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

Prepared in cooperation with the
KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET—DIVISION OF WATER

Loads and Yields of Sediment and Water-Quality Constituents in Kentucky Streams

Open-File Report 98–411

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By Rene Garcia *and* Angela S. Crain

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Louisville, Kentucky
1998

U.S. DEPARTMENT OF INTERIOR
BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Thomas J. Casadevall, Acting Director

For additional information write to:

District Chief, Kentucky District
U.S. Geological Survey
Water Resources Division
9818 Bluegrass Parkway
Louisville, KY 40299–1906

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CONVERSION FACTORS

Multiply	By	To Obtain
mile	1.606	kilometers
square mile (mi^2)	2.590	square kilometer
ton	907.2	kilogram
ton per square mile (ton/mi^2)	350.3	kilogram per square kilometer
ton per year (ton/yr)	907.2	kilogram per year

Degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) by use of the following equation:

$$°F = (9/5)(°C) + 32$$

ABBREVIATIONS

Abbreviated water-quality units used in this report: Chemical concentrations and water temperature are given in metric units. Chemical concentration of constituents in solution or suspension is given in milligrams per liter (mg/L) or micrograms per liter (µg/L). Milligrams per liter is a unit expressing the concentration of chemical constituents in solution as weight (milligrams) of solute per unit of volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Estimated loads and yields are expressed in tons per square mile ($tons/mi^2$). Bacteria densities are expressed as number of colonies per 100 milliliters of water (col/100 mL).

Water year: The 12-month period from October 1 through September 30. The water year is designated by the calendar year in which it ends.

Loads and Yields of Sediment and Water-Quality Constituents in Kentucky Streams

By Rene Garcia *and* Angela S. Crain

Abstract

Loads and yields of sediment and water-quality constituents were estimated for selected Kentucky streams. Streamflow, sediment, and water-quality information were collected at a network of 44 stream stations in Kentucky. Mean daily discharge was synthesized using the drainage-area ratio, regression analysis, or a combination of the two techniques. Streamflow was partitioned into total and base flow and used to estimate loads and yields for sediment and water-quality constituents through the use of ESTIMATOR and FLUX software. The relative magnitude of constituent transport to streams from ground- and surface-water sources was determined for 20 of the 44 stations.

Mean annual total-flow yields for suspended solids (residue, nonfilterable) ranged from 0.4 to 365 tons per square mile (tons/mi^2). The smallest mean annual total-flow yield for suspended solids was determined at Clarks Run at Almo; the largest was determined at Eagle Creek at Glencoe. The aggregate median value of the mean annual total-flow yield for suspended solids was 112 tons/mi^2.

The analysis of trace-metal data indicates that the largest mean annual total-flow yield of cadmium—0.039 tons/mi^2—was determined at Clarks River at Almo. This yield is approximately 20 times greater than the aggregate median value of the mean annual total-flow yields (0.002 tons/mi^2). Nine (45 percent) of the stations had mean annual total-flow yields equal to the aggregate minimum value (0.001 tons/mi^2). The maximum total-flow yield of chromium (0.009 tons/mi^2) was determined at Eagle Creek at Glencoe. Clarks River at Almo had the smallest estimated mean annual total- and base-flow yields for chromium (less than 0.001 tons/mi^2). The aggregate median value of the mean annual total-flow yield for copper was 0.007 tons/mi^2. Barren River at Bowling Green and Clarks River at Almo had the largest estimated mean annual total-flow yields for copper (0.017 tons/mi^2). The aggregate median of the mean annual total-flow yield for lead was 0.021 tons/mi^2. Barren River at Bowling Green had the largest mean annual total-flow yield of lead (0.04 tons/mi^2). Three stations—Beech Fork at Maud, Red River at Clay City, and South Fork Kentucky River at Booneville—had an estimate of mean annual total-flow yields of lead equal to the aggregate minimum of 0.004 tons/mi^2.

Analysis of the nutrient data indicates that the largest mean annual total-flow yield of nitrite plus nitrate (11.8 tons/mi^2) was estimated at South Elkhorn Creek near Midway. This yield is nearly 10 times the aggregate median value (1.3 tons/mi^2). The minimum annual total-flow yield of nitrite plus nitrate (0.419 tons/mi^2) was estimated at Middle Fork Kentucky River at Tallega. Salt River at Glensboro had the largest mean annual total-flow yield of ammonia and organic nitrogen (206 tons/mi^2). This is nearly 400 times the aggregate median value of the mean annual total-flow yield of 0.57 tons/mi^2. The phosphorus yield (total flow) was greatest at Clarks River at Almo with 3.4 tons/mi^2. This phosphorus yield is nearly 30 times the aggregate median value of the mean annual total-flow yield of 0.12 tons/mi^2. The smallest mean annual total-flow yield for phosphorus (0.036 tons/mi^2) was estimated at South Fork Kentucky River at Booneville. North Fork Kentucky River at Jackson had the smallest mean annual total-flow yield of ammonia (0.004 tons/mi^2). The aggregate median value of the mean annual total-flow yield for ammonia was 0.93 tons/mi^2.

INTRODUCTION

For many water bodies, nonpoint-source pollution often exceeds point-source pollution (Davenport and others, 1991). According to the Kentucky Environmental Quality Commission (1992), nonpoint-source runoff from agriculture, logging, mining, and urban development results in about 62 percent of the water-pollution problems in Kentucky. This results in increased levels of suspended solids, nutrients, trace metals, and pesticides in streams, which can have detrimental effects on the environment.

In July 1996, the U.S. Geological Survey (USGS), in cooperation with the Kentucky Natural Resources and Environmental Protection Cabinet—Division of Water, and the U.S. Environmental Protection Agency Nonpoint Source Pollution Program, began a study to estimate the loads and yields of sediment and selected water-quality constituents of Kentucky streams for total flow and periods of base flow and overland runoff.

Both point sources and nonpoint sources of chemical constituents, or contaminants, contribute to the total load of a stream. Generally, the inflow of point-source contaminants to streams remains relatively constant, and can be considered a component of stream-water quality at baseflow. By contrast, nonpoint-source contaminants are transported to streams primarily during storm runoff periods. Thus information about the relative magnitude of sediment and constituent loads in streams at base flow, which is sustained by the discharge of ground water to a stream, and during periods of overland runoff, will be helpful to those responsible for the planning and management of nonpoint-source control programs.

Purpose and Scope

This report presents the methods and techniques used to evaluate streamflow, sediment, and water-quality information for 20 stream stations in Kentucky (fig. 1). The 20 stations (table 1) were selected from the Kentucky Ambient Surface Water Monitoring Network to determine the relative magnitude of the loads and yields of sediment and selected water-quality constituents (table 2) transported in surface and ground water. Constituents for which estimated loads and yields are reported include the following: dissolved oxygen, suspended solids, nutrients, trace metals, and bacteria. It is not within the scope of this report to provide detailed analyses of the factors that affect the constituent concentrations measured in each of the selected streams.

Selected Stations

The 20 stations selected for the study are located in six major drainage basins (fig. 2):

Drainage basin	Number of stations
Big Sandy River	1
Kentucky River	9
Salt River	2
Green River	4
Cumberland River	3
Tennessee River	1

Because of the characteristic morphology of each drainage basin, the geographic location of a station is expected to greatly affect the water quality. Of the 20 stations, 10 have more than 60 percent of their drainage area within the Eastern Coalfield Region (fig. 3) where water quality is affected by coal extraction. Four stations have greater than 95 percent of their drainage area within the Inner and Outer Bluegrass regions, where water quality is affected by activities associated with urbanization and the horse and cattle industry (table 3).

Land use also affects the distribution of constituents in water and is important in assessing loads and yields. Land use was characterized into six categories: urban, agriculture, forest, water, wetland, and barren (table 4 and fig. 4). Forest was the largest represented category with an average of 53 percent, and wetlands was the least represented with an average of 0.03 percent.

STUDY METHODS

The load of a water-quality constituent in a stream—the weight of material transported during a specific time period—is calculated by multiplying the concentration of that constituent by the stream discharge; the yield is the load divided by the drainage area of watershed upstream. The methods used to estimate annual loads and yields of sediment and water-quality constituents for streams for total flow and base flow are described below.

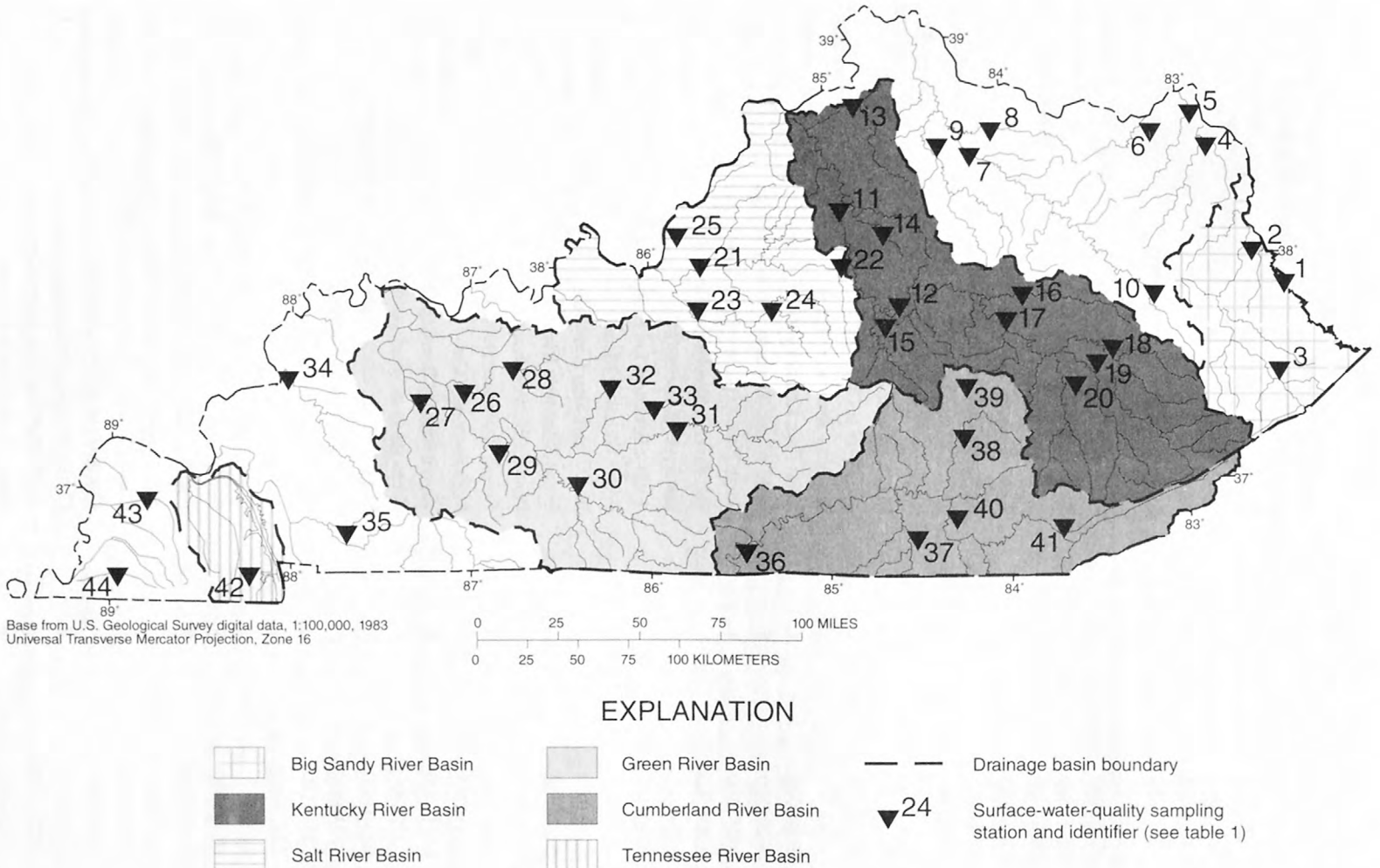

Figure 1. Major drainage basins and ambient surface-water monitoring network in Kentucky.

Table 1. Streamflow stations in the ambient surface-water monitoring network in Kentucky

[--, not applicable; NA, no U.S. Geological Survey (USGS) station number assigned]

Map number (figure 1)	USGS station number	Selected study stations	Station name
1	03214500	--	Tug Fork at Kermit
2	03215000	--	Levisa Fork near Louisa
3	03209500	X	Levisa Fork near Pikeville
4	03216500	--	Little Sandy River near Argillite
5	03216800	--	Tygarts Creek near Load
6	03237250	--	Kinniconick Creek near Tannery
7	03249500	--	Licking River at Claysville
8	03251400	--	North Fork Licking River at Milford
9	03252500	--	South Fork Licking River at Morgan
10	03248640	--	Licking River at West Liberty
11	03287500	X	Kentucky River at Frankfort
12	03284500	X	Kentucky River at Camp Nelson
13	03291500	X	Eagle Creek at Glencoe
14	03289300	X	S. Elkhorn Creek near Midway
15	03285000	X	Dix River near Danville
16	03283500	X	Red River at Clay City
17	NA	--	Kentucky River near Trapp
18	03280000	X	North Fork Kentucky River at Jackson
19	03281000	X	Middle Fork Kentucky River at Tallega
20	03281500	X	South Fork Kentucky River at Booneville
21	03298500	--	Salt River at Shepherdsville
22	03295400	X	Salt River at Glensboro
23	03301500	--	Rolling Fork near Lebanon Junction
24	03300400	X	Beech Fork near Maud
25	03302000	--	Pond Creek near Louisville
26	03316500	--	Green River near Island
27	03321060	--	Pond Creek near Sacramento
28	03319000	--	Rough River near Dundee
29	03316275	--	Mud River near Gus
30	03314500	X	Barren River at Bowling Green
31	03308500	X	Green River at Munfordville
32	03310300	X	Nolin River at White Mills
33	03310400	X	Bacon Creek near Priceville
34	03384180	--	Tradewater River near Sullivan
35	03438000	--	Little River near Cadiz
36	NA	--	Cumberland River at Turkey Neck Bend
37	03410500	X	South Fork Cumberland River at Blue Heron
38	03406500	X	Rockcastle River at Billows
39	03405842	--	Horse Lick Creek near Lamero
40	03404500	X	Cumberland River at Cumberland Falls
41	03402900	--	Cumberland River at Pineville
42	03610200	X	Clarks River at Almo
43	07022600	--	Mayfield Creek near Magee Springs
44	07024000	--	Bayou de Chien near Clinton

Table 2. Selected constituents for sediment and water-quality analysis

[Constituents are dissolved in milligrams per liter, unless otherwise specified]

Constituents
Field data
Dissolved oxygen
Bacteria (in colonies per 100 milliliters)
Fecal coliform
Miscellaneous determinations
Alkalinity
Chloride
Sulfate
Suspended solids (residue, nonfilterable)
Organic carbon, total
Biological oxygen demand, 5-day
Minerals, total
Calcium
Magnesium
Potassium
Sodium
Nutrients
Ammonia
Nitrite plus nitrate
Ammonia and organic, total as N
Phosphorus, total
Metals, total (in micrograms per liter)
Aluminum
Arsenic
Barium
Cadmium
Chromium
Copper
Iron
Lead
Manganese
Mercury
Zinc

Assembly of Datasets

Sediment and water-quality data were collected by Kentucky state agencies and streamflow data were provided by the USGS Kentucky District Office. Available sediment and water-quality data for the period March 1979–September 1995 were retrieved from the U.S.Environmental Protection Agency (USEPA) Storage and Retrieval (STORET) database. The list of selected constituents is presented in table 2. The data were reformatted and entered into the USGS National Water Information System (NWIS) database to facilitate formats required by the selected software to generate load estimates, to provide summary statistics, and to determine the percent of censored data for each constituent. Computer programs to reformat STORET data were written in FORTRAN by the USGS. There are three requirements for reformatting USEPA STORET data using the FORTRAN computer programs. These requirements include collecting agency code, USEPA site identification number(s), and a list of parameter codes for the constituents of interest. After reformatting, the sediment and water-quality data were entered into an alternate NWIS database to avoid overwriting any data present and to maintain a separate data set with controlled access. Sediment and water-quality data sets were subsequently retrieved from NWIS in specified formats for use in ESTIMATOR and FLUX to enable calculations of total and base-flow loads.

Daily discharge records matching the period of sediment and water-quality data were retrieved from NWIS. Daily base flow was estimated from the daily discharge records through use of a USGS partition program (Rutledge, 1993). No additional daily discharge record manipulation was required for estimating total loads using ESTIMATOR software; however, the partitioned daily discharge records were reformatted for use in determining loads through FLUX.

State boundary and hydrologic coverages were extracted from USGS 1:100,000-scale digital line graphs (U.S. Geological Survey, unpub. digital data, 1983). Drainage-basin boundaries were extracted from the 1:24,000-scale 14-digit hydrologic unit boundary coverages (Forbes and others, 1997; Nelson and others, 1997a–e). The coverage for site location was generated in ARC/INFO from latitude and longitude coordinates for the sampling network.

Land-use coverage was obtained from a 1:250,000-scale map extracted from USGS 1:250,000-scale digital land use and land-cover data (U.S. Geological Survey, unpub. digital data, 1986). Land-use coverages for each drainage basin were created in ARC/INFO by extracting the statewide coverage to the drainage-basin boundaries. The area of each polygon within the basin was divided by the total area of the basin and multiplied by 100 to obtain percentages. The percentages then were summed to obtain the total percentage for each land-use category.

The physiographic regions were modified from a coverage created from a hand-drawn map (Lobeck, 1930). The procedure for generating the coverages and

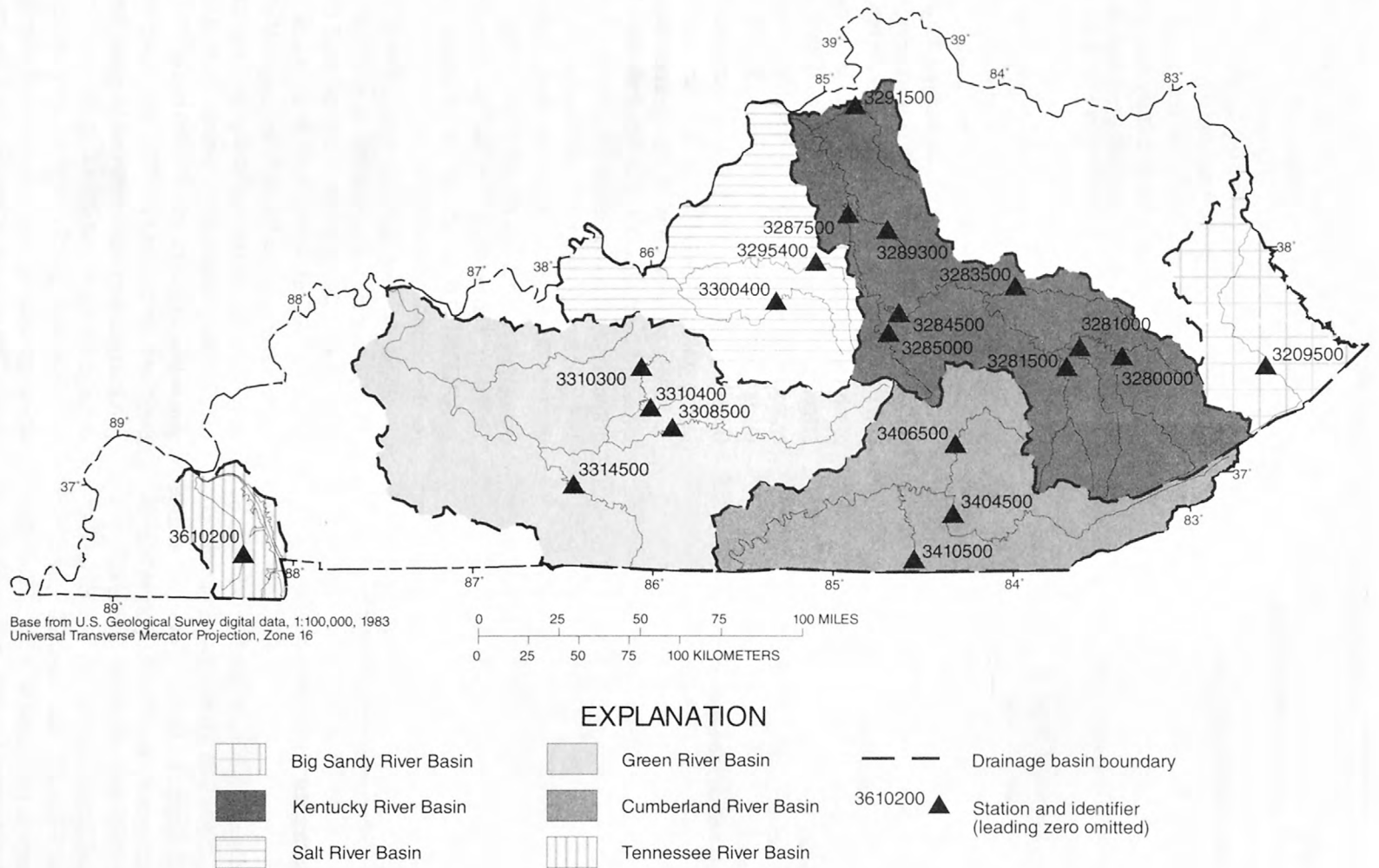

Figure 2. Major drainage basins in Kentucky and location of selected study stations.

