00	.00	x	x	x	x

02356420 - Dry Creek at Blakely, Ga.

[Results in micrograms per liter]

Minimum detection level for each respective compound: DBCP, 0.005 ug/L; butylate, 0.5 ug/L; vernolate, 0.5 ug/L; ethoprop, 0.3 ug/L; and disulfoton, 0.3 ug/L. +, none detected. Minimum detection level for each respective compound: butylate, 0.25 ug/L; vernolate, 0.25 ug/L; ethoprop, 0.02 ug/L; and disulfoton, 0.02 ug/L. x, none detected.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL DBCP	TOTAL TRIFLURALIN	TOTAL BENEFIN	TOTAL ALACHLOR	TOTAL PROPAZINE	TOTAL ATRAZINE	TOTAL SIMAZINE	TOTAL BUTYLATE	TOTAL VERNOLATE	TOTAL ETHOPROP	TOTAL DISULFOTON
July 1977													
20...	1030		+	0.00	0.00	0.00	0.00	0.00	0.00	+	+	+	+
Sept.													
8...	0945	37	+	.00	.00	.00	.00	.00	.00	+	+	+	+
11...	1000		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Nov.													
9...	1400		+	.00	.00	.00	.00	.00	.00	+	+	+	+
10...	1200		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Dec.													
19...	1245		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Jan. 1978													
20...	0930		+	.00	.00	.00	.00	.00	.00	+	+	+	+
21...	1115		+	.00	.00	.00	.00	.00	.00	+	+	+	+
26...	1400		+	.00	.00	.00	.00	.00	.00	+	+	+	+
Mar.													
9...	0900		+	.00	.00	<.01	.00	<.01	.03	+	+	+	+
10...	1600		+	.00	.00	.00	.00	TR	.00	+	+	+	+
Apr.													
13...	1010			.001	.001	.02	.00	.17	TR	x	TR	x	x
14...	0740			.003	.004	.02	.00	.31	.1	.80	.53	x	x
15...	0710			.002	.005	.02	.00	.18	.00	.31	x	x	x
July													
16...													

02357000 - Spring Creek near Iron Ciyt, Ga.

[Results in micrograms per liter]

Minimum detection level for each respective compound: DBCP, 0.005 ug/L; butylate, 0.5 ug/L; vernolate, 0.5 ug/L; ethoprop, 0.3 ug/L; and disulfoton, 0.3 ug/L. +, none detected. Minimum detection level for each respective compound: butylate, 0.25 ug/L; vernolate, 0.25 ug/L; ethoprop, 0.02 ug/L; and disulfoton, 0.02 ug/L. x, none detected.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL DBCP	TOTAL TRIFLURALIN	TOTAL BENEFIN	TOTAL ALACHLOR	TOTAL PROPAZINE	TOTAL ATRAZINE	TOTAL SIMAZINE	TOTAL BUTYLATE	TOTAL VERNOLATE	TOTAL ETHOPROP	TOTAL DISULFOTON
July 1977													
20...	1330		+	0.00	0.00	0.00	0.00	0.00	0.00	+	+	+	+
Sept.													
8...	0800	156	+	.00	.00	.00	.00	.00	.00	+	+	+	+
11...	0830	185	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Oct.													
18...	0830	55	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Nov.													
9...	1130	400	+	.00	.00	.00	.00	.00	.00	+	+	+	+
10	1005	595	+	.00	.00	.00	.00	.00	.00	+	+	+	+
12	0840	484	•	•	•	•	•	•	•	•	•	•	•
17	1000	251	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Dec.													
19...	1050	329	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Jan. 1978													
20...	0700	463	+	.00	.00	.00	.00	.00	.00	+	+	+	+
21...	1300	500	+	.00	.00	.00	.00	.00	.00	+	+	+	+
22...	1310	570	+	.00	.00	.00	.00	.00	.00	+	+	+	+
23...	1215	646	+	.00	.00	.00	.00	.00	.00	+	+	+	+
25...	1055	965	+	.00	.00	.00	.00	.00	.00	+	+	+	+
28...	1255	12,800	+	.00	.00	.00	.00	.00	.00	+	+	+	+
30...	1230	3,910	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Feb.													
6...	1130	1,980	+	.00	.00	.00	.00	.00	.00	+	+	+	+
Mar.													
9...	1230	2,520	+	.00	.00	<.01	.00	.02	.00	+	+	+	+
10...			+	.00	.00	<.01	.00	.02	.00	+	+	+	+
11...	1400	10,800	+	.00	.00	<.01	.00	.01	.00	+	+	+	+
14...	1530	3,540	+	.00	.00	TR	.00	.01	.00	+	+	+	+
Apr.													
13...	1245	468		<.001	<.001	<.01	.00	.12	.00	x	TR	x	x
14...	0940	626		.001	.004	.00	.00	.44	.41	.41	TR	x	x
15...	0850	684		.002	.001	TR	.00	.15	.00	x	.31	x	x
18...	0910	1,300		TR	TR	.01	.00	.18	.00	.08	x	x	x
20...	1015	836		.000	.000	.02	.00	.12	TR	.23	.11	x	x
May													
4...	1300	800		<.001	.002	.01	.00	TR	.00	TR	x	x	x
6...	0950	1,660		.003	.003	.05	.00	.14	.00	TR	TR	x	x
8...	1150	2,070		<.001	.002	.05	.00	.06	.00	TR	TR	x	x
11...	1100	1,310		.003	.004	.00	TR	.12	.00	x	x	x	x
July													
17...	1500	213		.000	.000	.00	.00	.00	.00	x	x	x	x