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Water Resources Data Kentucky Water Year 1997

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT KY-97-1

Prepared in cooperation with the Commonwealth of Kentucky and with other agencies

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP, therefore, provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary base and is expressed as milligrams dry weight of algae produced per liter of sample.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1–March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total-coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal-coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5 °C plus or minus 0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal-streptococcal bacteria are bacteria found also in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500 °C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square mile (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105 °C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile [$(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to that material in a representative water sample which passes through a 0.45 um membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (µg/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

National Water-Quality Assessment (NAWQA) Network is a network of fixed-location and synoptic sampling stations. It is currently limited in Kentucky to the Kentucky River Basin. The U.S. Geological Survey began the National Water-Quality Assessment Program in April 1986 to (1) provide a nationally consistent description of current water-quality status, (2) define recent trends in water quality, and (3) relate past and present water-quality conditions to relevant natural features, the history of land and water use, and land- and waste-management practices. The pilot study of the Kentucky River Basin is one of four surface-water pilot studies and will be used to test, and modify as necessary, assessment concepts and approaches in preparation for future full-scale implementation of the National program.

National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)			Method of analysis
Clay.....	0.00024	-	0.004	Sedimentation
Silt.....	.004	-	.062	Sedimentation
Sand.....	.062	-	2.0	Sedimentation or sieve
Gravel.....	2.0	-	64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/(m^2.time)] for periphyton and macrophytes and [mg C/(m^3.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O/(m^2.time)] for periphyton and macrophytes and [mg O/(m^3.time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN., in.) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons/day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

7-day 10-year low flow (7 Q_{10}) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and Plexiglas strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1991, is called the "1991 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.

2-D1. *Application of surface geophysics to ground-water investigations,* by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.

2-D2. *Application of seismic-refraction techniques to hydrologic studies,* by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.

2-E1. *Application of borehole geophysics to water-resources investigations,* by W. S. Keys and L.M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.

2-E2. *Borehole geophysics applied to ground-water investigations,* by W. S. Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 pages.

2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W. E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.

3-A1. *General field and office procedures for indirect discharge measurements,* by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.

3-A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

3-A3. *Measurement of peak discharge at culverts by indirect methods,* by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

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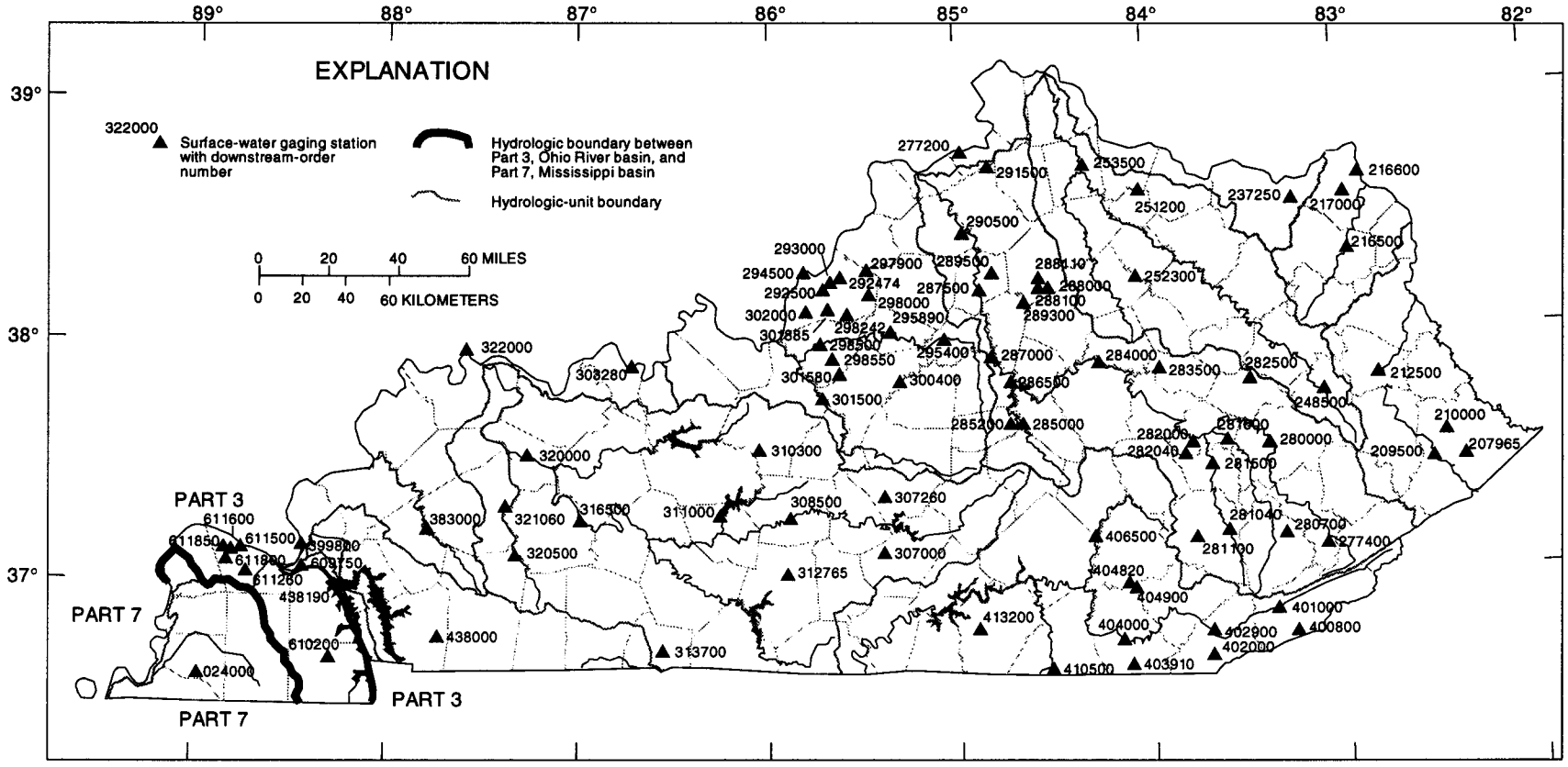

Figure 4. Location of gaging stations in Kentucky.

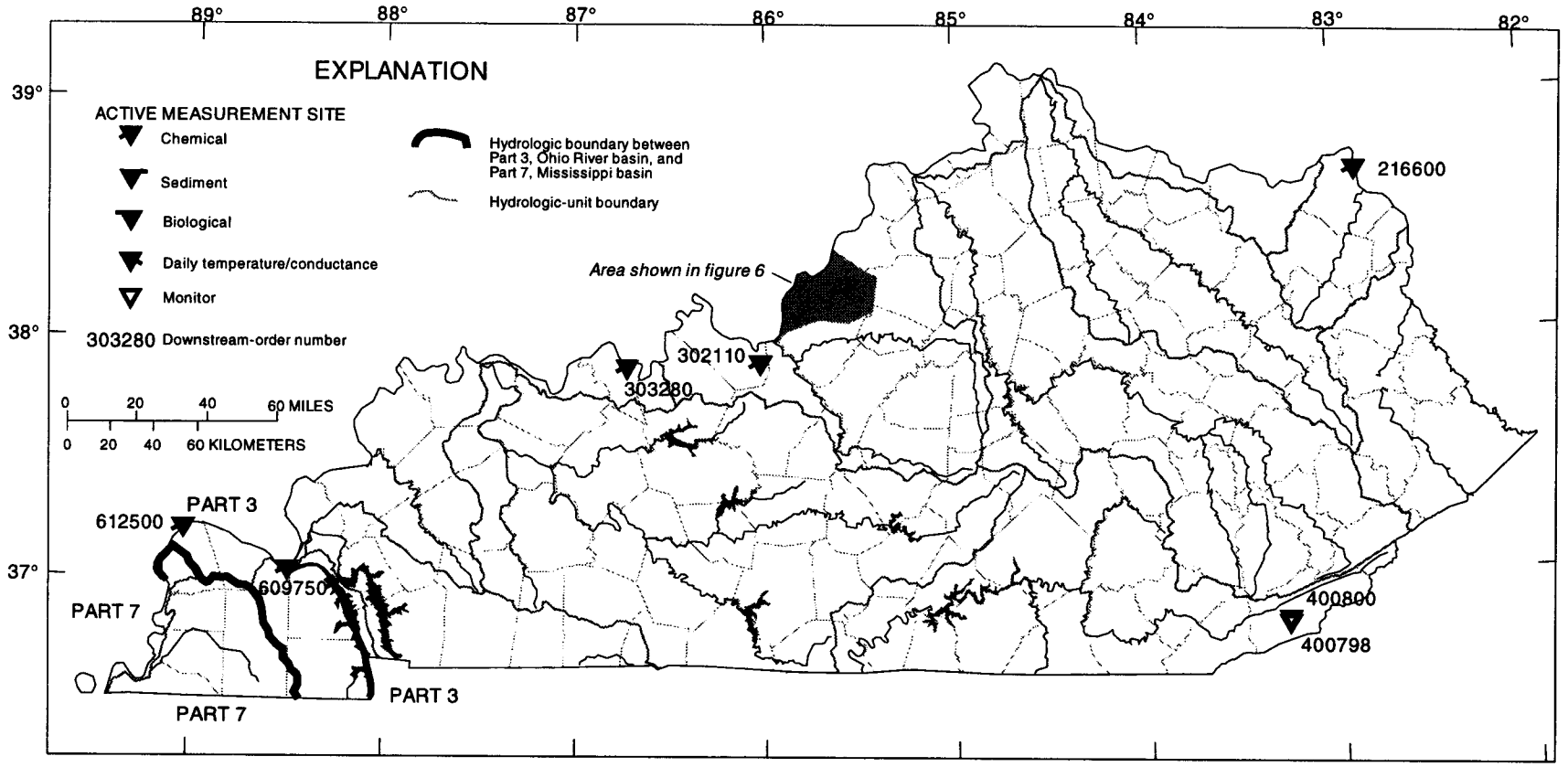

Figure 5. Location of surface-water quality stations in Kentucky.

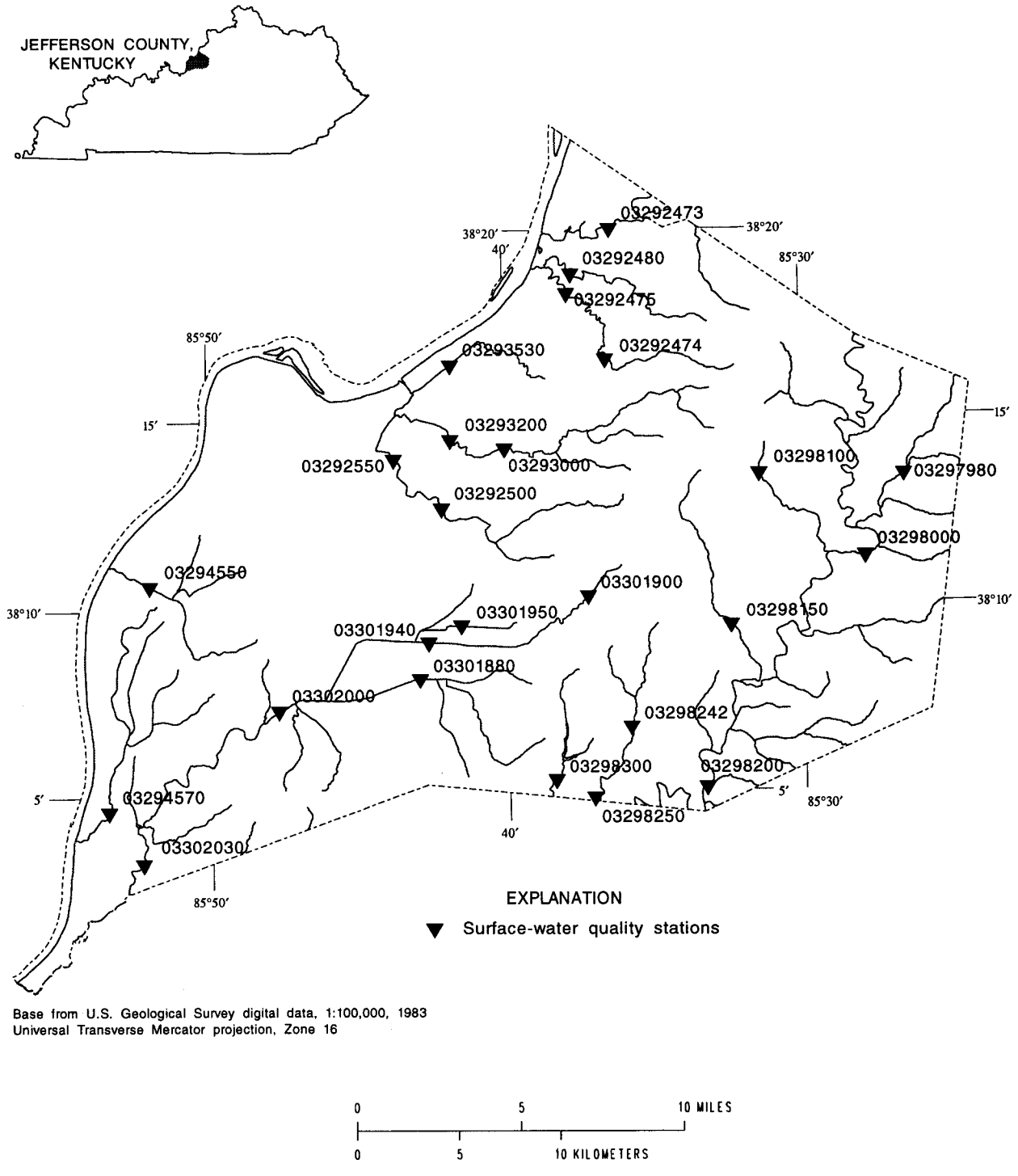

Figure 6. Location of surface-water quality stations in Jefferson County, for the MSD Sampling Network.

BIG SANDY RIVER BASIN

03207965 GRAPEVINE CREEK NEAR PHYLLIS, KY

LOCATION.--Lat 37°25'57", long 82°21'14", Pike County, Hydrologic Unit 05070202, on right bank at the Grapevine Recreation area, 1.3 mi downstream from Dicks Fork, 1.3 mi southwest of Phyllis, and at mile 1.1.

DRAINAGE AREA.--6.20 mi^2.

PERIOD OF RECORD.--October 1973 to September 1982, April 1989 to September 1992, October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 780 ft above sea level from topographic map.

