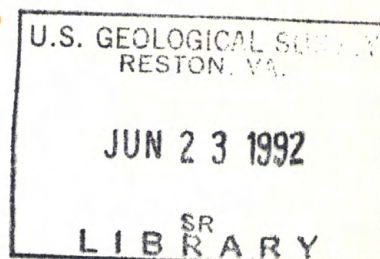


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West Virginia  
91



# Water Resources Data West Virginia Water Year 1991



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WV-91-1  
Prepared in cooperation with the State of West Virginia  
and with other agencies



# CALENDAR FOR WATER YEAR 1991

1990

## OCTOBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## NOVEMBER

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30	31					

1991

## JANUARY

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## MARCH

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## APRIL

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## JULY

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## AUGUST

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## SEPTEMBER

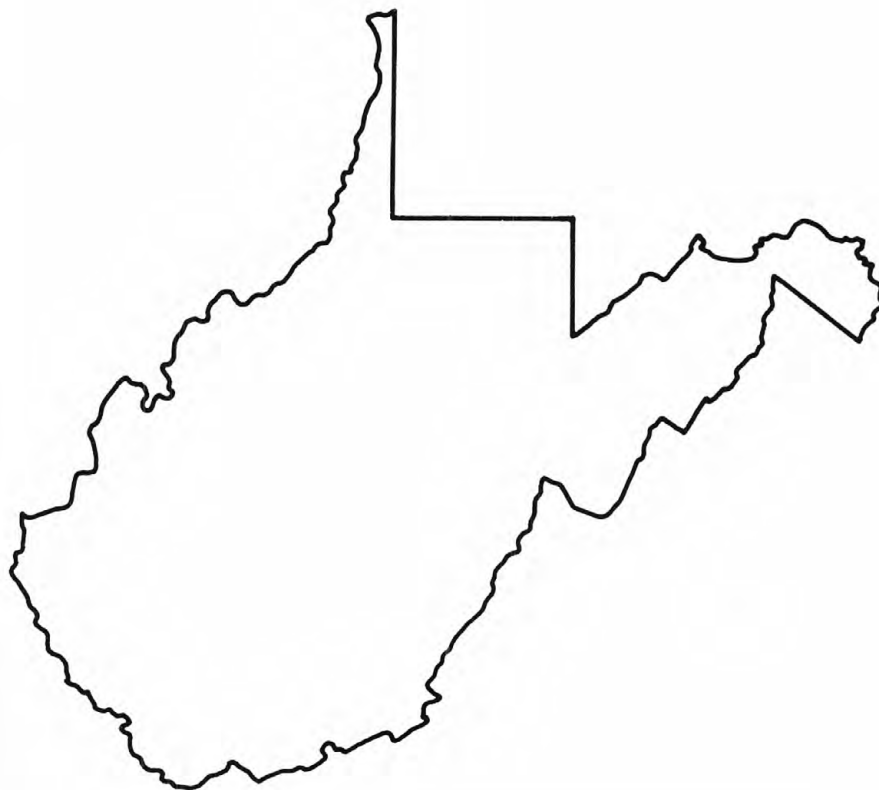
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29	30					





# Water Resources Data West Virginia Water Year 1991

by S.M. Ward, F.M. Taylor, and M.V. Mathes, Jr.



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WV-91-1  
Prepared in cooperation with the State of West Virginia  
and with other agencies



U.S. DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in West Virginia write to:  
District Chief, Water Resources Division  
U.S. Geological Survey  
603 Morris Street  
Charleston, West Virginia 25301

1992



## PREFACE

This volume of the annual hydrologic data report for West Virginia is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and Trust Territories. These records of streamflow, ground-water levels, and water quality provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines. The following individuals contributed significantly to the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of West Virginia and with other agencies under the general supervision of D. P. Brown, District Chief.



<b>REPORT DOCUMENTATION PAGE</b>	<b>1. REPORT NO.</b> USGS/WRD/HD-92/279	<b>2.</b>	<b>3. Recipient's Accession No.</b>
<b>4. Title and Subtitle</b> Water Resources Data - West Virginia, Water Year 1991			<b>5. Report Date</b> June 1992
<b>7. Author(s)</b> S. M. Ward, F. M. Taylor and M. V. Mathes, Jr.			<b>8. Performing Organization Rept. No.</b> USGS-WDR-WV-91-1
<b>9. Performing Organization Name and Address</b> U.S. Geological Survey, Water Resources Division 603 Morris Street Charleston, West Virginia 25301			<b>10. Project/Task/Work Unit No.</b>
<b>12. Sponsoring Organization Name and Address</b> U.S. Geological Survey, Water Resources Division 603 Morris Street Charleston, West Virginia 25301			<b>11. Contract(C) or Grant(G) No.</b> (C) (G)
			<b>13. Type of Report &amp; Period Covered</b> Annual - Oct. 1, 1990 to Sept. 30, 1991
<b>15. Supplementary Notes</b>  Prepared in cooperation with the State of West Virginia and other agencies.			<b>14.</b>
<b>16. Abstract (Limit: 200 words)</b>  Water-resources data for the 1991 water year for West Virginia consist of records of stage, discharge, and water quality of streams; contents of reservoirs; and water levels of observation wells. This report contains discharge records for 82 streamflow-gaging stations; stage only records for 7 gaging stations; annual maximum discharge at 2 crest-stage partial-record stations; change in contents for 1 reservoir; water-quality records for 14 stations; and water-level records for 30 observation wells. Locations of these sites are shown on figures 4 and 5. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in West Virginia.			
<b>17. Document Analysis a. Descriptors</b>  *West Virginia, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water analyses.  <b>b. Identifiers/Open-Ended Terms</b>    <b>c. COSATI Field/Group</b>			
<b>18. Availability Statement</b> No restriction on distribution. This report may be purchased from: National Technical Information Service Springfield, Virginia 22161		<b>19. Security Class (This Report)</b> UNCLASSIFIED	<b>21. No. of Pages</b> 200
		<b>20. Security Class (This Page)</b> UNCLASSIFIED	<b>22. Price</b>



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\* Records furnished by Maryland District, U.S. Geological Survey.



## SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

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\* Records furnished by Virginia District, U.S. Geological Survey.

## GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

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BERKELEY	392725077582401	20-5-7	Martinsburg	171
BRAXTON	384003080462601	34-2-15	Gassaway	171
BROOKE	401216080362703		Bethany	172
FAYETTE	380154080571301		Clifftop	172
GILMER	385604080495901	33-3-1	Glenville	173
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## WATER RESOURCES DATA - WEST VIRGINIA, 1991

### INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of West Virginia each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - West Virginia."

This report includes records on both surface and ground water in the State. Specifically, it contains: Discharge records for 81 streamflow-gaging stations; stage only records for 7 gaging stations; annual maximum discharge at 2 crest-stage partial-record stations; change in contents for 1 reservoir; water-quality records for 14 stations; and water-level records for 30 observation wells. Locations of these sites are shown on figures 4 and 5. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in West Virginia.

This series of annual reports for West Virginia began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to introduction of this series and for several water years concurrent with it, water resources data for West Virginia were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 6A and 6B." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from the U. S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report WV-91-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (304) 347-5130.

### COOPERATION

The U.S. Geological Survey and agencies of the State of West Virginia have had cooperative agreements for the collection of water-resource records since 1930. Organizations that assisted in collecting the data in this report through cooperative agreement with the Survey are:

West Virginia Division of Natural Resources, J. Edward Hamrick III, Director through  
Water Resources Section, L. Eli McCoy, Chief.

West Virginia Geological and Economic Survey, Larry D. Woodfork, Director.

West Virginia Department of Highways, Fred VanKirk, Acting Commissioner.

Morgantown Utility Board, Thomas E. Urquhart, General Manager.

Washington Public Service District, Charles I. Parsons, Manager.

Region VII Planning and Development Council, Arnett Baughman, Chairman.

Assistance with funds or services was given by the U.S. Army Corps of Engineers, U.S. Soil Conservation Service, National Park Service, and Federal Power Commission.

Assistance was also furnished by the National Weather Service of the U.S. Department of Commerce.

The following organizations aided in collecting records: Appalachian Power Company and the Monongahela Power Company.

Organizations that provided data are acknowledged in station descriptions.

## WATER RESOURCES DATA - WEST VIRGINIA, 1991

## SUMMARY OF HYDROLOGIC CONDITIONS

Streamflow and precipitation in October were above normal (1961-90) throughout the State. Near bankfull river stages were observed across the State but no flooding occurred. Streamflow and precipitation in November were near to below normal throughout the State. Streamflow and precipitation in December and January were above normal throughout the State. Minor flooding of less than one foot above flood stage occurred December 19-21 in the Little Kanawha and West Fork River basins. More flooding occurred December 31 to January 3 with the West Fork River exceeding flood stage by less than one-half foot and the mainstem Ohio River exceeded flood stage by 8 feet on January 3 at Racine. Streamflow was above normal in February throughout the State, whereas precipitation was below normal. Snowcover by the end of February was below normal and this deficit reduced flooding due to spring snowmelt. Streamflow and precipitation in March were above normal throughout the State. Minor flooding of less than one foot above flood stage occurred March 23-24 in the Greenbrier River basin. Streamflow was above normal to normal in April throughout the State, whereas precipitation was near to below normal. Streamflow and precipitation in June, July, and August were below normal throughout the State. Localized flash flooding associated with intense thunderstorms occurred in July in the central mountains. Drought conditions were observed in some central counties in August. Streamflow and precipitation in September were near normal throughout the State.

Water-quality data were collected periodically at five NASQAN and two project sites during the year. The amount of data was insufficient to provide a summary statement.

Ground-water levels were generally near average (for the period of record for each observation well) throughout most of the State for the 1991 water year. (Periods of record for the observed wells range from 4 to 51 years.) In October and November, water levels declined but were above average throughout most of the State. Water levels generally rose in December and declined in January throughout the State. Water levels generally rose again in February and March to above-average levels. Water levels declined in April, May, and June and were below average. Water levels rose in July to near average, were below average in August, and above average in September throughout the State.

The index well in Gilmer County, near the center of the State, recorded above-average water levels in 1991 water year. The index well, for which 37 years of record are available, had record high water levels in September. Modification of the well's construction from open-hole, dug well to gravel-pack construction in July 1988 could have affected the degree of water-level fluctuation at this well. Water-level fluctuations for the index well in Gilmer County for the 1987 to 1991 water years are shown in figure 6.



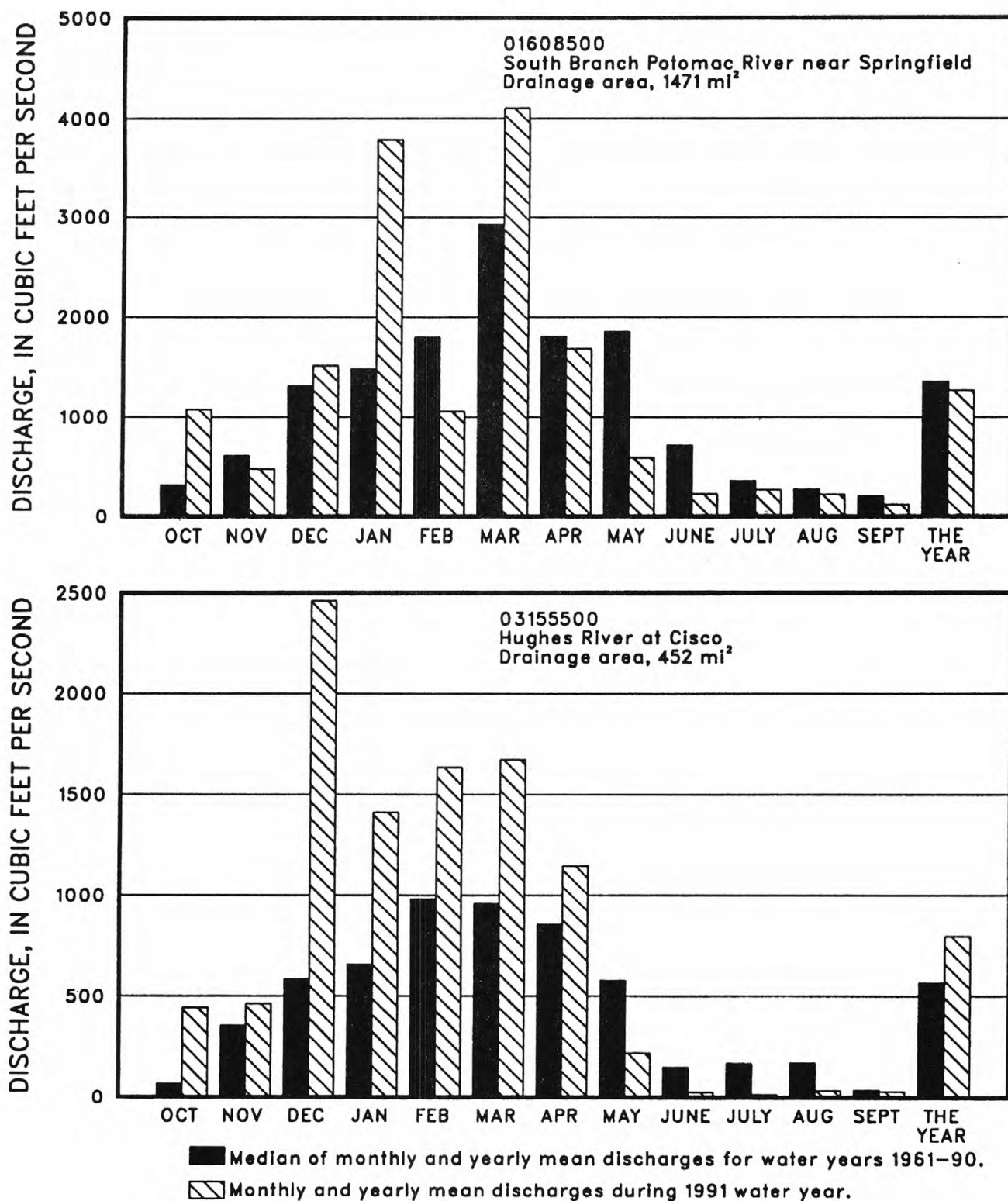


Figure 1.—Discharge at the South Branch Potomac River and the Hughes River index gaging stations during the 1991 water year compared to median discharge for the period 1961-90.

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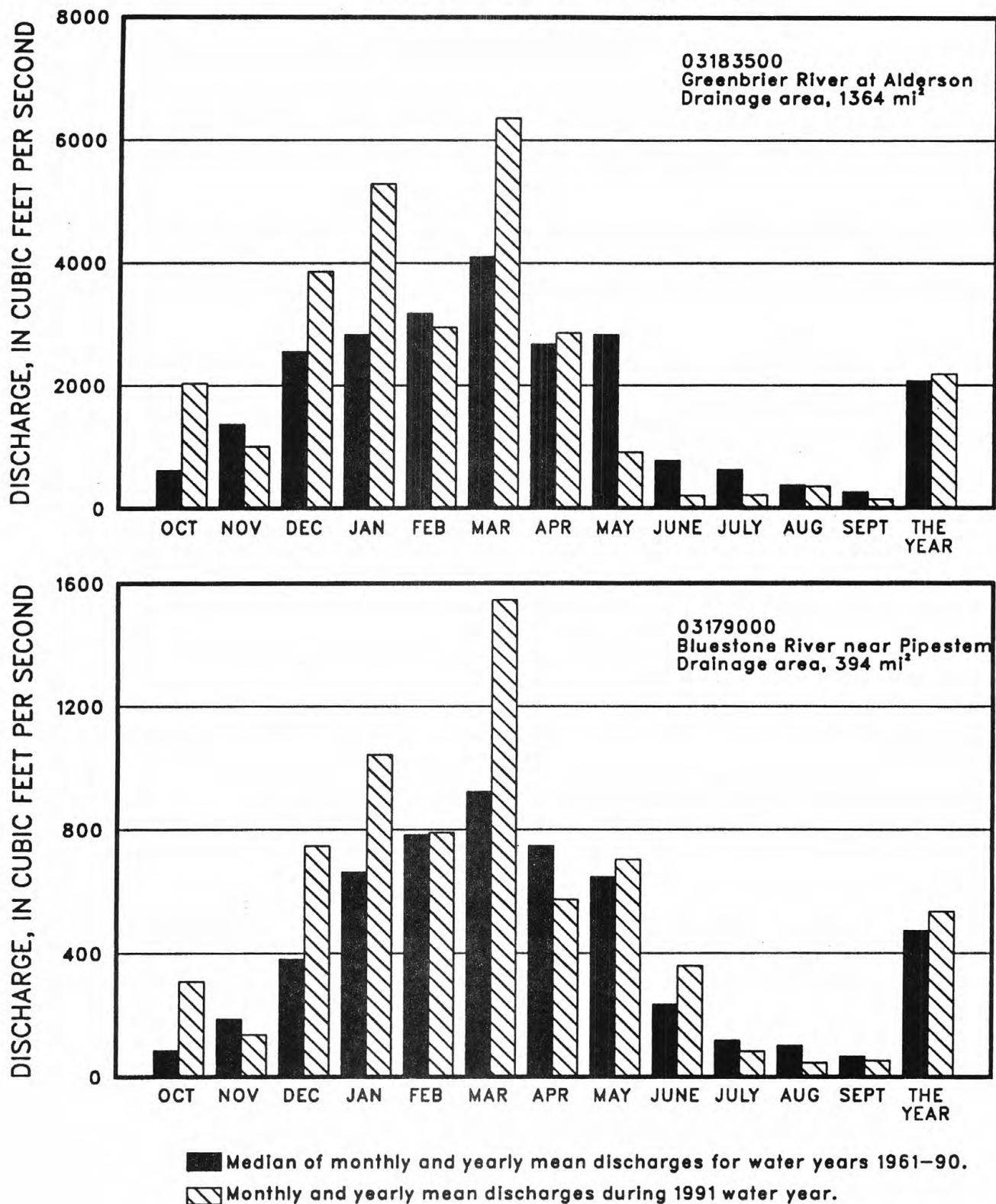


Figure 2.—Discharge at the Greenbrier River and the Bluestone River index gaging stations during the 1991 water year compared to median discharge for the period 1961-90.