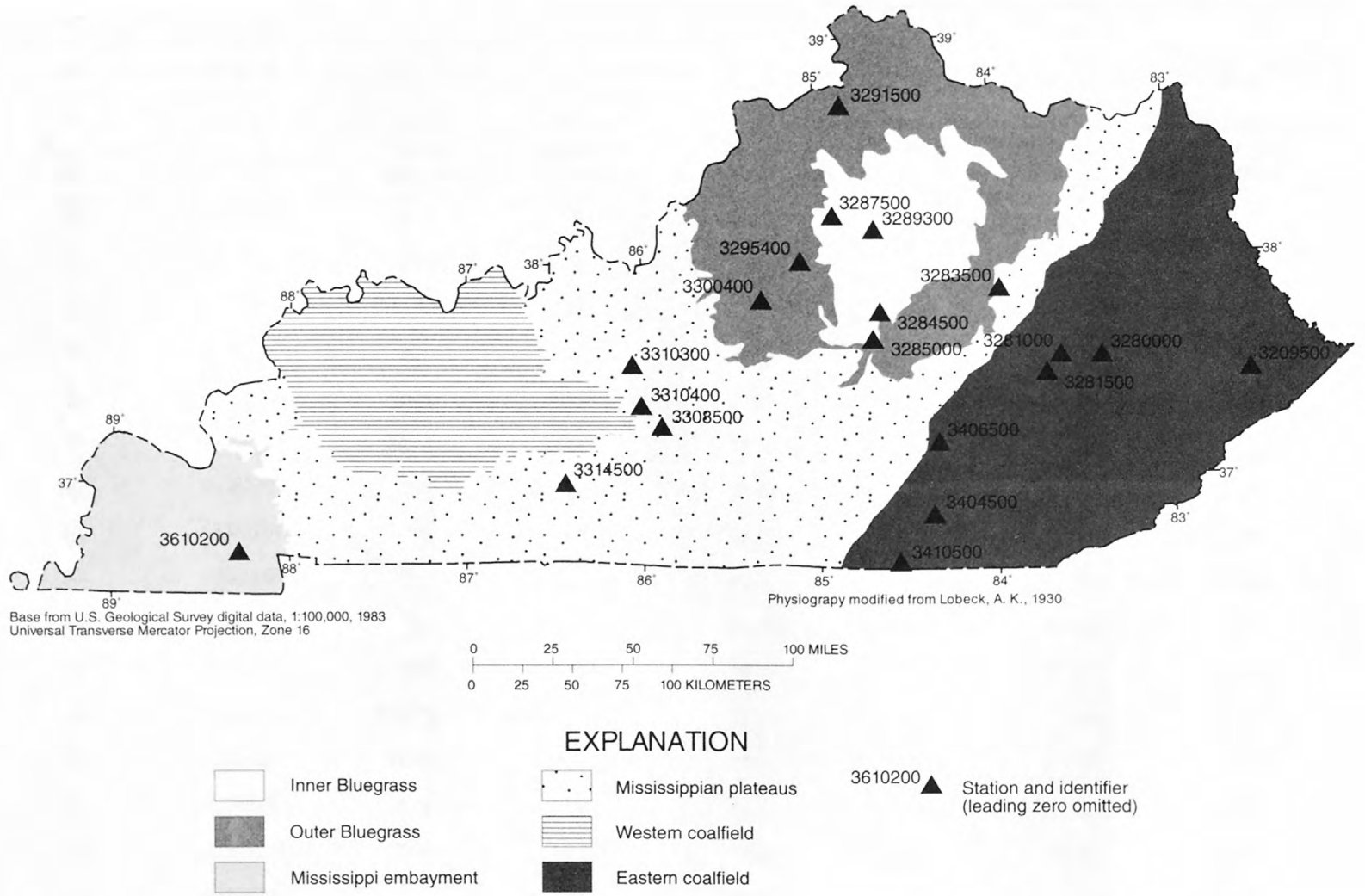

Figure 3. Physiographic regions of Kentucky and location of selected study stations.

Table 3. Percent physiographic region for selected ambient monitoring stations in Kentucky
[---, not applicable]

Map number (figure 1)	Station number	Physiographic regions						Total (percent)
		Inner Bluegrass (percent)	Outer Bluegrass (percent)	Mississippi Embayment (percent)	Western Coalfield (percent)	Mississippian Plateaus (percent)	Eastern Coalfield (percent)	
3	03209500	---	---	---	---	---	100.00	100.00
11	03287500	12.76	16.28	---	---	10.10	60.86	100.00
12	03284500	2.96	15.55	---	---	8.37	73.12	100.00
13	03291500	33.48	66.52	---	---	---	---	100.00
14	03289300	100.00	---	---	---	---	---	100.00
15	03285000	1.66	46.92	---	---	51.42	---	100.00
16	03283500	---	---	---	---	25.41	74.59	100.00
18	03280000	---	---	---	---	---	100.00	100.00
19	03281000	---	---	---	---	---	100.00	100.00
20	03281500	---	---	---	---	---	100.00	100.00
22	03295400	67.37	31.44	---	---	1.19	---	100.00
24	03300400	7.14	90.59	---	---	2.27	---	100.00
30	03314500	---	---	---	---	100.00	---	100.00
31	03308500	---	.52	---	---	99.48	---	100.00
32	03310300	---	---	---	---	100.00	---	100.00
33	03310400	---	---	---	---	100.00	---	100.00
37	03410500	---	---	---	---	---	100.00	100.00
38	03406500	---	---	---	---	23.02	76.98	100.00
40	03404500	---	---	---	---	---	100.00	100.00
42	03610200	---	---	100.00	---	---	---	100.00

Table 4. Percent land use for selected ambient monitoring stations in Kentucky

Map number (figure 1)	Station number	Land-use categories						
		Urban (percent)	Agricultural (percent)	Forest (percent)	Water (percent)	Wetland (percent)	Barren (percent)	Total (percent)
3	03209500	0.36	0.00	97.70	0.39	0.00	1.55	100
11	03287500	2.40	28.98	66.98	.14	.02	1.48	100
12	03284500	1.50	19.54	77.17	.06	.02	1.70	100
13	03291500	4.87	57.35	37.61	.16	.00	.01	100
14	03289300	26.74	72.28	.12	.00	.00	.86	100
15	03285000	3.38	68.61	27.55	.03	.08	.36	100
16	03283500	1.08	14.58	84.26	.01	.00	.06	100
18	03280000	.31	.25	95.19	.08	.00	4.18	100
19	03281000	.07	1.22	96.01	.15	.00	2.55	100
20	03281500	.25	5.98	92.78	.00	.00	.99	100
22	03295400	5.79	84.53	9.45	.03	.00	.20	100
24	03300400	1.90	79.09	18.70	.11	.00	.20	100
30	03314500	5.22	75.58	17.73	1.25	.03	.19	100
31	03308500	2.95	59.27	36.60	.78	.16	.24	100
32	03310300	7.70	83.61	8.10	.28	.07	.24	100
33	03310400	2.78	52.13	44.97	.00	.00	.13	100
37	03410500	.00	.13	98.51	.00	.00	1.36	100
38	03406500	2.43	24.26	69.53	.28	.00	3.50	100
40	03404500	2.62	6.96	85.51	.07	.00	4.85	100
42	03610200	5.16	91.00	3.55	.04	.18	.07	100

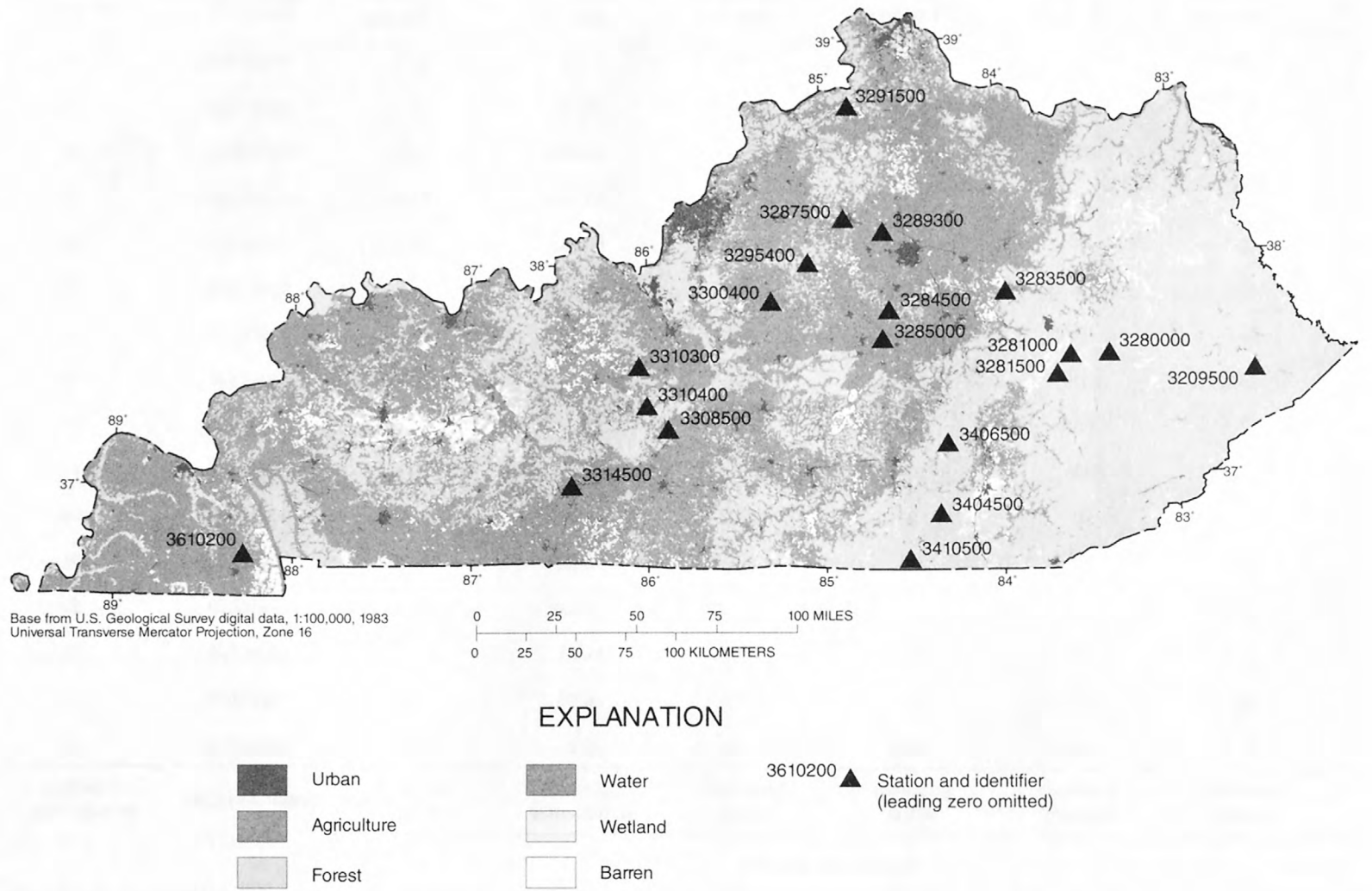

Figure 4. Land use in Kentucky and location of selected study stations.

calculating the physiographic-region percentages in each drainage basin was similar to that used for land use.

Daily Discharge Synthesis

Five techniques for estimating daily mean discharge at an ungaged station or a station with incomplete discharge records (missing data) were evaluated for use in this study. Application of ground-water-flow and modeling techniques were beyond the scope and objectives of the study. These models require intensive data input and require long-term precipitation data and information on processes affecting indices such as infiltration and evapotranspiration. Three other techniques—drainage area ratio, regression analysis, or a combination of these two—require less intensive data input and were selected for use in the study.

For stations on the same stream or in proximity to one another, a drainage-area ratio is applicable for determining daily mean discharge if the ratio between stations is less than 10 to 1. Commonly, the equation for drainage-area ratio is expressed as

$$Qu = [Qb\,(DAu/DAb) + Qa\,(DAu/DAa)] / 2, \quad (1)$$

where

Q is the daily mean discharge at a given station,
DA is the drainage area for a given station,
u is the station where discharge is unknown,
b is the station downstream, and
a is the station upstream.

Daily discharge also can be determined by application of the graphical regression analysis technique. However, whereas the lag time between observed and simulated flows are considered in modeling applications, other means are necessary to account for the lag time when using regression analysis. A combination of the regression and drainage-area ratio techniques can also be used to account for the lag. This graphical technique involves plotting and overlaying the hydrographs of the daily flows at the two stations. The curves are shifted to normalize daily flows with respect to drainage area. If applicable, estimates of daily discharge can be made on the basis of a discharge hydrograph from a nearby station. Only 1 of the 20 stations, Kentucky River at Camp Nelson (03284500), required synthesis of daily mean discharge. Daily discharge records from Kentucky River at Lock 10 and at Lock 6 were used to synthesize the daily mean discharge at the Camp Nelson station.

Partition of Daily Discharge

Nonpoint-source contaminants are generally transported to receiving waters during storm runoff periods. Thus, estimates of constituent loads in overland runoff can provide a means of measuring the effects nonpoint-source contaminants have on water quality and sediment. In this study, daily discharge was partitioned into total flow and base flow to estimate the loads contributed by nonpoint sources and point sources, respectively. Partitioning base-flow data began with the retrieval of daily-mean discharge records to match the period of water-quality data. A computerized method was used to estimate base flow from the long-term daily-discharge record (Rutledge, 1993). Two support programs are provided with the partition software to reformat and evaluate the discharge data. The daily-mean discharge from NWIS is translated by one program into a format used by the partition program. Daily-mean discharge is verified to be continuous throughout the period of record with another program. Missing record was synthesized as needed by use of the techniques described previously.

Antecedent streamflow recessions are specified in the USGS partition method, whereas antecedent rainfall conditions are specified in other networks. A one-dimensional array filled with daily mean streamflow record is screened for days fitting the recession requirement. For the days meeting the recession requirement, base-flow discharge is equal to streamflow if it is not followed by a daily decline greater than 0.1 log cycle. Rutledge's program continues searching the array and determines base flow for the remaining days by linear interpolation. Base flows (that exceed streamflow) can be generated, but these flows are corrected during the last program step.

Rutledge's computer program executes three times, once where the time base of overland runoff is the largest integer less than the result of the following equation (Lindsey and others, 1982):

$$(N=A^{0.2}), \quad (2)$$

where

N is number of days after the peak, and
A is drainage area in square miles.

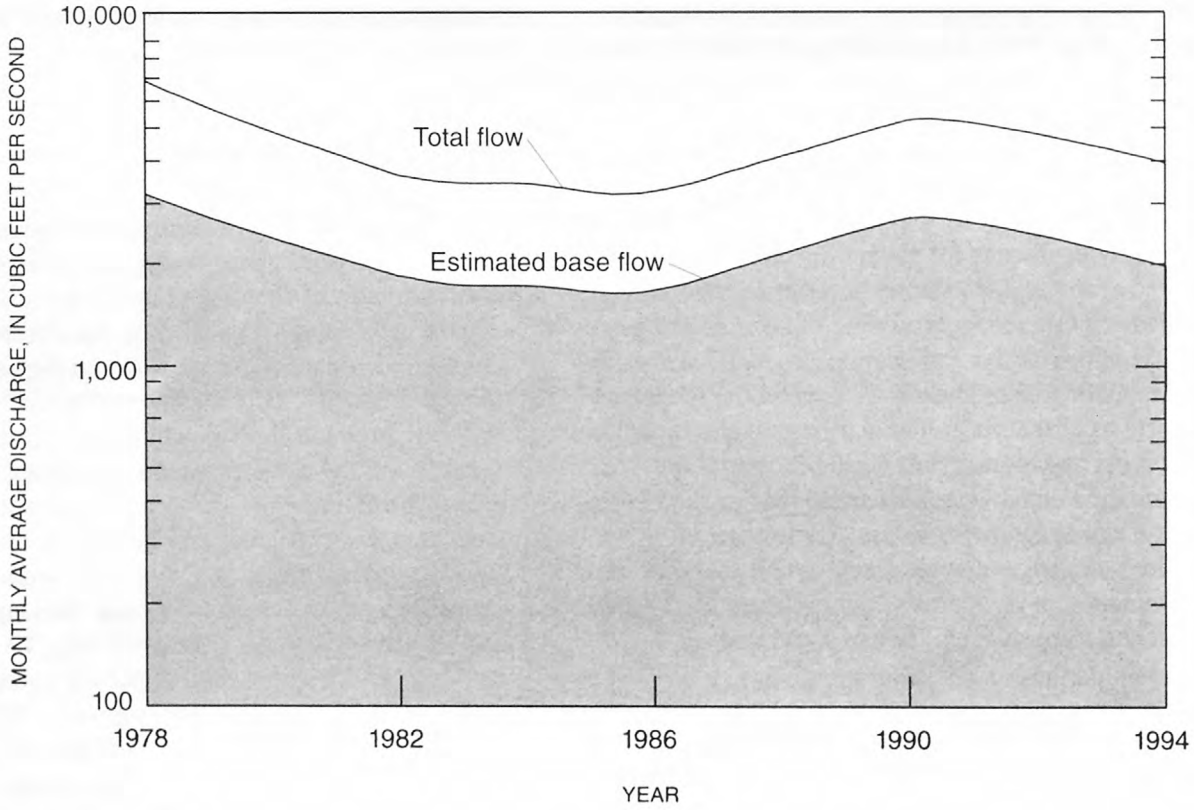

Figure 5. Partitioned discharge, Kentucky River at Lock 4 (03287500) at Frankfort, Kentucky.

A second-order polynomial expression is generated using the results of equation 2. Exact results are calculated with the equation in the program based on the polynomial expression.

After the daily-mean discharge data were partitioned, the base-flow estimates were reformatted, entered into the NWIS database, and retrieved for processing with the ESTIMATOR and FLUX programs to estimate loads. As an example, the total and partitioned base-flow discharge for Kentucky River at Frankfort (03287500) are shown in figure 5. Smooth lines were generated using the procedure termed, Locally Weighted Scatterplot Smoothing (LOWESS), (Cleveland, 1979).

Selection of Base-Flow Samples

A component of the study objective was to estimate the contribution of constituent transport during base flow. To accomplish this objective, sediment and water-quality records meeting a predetermined base-flow criterion were selected for specific days. The partitioned discharge data set provided the means for selecting sediment and water-quality records determined to represent base-flow samples. Analytical results for those water-quality samples were retained in the data set if base flow for the day in question was less than 0.9 times the total flow for the same day. The programming languages AWK and PERL were used to compare arrays of concurrent dates when base flow met the criterion and water-quality samples were collected. The matching records were retrieved for use in estimating loads and yields for the base-flow component.