REMARKS.--Estimated daily discharges: Dec. 14-21, 26-28, Jan. 5, 8, 10-15, 18-22. Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.4	85	7.1	12	6.6	14	5.2	4.3	82	1.7	.97
2	120	2.2	27	7.3	10	20	12	4.7	3.4	17	1.9	.85
3	22	2.1	17	7.9	8.0	256	10	5.1	3.3	11	1.7	1.2
4	9.2	2.1	13	6.4	13	54	9.8	6.0	2.9	5.0	3.5	.98
5	5.0	2.1	11	9.5	22	39	9.8	5.6	2.5	4.0	2.1	1.2
6	3.5	2.0	9.9	6.4	20	51	8.8	5.1	2.3	2.8	2.0	1.1
7	2.9	1.9	7.0	6.4	16	35	8.0	4.7	2.1	2.0	1.7	1.1
8	2.7	20	6.4	6.0	14	26	6.1	4.7	2.5	1.6	1.6	1.2
9	2.2	18	5.0	9.4	14	20	5.0	5.1	5.0	3.5	1.8	1.4
10	1.9	13	4.7	8.4	13	18	4.6	5.3	3.2	2.6	1.8	1.9
11	1.7	9.3	4.7	7.0	12	16	4.2	4.7	2.8	2.3	1.6	1.5
12	1.7	6.0	5.8	5.6	10	13	7.0	3.1	3.1	1.9	1.7	1.3
13	1.6	4.6	7.1	4.4	8.9	13	6.0	3.6	6.2	1.9	5.2	1.2
14	1.5	4.2	6.5	3.8	8.6	12	4.9	4.3	8.5	1.8	4.6	1.2
15	1.5	3.7	6.0	3.4	7.2	11	4.5	4.7	5.0	1.6	2.1	.99
16	1.5	3.4	5.5	13	5.6	12	3.4	4.2	3.2	1.6	1.8	.92
17	1.5	3.4	5.0	9.5	5.0	8.7	3.7	4.2	13	1.5	1.7	.83
18	2.9	6.0	4.4	7.0	4.6	12	3.8	4.2	12	1.4	6.3	.91
19	2.4	8.9	3.8	5.2	4.2	23	3.8	3.7	8.5	1.3	2.6	.79
20	2.0	8.2	3.4	4.1	4.3	24	3.8	7.8	5.6	1.3	8.1	1.6
21	1.7	14	3.0	3.6	4.6	18	3.4	4.5	3.7	1.5	3.5	1.2
22	1.5	19	4.2	3.2	6.1	14	3.4	4.2	2.2	4.1	2.3	1.1
23	1.5	14	5.8	11	5.5	12	4.4	3.9	1.8	2.2	1.8	1.3
24	1.5	11	9.0	9.8	5.2	11	4.7	3.4	1.6	2.1	1.7	1.6
25	1.5	8.0	10	9.8	4.8	10	4.6	3.6	2.0	1.8	1.6	1.3
26	1.8	11	8.0	8.9	4.2	13	4.2	14	4.3	1.6	1.5	1.0
27	2.1	11	6.8	8.8	4.5	11	4.3	9.9	3.0	4.1	1.4	1.2
28	4.0	11	6.0	34	4.7	11	5.2	6.1	1.9	3.7	1.3	1.5
29	4.2	9.2	9.3	27	---	16	5.7	6.0	1.6	3.2	1.2	1.4
30	3.4	35	9.1	19	---	14	5.7	6.0	1.9	2.5	1.1	1.2
31	3.0	---	8.1	15	---	15	---	4.1	---	2.0	1.1	---
TOTAL	216.1	266.7	317.5	287.9	252.0	815.3	178.8	161.7	123.4	176.9	74.0	35.94
MEAN	6.97	8.89	10.2	9.29	9.00	26.3	5.96	5.22	4.11	5.71	2.39	1.20
MAX	120	35	85	34	22	256	14	14	13	82	8.1	1.9
MIN	1.5	1.9	3.0	3.2	4.2	6.6	3.4	3.1	1.6	1.3	1.1	.79
CFSM	1.12	1.43	1.65	1.50	1.45	4.24	.96	.84	.66	.92	.39	.19
IN.	1.30	1.60	1.91	1.73	1.51	4.89	1.07	.97	.74	1.06	.44	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1997, BY WATER YEAR (WY)

MEAN	4.31	7.23	8.87	15.3	13.6	18.8	12.3	11.0	7.31	2.65	2.60	2.08
MAX	28.0	31.0	18.8	42.6	34.0	53.6	22.3	47.7	23.2	10.4	10.6	5.75
(WY)	1990	1974	1979	1974	1990	1975	1977	1989	1974	1979	1989	1989
MIN	.32	.27	.98	1.44	4.08	7.12	4.62	.71	.64	.32	.31	.38
(WY)	1992	1982	1982	1981	1992	1977	1982	1976	1980	1991	1981	1981

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1974 - 1997	
ANNUAL TOTAL	3520.64		2906.24			
ANNUAL MEAN	9.62		7.96		8.49	
HIGHEST ANNUAL MEAN					17.2	1974
LOWEST ANNUAL MEAN					5.30	1992
HIGHEST DAILY MEAN	120	Oct 2	256	Mar 3	832	Oct 1 1982
LOWEST DAILY MEAN	.94	Aug 7	.79	Sep 19	.01	Aug 19 1982
ANNUAL SEVEN-DAY MINIMUM	1.3	Jul 24	.98	Sep 13	.04	Sep 22 1981
INSTANTANEOUS PEAK FLOW			763	Mar 3	1650	Jun 1 1974
INSTANTANEOUS PEAK STAGE			2.43	Mar 3	9.10	Apr 7 1977
INSTANTANEOUS LOW FLOW					.79	Sep 19 1997
ANNUAL RUNOFF (CFSM)	1.55		1.28		1.37	
ANNUAL RUNOFF (INCHES)	21.12		17.44		18.60	
10 PERCENT EXCEEDS	20		14		18	
50 PERCENT EXCEEDS	5.5		4.5		3.2	
90 PERCENT EXCEEDS	1.6		1.5		.39	

BIG SANDY RIVER BASIN

03208500 RUSSELL FORK AT HAYSI, VA

LOCATION.--Lat 37°12'25", long 82°17'35", Dickenson County, Hydrologic Unit 05070202, on right bank 180 ft down- stream from bridge on State Highway 63, at Haysi, and 700 ft downstream from McClure River.

DRAINAGE AREA.--286 mi^2.

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1003: 1926-43. WSP 1385: 1928(M), 1929, 1933(M), 1935(M), 1937-38(M).

GAGE.--Water-stage recorder. Datum of gage is 1,237.61 ft above sea level. Prior to Dec. 21, 1939, nonrecording gage at highway bridge 180 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 59,000 ft^3/s, from rating curve extended above 32,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	72	6440	403	549	773	447	559	233	208	273	36
2	4080	72	2060	402	449	1230	407	432	221	188	197	34
3	1870	67	1090	383	383	8060	375	399	247	164	156	32
4	583	59	709	350	443	3400	345	359	596	156	186	32
5	350	58	540	469	794	1670	317	310	367	168	210	30
6	220	57	551	568	912	2740	297	290	269	125	144	28
7	156	58	936	507	735	1660	275	265	215	103	116	28
8	130	800	1340	436	796	1050	243	248	189	86	99	27
9	117	974	857	613	1030	747	227	259	222	78	89	29
10	108	526	607	718	902	649	209	244	243	286	86	51
11	95	333	501	604	708	520	200	211	186	189	80	140
12	82	228	465	478	564	432	213	198	199	123	79	77
13	75	176	744	410	478	386	264	201	194	100	76	55
14	71	154	767	388	446	448	224	205	387	85	89	42
15	66	130	622	395	398	493	202	218	381	74	75	36
16	62	113	516	662	343	448	190	185	296	80	67	32
17	60	104	459	680	311	415	190	169	340	103	60	30
18	63	136	383	610	292	466	187	165	516	88	75	29
19	93	293	336	523	282	2460	184	160	415	72	68	27
20	83	304	285	434	269	2350	181	377	333	63	92	27
21	69	1440	241	350	274	1220	174	341	289	58	86	31
22	63	2160	248	321	390	829	184	250	227	434	64	31
23	60	857	245	389	388	602	311	204	183	510	53	27
24	59	530	393	363	362	473	1520	180	152	254	49	34
25	57	411	766	432	341	409	994	179	130	152	46	44
26	59	623	645	413	369	444	612	603	198	111	44	42
27	81	647	526	394	550	383	479	620	273	1040	43	34
28	83	535	444	1400	857	370	468	401	169	573	41	47
29	83	427	431	1430	---	551	773	311	132	3350	41	98
30	81	1070	404	937	---	520	656	281	139	788	39	60
31	75	---	408	694	---	510	---	242	---	431	37	---
TOTAL	9246	13414	24959	17156	14615	36708	11348	9066	7941	10240	2860	1270
MEAN	298	447	805	553	522	1184	378	292	265	330	92.3	42.3
MAX	4080	2160	6440	1430	1030	8060	1520	620	596	3350	273	140
MIN	57	57	241	321	269	370	174	160	130	58	37	27
CFSM	1.04	1.56	2.82	1.94	1.83	4.14	1.32	1.02	.93	1.15	.32	.15
IN.	1.20	1.74	3.25	2.23	1.90	4.77	1.48	1.18	1.03	1.33	.37	.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1997, BY WATER YEAR (WY)

MEAN	89.2	168	338	520	649	775	573	419	180	149	120	64.3
MAX	838	961	1326	2083	1797	2331	1994	1429	715	566	561	608
(WY)	1990	1978	1927	1937	1939	1955	1977	1958	1989	1938	1966	1989
MIN	.98	2.46	11.1	19.6	57.7	168	64.0	63.4	21.6	3.03	8.81	2.07
(WY)	1954	1954	1954	1940	1941	1988	1942	1941	1966	1930	1953	1943

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1926 - 1997	
ANNUAL TOTAL	189204		158823			
ANNUAL MEAN	517		435		336	
HIGHEST ANNUAL MEAN					568	1994
LOWEST ANNUAL MEAN					100	1941
HIGHEST DAILY MEAN	6440	Dec 1	8060	Mar 3	30600	Apr 4 1977
LOWEST DAILY MEAN	37	Sep 27	27	aSep 8	.20	Jun 27 1936
ANNUAL SEVEN-DAY MINIMUM	42	Sep 21	29	Sep 17	.56	Jun 24 1936
INSTANTANEOUS PEAK FLOW			15300	Mar 3	59000	Apr 4 1977
INSTANTANEOUS PEAK STAGE			13.03	Mar 3	28.24	Apr 4 1977
INSTANTANEOUS LOW FLOW			26	bSep 19	c.20	dJun 27 1936
ANNUAL RUNOFF (CFSM)	1.81		1.52		1.17	
ANNUAL RUNOFF (INCHES)	24.61		20.66		15.95	
10 PERCENT EXCEEDS	1080		798		738	
50 PERCENT EXCEEDS	341		274		132	
90 PERCENT EXCEEDS	60		57		15	

BIG SANDY RIVER BASIN

03209500 LEVISA FORK AT PIKEVILLE, KY

LOCATION.--Lat 37°27'51", long 82°31'35", Pike County, Hydrologic Unit 05070203, on right bank 20 ft downstream from bridge on State Highway 1426, 0.75 mi downstream from Lanks Branch, 1.0 mi south of Pikeville, 1.5 mi upstream from Harolds Branch, and at mile 117.3.

DRAINAGE AREA.--1,232 mi^2.

PERIOD OF RECORD.--October 1937 to current year. Gage-height records collected in this vicinity since 1907 are contained in reports of National Weather Service.

REVISED RECORDS.--WRD KY 78-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 631.98 ft above sea level. Prior to Sept. 23, 1944, nonrecording gage at site 2.3 mi downstream at datum 2.65 ft higher. Sept. 23, 1944 to Sept. 30, 1952, water-stage recorder 2.3 mi downstream at datum 1.65 ft higher. Oct. 1, 1952 to Sept. 30, 1979, at site 2.1 mi downstream at same datum.

REMARKS.--No estimated daily discharges. Records good . Flow regulated since October 1968 by Fishtrap Lake (station 03207995), since August 1966 by North Fork Pound River Lake (station 03208680) and since March 1965 by John W. Flannagan Lake (station 03208990).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1140	716	9970	1620	2480	2290	1620	1210	1100	2190	649	218
2	6700	709	5800	1670	2240	2590	1350	1260	957	2300	541	214
3	6850	700	8180	1700	1950	12000	1200	1320	920	1140	440	208
4	6250	668	7710	1470	1760	7540	1090	1480	1480	1490	562	204
5	3600	628	6420	1580	3360	3680	998	1430	1690	1120	750	197
6	1640	627	4680	1980	3940	7150	935	1280	921	796	613	194
7	1440	549	2360	2080	3250	14200	871	1070	789	584	445	194
8	1040	1700	3040	1840	2780	11600	780	1010	746	492	411	190
9	978	2720	2840	2110	3280	7810	724	989	1370	479	348	195
10	824	1860	2300	2840	3480	4780	674	992	1510	558	328	264
11	781	1950	1840	2560	3050	2850	620	917	914	653	308	308
12	789	2870	1690	2280	2360	2210	647	880	854	530	302	310
13	757	2920	1870	2050	2010	1980	676	900	993	441	300	252
14	747	1730	2270	1470	1870	1990	659	891	1780	353	302	226
15	668	1300	2300	1320	1630	2020	595	845	1920	295	282	240
16	600	950	2090	2030	1520	1930	564	818	1460	283	283	413
17	621	920	1800	2660	1450	1830	558	769	1860	271	274	319
18	667	1020	1620	2030	1380	1790	552	756	2950	284	620	219
19	677	1480	1340	1750	1200	4760	542	747	2500	274	408	217
20	776	1740	1120	1890	1110	8510	536	1090	1770	262	680	220
21	737	2420	874	1970	1140	5970	528	1580	1310	259	743	238
22	653	6370	894	1760	1140	3810	536	1660	1140	1040	581	246
23	558	4900	1100	1620	1190	3120	603	1270	876	1820	432	303
24	598	3570	1280	1570	1390	2460	1550	1040	588	1470	332	326
25	595	2470	2090	1690	1490	2160	1830	837	514	608	277	352
26	583	2560	2710	1660	1410	2030	1270	1500	559	442	264	318
27	749	2700	2650	1790	1610	1950	1040	3440	1110	773	256	294
28	823	1940	1890	4480	2140	1740	1020	2480	1180	1920	249	288
29	845	1640	1810	6550	---	2830	1250	1610	892	4260	244	361
30	803	1470	1850	4490	---	3280	1330	1500	582	1660	238	380
31	732	---	1700	3230	---	3120	---	1300	---	772	225	---
TOTAL	45221	57797	90088	69740	57610	135980	27148	38871	37235	29819	12687	7908
MEAN	1459	1927	2906	2250	2058	4386	905	1254	1241	962	409	264
MAX	6850	6370	9970	6550	3940	14200	1830	3440	2950	4260	750	413
MIN	558	549	874	1320	1110	1740	528	747	514	259	225	190

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

MEAN	844	1176	1660	2400	2852	3017	2234	2028	981	577	474	472
MAX	3939	3991	5385	6861	6371	8081	7646	6067	3492	1855	1022	1607
(WY)	1990	1978	1973	1974	1994	1975	1977	1984	1979	1979	1971	1989
MIN	158	353	300	278	814	529	388	349	210	200	203	168
(WY)	1970	1970	1981	1981	1992	1988	1986	1976	1988	1988	1969	1969

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1969 - 1997	
ANNUAL TOTAL	738305		610104			
ANNUAL MEAN	2017		1672		1553	
HIGHEST ANNUAL MEAN					2459	1979
LOWEST ANNUAL MEAN					522	1988
HIGHEST DAILY MEAN	12100	Feb 9	14200	Mar 7	69300	Apr 5 1977
LOWEST DAILY MEAN	197	Sep 2	190	Sep 8	66	Dec 3 1970
ANNUAL SEVEN-DAY MINIMUM	227	Aug 28	197	Sep 3	103	Oct 10 1968
INSTANTANEOUS PEAK FLOW			17200	Mar 3	85500	Jan 30 1957
INSTANTANEOUS PEAK STAGE			28.50	Mar 3	52.72	Jan 30 1957
INSTANTANEOUS LOW FLOW			175	Sep 9	66	Dec 3 1970
10 PERCENT EXCEEDS	4910		3240		3590	
50 PERCENT EXCEEDS	1370		1190		778	
90 PERCENT EXCEEDS	327		295		234	

BIG SANDY RIVER BASIN

03210000 JOHNS CREEK NEAR META, KY

LOCATION.--Lat 37°34'01", long 82°27'29", Pike County, Hydrologic Unit 05070203, on left bank 10 ft downstream from bridge on U.S. Highway 119, 1,100 ft downstream from Ford Branch, 0.7 mi upstream from Raccoon Creek, 1.2 mi southwest of Meta, and at mile 42.7.