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## SPECIAL NETWORKS AND PROGRAMS

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.

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.

The 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).

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.

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.

## EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1991 water year that began October 1, 1990, and ended September 30, 1991. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 4 and 5. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in West Virginia, for surface-water stations where only miscellaneous measurements are made.

## Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 03198000, which appears just to the left of the station name, includes the two-digit Part number "03" plus the six-digit downstream-order number "198000." The Part number designates the major river basin; for example, Part "03" is the Kanawha River basin.

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## Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description. (See figure 3 below.)

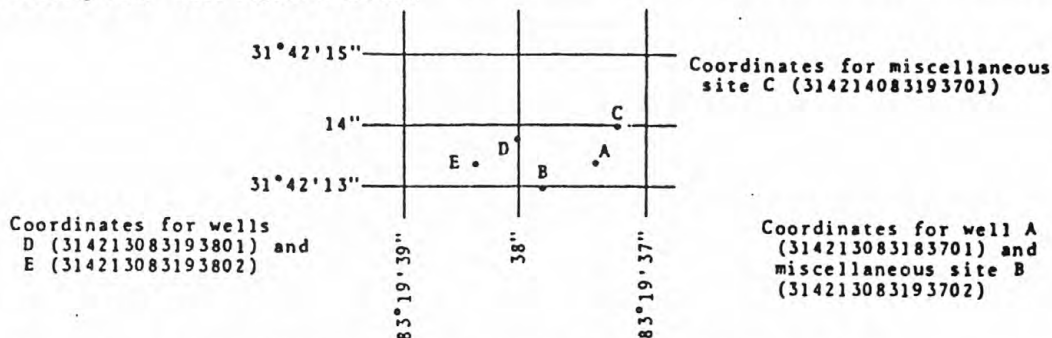


Figure 3. System for numbering wells and miscellaneous sites (latitude and longitude).

Well records furnished by the State of West Virginia also include the well number that is based on an indexing system used by the West Virginia State Water Control Board.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 4 and 5.

## Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.



Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

#### Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

**LOCATION.**--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

**DRAINAGE AREA.**--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.**--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

**REVISED RECORDS.**--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

**GAGE.**--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see glossary), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.**--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

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COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record, if the median differs from the average given by more than 10 percent.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

## Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table foot-note, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

## Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft<sup>3</sup>/s; to the nearest tenth between 1.0 and 10 ft<sup>3</sup>/s; to whole numbers between 10 and 1,000 ft<sup>3</sup>/s; and to 3 significant figures for more than 1,000 ft<sup>3</sup>/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

#### Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in the West Virginia District Office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the District office.

#### Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

#### Classification of records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records," as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 4.

#### Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

#### On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" which appears at the end of the introductory text. Detailed information on collecting, treating, and shipping samples may be obtained from the West Virginia District Office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.



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Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the West Virginia District Office whose address is given on the back of the title page of this report.

## Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the West Virginia District Office.

## Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

## Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado or Doraville, Georgia. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratories are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

In March 1989 the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and 1989. Sulfate values in this report have not been corrected for this bias.

## Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.



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COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

Records of Ground-Water Levels

Only water-level data from a national network of observation wells are given in this report. These data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in West Virginia are shown in figure 5.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the township-range location of the well.

Water-level records are obtained from direct measurements with a steel tape or from the graph or punched tape of a water-stage recorder. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

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**LOCATION.**--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); a landline location designation; the hydrologic-unit number; the distance and direction from a geographic point of reference; and the owner's name.

**AQUIFER.**--This entry designates by name (if a name exists) and geologic age the aquifer(s) open to the well.

**WELL CHARACTERISTICS.**--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

**INSTRUMENTATION.**--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

**DATUM.**--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above (or below) National Geodetic Vertical Datum of 1929 (NGVD of 1929); it is reported with a precision depending on the method of determination.

**REMARKS.**--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that also are water-quality observation wells, and may be used to acknowledge the assistance of local (non-Survey) observers.

**PERIOD OF RECORD.**--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

**EXTREMES FOR PERIOD OF RECORD.**--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. For wells equipped with recorders, only abbreviated tables are published; generally, only water level lows are listed for every fifth day and at the end of the month (eom). The highest and lowest water levels of the water year and their dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

#### Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that, for most sampling sites they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes, one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

#### Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some counties but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality Statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other counties in earlier years.

Most methods for collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed on a following page. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

#### Data Presentation

The records of ground-water quality are published in a section titled QUALITY OF GROUND WATER immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by County and are identified by well number. The prime identification number for wells sampled is the 15-digit number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

ACCESS TO WATSTORE DATA

The National Water Data Storage and Retrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from the offices whose addresses are given on the back of the title page.

General inquiries about WATSTORE may be directed to:

Chief Hydrologist  
U.S. Geological Survey  
437 National Center  
Reston, Virginia 22092

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## 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 equal 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 multicelled 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 phase and is expressed as milligrams dry weight of algae produced per liter of sample.

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 ( $\text{g/m}^3$ ), and periphyton and benthic organisms in grams per square mile ( $\text{g/m}^2$ ).

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 ( $\text{ft}^3/\text{s}$ ) 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 foot per second day ( $\text{ft}^3/\text{d}$ ) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Cubic feet per second per square mile [ $(\text{ft}^3/\text{s})/\text{mi}^2$ ] 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  $0.45 \mu\text{m}$  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 ( $\text{CaCO}_3$ ).

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 ( $\mu\text{g/g}$ ) 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 ( $\mu\text{g/L}$ ,  $\mu\text{g/L}$ ) 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.

Microsiemens per centimeter ( $\mu\text{S/cm}$ ) at  $25^{\circ}\text{C}$  are the units of measure for specific conductance. The microsiemen is numerically the same as the micromho.

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.

The 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).

Nephelometric turbidity units (NTU) are the unit of measure of turbidity. It is based on use of a standard suspension of Formazin.

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 ( $\text{m}^2$ ), 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:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
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.

Picocurie (PC, pCi) is one trillionth ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

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 [ $\text{mg C}/(\text{m}^2\text{-time})$  for periphyton and macrophytes and  $\text{mg C}/(\text{m}^3\text{-time})$  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.



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Milligrams of oxygen per area or volume per unit time [mgO<sub>2</sub>/(m<sup>2</sup>-time)] for periphyton and macrophytes and [mgO<sub>2</sub>/(m<sup>3</sup>-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) shows the depth to which the drainage area would be covered if all 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 per 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<sup>3</sup>/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<sub>10</sub>) 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 emerged 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 plexiglass 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 planimeted. All areas shown are those for the stage when the planimeted 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  $\mu$ m 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  $\mu$ m 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.....	<u>Hexagenia</u>
Species.....	<u>Hexagenia limbata</u>

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.

## WATER RESOURCES DATA - WEST VIRGINIA, 1991

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.

Turbidity is a measurement of the intensity of light scattered by a water sample. Suspended particulate matter in the sample causes scattering of light passing through the sample. Turbidity is measured by comparison of the light scattering intensity of a water sample to that of a standard reference suspension. The greater the intensity of the scattered light, the greater the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU).

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.

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, Books and Open-File Reports Section, Federal Center, Box 25425, 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. McCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W. Scott 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 Warren 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.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.

- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F. A. Kilpatrick, R. E. Rathburn, N. Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. *Levels of streamflow gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 27 pages.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by Richard L. Cooley and Richard L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction*, by O. L. Franke, T. E. Reilly, and G. D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. J. Fishman and L. C. Friedman: USGS--TWRI Book 5, Chapter A1. 1989. 545 pages.



- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R. L. Wershaw, M. J. Fishman, R. R. Grabbe, and L. E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L. J. Britton and P. E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 pages.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

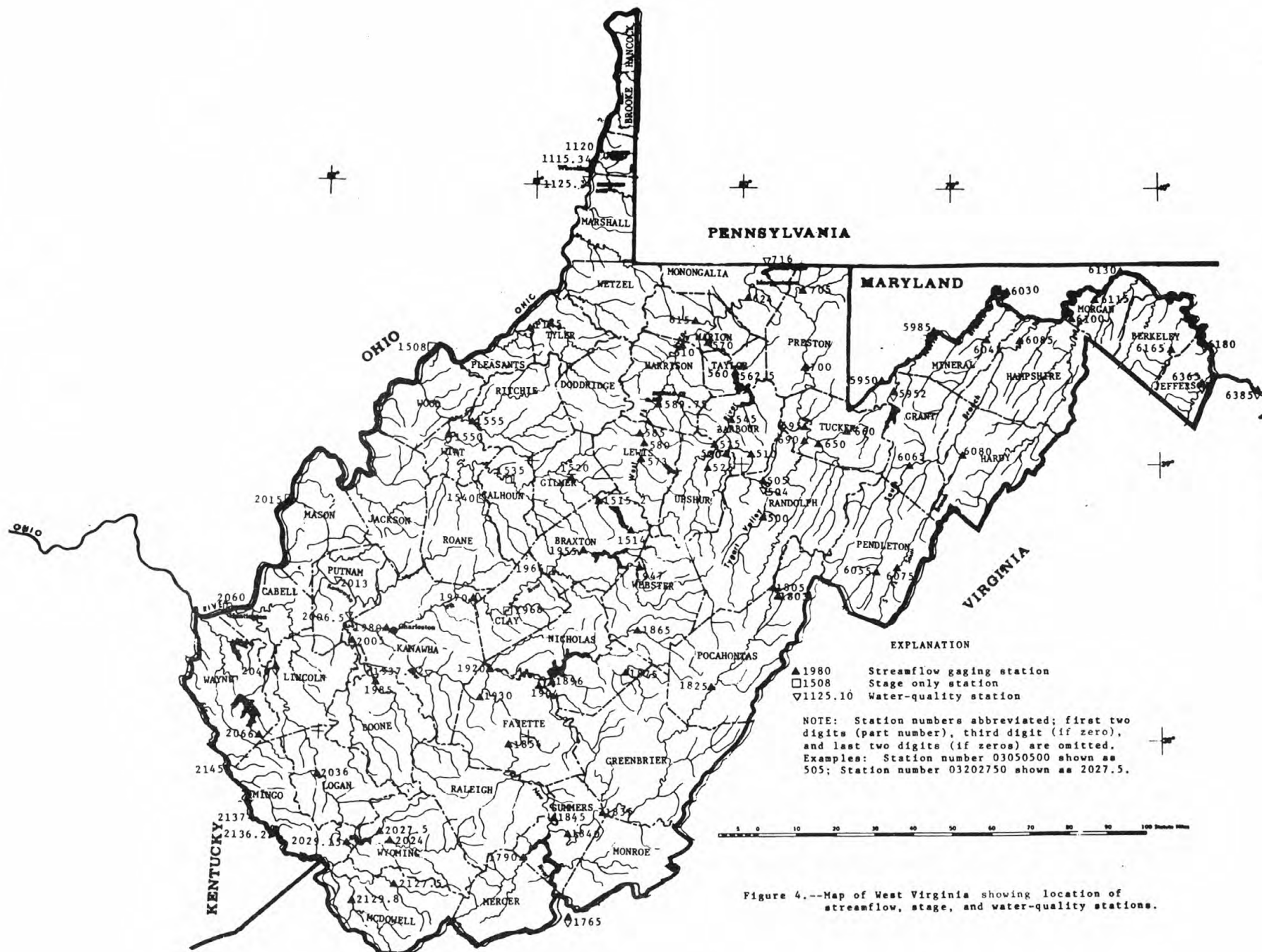


Figure 4.--Map of West Virginia showing location of streamflow, stage, and water-quality stations.

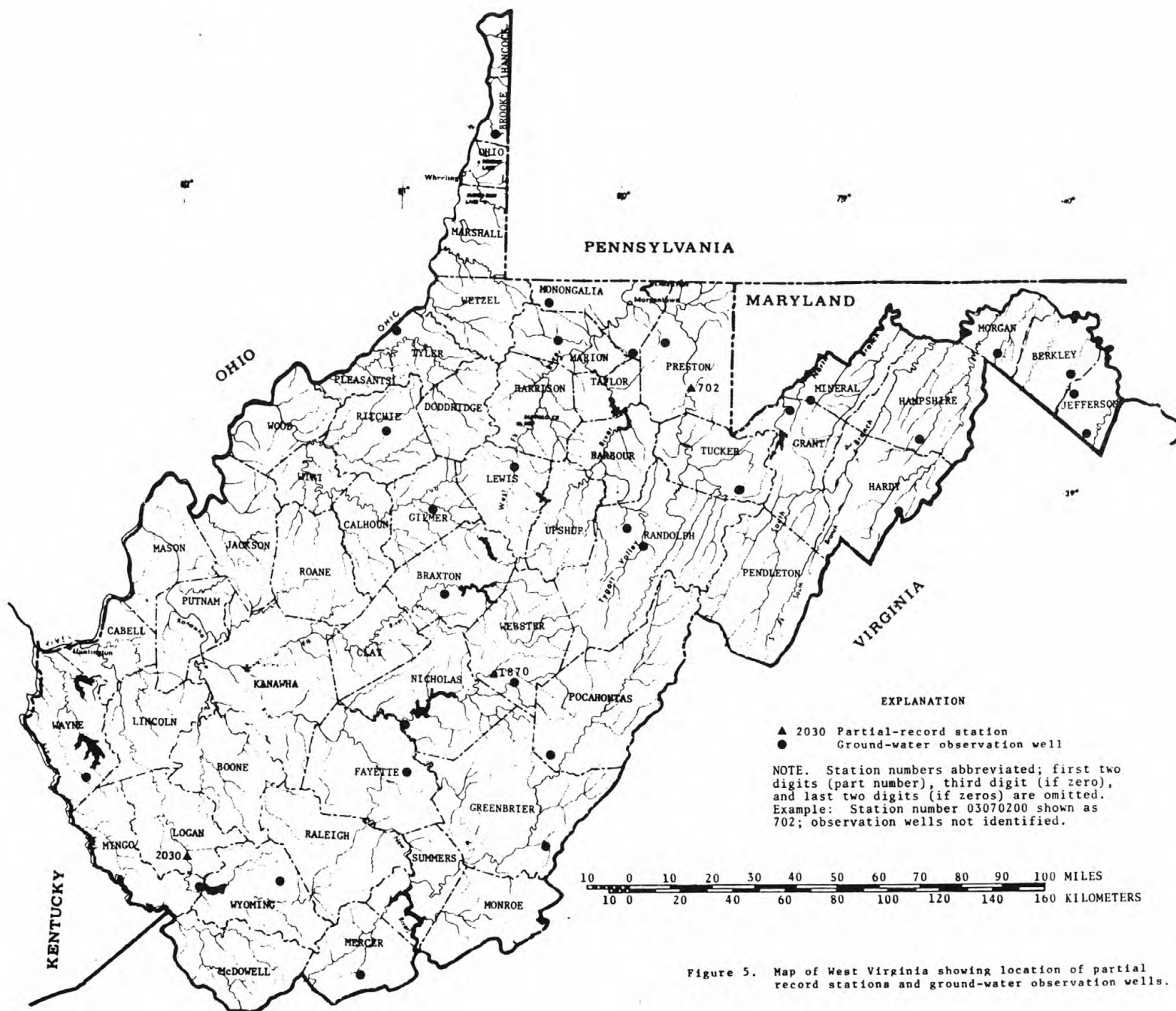


Figure 5. Map of West Virginia showing location of partial record stations and ground-water observation wells.