Estimating Loads and Yields of Sediment and Water-Quality Constituents

The software packages ESTIMATOR and FLUX were used to generate load estimates on the basis of continuous records of mean daily discharge retrieved from the NWIS Automated Data-Processing System (Dempster, 1990) and observations of constituent concentra-

tions in water-quality records retrieved from the NWIS Water-Quality System (Maddy and others, 1989) for each station. Yields for each station were determined by dividing the estimated load by the drainage area of the respective station; overland runoff yields were determined by subtracting the base-flow yield from the total-flow yield.

The Adjusted Maximum Likelihood Estimator (AMLE) as outlined by Cohn and others (1989, 1992a, b) was used in the computer program ESTIMATOR (Baier and others, 1992) to generate a record of daily loads, which were combined into monthly and annual average loads. In cases in which censored data occurred, the estimates are unbiased to first order. The AMLE also provides an accurate means to measure the uncertainty in the estimated loads. This uncertainty is reported as a "standard error of prediction," which is an estimate of the difference between the reported load and the (unknown) true load. Diagnostics used to evaluate the model include the regression diagnostic coefficient of determination (R^2), correlation coefficient of residuals, standard deviation, T, and P values for the model variables. Plots of the residuals generated in ESTIMATOR aids in graphically determining the fit of the model. These include boxplots, normal distribution, and residuals as opposed to simulated, flow, and time variables.

The R^2 indicates the percentage of the overall variability in the model simulation. An R^2 equal to 50 percent was used as the criterion value to use FLUX to generate loads. Of the 1,080 loads run in ESTIMATOR, approximately 5 percent were rerun by FLUX because the R^2 did not meet the prescribed criterion. An additional 20 percent did not generate loads through ESTIMATOR and also were run by FLUX. The constituents by site for total and base flow that had loads run using the FLUX program are listed in appendix 1.

The computer program, FLUX, developed by the U.S. Army Corps of Engineers (Walker, 1987) was used to calculate loads. Six load-calculation methods are available in FLUX; the method used will depend upon the dynamics of the system and sampling information. To assist the user, results of Monte-Carlo simulations are provided in the "Methods Section" of the program documentation. The direct mean loading is the simplest method. Application of this method gives unbiased results only if the distribution of sampled flow and total flow are equal for each partition. The most complicated method is the third-order regression; the third-order regression is applied individually to each flow value in the partition. A correction factor is applied to the mean square error of the regression.

Data stratification can assist in reducing the bias and variance of load estimates. Options to stratify data sets based on flow, date, and (or) season are provided in the FLUX program. In addition, the Jackknife procedure is used in all six methods to estimate the error variance, which provides a uniform basis for comparing results. The Jackknife procedure involves removing each sample, one at a time, from the set and recalculating the load.

ESTIMATES OF LOADS AND YIELDS OF SEDIMENT AND WATER-QUALITY CONSTITUENTS

A statistical summary of the aggregated total yields for all constituents and the total yields for selected stations are presented in table 5. Loads and yields for all flow components are presented in table 6. It should be noted that in some instances estimates of base-flow loads exceeded total-flow load estimates. Basin size, sample stratification, and highly censored data are possible reasons for this occurrence; however, assessment of the results of the statistical analyses is beyond the scope of this study.

Descriptive statistics for selected ambient monitoring stations in Kentucky are presented in table 7. Where 5 percent of the observations reported were at concentrations less than the detection limit, summary statistics were generated from a combination of the observations above the detection limit with below-limit values extrapolated on the basis of a log-probability regression procedure (Helsel and Cohn, 1988; Helsel, 1990). The estimated distribution parameters (percentiles) are presented in table 7; an asterisk is placed before the value if the value was extrapolated.

Cadmium is generally present in low concentrations in soils. It is released into the environment from mining and smelting, fossil-fuel combustion, landfill leachates, and weathering of cadmium-bearing deposits, especially when in contact with acidic waters. The aggregate median of the mean annual total-flow yield for cadmium was 0.002 (tons/mi^2). The largest mean annual total-flow yield for cadmium (0.039 tons/mi^2) was determined at Clarks River at Almo. This yield is nearly 20 times greater than the aggregate median. Nine (45 percent) of the stations had mean annual total-flow yields equal to the aggregate minimum (0.001 tons/mi^2).

Table 5. Aggregate total yields summary statistics for sediment and water-quality constituents for 20 ambient monitoring stations in Kentucky

[Yields are in tons per square mile except for fecal coliform (10^{15} colonies per square mile); N, number of stations at which yields were estimated; %, percent; chemical constituents are total analysis except chloride and sulfate, which are dissolved]

Constituent	N	Mean	Maximum	75% Quartile	Median	25% Quartile	Minimum
Dissolved oxygen	19	14.821	18.353	16.389	14.733	14.020	7.057
Fecal coliform	20	.287	1.739	.326	.159	.090	.008
Alkalinity, total	20	97.664	218.885	140.739	70.795	60.355	6.209
Biochemical oxygen demand	20	1.448	5.946	1.722	1.075	.617	.050
Chloride	20	10.470	42.949	12.031	8.444	6.387	3.296
Sulfate	20	51.203	150.460	60.592	46.797	25.798	1.162
Residue	20	138.816	364.600	156.855	113.088	71.457	.350
Carbon	20	213.625	4175.080	6.069	4.351	3.371	2.345
Calcium	20	53.206	217.935	60.112	43.644	27.884	8.434
Magnesium	20	10.662	24.510	13.036	9.926	7.647	1.504
Potassium	19	3.226	5.507	3.410	3.085	2.617	1.891
Sodium	20	8.708	28.358	10.051	6.898	4.727	1.839
Ammonia	20	.526	7.492	.118	.093	.055	.004
Nitrite plus nitrate	20	2.412	11.767	2.774	1.337	.938	.419
Ammonia and organic nitrogen	20	16.360	206.475	.893	.573	.375	.172
Phosphorus	20	.410	3.418	.198	.120	.072	.036
Aluminum	20	2.906	5.921	3.638	3.192	1.637	.832
Arsenic	20	.003	.012	.003	.003	.002	.002
Barium	20	.081	.414	.076	.063	.053	.037
Cadmium	20	.004	.039	.002	.002	.001	.001
Chromium	20	.005	.009	.006	.005	.004	.000
Copper	20	.008	.017	.009	.007	.006	.003
Iron	20	3.964	10.529	5.687	2.871	1.811	.013
Lead	20	.019	.040	.028	.021	.006	.004
Manganese	20	.212	.515	.225	.200	.156	.087
Mercury	20	.008	.161	.000	.000	.000	.000
Zinc	19	.051	.106	.061	.046	.037	.017

Copper is used extensively in commercial and residential plumbing, although much less now because of the use of polyvinyl chloride and other types of tubing. Copper salts have been used to suppress growth of nuisance aquatic plants and as a component in agricultural pesticides. The aggregate median of the mean annual total-flow yield for copper was 0.007 tons/mi^2. The largest mean annual total-flow yield for copper (0.017 tons/mi^2) was determined at Barren River at Bowling Green and at Clarks River at Almo. The largest mean annual yield contributed during base-flow conditions (7.8 tons/mi^2) was estimated at South Elkhorn Creek.

Chromium is not currently mined in the United States, but is present in waters throughout the nation mainly because of runoff and leaching from abandoned mining operations. Waste incineration, fossil-fuel combustion, and cement-plant emissions are among the sources of atmospheric chromium deposition. The mean background level of chromium in Kentucky soils of 106.9 micrograms per gram is twice the mean level of 50 micrograms per gram for various soils nationwide (Karathanasis and Seta, 1993). The largest mean annual total-flow yield for chromium (0.009 tons/mi^2) was determined at Eagle Creek at Glencoe. Clarks River at Almo had the smallest mean annual total and base-flow yields (less than 0.001 tons/mi^2).

Lead is common in sedimentary rocks and as a consequence is widely dispersed in the Earth's crust. It is generally present only in low concentrations in natural waters and when present it is as a result of corrosion of service lines, pipes, brass and bronze fittings, solder and fluxes, and leaded fuels. Barren River at Bowling Green had the largest mean annual total-flow yield of lead (0.04 tons/mi^2). The aggregate median of the mean annual total-flow yield for lead was 0.021 tons/mi^2. Three stations—Beech Fork at Maud, Red River at Clay City, and South Fork Kentucky River at Booneville—had an estimate of mean annual total-flow yields of lead equal to the aggregate minimum of 0.004 tons/mi^2.

Natural waters are a source of nutrients—nitrogen and phosphorus—for many aquatic plants. Nitrogen can occur in natural waters in the form of nitrate, nitrite, ammonia, or as organic nitrogen. Most nitrogenous materials tend to be found in natural waters in a more stable oxidized form as nitrate. Organic nitrogen and ammonia from fertilizers, sewage, and feedlots are the common sources of nitrogen in the nitrogen cycle leading to nitrate. Phosphorus is a common element in igneous and sedimentary rocks; other sources of phosphorus include sewage effluent, detergents, and leachates from septic tanks.

South Elkhorn Creek near Midway had the largest estimated mean annual total-flow yield for nitrite plus nitrate (11.8 tons/mi^2). This yield is nearly 10 times the aggregate median (1.3 tons/mi^2). The smallest mean annual total-flow yield for nitrite plus nitrate was estimated at Middle Fork Kentucky River at Tallega (0.419 tons/mi^2).

The largest mean annual total-flow yield of ammonia (7.49 tons/mi^2) was estimated at Clarks River at Almo. The aggregate median of the mean annual total-flow yield for ammonia was 0.93 tons/mi^2. North Fork Kentucky River at Jackson had the smallest mean annual total-flow yield of ammonia with 0.004 tons/mi^2. Salt River at Glensboro had the largest mean annual total-flow yield of ammonia and organic nitrogen with 206 tons/mi^2. This is nearly 400 times the aggregate median of the mean annual total-flow yield of 0.57 tons/mi^2. The smallest mean annual total-flow yield of ammonia and organic nitrogen (0.17 tons/mi^2) was estimated at the North Fork Kentucky River at Jackson.

The mean annual total-flow yield of phosphorus was largest at Clarks River at Almo with 3.4 tons/mi^2. This yield is nearly 30 times the aggregate median of 0.12 tons/mi^2. The smallest mean annual total-flow yield of phosphorus (0.036 tons/mi^2) was estimated at South Fork Kentucky River at Booneville.

Suspended solids (nonfilterable residue) is a common constituent that can affect the water-quality of streams in many ways. The effectiveness of suspended solids in sorbing and transporting some metals, pesticides, and other organic compounds can be detrimental to a stream's ecology. In addition, highly suspended-solids concentrations are aesthetically unsatisfactory and can adversely affect the biological community within the streams.

Mean annual total-flow yields for suspended solids ranged from 0.350 to 364.60 tons/mi^2. The smallest mean annual total-flow yield for suspended solids was at Clarks Run at Almo, while the largest mean annual total-flow was at Eagle Creek at Glencoe. The aggregate median value of the mean annual total-flow yield for suspended solids was 112 tons/mi^2.

SUMMARY

Loads and yields of sediment and selected water-quality constituents were estimated for 20 of the 44 stations in the Kentucky ambient surface-water monitoring network to determine the relative methods of constituent transport as by overland runoff or base flow. Available sediment and water-quality records were retrieved from the U.S. Environmental Protection Agency's (USEPA) Storage and Retrieval (STORET) data base and daily discharge from available streamflow records. Discharge was partitioned by use of USGS software and loads were estimated by use of ESTIMATOR and FLUX programs. Principal results of the analyses are as follows:

- Cadmium had an aggregate median value of the mean annual total-flow yield of 0.002 tons per square mile (tons/mi^2). The largest mean annual total-flow yield for cadmium (0.039 tons/mi^2) was determined at Clarks River at Almo. This yield is nearly 20 times greater than the aggregate median value. Nine (45 percent) of the stations had mean annual total-flow yields equal to the aggregate minimum value (0.001 tons/mi^2).
- Copper had an aggregate median value of the mean annual total-flow yield of 0.007 tons/mi^2. Barren River at Bowling Green and Clarks River at Almo had the largest estimated mean annual total-flow yields (0.017 tons/mi^2).
- The largest mean annual total-flow yield for chromium (0.009 tons/mi^2) was determined at Eagle Creek at Glencoe. Clarks River at Almo had the smallest estimated mean annual total and base-flow yields (less than 0.001 tons/mi^2).
- Lead had the largest mean annual total-flow yield of 0.04 tons/mi^2 at Barren River at Bowling Green. The aggregate median of the mean annual total-flow yield for lead was 0.021 tons/mi^2. Three stations—Beech Fork at Maud, Red River at Clay City, and South Fork Kentucky River at Booneville —had an estimate of mean annual total-flow yields of lead equal to the aggregate minimum of 0.004 tons/mi^2.
- The largest estimated mean annual base-flow yield of nitrite plus nitrate (30 tons/mi^2) was determined for South Elkhorn Creek near Midway, which was approximately three times greater than the mean annual total-flow yield (11 tons/mi^2) for the same station.
- Ammonia had the smallest mean annual total-flow yield of 0.004 tons/mi^2 at North Fork Kentucky River at Jackson. The aggregate median value of the mean annual total-flow yield for ammonia was 0.93 tons/mi^2.
- The phosphorus yield (total flow) was greatest at Clarks River at Almo with 3.4 tons/mi^2. This yield is nearly 30 times the aggregate median value of the mean annual total-flow yield of 0.12 tons/mi^2. The smallest mean annual total-flow yield for phosphorus (0.036 tons/mi^2) was estimated at South Fork Kentucky River at Booneville.
- The largest mean annual total-flow yield of ammonia and organic nitrogen (206 tons/mi^2) was estimated at Salt River at Glensboro. This is nearly 400 times the aggregate median value of the mean annual total-flow yield (0.57 tons/mi^2).
- Mean annual total-flow yields for suspended solids (residue, nonfilterable) ranged from 0.35 to 364.6 tons/mi^2. Clarks Run at Almo had the aggregate minimum value of the mean annual total-flow yield, while Eagle Creek at Glencoe had the aggregate maximum value. The aggregate median value of the mean annual total-flow yield for suspended solids was 112 tons/mi^2).

Calculated overland-runoff yields generated questions concerning the water-quality data and the methods and techniques used to determine loads in this study. Additional proposed studies are expected to provide answers to the concerns of overland-runoff yields. Issues to be addressed include sample stratification, base flow generated for basins larger than 1,000 mi^2, and constituents yields for data with a large percentage of censored values.

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Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Dissolved oxygen, in mg/L [00300]					
3	03209500	Levisa Fork at Pikeville	137.06	66.37	11.07	5.36	5.71
18	03280000	North Fork Kentucky River at Jackson	153.82	73.92	13.97	6.71	7.26
19	03281000	Middle Fork Kentucky River at Tallega	86.60	45.42	16.13	8.46	7.67
20	03281500	South Fork Kentucky River at Booneville	116.23	48.34	16.10	6.70	9.40
16	03283500	Red River at Clay City	61.49	26.29	16.99	7.26	9.72
12	03284500	Kentucky River at Camp Nelson	618.27	---	13.97	---	---
15	03285000	Dix River near Danville	52.60	17.44	16.54	5.49	11.05
11	03287500	Kentucky River at Lock 4 at Frankfort	766.48	---	14.17	---	---
14	03289300	South Elkhorn Creek near Midway	15.47	9.33	14.73	8.89	5.84
13	03291500	Eagle Creek at Glencoe	73.46	6.01	16.81	1.38	15.43
22	03295400	Salt River at Glensboro	23.04	8.19	13.40	4.76	8.63
24	03300400	Beech Fork at Maud	63.78	16.28	14.63	3.73	10.90
31	03308500	Green River at Munfordville	289.58	171.33	17.31	10.24	7.07
32	03310300	Nolin River at White Mills	50.22	31.53	14.07	8.83	5.24
33	03310400	Bacon Creek near Priceville	6.00	3.61	7.06	4.22	2.83
30	03314500	Barren River at Bowling Green	264.85	176.59	14.32	9.55	4.77
40	03404500	Cumberland River at Cumberland Falls	311.32	337.02	15.75	17.05	-1.30
38	03406500	Rockcastle River at Billows	98.08	43.35	16.24	7.18	9.06
37	03410500	South Fork Cumberland River near Stearns	175.08	83.82	18.35	8.79	9.57
42	03610200	Clarks River at Almo	---	---	---	---	---
		Fecal-coliform bacteria, colonies per 100 mL [31616]					
3	03209500	Levisa Fork at Pikeville	191.66	151.00	.15	.12	.03
18	03280000	North Fork Kentucky River at Jackson	399.70	207.64	.36	.19	.17
19	03281000	Middle Fork Kentucky River at Tallega	37.40	20.27	.07	.04	.03
20	03281500	South Fork Kentucky River at Booneville	86.95	25.58	.12	.04	.09
16	03283500	Red River at Clay City	42.29	18.55	.12	.05	.07
12	03284500	Kentucky River at Camp Nelson	724.73	557.78	.16	.13	.04
15	03285000	Dix River near Danville	100.81	87.56	.32	.28	.04
11	03287500	Kentucky River at Lock 4 at Frankfort	524.00	---	.10	---	---
14	03289300	South Elkhorn Creek near Midway	48.36	3.85	.46	.04	.42
13	03291500	Eagle Creek at Glencoe	140.65	90.16	.32	.21	.12

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
22	03295400	Salt River at Glensboro	52.95	---	0.31	---	---
24	03300400	Beech Fork at Maud	148.35	---	.34	---	---
31	03308500	Green River at Munfordville	324.58	248.70	.19	0.15	0.05
32	03310300	Nolin River at White Mills	265.98	90.53	.75	.25	.49
33	03310400	Bacon Creek near Priceville	148.54	17.04	1.74	.20	1.54
30	03314500	Barren River at Bowling Green	46.16	---	.02	---	---
40	03404500	Cumberland River at Cumberland Falls	268.70	114.65	.14	.06	.08
38	03406500	Rockcastle River at Billows	15.76	6.54	.03	.01	.02
37	03410500	South Fork Cumberland River near Stearns	31.20	14.40	.03	.02	.02
42	03610200	Clarks River at Almo	1.01	.15	.01	<.01	<.01
		Alkalinity, total as $CaCO_3$ [00410]					
3	03209500	Levisa Fork at Pikeville	740.52	395.05	59.82	31.91	27.91
18	03280000	North Fork Kentucky River at Jackson	765.10	404.17	69.49	36.71	32.78
19	03281000	Middle Fork Kentucky River at Tallega	232.37	119.45	43.27	22.24	21.03
20	03281500	South Fork Kentucky River at Booneville	247.72	123.43	34.31	17.10	17.21
16	03283500	Red River at Clay City	228.24	100.54	63.05	27.77	35.28
12	03284500	Kentucky River at Camp Nelson	3163.70	---	71.50	---	---
15	03285000	Dix River near Danville	505.64	.45	159.01	.14	158.87
11	03287500	Kentucky River at Lock 4 at Frankfort	5034.54	---	93.04	---	---
14	03289300	South Elkhorn Creek near Midway	229.83	134.69	218.89	128.28	90.61
13	03291500	Eagle Creek at Glencoe	306.31	73.96	70.09	16.92	53.17
22	03295400	Salt River at Glensboro	337.47	122.22	196.20	71.06	125.14
24	03300400	Beech Fork at Maud	834.50	216.24	191.40	49.60	141.80
31	03308500	Green River at Munfordville	2168.07	1343.22	129.59	80.29	49.30
32	03310300	Nolin River at White Mills	576.62	344.25	161.52	96.43	65.09
33	03310400	Bacon Creek near Priceville	82.00	48.03	96.47	56.24	40.23
30	03314500	Barren River at Bowling Green	2489.67	1674.14	134.65	90.54	44.11
40	03404500	Cumberland River at Cumberland Falls	1196.77	675.77	60.53	34.18	26.35
38	03406500	Rockcastle River at Billows	409.40	188.23	67.78	31.16	36.62
37	03410500	South Fork Cumberland River near Stearns	252.35	130.43	26.45	13.67	12.78
42	03610200	Clarks River at Almo	8.32	3.20	6.21	2.39	3.82