DRAINAGE AREA.--56.3 mi^2.

PERIOD OF RECORD.--April 1941 to September 1993, October 1994 to current year.

REVISED RECORDS.--WSP 1705: Drainage area. WRD KY-76-1: 1975. WDR KY-87-1: 1986.

GAGE:--Water-stage recorder. Datum of gage is 715.66 ft above sea level. See WDR KY-90-1 for history of changes prior to Dec. 21, 1965.

REMARKS.--Estimated daily discharges: Dec. 20, 21, Jan. 12-14, and Jan. 17-19. Record good except for periods of estimated record, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1939 reached a stage of 15.6 ft, from floodmark, present datum, at site 600 ft upstream, discharge, 4,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	19	999	64	107	46	132	59	42	294	20	9.6
2	710	16	289	56	89	171	119	51	39	135	19	12
3	252	15	162	53	73	1790	95	48	35	70	20	12
4	94	14	116	52	104	570	83	49	32	46	32	12
5	52	13	93	69	254	308	79	44	25	45	28	9.8
6	38	12	83	67	216	398	71	42	22	34	20	11
7	30	14	75	65	169	258	68	38	20	31	19	11
8	26	272	59	57	156	175	61	37	20	26	18	8.3
9	22	192	48	88	142	142	55	38	36	23	18	9.0
10	20	123	45	93	129	146	48	38	33	22	19	15
11	19	85	44	88	97	113	46	36	23	21	19	16
12	17	51	42	76	88	101	59	34	36	19	17	12
13	15	41	51	71	79	88	80	37	35	18	20	11
14	16	37	41	66	72	89	66	38	60	17	40	11
15	14	31	38	56	62	82	55	40	47	16	23	11
16	14	27	37	114	62	78	51	37	37	14	20	9.9
17	14	26	35	95	53	71	53	36	119	14	18	10
18	24	45	34	85	52	100	50	34	98	14	39	8.6
19	30	85	33	78	47	255	46	32	75	13	20	8.9
20	18	65	31	71	45	270	46	59	51	15	26	9.7
21	15	136	29	59	45	181	45	48	38	45	24	12
22	14	222	32	60	49	136	44	39	33	46	17	9.4
23	15	131	39	93	44	114	53	35	28	31	15	7.7
24	14	96	62	86	41	98	79	34	20	21	23	8.0
25	13	97	83	94	35	85	76	32	18	21	13	9.3
26	16	126	78	82	38	96	69	273	25	18	13	8.6
27	22	112	69	76	42	79	68	154	40	36	11	6.1
28	26	98	59	364	37	77	74	92	22	24	9.6	6.6
29	35	85	69	282	---	178	66	67	18	28	10	8.7
30	24	267	59	186	---	150	61	56	22	28	9.6	6.6
31	20	---	65	140	---	153	---	46	---	23	8.8	---
TOTAL	1663	2553	2999	2986	2427	6598	1998	1703	1149	1208	609.0	300.8
MEAN	53.6	85.1	96.7	96.3	86.7	213	66.6	54.9	38.3	39.0	19.6	10.0
MAX	710	272	999	364	254	1790	132	273	119	294	40	16
MIN	13	12	29	52	35	46	44	32	18	13	8.8	6.1
CFSM	.95	1.51	1.72	1.71	1.54	3.78	1.18	.98	.68	.69	.35	.18
IN.	1.10	1.69	1.98	1.97	1.60	4.36	1.32	1.13	.76	.80	.40	.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1997, BY WATER YEAR (WY)

MEAN	18.1	38.9	76.4	109	139	166	116	73.3	37.1	25.2	17.1	16.0
MAX	175	213	319	413	338	489	356	271	193	136	155	153
(WY)	1990	1974	1973	1974	1972	1955	1948	1984	1979	1956	1942	1966
MIN	.000	.23	.95	6.57	17.5	36.0	15.8	7.33	1.99	.42	.35	.000
(WY)	1954	1954	1966	1966	1954	1988	1963	1941	1969	1944	1943	1943

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1941 - 1997	
ANNUAL TOTAL	35643.1		26193.8			
ANNUAL MEAN	97.4		71.8		69.2	
HIGHEST ANNUAL MEAN					135	1974
LOWEST ANNUAL MEAN					24.5	1954
HIGHEST DAILY MEAN	1690	May 16	1790	Mar 3	3340	May 7 1984
LOWEST DAILY MEAN	4.2	Sep 27	6.1	Sep 27	.00	Oct 1 1941
ANNUAL SEVEN-DAY MINIMUM	5.3	Sep 21	7.7	Sep 24	.00	Oct 1 1941
INSTANTANEOUS PEAK FLOW			3870	Mar 3	7380	Mar 12 1963
INSTANTANEOUS PEAK STAGE			17.10	Mar 3	19.62	May 7 1984
INSTANTANEOUS LOW FLOW					.00	Oct 1 1941
ANNUAL RUNOFF (CFSM)	1.73		1.27		1.23	
ANNUAL RUNOFF (INCHES)	23.55		17.31		16.69	
10 PERCENT EXCEEDS	199		138		157	
50 PERCENT EXCEEDS	58		44		23	
90 PERCENT EXCEEDS	13		13		2.0	

BIG SANDY RIVER BASIN

03212500 LEVISA FORK AT PAINTSVILLE, KY

LOCATION.--Lat 37°48'55", long 82°47'30", Johnson County, Hydrologic Unit 05070203, on left bank 700 ft downstream from bridge on State Highway 40 at Paintsville, 900 ft downstream from Paint Creek, and at mile 65.2.

DRAINAGE AREA.--2,144 mi^2.

PERIOD OF RECORD.--June 1915 to September 1916, October 1916 to November 1920 (gage heights only), and October 1928 to current year. Monthly discharge only for October to December 1928, published in WSP 1305. Published. (as "at Thelma" prior to 1928.)

REVISED RECORDS.--WSP 953: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 566.84 ft above sea level. See WDR KY-90-1 for history of changes prior to Oct. 19, 1954.

REMARKS.--No estimated daily discharges: Records good. Flow regulated since October 1968 by Fishtrap Lake (station 03207995), since August 1966 by North Fork Pound River Lake (station 03208680), since March 1965 by John W. Flannagan Lake (station 03208990), and since May 1950 by Dewey Lake (station 03211000).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1862 reached a stage of 46.6 ft, from levels to floodmark by U.S. Army Corps of Engineers

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1690	1060	12200	2610	4540	3540	4650	1950	1940	1720	1020	427
2	2320	1190	16200	2510	3770	6650	3030	1870	1650	3470	838	417
3	11800	1170	10500	2510	3590	13200	2520	1890	1740	2740	730	406
4	8720	1150	10500	2350	3420	22400	2270	1940	1700	1800	1120	398
5	6300	1080	8680	2520	5010	13800	2020	2040	2240	1770	1410	383
6	3220	951	7250	3150	6670	10300	1920	1980	1930	1370	1070	375
7	2030	920	4570	3380	6140	18100	1720	1670	1320	1060	828	377
8	1630	3890	3370	2980	5300	21100	1520	1450	1320	861	669	376
9	1350	6280	4000	2960	5170	17100	1500	1450	3930	777	621	409
10	1250	4600	3460	3700	5650	11200	1410	1370	5700	775	565	514
11	1100	2910	3100	4020	5230	7390	1310	1330	3980	815	541	548
12	1040	3230	2690	3520	4400	6070	1280	1250	2890	885	515	579
13	1080	3820	2350	3150	3490	5190	1380	1220	2260	780	520	537
14	990	3190	2490	2640	3140	4430	1350	1270	2380	699	560	478
15	947	2180	2770	2150	2880	3780	1310	1350	3440	620	581	440
16	897	1770	2700	2740	2590	3510	1180	1260	3200	520	522	422
17	835	1460	2500	3870	2420	3270	1100	1150	5450	507	497	540
18	913	1700	2330	3640	2330	3040	1030	1080	5810	485	577	482
19	1080	2570	2040	3130	2240	5680	1010	1030	5220	476	833	380
20	1050	2890	1760	2830	1990	11600	1030	1180	4050	469	956	384
21	1040	3040	1500	3030	1890	11300	1020	1600	3040	457	1070	390
22	930	6800	1310	2980	1890	7320	1020	2000	2120	973	957	401
23	905	7760	1430	2980	1800	5250	1070	1930	1770	1960	764	397
24	820	5980	2060	2940	1740	4320	1300	1480	1400	2290	629	448
25	829	4430	2590	3110	1930	3610	2380	1330	1090	1680	536	464
26	838	4480	3450	3200	2050	3460	2260	6250	1030	1030	470	475
27	929	4520	4010	3070	2190	3310	1940	7170	1290	893	442	451
28	1030	3890	3320	5120	2360	3250	1760	5690	1590	1370	438	432
29	1100	3140	2840	10200	---	4310	1740	3700	1550	750	439	428
30	1130	3190	2870	9340	---	6540	2040	2690	1870	4080	403	454
31	1060	---	2880	6490	---	6150	---	2240	---	1630	411	---
TOTAL	60853	95241	133720	112820	95820	250170	51070	65810	78900	39712	21532	13212
MEAN	1963	3175	4314	3639	3422	8070	1702	2123	2630	1281	695	440
MAX	11800	7760	16200	10200	6670	22400	4650	7170	5810	4080	1410	579
MIN	820	920	1310	2150	1740	3040	1010	1030	1030	457	403	375

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

MEAN	1178	1900	2890	4064	4957	5296	4005	3429	1672	882	777	719
MAX	6560	4908	8870	12030	11000	13160	10040	9665	5338	2384	1837	2054
(WY)	1990	1978	1973	1974	1994	1975	1987	1984	1989	1979	1977	1989
MIN	181	447	570	435	1467	963	594	519	278	257	291	239
(WY)	1970	1970	1981	1981	1988	1988	1986	1976	1988	1988	1969	1969

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1969 - 1997	
ANNUAL TOTAL	1204731		1018860			
ANNUAL MEAN	3292		2791		2636	
HIGHEST ANNUAL MEAN					4234	1975
LOWEST ANNUAL MEAN					830	1988
HIGHEST DAILY MEAN	18100	Feb 10	22400	Mar 4	42000	Apr 6 1977
LOWEST DAILY MEAN	365	Sep 2	375	Sep 6	98	Oct 1 1968
ANNUAL SEVEN-DAY MINIMUM	414	Aug 28	389	Sep 3	122	Aug 27 1969
INSTANTANEOUS PEAK FLOW			22900	Mar 4	69700	Jan 31 1957
INSTANTANEOUS PEAK STAGE			25.37	Mar 4	45.92	Jan 31 1957
INSTANTANEOUS LOW FLOW			98	Oct	1 1968	
10 PERCENT EXCEEDS	7780		5880		6320	
50 PERCENT EXCEEDS	2330		1920		1280	
90 PERCENT EXCEEDS	557		503		376	

LITTLE SANDY RIVER BASIN

03216500 LITTLE SANDY RIVER AT GRAYSON, KY

LOCATION.--Lat 38°19'48", long 82°56'22", Carter County, Hydrologic Unit 05090104, on left bank 0.3 mi upstream from bridge on U.S. Highway 60, 0.5 mi downstream from Town Branch, 0.5 mi east of Grayson, and at mile 38.1.

DRAINAGE AREA.--400 mi^2.

PERIOD OF RECORD.--April 1938 to current year. Prior to October 1964, published as "near Grayson."

REVISED RECORDS.--WSP 1435: 1939(M), 1943(M), 1948(P). WSP 1725: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 557.95 ft above sea level. Prior to Aug. 11, 1939, nonrecording gage and Aug. 11, 1939 to Jan. 29, 1965, water-stage recorder at site 1.6 mi downstream at same datum. Apr. 6, 1948 to Jan. 29, 1965, supplementary nonrecording gage 800 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 19-21, Jan. 11-15. Records good except for periods of estimated record, which are fair. Flow regulated since March 1968 by Grayson Lake (station 03216300). Peak flow 24,500 ft ^{3}/s on Sept. 22, 1950, at site 1.6 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	220	2410	367	615	4290	996	250	975	161	80	41
2	139	287	2150	354	548	14600	573	220	662	135	53	40
3	137	279	2350	384	508	8040	375	198	591	133	49	36
4	133	209	994	217	551	4680	316	197	1190	128	106	36
5	124	188	387	257	1440	1880	279	171	627	103	461	35
6	54	187	461	397	1450	2510	251	157	288	68	299	35
7	45	218	514	582	1090	3290	220	142	269	61	75	36
8	42	1410	426	476	604	3480	192	135	401	55	57	35
9	40	1290	318	295	810	3310	169	193	1230	54	51	37
10	51	1330	140	515	806	3190	153	183	2260	168	48	55
11	38	1270	139	240	741	3260	140	153	1580	119	47	49
12	41	1020	274	190	499	3140	143	138	906	66	46	45
13	40	285	365	180	510	3090	151	132	2310	56	44	42
14	39	153	204	170	709	2750	138	131	2030	52	53	40
15	39	137	177	160	776	3030	122	161	3050	48	55	38
16	39	131	175	265	667	3010	113	150	1850	45	48	35
17	37	241	881	303	610	2970	111	128	973	43	62	34
18	42	323	1320	262	625	2910	109	119	359	41	109	33
19	53	533	800	303	669	3080	103	108	478	40	86	34
20	61	588	480	199	489	3450	101	112	437	39	141	37
21	140	499	300	202	387	3260	99	106	326	38	385	37
22	196	586	264	216	330	3070	100	90	160	46	211	35
23	195	607	354	421	291	2870	98	81	113	192	66	34
24	194	539	1010	609	291	2250	114	75	136	66	53	35
25	192	368	1200	909	321	1370	89	73	126	51	54	34
26	197	1370	1030	687	224	1290	84	429	136	50	63	34
27	204	1260	1010	843	271	1050	96	1110	420	58	55	34
28	217	709	403	2130	275	676	517	992	284	103	55	34
29	229	669	374	2230	---	1300	430	554	221	528	50	34
30	218	926	484	1280	---	1670	288	276	147	527	45	33
31	212	---	732	775	---	1240	---	425	---	415	42	---
TOTAL	3541	17832	22126	16418	17107	100006	6670	7389	24535	3689	3049	1117
MEAN	114	594	714	530	611	3226	222	238	818	119	98.4	37.2
MAX	229	1410	2410	2230	1450	14600	996	1110	3050	528	461	55
MIN	37	131	139	160	224	676	84	73	113	38	42	33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