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## SURFACE-WATER RECORDS

REMARK CODES.--The following remark codes may appear with the water-quality data in this section:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (Organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

NOTE: Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's and 100's of nanograms per liter ( $\text{ng/L}$ ). Present data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey will begin using new trace-element protocols in the near future.



## POTOMAC RIVER BASIN

01595000 NORTH BRANCH POTOMAC RIVER AT STEYER, MD--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1956 - 1991	
ANNUAL TOTAL	65460		52707.1			
ANNUAL MEAN	179		144		174	
HIGHEST ANNUAL MEAN					225	1978
LOWEST ANNUAL MEAN					115	1959
HIGHEST DAILY MEAN	1640	May 26	1250	Dec 31	4410	Nov 5 1985
LOWEST DAILY MEAN	23	Oct 8	4.5	Sep 3	3.1	(a)
ANNUAL SEVEN-DAY MINIMUM	29	Aug 30	12	Sep 12	3.6	Sep 23 1959
INSTANTANEOUS PEAK FLOW	3630	May 26	2210	Dec 31	b11500	Nov 5 1985
INSTANTANEOUS PEAK STAGE	7.62	May 26	6.23	Dec 31	13.14	Nov 5 1985
INSTANTANEOUS LOW FLOW	15	Oct 6	4.0	Sep 3	2.9	Sep 10 1965
ANNUAL RUNOFF (CFSM)	2.46		1.98		2.38	
ANNUAL RUNOFF (INCHES)	33.36		26.86		32.29	
10 PERCENT EXCEEDS	350		333		386	
50 PERCENT EXCEEDS	135		90		102	
90 PERCENT EXCEEDS	42		20		20	

a Sept. 9, 10, 1965.

b From rating curve extended above 3,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 10.30 ft.

## POTOMAC RIVER BASIN

01595200 STONY RIVER NEAR MOUNT STORM, WV

LOCATION.--Lat 39°16'10", long 79°15'45", Grant County, Hydrologic Unit 02070002, on left bank 100 ft downstream from highway bridge on U.S. Highway 50, 1.0 mi west of Mount Storm, and at mile 6.4.

DRAINAGE AREA.--48.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,554.54 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Water-discharge records good, except those for September, which are fair due to extreme shifting. Prior to June 1987, flow regulated by Stony River Reservoir, 14.0 mi upstream from station. Regulation since 1963 by Virginia Electric and Power Company dam (Mount Storm Lake) 4.0 mi upstream from station.

AVERAGE DISCHARGE.--30 years, 98.5 ft<sup>3</sup>/s, 27.41 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 16.41 ft, from floodmarks, from rating curve extended above 7,500 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow; minimum daily discharge, 1.3 ft<sup>3</sup>/s, Aug. 28, 1988; minimum gage height, 1.73 ft, Sept. 25, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,430 ft<sup>3</sup>/s, Dec. 30, gage height, 6.23 ft; minimum daily, 4.4 ft<sup>3</sup>/s, Aug. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	36	188	159	107	71	99	78	18	27	12	6.0
2	12	34	105	555	97	102	196	43	16	37	9.0	5.0
3	11	29	44	432	80	396	64	35	19	18	5.3	5.4
4	13	27	74	118	63	799	61	32	25	76	4.4	12
5	13	30	57	112	79	76	72	30	20	87	4.8	21
6	10	43	50	108	142	73	68	33	19	42	8.2	23
7	8.9	40	45	122	236	100	61	34	18	30	13	14
8	9.0	33	28	117	321	67	59	33	17	84	14	6.4
9	11	32	26	114	425	58	61	42	15	47	27	9.1
10	11	42	147	123	216	58	72	40	15	40	13	27
11	51	38	255	128	71	61	61	35	17	33	6.0	19
12	27	33	122	155	67	64	57	32	18	38	5.2	18
13	33	30	20	158	71	67	87	31	22	49	7.8	18
14	22	35	19	141	107	67	202	36	21	30	17	8.8
15	17	30	67	139	141	60	619	37	16	25	17	6.1
16	16	27	58	273	126	59	173	36	14	22	10	5.6
17	15	28	35	332	111	68	91	32	19	21	6.3	15
18	21	25	51	408	103	385	76	28	19	19	5.4	27
19	23	23	77	284	154	172	75	29	17	21	6.3	34
20	18	23	45	83	191	107	64	26	17	16	13	28
21	18	21	47	98	243	322	57	25	17	11	13	20
22	24	20	37	122	373	221	64	24	24	13	13	8.0
23	224	23	66	125	65	566	70	22	76	18	12	7.0
24	554	21	87	109	64	355	84	20	35	19	9.6	15
25	270	19	59	98	70	367	83	19	31	18	5.2	22
26	137	21	53	96	75	211	72	18	34	19	5.1	20
27	78	26	53	90	75	188	63	18	30	19	12	20
28	37	24	112	90	71	122	67	19	27	15	14	10
29	34	94	249	85	---	71	99	24	20	17	15	5.0
30	39	249	615	103	---	79	118	24	16	20	15	4.5
31	31	---	788	143	---	79	---	24	---	14	11	---
TOTAL	1797.6	1156	3679	5220	3944	5491	3095	959	672	945	329.6	439.9
MEAN	58.0	38.5	119	168	141	177	103	30.9	22.4	30.5	10.6	14.7
MAX	554	249	788	555	425	799	619	78	76	87	27	34
MIN	8.9	19	19	83	63	58	57	18	14	11	4.4	4.5

CAL YR 1990 TOTAL 31195.5 MEAN 85.5 MAX 981 MIN 8.9  
WTR YR 1991 TOTAL 27728.1 MEAN 76.0 MAX 799 MIN 4.4



## POTOMAC RIVER BASIN

01595200 STONY RIVER NEAR MOUNT STORM, WV--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: December 1961 to March 1974, September 1974 to current year.

INSTRUMENTATION.--Temperature recorder (continuous ethyl alcohol - actuated thermograph) since December 1961.

REMARKS.--Upstream reservoir regulation stopped June 1987. Temperature recorder malfunctioned Oct 1-29.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 27.5°C, Aug. 14, 1984, July 19, 1990; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 26.0°C, July 23, 24; minimum, 1.5°C, Dec. 25-28.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10.5	11.0	5.0	3.5	8.0	10.0	19.0	23.0	24.5	23.5	21.0
2	---	10.0	11.0	11.0	5.0	10.5	13.0	17.5	23.0	23.5	25.0	19.0
3	---	11.0	10.0	11.0	5.0	13.0	11.0	16.0	22.0	23.0	25.0	19.5
4	---	11.0	7.0	8.0	5.0	13.0	11.5	14.0	21.0	21.5	23.0	19.0
5	---	11.0	5.0	7.0	5.5	8.0	11.5	18.0	19.5	22.0	24.0	19.0
6	---	11.0	4.0	8.0	6.0	6.0	13.5	18.0	17.5	24.0	22.5	20.5
7	---	9.0	5.0	8.0	8.0	6.0	15.5	15.5	17.0	25.0	21.5	19.0
8	---	8.0	4.5	6.0	9.0	5.5	15.0	16.5	17.0	23.5	22.5	19.0
9	---	7.5	3.0	7.0	9.5	5.0	16.0	16.0	20.5	22.5	22.0	18.0
10	---	7.0	8.0	7.0	9.5	4.5	15.0	19.0	21.0	22.5	22.0	19.0
11	---	6.5	9.5	7.0	4.5	4.0	12.5	19.0	21.0	22.5	22.0	20.5
12	---	6.0	9.5	6.5	3.0	4.5	12.0	19.5	20.0	22.5	21.0	18.5
13	---	5.5	7.0	6.0	4.5	4.5	11.0	21.0	20.5	22.5	20.0	19.0
14	---	4.0	5.0	5.0	4.5	4.5	11.0	21.0	20.5	22.5	19.0	21.0
15	---	6.0	3.5	6.5	3.5	6.0	16.5	21.5	22.0	23.0	20.0	20.5
16	---	7.0	3.5	6.5	3.5	6.0	17.0	21.5	23.0	23.5	21.5	22.0
17	---	7.0	3.0	7.0	4.5	7.5	14.0	21.5	23.0	23.5	21.5	21.5
18	---	6.0	5.5	7.5	6.0	11.5	14.0	20.5	22.0	23.5	21.0	21.0
19	---	4.0	5.5	8.0	6.0	11.5	13.5	18.5	22.0	23.5	23.0	20.5
20	---	4.5	4.0	6.0	6.5	8.0	10.5	15.5	23.0	24.5	21.0	16.0
21	---	4.0	5.0	5.0	8.0	13.5	10.5	18.5	24.0	25.5	19.0	14.0
22	---	6.0	7.0	3.0	9.5	12.5	9.5	19.5	23.5	25.5	20.5	14.0
23	---	8.0	7.5	3.5	7.5	14.0	11.5	21.0	20.5	26.0	19.5	14.0
24	---	7.0	7.5	4.0	5.0	11.0	11.5	20.5	21.5	26.0	21.0	13.5
25	---	6.0	3.0	4.0	5.5	13.0	14.0	22.0	22.0	24.5	20.0	13.0
26	---	6.5	1.5	4.0	5.0	12.0	15.0	22.0	22.5	24.0	21.5	13.0
27	---	8.0	1.5	4.5	5.0	14.0	15.5	22.0	23.0	23.0	21.0	12.0
28	---	10.0	7.0	4.5	6.0	14.0	17.5	22.5	23.5	22.5	21.5	12.0
29	---	11.0	7.0	5.0	---	12.0	18.5	22.5	24.0	22.0	22.0	13.0
30	9.5	11.0	9.5	6.0	---	11.0	19.0	23.5	25.0	22.0	22.0	14.0
31	10.5	---	9.5	5.0	---	9.5	---	24.0	---	23.0	22.5	---
MAX	---	11.0	11.0	11.0	9.5	14.0	19.0	24.0	25.0	26.0	25.0	22.0

WTR YR 1991 MAX 26.0

## POTOMAC RIVER BASIN

01595200 STONY RIVER NEAR MOUNT STORM, WV--Continued

## WATER-QUALITY RECORDS

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MINIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	9.5	11.0	4.5	3.0	6.0	8.5	16.0	21.0	23.0	19.0	18.0
2	---	9.5	10.0	5.0	3.5	8.0	10.0	13.5	21.0	21.5	20.0	16.5
3	---	10.0	7.0	8.0	5.0	10.0	8.5	12.5	21.0	21.5	20.0	16.5
4	---	9.5	5.0	6.0	4.0	8.0	9.5	13.0	19.5	20.0	21.5	18.0
5	---	9.5	4.0	6.0	4.0	6.0	11.5	13.0	16.5	19.5	19.0	18.0
6	---	9.0	4.0	7.0	5.5	6.0	11.0	15.5	15.5	20.5	19.0	18.0
7	---	8.0	4.0	6.0	6.0	5.5	12.0	12.0	15.5	22.5	20.0	16.0
8	---	7.5	3.5	6.0	8.0	5.0	13.0	12.5	15.5	21.0	19.0	16.0
9	---	6.5	3.0	6.0	8.5	4.0	14.5	15.0	15.5	21.0	20.0	16.0
10	---	6.5	3.0	7.0	4.5	4.0	12.5	15.0	15.0	21.5	19.0	17.0
11	---	6.0	8.0	5.0	3.0	4.0	10.0	15.5	18.0	20.5	18.0	18.0
12	---	5.5	7.0	5.5	2.0	4.0	10.0	16.0	18.5	20.5	17.0	16.0
13	---	3.5	5.0	5.0	2.0	4.5	10.0	18.0	17.5	20.5	17.0	16.0
14	---	3.5	2.0	5.0	3.5	4.5	10.0	18.5	16.0	21.5	18.0	18.0
15	---	3.5	2.0	5.0	3.5	4.5	11.0	18.5	17.0	19.5	18.0	18.0
16	---	6.0	3.0	5.0	3.0	4.5	11.5	18.5	20.0	19.0	18.0	18.5
17	---	6.0	3.0	5.0	3.5	5.5	11.5	20.0	21.0	20.0	17.5	20.0
18	---	4.0	3.0	7.0	4.5	7.0	11.0	19.0	21.0	20.0	19.0	19.0
19	---	3.0	4.0	6.0	5.5	6.0	10.5	15.5	20.0	22.5	18.5	16.0
20	---	3.5	3.0	5.0	5.5	6.0	10.5	14.5	19.5	21.5	19.0	14.0
21	---	3.0	3.0	3.0	6.0	8.0	9.5	14.5	20.0	22.0	17.5	11.0
22	---	4.0	5.0	2.5	7.5	12.5	8.5	17.5	20.5	22.5	16.5	11.0
23	---	6.0	7.0	3.0	4.5	11.0	8.5	17.5	19.0	23.0	17.0	13.0
24	---	5.0	3.0	3.5	3.5	10.5	10.0	19.5	18.5	23.0	17.5	12.0
25	---	5.0	1.5	3.0	5.0	11.5	9.5	19.0	18.5	22.0	17.5	13.0
26	---	6.0	1.5	3.0	5.0	11.0	12.5	19.5	19.5	22.0	18.0	12.0
27	---	6.0	1.5	3.5	4.5	12.0	13.0	19.5	19.5	21.0	17.5	11.0
28	---	7.5	1.5	4.5	5.0	12.0	14.5	20.5	20.5	19.0	19.5	10.0
29	---	7.5	6.5	4.5	---	11.0	16.5	20.5	22.0	19.0	19.0	10.0
30	8.0	11.0	6.5	5.0	---	8.0	17.5	21.0	22.5	19.0	19.0	11.5
31	8.5	---	5.0	3.0	---	7.5	---	22.0	---	20.0	20.5	---
MIN	---	3.0	1.5	2.5	2.0	4.0	8.5	12.0	15.0	19.0	16.5	10.0

WTR YR 1991 MIN 1.5

## POTOMAC RIVER BASIN

01598500 NORTH BRANCH POTOMAC RIVER AT LUKE, MD

LOCATION.--Lat 39°28'45", long 79°03'55", Mineral County, W. Va., Hydrologic Unit 02070002, on right bank 0.2 mi downstream from Savage River, 0.5 mi northwest of Luke, and at mile 53.3.

DRAINAGE AREA.--404 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1899 to July 1906 (published as "at Piedmont, W. Va."), October 1949 to current year.