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Biochemical oxygen demand, 5-day [00310]					
3	03209500	Levisa Fork at Pikeville	10.64	11.51	0.86	0.93	-0.07
18	03280000	North Fork Kentucky River at Jackson	6.72	2.22	.61	.20	.41
19	03281000	Middle Fork Kentucky River at Tallega	4.45	---	.83	---	---
20	03281500	South Fork Kentucky River at Booneville	4.47	---	.62	---	---
16	03283500	Red River at Clay City	.18	---	.05	---	---
12	03284500	Kentucky River at Camp Nelson	39.76	---	.90	---	---
15	03285000	Dix River near Danville	.17	---	.05	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	61.12	66.31	1.13	1.23	-.10
14	03289300	South Elkhorn Creek near Midway	3.30	2.65	3.15	2.52	.63
13	03291500	Eagle Creek at Glencoe	9.24	---	2.11	---	---
22	03295400	Salt River at Glensboro	10.23	9.02	5.95	5.24	.70
24	03300400	Beech Fork at Maud	4.45	4.79	1.02	1.10	-.08
31	03308500	Green River at Munfordville	24.51	25.40	1.47	1.52	-.05
32	03310300	Nolin River at White Mills	5.97	3.98	1.67	1.12	.56
33	03310400	Bacon Creek near Priceville	.44	---	.52	---	---
30	03314500	Barren River at Bowling Green	46.97	33.25	2.54	1.80	.74
40	03404500	Cumberland River at Cumberland Falls	33.04	31.58	1.67	1.60	.07
38	03406500	Rockcastle River at Billows	10.99	5.54	1.82	.92	.90
37	03410500	South Fork Cumberland River near Stearns	16.12	9.30	1.69	.97	.71
42	03610200	Clarks River at Almo	.41	.05	.30	.03	.27
		Chloride, dissolved as Cl [00940]					
3	03209500	Levisa Fork at Pikeville	126.68	136.59	10.23	11.03	-.80
18	03280000	North Fork Kentucky River at Jackson	71.23	---	6.47	---	---
19	03281000	Middle Fork Kentucky River at Tallega	32.97	20.50	6.14	3.82	2.32
20	03281500	South Fork Kentucky River at Booneville	52.38	---	7.25	---	---
16	03283500	Red River at Clay City	43.20	21.51	11.93	5.94	5.99
12	03284500	Kentucky River at Camp Nelson	554.96	---	12.54	---	---
15	03285000	Dix River near Danville	20.69	7.49	6.51	2.36	4.15
11	03287500	Kentucky River at Lock 4 at Frankfort	666.82	---	12.32	---	---
14	03289300	South Elkhorn Creek near Midway	45.10	---	42.95	---	---
13	03291500	Eagle Creek at Glencoe	39.65	25.60	9.07	5.86	3.22
22	03295400	Salt River at Glensboro	19.70	19.90	11.45	11.57	-.12

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
24	03300400	Beech Fork at Maud	34.08	7.45	7.82	1.71	6.11
31	03308500	Green River at Munfordville	256.06	253.73	15.31	15.17	.14
32	03310300	Nolin River at White Mills	50.50	13.51	14.15	3.79	10.36
33	03310400	Bacon Creek near Priceville	2.80	2.68	3.30	3.14	.16
30	03314500	Barren River at Bowling Green	194.75	114.91	10.53	6.21	4.32
40	03404500	Cumberland River at Cumberland Falls	117.20	---	5.93	---	---
38	03406500	Rockcastle River at Billows	32.65	18.78	5.41	3.11	2.30
37	03410500	South Fork Cumberland River near Stearns	63.46	34.66	6.65	3.63	3.02
42	03610200	Clarks River at Almo	4.61	1.02	3.44	.76	2.67
		Sulfate, dissolved in mg/L as SO_4 [00946]					
3	03209500	Levisa Fork at Pikeville	1424.56	759.07	115.07	61.31	53.76
18	03280000	North Fork Kentucky River at Jackson	1656.57	864.02	150.46	78.48	71.98
19	03281000	Middle Fork Kentucky River at Tallega	400.17	214.46	74.52	39.94	34.58
20	03281500	South Fork Kentucky River at Booneville	418.97	207.15	58.03	28.69	29.34
16	03283500	Red River at Clay City	95.16	39.38	26.29	10.88	15.41
12	03284500	Kentucky River at Camp Nelson	2622.43	---	59.26	---	---
15	03285000	Dix River near Danville	100.98	35.13	31.75	11.05	20.71
11	03287500	Kentucky River at Lock 4 at Frankfort	2889.07	---	53.39	---	---
14	03289300	South Elkhorn Creek near Midway	63.09	67.79	60.08	64.57	-4.48
13	03291500	Eagle Creek at Glencoe	271.47	.06	62.12	.01	62.11
22	03295400	Salt River at Glensboro	64.92	27.02	37.74	15.71	22.04
24	03300400	Beech Fork at Maud	193.53	54.11	44.39	12.41	31.98
31	03308500	Green River at Munfordville	407.02	227.51	24.33	13.60	10.73
32	03310300	Nolin River at White Mills	49.50	34.57	13.87	9.68	4.18
33	03310400	Bacon Creek near Priceville	5.02	2.61	5.91	3.05	2.86
30	03314500	Barren River at Bowling Green	442.43	295.06	23.93	15.96	7.97
40	03404500	Cumberland River at Cumberland Falls	1875.86	1024.17	94.88	51.80	43.08
38	03406500	Rockcastle River at Billows	227.45	110.39	37.66	18.28	19.38
37	03410500	South Fork Cumberland River near Stearns	469.43	253.90	49.21	26.61	22.59
42	03610200	Clarks River at Almo	1.56	.30	1.16	.22	.94

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Residue, total nonfilterable [00530]					
3	03209500	Levisa Fork at Pikeville	1091.42	1148.99	88.16	92.81	-4.65
18	03280000	North Fork Kentucky River at Jackson	3757.19	927.72	341.25	84.26	256.99
19	03281000	Middle Fork Kentucky River at Tallega	714.37	454.51	133.03	84.64	48.39
20	03281500	South Fork Kentucky River at Booneville	520.03	167.23	72.03	23.16	48.86
16	03283500	Red River at Clay City	554.51	196.70	153.18	54.34	98.84
12	03284500	Kentucky River at Camp Nelson	7428.96	---	167.89	---	---
15	03285000	Dix River near Danville	178.31	---	56.07	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	7490.07	---	138.42	---	---
14	03289300	South Elkhorn Creek near Midway	47.32	---	45.07	---	---
13	03291500	Eagle Creek at Glencoe	1593.30	1232.94	364.60	282.14	82.46
22	03295400	Salt River at Glensboro	182.78	---	106.27	---	---
24	03300400	Beech Fork at Maud	522.81	---	119.91	---	---
31	03308500	Green River at Munfordville	2116.63	1371.63	126.52	81.99	44.53
32	03310300	Nolin River at White Mills	605.29	343.70	169.55	96.28	73.27
33	03310400	Bacon Creek near Priceville	78.42	63.61	92.26	74.49	17.78
30	03314500	Barren River at Bowling Green	1289.69	---	69.75	---	---
40	03404500	Cumberland River at Cumberland Falls	7117.63	4354.63	360.02	220.26	139.76
38	03406500	Rockcastle River at Billows	408.26	189.73	67.59	31.41	36.18
37	03410500	South Fork Cumberland River near Stearns	996.09	417.99	104.41	43.81	60.60
42	03610200	Clarks River at Almo	.47	.15	.35	.11	.24
		Carbon, organic, total as C [00680]					
3	03209500	Levisa Fork at Pikeville	32.57	15.41	2.63	1.24	1.39
18	03280000	North Fork Kentucky River at Jackson	32.67	20.58	2.97	1.87	1.10
19	03281000	Middle Fork Kentucky River at Tallega	17.49	9.26	3.26	1.72	1.53
20	03281500	South Fork Kentucky River at Booneville	16.93	9.24	2.34	1.28	1.06
16	03283500	Red River at Clay City	18.94	8.74	5.23	2.41	2.82
12	03284500	Kentucky River at Camp Nelson	186.23	---	4.21	---	---
15	03285000	Dix River near Danville	15.84	6.01	4.98	1.89	3.09
11	03287500	Kentucky River at Lock 4 at Frankfort	233.06	---	4.31	---	---
14	03289300	South Elkhorn Creek near Midway	7.62	5.51	7.26	5.25	2.01
13	03291500	Eagle Creek at Glencoe	62.30	4.41	14.26	1.01	13.25

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
22	03295400	Salt River at Glensboro	14.85	5.24	8.63	3.05	5.59
24	03300400	Beech Fork at Maud	38.76	10.11	8.89	2.32	6.57
31	03308500	Green River at Munfordville	94.92	55.23	5.67	3.30	2.37
32	03310300	Nolin River at White Mills	15.69	.01	4.39	<.01	4.39
33	03310400	Bacon Creek near Priceville	2.11	1.95	2.48	2.28	.20
30	03314500	Barren River at Bowling Green	85.26	58.15	4.61	3.15	1.47
40	03404500	Cumberland River at Cumberland Falls	74.98	65.76	3.79	3.33	.47
38	03406500	Rockcastle River at Billows	24.76	10.21	4.10	1.69	2.41
37	03410500	South Fork Cumberland River near Stearns	32.52	16.98	3.41	1.78	1.63
42	03610200	Clarks River at Almo	5594.61	497.71	4175.08	371.43	3803.65
		Calcium, recoverable, total as Ca [00916]					
3	03209500	Levisa Fork at Pikeville	466.50	240.80	37.68	19.45	18.23
18	03280000	North Fork Kentucky River at Jackson	518.21	275.73	47.07	25.04	22.02
19	03281000	Middle Fork Kentucky River at Tallega	137.14	71.21	25.54	13.26	12.28
20	03281500	South Fork Kentucky River at Booneville	149.73	73.23	20.74	10.14	10.60
16	03283500	Red River at Clay City	96.61	43.19	26.69	11.93	14.76
12	03284500	Kentucky River at Camp Nelson	1820.97	---	41.15	---	---
15	03285000	Dix River near Danville	190.25	61.80	59.83	19.43	40.39
11	03287500	Kentucky River at Lock 4 at Frankfort	2496.39	---	46.14	---	---
14	03289300	South Elkhorn Creek near Midway	109.14	67.02	103.94	63.83	40.11
13	03291500	Eagle Creek at Glencoe	36.85	30.37	8.43	6.95	1.48
22	03295400	Salt River at Glensboro	147.92	50.76	86.00	29.51	56.49
24	03300400	Beech Fork at Maud	314.29	85.19	72.08	19.54	52.55
31	03308500	Green River at Munfordville	833.72	513.53	49.83	30.70	19.14
32	03310300	Nolin River at White Mills	217.66	137.23	60.97	38.44	22.53
33	03310400	Bacon Creek near Priceville	29.58	18.70	34.80	21.90	12.90
30	03314500	Barren River at Bowling Green	918.79	579.23	49.69	31.33	18.36
40	03404500	Cumberland River at Cumberland Falls	603.59	383.00	30.53	19.37	11.16
38	03406500	Rockcastle River at Billows	170.83	74.19	28.28	12.28	16.00
37	03410500	South Fork Cumberland River near Stearns	160.26	80.59	16.80	8.45	8.35
42	03610200	Clarks River at Almo	292.03	32.42	217.93	24.19	193.74

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Magnesium, total as Mg [00927]					
3	03209500	Levisa Fork at Pikeville	204.04	103.24	16.48	8.34	8.14
18	03280000	North Fork Kentucky River at Jackson	269.85	139.53	24.51	12.67	11.84
19	03281000	Middle Fork Kentucky River at Tallega	63.56	32.87	11.84	6.12	5.72
20	03281500	South Fork Kentucky River at Booneville	73.20	34.75	10.14	4.81	5.33
16	03283500	Red River at Clay City	19.62	8.76	5.42	2.42	3.00
12	03284500	Kentucky River at Camp Nelson	589.68	12.30	13.33	.28	13.05
15	03285000	Dix River near Danville	47.86	15.83	15.05	4.98	10.08
11	03287500	Kentucky River at Lock 4 at Frankfort	652.46	---	12.06	---	---
14	03289300	South Elkhorn Creek near Midway	10.20	6.52	9.71	6.21	3.50
13	03291500	Eagle Creek at Glencoe	56.54	4.65	12.94	1.06	11.87
22	03295400	Salt River at Glensboro	13.49	5.17	7.84	3.01	4.84
24	03300400	Beech Fork at Maud	53.71	15.14	12.32	3.47	8.85
31	03308500	Green River at Munfordville	162.21	106.27	9.70	6.35	3.34
32	03310300	Nolin River at White Mills	23.70	15.45	6.64	4.33	2.31
33	03310400	Bacon Creek near Priceville	2.04	1.26	2.40	1.48	.92
30	03314500	Barren River at Bowling Green	177.56	112.35	9.60	6.08	3.53
40	03404500	Cumberland River at Cumberland Falls	328.19	204.31	16.60	10.33	6.27
38	03406500	Rockcastle River at Billows	46.57	20.55	7.71	3.40	4.31
37	03410500	South Fork Cumberland River near Stearns	71.12	37.46	7.46	3.93	3.53
42	03610200	Clarks River at Almo	2.02	.02	1.50	.01	1.49
		Potassium, total as K [00937]					
3	03209500	Levisa Fork at Pikeville	33.73	16.99	2.72	1.37	1.35
18	03280000	North Fork Kentucky River at Jackson	38.76	---	3.52	---	---
19	03281000	Middle Fork Kentucky River at Tallega	15.71	8.18	2.93	1.52	1.40
20	03281500	South Fork Kentucky River at Booneville	17.10	8.49	2.37	1.18	1.19
16	03283500	Red River at Clay City	9.08	3.94	2.51	1.09	1.42
12	03284500	Kentucky River at Camp Nelson	143.27	---	3.24	---	---
15	03285000	Dix River near Danville	10.49	3.58	3.30	1.13	2.17
11	03287500	Kentucky River at Lock 4 at Frankfort	168.79	---	3.12	---	---
14	03289300	South Elkhorn Creek near Midway	5.58	3.68	5.32	3.51	1.81
13	03291500	Eagle Creek at Glencoe	24.06	1.74	5.51	.40	5.11
22	03295400	Salt River at Glensboro	6.30	1.99	3.66	1.16	2.51

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
24	03300400	Beech Fork at Maud	17.25	4.50	3.96	1.03	2.92
31	03308500	Green River at Munfordville	51.30	29.80	3.07	1.78	1.28
32	03310300	Nolin River at White Mills	11.01	8.34	3.09	2.34	.75
33	03310400	Bacon Creek near Priceville	1.61	1.30	1.89	1.52	.37
30	03314500	Barren River at Bowling Green	56.62	41.13	3.06	2.22	.84
40	03404500	Cumberland River at Cumberland Falls	64.97	42.71	3.29	2.16	1.13
38	03406500	Rockcastle River at Billows	15.14	6.86	2.51	1.14	1.37
37	03410500	South Fork Cumberland River near Stearns	21.50	11.41	2.25	1.20	1.06
42	03610200	Clarks River at Almo	---	---	---	---	---
		Sodium, recoverable, total as Na [00929]					
3	03209500	Levisa Fork at Pikeville	255.50	138.97	20.64	11.23	9.41
18	03280000	North Fork Kentucky River at Jackson	120.97	70.56	10.99	6.41	4.58
19	03281000	Middle Fork Kentucky River at Tallega	42.56	21.47	7.93	4.00	3.93
20	03281500	South Fork Kentucky River at Booneville	55.15	29.98	7.64	4.15	3.49
16	03283500	Red River at Clay City	22.29	10.75	6.16	2.97	3.19
12	03284500	Kentucky River at Camp Nelson	467.04	---	10.55	---	---
15	03285000	Dix River near Danville	12.14	4.71	3.82	1.48	2.34
11	03287500	Kentucky River at Lock 4 at Frankfort	534.79	---	9.88	---	---
14	03289300	South Elkhorn Creek near Midway	29.78	4.79	28.36	4.56	23.80
13	03291500	Eagle Creek at Glencoe	23.91	2.13	5.47	.49	4.98
22	03295400	Salt River at Glensboro	9.64	3.71	5.61	2.16	3.45
24	03300400	Beech Fork at Maud	18.21	5.18	4.18	1.19	2.99
31	03308500	Green River at Munfordville	129.30	83.13	7.73	4.97	2.76
32	03310300	Nolin River at White Mills	33.53	---	9.39	---	---
33	03310400	Bacon Creek near Priceville	1.56	1.06	1.84	1.24	.60
30	03314500	Barren River at Bowling Green	88.60	54.60	4.79	2.95	1.84
40	03404500	Cumberland River at Cumberland Falls	303.96	167.22	15.37	8.46	6.92
38	03406500	Rockcastle River at Billows	23.69	10.56	3.92	1.75	2.17
37	03410500	South Fork Cumberland River near Stearns	51.21	28.79	5.37	3.02	2.35
42	03610200	Clarks River at Almo	6.07	1.31	4.53	.98	3.56

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Ammonia, total as N [00610]					
3	03209500	Levisa Fork at Pikeville	0.66	---	0.05	---	---
18	03280000	North Fork Kentucky River at Jackson	.04	---	<.01	---	---
19	03281000	Middle Fork Kentucky River at Tallega	.22	0.22	.04	0.04	<0.01
20	03281500	South Fork Kentucky River at Booneville	.28	.28	.04	.04	<.01
16	03283500	Red River at Clay City	.20	.21	.06	.06	<.01
12	03284500	Kentucky River at Camp Nelson	5.74	6.93	.15	.16	-.01
15	03285000	Dix River near Danville	.30	.26	.09	.08	.01
11	03287500	Kentucky River at Lock 4 at Frankfort	3.71	---	.07	---	---
14	03289300	South Elkhorn Creek near Midway	1.58	---	1.50	---	---
13	03291500	Eagle Creek at Glencoe	.48	.29	.11	.07	.04
22	03295400	Salt River at Glensboro	.19	---	.11	---	---
24	03300400	Beech Fork at Maud	.39	.41	.09	.09	-.01
31	03308500	Green River at Munfordville	1.50	1.54	.09	.09	<.01
32	03310300	Nolin River at White Mills	.41	---	.11	---	---
33	03310400	Bacon Creek near Priceville	.04	---	.04	---	---
30	03314500	Barren River at Bowling Green	2.06	2.12	.11	.11	<.01
40	03404500	Cumberland River at Cumberland Falls	1.85	1.96	.09	.10	-.01
38	03406500	Rockcastle River at Billows	.86	.85	.14	.14	<.01
37	03410500	South Fork Cumberland River near Stearns	1.25	.63	.13	.07	.06
42	03610200	Clarks River at Almo	10.04	10.71	7.49	7.99	-.50
		Nitrite plus Nitrate, total as N [00630]					
3	03209500	Levisa Fork at Pikeville	7.52	3.25	.61	.26	.34
18	03280000	North Fork Kentucky River at Jackson	11.08	3.52	1.01	.32	.69
19	03281000	Middle Fork Kentucky River at Tallega	2.25	1.12	.42	.21	.21
20	03281500	South Fork Kentucky River at Booneville	6.88	1.63	.95	.23	.73
16	03283500	Red River at Clay City	2.19	.80	.60	.22	.38
12	03284500	Kentucky River at Camp Nelson	39.47	---	.89	---	---
15	03285000	Dix River near Danville	21.86	6.22	6.87	1.96	4.92
11	03287500	Kentucky River at Lock 4 at Frankfort	94.35	---	1.74	---	---
14	03289300	South Elkhorn Creek near Midway	12.35	---	11.77	---	---
13	03291500	Eagle Creek at Glencoe	4.65	3.76	1.06	.86	.20
22	03295400	Salt River at Glensboro	8.02	4.10	4.66	2.39	2.28
24	03300400	Beech Fork at Maud	15.64	1.89	3.59	.43	3.15