MEAN	174	358	659	749	923	1048	674	653	296	160	111	124
MAX	733	993	2630	1954	2886	3226	2291	2116	928	841	382	585
(WY)	1990	1987	1979	1974	1989	1997	1972	1996	1974	1971	1979	1979
MIN	30.1	28.4	53.6	45.2	249	133	113	62.1	39.1	37.5	34.7	33.3
(WY)	1981	1982	1982	1981	1969	1969	1986	1976	1988	1969	1988	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1969 - 1997	
ANNUAL TOTAL	264747		223479			
ANNUAL MEAN	723		612		492	
HIGHEST ANNUAL MEAN					838	1979
LOWEST ANNUAL MEAN					116	1969
HIGHEST DAILY MEAN	5000	May 16	14600	Mar 2	14600	Mar 2 1997
LOWEST DAILY MEAN	37	Oct 17	33	Sep 18	5.8	Oct 1 1968
ANNUAL SEVEN-DAY MINIMUM	39	Oct 11	34	Sep 24	18	Nov 1 1968
INSTANTANEOUS PEAK FLOW			16300	Mar 2	24500	Sep 22 1950
INSTANTANEOUS PEAK STAGE			30.57	Mar 2	30.57	Mar 2 1997
INSTANTANEOUS LOW FLOW					1.5	Oct 12 1953
10 PERCENT EXCEEDS	2030		1500		1410	
50 PERCENT EXCEEDS	417		217		177	
90 PERCENT EXCEEDS	48		41		40	

OHIO RIVER MAIN STEM

03216600 OHIO RIVER AT GREENUP DAM, KY

LOCATION.--Lat 38°38'48", long 82°51'38", Greenup County, Hydrologic Unit 05090103, at left bank at downstream end of lock guidewall in lower pool at Greenup locks, 1.1 mi upstream from Grays Branch, 4.7 mi downstream from Little Sandy River, 5.0 mi north of Greenup, and at mile 341.5.

DRAINAGE AREA.--62,000 mi^2, approximately.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 472.43 ft above sea level or 472.97 ft Ohio River Datum. Record of Greenup Dam headwater, tailwater, gate openings and lockages used to determine discharge from Oct. 1, 1968 to Sept. 30, 1981. Auxiliary water-stage recorder is located at Portsmouth, Ohio, 14.1 mi downstream, established Oct. 1, 1981 and used in slope rating computation from Oct. 1, 1981 to Sept. 30, 1983. Datum of gage is 470.43 ft above sea level or 470.99 ft Ohio River Datum. Since Oct. 1, 1983, discharge has been computed using the Branch Flow Model. Stage record for this model is obtained from the Greenup Dam Tailwater and Portsmouth, Ohio gages.

REMARKS.--No estimated daily discharges. Records fair except for periods below 20,000 ft^3/s and those computed using dam operations records, which are poor. Flow regulated by Ohio River system of locks, dams, and reservoirs upstream from the station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119000	67500	173000	108000	135000	160000	134000	90900	105000	41400	30000	15800
2	89500	57300	224000	98000	116000	400000	125000	76500	150000	60600	14900	17500
3	90100	55700	312000	90800	95200	490000	113000	64300	192000	73100	14700	13600
4	86900	52900	321000	83700	86500	517000	96900	72900	202000	62400	19500	14200
5	75700	48800	300000	83700	111000	520000	88100	83200	190000	44000	28700	12700
6	62500	48500	229000	97000	153000	497000	78200	70400	154000	33800	7610	10200
7	48500	44200	182000	96200	168000	453000	76500	67900	218000	31700	28900	10100
8	38100	84100	149000	97700	165000	411000	64200	69800	206000	16600	8010	23800
9	41100	162000	126000	88100	149000	382000	57900	78000	134000	22000	13400	10100
10	34500	214000	112000	78600	135000	352000	50700	94700	111000	27800	16800	21800
11	36000	236000	101000	89500	119000	331000	53300	98900	93800	30900	7710	20200
12	35000	209000	104000	77300	105000	312000	45800	92000	93900	16300	19700	19200
13	30300	165000	146000	59900	99200	280000	54900	87100	78100	32900	8450	22200
14	28300	151000	181000	42500	85200	211000	80000	79000	77400	22200	24000	16400
15	23500	138000	181000	39800	89700	185000	76100	67400	74900	22000	20500	18700
16	34300	117000	165000	43100	93500	189000	78900	69700	85700	20900	17100	17800
17	23500	104000	147000	58500	89800	185000	58800	69700	75600	15200	40500	10800
18	17600	90100	138000	51500	68800	161000	69500	65800	55400	9180	75500	16800
19	43000	83100	140000	45600	67400	165000	56700	55600	72100	26800	100000	17000
20	65600	91200	129000	30900	83900	196000	55500	79400	62500	15400	64000	7370
21	91600	90200	109000	50200	100000	219000	57700	104000	79600	8360	70800	31500
22	122000	92500	97200	48200	121000	197000	40200	117000	81800	14400	62600	14600
23	118000	92900	80400	51000	130000	159000	53400	105000	48400	28200	63100	15100
24	126000	88900	86400	78100	136000	134000	45800	85000	60000	19600	33200	15300
25	122000	79600	115000	103000	136000	113000	52300	79300	34600	26400	24900	14500
26	113000	92100	132000	117000	122000	118000	54600	116000	44600	20200	25700	10500
27	95700	129000	135000	121000	112000	158000	63600	198000	19100	32300	25100	20700
28	86500	157000	125000	141000	104000	164000	63200	208000	34500	27400	20400	7810
29	72700	160000	113000	195000	---	151000	78600	158000	31400	61500	17000	24700
30	69300	139000	108000	203000	---	153000	86600	136000	46800	35100	19600	28300
31	77800	---	104000	173000	---	149000	---	121000	---	26700	15000	---
TOTAL	2117600	3340600	4765000	2740900	3176200	8112000	2110000	2960500	2912200	925340	937380	499280
MEAN	68310	111400	153700	88420	113400	261700	70330	95500	97070	29850	30240	16640
MAX	126000	236000	321000	203000	168000	520000	134000	208000	218000	73100	100000	31500
MIN	17600	44200	80400	30900	67400	113000	40200	55600	19100	8360	7610	7370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

MEAN	41440	72770	115900	119500	145600	167800	141800	106800	67240	44940	37360	34000
MAX	111300	208600	252700	242700	259100	268600	258400	276700	174000	100700	113600	86310
(WY)	1980	1986	1973	1974	1994	1994	1994	1996	1981	1972	1980	1979
MIN	11310	21910	38500	27170	66240	53550	52660	36610	13440	13060	11270	12000
(WY)	1992	1992	1990	1977	1978	1969	1986	1976	1988	1988	1988	1985

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1969 - 1997	
ANNUAL TOTAL	49480200		34597000			
ANNUAL MEAN	135200		94790		90990	
HIGHEST ANNUAL MEAN					120100	1996
LOWEST ANNUAL MEAN					49760	1988
HIGHEST DAILY MEAN	444000	May 18	520000	Mar 5	540000	Jan 12 1974
LOWEST DAILY MEAN	11200	Sep 2	7370	Sep 20	4810	Jul 24 1993
ANNUAL SEVEN-DAY MINIMUM	16500	Aug 29	13400	Sep 1	9050	Jul 11 1988
INSTANTANEOUS PEAK FLOW			520000	Mar 4	520000	Mar 4 1997
INSTANTANEOUS PEAK STAGE			62.19	Mar 4	62.19	Mar 4 1997
10 PERCENT EXCEEDS	300000		183000		205000	
50 PERCENT EXCEEDS	118000		78900		64000	
90 PERCENT EXCEEDS	34400		17300		17900	

OHIO RIVER MAIN STEM

03216600 OHIO RIVER AT GREENUP DAM, KY--Continued

(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to September 1996, and current water year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1974 to September 1981.
WATER TEMPERATURES: October 1974 to September 1981.
REMARKS.--Flow regulated by Ohio River system of locks, dams, and reservoirs.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	TIME	STREAM FLOW INSTAN-TANEOUS (FTS3/S) SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
DEC 1996											
04...	1100	332000	202	7.1	6.5	90	13.7	112	73	20	5.6
JAN 1997											
09...	1400	110000	303	7.6	6.5	13	14.1	115	110	29	8.5
FEB											
13...	1100	126000	291	7.6	3.0	22	13.2	100	97	26	7.7
MAR											
04...	1600	530000	153	7,.2	8.5	340	9.9	86	57	16	4.1
17...	1630	195000	242	7.6	6.5	31	11.9	99	89	24	7.0
APR											
11...	1230	125000	302	7.6	12.0	2.8	12.9	121	100	28	8.1
MAY											
01...	1600	93000	312	7.5	14.0	13	10.5	105	110	30	9.2
14...	1545	85000	309	7.3	15.0	15	9.1	92	100	28	8.2
JUN											
02...	1545	164000	273	7.2	18.0	72	8.4	92	94	26	6.9
09...	1600	85400	289	7.2	18.0	18	8.2	88	100	28	7.8
23...	1700	58000	323	7.5	24.5	9.0	8.3	101	110	29	8.5
JUL											
24...	1730	21400	420	7.4	29.0	3.1	5.9	78	140	37	11
AUG											
6...	1400	25200	395	7.2	25.0	14	5.6	70	120	33	9.7
SEP											
25...	1730	15300	511	7.3	23.5	4.5	6.0	73	160	43	13

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
DEC 1996											
04...	7.8	1.9	38	31	9.5	40	<0.10	5.6	120	0.020	0.600
JAN 1997											
09...	14	2.2	62	50	17	61	<0.10	5.9	182	0.030	0.850
FEB											
13...	15	1.9	54	44	20	55	0.10	5.8	170	0.020	0.990
MAR											
04...	7.0	1.8	34	28	8.2	30	0.20	5.5	99	0.010	0.720
17...	10	1.7	41	34	14	53	0.10	5.6	157	<0.010	0.890
APR											
11...	14	1.6	47	38	17	64	0.12	5.2	178	0.012	0.818
MAY											
01...	14	1.9	64	52	17	66	0.11	2.9	184	<0.010	0.616
14...	16	1.9	56	46	16	67	0.11	3.6	191	0.022	0.554
JUN											
02...	12	2.1	55	45	14	52	<0.10	5.6	142	0.028	1.14
09...	12	2.3	54	44	14	55	0.14	5.7	172	0.035	1.44
23...	15	2.3	63	52	17	63	0.13	3.4	196	<0.010	0.851
JUL											
24...	22	2.7	84	69	26	83	0.23	1.6	253	0.034	0.708
AUG											
26...	25	3.1	71	58	24	78	0.20	3.6	235	<0.010	<0.050
SEP											
25...	34	3.3	81	66	33	110	0.23	2.6	298	0.073	1.26

OHIO RIVER MAIN STEM

03216600 OHIO RIVER AT GREENUP DAM, KY--Continued

(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)
DEC 1996											
04...	0.040	0.20	0.90	0.230	0.020	<0.001	18	<1.0	<1	32	<1.0
JAN 1997											
09...	0.110	<0.20	0.30	0.030	<0.010	0.004	11	<1.0	<1	35	<1.0
FEB											
13...	0.070	<0.20	0.30	0.060	<0.010	<0.001	9.0	<1.0	<1	33	<1.0
MAR											
04...	0.040	0.20	0.60	0.200	<0.010	0.004	14	<1.0	<1	28	<1.0
17...	0.060	<0.20	0.50	0.130	0.020	0.004	11	<1.0	<1	31	<1.0
APR											
11...	0.016	<0.20	0.24	<0.010	<0.010	0.001	17	<1.0	<1	38	<1.0
MAY											
01...	<0.015	<0.20	0.41	0.022	<0.010	0.003	21	<1.0	<1	37	<1.0
14...	0.036	<0.20	<0.20	0.056	0.018	0.007	12	<1.0	<1	38	<1.0
JUN											
02...	<0.015	<0.20	0.85	0.229	<0.010	0.009	13	<1.0	<1	34	<1.0
09...	<0.015	<0.20	0.42	0.080	<0.010	0.008	11	<1.0	2	36	<1.0
23...	<0.015	<0.20	0.34	0.019	<0.010	0.004	18	<1.0	<1	41	<1.0
JUL											
24...	0.109	0.38	0.39	0.032	0.016	0.008	12	<1.0	<1	56	<1.0
AUG											
26...	<0.015	0.30	0.25	0.032	0.036	0.015	8.7	<1.0	<1	50	<1.0
SEP											
25...	0.045	0.34	0.31	0.023	0.020	0.017	7.2	<1.0	<1	57	<1.0

DATE	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)
DEC 1996											
04...	19	<1.0	<1.0	<1.0	<1.0	77	<1.0	37	<1.0	2.0	<1
JAN 1997											
09...	28	<1.0	<1.0	<1.0	1.0	28	<1.0	64	1.0	3.0	<1
FEB											
13...	24	<1.0	<1.0	<1.0	1.0	23	<1.0	33	1.0	2.0	<1
MAR											
04...	21	<1.0	<1.0	<1.0	1.0	68	<1.0	3.0	<1.0	1.0	<1
17...	22	<1.0	<1.0	<1.0	1.0	18	<1.0	27	<1.0	2.0	<1
APR											
11...	23	<1.0	<1.0	<1.0	1.1	15	<1.0	58	1.4	2.2	<1
MAY											
01...	29	<1.0	<1.0	<1.0	1.5	8.7	<1.0	4.7	1.4	1.6	<1
14...	27	<1.0	1.0	<1.0	1.1	9.9	<1.0	7.8	1.5	1.1	<1
JUN											
02...	39	<1.0	<1.0	<1.0	1.7	15	<1.0	2.1	1.3	2.0	<1
09...	33	<1.0	<1.0	<1.0	2.0	6.7	<1.0	6.1	1.9	1.7	<1
23...	27	<1.0	<1.0	<1.0	2.0	9.6	<1.0	2.9	1.9	1.7	<1
JUL											
24...	51	<1.0	1.4	<1.0	2.8	4.0	<1.0	3.0	3.7	1.5	<1
AUG											
26...	53	<1.0	<1.0	<1.0	2.5	<3.0	<1.0	4.8	3.8	1.4	<1
SEP											
25...	70	<1.0	<1.0	<1.0	2.1	<3.0	<1.0	15	6.4	2.1	<1