REVISED RECORDS.--WSP 192: 1899-1904. WSP 1432: 1905-6, drainage area at former site.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 946.22 ft above National Geodetic Vertical Datum of 1929. June 27, 1899, to July 15, 1906, nonrecording gage at bridge 1.1 mi downstream at datum about 35 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated prior to July 1981 by Stony River Reservoir, 45 mi upstream from station, since December 1950 by Savage River Reservoir, 5 mi upstream from station (see station 01597500), and since July 1981 by Jennings Randolph Lake, 9 mi upstream from station. Some regulation at low flow by West Virginia Pulp and Paper Company at site used 1899-1906. U.S. Army Corps of Engineers satellite telemeter at station. Upper Potomac River Commission gage height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGE FOR CURRENT YEAR.--Peak discharge, 4,700 ft<sup>3</sup>/s, Apr. 15, gage height, 6.82 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	426	690	399	3730	860	728	907	637	271	231	231	226
2	424	685	399	3640	857	1070	747	561	270	231	231	225
3	422	680	515	3380	859	1080	711	470	277	231	231	221
4	427	677	676	2460	863	1360	634	434	272	237	231	211
5	422	678	470	1830	877	1470	565	433	254	232	226	205
6	628	674	470	1750	933	1480	560	389	236	228	229	202
7	627	672	484	1760	1320	1490	556	325	236	228	229	190
8	623	667	478	1630	1560	1230	553	322	236	227	229	189
9	414	667	473	1540	1530	1020	557	353	235	735	235	189
10	413	690	469	1540	1520	1020	563	347	235	612	229	189
11	723	673	467	1550	1500	1010	523	555	222	245	228	188
12	926	667	463	1550	1270	1000	500	553	230	252	228	186
13	827	663	462	1550	1090	955	1000	327	229	251	228	185
14	804	629	458	1540	1120	837	2830	323	230	248	228	184
15	717	594	536	1540	1100	787	4130	321	231	247	229	184
16	453	555	666	1980	1080	786	4390	308	235	245	231	184
17	431	526	948	2720	1080	788	2960	298	232	245	232	184
18	509	523	1270	2710	1080	822	1940	301	231	244	233	184
19	492	485	1410	2650	1090	832	1500	306	228	241	232	184
20	430	467	1380	2620	1140	827	1590	299	228	243	233	175
21	430	510	1390	2600	1130	826	1030	297	227	243	231	166
22	441	509	1370	1850	1120	879	735	297	229	243	231	166
23	1380	513	1420	1270	1110	1950	699	312	237	243	240	166
24	1990	511	1420	1260	1100	2810	737	323	230	241	785	166
25	1380	507	1390	1240	1090	2160	830	513	228	241	626	166
26	957	505	1370	1230	1090	1920	823	535	227	239	241	165
27	669	504	1360	1230	1080	1780	1020	327	222	239	240	164
28	594	501	1350	1030	665	1400	1010	308	228	238	240	165
29	536	500	1370	835	---	1270	672	292	228	244	239	166
30	576	454	1890	862	---	1130	667	285	229	237	235	166
31	695	---	3260	875	---	1040	---	274	---	232	227	---
TOTAL	20786	17576	30483	57952	31114	37757	35939	11625	7103	8293	8138	5541
MEAN	671	586	983	1869	1111	1218	1198	375	237	268	263	185
MAX	1990	690	3260	3730	1560	2810	4390	637	277	735	785	226
MIN	413	454	399	835	665	728	500	274	222	227	226	164

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1991, BY WATER YEAR (WY)

MEAN	377	495	842	903	1109	1500	1164	908	514	316	311	260
MAX	1423	2806	2536	2276	2421	3414	2442	2238	1493	1294	1401	737
(WY)	1955	1986	1973	1952	1956	1963	1958	1988	1981	1990	1955	1971
MIN	45.5	91.8	131	166	322	467	374	165	108	91.4	61.4	66.9
(WY)	1952	1954	1954	1977	1978	1988	1990	1982	1969	1953	1951	1951

## POTOMAC RIVER BASIN

01598500 NORTH BRANCH POTOMAC RIVER AT LUKE, MD--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1950 - 1991	
ANNUAL TOTAL	300585		272307			
ANNUAL MEAN	824		746		723	
ANNUAL MEAN <sup>a</sup>	837		691		724	
HIGHEST ANNUAL MEAN					943	1972
LOWEST ANNUAL MEAN					412	1969
HIGHEST DAILY MEAN	6300	Jul 13	4390	Apr 16	18400	Aug 18 1955
LOWEST DAILY MEAN	286	Aug 3	164	Sep 27	36	Oct 20 1951
ANNUAL SEVEN-DAY MINIMUM	293	Aug 9	165	Sep 22	38	Oct 18 1951
INSTANTANEOUS PEAK FLOW	8540	Jul 13	4700	Apr 15	a39400	Oct 15 1954
INSTANTANEOUS PEAK STAGE	8.89	Jul 13	6.82	Apr 15	17.15	Oct 15 1954
INSTANTANEOUS LOW FLOW	222	Aug 26	119	Jun 11	UNKNOWN	
ANNUAL RUNOFF (CFSM) <sup>a</sup>	2.07		1.71		1.79	
ANNUAL RUNOFF (INCHES) <sup>a</sup>	28.12		23.22		24.33	
10 PERCENT EXCEEDS	1500		1540		1630	
50 PERCENT EXCEEDS	577		513		411	
90 PERCENT EXCEEDS	361		227		111	

<sup>a</sup> Adjusted for change in reservoir contents since October 1949.

a From rating curve extended above 25,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.



## POTOMAC RIVER BASIN

01603000 NORTH BRANCH POTOMAC RIVER NEAR CUMBERLAND, MD

LOCATION.--Lat 39°37'16", long 78°46'24", Allegany County, Hydrologic Unit 02070002, on left bank at downstream side of Wiley Ford Bridge, 2.0 mi south of Cumberland, 2.1 mi downstream from Wills Creek, and at mile 19.6.

DRAINAGE AREA.--875 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1929 to current year. Gage-height records collected at various sites about 2.0 mi upstream from September 1901 to December 1932 and thereafter at present site, are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 726: Drainage area. WSP 781: 1932(M).

GAGE.--Water-stage recorder. Datum of gage is 585.22 ft above National Geodetic Vertical Datum of 1929. Prior to June 18, 1929, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges (backwater from construction), which are fair. Prior to July 1981 some regulation at low flow by Stony River Reservoir, 79 mi upstream from station. Low-flow regulation since December 1950 by Savage River Reservoir, 39 mi upstream from station (see station 01597500). Flow regulated by Jennings Randolph Lake, 43 mi upstream from station since July 1981. Prior to July 1957, small amount of inflow from industrial wastes and sewage from city of Cumberland from water diverted from Evitts Creek, mouth of which is downstream from station. Diversion to Chesapeake and Ohio Canal prior to 1935. National Weather Service gage height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at gage. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 29.2 ft June 1, 1889, discharge, about 89,000 ft<sup>3</sup>/s. Flood of Mar. 29, 1924, reached a stage of 28.4 ft, discharge, about 82,000 ft<sup>3</sup>/s.

PEAK DISCHARGE FOR CURRENT YEAR.--Peak discharge, 12,400 ft<sup>3</sup>/s, Oct. 23, gage height, 11.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e470	1230	708	6660	e1400	e1100	1840	1190	433	298	279	251
2	e460	1180	678	5440	e1430	e1750	1590	1110	420	294	275	246
3	e450	1130	1050	4810	e1450	e1800	1450	987	426	291	266	245
4	e470	1100	2550	3850	e1500	e4700	1400	892	433	304	273	248
5	e520	1080	2000	2770	e1650	e4000	1290	863	406	411	267	251
6	e480	1110	1610	2630	e2400	e3400	1270	913	361	338	255	245
7	e600	1060	1430	2750	e4000	e3500	1220	813	355	319	255	242
8	e590	1020	1300	2510	e3850	e2900	1180	719	350	312	255	228
9	e580	1010	1200	2300	e3200	e2400	1170	735	335	300	276	229
10	e450	1230	1130	2310	e2850	e2200	1270	790	342	1050	279	226
11	e1500	1320	1070	2430	e2600	1950	1170	730	330	381	261	228
12	3140	1190	1030	2450	e2300	1810	1080	873	328	302	256	222
13	2790	1160	1000	2550	e2000	1770	1330	843	325	338	251	222
14	2440	1100	973	2420	e2250	1650	3950	660	325	319	250	235
15	1930	1030	1140	2430	e2200	1520	6680	623	318	298	256	230
16	1430	1020	1750	e4800	e1850	1470	7340	592	317	294	257	223
17	1110	953	1710	e7500	e1850	1500	5500	566	340	289	254	220
18	1240	931	2680	e5600	e1850	1760	3650	561	328	288	290	220
19	1500	895	3770	e4600	e1850	2040	2610	634	325	288	294	230
20	1200	841	3220	e4250	e2250	2060	2670	590	318	286	291	217
21	1110	829	3210	e4150	e2500	1970	2330	539	314	283	269	213
22	1090	839	3100	e3350	e2350	1970	1780	526	331	283	261	206
23	7450	852	3590	e2350	e2200	3740	1600	519	421	291	259	207
24	6460	869	3940	e2250	e2050	5800	1510	515	389	282	337	209
25	3790	854	3580	e2000	e1950	4340	1540	530	339	274	1090	215
26	2780	841	3160	e1850	e1850	3260	1500	696	318	271	356	210
27	1900	830	2820	e1900	e1750	3260	1490	708	309	271	274	205
28	1580	820	2710	e1750	e1550	2650	1690	501	295	270	274	202
29	1360	810	2620	e1450	---	2330	1380	463	294	278	285	203
30	1210	802	3330	e1400	---	2200	1260	450	295	290	273	205
31	1250	---	8730	e1550	---	1940	---	434	---	288	264	---
TOTAL	53330	29936	72789	99060	60930	78740	65740	21565	10420	10081	9282	6733
MEAN	1720	998	2348	3195	2176	2540	2191	696	347	325	299	224
MAX	7450	1320	8730	7500	4000	5800	7340	1190	433	1050	1090	251
MIN	450	802	678	1400	1400	1100	1080	434	294	270	250	202

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1991, BY WATER YEAR (WY)

MEAN	616	765	1305	1551	1994	2843	2347	1720	889	511	437	389
MAX	3791	5350	4652	5115	4125	8763	4888	3902	2375	2270	2028	2036
(WY)	1943	1986	1973	1937	1961	1936	1970	1988	1981	1989	1955	1945
MIN	28.9	44.8	134	269	393	789	723	374	209	89.7	57.7	40.3
(WY)	1931	1931	1931	1940	1934	1990	1968	1934	1965	1930	1930	1932

## POTOMAC RIVER BASIN

01603000 NORTH BRANCH POTOMAC RIVER NEAR CUMBERLAND, MD--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1930 - 1991	
ANNUAL TOTAL	528453		518606			
ANNUAL MEAN	1448		1421		1277	
ANNUAL MEAN*	1461		1366		1278	
HIGHEST ANNUAL MEAN					1801	1973
LOWEST ANNUAL MEAN					632	1969
HIGHEST DAILY MEAN	8730	Dec 31	8730	Dec 31	47400	Mar 18 1936
LOWEST DAILY MEAN	350	(a)	202	Sep 28	13	(b)
ANNUAL SEVEN-DAY MINIMUM	360	Aug 12	207	Sep 24	16	Sep 20 1932
INSTANTANEOUS PEAK FLOW	12400	Oct 23	12400	Oct 23	c88200	Mar 17 1936
INSTANTANEOUS PEAK STAGE	11.47	Oct 23	11.47	Oct 23	29.10	Mar 17 1936
INSTANTANEOUS LOW FLOW	UNKNOWN		202	(d)	12	Sep 22 1932
ANNUAL RUNOFF (CFSM)	1.67		1.56		1.46	
ANNUAL RUNOFF (INCHES)	22.67		21.19		19.83	
10 PERCENT EXCEEDS	2880		3240		2970	
50 PERCENT EXCEEDS	963		1050		671	
90 PERCENT EXCEEDS	494		256		163	

\* Adjusted for change in reservoir contents since October 1981.

a Aug. 15, 16.

b Sept. 21-24, 1932.

c From rating curve extended above 33,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

d Sept. 27-29.

## POTOMAC RIVER BASIN

01604500 PATTERSON CREEK NEAR HEADSVILLE, WV

LOCATION.--Lat 39°26'35", long 78°49'20", Mineral County, Hydrologic Unit 02070002, on right bank 100 ft downstream from Hazel Run, 1.0 mi downstream from Cabin Run, 4.0 mi northeast of Headsville, 8.0 mi east of Keyser, and at mile 12.5.

DRAINAGE AREA.--219 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 951: 1939-40.

GAGE.--Water-stage recorder. Datum of gage is 624.90 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 11, 1946, nonrecording gage on bridge 1.0 mi upstream at datum 6.14 ft higher. Oct. 11-23, 1946, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Feb. 17-18. Records good, except for August and September, which are fair due to shifting for aquatic growth. The flow from 115 mi<sup>2</sup> upstream from station is partially controlled, but not diverted, by several floodwater detention reservoirs with a total combined detention capacity of 19,887 acre-ft.

AVERAGE DISCHARGE.--53 years, 168 ft<sup>3</sup>/s, 10.42 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft<sup>3</sup>/s, Aug. 19, 1955, gage height, 12.20 ft, from rating curve extended above 4,900 ft<sup>3</sup>/s, on basis of contracted-opening measurement at gage height 11.53 ft; minimum daily discharge, 1.2 ft<sup>3</sup>/s, Aug. 18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,400 ft<sup>3</sup>/s, Mar. 23, gage height, 8.71 ft; minimum daily discharge, 2.1 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	56	20	915	147	107	342	97	21	12	9.0	3.1
2	17	49	19	685	128	112	298	89	20	11	8.0	3.1
3	13	44	37	582	118	133	254	82	21	12	7.2	3.1
4	12	40	166	510	112	1160	221	77	27	50	6.6	3.0
5	12	37	155	443	108	756	200	73	28	169	6.1	3.0
6	12	40	123	403	149	574	181	75	26	82	5.6	3.1
7	11	36	99	428	215	571	159	76	24	53	5.2	3.3
8	11	33	80	395	238	484	142	69	20	36	5.0	3.4
9	11	31	67	345	219	427	133	71	19	27	5.3	3.2
10	12	45	59	335	200	385	135	78	17	23	5.9	3.0
11	77	54	51	417	179	331	120	72	15	21	6.8	2.9
12	93	49	46	493	156	286	107	64	15	19	6.3	2.8
13	130	44	43	575	146	260	125	68	13	23	5.6	2.8
14	131	39	40	524	182	239	555	82	12	23	5.0	2.7
15	95	36	67	537	194	219	623	61	11	21	7.3	2.6
16	67	34	150	1190	175	208	606	53	11	18	13	2.5
17	43	32	146	1680	e160	202	479	47	12	15	8.5	2.6
18	39	31	152	1130	e150	247	397	43	13	13	7.1	2.6
19	43	29	178	858	165	287	338	45	13	11	6.5	2.9
20	37	28	154	745	181	281	301	44	16	10	8.0	3.3
21	34	27	143	690	181	269	270	42	14	11	7.2	2.9
22	32	26	132	584	180	279	241	38	13	12	8.6	2.7
23	851	26	149	500	170	1280	208	35	16	12	6.7	2.6
24	571	25	292	454	157	1350	181	31	48	11	5.8	2.6
25	334	24	277	394	150	865	158	31	44	9.2	5.2	2.6
26	246	23	221	332	143	676	138	32	30	8.4	4.9	2.5
27	192	22	181	291	130	593	124	29	23	8.1	4.5	2.4
28	151	22	162	259	117	522	115	28	18	7.4	4.3	2.3
29	114	21	145	221	---	453	110	25	15	7.7	4.3	2.2
30	86	20	198	192	---	444	105	23	13	8.6	3.8	2.1
31	68	---	1470	178	---	388	---	22	---	9.0	3.2	---
TOTAL	3564	1023	5222	17285	4550	14388	7366	1702	588	753.4	196.5	83.9
MEAN	115	34.1	168	558	162	464	246	54.9	19.6	24.3	6.34	2.80
MAX	851	56	1470	1680	238	1350	623	97	48	169	13	3.4
MIN	11	20	19	178	108	107	105	22	11	7.4	3.2	2.1
CFSM	.52	.16	.77	2.55	.74	2.12	1.12	.25	.09	.11	.03	.01
IN.	.61	.17	.89	2.94	.77	2.44	1.25	.29	.10	.13	.03	.01

CAL YR 1990 TOTAL 47184 MEAN 129 MAX 1470 MIN 11 CFSM .59 IN. 8.01  
WTR YR 1991 TOTAL 56721.8 MEAN 155 MAX 1680 MIN 2.1 CFSM .71 IN. 9.63

e Estimated

## POTOMAC RIVER BASIN

01605500 SOUTH BRANCH POTOMAC RIVER AT FRANKLIN, WV

LOCATION.--Lat 38°38'14", long 79°20'14", Pendleton County, Hydrologic Unit 02070001, on left bank 0.5 mi southwest of Franklin, 2 mi upstream from Friends Run, 2.5 mi downstream from Thorn Creek, and at mile 109.5.

DRAINAGE AREA.--182 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1940 to September 1969, October 1976 to current year.