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
31	03308500	Green River at Munfordville	28.09	16.38	1.68	0.98	0.70
32	03310300	Nolin River at White Mills	13.42	7.21	3.76	2.02	1.74
33	03310400	Bacon Creek near Priceville	1.31	.56	1.54	.66	.88
30	03314500	Barren River at Bowling Green	35.55	26.79	1.92	1.45	.47
40	03404500	Cumberland River at Cumberland Falls	19.16	---	.97	---	---
38	03406500	Rockcastle River at Billows	6.86	2.30	1.14	.38	.75
37	03410500	South Fork Cumberland River near Stearns	5.17	1.68	.54	.18	.37
42	03610200	Clarks River at Almo	3.35	3.66	2.50	2.73	-.23
		Ammonia and organic, total as N [00625]					
3	03209500	Levisa Fork at Pikeville	3.95	---	.32	---	---
18	03280000	North Fork Kentucky River at Jackson	1.89	---	.17	---	---
19	03281000	Middle Fork Kentucky River at Tallega	1.69	1.80	.31	.34	-.02
20	03281500	South Fork Kentucky River at Booneville	2.83	---	.39	---	---
16	03283500	Red River at Clay City	1.87	---	.52	---	---
12	03284500	Kentucky River at Camp Nelson	30.72	6.93	.78	.16	.62
15	03285000	Dix River near Danville	3.95	.26	1.24	.08	1.16
11	03287500	Kentucky River at Lock 4 at Frankfort	17.63	---	.33	---	---
14	03289300	South Elkhorn Creek near Midway	.62	---	.59	---	---
13	03291500	Eagle Creek at Glencoe	7.24	.29	1.66	.07	1.59
22	03295400	Salt River at Glensboro	355.14	.21	206.47	.12	206.35
24	03300400	Beech Fork at Maud	435.80	.41	99.95	.09	99.86
31	03308500	Green River at Munfordville	12.07	---	.72	---	---
32	03310300	Nolin River at White Mills	2.75	---	.77	---	---
33	03310400	Bacon Creek near Priceville	.20	.05	.24	.05	.18
30	03314500	Barren River at Bowling Green	10.31	2.12	.56	.11	.44
40	03404500	Cumberland River at Cumberland Falls	14.07	1.96	.71	.10	.61
38	03406500	Rockcastle River at Billows	3.13	3.16	.52	.52	-.01
37	03410500	South Fork Cumberland River near Stearns	4.80	---	.50	---	---
42	03610200	Clarks River at Almo	14.00	10.71	10.45	7.99	2.45

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Phosphorus, total as P [00665]					
3	03209500	Levisa Fork at Pikeville	0.86	0.89	0.07	0.07	<0.01
18	03280000	North Fork Kentucky River at Jackson	.81	.36	.07	.03	.04
19	03281000	Middle Fork Kentucky River at Tallega	.31	.21	.06	.04	.02
20	03281500	South Fork Kentucky River at Booneville	.26	.15	.04	.02	.02
16	03283500	Red River at Clay City	.27	.12	.08	.03	.04
12	03284500	Kentucky River at Camp Nelson	7.26	---	.16	---	---
15	03285000	Dix River near Danville	.56	---	.18	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	10.90	---	.20	---	---
14	03289300	South Elkhorn Creek near Midway	1.94	---	1.85	---	---
13	03291500	Eagle Creek at Glencoe	.26	---	.06	---	---
22	03295400	Salt River at Glensboro	1.22	.38	.71	.22	.49
24	03300400	Beech Fork at Maud	2.07	.55	.48	.13	.35
31	03308500	Green River at Munfordville	1.86	1.30	.11	.08	.03
32	03310300	Nolin River at White Mills	.70	.58	.20	.16	.04
33	03310400	Bacon Creek near Priceville	.11	.08	.13	.09	.04
30	03314500	Barren River at Bowling Green	1.57	---	.09	---	---
40	03404500	Cumberland River at Cumberland Falls	3.16	2.75	.16	.14	.02
38	03406500	Rockcastle River at Billows	.41	.19	.07	.03	.04
37	03410500	South Fork Cumberland River near Stearns	.79	.29	.08	.03	.05
42	03610200	Clarks River at Almo	4.58	1.03	3.42	.77	2.65
		Aluminum, total, in µg/L as Al [01105]					
3	03209500	Levisa Fork at Pikeville	16.74	13.32	1.35	1.08	0.28
18	03280000	North Fork Kentucky River at Jackson	65.19	9.41	5.92	.85	5.07
19	03281000	Middle Fork Kentucky River at Tallega	18.71	4.89	3.48	.91	2.57
20	03281500	South Fork Kentucky River at Booneville	12.76	3.69	1.77	.51	1.25
16	03283500	Red River at Clay City	12.16	---	3.36	---	---
12	03284500	Kentucky River at Camp Nelson	181.39	12.32	4.10	.28	3.82
15	03285000	Dix River near Danville	5.51	2.11	1.73	.66	1.07
11	03287500	Kentucky River at Lock 4 at Frankfort	182.32	38.36	3.37	.71	2.66
14	03289300	South Elkhorn Creek near Midway	1.28	---	1.22	---	---
13	03291500	Eagle Creek at Glencoe	14.82	3.56	3.39	.81	2.58
22	03295400	Salt River at Glensboro	5.25	---	3.05	---	---

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
24	03300400	Beech Fork at Maud	13.41	6.28	3.08	1.44	1.64
31	03308500	Green River at Munfordville	30.19	1.26	1.80	.08	1.73
32	03310300	Nolin River at White Mills	11.81	---	3.31	---	---
33	03310400	Bacon Creek near Priceville	4.43	---	5.19	---	---
30	03314500	Barren River at Bowling Green	15.38	2.49	.83	.13	.70
40	03404500	Cumberland River at Cumberland Falls	86.57	3.80	4.38	.19	4.19
38	03406500	Rockcastle River at Billows	7.50	.69	1.24	.11	1.13
37	03410500	South Fork Cumberland River near Stearns	9.12	---	.96	---	---
42	03610200	Clarks River at Almo	6.14	---	4.58	---	---
		Arsenic, total, in µg/L as As [01002]					
3	03209500	Levisa Fork at Pikeville	.03	---	<.01	---	---
18	03280000	North Fork Kentucky River at Jackson	.03	---	<.01	---	---
19	03281000	Middle Fork Kentucky River at Tallega	.01	.01	<.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.02	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	.01	<.01	<.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.11	---	<.01	---	---
15	03285000	Dix River near Danville	.01	---	<.01	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.15	---	<.01	---	---
14	03289300	South Elkhorn Creek near Midway	<.01	---	<.01	---	---
13	03291500	Eagle Creek at Glencoe	.05	.01	.01	<.01	<.01
22	03295400	Salt River at Glensboro	.01	<.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	.01	---	<.01	---	---
31	03308500	Green River at Munfordville	.05	.03	<.01	<.01	<.01
32	03310300	Nolin River at White Mills	.01	.01	<.01	<.01	<.01
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	<.01	<.01
30	03314500	Barren River at Bowling Green	.05	.06	<.01	<.01	<.01
40	03404500	Cumberland River at Cumberland Falls	.09	---	<.01	---	---
38	03406500	Rockcastle River at Billows	.02	.01	<.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.03	.02	<.01	<.01	<.01
42	03610200	Clarks River at Almo	.01	<.01	.01	<.01	<.01

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Barium, total, in µg/L as Ba [01007]					
3	03209500	Levisa Fork at Pikeville	0.71	0.36	0.06	0.03	0.03
18	03280000	North Fork Kentucky River at Jackson	.73	.36	.07	.03	.03
19	03281000	Middle Fork Kentucky River at Tallega	.34	.19	.06	.04	.03
20	03281500	South Fork Kentucky River at Booneville	.41	.19	.06	.03	.03
16	03283500	Red River at Clay City	.26	.13	.07	.03	.04
12	03284500	Kentucky River at Camp Nelson	4.14	---	.09	---	---
15	03285000	Dix River near Danville	.16	---	.05	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	4.45	---	.08	---	---
14	03289300	South Elkhorn Creek near Midway	.05	.03	.05	.03	.02
13	03291500	Eagle Creek at Glencoe	.35	.24	.08	.05	.03
22	03295400	Salt River at Glensboro	.08	---	.05	---	---
24	03300400	Beech Fork at Maud	.22	.06	.05	.01	.04
31	03308500	Green River at Munfordville	1.01	.65	.06	.04	.02
32	03310300	Nolin River at White Mills	.27	.19	.08	.05	.02
33	03310400	Bacon Creek near Priceville	.03	.02	.04	.03	.01
30	03314500	Barren River at Bowling Green	1.13	---	.06	---	---
40	03404500	Cumberland River at Cumberland Falls	1.52	1.36	.08	.07	.01
38	03406500	Rockcastle River at Billows	.32	.12	.05	.02	.03
37	03410500	South Fork Cumberland River near Stearns	.62	.30	.06	.03	.03
42	03610200	Clarks River at Almo	.56	.09	.41	.07	.35
		Cadmium, total, in µg/L as Cd [01027]					
3	03209500	Levisa Fork at Pikeville	.03	.02	<.01	<.01	<.01
18	03280000	North Fork Kentucky River at Jackson	.01	---	<.01	---	---
19	03281000	Middle Fork Kentucky River at Tallega	<.01	<.01	<.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.01	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	<.01	<.01	<.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.11	.06	<.01	<.01	<.01
15	03285000	Dix River near Danville	<.01	<.01	<.01	<.01	<.01
11	03287500	Kentucky River at Lock 4 at Frankfort	.21	---	<.01	---	---
14	03289300	South Elkhorn Creek near Midway	<.01	---	<.01	---	---
13	03291500	Eagle Creek at Glencoe	.01	<.01	<.01	<.01	<.01
22	03295400	Salt River at Glensboro	<.01	<.01	<.01	<.01	<.01

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
24	03300400	Beech Fork at Maud	<0.01	<0.01	<0.01	<0.01	<0.01
31	03308500	Green River at Munfordville	.03	.01	<.01	<.01	<.01
32	03310300	Nolin River at White Mills	.01	<.01	<.01	<.01	<.01
33	03310400	Bacon Creek near Priceville	<.01	---	<.01	---	---
30	03314500	Barren River at Bowling Green	.06	.03	<.01	<.01	<.01
40	03404500	Cumberland River at Cumberland Falls	.04	.04	<.01	<.01	<.01
38	03406500	Rockcastle River at Billows	.01	.01	<.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.02	.01	<.01	<.01	<.01
42	03610200	Clarks River at Almo	.05	.01	.04	.01	.03
		Chromium, total, in µg/L as Cr [01034]					
3	03209500	Levisa Fork at Pikeville	.04	---	<.01	---	---
18	03280000	North Fork Kentucky River at Jackson	.07	.03	.01	<.01	<.01
19	03281000	Middle Fork Kentucky River at Tallega	.02	.01	<.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.03	---	<.01	---	---
16	03283500	Red River at Clay City	.02	.01	.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.22	---	.01	---	---
15	03285000	Dix River near Danville	.02	---	.01	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.34	---	.01	---	---
14	03289300	South Elkhorn Creek near Midway	<.01	<.01	<.01	<.01	<.01
13	03291500	Eagle Creek at Glencoe	.04	.04	.01	.01	<.01
22	03295400	Salt River at Glensboro	.01	---	.01	---	---
24	03300400	Beech Fork at Maud	.03	---	.01	---	---
31	03308500	Green River at Munfordville	.08	.05	<.01	<.01	<.01
32	03310300	Nolin River at White Mills	.02	.02	.01	<.01	<.01
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	<.01	<.01
30	03314500	Barren River at Bowling Green	.08	.08	<.01	<.01	<.01
40	03404500	Cumberland River at Cumberland Falls	.12	---	.01	---	---
38	03406500	Rockcastle River at Billows	.02	.01	<.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.04	.02	<.01	<.01	<.01
42	03610200	Clarks River at Almo	---	---	---	---	---

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Copper, total, in µg/L as Cu [01042]					
3	03209500	Levisa Fork at Pikeville	0.08	0.09	0.01	0.01	<0.01
18	03280000	North Fork Kentucky River at Jackson	.07	.04	.01	<.01	<.01
19	03281000	Middle Fork Kentucky River at Tallega	.03	.02	.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.03	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	.02	.01	.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.35	---	.01	---	---
15	03285000	Dix River near Danville	.01	---	<.01	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.63	---	.01	---	---
14	03289300	South Elkhorn Creek near Midway	.01	---	.01	---	---
13	03291500	Eagle Creek at Glencoe	.04	.04	.01	.01	<.01
22	03295400	Salt River at Glensboro	.01	<.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	.03	---	.01	---	---
31	03308500	Green River at Munfordville	.11	.06	.01	<.01	<.01
32	03310300	Nolin River at White Mills	.02	---	.01	---	---
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	<.01	<.01
30	03314500	Barren River at Bowling Green	.31	.19	.02	.01	.01
40	03404500	Cumberland River at Cumberland Falls	.22	---	.01	---	---
38	03406500	Rockcastle River at Billows	.05	.02	.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.09	.04	.01	<.01	<.01
42	03610200	Clarks River at Almo	.02	<.01	.02	<.01	.01
		Iron, total, in µg/L as Fe [01045]					
3	03209500	Levisa Fork at Pikeville	27.79	29.93	2.24	2.42	-.17
18	03280000	North Fork Kentucky River at Jackson	88.34	29.23	8.02	2.65	5.37
19	03281000	Middle Fork Kentucky River at Tallega	22.05	11.50	4.11	2.14	1.97
20	03281500	South Fork Kentucky River at Booneville	21.64	7.66	3.00	1.06	1.94
16	03283500	Red River at Clay City	16.97	6.81	4.69	1.88	2.81
12	03284500	Kentucky River at Camp Nelson	343.64	303.84	7.77	6.87	.90
15	03285000	Dix River near Danville	8.73	---	2.74	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	303.30	292.01	5.61	5.40	.21
14	03289300	South Elkhorn Creek near Midway	1.35	---	1.29	---	---
13	03291500	Eagle Creek at Glencoe	46.01	---	10.53	---	---
22	03295400	Salt River at Glensboro	7.67	---	4.46	---	---

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
24	03300400	Beech Fork at Maud	25.86	---	5.93	---	---
31	03308500	Green River at Munfordville	38.55	25.60	2.30	1.53	0.77
32	03310300	Nolin River at White Mills	8.53	---	2.39	---	---
33	03310400	Bacon Creek near Priceville	.97	---	1.14	---	---
30	03314500	Barren River at Bowling Green	20.09	---	1.09	---	---
40	03404500	Cumberland River at Cumberland Falls	166.71	---	8.43	---	---
38	03406500	Rockcastle River at Billows	10.14	4.14	1.68	.69	.99
37	03410500	South Fork Cumberland River near Stearns	17.70	7.93	1.86	.83	1.02
42	03610200	Clarks River at Almo	.02	---	.01	---	---
		Lead, total, in µg/L as Pb [01051]					
3	03209500	Levisa Fork at Pikeville	.32	---	.03	---	---
18	03280000	North Fork Kentucky River at Jackson	.08	.03	.01	<.01	<.01
19	03281000	Middle Fork Kentucky River at Tallega	.03	.01	.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.03	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	.01	.01	<.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	1.13	.71	.03	.02	.01
15	03285000	Dix River near Danville	.03	.03	.01	.01	<.01
11	03287500	Kentucky River at Lock 4 at Frankfort	1.72	---	.03	---	---
14	03289300	South Elkhorn Creek near Midway	.01	---	.01	---	---
13	03291500	Eagle Creek at Glencoe	.16	.02	.04	.01	.03
22	03295400	Salt River at Glensboro	.01	.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	.02	---	<.01	---	---
31	03308500	Green River at Munfordville	.61	.15	.04	.01	.03
32	03310300	Nolin River at White Mills	.08	.04	.02	.01	.01
33	03310400	Bacon Creek near Priceville	.02	.01	.02	.01	.01
30	03314500	Barren River at Bowling Green	.74	---	.04	---	---
40	03404500	Cumberland River at Cumberland Falls	.51	.54	.03	.03	<.01
38	03406500	Rockcastle River at Billows	.21	.09	.03	.02	.02
37	03410500	South Fork Cumberland River near Stearns	.26	.10	.03	.01	.02
42	03610200	Clarks River at Almo	.01	<.01	.01	<.01	.01

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
		Manganese, total, in µg/L as Mn [01055]					
3	03209500	Levisa Fork at Pikeville	2.18	0.25	0.18	0.02	0.16
18	03280000	North Fork Kentucky River at Jackson	3.48	1.55	.32	.14	.18
19	03281000	Middle Fork Kentucky River at Tallega	1.10	.57	.21	.11	.10
20	03281500	South Fork Kentucky River at Booneville	1.41	.58	.19	.08	.12
16	03283500	Red River at Clay City	.57	.26	.16	.07	.09
12	03284500	Kentucky River at Camp Nelson	10.56	---	.24	---	---
15	03285000	Dix River near Danville	.28	---	.09	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	11.35	---	.21	---	---
14	03289300	South Elkhorn Creek near Midway	.24	.16	.22	.15	.07
13	03291500	Eagle Creek at Glencoe	1.92	1.61	.44	.37	.07
22	03295400	Salt River at Glensboro	.17	---	.10	---	---
24	03300400	Beech Fork at Maud	.69	.23	.16	.05	.11
31	03308500	Green River at Munfordville	2.51	1.59	.15	.09	.06
32	03310300	Nolin River at White Mills	.59	.43	.17	.12	.04
33	03310400	Bacon Creek near Priceville	.08	.06	.10	.07	.03
30	03314500	Barren River at Bowling Green	4.20	3.11	.23	.17	.06
40	03404500	Cumberland River at Cumberland Falls	10.18	8.66	.51	.44	.08
38	03406500	Rockcastle River at Billows	1.35	.59	.22	.10	.13
37	03410500	South Fork Cumberland River near Stearns	2.10	1.08	.22	.11	.11
42	03610200	Clarks River at Almo	.19	.05	.14	.04	.10
		Mercury, total, in µg/L as Hg [71900]					
3	03209500	Levisa Fork at Pikeville	<.01	<.01	---	---	---
18	03280000	North Fork Kentucky River at Jackson	<.01	<.01	---	---	---
19	03281000	Middle Fork Kentucky River at Tallega	<.01	---	---	---	---
20	03281500	South Fork Kentucky River at Booneville	<.01	<.01	---	---	---
16	03283500	Red River at Clay City	<.01	---	---	---	---
12	03284500	Kentucky River at Camp Nelson	.01	---	---	---	---
15	03285000	Dix River near Danville	---	---	---	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.02	.07	---	<.01	---
14	03289300	South Elkhorn Creek near Midway	---	---	---	---	---
13	03291500	Eagle Creek at Glencoe	<.01	<.01	<.01	---	---
22	03295400	Salt River at Glensboro	---	---	---	---	---