OHIO RIVER MAIN STEM

03216600 OHIO RIVER AT GREENUP DAM, KY--Continued

(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	ALPHA BHC DIS-SOLVED (UG/L) (34253)
DEC 1996											
04...	<1.0	110	<6	5.0	<1.0	2.7	3.8	<0.002	<0.002	0.020	<0.002
JAN 1997											
09...	<1.0	160	<6	6.0	<1.0	2.0	0.30	<0.002	<0.002	0.028	<0.002
FEB											
13...	<1.0	150	<6	4.0	<1.0	1.9	0.80	<0.002	<0.002	0.018	<0.002
MAR											
04...	<1.0	85	<6	<1.0	<1.0	4.0	>5.0	<0.002	<0.002	0.013	E0.004
17...	<1.0	130	<6	2.0	<1.0	2.1	1.5	<0.002	<0.002	0.014	<0.002
APR											
11...	<1.0	171	<6	1.4	<1.0	3.6	0.70	<0.002	<0.002	0.011	<0.002
MAY											
01...	<1.0	172	<6	1.2	<1.0	2.6	1.1	<0.002	<0.002	0.013	<0.002
14...	<1.0	181	<6	3.5	<1.0	2.3	0.70	E0.003	0.016	0.066	<0.002
JUN											
02...	<1.0	152	<6	<1.0	<1.0	4.9	3.5	0.037	0.216	1.36	<0.002
09...	<1.0	149	<6	<1.0	<1.0	2.8	1.0	0.039	0.276	1.48	<0.002
23...	<1.0	174	<6	1.2	<1.0	3.5	0.70	0.020	0.130	0.858	<0.002
JUL											
24...	<1.0	219	<6	1.9	<1.0	2.8	0.30	0.012	0.018	0.390	<0.002
AUG											
26...	<1.0	215	<6	1.6	<1.0	3.1	0.60	<0.002	0.005	0.116	<0.002
SEP											
25...	<1.0	268	<6	2.2	<1.0	2.8	0.60	<0.002	<0.002	0.150	<0.002

DATE	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)
DEC 1996											
04...	<0.002	<0.004	<0.004	E0.003	<0.002	<0.001	<0.003	<0.004	<0.005	0.019	0.009
JAN 1997											
09...	<0.002	<0.004	0.006	E0.017	<0.002	<0.001	<0.003	<0.004	<0.005	0.062	0.014
FEB											
13...	<0.002	<0.004	<0.004	E0.004	<0.002	<0.001	<0.003	<0.004	<0.005	0.030	0.014
MAR											
04...	<0.002	<0.004	<0.004	E0.004	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.007
17...	<0.002	<0.004	<0.004	E0.010	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.007
APR											
11...	<0.002	<0.004	<0.004	E0.007	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.006
MAY											
01...	<0.002	0.005	<0.004	E0.008	0.005	<0.001	<0.003	<0.004	<0.005	0.005	0.007
14...	<0.002	<0.004	0.022	E0.010	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.046
JUN											
02...	<0.002	<0.090	0.142	E0.022	0.010	<0.001	<0.003	<0.004	<0.005	0.025	0.801
09...	<0.002	<0.004	0.236	E0.073	0.007	<0.001	<0.003	<0.004	<0.005	0.038	0.903
23...	<0.002	<0.004	0.131	E0.094	<0.002	<0.001	<0.003	<0.004	<0.005	0.008	0.440
JUL											
24...	<0.002	<0.004	0.059	E0.036	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.177
AUG											
26...	<0.002	<0.004	0.009	E0.016	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.032
SEP											
25...	<0.002	E0.006	0.019	E0.030	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	0.046

OHIO RIVER MAIN STEM

03216600 OHIO RIVER AT GREENUP DAM, KY--Continued

(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	P,P' DDE DISSOLV (UG/L) (34653)	PARA-THION, DIS-SOLVED (UG/L) (39542)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
DEC 1996											
04...	<0.006	<0.004	<0.007	<0.018	E0.005	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
JAN 1997											
09...	<0.006	<0.004	<0.007	<0.018	0.006	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
FEB											
13...	<0.006	<0.004	<0.007	<0.018	E0.004	<0.002	E0.004	<0.003	<0.002	<0.003	<0.017
MAR											
04...	<0.006	<0.004	<0.007	<0.018	E0.004	<0.002	E0.008	<0.003	<0.002	<0.003	<0.017
17...	<0.006	<0.004	<0.007	<0.018	<0.005	<0.002	E0.007	<0.003	<0.002	<0.003	<0.017
APR											
11...	<0.006	<0.004	<0.007	<0.018	<0.005	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
MAY											
01...	<0.006	<0.004	<0.007	E0.006	0.013	<0.002	E0.008	E0.003	<0.002	<0.003	<0.017
14...	<0.006	<0.004	<0.007	<0.018	0.023	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
JUN											
02...	<0.006	<0.004	<0.007	E0.018	0.154	<0.002	<0.003	<0.003	E0.002	<0.003	<0.017
09...	<0.006	<0.004	<0.007	E0.013	0.285	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
23...	<0.006	<0.004	<0.007	E0.014	0.134	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
JUL											
24...	<0.006	<0.004	<0.007	0.018	0.065	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
AUG											
26...	<0.006	<0.004	<0.007	E0.017	0.016	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017
SEP											
25...	<0.006	<0.004	<0.007	0.019	0.026	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017

DATE	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
DEC 1996											
04...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
JAN 1997											
09...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
FEB											
13...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
MAR											
04...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
17...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
APR											
11...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
MAY											
01...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
14...	<0.004	<0.003	<0.002	<0.001	<0.006	E0.004	<0.003	<0.004	<0.005	<0.002	<0.003
JUN											
02...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
09...	<0.004	<0.003	<0.015	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
23...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
JUL											
24...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
AUG											
26...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003
SEP											
25...	<0.004	<0.003	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.005	<0.002	<0.003

03216600 OHIO RIVER AT GREENUP DAM, KY--Continued

(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC 1996											
04...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	236	212000	79
JAN 1997											
09...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	27	8020	98
FEB											
13...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	40	13500	98
MAR											
04...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	617	883000	96
17...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	74	39000	87
APR											
11...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	5	1690	95
MAY											
01...	<0.004	<0.013	E0.009	<0.007	<0.013	<0.001	<0.002	<0.002	15	3770	87
14...	<0.004	<0.013	E0.006	<0.007	<0.013	<0.001	<0.002	<0.002	33	7570	84
JUN											
02...	<0.004	<0.013	E0.009	<0.007	<0.013	<0.001	<0.002	<0.002	221	97900	91
09...	<0.004	<0.013	E0.006	<0.007	<0.013	<0.001	<0.002	<0.002	63	14500	20
23...	<0.004	<0.013	E0.006	<0.007	<0.013	<0.001	<0.002	<0.002	--	--	--
JUL											
24...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	18	1040	97
AUG											
26...	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	20	1360	99
SEP											
25...	<0.004	<0.013	0.010	<0.007	<0.013	<0.001	0.005	<0.002	12	496	82

QUALITY-ASSURANCE DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	TIME	MEDIUM CODE	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
JAN 1997												
09...	1410	R[1]	110	29	8.5	14	2.2	65	53	17	62	<0.10
MAR												
17...	1640	Q[2]	--	0.011	<0.001	<0.025	--	--	--	--	--	--
MAY												
01...	1608	Q[2]	--	--	--	--	--	--	--	--	--	--
JUN												
23...	1710	R[1]	110	29	8.5	15	2.2	66	54	18	63	0.14

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
JAN 1997												
09...	5.8	0.030	0.870	0.190	<0.20	0.30	0.030	<0.010	0.007	12	<1.0	<1
MAR												
17...	<0.02	0.001	<0.005	<0.002	--	--	--	--	<0.001	<0.30	<0.20	--
MAY												
01...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
23...	3.3	<0.010	0.913	0.023	<0.20	0.33	0.024	<0.010	0.005	18	<1.0	<1

1. Surface-water quality-assurance sample

2. Artificial quality-assurance sample

OHIO RIVER MAIN STEM

03216600 OHIO RIVER AT GREENUP DAM, KY--Continued

(National stream-quality accounting network station)

QUALITY-ASSURANCE DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)
JAN 1997												
09...	36	<1.0	26	<1.0	<1.0	<1.0	<1.0	25	<1.0	63	1.0	3.0
MAR												
17...	<0.20	<0.20	<2.0	<0.30	<0.20	<0.20	0.28	<3.0	<0.30	<0.10	<0.20	<0.50
MAY												
01...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
23...	41	<1.0	28	<1.0	<1.0	<1.0	2.0	6.6	<1.0	2.3	1.8	1.7

DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	ALPHA BHC DIS-SOLVED (UG/L) (34253)
JAN 1997												
09...	<1	<1.0	160	<6	3.0	<1.0	1.8	0.20	<0.002	<0.002	0.026	<0.002
MAR												
17...	--	<0.20	<0.10	--	1.1	<0.20	--	--	--	--	--	--
MAY												
01...	--	--	--	--	--	--	0.20	0.50	<0.002	<0.002	0.004	<0.002
JUN												
23...	<1	<1.0	175	<6	1.3	<1.0	3.0	1.2	0.020	0.127	0.836	<0.002

DATE	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	P,P' DDE DISSOLV (UG/L) (34653)
JAN 1997												
09...	<0.002	<0.004	0.007	E0.015	<0.002	<0.001	<0.003	<0.004	<0.005	0.010	0.013	<0.006
MAR												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
01...	<0.002	<0.004	<0.004	E0.002	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	E0.004	<0.006
JUN												
23...	<0.002	<0.004	0.127	E0.087	<0.002	<0.001	<0.003	<0.004	<0.005	0.011	0.433	<0.006

DATE	PARA-THION, DIS-SOLVED (UG/L) (39542)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)
JAN 1997											
09...	<0.004	<0.007	<0.018	0.006	<0.002	E0.002	<0.003	<0.002	<0.003	<0.017	<0.004
MAR											
17...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	<0.004	<0.007	<0.018	<0.005	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017	<0.004
JUN											
23...	<0.004	<0.007	E0.010	0.142	<0.002	<0.003	<0.003	<0.002	<0.003	<0.017	<0.004

(National stream-quality accounting network station)

QUALITY-ASSURANCE DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	ETHOPROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	LINURON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL AZINPHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARATHION WAT FLT 0.7 U GF, REC (UG/L) (82667)	MOLINATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROPAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PEBULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDIMETHALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PERMETHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)
JAN 1997											
09...	<0.003	<0.002	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.004	<0.005	<0.002
MAR											
17...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	<0.003	<0.002	<0.002	<0.001	<0.006	<0.004	<0.014	<0.004	<0.004	<0.005	<0.002
JUN											
23...	<0.003	<0.002	<0.002	<0.001	<0.006	<0.004	<0.003	<0.004	<0.004	<0.005	<0.002

DATE	PRONAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PROPARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	TEBUTHIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TERBACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TERBUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TRIALLATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRIFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	THIOBENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	SEDIMENT, SUSPENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JAN 1997											
09...	<0.003	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	27	98
MAR											
17...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	<0.003	<0.004	<0.013	<0.010	<0.007	<0.013	<0.001	<0.002	<0.002	--	--
JUN											
23...	<0.003	<0.004	<0.013	E0.006	<0.007	<0.013	<0.001	<0.002	<0.002	--	--

TYGARTS CREEK BASIN

03217000 TYGARTS CREEK NEAR GREENUP, KY

LOCATION.--Lat 38°33'51", long 82°57'08", Greenup County, Hydrologic Unit 05090103, on downstream side of center pier of bridge on State Highway 7, 100 ft downstream from Lick Run, 0.4 mi upstream from White Oak Creek, 6.5 mi west of Greenup, and at mile 28.1.

DRAINAGE AREA.--242 mi^2.

PERIOD OF RECORD.--August 1940 to current year.

REVISED RECORDS.--WSP 1113: 1942-43, 1945-46. WSP 1625: 1958. WSP 1725: Drainage area. WRD KY 79-1: 1948(P), 1950(M), 1952(M), 1962(M), 1967(P), 1970(M), 1972-76(M), 1978(M).

GAGE.--Water-stage recorder. Datum of gage is 547.14 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 21, 22 and Jan. 9-22. Records fair except for periods of estimated record, which are poor. Occasional regulation at low flow caused by withdrawal of water for cooling purposes by gas transmission plant above station. Specific conductance and temperature measurements made in conjunction with discharge measurements are published in the miscellaneous water-quality data section.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	30	2280	162	370	5520	492	243	2420	798	31	18
2	40	21	1690	145	292	25800	369	215	1440	317	22	15
3	30	15	522	133	236	8010	307	215	1100	178	18	15
4	22	12	387	122	633	4470	267	309	472	166	17	13
5	19	9.5	242	118	2190	1770	236	337	310	120	18	11
6	16	7.6	235	186	1120	2350	212	253	225	89	25	9.5
7	14	7.6	242	215	599	1310	188	203	174	70	23	8.3
8	12	574	206	158	501	780	162	174	151	56	20	6.9
9	9.9	736	173	135	468	534	144	195	1080	46	17	6.7
10	7.8	274	139	158	405	619	132	204	1420	41	15	6.9
11	5.8	170	122	160	364	696	124	173	529	39	13	6.2
12	5.1	107	303	135	325	469	125	152	460	34	13	5.6
13	5.4	75	729	125	289	356	148	138	585	33	13	5.9
14	5.7	56	388	120	360	406	146	127	629	29	13	5.5
15	4.6	43	257	130	656	618	126	119	756	26	14	6.3
16	3.5	35	203	260	509	430	116	131	391	23	14	6.1
17	2.9	31	581	180	386	338	113	127	258	22	18	5.6
18	4.6	44	2310	165	315	444	109	117	204	20	53	4.8
19	6.4	145	987	150	276	1670	106	105	234	19	92	3.8
20	9.3	158	469	140	244	1220	100	103	210	18	78	3.9
21	32	115	294	170	221	697	99	99	154	17	54	3.3
22	31	130	214	193	217	476	105	92	127	16	46	2.8
23	21	180	196	273	192	353	102	77	104	15	44	2.5
24	17	131	234	475	161	282	98	67	86	14	29	2.3
25	14	109	1230	1520	139	244	90	63	74	22	23	2.0
26	12	765	631	924	133	761	83	117	96	18	19	1.7
27	16	569	371	503	189	856	99	334	164	16	35	1.5
28	32	319	290	1750	221	482	890	207	191	15	43	1.2
29	41	222	241	1410	---	1110	595	144	110	15	26	.91
30	47	234	211	648	---	1080	312	121	174	74	20	.69
31	43	---	182	471	---	688	---	217	---	58	19	---
TOTAL	589.0	5324.7	16559	11434	12011	64839	6195	5178	14328	2424	885	182.90
MEAN	19.0	177	534	369	429	2092	207	167	478	78.2	28.5	6.10
MAX	59	765	2310	1750	2190	25800	890	337	2420	798	92	18
MIN	2.9	7.6	122	118	133	244	83	63	74	14	13	.69
CFSM	.08	.73	2.21	1.52	1.77	8.64	.85	.69	1.97	.32	.12	.03
IN.	.09	.82	2.55	1.76	1.85	9.97	.95	.80	2.20	.37	.14	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1997, BY WATER YEAR (WY)

MEAN	58.4	157	393	488	609	707	517	391	175	117	82.3	68.3
MAX	509	869	1954	1665	1953	2092	1513	1309	994	645	445	1031
(WY)	1976	1987	1979	1950	1989	1997	1972	1996	1961	1960	1979	1950
MIN	.35	.70	3.23	31.1	20.7	80.8	90.9	27.6	5.13	5.39	2.09	1.31
(WY)	1954	1954	1954	1977	1954	1941	1941	1941	1988	1964	1944	1953

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1940 - 1997	
ANNUAL TOTAL	172698.4		139949.60			
ANNUAL MEAN	472		383		312	
HIGHEST ANNUAL MEAN					589	1979
LOWEST ANNUAL MEAN					67.5	1954
HIGHEST DAILY MEAN	7610	May 16	25800	Mar 2	25800	Mar 2 1997
LOWEST DAILY MEAN	2.9	Oct 17	.69	Sep 30	.00	Aug 24 1952
ANNUAL SEVEN-DAY MINIMUM	4.5	Oct 12	1.5	Sep 24	.00	Sep 17 1955
INSTANTANEOUS PEAK FLOW			34400	Mar 2	34400	Mar 2 1997
INSTANTANEOUS PEAK STAGE			23.65	Mar 2	23.65	Mar 2 1997
INSTANTANEOUS LOW FLOW					.00	Aug 24 1952
ANNUAL RUNOFF (CFSM)	1.95		1.58		1.29	
ANNUAL RUNOFF (INCHES)	26.55		21.51		17.53	
10 PERCENT EXCEEDS	1190		710		700	
50 PERCENT EXCEEDS	233		135		94	
90 PERCENT EXCEEDS	9.7		8.9		5.2	

KINNICONICK CREEK BASIN

03237250 KINNICONICK CREEK AT TANNERY, KY

LOCATION.--Lat 38°32'36", long 83°13'29", Lewis County, Hydrologic Unit 05090201, near right bank on downstream side of bridge on County Highway 1149, 0.35 mi upstream from Trace Creek, 0.5 mi west of Tannery, and 10.2 mi upstream from mouth.