GAGE.--Water-stage recorder and improved natural control. Datum of gage is 1,692.5 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Mar. 4-7, 23-24, and July 15 to Sept. 11. Records good except those for periods of estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--44 years, 170 ft<sup>3</sup>/s, 12.68 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,000 ft<sup>3</sup>/s, Nov. 4, 1985, gage height, 22.58 ft, from floodmarks, from rating curve extended above 15,000 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow; minimum, 13 ft<sup>3</sup>/s, Jan. 17, 1966; minimum gage height, 1.31 ft, Sept. 25-29, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 1936 reached a stage of about 13 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Jan. 16	1300	2,020	4.60	Mar. 23	1230	*5,680	*6.88
Mar. 4	0400	3,020	5.30				

Minimum discharge, 24 ft<sup>3</sup>/s, Sept. 30, gage height, 1.50 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	92	46	712	156	124	320	108	49	34	71	34
2	28	84	46	504	144	255	290	101	47	47	59	31
3	27	77	56	388	139	349	256	95	48	45	51	30
4	29	72	204	312	134	e2300	232	91	47	43	47	29
5	30	70	149	258	130	e1600	231	89	45	91	44	36
6	28	83	127	228	136	e900	240	93	43	51	40	34
7	27	71	115	284	146	e500	207	88	42	40	45	30
8	27	65	103	273	145	395	193	82	42	35	42	29
9	28	62	94	257	139	334	193	88	42	33	85	28
10	28	144	86	343	135	298	186	88	39	32	95	28
11	318	146	81	560	129	257	166	80	38	33	68	28
12	182	128	76	1150	120	227	152	77	38	33	55	28
13	226	114	73	957	120	222	225	74	37	54	48	27
14	186	102	69	710	153	207	309	73	35	41	46	27
15	128	92	77	531	143	190	307	70	34	35	44	27
16	96	86	142	1270	112	192	289	66	34	31	40	26
17	78	83	132	1450	120	192	257	64	35	30	38	27
18	110	78	140	843	121	318	235	66	38	29	39	27
19	190	73	208	608	138	359	219	75	43	44	59	27
20	133	69	194	488	180	322	213	66	39	46	46	27
21	108	65	195	407	169	308	200	63	36	44	39	26
22	101	63	190	315	163	311	184	61	36	38	37	26
23	991	62	223	261	155	e2400	168	60	72	34	34	26
24	562	60	569	237	144	e1500	155	58	58	35	32	27
25	342	57	420	204	143	817	142	78	42	34	31	28
26	246	55	325	182	147	578	131	63	39	141	31	28
27	188	52	260	175	136	469	126	57	36	75	29	27
28	157	51	238	171	126	383	124	59	35	58	30	26
29	134	50	337	159	---	340	121	54	34	155	39	26
30	118	48	957	158	---	399	116	52	33	152	31	26
31	104	---	1200	192	---	344	---	50	---	97	37	---
TOTAL	4979	2354	7132	14587	3923	17390	6187	2289	1236	1690	1432	846
MEAN	161	78.5	230	471	140	561	206	73.8	41.2	54.5	46.2	28.2
MAX	991	146	1200	1450	180	2400	320	108	72	155	95	36
MIN	27	48	46	158	112	124	116	50	33	29	29	26
CFSM	.88	.43	1.26	2.59	.77	3.08	1.13	.41	.23	.30	.25	.15
IN.	1.02	.48	1.46	2.98	.80	3.55	1.26	.47	.25	.35	.29	.17

CAL YR 1990 TOTAL 55263 MEAN 151 MAX 1200 MIN 27 CFSM .83 IN. 11.30  
WTR YR 1991 TOTAL 64045 MEAN 175 MAX 2400 MIN 26 CFSM .96 IN. 13.09

e Estimated



## POTOMAC RIVER BASIN

01606500 SOUTH BRANCH POTOMAC RIVER NEAR PETERSBURG, WV

LOCATION (REVISED).--Lat 38°59'28", long 79°10'34", Grant County, Hydrologic Unit 02070001, on right bank 1.1 mi downstream from North Fork South Branch Potomac River, 2.6 mi west of Petersburg, and at mile 72.7.

DRAINAGE AREA.--642 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1928 to current year.

REVISED RECORDS.--WSP 951: 1939-41. WSP 1141: 1932, 1933(M), 1936-38.

GAGE.--Water-stage recorder. Datum of gage is 968.34 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 4, 1928, nonrecording gage at site 700 ft downstream and at different datum. June 1928 to Nov. 5, 1985, water-stage recorder at site 700 ft downstream at datum 6.34 ft lower.

REMARKS.--No estimated daily discharges. Records good except those for March, April and May, which are fair. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--63 years, 719 ft<sup>3</sup>/s, 15.21 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 21.80 ft, from floodmarks, from rating curve extended above 63,000 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow; minimum, 42 ft<sup>3</sup>/s, Sept. 28, 29, 1959, Sept. 11, 12, 1966; minimum gage height, 0.45 ft, part or all of each day Aug. 11-20, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1877 reached a stage of 21.2 ft, from floodmarks at previous site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft<sup>3</sup>/s and maximum(\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0800	6,900	6.11	Mar. 4	1100	7,790	6.44
Jan. 17	0100	7,490	6.33	Mar. 23	1800	*16,200	*9.06

Minimum discharge, 61 ft<sup>3</sup>/s, Sept. 30, gage height, 0.50 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	327	173	3880	721	423	1080	425	181	91	240	78
2	104	303	169	2540	655	459	1000	398	181	100	190	80
3	101	280	174	1850	596	878	880	395	177	123	155	72
4	98	262	306	1300	551	4810	826	378	168	175	135	70
5	98	250	491	963	512	4570	777	355	156	248	123	76
6	99	249	420	798	536	2990	740	335	144	229	112	83
7	100	272	388	793	712	2240	708	335	136	159	105	93
8	96	245	364	899	800	1940	675	361	128	123	97	87
9	94	230	341	788	725	1600	645	335	125	107	144	78
10	92	261	322	1090	641	1310	615	380	122	98	371	72
11	600	493	303	1620	563	1050	555	377	115	100	299	71
12	1110	446	291	3640	493	876	510	367	109	100	221	66
13	683	404	275	4270	465	775	670	359	106	130	180	66
14	710	376	268	3060	475	708	2260	359	101	165	154	66
15	492	342	267	2430	509	645	2110	346	94	150	142	65
16	395	320	592	4340	430	626	1700	328	90	130	129	64
17	330	298	706	6400	390	670	1340	302	90	105	117	63
18	294	291	655	4050	430	1300	1080	282	93	92	112	62
19	510	274	850	2800	430	2290	920	288	99	92	116	68
20	497	257	1010	2180	789	2050	845	298	110	114	148	72
21	417	245	901	1780	960	1860	782	281	105	170	139	76
22	368	235	822	1320	850	1900	719	262	100	138	120	73
23	3200	227	756	953	731	8930	630	247	135	119	101	68
24	3100	223	1850	894	621	7620	585	237	233	108	92	66
25	1670	218	2190	724	560	4040	517	232	197	103	85	66
26	1030	212	1520	595	540	2620	467	258	143	118	82	66
27	721	202	1060	584	487	1990	447	240	119	202	78	65
28	557	193	899	549	455	1520	535	231	105	205	76	63
29	467	186	1070	530	---	1250	470	224	97	169	79	62
30	400	179	4650	495	---	1340	445	194	94	369	79	61
31	359	---	6060	709	---	1230	---	183	---	306	78	---
TOTAL	18900	8300	30143	58824	16627	66510	25533	9592	3853	4638	4299	2118
MEAN	610	277	972	1898	594	2145	851	309	128	150	139	70.6
MAX	3200	493	6060	6400	960	8930	2260	425	233	369	371	93
MIN	92	179	169	495	390	423	445	183	90	91	76	61
CFSM	.95	.43	1.51	2.96	.92	3.34	1.33	.48	.20	.23	.22	.11
IN.	1.10	.48	1.75	3.41	.96	3.85	1.48	.56	.22	.27	.25	.12

CAL YR 1990 TOTAL 253152 MEAN 694 MAX 6510 MIN 92 CFSM 1.08 IN. 14.67  
WTR YR 1991 TOTAL 249337 MEAN 683 MAX 8930 MIN 61 CFSM 1.06 IN. 14.45

## POTOMAC RIVER BASIN

01607500 SOUTH FORK SOUTH BRANCH POTOMAC RIVER AT BRANDYWINE, WV

LOCATION.--Lat 38°37'53", long 79°14'38", Pendleton County, Hydrologic Unit 02070001, on left bank 50 ft upstream from bridge on U.S. Highway 33, 0.1 mi upstream from Hawes Run, 0.4 mi north of Brandywine, 0.9 mi downstream from Broad Run, and at mile 42.9.

DRAINAGE AREA.--102 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1943 to current year.

REVISED RECORDS.--WSP 1141: 1945(M), 1947(M). WRD WV-84-1: 1983. WRD WV-88-1: 1987.

GAGE.--Water-stage recorder. Datum of gage is 1,558.35 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 24, 1956, nonrecording gage at highway bridge 50 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Feb. 16-17. Records good except those for periods of estimated daily discharges, which are fair. The flow from 41.3 mi<sup>2</sup> upstream from station is partially controlled, but not diverted, by several floodwater detention reservoirs with a total combined detention capacity of 8,882 acre-ft.

AVERAGE DISCHARGE.--48 years, 101 ft<sup>3</sup>/s, 13.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,200 ft<sup>3</sup>/s, June 17, 1949, gage height, 14.6 ft, from floodmarks, from rating curve extended above 5,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; maximum gage height, 18.42 ft, Nov. 4, 1985, from floodmarks; minimum, 0.3 ft<sup>3</sup>/s, Dec. 1, 10, 1958, result of freezeup; minimum gage height, 0.59 ft, Sept. 25, 26, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,440 ft<sup>3</sup>/s, Mar. 23, gage height, 4.79 ft; minimum daily discharge, 5.9 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	45	15	419	54	51	243	44	18	11	48	15
2	8.4	42	15	271	52	77	207	41	17	13	42	11
3	8.3	39	20	199	51	173	177	42	17	19	36	9.6
4	8.7	34	106	151	50	1720	154	43	17	20	32	8.8
5	9.1	31	131	119	49	1070	144	42	15	88	28	10
6	9.0	33	106	101	52	461	138	43	13	48	24	10
7	8.7	30	86	151	55	262	122	44	13	31	22	8.6
8	8.9	26	72	205	56	192	110	35	12	21	20	7.9
9	8.9	24	63	195	56	155	104	36	12	17	34	7.5
10	8.9	47	56	268	58	134	97	38	11	16	41	7.2
11	107	60	50	552	59	115	87	35	10	15	35	6.7
12	138	56	46	1310	55	101	75	31	10	15	26	6.7
13	347	51	43	843	55	99	91	73	9.5	19	20	6.7
14	285	46	39	431	66	96	131	106	8.8	18	18	6.4
15	154	42	42	297	71	87	139	55	8.8	14	16	6.3
16	96	39	50	822	e51	90	143	45	8.5	12	13	6.3
17	67	36	48	954	e53	89	136	41	9.0	11	12	6.1
18	135	33	52	442	58	127	128	42	9.2	15	11	6.0
19	312	30	64	286	55	177	112	72	9.0	16	18	6.6
20	175	28	71	227	61	166	109	61	8.9	45	17	6.5
21	111	26	80	186	59	153	100	53	8.8	34	14	6.4
22	88	24	86	147	61	146	93	46	8.8	21	12	6.4
23	1170	23	112	116	64	1390	85	43	44	21	11	6.5
24	571	21	365	105	58	1330	79	41	50	19	10	6.6
25	245	19	277	89	56	481	69	40	28	19	9.9	6.6
26	157	19	199	76	59	293	62	33	20	47	9.3	6.5
27	109	18	154	72	56	232	55	28	15	37	8.2	6.4
28	81	18	135	67	52	190	53	27	14	29	8.1	6.3
29	66	17	183	61	---	166	51	23	13	76	8.9	6.1
30	57	16	968	58	---	199	48	20	12	106	9.1	5.9
31	50	---	949	66	---	250	---	19	---	62	22	---
TOTAL	4608.5	973	4683	9286	1582	10272	3342	1342	450.3	935	635.5	223.6
MEAN	149	32.4	151	300	56.5	331	111	43.3	15.0	30.2	20.5	7.45
MAX	1170	60	968	1310	71	1720	243	106	50	106	48	15
MIN	8.3	16	15	58	49	51	48	19	8.5	11	8.1	5.9
CFSM	1.46	.32	1.48	2.94	.55	3.25	1.09	.42	.15	.30	.20	.07
IN.	1.68	.35	1.71	3.39	.58	3.75	1.22	.49	.16	.34	.23	.08

CAL YR 1990 TOTAL 32710.2 MEAN 89.6 MAX 1170 MIN 7.4 CFSM .88 IN. 11.93  
WTR YR 1991 TOTAL 38332.9 MEAN 105 MAX 1720 MIN 5.9 CFSM 1.03 IN. 13.98

e Estimated

## POTOMAC RIVER BASIN

01608000 SOUTH FORK SOUTH BRANCH POTOMAC RIVER NEAR MOOREFIELD, WV

LOCATION.--Lat 39°00'44", long 78°57'23", Hardy County, Hydrologic Unit 02070001, on right bank 0.2 mi downstream from Stony Creek, 3.5 mi south of Moorefield, and at mile 6.0.

DRAINAGE AREA.--283 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1928 to September 1935, August 1938 to current year.

REVISED RECORDS.--WSP 1141: 1933(M), 1940, 1942-43, 1945, 1948(M). WSP 1302: 1931(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 861.51 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers datum). Prior to Mar. 11, 1940, nonrecording gage at Harness Ford Bridge 2.0 mi upstream at datum about 31 ft higher.

REMARKS.--Estimated daily discharges: Nov. 10-17, Dec. 15-23, and Feb. 18-19. Records good except those for periods of estimated daily discharges, which are poor. The flow from 92.7 mi<sup>2</sup> upstream from station is partially controlled, but not diverted, by several floodwater detention reservoirs with a total combined detention capacity of 19,870 acre-ft.

AVERAGE DISCHARGE.--60 years, 226 ft<sup>3</sup>/s, 10.84 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 110,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 19.99 ft, from floodmarks, from rating curve extended above 39,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 4.4 ft<sup>3</sup>/s, Sept. 10, 11, 1965, Sept. 9-11, 1966; minimum gage height, 0.31 ft, Sept. 30, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,220 ft<sup>3</sup>/s, Mar. 23, gage height, 7.34 ft; minimum daily discharge, 12 ft<sup>3</sup>/s, Sept. 15-18, 22-23, 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	115	53	1290	129	105	423	129	51	22	97	13
2	18	108	51	791	122	107	377	123	50	37	78	21
3	18	102	55	518	119	129	310	118	65	28	64	20
4	19	96	67	355	116	3040	258	112	61	62	55	18
5	19	91	121	260	115	2540	226	109	51	205	47	19
6	18	91	133	207	115	1320	208	107	45	204	38	24
7	18	87	127	214	118	777	183	103	41	123	34	22
8	18	83	120	291	119	518	163	100	38	92	28	18
9	18	77	113	313	120	372	150	99	35	73	45	16
10	18	e90	108	436	122	300	145	101	32	62	46	14
11	48	e170	103	787	124	249	134	96	29	58	60	14
12	177	e145	99	2070	121	204	127	92	27	51	54	13
13	336	e130	94	2130	119	183	140	87	25	58	44	13
14	690	e120	88	1310	120	179	399	176	22	54	38	13
15	403	e110	e95	927	123	164	399	154	21	52	32	12
16	232	e100	e110	1820	155	153	376	120	20	44	26	12
17	158	e95	e100	3020	115	162	326	106	20	37	22	12
18	135	96	e115	1490	e100	207	280	97	20	32	20	12
19	374	92	e130	909	e105	316	237	98	20	28	20	13
20	442	87	e150	634	114	332	215	110	21	36	41	13
21	274	83	e170	479	114	300	192	101	19	54	46	13
22	192	79	e200	361	112	292	173	93	19	78	34	12
23	1310	76	e240	278	111	4000	153	87	27	57	25	12
24	1710	72	330	242	110	4400	138	82	32	49	21	13
25	808	68	579	205	108	1640	132	77	69	40	19	13
26	455	65	410	172	110	876	126	73	52	42	18	13
27	284	63	294	156	110	620	122	67	40	56	16	13
28	197	61	252	144	108	453	138	68	30	70	14	12
29	152	60	203	137	---	342	150	62	24	60	14	12
30	132	55	1560	132	---	348	137	58	22	87	13	12
31	123	---	2420	131	---	382	---	54	---	123	13	---
TOTAL	8815	2767	8690	22209	3274	25010	6537	3059	1028	2074	1122	437
MEAN	284	92.2	280	716	117	807	218	98.7	34.3	66.9	36.2	14.6
MAX	1710	170	2420	3020	155	4400	423	176	69	205	97	24
MIN	18	55	51	131	100	105	122	54	19	22	13	12
CFSM	1.00	.33	.99	2.53	.41	2.85	.77	.35	.12	.24	.13	.05
IN.	1.16	.36	1.14	2.92	.43	3.29	.86	.40	.14	.27	.15	.06

CAL YR 1990 TOTAL 67813 MEAN 186 MAX 2420 MIN 18 CFMS .66 IN. 8.91  
WTR YR 1991 TOTAL 85022 MEAN 233 MAX 4400 MIN 12 CFMS .82 IN. 11.18

e Estimated

## POTOMAC RIVER BASIN

01608500 SOUTH BRANCH POTOMAC RIVER NEAR SPRINGFIELD, WV

LOCATION.--Lat 39°26'49", long 78°39'16", Hampshire County, Hydrologic Unit 02070001, on left bank at highway bridge, 2.0 mi east of Springfield, and at mile 13.4.