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky—*Continued*
[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load		Yield		
			Total flow	Base flow	Total flow	Base flow	Overland runoff
			(Tons per year (x 100))		(Tons per year per square mile)		
24	03300400	Beech Fork at Maud	<0.01	---	---	---	---
31	03308500	Green River at Munfordville	.01	<0.01	<0.01	---	---
32	03310300	Nolin River at White Mills	<.01	<.01	<.01	---	---
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	---	---
30	03314500	Barren River at Bowling Green	.01	.01	<.01	---	---
40	03404500	Cumberland River at Cumberland Falls	.01	.01	<.01	<0.01	---
38	03406500	Rockcastle River at Billows	<.01	<.01	---	---	---
37	03410500	South Fork Cumberland River near Stearns	<.01	<.01	---	---	---
42	03610200	Clarks River at Almo	.22	.18	.16	.13	0.03
		Zinc, total, in µg/L as Zn [010921]					
3	03209500	Levisa Fork at Pikeville	.43	.42	.04	.03	<.01
18	03280000	North Fork Kentucky River at Jackson	1.12	.38	.10	.03	.07
19	03281000	Middle Fork Kentucky River at Tallega	.25	.17	.05	.03	.02
20	03281500	South Fork Kentucky River at Booneville	.26	---	.04	---	---
16	03283500	Red River at Clay City	.14	.04	.04	.01	.03
12	03284500	Kentucky River at Camp Nelson	4.70	---	.11	---	---
15	03285000	Dix River near Danville	.18	---	.06	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	4.08	---	.08	---	---
14	03289300	South Elkhorn Creek near Midway	.04	---	.04	---	---
13	03291500	Eagle Creek at Glencoe	.23	.24	.05	.05	<.01
22	03295400	Salt River at Glensboro	.05	.04	.03	.02	<.01
24	03300400	Beech Fork at Maud	.28	---	.06	---	---
31	03308500	Green River at Munfordville	.79	.87	.05	.05	<.01
32	03310300	Nolin River at White Mills	.12	.13	.03	.04	<.01
33	03310400	Bacon Creek near Priceville	.01	---	.02	---	---
30	03314500	Barren River at Bowling Green	.85	.57	.05	.03	.01
40	03404500	Cumberland River at Cumberland Falls	1.40	---	.07	---	---
38	03406500	Rockcastle River at Billows	.25	.10	.04	.02	.02
37	03410500	South Fork Cumberland River near Stearns	.38	.15	.04	.02	.02
42	03610200	Clarks River at Almo	---	---	---	---	---

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Dissolved oxygen, in mg/L [00300]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	163	15.500	4.500	12.600	10.200	8.800	7.200	5.840
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	14.200	5.600	13.140	11.300	9.100	7.600	6.615
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	119	14.400	5.400	12.800	11.200	8.800	7.200	6.200
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	14.400	4.800	12.990	11.000	9.000	7.050	6.010
16	03283500	Red River at Clay City	10/85 - 9/94	104	14.400	4.800	13.250	11.375	9.100	7.125	6.100
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	167	19.000	5.500	13.640	11.900	9.800	8.100	6.840
15	03285000	Dix River near Danville	10/85 - 9/94	105	16.000	5.700	13.940	11.300	9.800	7.600	6.200
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	15.700	4.200	13.105	11.600	10.000	7.975	6.500
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	16.200	2.400	11.900	10.300	8.100	6.000	3.100
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	18.000	3.400	14.580	12.200	9.300	7.700	6.310
22	03295400	Salt River at Glensboro	2/89 - 9/94	75	16.100	4.200	13.060	11.100	9.200	7.100	5.580
24	03300400	Beech Fork at Maud	4/84 - 9/94	120	16.500	3.100	13.100	10.700	8.400	6.325	4.900
31	03308500	Green River at Munfordville	8/79 - 9/94	179	14.000	5.500	12.800	11.000	9.400	8.200	6.800
32	03310300	Nolin River at White Mills	8/79 - 9/94	178	16.000	5.800	12.200	10.800	9.000	7.875	6.495
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	164	13.600	6.100	12.875	11.175	9.600	8.000	7.200
30	03314500	Barren River at Bowling Green	6/79 - 9/94	169	14.200	3.400	11.850	10.000	8.900	8.150	6.500
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	180	15.800	3.500	12.800	10.600	9.000	8.000	6.205
38	03406500	Rockcastle River at Billows	3/79 - 9/94	175	14.900	4.600	12.620	10.100	8.800	7.500	6.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	179	15.200	4.800	13.200	10.500	9.000	7.700	6.100
			Biochemical oxygen demand, 5-day at 20 degrees Celsius, in mg/L [00310]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	80	3.800	.100	2.295	1.200	.700	.425	.100
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	29	2.000	.100	1.950	1.150	.800	.600	.150
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	29	2.300	--	*1.900	*.950	*.700	*.400	*.118
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	29	3.200	.100	2.500	1.100	.800	.400	.100
16	03283500	Red River at Clay City	10/85 - 9/94	13	1.100	.400	1.100	1.000	.700	.550	.400
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	78	3.700	.000	2.610	1.500	1.050	.575	.100
15	03285000	Dix River near Danville	10/85 - 9/94	13	2.600	.500	2.600	1.400	.900	.700	.500
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	84	5.900	.000	3.375	1.575	1.050	.600	.100
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	68	8.600	.100	7.455	2.375	1.550	1.025	.490
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	91	3.200	.000	2.720	1.800	1.200	.700	.200

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	16	6.600	0.500	6.600	4.475	2.050	0.925	0.500
24	03300400	Beech Fork at Maud	4/84 - 9/94	29	3.500	.100	3.250	1.500	1.200	.400	.100
31	03308500	Green River at Munfordville	8/79 - 9/94	85	2.800	--	*2.470	*1.300	*.700	*.400	*.125
32	03310300	Nolin River at White Mills	8/79 - 9/94	82	3.400	.100	2.185	1.300	.800	.400	.200
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	71	2.900	--	*1.820	*1.000	*.700	*.400	*.100
30	03314500	Barren River at Bowling Green	6/79 - 9/94	83	6.000	.100	4.240	1.800	1.100	.700	.220
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	83	6.200	.100	2.100	1.100	.700	.400	.100
38	03406500	Rockcastle River at Billows	3/79 - 9/94	86	3.100	.100	2.200	1.100	.750	.400	.135
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	84	2.800	--	*2.175	*1.000	*.600	*.300	*.094
42	03610200	Clarks River at Almo	4/84 - 9/94	121	1.100	--	*.490	*.100	*.058	*.027	*.009
		Alkalinity, total as $CACO_3$, in mg/L [00410]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	182	136.000	8.000	104.850	84.250	68.000	51.000	35.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	165.000	35.000	128.850	100.250	77.000	56.000	43.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	83.000	15.000	68.850	54.250	38.500	28.000	17.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	91.000	13.000	69.600	50.000	37.000	23.000	16.000
16	03283500	Red River at Clay City	10/85 - 9/94	103	88.000	8.000	82.800	70.000	56.000	45.000	27.600
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	170	124.000	7.000	96.000	80.000	69.000	54.000	41.100
15	03285000	Dix River near Danville	10/85 - 9/94	106	310.000	23.000	171.650	138.000	125.000	103.000	72.800
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	172.000	8.000	111.050	91.000	78.000	66.000	50.800
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	124	373.000	35.000	191.750	166.000	150.500	130.250	95.500
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	387.000	27.000	213.400	168.000	142.000	121.000	80.100
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	225.000	50.000	217.650	187.500	170.500	146.500	83.700
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	363.000	43.000	216.200	184.000	158.000	132.000	84.600
31	03308500	Green River at Munfordville	8/79 - 9/94	175	179.000	42.000	130.400	114.000	94.000	76.000	54.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	171	315.000	46.000	189.400	172.000	154.000	130.000	83.200
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	159	800.000	70.000	190.000	180.000	170.000	158.000	107.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	173	224.000	47.000	140.300	121.500	103.000	88.000	70.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	177	150.000	14.000	109.000	76.000	56.000	38.000	25.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	169	123.000	27.000	90.500	71.500	55.000	42.000	32.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	177	83.000	7.000	37.000	25.000	18.000	13.000	9.000
42	03610200	Clarks River at Almo	4/84 - 9/94	120	41.000	2.000	36.950	21.000	12.000	8.000	4.050

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Residue, total nonfilterable, in mg/L [00530]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	185	705.000	1.000	130.800	38.000	19.000	8.000	3.300
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	883.000	1.000	238.600	57.500	22.000	10.000	2.100
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	320.000	.000	102.500	32.500	12.000	6.000	1.100
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	344.000	.000	62.100	18.000	8.000	4.000	1.000
16	03283500	Red River at Clay City	10/85 - 9/94	101	276.000	1.000	145.000	35.500	12.000	7.000	2.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	478.000	1.000	230.400	40.750	14.500	6.000	2.000
15	03285000	Dix River near Danville	10/85 - 9/94	105	681.000	.000	74.000	15.000	8.000	4.000	1.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	179	410.000	1.000	207.000	49.000	16.000	8.000	3.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	286.000	.000	43.400	14.500	9.000	6.000	1.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	184	1180.000	1.000	296.500	40.500	18.000	9.000	2.000
22	03295400	Salt River at Glensboro	2/89 - 9/94	85	525.000	1.000	243.100	39.500	14.000	7.000	1.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	870.000	2.000	192.800	30.000	17.000	9.000	3.000
31	03308500	Green River at Munfordville	8/79 - 9/94	175	380.000	1.000	134.600	38.000	22.000	12.000	3.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	171	334.000	1.000	141.000	33.000	18.000	10.000	3.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	158	294.000	1.000	100.200	33.000	19.000	8.000	2.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	175	907.000	1.000	99.800	31.000	20.000	13.000	4.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	173	694.000	1.000	267.200	54.000	17.000	6.000	1.000
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	291.000	--	*73.250	*12.000	*5.000	*2.000	*.541
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	173	317.000	--	*108.400	*12.000	*5.000	*2.000	*.409
42	03610200	Clarks River at Almo	4/84 - 9/94	120	2.000	.000	2.000	1.000	1.000	.000	.000
			Ammonia, total in mg/L as N [00610]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	1.240	--	*.172	*.060	*.028	*.013	*.004
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	.164	--	*.093	*.046	*.030	*.019	*.010
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	123	.299	--	*.059	*.013	*.004	*.002	*.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	.091	--	*.060	*.035	*.025	*.018	*.011
16	03283500	Red River at Clay City	10/85 - 9/94	104	.170	--	*.097	*.038	*.021	*.012	*.005
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	17.000	--	*.257	*.080	*.027	*.009	*.002
15	03285000	Dix River near Danville	10/85 - 9/94	106	.644	--	*.091	*.031	*.013	*.005	*.001
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	181	1.760	--	*.230	*.084	*.037	*.017	*.005
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	126	15.800	--	*9.933	*2.460	*.105	*.030	*.002

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	182	0.670	--	*0.219	*0.079	*0.034	*0.015	*0.005
22	03295400	Salt River at Glensboro	2/89 - 9/94	85	.422	--	*.158	*.054	*.028	*.015	*.006
24	03300400	Beech Fork at Maud	4/84 - 9/94	125	.282	--	*.088	*.042	*.023	*.013	*.006
31	03308500	Green River at Munfordville	8/79 - 9/94	174	.300	--	*.147	*.051	*.028	*.014	*.005
32	03310300	Nolin River at White Mills	8/79 - 9/94	171	.440	--	*.204	*.074	*.044	*.024	*.010
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	156	.309	--	*.180	*.056	*.035	*.019	*.008
30	03314500	Barren River at Bowling Green	6/79 - 9/94	168	.461	--	*.243	*.093	*.039	*.018	*.006
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	.290	--	*.160	*.059	*.035	*.019	*.008
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	1.520	--	*.197	*.052	*.026	*.012	*.003
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	172	.240	--	*.124	*.046	*.023	*.012	*.004
42	03610200	Clarks River at Almo	4/84 - 9/94	119	14.800	1.300	8.000	4.600	3.800	3.200	2.300
		Ammonia and organic, total in mg/L as N [00625]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	179	1.500	--	*.630	*.390	*.230	*.130	*.059
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	123	1.400	--	*.592	*.350	*.230	*.150	*.063
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	123	.890	--	*.394	*.240	*.160	*.110	*.058
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	.880	--	*.443	*.262	*.150	*.070	*.030
16	03283500	Red River at Clay City	10/85 - 9/94	104	.940	--	*.650	*.330	*.240	*.120	*.058
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	2.200	.030	1.200	.557	.370	.240	.063
15	03285000	Dix River near Danville	10/85 - 9/94	104	2.500	.030	.837	.547	.360	.220	.050
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	180	1.800	.050	1.000	.588	.415	.272	.150
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	124	28.000	--	*12.000	*2.500	*.850	*.373	*.070
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	182	4.500	.050	1.485	.763	.610	.450	.213
22	03295400	Salt River at Glensboro	2/89 - 9/94	84	2.500	.050	1.925	.870	.570	.402	.127
24	03300400	Beech Fork at Maud	4/84 - 9/94	124	9.400	.050	1.275	.755	.535	.380	.147
31	03308500	Green River at Munfordville	8/79 - 9/94	172	1.500	.050	.690	.428	.310	.220	.087
32	03310300	Nolin River at White Mills	8/79 - 9/94	169	1.500	--	*1.050	*.520	*.340	*.190	*.062
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	154	1.300	--	*.970	*.382	*.240	*.108	*.043
30	03314500	Barren River at Bowling Green	6/79 - 9/94	163	1.500	.050	1.080	.530	.370	.230	.070
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	2.200	--	*.870	*.420	*.260	*.160	*.070
38	03406500	Rockcastle River at Billows	3/79 - 9/94	175	1.500	--	*.770	*.330	*.210	*.120	*.053
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	173	1.600	--	*.650	*.300	*.180	*.080	*.038
42	03610200	Clarks River at Almo	4/84 - 9/94	118	31.000	.500	16.050	13.250	12.000	10.000	7.990

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Nitrite plus nitrate, total in mg/L as N [00630]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	182	1.120	0.025	0.629	0.449	0.329	0.224	0.126
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	1.020	.035	.664	.558	.440	.308	.097
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	.490	.015	.388	.278	.202	.139	.053
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	.650	.005	.523	.393	.251	.136	.035
16	03283500	Red River at Clay City	10/85 - 9/94	103	.835	.005	.627	.367	.268	.179	.070
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	171	3.000	.055	1.236	.660	.500	.369	.189
15	03285000	Dix River near Danville	10/85 - 9/94	104	3.200	.010	2.508	1.585	.979	.615	.038
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	3.100	.005	1.390	.882	.661	.404	.093
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	13.300	.005	10.880	6.255	5.010	3.775	1.205
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	1.660	.005	1.340	.701	.438	.040	.010
22	03295400	Salt River at Glensboro	2/89 - 9/94	82	4.820	.011	3.819	1.963	1.270	.686	.073
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	2.300	.005	1.942	1.070	.521	.125	.022
31	03308500	Green River at Munfordville	8/79 - 9/94	171	1.900	.120	1.344	1.010	.730	.550	.303
32	03310300	Nolin River at White Mills	8/79 - 9/94	168	14.700	.267	3.822	3.150	2.650	2.105	1.239
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	155	2.150	.040	1.952	1.450	1.080	.700	.318
30	03314500	Barren River at Bowling Green	6/79 - 9/94	165	5.440	.158	1.928	1.465	1.080	.590	.253
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	173	1.300	.005	.569	.410	.325	.201	.029
38	03406500	Rockcastle River at Billows	3/79 - 9/94	171	.840	.009	.681	.490	.340	.200	.056
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	171	.694	.005	.307	.210	.135	.066	.020
42	03610200	Clarks River at Almo	4/84 - 9/94	32	6.700	.100	6.440	2.875	1.955	1.200	.165
			Phosphorus, total in mg/L as P [00665]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	.660	--	*.105	*.040	*.021	*.010	*.004
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	.236	--	*.123	*.039	*.022	*.013	*.004
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	124	.222	--	*.069	*.027	*.015	*.008	*.003
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	124	.220	--	*.060	*.019	*.012	*.005	*.002
16	03283500	Red River at Clay City	10/85 - 9/94	105	.164	--	*.087	*.049	*.027	*.016	*.007
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	.840	.005	.311	.113	.065	.040	.019
15	03285000	Dix River near Danville	10/85 - 9/94	105	.960	.005	.249	.115	.067	.043	.013
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	181	1.030	.008	.261	.128	.083	.057	.030
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	126	4.800	.021	3.553	1.878	1.165	.773	.455

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	183	1.780	0.005	0.533	0.159	0.089	0.053	0.021
22	03295400	Salt River at Glensboro	2/89 - 9/94	85	1.780	.061	1.230	.474	.351	.238	.152
24	03300400	Beech Fork at Maud	4/84 - 9/94	124	1.620	.007	.682	.235	.160	.109	.062
31	03308500	Green River at Munfordville	8/79 - 9/94	171	1.330	.004	.154	.069	.048	.033	.013
32	03310300	Nolin River at White Mills	8/79 - 9/94	168	.566	.005	.379	.181	.110	.069	.024
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	153	6.750	--	*.171	*.045	*.028	*.015	*.004
30	03314500	Barren River at Bowling Green	6/79 - 9/94	166	.670	.005	.105	.050	.034	.024	.009
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	174	.278	--	*.167	*.059	*.029	*.014	*.005
38	03406500	Rockcastle River at Billows	3/79 - 9/94	173	.260	--	*.084	*.031	*.015	*.008	*.002
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	173	.235	--	*.078	*.031	*.013	*.005	*.002
42	03610200	Clarks River at Almo	4/84 - 9/94	119	6.090	1.210	3.430	2.990	2.690	2.440	1.880
		Carbon organic, total in mg/L as C [00680]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	135	26.000	.300	4.360	2.300	1.900	1.600	1.200
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	120	34.000	.300	5.960	3.000	2.250	1.600	1.105
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	21.000	.600	4.590	2.500	2.000	1.450	1.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	18.000	.400	4.530	2.600	1.600	1.100	.710
16	03283500	Red River at Clay City	10/85 - 9/94	101	25.000	.760	9.460	3.850	2.400	1.550	1.110
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	129	25.000	.500	6.650	3.500	2.800	1.950	1.300
15	03285000	Dix River near Danville	10/85 - 9/94	105	33.000	1.500	8.200	5.250	3.800	2.350	1.600
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	129	8.700	1.300	5.700	3.750	3.000	2.100	1.500
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	118	42.000	.600	18.100	7.025	4.700	2.800	1.800
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	128	27.000	.100	13.100	8.075	6.350	4.600	3.145
22	03295400	Salt River at Glensboro	2/89 - 9/94	77	17.000	1.500	12.000	6.900	5.300	3.600	2.080
24	03300400	Beech Fork at Maud	4/84 - 9/94	121	41.000	2.100	11.900	6.450	5.500	3.800	2.400
31	03308500	Green River at Munfordville	8/79 - 9/94	129	20.000	1.100	6.050	3.300	2.500	2.100	1.600
32	03310300	Nolin River at White Mills	8/79 - 9/94	128	15.000	.800	6.390	3.400	2.400	1.800	1.245
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	126	9.400	.100	5.495	2.500	1.800	1.300	.935
30	03314500	Barren River at Bowling Green	6/79 - 9/94	130	11.000	1.000	4.900	3.125	2.400	1.900	1.400
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	124	11.000	.100	5.175	3.100	2.350	1.525	1.100
38	03406500	Rockcastle River at Billows	3/79 - 9/94	123	9.800	.010	5.920	3.000	2.000	1.400	.900
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	122	6.800	.600	4.185	2.525	1.800	1.375	.800
42	03610200	Clarks River at Almo	4/84 - 9/94	119	13000.000	6.000	2400.000	820.000	450.000	300.000	140.000