DRAINAGE AREA.--201 mi^2

PERIOD OF RECORD.--October 1991 to current year.

GAGE.--Water-stage recorder. Datum of gage is 535.34 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 12 to Dec. 10, Jan. 10-15, 18-21, Mar. 2-28, Apr. 14 to May 15, and June 10 to July 9. Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	96	1000	174	260	10400	526	95	2330	600	.71	3.3
2	17	86	780	161	202	20000	351	69	1080	350	.59	2.8
3	7.8	77	520	149	170	11500	270	540	1030	210	.37	2.7
4	4.3	74	380	133	802	6000	234	380	553	140	.52	2.2
5	2.6	70	230	288	3160	2300	202	270	300	96	1.1	2.2
6	.82	67	240	554	948	1300	182	190	209	74	2.1	1.6
7	.79	75	260	278	526	760	155	140	155	56	2.1	1.1
8	4.4	419	180	208	369	410	132	100	130	45	2.5	.79
9	16	282	140	188	286	480	112	580	2160	38	2.7	.72
10	25	159	110	170	251	600	101	410	5000	29	2.2	1.2
11	27	110	83	155	230	460	90	310	2100	26	1.7	2.1
12	27	80	632	145	206	360	96	240	1000	21	1.4	2.3
13	26	66	1210	135	185	300	129	200	310	15	2.1	2.1
14	26	58	458	125	219	750	110	160	350	10	5.6	1.1
15	25	50	258	190	553	1300	92	140	390	7.8	7.4	.71
16	24	43	202	261	453	680	80	117	250	5.7	7.2	.65
17	23	40	2070	374	311	420	68	101	180	6.5	14	.39
18	27	63	1180	250	250	720	60	94	330	11	28	.32
19	29	90	523	190	223	1400	52	83	840	13	19	.25
20	30	130	272	150	200	660	48	90	340	17	16	.25
21	34	110	203	120	189	470	44	103	210	20	8.9	.28
22	41	98	167	217	197	350	60	77	150	23	4.3	.27
23	57	120	147	411	165	280	54	58	110	29	1.6	.27
24	65	200	801	638	147	220	44	45	88	141	.54	.30
25	72	400	933	2890	136	1500	37	64	72	37	.29	.32
26	88	1000	415	908	135	1100	30	186	62	11	.25	.33
27	93	640	277	541	178	761	39	241	52	3.9	.47	.32
28	112	350	220	2720	183	410	62	166	45	2.3	.99	.30
29	131	250	215	1150	---	1840	100	125	40	1.6	1.1	.27
30	123	520	208	585	---	1050	160	105	37	1.1	3.4	.24
31	104	---	192	354	---	736	---	343	---	.86	3.7	---
TOTAL	1290.71	5823	14506	14812	11134	69517	3720	5822	19903	2041.76	142.83	31.68
MEAN	41.6	194	468	478	398	2242	124	188	663	65.9	4.61	1.06
MAX	131	1000	2070	2890	3160	20000	526	580	5000	600	28	3.3
MIN	.79	40	83	120	135	220	30	45	37	.86	.25	.24
CFSM	.21	.97	2.33	2.38	1.98	11.2	.62	.93	3.30	.33	.02	.01
IN.	.24	1.08	2.68	2.74	2.06	12.87	.69	1.08	3.68	.38	.03	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1997, BY WATER YEAR (WY)

MEAN	38.9	147	292	571	442	930	425	495	193	78.3	65.3	8.38
MAX	130	340	468	1025	816	2242	689	1187	663	161	189	23.0
(WY)	1996	1994	1997	1994	1994	1997	1996	1996	1997	1996	1995	1995
MIN	2.32	20.8	194	295	293	345	124	64.8	15.6	37.2	4.61	1.06
(WY)	1993	1992	1995	1992	1995	1995	1997	1993	1994	1993	1997	1997

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1992 - 1997	
ANNUAL TOTAL	141864.26		148743.98			
ANNUAL MEAN	388		408		307	
HIGHEST ANNUAL MEAN					408	1997
LOWEST ANNUAL MEAN					221	1992
HIGHEST DAILY MEAN	4390	May 6	20000	Mar 2	20000	Mar 2 1997
LOWEST DAILY MEAN	.79	Oct 7	.24	Sep 30	.24	Sep 30 1997
ANNUAL SEVEN-DAY MINIMUM	1.1	Sep 23	.28	Sep 18	.28	Sep 18 1997
INSTANTANEOUS PEAK FLOW			45600	Mar 2	45600	Mar 2 1997
INSTANTANEOUS PEAK STAGE			28.04	Mar 2	28.04	Mar 2 1997
INSTANTANEOUS LOW FLOW					.89	Sep 28 1996
ANNUAL RUNOFF (CFSM)	1.93		2.03		1.53	
ANNUAL RUNOFF (INCHES)	26.26		27.53		20.79	
10 PERCENT EXCEEDS	961		760		746	
50 PERCENT EXCEEDS	172		125		104	
90 PERCENT EXCEEDS	3.0		1.3		2.2	

LICKING RIVER BASIN

03248500 LICKING RIVER NEAR SALYERSVILLE, KY

LOCATION.--Lat 37°45'03", long 83°05'04", Magoffin County, Hydrologic Unit 05100101, on left bank on downstream side of bridge on State Highway 30, 0.8 mi upstream from Gardner Branch, 1.2 mi west of Salyersville, 2.9 mi downstream from State Road Fork, and at mile 266.9.

DRAINAGE AREA.--140 mi^2.

PERIOD OF RECORD.--October 1938 to September 1992, October 1994 to current year. Monthly discharge only for October to December 1938, published in WSP 1305.

REVISED RECORDS.--WSP 923: 1939-40, drainage area. WSP 1505: 1955(M), 1956(P).

GAGE.--Water-stage recorder. Datum of gage is 823.80 ft above sea level. Prior to Feb. 27, 1939, nonrecording gage at same site and datum. Feb. 27, 1939 to Sept. 27, 1965, water-stage recorder on upstream side of bridge at same datum.

REMARKS.--Estimated daily discharges: Dec. 20-22, Jan. 11-14, 17-21, Feb. 20, June 6-10, July 16, and Sept. 25. Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	39	1250	131	239	391	290	85	145	259	21	10
2	183	37	898	126	200	1540	241	87	131	166	20	9.3
3	196	34	370	122	175	2510	214	97	159	119	19	8.9
4	88	32	254	112	223	2520	193	103	131	92	20	8.7
5	55	30	202	174	722	1210	176	93	103	75	51	8.8
6	42	29	194	221	447	1460	164	87	88	63	34	7.8
7	35	30	167	180	323	775	150	79	78	54	22	7.2
8	30	763	144	151	352	468	127	73	200	48	18	7.7
9	28	424	125	153	385	340	113	78	700	43	16	7.6
10	26	199	108	184	326	318	104	72	1100	40	16	26
11	24	137	102	163	282	269	96	64	319	37	16	36
12	23	103	98	133	243	228	99	57	244	34	15	21
13	22	82	91	150	215	202	108	54	211	31	15	17
14	20	71	81	130	218	208	95	53	243	28	26	12
15	19	62	74	118	202	194	84	64	245	26	23	9.9
16	19	55	71	257	181	165	78	59	189	25	22	8.3
17	18	51	85	266	164	152	78	50	1460	24	13	7.5
18	32	173	88	250	151	178	75	46	2230	25	66	8.2
19	56	313	80	230	139	582	73	44	645	22	30	6.8
20	50	198	71	205	135	487	72	76	346	21	180	6.9
21	37	175	66	164	131	345	70	59	249	27	163	7.9
22	32	294	63	145	149	276	72	47	187	69	50	8.3
23	34	206	72	185	129	225	72	40	144	216	31	8.3
24	36	154	180	185	113	186	83	37	116	79	24	9.1
25	32	136	239	227	106	171	73	35	99	51	21	8.0
26	33	315	183	208	111	254	66	925	99	39	21	7.4
27	40	242	158	188	131	239	67	853	168	34	19	8.2
28	43	176	139	653	128	221	89	307	122	31	15	12
29	47	144	137	587	---	401	84	227	98	39	13	9.5
30	46	298	136	361	---	431	77	198	234	28	12	9.0
31	42	---	132	287	---	358	---	160	---	25	11	---
TOTAL	1419	5002	6058	6646	6320	17304	3383	4309	10483	1870	1023	323.3
MEAN	45.8	167	195	214	226	558	113	139	349	60.3	33.0	10.8
MAX	196	763	1250	653	722	2520	290	925	2230	259	180	36
MIN	18	29	63	112	106	152	66	35	78	21	11	6.8
CFSM	.33	1.19	1.40	1.53	1.61	3.99	.81	.99	2.50	.43	.24	.08
IN.	.38	1.33	1.61	1.77	1.68	4.60	.90	1.14	2.79	.50	.27	.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1997, BY WATER YEAR (WY)

MEAN	32.9	93.6	209	268	367	385	309	197	97.7	62.3	41.7	29.1
MAX	343	443	803	824	1015	1162	940	648	454	261	305	276
(WY)	1990	1974	1979	1950	1972	1955	1972	1984	1974	1939	1947	1950
MIN	.084	.63	1.96	25.4	27.3	89.3	40.6	25.4	6.06	3.01	1.07	.23
(WY)	1954	1956	1956	1940	1954	1983	1986	1941	1966	1944	1957	1955

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1939 - 1997	
ANNUAL TOTAL	75364.3		64140.3			
ANNUAL MEAN	206		176		173	
HIGHEST ANNUAL MEAN					300	1975
LOWEST ANNUAL MEAN					40.3	1954
HIGHEST DAILY MEAN	2580	Jun 9	2520	Mar 4	9010	Dec 9 1978
LOWEST DAILY MEAN	9.7	Sep 12	6.8	Sep 19	.00	Sep 15 1943
ANNUAL SEVEN-DAY MINIMUM	11	Sep 7	7.7	Sep 16	.00	Oct 1 1943
INSTANTANEOUS PEAK FLOW			3340	Mar 3	14300	Feb 3 1939
INSTANTANEOUS PEAK STAGE			20.12	Mar 3	25.40	Feb 3 1939
ANNUAL RUNOFF (CFSM)	1.47		1.26		1.24	
ANNUAL RUNOFF (INCHES)	20.03		17.04		16.82	
10 PERCENT EXCEEDS	436		324		400	
50 PERCENT EXCEEDS	130		98		60	
90 PERCENT EXCEEDS	18		17		4.4	

03250310 ROCK LICK CREEK ABOVE UNNAMED TRIBUTARY NEAR SHARKEY, KY

LOCATION.--Lat 38°15'04", long 83°33'58", Fleming County, Hydrologic Unit 05100101, on right bank, 1.1 miles above Drip Springs, 1.3 miles north of Sharkey, and 2.7 mi above mouth.
DRAINAGE AREA.--1.66 mi^2
PERIOD OF RECORD.--October 1996 to September 1997
GAGE.--Water-stage recorder. Datum of gage is 720 ft above mean sea level, from topographic map.
REMARKS.--Estimated daily discharges: Dec. 31, Jan. 18-20, and Aug. 3-16. Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.28	13	1.0	2.6	134	1.8	1.4	12	3.0	.11	.09
2	.11	.25	1.7	.97	2.3	41	1.4	1.1	5.4	1.5	.09	.08
3	.10	.23	1.1	.91	2.1	17	1.2	2.7	3.7	.99	.08	.07
4	.10	.21	.78	.87	21	4.5	1.1	2.1	3.0	.77	.07	.04
5	.09	.20	.66	3.2	11	8.4	1.0	1.4	2.5	.64	.07	.04
6	.09	.19	.74	1.8	3.8	4.6	.90	1.2	2.2	.54	.06	.03
7	.09	.41	.69	1.3	3.2	2.4	.81	.97	1.9	.46	.06	.02
8	.09	3.6	.60	1.1	3.6	1.8	.72	.95	9.6	.41	.05	.02
9	.09	.73	.53	1.2	3.4	1.5	.66	1.2	28	.49	.07	.02
10	.09	.41	.50	1.4	3.1	2.9	.62	.96	4.6	.44	.10	.06
11	.09	.26	.49	1.2	2.8	1.8	.60	.82	2.3	.38	.07	.03
12	.09	.21	7.7	1.1	2.6	1.4	.81	.74	4.8	.36	.04	.01
13	.09	.18	2.2	.87	2.5	1.2	.98	.70	7.1	.33	.19	.01
14	.09	.17	1.3	.81	6.4	2.8	.75	.75	8.2	.31	.10	.01
15	.09	.16	1.0	.79	3.7	1.9	.66	1.2	3.5	.30	.11	.00
16	.09	.15	2.2	2.0	2.9	1.4	.63	.93	2.0	.28	.06	.00
17	.09	.15	24	1.4	2.6	1.2	.64	.80	2.6	.27	.42	.00
18	.10	1.1	2.8	1.2	2.5	7.4	.62	.71	2.8	.26	.27	.00
19	.10	.54	1.8	1.1	2.4	4.7	.61	.64	2.4	.26	.14	.00
20	.10	.30	1.3	.90	2.3	2.5	.58	.65	1.5	.26	.17	.00
21	.10	.75	1.1	.73	2.5	1.8	.59	.57	1.1	.30	.16	.00
22	.10	.53	1.0	2.1	3.2	1.5	.65	.51	.86	.29	.13	.00
23	.13	.30	1.0	2.9	2.7	1.2	.62	.47	.73	.27	.11	.00
24	.14	.24	8.7	6.4	2.4	1.0	.57	.43	.62	.26	.10	.00
25	.14	5.7	2.2	7.3	2.3	1.6	.54	.44	.54	.26	.11	.00
26	.15	2.1	1.6	2.3	2.3	5.4	.51	4.5	1.4	.26	.12	.00
27	.20	.68	1.4	3.3	2.7	2.0	4.1	1.6	1.1	.29	.12	.00
28	.23	.39	1.3	24	2.5	2.5	3.3	1.0	.70	2.8	.11	.00
29	.25	.29	1.2	4.1	---	9.8	1.7	.86	2.2	.99	.10	.00
30	.27	6.9	1.1	3.1	---	2.9	1.3	.76	9.2	.17	.09	.00
31	.30	---	1.2	2.8	---	2.6	---	17	---	.13	.09	---
MEAN	.13	.92	2.80	2.71	3.84	8.93	1.03	1.61	4.29	.59	.12	.018
MAX	.30	6.9	24	24	21	134	4.1	17	28	3.0	.42	.09
MIN	.09	.15	.49	.73	2.1	1.0	.51	.43	.54	.13	.04	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1997, BY WATER YEAR (WY)