DRAINAGE AREA.--1,471 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1894 to February 1896 (fragmentary), June 1899 to February 1902, August 1903 to July 1906, August 1928 to current year.

REVISED RECORDS.--WSP 1552: 1903-06, 1929-30(M), 1932-33(M), 1935(M), 1937-40(M), 1942-43(M), 1945(M).

GAGE.--Water-stage recorder. Datum of gage is 562.02 ft above National Geodetic Vertical Datum of 1929. June 1894 to February 1896, nonrecording gage at Baltimore & Ohio Railroad bridge 11.2 mi upstream at different datum. June 26, 1899, to Feb. 2, 1902, nonrecording gage at bridge 10.0 mi upstream at different datum. Aug. 28, 1903, to July 14, 1906, nonrecording gage at present site at different datum. Aug. 8 to Sept. 24, 1928, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. National Weather Service gage-height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--67 years (water years 1900-01, 1904-05, 1929-91), 1,314 ft<sup>3</sup>/s, 12.13 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 44.22 ft, from floodmarks, from rating curve extended above 145,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 29 ft<sup>3</sup>/s, Jan. 28, 1956, result of freezeup, July 30, 1966, result of temporary dam; minimum gage height, 0.39 ft, July 30, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of about 34 ft, from floodmarks, discharge, 140,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0600	14,900	11.72	Mar. 5	0100	14,500	11.54
Jan. 17	1000	16,600	12.44	Mar. 24	0800	*31,500	*17.38

Minimum discharge, 103 ft<sup>3</sup>/s, Sept. 18, gage height, 1.72 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	648	299	8590	1210	790	2340	932	292	162	512	120
2	162	588	291	4930	1130	767	2210	846	281	156	383	116
3	154	538	306	3400	1070	921	1990	780	296	157	309	113
4	152	499	477	2520	1000	6610	1780	724	356	184	262	122
5	152	463	622	1970	941	11000	1640	684	336	585	230	124
6	147	453	875	1650	935	6040	1570	662	294	786	201	129
7	146	445	783	1600	1060	4640	1550	677	263	590	180	133
8	146	455	706	1780	1310	3740	1410	667	244	416	169	134
9	149	428	649	1740	1330	2890	1320	636	230	313	169	137
10	146	434	601	1760	1230	2400	1290	664	219	259	195	131
11	198	490	557	2820	1130	2070	1220	715	210	232	347	123
12	794	747	523	5120	1030	1780	1090	665	201	220	430	117
13	1470	712	495	8290	939	1590	1020	699	187	223	324	113
14	1540	658	468	6410	964	1530	2460	808	178	242	264	114
15	1410	613	476	4800	1030	1470	3780	845	171	258	232	111
16	1020	572	568	7080	971	1350	3380	707	164	257	213	109
17	772	534	997	15100	843	1340	2740	606	162	232	194	106
18	644	505	1090	9600	828	1580	2280	545	167	205	179	106
19	602	486	1140	5790	879	2680	1970	512	159	182	170	119
20	1020	460	1360	4110	925	3010	1770	508	161	169	228	116
21	1030	431	1370	3290	1360	2630	1640	537	165	166	208	115
22	837	411	1290	2640	1360	2560	1510	494	169	192	223	113
23	2410	398	1270	2070	1250	9280	1370	454	172	261	203	122
24	6800	380	1690	1790	1130	23900	1240	425	212	232	177	125
25	3660	367	3130	1620	1030	10100	1130	412	275	202	160	122
26	2260	360	2630	1360	974	5730	1040	386	327	183	149	120
27	1620	346	2030	1210	935	4090	959	382	266	170	140	119
28	1250	335	1690	1180	859	3230	905	376	221	193	134	116
29	1010	324	1510	1130	---	2620	1060	354	193	275	128	113
30	848	311	3660	1050	---	2440	1010	333	173	277	123	112
31	733	---	13600	1020	---	2560	---	314	---	371	123	---
TOTAL	33453	14391	47153	117420	29653	127338	50674	18349	6744	8350	6959	3570
MEAN	1079	480	1521	3788	1059	4108	1689	592	225	269	224	119
MAX	6800	747	13600	15100	1360	23900	3780	932	356	786	512	137
MIN	146	311	291	1020	828	767	905	314	159	156	123	106
CFSM	.73	.33	1.03	2.57	.72	2.79	1.15	.40	.15	.18	.15	.08
IN.	.85	.36	1.19	2.97	.75	3.22	1.28	.46	.17	.21	.18	.09

CAL YR 1990 TOTAL 391911 MEAN 1074 MAX 13600 MIN 146 CFSM .73 IN. 9.91  
WTR YR 1991 TOTAL 464054 MEAN 1271 MAX 23900 MIN 106 CFSM .86 IN. 11.74





## POTOMAC RIVER BASIN

01610000 POTOMAC RIVER AT PAW PAW, WV--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1939 - 1991	
ANNUAL TOTAL	1162002		1250251			
ANNUAL MEAN	3184		3425		3299	
HIGHEST ANNUAL MEAN					5080	1973
LOWEST ANNUAL MEAN					1499	1969
HIGHEST DAILY MEAN	24900	Dec 31	34700	Mar 24	125000	Nov 6 1985
LOWEST DAILY MEAN	580	Aug 17	352	Sep 30	172	(a)
ANNUAL SEVEN-DAY MINIMUM	610	Aug 13	363	Sep 24	179	Sep 7 1966
INSTANTANEOUS PEAK FLOW	29600	Dec 31	39700	Mar 24	b235000	Nov 5 1985
INSTANTANEOUS PEAK STAGE	18.88	Dec 31	22.11	Mar 24	53.58	Nov 5 1985
INSTANTANEOUS LOW FLOW	574	Aug 17	350	Sep 30	164	(c)
ANNUAL RUNOFF (CFSM)	1.02		1.10		1.06	
ANNUAL RUNOFF (INCHES)	13.90		14.96		14.42	
10 PERCENT EXCEEDS	6390		7510		7480	
50 PERCENT EXCEEDS	2260		1990		1770	
90 PERCENT EXCEEDS	915		491		427	

a Sept. 10, 12, 13, 1966.

b From rating curve extended above 85,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow at site 5.0 mi upstream at Okonoko, WV.

b Sept. 10, 11, 1966.

## POTOMAC RIVER BASIN

01611500 CACAPON RIVER NEAR GREAT CACAPON, WV

LOCATION.--Lat 39°34'43", long 78°18'34", Morgan County, Hydrologic Unit 02070003, on left bank at Rock Ford, 3.0 mi southwest of Great Cacapon, and at mile 6.5.

DRAINAGE AREA.--677 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1922 to current year.

REVISED RECORDS.--WSP 800: 1924(M). WSP 921: Drainage area. WSP 951: 1936-37, WSP 1552: 1925-26(M), 1928, 1929(M), 1932.

GAGE.--Water-stage recorder. Datum of gage is 456.78 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Nov. 10, 1933, nonrecording gage at same site and datum. National Weather Service gage-height telemeter at the station.

REMARKS.--Estimated daily discharges: May 28 to July 17, and Aug. 4 to Sept. 30. Records good except those for period of estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--68 years (water years 1924-91), 584 ft<sup>3</sup>/s, 11.71 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,600 ft<sup>3</sup>/s, Mar. 18, 1936, gage height, 30.1 ft, from rating curve extended above 52,000 ft<sup>3</sup>/s; minimum, 26 ft<sup>3</sup>/s, Sept. 11-13, 1966; minimum gage height, 0.35 ft, Sept. 21, 22, 1932, Sept. 11-13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1889 reached a stage of 24.7 ft, from floodmarks, discharge, 57,500 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Oct. 23	2200	9,060	10.24	Mar. 5	0500	3,980	6.89
Dec. 31	1000	9,970	10.72	Mar. 24	0700	*15,700	*13.31
Jan. 17	1200	9,090	10.26				

Minimum daily discharge, 50 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	368	149	3850	586	351	1010	419	135	82	70	66
2	66	330	146	2180	494	343	899	374	123	79	68	63
3	64	302	154	1610	435	389	827	341	137	78	67	61
4	64	280	232	1250	418	1160	755	321	151	79	66	60
5	63	263	384	976	397	3350	712	305	207	82	64	60
6	62	262	489	817	398	2070	693	312	175	153	64	61
7	60	256	399	819	477	1610	669	406	153	288	63	61
8	60	256	339	929	559	1430	606	390	135	198	61	63
9	60	246	309	824	603	1150	561	333	123	151	66	63
10	59	247	285	780	579	990	543	320	115	121	68	61
11	74	274	265	1070	553	866	511	336	107	107	73	63
12	99	327	250	1470	522	763	454	323	104	104	81	60
13	976	309	236	1920	480	683	419	290	98	100	82	58
14	1860	274	224	2010	491	656	520	271	93	96	74	61
15	1020	254	230	1650	570	646	1200	260	89	93	73	58
16	670	240	266	2140	525	604	1360	295	88	89	70	58
17	484	230	318	7760	394	564	1240	259	93	89	67	57
18	411	221	347	4980	369	578	1050	226	86	88	66	61
19	582	215	400	2790	424	688	894	202	109	83	70	240
20	1030	208	512	2050	454	763	794	189	111	79	81	210
21	708	197	486	1780	496	737	762	180	107	76	115	107
22	556	190	459	1520	464	725	738	175	104	74	180	72
23	2820	187	482	1160	436	2370	690	170	104	73	147	64
24	5540	184	613	1010	415	11200	618	159	100	71	131	60
25	2120	182	1010	927	393	3910	554	152	98	72	104	58
26	1340	179	954	739	385	2220	503	147	106	73	89	57
27	965	173	783	675	386	1700	458	144	106	73	79	54
28	736	166	654	681	377	1410	427	192	100	72	76	51
29	601	160	595	640	---	1180	433	165	113	70	70	51
30	501	154	738	595	---	1060	453	145	86	71	68	50
31	426	---	6990	581	---	1140	---	143	---	72	67	---
TOTAL	24146	7134	19698	52183	13080	47306	21353	7944	3456	3036	2520	2169
MEAN	779	238	635	1683	467	1526	712	256	115	97.9	81.3	72.3
MAX	5540	368	6990	7760	603	11200	1360	419	207	288	180	240
MIN	59	154	146	581	369	343	419	143	86	70	61	50
CFSM	1.15	.35	.94	2.49	.69	2.25	1.05	.38	.17	.14	.12	.11
IN.	1.33	.39	1.08	2.87	.72	2.60	1.17	.44	.19	.17	.14	.12

CAL YR 1990 TOTAL 166849 MEAN 457 MAX 6990 MIN 59 CFSM .68 IN. 9.17  
WTR YR 1991 TOTAL 204025 MEAN 559 MAX 11200 MIN 50 CFSM .83 IN. 11.21

## POTOMAC RIVER BASIN

01613000 POTOMAC RIVER AT HANCOCK, MD

LOCATION.--Lat 39°41'49", long 78°10'39", Washington County, Hydrologic Unit 02070004, on left bank, 0.2 mi downstream from Little Tonoloway Creek, 0.5 mi downstream from bridge on U.S. Highway 522 at Hancock, 1.1 mi upstream from Tonoloway Creek (formerly called Great or Big Tonoloway Creek), and at mile 239.

DRAINAGE AREA.--4,073 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1932 to current year. Gage-height records collected at same site since June 1925 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 781: 1933(M). WSP 801: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 383.68 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1932, to Jan. 5, 1935, Mar. 18, 1936, to Jan. 20, 1937, nonrecording gage, on former highway bridge just upstream at same datum.

REMARKS.--Records good. Slight regulation at low flow from power plants upstream. Low flow affected slightly by Stony River Reservoir prior to July 1981, since December 1950 by Savage River Reservoir (see station 01597500), and since July 1981 by Jennings Randolph Lake. National Weather Service gage height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known prior to 1932, about 40 ft in May 1889, discharge, about 220,000 ft<sup>3</sup>/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 23,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 24	0515	29,400	15.01	Mar. 5	1115	25,200	13.80
Dec. 31	1945	36,000	16.76	Mar. 24	1430	*46,500	*19.31
Jan. 17	1845	40,800	17.95				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	2890	1490	27300	4040	3540	6780	3410	1180	749	798	612
2	1080	2680	1430	17200	3900	2950	6290	3150	1110	724	1010	568
3	1030	2500	1470	12900	3740	3620	5700	2880	1090	709	961	540
4	1010	2350	5610	10500	3650	7870	5150	2640	1070	703	869	531
5	1000	2220	6810	8440	3630	23000	4790	2460	1190	725	790	542
6	1030	2160	4980	6900	3870	16000	4510	2410	1210	1050	747	565
7	1020	2160	4200	6520	5560	12200	4350	2590	1120	1740	702	575
8	1160	2100	3580	6790	7780	10700	4130	2590	1010	1440	653	560
9	1160	2030	3160	6440	7290	8810	3870	2340	960	1210	666	554
10	1160	2060	2840	6030	6430	7440	3860	2260	920	1010	651	536
11	1130	2630	2600	6670	5760	6610	3850	2320	880	1220	669	534
12	3250	2850	2410	8500	5210	5910	3510	2300	859	1250	693	526
13	6600	2810	2270	11800	4710	5340	3260	2360	837	882	930	514
14	8320	2640	2170	13100	4470	5090	4190	2600	796	825	905	498
15	6050	2470	2150	10700	5020	4880	12500	2480	778	831	811	509
16	4620	2320	3080	13200	4790	4520	15700	2290	766	825	766	520
17	3480	2210	4080	35100	4160	4250	13600	2110	765	813	718	501
18	2920	2090	4610	30600	4070	4360	10300	1880	764	795	689	499
19	3250	2000	7530	19300	4040	5300	8130	1750	761	757	665	532
20	4000	1930	8010	14400	4190	6780	6810	1740	783	725	787	800
21	3620	1830	6840	12400	4560	6680	6530	1690	773	693	799	658
22	3270	1750	6750	11100	5070	6260	5960	1660	767	722	868	572
23	9760	1750	6400	8770	4930	8900	5220	1570	777	670	792	532
24	25900	1740	8800	7180	4570	40500	4690	1470	817	726	835	514
25	14800	1730	9850	6510	4270	27500	4320	1410	879	773	776	e521
26	9320	1680	9170	5560	4090	15700	4100	1380	902	729	1110	e525
27	6710	1630	7500	5110	3920	11800	3850	1520	944	692	1180	e526
28	5080	1590	6430	4880	3760	10100	3720	1610	932	665	728	509
29	4180	1560	5830	4650	---	8690	3860	1400	847	658	650	501
30	3530	1530	5570	4140	---	7570	3660	1310	779	700	631	486
31	3090	---	23100	4010	---	7290	---	1250	---	807	627	---
TOTAL	143650	63890	170720	346700	131480	300160	177190	64830	27266	26818	24476	16360
MEAN	4634	2130	5507	11180	4696	9683	5906	2091	909	865	790	545
MAX	25900	2890	23100	35100	7780	40500	15700	3410	1210	1740	1180	800
MIN	1000	1530	1430	4010	3630	2950	3260	1250	761	658	627	486
CFSM	1.14	.52	1.35	2.75	1.15	2.38	1.45	.51	.22	.21	.19	.13
IN.	1.31	.58	1.56	3.17	1.20	2.74	1.62	.59	.25	.24	.22	.15
e Estimated												

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1933	2124	13270	1977	309	1942
1934	2467	20090	1986	399	1966
1935	3994	15160	1973	463	1966
1936	4968	15450	1937	751	1956
1937	6556	16720	1971	1041	1934
1938	9134	32280	1936	2311	1990
1939	7653	16950	1987	2857	1968
1940	5505	13260	1988	1344	1941
1941	3123	13390	1972	622	1969
1942	1560	6677	1949	357	1966
1943	1505	9479	1955	342	1944
1944	1264	6756	1945	329	1946



## POTOMAC RIVER BASIN

01613000 POTOMAC RIVER AT HANCOCK, MD--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1933 - 1991	
ANNUAL TOTAL	1349697		1493540			
ANNUAL MEAN	3698		4092		4142	
HIGHEST ANNUAL MEAN					6319	1973
LOWEST ANNUAL MEAN					1770	1969
HIGHEST DAILY MEAN	25900	Oct 24	40500	Mar 24	261000	Mar 18 1936
LOWEST DAILY MEAN	773	Aug 18	486	Sep 30	184	Oct 3 1932
ANNUAL SEVEN-DAY MINIMUM	822	Aug 13	510	Sep 12	215	Sep 7 1966
INSTANTANEOUS PEAK FLOW	36000	Dec 31	46500	Mar 24	a340000	Mar 18 1936
INSTANTANEOUS PEAK STAGE	16.76	Dec 31	19.31	Mar 24	47.60	Mar 18 1936
INSTANTANEOUS LOW FLOW	765	Aug 18	462	Sep 30	180	Oct 4 1932
ANNUAL RUNOFF (CFSM)	.91		1.00		1.02	
ANNUAL RUNOFF (INCHES)	12.33		13.64		13.82	
10 PERCENT EXCEEDS	7640		8800		9410	
50 PERCENT EXCEEDS	2610		2410		2160	
90 PERCENT EXCEEDS	1130		665		520	

a From rating curve extended above 120,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

## POTOMAC RIVER BASIN

01616500 OPEQUON CREEK NEAR MARTINSBURG, WV

LOCATION.--Lat 39°25'25", long 77°56'20", Berkeley County, Hydrologic Unit 02070004, on right bank 300 ft upstream from Evans Run, 2.3 mi upstream from Tuscarora Creek, 3.0 mi southeast of Martinsburg, and at mile 11.1.