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
		Calcium, recoverable, total in mg/L as Ca [00916]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	133	79.000	12.000	57.300	47.000	40.000	34.500	24.700
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	120	120.000	18.000	84.950	65.000	49.500	37.250	28.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	119	45.000	5.800	33.000	27.000	22.000	16.000	11.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	45.000	6.500	35.000	25.000	19.000	15.000	10.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	50.000	2.800	34.000	28.000	23.500	19.000	12.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	128	63.000	17.000	56.000	43.000	34.000	28.000	21.450
15	03285000	Dix River near Danville	10/85 - 9/94	105	98.000	17.000	53.000	46.000	41.000	36.000	27.300
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	128	65.000	17.000	54.550	43.750	37.000	32.000	22.900
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	100.000	17.000	91.000	80.000	73.000	65.000	50.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	126	95.000	17.000	81.000	69.000	56.000	46.000	33.000
22	03295400	Salt River at Glensboro	2/89 - 9/94	62	120.000	22.000	97.550	79.250	70.500	62.500	37.600
24	03300400	Beech Fork at Maud	4/84 - 9/94	118	130.000	16.000	83.050	70.000	57.000	47.000	32.000
31	03308500	Green River at Munfordville	8/79 - 9/94	129	64.000	13.000	50.500	44.000	37.000	29.000	23.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	126	94.000	20.000	77.000	69.000	61.500	51.000	33.050
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	123	94.000	27.000	75.000	68.000	65.000	52.000	36.200
30	03314500	Barren River at Bowling Green	6/79 - 9/94	127	61.000	10.000	55.000	47.000	41.000	34.000	27.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	125	70.000	6.700	42.000	32.000	27.000	21.000	14.300
38	03406500	Rockcastle River at Billows	3/79 - 9/94	124	44.000	9.400	39.000	31.000	24.000	20.000	13.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	124	43.000	4.800	24.000	16.000	12.000	9.225	6.000
42	03610200	Clarks River at Almo	4/84 - 9/94	120	400.000	1.000	167.500	79.750	61.500	42.000	16.000
		Magnesium, total in mg/L as Mg [00927]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	134	29.000	4.300	25.250	20.000	18.000	15.000	11.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	67.000	11.000	46.000	33.500	25.000	20.000	15.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	51.000	4.300	14.000	11.000	9.800	7.650	5.530
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	20.000	3.800	16.000	12.000	8.700	7.200	5.200
16	03283500	Red River at Clay City	10/85 - 9/94	104	7.100	2.500	5.800	5.000	4.250	3.425	2.925
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	129	25.000	5.900	19.000	15.000	11.000	9.200	7.750
15	03285000	Dix River near Danville	10/85 - 9/94	106	17.000	6.000	15.000	13.000	11.000	9.600	7.800
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	129	20.000	4.500	16.000	12.000	9.900	8.550	7.250
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	16.000	3.700	13.000	9.700	7.500	5.800	4.210

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	128	23.000	3.600	16.550	11.000	8.950	7.300	4.980
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	12.000	4.200	11.000	8.525	7.300	6.175	4.705
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	24.000	2.800	15.850	12.000	9.100	7.600	5.160
31	03308500	Green River at Munfordville	8/79 - 9/94	130	55.000	2.700	8.590	7.325	6.300	5.275	4.100
32	03310300	Nolin River at White Mills	8/79 - 9/94	129	10.000	2.500	9.450	7.900	6.600	5.450	3.850
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	128	7.700	2.000	5.755	5.100	4.500	3.625	2.800
30	03314500	Barren River at Bowling Green	6/79 - 9/94	128	13.000	2.800	9.800	8.500	7.500	6.300	4.800
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	126	24.000	5.300	21.000	17.000	13.500	10.000	8.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	125	14.000	2.800	10.000	7.900	6.200	5.050	3.630
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	125	12.000	1.900	9.240	6.200	4.900	3.850	2.700
42	03610200	Clarks River at Almo	4/84 - 9/94	120	77.000	--	*1.000	*.075	*.012	*.002	*.000
		Sodium, recoverable, total in mg/L as Na [00929]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	135	56.000	9.000	50.000	40.000	29.000	20.000	12.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	46.000	4.600	33.850	21.000	14.000	9.650	5.960
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	69.000	2.200	16.000	9.925	6.450	4.775	2.530
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	69.000	1.600	37.000	15.000	8.450	5.875	3.115
16	03283500	Red River at Clay City	10/85 - 9/94	105	35.000	1.600	15.000	7.850	5.000	3.450	2.330
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	130	76.000	1.800	40.250	13.250	9.350	5.500	3.355
15	03285000	Dix River near Danville	10/85 - 9/94	107	20.000	.600	14.400	5.300	4.100	3.100	2.340
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	130	45.000	2.200	25.450	12.000	7.650	4.800	3.355
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	77.000	4.000	67.550	42.250	26.000	16.000	7.690
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	129	15.000	1.200	8.600	5.950	4.800	3.400	2.250
22	03295400	Salt River at Glensboro	2/89 - 9/94	67	42.000	1.300	31.400	14.000	7.000	4.600	2.840
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	7.300	1.300	6.080	4.400	3.200	2.700	1.700
31	03308500	Green River at Munfordville	8/79 - 9/94	131	55.000	1.400	25.000	13.000	6.200	3.600	2.360
32	03310300	Nolin River at White Mills	8/79 - 9/94	130	72.000	1.300	45.450	20.250	10.500	5.825	3.085
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	128	14.000	.600	4.375	2.900	2.200	1.800	1.100
30	03314500	Barren River at Bowling Green	6/79 - 9/94	129	12.000	1.000	7.900	4.800	3.500	2.800	2.050
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	127	63.000	3.800	47.600	24.000	16.000	11.000	5.920
38	03406500	Rockcastle River at Billows	3/79 - 9/94	126	27.000	1.100	8.825	5.200	3.500	2.600	1.535
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	126	19.000	.300	16.000	7.800	4.400	2.800	1.400
42	03610200	Clarks River at Almo	4/84 - 9/94	118	14.000	--	*8.000	*3.000	*2.000	*.835	*.351

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Potassium, total, in mg/L as K [00937]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	134	4.200	1.500	3.900	3.300	2.850	2.400	1.900
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	7.900	1.800	5.980	4.800	3.400	2.600	2.100
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	6.900	.700	3.190	2.500	2.000	1.600	1.300
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	5.300	1.000	4.400	2.700	2.000	1.500	1.100
16	03283500	Red River at Clay City	10/85 - 9/94	102	3.800	.900	3.185	2.425	1.850	1.300	1.100
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	129	5.100	1.300	4.500	3.400	2.600	1.950	1.500
15	03285000	Dix River near Danville	10/85 - 9/94	106	8.600	1.000	6.465	4.600	2.500	1.700	1.335
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	129	5.000	1.300	4.050	3.000	2.500	2.000	1.500
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	12.000	1.400	9.980	6.850	4.500	2.850	2.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	128	9.100	1.400	5.255	3.800	3.000	2.225	1.645
22	03295400	Salt River at Glensboro	2/89 - 9/94	67	7.600	1.400	6.240	5.100	2.900	2.200	1.500
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	8.300	1.300	5.970	4.325	3.050	2.300	1.615
31	03308500	Green River at Munfordville	8/79 - 9/94	130	5.900	1.000	3.300	2.300	1.900	1.500	1.200
32	03310300	Nolin River at White Mills	8/79 - 9/94	129	7.400	1.100	4.000	2.900	2.100	1.500	1.200
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	124	6.200	.700	3.700	1.975	1.350	1.025	.800
30	03314500	Barren River at Bowling Green	6/79 - 9/94	127	10.000	1.000	4.120	2.500	2.000	1.600	1.200
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	125	5.100	1.400	4.400	3.200	2.400	1.900	1.500
38	03406500	Rockcastle River at Billows	3/79 - 9/94	124	4.100	.900	3.400	2.600	1.750	1.400	1.100
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	122	3.300	.700	2.500	1.900	1.350	1.100	.900
			Chloride, dissolved, in mg/L as Cl [00940]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	185	40.000	1.000	29.700	18.000	11.000	7.500	4.130
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	123	100.000	.100	17.000	10.000	6.700	4.500	2.320
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	123	35.000	.100	9.900	6.700	4.900	3.100	1.320
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	120.000	.100	85.600	16.000	7.800	4.400	2.020
16	03283500	Red River at Clay City	10/85 - 9/94	104	76.000	.100	34.500	15.750	7.400	4.800	2.450
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	173	170.000	.100	66.300	21.500	11.000	6.200	2.670
15	03285000	Dix River near Danville	10/85 - 9/94	108	53.000	1.000	23.550	8.600	6.100	4.550	2.300
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	181	71.000	.200	38.900	17.000	9.700	6.450	3.100
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	124	490.000	4.000	94.250	51.750	34.000	23.500	6.700
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	182	63.000	.100	14.000	8.500	6.400	4.675	2.230
22	03295400	Salt River at Glensboro	2/89 - 9/94	68	45.000	.100	34.400	13.750	9.450	6.600	4.300

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
24	03300400	Beech Fork at Maud	4/84 - 9/94	125	39.000	--	*8.970	*6.550	*5.000	*3.800	*1.583
31	03308500	Green River at Munfordville	8/79 - 9/94	180	75.000	0.100	42.900	21.000	12.000	7.000	3.710
32	03310300	Nolin River at White Mills	8/79 - 9/94	174	98.000	1.000	66.250	27.000	13.000	8.400	4.450
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	160	18.000	.100	10.950	6.250	4.750	3.725	1.705
30	03314500	Barren River at Bowling Green	6/79 - 9/94	174	98.000	.100	14.000	9.150	7.300	5.900	3.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	176	52.000	.100	15.000	6.675	4.800	3.300	.778
38	03406500	Rockcastle River at Billows	3/79 - 9/94	172	21.000	.100	9.805	5.200	3.800	2.925	.662
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	176	150.000	.050	13.000	6.075	3.700	2.500	.785
42	03610200	Clarks River at Almo	4/84 - 9/94	121	5.100	.150	3.790	2.850	2.200	1.600	.501
		Sulfate, dissolved, in mg/L as SO_4 [00946]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	184	450.000	13.000	197.500	150.000	125.000	100.000	56.750
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	470.000	46.000	308.500	200.000	150.000	120.000	85.600
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	280.000	22.000	89.900	70.000	56.000	48.000	36.100
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	160.000	20.000	110.000	74.000	55.000	44.000	30.400
16	03283500	Red River at Clay City	10/85 - 9/94	101	120.000	5.000	37.600	18.000	15.000	13.000	9.540
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	150.000	11.000	110.000	77.000	55.500	44.000	31.300
15	03285000	Dix River near Danville	10/85 - 9/94	104	70.000	9.700	37.750	27.000	23.000	19.000	15.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	180	130.000	20.000	87.950	59.750	46.000	37.000	28.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	123	130.000	6.600	98.400	66.000	49.000	36.000	24.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	180.000	17.000	86.900	55.500	40.000	30.500	21.100
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	82.000	9.100	68.600	51.000	39.000	28.000	15.750
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	290.000	6.700	61.000	40.000	29.000	20.000	14.200
31	03308500	Green River at Munfordville	8/79 - 9/94	179	110.000	5.000	27.000	18.000	15.000	13.000	9.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	175	71.000	2.200	25.000	16.000	11.000	8.100	4.800
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	161	46.000	--	*15.900	*7.500	*5.400	*3.521	*1.501
30	03314500	Barren River at Bowling Green	6/79 - 9/94	175	53.000	5.000	29.200	21.000	17.000	13.000	8.180
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	170.000	10.000	140.000	100.000	77.000	59.000	35.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	173	130.000	7.600	63.000	38.000	29.000	23.000	16.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	174	100.000	6.700	84.500	48.250	36.000	29.000	17.000
42	03610200	Clarks River at Almo	4/84 - 9/94	121	2.200	.120	1.300	.805	.620	.470	.252

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Arsenic, total, in µg/L as As [01002]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	175	55.000	--	*6.000	*2.000	*1.000	*0.388	*0.130
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	120	13.000	--	*4.950	*2.000	*.780	*.372	*.130
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	120	13.000	--	*5.950	*1.000	*.366	*.128	*.030
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	21.000	--	*5.000	*1.383	*.519	*.189	*.046
16	03283500	Red River at Clay City	10/85 - 9/94	104	13.000	--	*6.000	*2.000	*.962	*.401	*.140
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	162	12.000	--	*4.850	*2.000	*1.000	*.614	*.281
15	03285000	Dix River near Danville	10/85 - 9/94	104	18.000	--	*8.000	*2.000	*.700	*.280	*.079
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	169	19.000	--	*6.500	*2.000	*1.000	*.634	*.254
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	118	11.000	--	*6.050	*2.000	*.996	*.425	*.147
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	173	65.000	--	*6.000	*2.000	*1.000	*.526	*.187
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	10.000	--	*6.800	*2.000	*.925	*.448	*.154
24	03300400	Beech Fork at Maud	4/84 - 9/94	119	11.000	--	*8.000	*2.000	*.688	*.279	*.071
31	03308500	Green River at Munfordville	8/79 - 9/94	164	29.000	--	*6.000	*2.000	*.999	*.372	*.127
32	03310300	Nolin River at White Mills	8/79 - 9/94	161	13.000	--	*6.000	*1.406	*.875	*.365	*.128
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	11.000	--	*4.600	*1.512	*.838	*.374	*.135
30	03314500	Barren River at Bowling Green	6/79 - 9/94	158	14.000	--	*6.050	*2.000	*1.000	*.542	*.208
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	170	43.000	--	*8.900	*2.000	*1.000	*.375	*.106
38	03406500	Rockcastle River at Billows	3/79 - 9/94	166	14.000	--	*7.000	*2.000	*.982	*.349	*.108
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	168	39.000	--	*7.550	*1.183	*1.000	*.295	*.085
42	03610200	Clarks River at Almo	4/84 - 9/94	120	280.000	--	*14.900	*3.750	*2.000	*.518	*.128
			Barium, total, in µg/L as Ba [01007]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	143	200.000	8.000	100.000	70.000	50.000	40.000	12.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	500.000	1.000	90.000	60.000	40.000	30.000	11.500
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	200.000	1.000	80.000	50.000	40.000	30.000	20.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	300.000	2.000	90.000	50.000	40.000	20.000	10.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	400.000	10.000	175.000	70.000	40.000	30.000	20.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	140	300.000	1.000	100.000	70.000	50.000	30.000	10.500
15	03285000	Dix River near Danville	10/85 - 9/94	106	300.000	1.000	60.000	40.000	30.000	20.000	8.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	141	500.000	1.000	100.000	60.000	40.000	30.000	20.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	300.000	1.000	78.500	30.000	20.000	20.000	6.150
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	141	400.000	1.000	80.000	30.000	20.000	20.000	4.000

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	400.000	3.000	76.500	40.000	30.000	20.000	10.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	400.000	1.000	70.000	30.000	20.000	20.000	3.600
31	03308500	Green River at Munfordville	8/79 - 9/94	142	100.000	4.000	60.000	42.500	30.000	20.000	10.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	141	200.000	9.000	100.000	80.000	50.000	40.000	20.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	135	200.000	4.000	90.000	50.000	40.000	30.000	10.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	138	200.000	1.000	90.500	42.500	30.000	30.000	9.950
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	136	500.000	1.000	100.000	50.000	40.000	30.000	8.850
38	03406500	Rockcastle River at Billows	3/79 - 9/94	135	100.000	1.000	60.000	30.000	20.000	20.000	3.800
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	135	100.000	4.000	80.000	40.000	30.000	20.000	8.000
42	03610200	Clarks River at Almo	4/84 - 9/94	119	900.000	.000	400.000	300.000	200.000	200.000	100.000
		Cadmium, total, in µg/L as Cd [01027]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	162	25.000	--	*4.700	*.365	*.081	*.018	*.002
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	--	--	--	--	--	--	--
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	161	32.000	--	*6.900	*.436	*.078	*.014	*.001
15	03285000	Dix River near Danville	10/85 - 9/94	105	--	--	--	--	--	--	--
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	163	32.000	--	*8.200	*.377	*.062	*.010	*.001
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	162	52.000	--	*5.700	*.387	*.073	*.013	*.001
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	--	--	--	--	--	--	--
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	--	--	--	--	--	--	--
31	03308500	Green River at Munfordville	8/79 - 9/94	164	18.000	--	*2.750	*.378	*.109	*.030	*.005
32	03310300	Nolin River at White Mills	8/79 - 9/94	163	15.000	--	*5.000	*.555	*.151	*.041	*.006
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	149	22.000	--	*4.000	*.213	*.037	*.006	*.001
30	03314500	Barren River at Bowling Green	6/79 - 9/94	161	71.000	--	*5.000	*.545	*.128	*.029	*.004
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	155	20.000	--	*4.000	*.436	*.121	*.033	*.005
38	03406500	Rockcastle River at Billows	3/79 - 9/94	156	17.000	--	*4.150	*.460	*.118	*.030	*.004
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	157	20.000	--	*6.000	*.318	*.061	*.012	*.001
42	03610200	Clarks River at Almo	4/84 - 9/94	118	330.000	--	*57.400	*21.250	*15.000	*8.000	*2.095

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Chromium, total, in µg/L as Cr [01034]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	26.000	--	*6.000	*3.000	*1.135	*0.716	*0.284
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	13.000	--	*7.900	*3.000	*2.000	*.880	*.371
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	16.000	--	*5.900	*3.000	*1.000	*.773	*.333
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	120	12.000	--	*5.000	*3.000	*1.000	*.640	*.264
16	03283500	Red River at Clay City	10/85 - 9/94	104	9.000	--	*5.750	*3.000	*1.571	*.822	*.351
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	169	12.000	--	*8.000	*3.500	*2.000	*1.000	*.380
15	03285000	Dix River near Danville	10/85 - 9/94	105	63.000	--	*8.000	*3.000	*1.000	*.556	*.170
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	177	20.000	--	*8.000	*4.000	*2.000	*1.000	*.449
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	9.000	--	*7.000	*4.000	*2.000	*1.000	*.453
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	180	20.000	--	*10.000	*4.000	*2.000	*1.000	*.326
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	14.000	--	*7.600	*3.000	*1.000	*.502	*.172
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	19.000	--	*9.000	*3.250	*2.000	*.740	*.271
31	03308500	Green River at Munfordville	8/79 - 9/94	171	10.000	--	*6.000	*3.000	*2.000	*.932	*.367
32	03310300	Nolin River at White Mills	8/79 - 9/94	169	31.000	--	*8.000	*4.000	*2.000	*1.000	*.328
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	155	21.000	--	*7.200	*3.000	*1.000	*.725	*.281
30	03314500	Barren River at Bowling Green	6/79 - 9/94	164	26.000	--	*6.000	*3.000	*2.000	*1.000	*.422
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	174	18.000	--	*8.000	*4.000	*2.000	*1.000	*.316
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	10.000	--	*5.000	*2.000	*1.000	*.787	*.377
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	174	13.000	--	*6.000	*2.000	*1.014	*.738	*.311
42	03610200	Clarks River at Almo	4/84 - 9/94	118	--	--	--	--	--	--	--
			Copper, total, in µg/L as Cu [01042]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	182	40.000	--	*16.850	*6.000	*3.000	*1.000	*.464
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	41.000	--	*13.850	*4.000	*3.000	*2.000	*.585
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	19.000	--	*8.000	*4.000	*2.000	*1.000	*.465
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	21.000	--	*11.900	*3.000	*2.000	*1.000	*.303
16	03283500	Red River at Clay City	10/85 - 9/94	104	23.000	--	*10.000	*3.750	*2.000	*1.000	*.359
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	170	29.000	--	*13.450	*6.000	*4.000	*2.000	*.726
15	03285000	Dix River near Danville	10/85 - 9/94	106	28.000	--	*11.300	*4.000	*2.000	*1.000	*.410
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	210.000	--	*25.250	*7.000	*3.000	*2.000	*.547
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	26.000	--	*10.850	*5.000	*3.000	*2.000	*.778
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	39.000	--	*17.800	*6.000	*4.000	*2.000	*.810