MEAN	.13	.92	2.80	2.71	3.84	8.93	1.03	1.61	4.28	.59	.60	.54
MAX	.13	.92	2.80	2.71	3.84	8.93	1.03	1.61	4.28	.59	1.09	1.06
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1996	1996
MIN	.13	.92	2.80	2.71	3.84	8.93	1.03	1.61	4.28	.59	.12	.018
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997

SUMMARY STATISTICS FOR 1997 WATER YEAR

ANNUAL MEAN	2.24	
HIGHEST ANNUAL MEAN		
LOWEST ANNUAL MEAN		
HIGHEST DAILY MEAN	134	Mar 1
LOWEST DAILY MEAN	.00	Sep 15
ANNUAL SEVEN-DAY MINIMUM	.00	Sep 15
INSTANTANEOUS PEAK FLOW	592	Mar 1
INSTANTANEOUS PEAK STAGE	5.65	Mar 1
10 PERCENT EXCEEDS	3.7	
50 PERCENT EXCEEDS	.76	
90 PERCENT EXCEEDS	.07	

LICKING RIVER BASIN

03250322 ROCK LICK CREEK AT HIGHWAY 158 NEAR SHARKEY, KY

LOCATION.--Lat 38°14'50", long 83°35'22", Fleming County, Hydrologic Unit 05100101, on downstream side of bridge, 0.53 miles downstream from Drip Spring, 1.1 miles above mouth, and 1.9 miles northwest of Sharkey.

DRAINAGE AREA.--4.2 mi^2

PERIOD OF RECORD.--October 1996 to September 1997

GAGE.--Water-stage recorder. Datum of gage is 645.451 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 18 to Jan. 22, Mar. 1-9, April 1-9, 10-26, and May 15 to June 3. Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	.42	47	5.0	4.5	190	4.2	3.9	56	11	.64	.24
2	.33	.40	8.2	4.3	3.7	50	3.5	2.5	13	5.2	.48	.22
3	.28	.37	4.4	4.1	3.1	10	3.1	10	7.4	2.1	.43	.23
4	.19	.27	3.0	5.8	48	11	2.7	7.3	3.9	1.5	.43	.21
5	.17	.26	2.6	28	26	15	2.4	3.9	2.7	1.0	.41	.20
6	.17	.37	2.5	12	9.9	13	2.2	3.1	1.9	.75	.37	.20
7	.15	2.2	2.2	5.8	6.7	10	2.1	2.2	1.4	.58	.31	.18
8	.15	29	1.8	4.7	9.4	9.0	2.0	3.3	7.0	.48	.29	.18
9	.16	5.1	1.4	4.2	7.1	8.2	1.9	3.3	99	1.4	.45	.51
10	.17	3.0	1.2	6.0	5.8	13	1.8	2.3	29	.58	.59	1.7
11	.15	1.8	1.1	4.3	4.8	7.6	1.7	1.8	13	.46	.33	.14
12	.14	1.2	29	3.9	4.1	5.5	1.6	1.6	19	.42	.24	.07
13	.11	.83	10	3.5	4.3	5.0	3.5	1.4	22	.40	1.2	.05
14	.11	.66	4.8	3.2	16	13	2.4	2.6	43	.33	.58	.05
15	.11	.52	3.3	3.0	8.1	7.9	1.8	3.3	20	.25	.66	.04
16	.11	.47	7.0	19	5.1	5.4	1.5	2.6	11	.21	.35	.04
17	.12	.83	60	6.7	4.0	4.6	1.3	2.2	12	.18	11	.04
18	1.7	6.6	12	4.5	3.6	31	1.8	1.9	12	.16	4.1	.04
19	.44	3.7	7.8	3.5	3.3	21	1.5	1.7	9.3	.15	1.3	.04
20	.19	2.2	5.1	3.1	2.9	11	1.3	1.7	5.4	.13	3.3	.57
21	.17	4.4	2.8	2.8	3.3	8.2	2.0	1.5	3.9	1.3	1.5	.00
22	.16	4.0	3.6	11	4.4	6.4	1.7	1.5	3.0	.33	.80	.00
23	.64	2.3	4.3	13	3.1	4.9	1.4	1.3	2.3	.23	.53	.00
24	.24	1.6	36	20	2.5	4.1	1.2	1.3	1.7	.21	.43	.00
25	.20	20	20	27	3.0	6.6	1.1	6.5	1.2	.19	1.7	.00
26	.79	15	9.6	8.8	4.9	21	1.0	45	4.9	.15	.51	.00
27	.62	5.2	5.0	12	5.8	9.2	14	7.4	2.6	.55	.45	.00
28	.71	2.9	4.0	54	5.0	12	11	4.2	1.3	23	.42	.00
29	.48	2.2	3.6	12	---	20	5.1	1.9	8.9	8.7	.41	.00
30	.44	26	3.3	7.1	---	5.7	3.3	1.4	42	2.1	.26	.00
31	.42	---	4.0	5.6	---	4.0	---	42	---	1.0	.24	---
TOTAL	10.17	143.80	310.6	307.9	212.4	543.3	86.1	176.6	459.8	65.04	34.71	4.95
MEAN	.33	4.79	10.0	9.93	7.59	17.5	2.87	5.70	15.3	2.10	1.12	.16
MAX	1.7	29	60	54	48	190	14	45	99	23	11	1.7
MIN	.11	.26	1.1	2.8	2.5	4.0	1.0	1.3	1.2	.13	.24	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1997, BY WATER YEAR (WY)

MEAN	.33	4.79	10.0	9.93	7.59	17.5	2.87	5.70	15.3	2.10	1.12	.17
MAX	.33	4.79	10.0	9.93	7.59	17.5	2.87	5.70	15.3	2.10	1.12	.17
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997
MIN	.33	4.79	10.0	9.93	7.59	17.5	2.87	5.70	15.3	2.10	1.12	.17
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997

SUMMARY STATISTICS FOR 1997 WATER YEAR

ANNUAL TOTAL	2355.37	
ANNUAL MEAN	6.45	
HIGHEST DAILY MEAN	190	Mar 1
LOWEST DAILY MEAN	.00	Sep 21
ANNUAL SEVEN-DAY MINIMUM	.00	Sep 21
INSTANTANEOUS PEAK STAGE	10.71	Mar 2
10 PERCENT EXCEEDS	13	
50 PERCENT EXCEEDS	2.5	
90 PERCENT EXCEEDS	.17	

03251200 NORTH FORK LICKING RIVER NEAR MOUNT OLIVET, KY

LOCATION.--Lat 38°35'41", long 84°01'13", Bracken County, Hydrologic Unit 05100101, on right bank, downstream side of bridge on State Highway 875, 4 mi northeast of Mt. Olivet, and at mile 26.1.

DRAINAGE AREA.--226 mi^2

PERIOD OF RECORD.--June 1991 to current year.

GAGE.--Water-stage recorder. Datum of gage is 622.46 ft above sea level.

REMARKS.--Estimated daily discharges: Jan. 10-15 and Feb. 10-12. Records good except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	26	2250	205	312	5340	533	87	4180	429	1.0	.27
2	52	19	2080	187	260	12400	371	69	4260	207	1.0	.27
3	29	15	685	170	230	8650	282	587	2010	157	.92	.28
4	18	12	341	154	2350	4670	242	499	672	90	.95	.29
5	12	10	245	476	4500	1790	203	351	427	59	1.0	.28
6	8.4	8.2	268	689	3030	1480	181	180	287	43	1.0	.25
7	6.3	170	289	416	767	1260	155	123	219	32	.87	.20
8	4.4	1130	256	270	489	606	124	112	245	25	.74	.19
9	3.5	1200	203	227	457	427	105	324	920	19	.61	.37
10	3.3	421	164	180	370	724	92	271	2330	20	.55	.71
11	2.7	224	146	160	320	737	85	172	1850	18	.53	.56
12	2.3	151	975	150	290	452	81	123	437	17	.58	.41
13	2.2	109	2390	140	273	306	84	99	293	16	.72	.34
14	2.3	84	1230	135	323	742	78	84	384	10	.77	.28
15	2.5	69	412	130	571	1120	71	72	375	7.9	.70	.28
16	2.9	58	322	201	531	583	62	62	228	5.9	.56	.29
17	3.1	50	3130	265	365	370	59	54	175	4.5	.56	.27
18	4.6	84	3350	198	290	1070	55	48	503	3.6	20	.27
19	8.5	122	1220	142	250	1860	50	42	707	3.0	12	.25
20	13	153	434	125	217	1340	48	579	545	2.4	12	.26
21	16	128	284	117	202	627	48	258	286	2.0	7.8	.24
22	15	125	226	179	206	417	60	147	183	2.0	4.1	.21
23	12	135	202	451	181	283	52	90	133	1.8	2.7	.16
24	8.5	138	1490	1190	150	217	49	66	101	1.8	1.6	.16
25	7.2	433	1840	2710	132	228	43	56	80	1.7	1.0	.13
26	12	1040	675	2360	131	977	34	84	71	1.8	.75	.11
27	55	1020	378	1490	178	823	31	88	73	1.7	.54	.07
28	103	472	304	2740	168	457	44	86	56	1.5	.44	.05
29	82	274	280	2140	---	2120	92	79	44	1.5	.42	.05
30	51	762	255	594	---	2760	123	70	128	1.3	.36	.02
31	35	---	232	386	---	852	---	483	---	1.2	.34	---
TOTAL	682.7	8642.2	26556	18977	17543	55688	3537	5445	22202	1187.6	77.11	7.52
MEAN	22.0	288	857	612	627	1796	118	176	740	38.3	2.49	.25
MAX	105	1200	3350	2740	4500	12400	533	587	4260	429	20	.71
MIN	2.2	8.2	146	117	131	217	31	42	44	1.2	.34	.02
CFSM	.10	1.27	3.79	2.71	2.77	7.95	.52	.78	3.27	.17	.01	.00
IN.	.11	1.42	4.37	3.12	2.89	9.17	.58	.90	3.65	.20	.01	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1997, BY WATER YEAR (WY)

MEAN	13.6	172	437	719	471	881	367	558	285	111	58.8	21.1
MAX	31.4	454	857	1165	794	1796	676	1524	740	296	123	62.7
(WY)	1994	1994	1997	1994	1994	1997	1994	1996	1997	1992	1995	1991
MIN	1.31	14.1	182	369	284	416	118	87.4	4.41	5.45	2.49	.25
(WY)	1995	1992	1993	1992	1995	1995	1997	1993	1991	1995	1997	1997

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1991 - 1997	
ANNUAL TOTAL	179087.8		160545.13			
ANNUAL MEAN	489		440		344	
HIGHEST ANNUAL MEAN					440	1997
LOWEST ANNUAL MEAN					233	1993
HIGHEST DAILY MEAN	5800	May 16	12400	Mar 2	12400	Mar 2 1997
LOWEST DAILY MEAN	1.2	Sep 12	.02	Sep 30	.02	Sep 30 1997
ANNUAL SEVEN-DAY MINIMUM	1.4	Sep 9	.08	Sep 24	.08	Sep 24 1997
INSTANTANEOUS PEAK FLOW			13500	Mar 2	13500	Mar 2 1997
INSTANTANEOUS PEAK STAGE			34.71	Mar 2	34.71	Mar 2 1997
INSTANTANEOUS LOW FLOW					.24	Oct 7 1994
ANNUAL RUNOFF (CFSM)	2.17		1.95		1.52	
ANNUAL RUNOFF (INCHES)	29.48		26.43		20.70	
10 PERCENT EXCEEDS	1250		1120		842	
50 PERCENT EXCEEDS	173		124		85	
90 PERCENT EXCEEDS	3.0		.56		2.1	

LICKING RIVER BASIN

03252300 HINKSTON CREEK NEAR CARLISLE, KY

LOCATION.--Lat 38°14'33", long 84°03'18", Bourbon County, Hydrologic Unit 05100102, at upstream side bridge on State Highway 13, 0.5 mi upstream from Taylors Creek, 5.0 mi south of Carlisle, and at mile 29.0.
DRAINAGE AREA.--154 mi^2.
PERIOD OF RECORD.--October 1991 to current year.
REVISED RECORDS.--WRD KY-93-1: Drainage area.
GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 764.88 ft above sea level.
REMARKS.--Estimated daily discharges: Mar. 2-5. Records good except for period of estimated record, which is fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	60	1830	135	215	3830	302	42	3300	380	4.4	2.0
2	56	52	963	126	175	7520	229	43	1520	206	4.0	1.8
3	46	48	366	119	149	5510	187	109	398	107	3.8	1.7
4	41	44	242	109	2390	3200	158	147	236	70	3.6	1.5
5	34	40	174	157	3450	1900	138	96	178	50	3.5	1.4
6	25	39	164	194	1160	1690	123	67	138	43	2.8	1.8
7	19	96	152	159	411	713	106	53	114	36	2.3	2.4
8	16	788	130	137	328	418	90	47	735	29	3.3	2.2
9	11	473	112	136	337	298	81	54	2160	23	3.8	2.5
10	9.9	247	98	163	296	430	73	55	1170	17	3.6	2.9
11	9.1	163	92	138	257	428	69	42	460	13	3.1	2.8
12	7.9	118	501	121	220	281	69	35	417	12	3.0	3.4
13	10	93	660	104	189	221	69	31	585	9.0	3.2	3.2
14	10	78	331	93	254	459	65	29	1470	7.6	3.2	2.4
15	8.9	68	215	94	378	396	54	29	916	6.7	4.0	1.9
16	8.6	59	194	228	300	253	49	29	444	6.0	5.5	1.6
17	9.5	55	2520	225	231	210	47	27	1640	5.9	4.8	1.3
18	16	276	1560	146	191	1160	46	23	1520	5.6	13	1.0
19	37	334	444	117	165	2090	44	20	794	5.6	11	.77
20	82	210	276	106	146	809	42	18	371	5.7	8.7	1.3
21	50	215	192	100	136	411	42	17	251	5.4	5.4	1.3
22	41	315	162	200	135	288	43	18	163	5.3	5.9	2.2
23	41	206	143	580	116	215	43	16	123	5.8	5.3	3.1
24	39	151	673	923	101	175	35	11	95	15	3.7	2.3
25	38	359	615	2500	94	156	31	8.8	76	33	3.3	1.6
26	51	1070	323	782	95	513	29	827	63	11	2.8	1.1
27	74	610	238	403	123	331	32	341	59	5.8	2.5	.79
28	95	305	199	1750	122	355	78	140	58	5.3	2.4	.57
29	86	207	178	930	---	2170	83	113	46	5.1	2.7	.76
30	85	680	162	397	---	675	50	154	48	4.7	2.3	1.3
31	74	---	146	279	---	412	---	874	---	4.6	2.1	---
TOTAL	1214.9	7459	14055	11651	12164	37517	2507	3515.8	19548	139.1	133.0	54.89
MEAN	39.2	249	453	376	434	1210	83.6	113	652	36.7	4.29	1.83
MAX	95	1070	2520	2500	3450	7520	302	874	3300	380	13	3.4
MIN	7.9	39	92	93	94	156	29	8.8	46	4.6	2.1	.57
CFSM	.25	1.61	2.94	2.44	2.82	7.86	.54	.74	4.23	.24	.03	.01
IN.	.29	1.80	3.40	2.81	2.94	9.06	.61	.85	4.72	.28	.03	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1997, BY WATER YEAR (WY)