DRAINAGE AREA.--272 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1905 to July 1906, July 1947 to current year.

REVISED RECORDS.--WSP 1702: 1959.

GAGE.--Water-stage recorder. Datum of gage is 354.89 ft above National Geodetic Vertical Datum of 1929. Prior to July 1906, nonrecording gage at approximately the same site at different datum. July 23, 1947 to July 22, 1948, nonrecording gage at present site and datum. National Weather Service gage-height telemeter at the station.

REMARKS.--No estimated daily discharges. Records good.

AVERAGE DISCHARGE.--44 years (water years 1947-91), 230 ft<sup>3</sup>/s, 11.48 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,000 ft<sup>3</sup>/s, June 22, 1972, gage height, 17.45 ft, from rating curve extended above 7,100 ft<sup>3</sup>/s; minimum observed, 25 ft<sup>3</sup>/s, Oct. 25, 1947; minimum gage height, 1.24 ft, Jan. 8, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1936 reached a stage of about 17.5 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Oct. 13	2200	*9,270	*14.07	Jan. 17	0400	2,330	9.33
Oct. 23	2400	4,580	11.64	Mar. 24	0900	4,360	11.50
Dec. 31	0900	2,890	10.26				

Minimum discharge, 44 ft<sup>3</sup>/s, Sept. 30, gage height, 1.65 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	293	161	902	304	201	386	188	106	79	64	50
2	74	280	158	609	285	207	355	179	110	76	62	47
3	72	263	180	504	281	218	322	172	131	77	60	49
4	72	254	464	431	275	831	299	169	135	76	59	50
5	73	247	392	376	266	723	293	164	110	108	60	56
6	72	261	277	364	278	434	296	176	104	98	58	55
7	69	246	241	499	335	412	277	181	104	91	57	68
8	67	235	219	549	324	341	261	165	101	92	58	58
9	68	227	204	482	302	302	254	162	100	86	64	52
10	66	297	193	473	286	300	255	172	97	83	78	50
11	319	354	184	568	275	264	240	159	96	85	65	50
12	417	274	177	784	260	248	227	147	94	84	60	48
13	4620	246	173	886	256	241	233	153	94	88	55	48
14	4030	229	166	721	282	242	320	156	89	85	56	49
15	597	221	199	601	270	246	417	147	89	79	57	48
16	416	215	316	1170	237	229	529	149	88	77	61	48
17	342	214	255	2060	226	218	364	135	112	76	58	48
18	392	205	310	1350	229	240	303	133	137	76	55	52
19	815	198	391	913	240	255	268	131	176	74	60	75
20	453	193	322	764	266	230	270	131	110	72	65	55
21	356	192	296	694	248	219	270	128	100	71	70	49
22	315	187	303	568	238	222	269	124	98	70	62	48
23	2210	192	298	477	229	1310	247	122	110	85	58	48
24	2210	194	709	447	219	2850	234	119	131	79	55	51
25	743	185	547	407	218	791	221	118	102	71	54	52
26	558	179	380	371	217	570	210	115	93	69	55	51
27	449	176	320	358	212	513	206	113	89	68	54	49
28	395	173	302	351	206	463	201	125	84	66	52	47
29	353	173	314	339	---	394	195	120	83	68	52	47
30	326	170	610	327	---	421	194	118	80	71	53	47
31	309	---	2280	339	---	453	---	108	---	68	51	---
TOTAL	21334	6773	11341	19684	7264	14588	8416	4479	3153	2448	1828	1545
MEAN	688	226	366	635	259	471	281	144	105	79.0	59.0	51.5
MAX	4620	354	2280	2060	335	2850	529	188	176	108	78	75
MIN	66	170	158	327	206	201	194	108	80	66	51	47
CFSM	2.53	.83	1.34	2.33	.95	1.73	1.03	.53	.39	.29	.22	.19
IN.	2.92	.93	1.55	2.69	.99	2.00	1.15	.61	.43	.33	.25	.21

CAL YR 1990 TOTAL 84387 MEAN 231 MAX 4620 MIN 59 CFSM .85 IN. 11.54  
WTR YR 1991 TOTAL 102853 MEAN 282 MAX 4620 MIN 47 CFSM 1.04 IN. 14.07



## POTOMAC RIVER BASIN

01618000 POTOMAC RIVER AT SHEPHERDSTOWN, WV--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1929 - 1991	
ANNUAL TOTAL	2014930		2351785			
ANNUAL MEAN	5520		6443		5969	
HIGHEST ANNUAL MEAN					9988	1972
LOWEST ANNUAL MEAN					2607	1969
HIGHEST DAILY MEAN	45100	Oct 24	54000	Jan 18	287000	Mar 19 1936
LOWEST DAILY MEAN	1160	(a)	770	(b)	185	Jul 31 1966
ANNUAL SEVEN-DAY MINIMUM	1260	Oct 3	884	Aug 29	294	Sep 4 1966
INSTANTANEOUS PEAK FLOW	52700	Oct 24	59600	Jan 18	c335000	Mar 19 1936
INSTANTANEOUS PEAK STAGE	14.91	Oct 24	16.12	Jan 18	d42.10	Mar 19 1936
INSTANTANEOUS LOW FLOW	718	Oct 3	679	Jul 22	170	Aug 1 1966
ANNUAL RUNOFF (CFSM)	.93		1.09		1.01	
ANNUAL RUNOFF (INCHES)	12.63		14.74		13.66	
10 PERCENT EXCEEDS	10900		14000		13400	
50 PERCENT EXCEEDS	3880		4060		3220	
90 PERCENT EXCEEDS	1670		1030		860	

a Aug. 12, 16.

b Sept. 2, 3.

c From rating curve extended above 200,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

d From floodmarks.



## POTOMAC RIVER BASIN

01618000 POTOMAC RIVER AT SHEPHERDSTOWN, WV--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1981 (discontinued).

WATER TEMPERATURE: October 1980 to September 1981 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD--

SPECIFIC CONDUCTANCE: Maximum, 670 microsiemens, Aug. 6, 10, 15, 30, Sept. 3, 1981; minimum, 160 microsiemens, Apr. 14-15, 1981.

WATER TEMPERATURE: Maximum, 30.0°C, July 17, 21, 25, 1981; minimum, 1.0°C, Feb. 13, 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TEMPER- ATURE AIR (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 1990												
22...	0930	6250	260	258	6.9	12.0	13.0	758	8.4	10.7	100	K1900
JAN 1991												
10...	1205	9800	270	262	6.9	4.0	11.0	771	3.6	13.1	99	260
MAR												
18...	0905	6400	268	252	7.1	6.0	16.0	750	2.8	12.7	104	K22
MAY												
06...	0930	3550	290	275	7.1	18.0	20.0	753	1.1	9.0	96	K17
JUL												
08...	1030	2200	385	465	8.0	26.0	30.0	753	1.5	7.3	91	--
SEP												
09...	0930	1010	350	453	8.2	25.0	25.0	764	1.2	--	--	K10

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 1990												
22...	290	31	6.2	8.4	2.9	69	80	66	34	8.8	<0.10	7.3
JAN 1991												
10...	65	33	6.2	6.9	1.7	63	77	63	37	10	<0.10	6.4
MAR												
18...	K17	34	7.0	6.8	1.5	68	82	67	37	10	<0.10	4.5
MAY												
06...	250	35	10	6.4	2.1	84	100	82	12	9.5	0.20	0.60
JUL												
08...	--	52	11	21	3.4	120	145	119	77	25	0.20	5.6
SEP												
09...	170	50	11	22	3.4	107	130	107	86	31	0.20	4.6

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)
OCT 1990												
22...	150	211	--	0.010	<0.010	1.50	1.50	0.040	0.030	0.40	1.9	0.030
JAN 1991												
10...	151	210	--	<0.010	<0.010	1.80	1.70	0.040	0.060	0.40	2.2	0.030
MAR												
18...	161	215	--	0.020	<0.010	1.50	1.40	0.010	0.020	0.30	1.8	0.010
MAY												
06...	145	213	1.19	<0.010	0.010	1.20	1.20	0.060	0.060	0.60	1.8	0.040
JUL												
08...	277	399	1.08	0.020	0.020	1.10	1.10	0.040	0.040	0.60	1.7	0.060
SEP												
09...	259	390	0.760	0.010	0.020	0.790	0.780	0.030	0.030	0.70	1.5	0.040

K: Results based on colony count outside the acceptance range (non-ideal colony count).

## POTOMAC RIVER BASIN

01618000 POTOMAC RIVER AT SHEPHERDSTOWN, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 1990 22...	0.040	0.020	0.020	10	<1	43	<0.5	<1.0	<1	<3	1	60
JAN 1991 10...	<0.010	0.010	<0.010	--	--	--	--	--	--	--	--	--
MAR 18...	0.010	0.020	<0.010	20	<1	41	<0.5	<1.0	<1	<3	2	19
MAY 06...	0.040	0.010	0.020	<10	<1	31	<0.5	<1.0	<1	<3	1	17
JUL 08...	0.040	0.040	0.030	--	--	--	--	--	--	--	--	--
SEP 09...	0.030	0.010	0.030	<10	<1	50	<0.5	<1.0	<1	<3	2	6

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	HARD- NESS TOTAL (MG/L AS CACO3)
OCT 1990 22...	<1	4	17	0.1	<10	2	<1	<1.0	150	<6	<3	100
JAN 1991 10...	--	--	--	--	--	--	--	--	--	--	--	110
MAR 18...	<1	<4	39	<0.1	<10	2	<1	<1.0	160	<6	<3	110
MAY 06...	1	<4	6	<0.1	<10	<1	<1	<1.0	120	<6	7	130
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	190
SEP 09...	<1	11	20	<0.1	<10	2	<1	<1.0	300	<6	3	180

## SUSPENDED SEDIMENT DISCHARGE

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 1990 22...	0930	6250	10	169	99
JAN 1991 10...	1205	9800	7	185	96
MAR 18...	0905	6400	5	86	88
MAY 06...	0930	3550	10	96	95
JUL 08...	1030	2200	6	36	100
SEP 09...	0930	1010	5	14	92

## POTOMAC RIVER BASIN

01636500 SHENANDOAH RIVER AT MILLVILLE, WV  
(National stream-quality accounting network station)

LOCATION.--Lat 39°16'55", long 77°47'22", Jefferson County, Hydrologic Unit 02070007, on left bank 0.4 mi downstream from Cattail Run, 1.0 mi upstream from Millville, 5.0 mi upstream from Harpers Ferry, and at mile 5.0.

DRAINAGE AREA.--3,040 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1895 to March 1909, August 1928 to current year.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1432: Drainage area at former site, 1895-99, 1901-02, 1905, 1907-08, 1932(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 293.00 ft above National Geodetic Vertical Datum, adjustment of 1912. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi downstream at datum 0.32 ft higher.

REMARKS.--No estimated daily discharges. Records good. Regulation by hydroelectric plants, particularly that of Potomac Light and Power Co., 0.5 mi upstream from station. U.S. Army Corps of Engineers satellite telemeter and National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--76 years (water years 1896-1908, 1929-91), 2,686 ft<sup>3</sup>/s, 12.00 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft<sup>3</sup>/s, Oct. 16, 1942, gage height, 32.4 ft, from floodmarks; minimum, about 59 ft<sup>3</sup>/s, Oct. 4, 1930, gage height, 0.39 ft; minimum daily, 194 ft<sup>3</sup>/s, July 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1870 reached practically same stage as flood of Mar. 18, 1936, 26.36 ft, discharge, 151,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Oct. 13	1845	23,100	10.46	Jan. 18	0115	20,300	9.82
Oct. 24	1600	*28,900	*11.68	Mar. 5	2115	17,900	9.21
Jan. 1	0330	18,300	9.31	Mar. 24	2230	25,300	10.95
Jan. 13	1445	16,900	8.93				

Minimum daily discharge, 367 ft<sup>3</sup>/s, Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	705	3110	1040	16100	3120	1950	7380	2480	1150	847	4190	639
2	593	2790	1110	10500	2920	1910	6310	2310	1140	851	2790	620
3	664	2630	1210	7820	2710	1920	5590	2190	1350	834	2130	595
4	619	2330	1380	6360	2580	2590	4980	2080	1470	835	1710	573
5	650	2160	1790	5360	2490	10800	4510	1970	1420	1500	1440	601
6	575	2140	3360	4640	2450	14200	4210	1920	1330	1620	1260	696
7	534	2030	3720	4420	2470	9110	3970	1870	1230	2900	1100	774
8	567	1860	3090	4630	2520	6960	3760	1790	1130	2600	1010	695
9	634	1890	2660	5330	2590	5710	3480	1770	931	1970	991	563
10	673	1980	2360	5250	2870	4810	3230	1750	840	1510	1080	564
11	859	2080	2160	5120	2590	4200	3050	1740	984	1270	1190	758
12	1340	2160	1990	6420	2410	3790	2780	1720	951	1080	1150	681
13	10700	2360	1840	14400	2320	3480	2670	1650	808	1090	1180	367
14	17500	2150	1710	15800	2290	3280	2860	1590	776	1040	1020	455
15	12300	2160	1700	12400	2340	3180	3540	1550	794	1030	928	538
16	7250	1870	1730	10600	2300	3140	4160	1660	722	1250	892	643
17	5040	1890	1800	16200	2230	2990	4250	1590	724	1180	866	426
18	3930	1890	1880	18000	2130	2920	4010	1680	785	993	777	507
19	4500	1570	1990	12700	2110	2960	3720	1590	816	873	811	570
20	7170	1670	2050	9660	2130	3080	3540	1520	866	825	895	433
21	6690	1720	2040	8080	2120	3340	3420	1830	1100	787	895	400
22	5070	1660	2040	7190	2090	3260	3320	1710	1070	780	870	470
23	7260	1330	2070	6080	2070	5820	3130	1610	960	878	850	636
24	25900	1730	2430	5320	1970	21800	2920	1570	967	840	817	393
25	18100	1200	3710	4790	1940	18400	2720	1430	986	886	760	543
26	10400	1400	4350	4400	1930	10900	2550	1380	1470	853	711	464
27	7400	1390	4500	4040	1910	8110	2400	1310	1470	703	699	503
28	5780	1310	4090	3770	1930	6690	2360	1270	1230	644	684	491
29	4730	1380	3700	3600	---	5790	2340	1370	1080	2050	674	495
30	4050	1380	3820	3420	---	5370	2710	1390	977	2310	647	498
31	3490	---	12500	3290	---	6670	---	1190	---	4240	650	---
TOTAL	175673	57220	85820	245690	65530	189130	109870	52480	31527	41069	35667	16591
MEAN	5667	1907	2768	7925	2340	6101	3662	1693	1051	1325	1151	553
MAX	25900	3110	12500	18000	3120	21800	7380	2480	1470	4240	4190	774
MIN	534	1200	1040	3290	1910	1910	2340	1190	722	644	647	367
CFSM	1.86	.63	.91	2.61	.77	2.01	1.20	.56	.35	.44	.38	.18
IN.	2.15	.70	1.05	3.01	.80	2.31	1.34	.64	.39	.50	.44	.20

CAL YR 1990 TOTAL 941514 MEAN 2579 MAX 25900 MIN 533 CFSM .85 IN. 11.52  
WTR YR 1991 TOTAL 1106267 MEAN 3031 MAX 25900 MIN 367 CFSM 1.00 IN. 13.54

## POTOMAC RIVER BASIN

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-63, 1965, 1969-71, 1979 to current year.