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	25.000	--	*16.000	*3.000	*2.000	*1.000	*0.464
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	23.000	--	*11.000	*4.000	*2.000	*1.000	*.397
31	03308500	Green River at Munfordville	8/79 - 9/94	171	24.000	--	*13.200	*4.000	*2.000	*1.000	*.476
32	03310300	Nolin River at White Mills	8/79 - 9/94	170	170.000	--	*16.450	*4.000	*2.000	*1.000	*.383
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	156	47.000	--	*11.300	*4.000	*2.000	*1.000	*.330
30	03314500	Barren River at Bowling Green	6/79 - 9/94	165	260.000	--	*38.500	*9.500	*4.000	*2.000	*.639
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	60.000	--	*21.200	*6.000	*4.000	*2.000	*.869
38	03406500	Rockcastle River at Billows	3/79 - 9/94	175	230.000	--	*23.000	*6.000	*3.000	*2.000	*.508
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	174	98.000	--	*15.250	*5.000	*2.000	*1.000	*.455
42	03610200	Clarks River at Almo	4/84 - 9/94	108	36.000	2.000	34.100	28.000	21.000	11.250	4.450
		Iron, total, in µg/L as Fe [01045]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	161	7700.000	20.000	3659.998	1150.000	610.000	335.000	201.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	119	43000.000	60.000	6100.000	1700.000	750.000	420.000	240.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	120	49000.000	70.000	4564.998	1400.000	720.000	382.500	180.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	49000.000	2.000	2400.000	830.000	410.000	300.000	130.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	37000.000	220.000	5825.000	1800.000	870.000	635.000	385.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	160	17000.000	1.000	8995.002	1900.000	585.000	230.000	70.000
15	03285000	Dix River near Danville	10/85 - 9/94	106	15000.000	10.000	2294.998	630.000	310.000	180.000	60.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	161	13000.000	10.000	8479.986	1850.000	530.000	205.000	80.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	118	9800.000	90.000	1415.001	480.000	330.000	250.000	159.500
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	160	30000.000	5.000	9000.000	1900.000	775.000	342.500	120.500
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	17000.000	20.000	6269.997	1300.000	600.000	305.000	105.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	121	25000.000	90.000	9839.996	1500.000	760.000	400.000	212.000
31	03308500	Green River at Munfordville	8/79 - 9/94	161	8200.000	40.000	2490.000	940.000	460.000	220.000	130.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	161	11000.000	10.000	4489.999	760.000	420.000	250.000	130.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	7700.000	40.000	2840.012	730.000	450.000	280.000	134.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	160	7300.000	60.000	1995.001	637.500	390.000	240.000	110.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	154	28000.000	10.000	4775.000	1625.000	580.000	220.000	57.500
38	03406500	Rockcastle River at Billows	3/79 - 9/94	154	6800.000	10.000	2575.000	312.500	180.000	110.000	47.500
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	155	11000.000	20.000	2420.001	710.000	440.000	290.000	168.000
42	03610200	Clarks River at Almo	4/84 - 9/94	121	30.000	2.000	30.000	20.000	20.000	9.000	3.000

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Lead, total, in µg/L as Pb [01051]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	410.000	--	*117.800	*8.500	*3.000	*0.780	*0.109
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	72.000	--	*9.850	*3.000	*1.325	*.564	*.164
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	48.000	--	*6.850	*3.000	*1.032	*.541	*.184
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	18.000	--	*8.900	*2.000	*.822	*.325	*.088
16	03283500	Red River at Clay City	10/85 - 9/94	104	18.000	--	*5.000	*2.000	*.990	*.444	*.162
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	170	470.000	--	*150.000	*10.000	*4.000	*1.047	*.202
15	03285000	Dix River near Danville	10/85 - 9/94	105	78.000	--	*11.100	*2.000	*.661	*.182	*.036
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	390.000	--	*102.000	*10.000	*2.000	*.729	*.092
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	18.000	--	*9.850	*3.250	*2.000	*1.000	*.399
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	310.000	--	*149.000	*12.000	*2.000	*.386	*.038
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	24.000	--	*13.600	*2.000	*.540	*.178	*.037
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	24.000	--	*6.600	*2.000	*1.000	*.482	*.168
31	03308500	Green River at Munfordville	8/79 - 9/94	171	360.000	--	*53.600	*6.000	*1.237	*.311	*.041
32	03310300	Nolin River at White Mills	8/79 - 9/94	170	150.000	--	*55.900	*7.250	*2.000	*.381	*.055
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	155	430.000	--	*55.000	*4.000	*1.000	*.239	*.029
30	03314500	Barren River at Bowling Green	6/79 - 9/94	165	1500.000	--	*130.000	*12.000	*4.000	*1.145	*.207
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	176	170.000	--	*101.500	*8.000	*3.000	*1.000	*.134
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	240.000	--	*72.000	*10.000	*4.000	*1.000	*.199
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	175	270.000	--	*120.000	*8.000	*2.000	*.441	*.056
42	03610200	Clarks River at Almo	4/84 - 9/94	120	8.000	6.000	8.000	7.000	7.000	7.000	6.000
			Manganese, total, in µg/L as Mn [01055]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	162	990.000	1.000	247.000	140.000	100.000	72.250	43.300
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	820.000	16.000	449.000	165.000	110.000	82.500	40.600
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	470.000	11.000	190.000	130.000	92.000	61.000	46.300
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	120	420.000	4.000	229.500	137.500	96.000	61.250	37.050
16	03283500	Red River at Clay City	10/85 - 9/94	105	270.000	26.000	197.000	120.000	83.000	60.000	35.300
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	161	790.000	15.000	347.000	130.000	80.000	56.500	30.200
15	03285000	Dix River near Danville	10/85 - 9/94	107	880.000	5.000	118.000	50.000	30.000	15.000	8.800
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	162	790.000	10.000	444.000	95.500	60.000	40.000	20.150
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	1200.000	10.000	378.000	150.000	100.000	54.000	28.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	164	1300.000	10.000	465.000	110.000	62.000	40.000	18.500

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	700.000	6.000	182.500	62.750	40.000	20.000	10.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	1600.000	20.000	331.000	120.000	80.000	40.000	25.150
31	03308500	Green River at Munfordville	8/79 - 9/94	163	300.000	10.000	150.000	86.000	51.000	36.000	18.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	162	520.000	10.000	160.000	88.500	60.000	40.000	18.300
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	360.000	2.000	202.000	110.000	80.000	57.000	25.600
30	03314500	Barren River at Bowling Green	6/79 - 9/94	161	2200.000	22.000	290.000	170.000	110.000	83.000	50.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	155	890.000	10.000	394.001	190.000	110.000	60.000	20.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	156	510.000	1.000	193.000	90.000	60.000	40.000	21.700
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	156	410.000	15.000	230.000	130.000	100.000	70.000	34.850
42	03610200	Clarks River at Almo	4/84 - 9/94	122	360.000	52.000	250.000	202.500	170.000	137.500	101.500
		Zinc, total, in µg/L as Zn [01092]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	162	310.000	1.000	60.000	20.000	10.000	7.000	2.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	119	390.000	--	*100.000	*30.000	*10.000	*6.000	*1.703
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	119	320.000	--	*80.000	*20.000	*10.000	*5.000	*1.445
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	118	320.000	--	*50.500	*20.000	*8.500	*4.000	*.947
16	03283500	Red River at Clay City	10/85 - 9/94	100	270.000	--	*60.000	*20.000	*10.000	*5.000	*1.427
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	159	1500.000	--	*110.000	*30.000	*20.000	*8.000	*1.827
15	03285000	Dix River near Danville	10/85 - 9/94	105	390.000	--	*114.000	*20.000	*9.000	*4.000	*.848
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	160	450.000	--	*89.500	*30.000	*20.000	*6.250	*1.707
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	290.000	1.000	70.000	30.000	20.000	10.000	4.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	160	460.000	--	*70.000	*20.000	*10.000	*7.000	*1.474
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	100.000	--	*48.000	*20.000	*6.000	*3.000	*.705
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	350.000	--	*148.000	*20.000	*9.500	*4.000	*.906
31	03308500	Green River at Munfordville	8/79 - 9/94	164	760.000	--	*77.500	*20.000	*10.000	*5.000	*1.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	162	320.000	--	*50.000	*20.000	*10.000	*5.000	*1.455
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	320.000	--	*70.000	*20.000	*6.000	*3.000	*.842
30	03314500	Barren River at Bowling Green	6/79 - 9/94	159	520.000	--	*60.000	*20.000	*10.000	*8.000	*2.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	153	12000.000	--	*83.000	*20.000	*10.000	*8.000	*1.724
38	03406500	Rockcastle River at Billows	3/79 - 9/94	155	310.000	--	*60.000	*20.000	*10.000	*5.000	*1.343
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	155	930.000	--	*62.000	*20.000	*10.000	*6.000	*1.531
42	03610200	Clarks River at Almo	4/84 - 9/94	63	.000	--	--	--	--	--	--

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
			Aluminum, total, in µg/L as Al [01105]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	135	3100.000	5.000	2020.001	500.000	270.000	130.000	50.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	20000.000	2.000	3495.004	920.000	345.000	145.000	53.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	12000.000	1.000	3865.005	635.000	245.000	120.000	21.500
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	16000.000	1.000	1535.996	350.000	150.000	80.000	30.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	9700.000	2.000	2675.000	797.500	275.000	110.000	45.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	130	8300.000	1.000	5189.999	952.500	330.000	137.500	40.000
15	03285000	Dix River near Danville	10/85 - 9/94	106	6300.000	3.000	1429.999	505.000	205.000	90.000	30.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	130	7700.000	1.000	4769.998	962.500	290.000	130.000	30.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	9200.000	6.000	1290.000	380.000	230.000	120.000	40.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	130	19000.000	1.000	7369.998	1325.000	590.000	277.500	60.000
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	11000.000	30.000	3890.001	897.500	355.000	177.500	53.500
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	14000.000	5.000	3500.000	890.000	500.000	230.000	70.000
31	03308500	Green River at Munfordville	8/79 - 9/94	131	5800.000	1.000	2079.996	620.000	320.000	140.000	60.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	130	9800.000	2.000	3369.998	602.500	330.000	177.500	70.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	129	7200.000	3.000	3300.000	595.000	310.000	120.000	20.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	129	7600.000	4.000	1650.000	565.000	330.000	185.000	105.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	126	13000.000	9.000	2724.997	720.000	195.000	70.000	23.500
38	03406500	Rockcastle River at Billows	3/79 - 9/94	127	3800.000	1.000	1300.000	190.000	90.000	50.000	10.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	126	2400.000	6.000	1165.000	230.000	130.000	90.000	30.000
42	03610200	Clarks River at Almo	4/84 - 9/94	118	16000.000	1.000	2510.000	1100.000	820.000	660.000	508.500
			Fecal-coliform bacteria, colonies per 100 mL [31616]								
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	169	30000.000	5.000	3800.000	760.000	420.000	230.000	50.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	126	12000.000	8.000	5400.000	1400.000	625.000	287.500	43.500
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	126	3000.000	2.000	786.000	240.000	100.000	39.000	10.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	126	6000.000	2.000	1365.000	180.000	75.000	30.000	6.000
16	03283500	Red River at Clay City	10/85 - 9/94	107	10000.000	2.000	1860.000	410.000	160.000	60.000	10.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	171	9700.000	--	*2064.996	*215.000	*41.000	*10.000	*2.000
15	03285000	Dix River near Danville	10/85 - 9/94	106	6400.000	2.000	3084.995	350.000	125.000	40.000	6.700
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	169	4000.000	3.000	1150.000	225.000	70.000	17.000	6.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	17000.000	10.000	4000.000	572.500	205.000	60.000	15.150
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	174	33000.000	--	*2370.001	*315.000	*77.000	*25.000	*1.579

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; µg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	13000.000	10.000	8550.010	602.500	225.000	70.000	19.600
24	03300400	Beech Fork at Maud	4/84 - 9/94	126	16000.000	2.000	3824.997	447.500	130.000	57.500	10.000
31	03308500	Green River at Munfordville	8/79 - 9/94	158	16000.000	2.000	4200.000	292.500	120.000	43.750	9.950
32	03310300	Nolin River at White Mills	8/79 - 9/94	157	14000.000	4.000	4930.008	465.000	190.000	78.000	36.300
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	156	12000.000	2.000	5544.998	280.000	135.000	65.750	15.100
30	03314500	Barren River at Bowling Green	6/79 - 9/94	141	4800.000	.000	788.999	140.000	59.000	24.500	4.100
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	166	2300.000	--	*889.500	*215.000	*47.000	*10.000	*1.791
38	03406500	Rockcastle River at Billows	3/79 - 9/94	165	2300.000	--	*322.001	*60.000	*24.000	*10.000	*1.968
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	167	7700.000	--	*304.000	*44.000	*16.000	*4.185	*.790
42	03610200	Clarks River at Almo	4/84 - 9/94	121	530.000	1.000	56.200	23.000	14.000	8.500	4.000
		Mercury, total, in µg/L as Hg [71900]									
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	178	15.000	--	*1.500	*.300	*.064	*.016	*.002
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	119	4.700	--	*.400	*.100	*.025	*.007	*.001
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	117	.600	--	*.300	*.100	*.035	*.016	*.005
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	118	6.000	--	*.300	*.100	*.020	*.006	*.001
16	03283500	Red River at Clay City	10/85 - 9/94	102	3.600	--	*.285	*.100	*.029	*.011	*.003
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	166	6.700	--	*1.300	*.225	*.065	*.018	*.003
15	03285000	Dix River near Danville	10/85 - 9/94	102	.300	--	*.200	*.100	*.051	*.030	*.014
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	173	110.000	--	*1.860	*.300	*.100	*.018	*.002
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	116	3.900	--	*.300	*.100	*.037	*.013	*.003
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	173	6.000	--	*2.380	*.350	*.100	*.023	*.003
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	--	--	--	--	--	--	--
24	03300400	Beech Fork at Maud	4/84 - 9/94	118	5.100	--	*.300	*.100	*.030	*.011	*.003
31	03308500	Green River at Munfordville	8/79 - 9/94	166	31.000	--	*1.900	*.225	*.059	*.013	*.001
32	03310300	Nolin River at White Mills	8/79 - 9/94	162	5.400	--	*1.485	*.200	*.100	*.019	*.003
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	7.400	--	*2.140	*.200	*.044	*.010	*.001
30	03314500	Barren River at Bowling Green	6/79 - 9/94	161	7.000	--	*2.090	*.200	*.054	*.013	*.002
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	169	4.600	--	*2.000	*.300	*.100	*.028	*.005
38	03406500	Rockcastle River at Billows	3/79 - 9/94	163	4.400	--	*2.500	*.400	*.089	*.026	*.004
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	168	32.000	--	*1.710	*.375	*.100	*.023	*.004
42	03610200	Clarks River at Almo	4/84 - 9/94	16	250.000	62.000	250.000	167.500	145.000	132.500	62.000

APPENDIX 1

Appendix 1. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky

[R-squared, coefficient of determination; ---, not applicable]

Station	Base flow (R-squared)	Total flow (R-squared)
	Dissolved oxygen	
03291500	---	99.4
	Fecal coliform	
03280000	46.5	---
03284500	68.8	---
03285000	81.3	---
03289300	55.8	---
03291500	61.4	79.0
03295400	66.3	79.4
03300400	79.1	---
03310400	73.8	---
03314500	39.2	---
03404500	64.2	---
03209500	47.6	---
	Biochemical oxygen demand	
03281000	67.4	---
03281500	86.6	---
03283500	84.3	---
03284500	71.3	---
03287500	40.7	---
03291500	---	95.5
03295400	96.4	94.8
03300400	78.8	83.0
03308500	49.9	---
03310400	90.4	47.8
03314500	69.8	---
03404500	64.5	---
03209500	44.1	---
	Chloride	
03280000	50.6	---
03281500	31.0	49.0
03289300	22.2	45.1
03291500	63.1	81.4
03295400	63.6	68.4
03308500	42.2	---
03310300	43.2	49.6
03310400	56.1	---
03404500	44.8	---
03209500	50.1	---
	Sulfate	
03289300	48.9	---
03291500	---	97.9

Appendix 1. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky—*Continued*

[R-squared, coefficient of determination; ---, not applicable]

Station	Base flow (R-squared)	Total flow (R-squared)
	Residue	
03285000	79.6	---
03289300	59.9	---
03291500	83.1	93.4
03295400	68.3	---
03300400	86.7	---
03310400	86.3	---
03314500	74	---
03404500	84.3	---
03209500	53.1	---
	Carbon	
03291500	---	98.9
	Calcium	
03291500	---	98.4
	Magnesium	
03291500	---	98.8
03610200	---	44.9
	Potassium	
03280000	8.7	---
03291500	---	98.4
	Sodium	
03289300	21.4	---
03291500	---	97.5
03310300	18.6	36.0
	Ammonia	
03281000	40.9	---
03284500	81.1	---
03285000	78.5	81.0
03287500	83.9	---
03289300	71.1	---
03291500	78.7	90.7
03295400	77.8	85.5
03310400	74.0	---
03314500	72.9	---
03404500	80.3	---
03209500	47.4	---
	Nitrite plus nitrate	
03285000	91.5	---
03291500	83.9	87.9
03295400	88.3	---
03610200	48.7	---

Appendix 1. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky—*Continued*

[R-squared, coefficient of determination; ---, not applicable]

Station	Base flow (R-squared)	Total flow (R-squared)
	Ammonia and organic nitrogen	
03284500	---	34.6
03285000	83.2	---
03289300	73.2	---
03291500	90.1	95.1
03295400	83.0	---
03404500	77.5	---
03209500	46.4	---
	Phosphorus	
03285000	84.9	---
03289300	30.5	46.5
03291500	82.4	93.0
03310400	81.5	---
03314500	77.8	---
03404500	81.0	---
03209500	63.1	---
	Aluminum	
03285000	86.6	---
03289300	73.3	---
03291500	87.2	---
03295400	76.7	85.7
03310400	85.1	---
03314500	76.6	---
03404500	78.5	---
03209500	60.7	---
	Arsenic	
03280000	39.2	---
03281000	---	50.6
03285000	73.3	---
03287500	88.6	---
03289300	34.9	42.3
03291500	83.1	27.1
03295400	82.2	85.9
03300400	81.5	---
03310400	71.0	---
03314500	66.3	---
03404500	67.4	---
03209500	33.8	---
	Barium	
03285000	83.4	---
03291500	81.5	91.2
03295400	82.9	---
03314500	70.2	---

Appendix 1. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky—*Continued*

[R-squared, coefficient of determination; ---, not applicable]

Station	Base flow (R-squared)	Total flow (R-squared)
	Cadmium	
03284500	80.5	---
03287500	79.2	---
03300400	100.0	---
03310400	35.7	---
03314500	67.3	---
03404500	86.0	---
03209500	47.0	---
	Chromium	
03285000	81.4	---
03291500	88.1	90.7
03295400	82.3	80.7
03300400	88.8	---
03310400	74.2	---
03314500	77.3	---
03404500	70.5	---
03209500	51.9	---
	Copper	
03285000	80.8	---
03289300	41.7	---
03291500	82.8	89.1
03295400	---	79.6
03300400	85.1	---
03310300	49.3	---
03310400	61.2	---
03314500	60.4	---
03404500	69.4	---
03209500	41.8	---
	Iron	
03284500	81.7	---
03287500	82.7	---
03289300	73.9	---
03291500	86.8	95.5
03295400	---	85.5
03300400	88.4	---
03310300	74.9	---
03310400	86.0	---
03314500	84.3	---
03610200	92.5	---
03209500	52.6	---

Appendix 1. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky—*Continued*

[R-squared, coefficient of determination; ---, not applicable]

Station	Base flow (R-squared)	Total flow (R-squared)
	Lead	
03284500	79.4	---
03285000	81.6	68.0
03287500	69.6	---
03289300	59.4	---
03291500	73.8	85.7
03295400	78.6	79.0
03300400	88.8	---
03310400	68.9	---
03314500	36.2	---
03404500	70.8	---
03209500	50.4	---
	Manganese	
03285000	83.7	---
03291500	83.9	94.6
03295400	81.8	---
03404500	87.2	---
03209500	54.5	---
	Mercury	
03280000	28.3	47.3
03281500	35.7	---
03283500	61.9	---
03285000	94.1	---
03287500	87.8	---
03289300	65.1	---
03310300	71.9	---
03310400	71.0	---
03314500	71.2	---
03404500	59.1	---
03610200	94.5	---
	Zinc	
03281000	44.1	---
03281500	43.5	---
03284500	---	7.6
03285000	69.2	---
03289300	37.9	38.6
03291500	78.5	87.3
03295400	91.5	80.4
03300400	77.8	---
03308500	43.9	---
03310300	29.6	41.4
03310400	47.4	33.7
03314500	65.7	---
03404500	57.6	---
03209500	46.6	---

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