MEAN	27.1	134	263	478	321	603	191	351	183	38.0	62.5	17.2
MAX	48.2	302	453	675	526	1210	436	875	652	89.3	121	56.5
(WY)	1994	1994	1997	1994	1994	1997	1994	1996	1997	1992	1993	1996
MIN	2.29	16.5	70.6	166	168	272	83.6	41.3	38.3	17.2	4.29	1.83
(WY)	1993	1992	1993	1992	1996	1995	1997	1992	1992	1993	1997	1997

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1992 - 1997	
ANNUAL TOTAL	100045.5		110958.69			
ANNUAL MEAN	273		304		223	
HIGHEST ANNUAL MEAN					304	1997
LOWEST ANNUAL MEAN					128	1992
HIGHEST DAILY MEAN	4090	May 16	7520	Mar 2	7520	Mar 2 1997
LOWEST DAILY MEAN	4.2	Sep 6	.57	Sep 28	.56	Sep 30 1995
ANNUAL SEVEN-DAY MINIMUM	4.8	Aug 27	1.2	Sep 24	.88	Sep 26 1995
INSTANTANEOUS PEAK FLOW			7800	Mar 2	7800	Mar 2 1997
INSTANTANEOUS PEAK STAGE			37.00	Mar 2	37.00	Mar 2 1997
ANNUAL RUNOFF (CFSM)	1.77		1.97		1.45	
ANNUAL RUNOFF (INCHES)	24.17		26.80		19.64	
10 PERCENT EXCEEDS	664				722	
50 PERCENT EXCEEDS	113				93	
90 PERCENT EXCEEDS	6.3				3.1	
					512	
					70	
					4.5	

LICKING RIVER BASIN

03253500 LICKING RIVER AT CATAWBA, KY

LOCATION.--Lat 38°42'31", long 84°18'38", Pendleton County, Hydrologic Unit 05100101, on right bank 1 mi southeast of Catawba, 1.5 mi upstream from Kincaid Creek, 2.3 mi north of Falmouth, and at mile 48.0.

DRAINAGE AREA.--3,300 mi.^{2}

PERIOD OF RECORD.--January 1914 to July 1920 (January 1914 to July 1915 and October 1917 to July 1920, gage heights only), July 1928 to current year. Published as "at Falmouth" 1914-16. Gage-height records collected in this vicinity since 1887 are published in reports of the National Weather Service.

REVISED RECORDS.--WSP 853: 1937. WSP 1003: 1943. WSP 1385: 1942. WSP 1705: Drainage.

GAGE.--Water-stage recorder. Datum of gage is 500.01 ft above sea level (levels by U>S> Army Corps of Engineers). Jan. 1, 1914 to July 31, 1916, nonrecording gage at site 3.8 mi upstream at datum 12.2 ft higher. July 14, 1916 to July 5, 1920, nonrecording gage at site 1.4 mi downstream at present datum.

REMARKS.--Estimated daily discharges: Mar. 2-10 and May 19-29. Records good except for periods of estimated record, which are fair. Flow regulated since December 1973 by Cave Run Lake (station 03249498).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2380	711	17900	3260	6860	39900	11100	2640	39700	5830	705	288
2	1440	651	19800	2790	6050	101000	8990	2220	34400	8980	510	209
3	996	584	14000	2620	5440	104000	7650	6030	23500	6810	419	183
4	759	520	7040	2470	16300	67200	7040	5300	9790	4950	373	172
5	629	464	4730	5840	35600	32400	6830	4010	6110	4150	344	159
6	558	425	5130	4550	30300	21700	6410	3630	5680	3780	327	155
7	498	574	5310	4010	14900	16300	5780	2820	5490	3570	323	152
8	441	6130	5010	3360	7950	12000	5390	2320	8240	3450	320	151
9	397	8170	4310	2780	7260	9350	5270	3790	15600	3340	318	148
10	361	8160	3490	2850	7540	7530	5310	2240	22000	2710	318	148
11	332	5820	3200	2800	7180	7670	5220	2030	18100	1660	318	156
12	310	4850	5680	2600	6520	9550	5150	1800	10100	1070	317	162
13	291	4380	12600	2330	5930	8390	5130	1560	7210	953	326	163
14	253	3990	11000	2410	5480	10100	5090	1410	10200	882	334	241
15	229	3730	6660	2380	6900	10400	5060	1310	14100	768	333	328
16	228	3560	4160	2310	7300	9120	4950	1250	12600	601	333	311
17	221	3440	24400	2720	6070	8370	4850	1230	8830	512	355	302
18	248	3580	27100	2840	4930	12300	4750	1190	15400	461	384	290
19	298	4120	17900	2310	4290	23100	4700	1590	17900	375	625	285
20	316	5050	8420	1940	3870	21500	4650	6340	10100	291	709	281
21	323	4650	4730	2090	3560	13400	4400	1700	7330	251	548	277
22	342	3910	4200	1950	3190	9530	3120	1130	6330	228	470	290
23	398	4420	4050	3110	2840	8790	1420	1000	5270	212	432	302
24	472	4290	11200	6440	2690	7900	1820	940	4660	209	367	298
25	453	5000	12200	21900	2280	7220	2580	900	4250	247	328	285
26	417	11900	10500	22300	1860	9760	2840	11000	2730	344	286	282
27	458	11700	6860	15500	2080	8940	2560	6000	1320	499	246	282
28	687	9010	5380	21100	2130	8760	1910	4200	2130	483	237	282
29	658	5920	4710	18900	---	16700	2070	3800	3870	410	381	278
30	663	5290	4330	15100	---	21800	3050	3980	4030	701	419	276
31	722	---	3960	8970	---	15800	---	6430	---	1040	366	---
TOTAL	16778	134999	279960	196530	217300	660480	145090	95790	336970	59767	12071	7136
MEAN	541	4500	9031	6340	7761	21310	4836	3090	11230	1928	389	238
MAX	2380	11900	27100	22300	35600	104000	11100	11000	39700	8980	709	328
MIN	221	425	3200	1940	1860	7220	1420	900	1320	209	237	148

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1997, BY WATER YEAR (WY)

MEAN	1447	2969	6123	6915	7667	8742	5891	4983	3208	1467	1225	1504
MAX	7178	6516	18500	15110	21140	21310	11920	16660	11230	6962	4630	12860
(WY)	1976	1987	1979	1974	1989	1997	1975	1983	1997	1979	1974	1979
MIN	264	298	1092	420	2321	1247	666	371	134	291	103	110
(WY)	1988	1988	1981	1981	1977	1983	1986	1976	1988	1984	1986	1995

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1974 - 1997	
ANNUAL TOTAL	2178300		2162871			
ANNUAL MEAN	5952		5926		4330	
HIGHEST ANNUAL MEAN					7730	1979
LOWEST ANNUAL MEAN					2006	1977
HIGHEST DAILY MEAN	47400	May 16	104000	Mar 3	104000	Mar 3 1997
LOWEST DAILY MEAN	84	Sep 14	148	Sep 9	25	Jul 8 1988
ANNUAL SEVEN-DAY MINIMUM	89	Sep 9	153	Sep 5	38	Jul 3 1988
INSTANTANEOUS PEAK FLOW			110000	Mar 3	110000	Mar 3 1997
INSTANTANEOUS PEAK STAGE			57.57	Mar 3	57.57	Mar 3 1997
INSTANTANEOUS LOW FLOW					2.5	Aug 5 1930
10 PERCENT EXCEEDS	14000		14000		10700	
50 PERCENT EXCEEDS	4490		3450		1800	
90 PERCENT EXCEEDS	220		289		257	

OHIO RIVER MAIN STEM

03277200 OHIO RIVER AT MARKLAND DAM, KY

LOCATION.--Lat 38°46'29", long 84°57'52", Gallatin County, Hydrologic Unit 05090203, at left end of Markland Dam, 0.4 mi upstream from Stephens Creek, 3.4 mi west of Warsaw, and at mile 531.5.

DRAINAGE AREA.--83,170 mi^2, approximately.

PERIOD OF RECORD.--May 1970 to current year.

REVISED RECORDS.--WDR KY-88-1: 1987.

GAGE.--Gate opening and water-stage recorders on left bank. Turbine recorders in powerplant on right bank. Datum of headwater gage 0.5 mi upstream is 443 ft Ohio River datum. Datum of tailwater gage 0.4 mi downstream is 35 ft lower.

REMARKS.--No estimated daily discharges. Records fair except for periods below 20,000 ft^3/s, which are poor. Daily discharge computed from head, gate openings, turbine flow, and tailwater rating. Flow regulated by Ohio River system of locks, dams, and reservoirs upstream from station.

COOPERATION.--U.S. Army Corps of Engineers.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 26, 1937, reached a stage of 76.1 ft (tailwater gage).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155000	99000	247000	148000	234000	271000	211000	106000	372000	68100	29500	20300
2	139000	86400	279000	148000	193000	327000	192000	105000	340000	77500	17700	17000
3	113000	77100	308000	128000	156000	415000	171000	148000	307000	103000	12200	18400
4	101000	74600	335000	123000	165000	508000	155000	132000	321000	103000	14700	18700
5	99500	66100	344000	124000	228000	569000	136000	131000	309000	94100	39400	19600
6	91200	50600	318000	137000	238000	579000	125000	128000	288000	58300	7690	14000
7	75100	65400	281000	140000	247000	576000	120000	112000	255000	44000	26000	7950
8	57300	72900	237000	129000	246000	557000	116000	107000	228000	31100	16300	17400
9	45900	135000	197000	131000	231000	528000	94000	113000	258000	26500	9700	23100
10	40800	195000	166000	122000	213000	494000	90600	116000	196000	28300	20600	12300
11	31400	248000	154000	110000	186000	454000	79300	122000	170000	36500	13500	26500
12	34500	253000	151000	116000	164000	411000	76600	122000	154000	32900	15000	24000
13	40900	240000	164000	102000	144000	367000	71400	114000	121000	24400	21500	26200
14	37200	201000	198000	73600	131000	332000	97600	109000	119000	35000	20000	18700
15	34000	184000	217000	59700	122000	302000	103000	102000	131000	25900	32700	19700
16	28100	167000	219000	58900	124000	268000	99400	84600	142000	27000	19900	19700
17	39500	146000	298000	55200	119000	246000	98300	85300	159000	23300	33300	16000
18	21500	128000	277000	78600	121000	246000	86700	87500	154000	6920	83600	13300
19	35800	115000	263000	68000	100000	270000	96700	82700	184000	23100	109000	20000
20	65000	114000	236000	37000	101000	274000	85800	91300	145000	28900	119000	12200
21	88100	118000	205000	52200	114000	285000	85500	111000	145000	5610	86200	24100
22	115000	119000	174000	73400	122000	288000	81300	121000	117000	9380	88900	25300
23	137000	117000	145000	91200	147000	273000	60500	128000	113000	41200	78200	10500
24	137000	121000	155000	96800	157000	234000	61300	114000	89000	28200	65700	19900
25	137000	122000	172000	147000	158000	189000	62700	107000	56600	21300	33400	22400
26	138000	148000	181000	173000	160000	175000	69200	119000	47400	30900	27100	8000
27	127000	163000	187000	183000	147000	180000	77900	155000	58900	25700	30800	21900
28	116000	178000	182000	243000	148000	198000	80200	222000	73400	37100	29400	8800
29	105000	197000	181000	240000	---	232000	84500	237000	84100	43200	23000	15700
30	92000	201000	162000	268000	---	225000	95800	204000	65800	61600	20300	33900
31	98400	---	158000	253000	---	222000	---	190000	---	34900	18900	---
TOTAL	2576200	4202100	6791000	3909600	4616000	10495000	3064300	3906400	5203200	1236910	1163190	555550
MEAN	83100	140100	219100	126100	164900	338500	102100	126000	173400	39900	37520	18520
MAX	155000	253000	344000	268000	247000	579000	211000	237000	372000	103000	119000	33900
MIN	21500	50600	145000	37000	100000	175000	60500	82700	47400	5610	7690	7950

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1997, BY WATER YEAR (WY)

MEAN	51230	89500	148900	150200	178200	216100	179700	140800	92100	59070	46390	41170
MAX	144100	230600	288700	289900	291300	338500	292200	370100	219100	109500	146200	143800
(WY)	1980	1986	1973	1974	1975	1997	1972	1996	1981	1972	1980	1979
MIN	13910	26500	42150	34060	77100	98440	61160	43510	16250	18530	13060	14980
(WY)	1992	1992	1990	1977	1992	1990	1986	1976	1988	1988	1988	1995

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1970 - 1997	
ANNUAL TOTAL	62961900		47719450			
ANNUAL MEAN	172000		130700		116100	
HIGHEST ANNUAL MEAN					157300	1979
LOWEST ANNUAL MEAN					60450	1988
HIGHEST DAILY MEAN	536000	Jan 27	579000	Mar 6	579000	Mar 6 1997
LOWEST DAILY MEAN	11100	Sep 4	5610	Jul 21	4320	Sep 23 1984
ANNUAL SEVEN-DAY MINIMUM	17100	Aug 30	15300	Sep 23	7310	Jul 1 1988
INSTANTANEOUS PEAK FLOW			582000	Mar 6	582000	Mar 6 1997
INSTANTANEOUS PEAK STAGE			60.72	Mar 6	60.72	Mar 6 1997
10 PERCENT EXCEEDS	338000		265000		261000	
50 PERCENT EXCEEDS	152000		114000		81500	
90 PERCENT EXCEEDS	37500		20500		21900	