INSTRUMENTATION.--Water-quality monitor October 1980 to September 1983.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1983 (discontinued).

WATER TEMPERATURE: October 1980 to September 1983 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1981-82): Maximum, 778 microsiemens, Dec. 29, 1980; minimum, 212 microsiemens, Jan. 17, 1982.

WATER TEMPERATURE: Maximum, 30.0°C, July 20, 21, 1981; minimum, 0.0°C on many days during winter periods.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TEMPER- ATURE AIR (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 1990												
22...	1215	5000	260	247	6.8	15.0	20.0	757	20	9.8	98	530
JAN 1991												
10...	0930	5300	290	255	7.1	4.0	17.0	770	3.8	12.7	96	54
MAR												
18...	1040	2900	290	283	6.8	6.5	15.5	748	1.5	11.6	96	K9
MAY												
06...	1130	1700	269	290	6.8	19.0	20.0	751	2.0	8.6	94	52
JUL												
08...	1330	2500	362	355	8.1	28.0	29.0	751	1.5	7.3	95	--
SEP												
09...	1230	1250	340	350	8.4	25.0	28.0	762	1.4	7.4	90	33

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS TOT IT MG/L AS CACO3	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 1990												
22...	800	31	7.6	5.2	3.4	86	106	87	18	7.9	<0.10	8.1
JAN 1991												
10...	37	33	8.2	5.2	1.7	97	118	97	16	8.7	<0.10	6.1
MAR												
18...	K11	39	10	5.8	1.6	113	138	113	16	8.7	0.10	3.9
MAY												
06...	32	38	7.5	7.6	2.0	119	143	117	39	11	0.20	2.1
JUL												
08...	--	43	14	9.5	3.1	144	174	143	17	11	0.30	7.6
SEP												
09...	370	39	16	11	2.5	144	176	144	20	20	0.20	2.9

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)
OCT 1990												
22...	136	228	1.58	0.020	0.020	1.60	1.60	0.090	0.060	0.80	2.4	0.170
JAN 1991												
10...	137	241	--	<0.010	<0.010	1.70	1.60	0.020	0.020	0.40	2.1	0.030
MAR												
18...	159	273	--	0.020	<0.010	1.60	1.50	0.010	0.010	0.30	1.9	0.040
MAY												
06...	165	298	0.660	<0.010	0.010	0.660	0.670	0.040	0.030	0.50	1.2	0.050
JUL												
08...	197	342	1.58	0.030	0.020	1.60	1.60	0.070	0.070	0.70	2.3	0.180
SEP												
09...	186	346	0.750	<0.010	0.010	0.760	0.760	0.030	0.040	0.60	1.4	0.090

K: Results based on colony count outside the acceptance range (non-ideal colony count).



## POTOMAC RIVER BASIN

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 1990 22...	0.130	0.130	0.120	30	<1	31	<0.5	<1.0	<1	<3	1	61
JAN 1991 10...	0.020	0.030	<0.010	--	--	--	--	--	--	--	--	--
MAR 18...	0.030	0.040	0.030	<10	<1	31	<0.5	<1.0	<1	<3	1	11
MAY 06...	0.030	0.020	0.010	30	<1	47	<0.5	<1.0	1	<3	1	13
JUL 08...	0.140	0.150	0.130	--	--	--	--	--	--	--	--	--
SEP 09...	0.090	0.070	0.080	<10	<1	34	<0.5	1.0	<1	<3	1	5

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	HARD- NESS TOTAL (MG/L AS CACO3)
OCT 1990 22...	<1	4	3	0.1	<10	2	<1	<1.0	100	<6	<3	110
JAN 1991 10...	--	--	--	--	--	--	--	--	--	--	--	120
MAR 18...	1	<4	6	<0.1	<10	<1	<1	<1.0	130	<6	<3	140
MAY 06...	<1	5	6	<0.1	<10	1	<1	<1.0	180	<6	6	130
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	170
SEP 09...	<1	8	12	0.2	<10	<1	<1	<1.0	150	<6	<3	160

## SUSPENDED SEDIMENT DISCHARGE

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 1990 22...	1215	5000	34	459	98
JAN 1991 10...	0930	5300	8	114	88
MAR 18...	1040	2900	12	94	62
MAY 06...	1130	1700	5	23	94
JUL 08...	1330	2500	26	176	96
SEP 09...	1230	1250	14	47	93

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD

LOCATION.--Lat 39°16'25", long 77°32'35", Frederick County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on U.S. Highway 15 at Point of Rocks, 0.3 mi downstream from Catoctin Creek (Virginia), 6 mi upstream from Monocacy River, and at mile 159.5.

DRAINAGE AREA. --9.651 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1895 to current year.

REVISED RECORDS.--WSP 192: 1895-1905. WSP 1432: 1899, 1901-2, 1904-5, 1912, 1914(M), 1915, 1917(M), 1918, 1919(M), 1920, 1921-23(M), 1924, 1925-28(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 200.63 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 28, 1929, nonrecording gage at same site. Prior to Sept. 2, 1902, at datum about 0.45 ft higher.

REMARKS.--Water-discharge records good except those for estimated daily discharges (backwater from grass), which are fair. Low flow affected slightly from 1913 to July 1981 by Stony River Reservoir; since December 1950 by Savage River Reservoir (see station 01597500); and since July 1981 by Jennings Randolph Lake. Low flow affected extensively at times by run-of-the-river hydroelectric plants. National Weather Service gage height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, reached a stage of 40.2 ft, from floodmarks, discharge, about 460,000 ft<sup>3</sup>/s from rating curve extended as explained in footnotes.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 24	1930	83,500	15.44	Mar. 6	0300	48,500	10.65
Jan. 1	1200	67,200	13.30	Mar. 25	0330	*85,000	*15.63
Jan. 18	0730	82,600	15.32				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2080	8420	3540	61400	10200	7620	18900	8270	3260	2060	e5600	e1500
2	2240	7680	3270	46300	9700	7380	16900	7680	2940	1970	e4100	e1400
3	2100	7180	3520	32600	9120	6940	15300	7120	2950	1920	e3400	e1400
4	1810	6560	4440	25700	8790	8330	13800	6630	3280	2020	e3000	e1400
5	1960	6080	16000	21300	8540	26200	12600	6170	3030	2310	e2600	e1600
6	1940	6010	15300	17600	8420	43700	11800	6000	3040	2780	e2400	e1700
7	1800	5770	12700	16000	8920	30500	11200	6200	3010	3680	e2200	e1700
8	1830	5470	10600	16000	11500	24600	10600	6540	2880	4830	e2000	e1700
9	1870	5270	8980	16400	14200	20700	10000	6280	2580	4190	e2000	e1600
10	2060	5620	7870	15900	13500	17300	9430	5790	2360	3490	e1900	e1400
11	2340	6140	7110	15600	12200	15000	9020	5610	2310	2940	e1700	e1400
12	3200	6710	6520	19100	11000	13400	8720	5450	2440	2300	e1700	e1400
13	12300	7040	6020	27600	10200	12100	8230	5250	2160	2740	e1800	e1300
14	25300	6540	5600	34500	9800	11300	8250	5320	1990	2670	e1700	e1300
15	24000	6330	5540	31400	9970	10900	10600	5650	2160	2300	e1700	e1200
16	18000	5730	5990	28000	10400	10500	23000	5780	1920	2450	e1700	e1100
17	12900	5530	7360	51500	9730	9990	25800	5270	1880	2370	e1600	e1200
18	10300	5350	8700	78100	8840	9740	21900	5150	2240	2210	e1600	e1200
19	10400	4950	10600	54700	8690	10000	17700	4790	2350	2080	e1500	e2900
20	15000	4810	15700	38900	8780	11200	15000	4440	2190	1980	e1800	e5000
21	14500	4740	14700	31600	9020	12900	13500	4580	2250	1940	e2400	e2800
22	11600	4480	13400	27700	9130	12700	13300	4470	2340	1830	e2200	e2200
23	13200	4350	13300	23700	9510	15600	12800	4210	2260	1880	e2300	e2000
24	60000	4350	15000	19500	9210	49300	11700	4060	2200	1970	e2100	e1800
25	57900	4300	21500	16900	8710	74900	10600	4020	2170	1920	e1900	e1700
26	32900	4010	21000	15000	8370	43700	9720	3610	2530	2030	e1800	e2100
27	22600	4070	19000	13300	8080	30500	9080	3570	2790	1980	e1700	e1700
28	17000	3940	16300	12400	7820	24900	8560	3490	2580	1680	e1900	e1500
29	13200	3790	14300	11800	---	21300	8320	3620	2360	2270	e2200	e1500
30	11100	3860	13900	11300	---	18400	8650	3780	2340	e3500	e1700	e1400
31	9520	---	24700	10600	---	18000	---	3380	---	e3800	e1500	---
TOTAL	416950	165080	352460	842400	272350	629600	384980	162180	74790	78090	67700	52100
MEAN	13450	5503	11370	27170	9727	20310	12830	5232	2493	2519		

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 1991, BY WATER YEAR (WY)

MEAN	5132	5524	8382	11130	14300	19200	16370	12330	8018	4513	4198	3486
MAX	37030	39000	32610	31350	42640	68360	39840	41970	40400	16000	23580	17820
(WY)	1943	1986	1973	1937	1897	1936	1918	1924	1972	1949	1955	1975
MIN	706	840	1253	1703	2661	5400	4368	3276	1932	1056	771	834
(WY)	1931	1931	1966	1981	1934	1931	1915	1930	1969	1966	1930	1930

## POTOMAC RIVER BASIN

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD--Continued

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1895 - 1991	
ANNUAL TOTAL	2964160		3498680			
ANNUAL MEAN	8121		9585		9366	
HIGHEST ANNUAL MEAN					15840	1972
LOWEST ANNUAL MEAN					4366	1969
HIGHEST DAILY MEAN	60000	Oct 24	78100	Jan 18	434000	Mar 19 1936
LOWEST DAILY MEAN	1740	Aug 17	e1100	Sep 16	540	Sep 10 1914
ANNUAL SEVEN-DAY MINIMUM	1900	Oct 4	1240	Sep 12	593	Sep 6 1966
INSTANTANEOUS PEAK FLOW	83500	Oct 24	85000	Mar 25	a480000	Mar 19 1936
INSTANTANEOUS PEAK STAGE	15.44	Oct 24	15.63	Mar 25	41.03	Mar 19 1936
INSTANTANEOUS LOW FLOW	1640	Oct 4	UNKNOWN		530	(b)
ANNUAL RUNOFF (CFSM)	.84		.99		.97	
ANNUAL RUNOFF (INCHES)	11.43		13.49		13.19	
10 PERCENT EXCEEDS	15400		21300		20400	
50 PERCENT EXCEEDS	6140		6000		5380	
90 PERCENT EXCEEDS	2440		1800		1650	

e Estimated.

a From rating curve extended above 300,000 ft<sup>3</sup>/s, on the basis of adjustment of figure of peak flow at station near Washington for inflow and storage, and slope-area measurement of peak flow.

b September 11, 12, 1966.

## POTOMAC RIVER BASIN

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1960 to current year.

REMARKS.--Water temperatures are measured daily in field by local observer at time of sampling.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (water years 1961-1990): Maximum daily, 33.5°C, Aug. 24, 1964, July 19, 1977; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily mean, 2,690 mg/L, Nov. 7, 1985; minimum daily mean, 1 mg/L, on many days most years.

SEDIMENT LOAD: Maximum daily, 1,930,000 tons, Nov. 7, 1985; minimum daily, 2.0 tons on many days during 1964, 1966-1969.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 400 mg/L, Oct. 25; minimum daily mean, 1 mg/L, on many days.

SEDIMENT LOAD: Maximum daily, 62,500 tons, Oct. 25; minimum daily, 4.9 tons, July 22.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	12.0	---	4.0	---	8.0	9.0	---	---	---	---	28.0
2	19.5	---	---	6.0	---	8.0	---	---	---	---	---	26.0
3	19.0	---	---	---	---	9.0	---	---	---	---	---	24.0
4	19.0	11.5	---	---	---	9.0	10.5	---	---	---	---	26.0
5	---	---	---	---	---	10.0	12.0	---	---	---	---	27.0
6	20.0	12.0	---	---	---	---	12.0	---	---	---	---	25.0
7	21.0	12.0	---	---	---	---	14.0	---	---	---	---	24.0
8	21.0	10.0	7.5	---	---	---	---	---	---	---	---	25.0
9	23.0	10.0	7.0	---	---	---	---	---	---	---	---	27.0
10	22.0	9.0	7.0	---	---	---	---	---	---	---	---	25.0
11	---	9.0	6.0	---	---	10.0	---	---	---	---	---	26.0
12	---	9.5	6.5	---	---	9.0	---	---	---	---	---	25.0
13	---	---	---	---	---	9.0	---	---	---	---	---	25.0
14	19.5	8.0	6.0	---	---	6.0	---	---	---	---	---	27.0
15	19.0	9.0	6.0	---	---	6.0	---	---	---	---	---	28.0
16	19.0	9.5	7.5	---	---	8.0	---	---	---	---	---	---
17	19.0	9.0	8.0	---	---	8.0	---	---	---	---	---	30.0
18	---	---	9.0	---	---	---	---	---	---	---	---	27.0
19	---	8.0	7.0	---	---	10.0	12.0	---	---	---	---	25.0
20	16.0	8.0	7.0	---	---	10.0	---	---	---	---	---	22.0
21	15.0	8.5	6.5	---	---	8.0	---	---	---	---	---	---
22	14.5	8.5	---	---	---	8.0	11.0	---	---	---	---	19.0
23	14.5	---	---	---	---	11.0	---	---	---	---	---	20.0
24	14.0	---	---	---	---	11.0	12.0	---	---	---	---	20.0
25	14.0	---	---	---	---	10.0	14.0	---	---	---	---	20.0
26	13.0	---	---	---	---	10.0	---	---	---	---	---	21.0
27	13.0	---	3.0	---	---	---	---	---	---	---	28.0	18.0
28	12.5	---	2.0	---	---	12.0	---	---	---	---	29.0	20.0
29	11.0	---	---	---	---	9.0	---	---	---	---	31.0	22.0
30	10.5	---	---	---	---	10.0	---	---	---	---	32.0	19.0
31	11.5	---	---	---	---	10.0	---	---	---	---	30.0	---





## MONONGAHELA RIVER BASIN

## 03050000 TYGART VALLEY RIVER NEAR DAILEY, WV

LOCATION.--Lat 38°48'35", long 79°52'55", Randolph County, Hydrologic Unit 05020001, on right bank 50 ft downstream from highway bridge, 1,000 ft upstream from Stalnaker Run, 1.0 mi northeast of Dailey, 2.5 mi south of Beverly, and at mile 95.7.

DRAINAGE AREA.--187 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1915 to September 1975, October 1975 to October 1976 (gage heights only), July 1988 to current year. Prior to October 1960, published as Tygart River near Dailey.

REVISED RECORDS.--WSP 823: Drainage area. WSP 873: 1932(M), WSP 1053: 1918(M), 1928(M), 1932, 1934-38. WSP 1305: 1924(M).

GAGE.--Water-stage recorder. Datum of gage is 1,940.09 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Sept. 27, 1928, nonrecording gage a few feet upstream at same datum. Sept. 27, 1928 to Dec. 16, 1941, nonrecording gage at site 50 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Jan. 23-28 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--63 years, (water years 1915-75, 1989-91), 352 ft<sup>3</sup>/s, 25.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft<sup>3</sup>/s, Feb. 4, 1932, gage height, 17.2 ft, from floodmarks; no flow Sept. 12 to Nov. 30, 1930, Sept. 29 to Nov. 5, 1953.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 5, 1985 reached a stage of 16.6 ft, from floodmarks, discharge, about 22,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	1430	4,860	10.05	Mar. 24	0115	*6,520	*11.19

Minimum discharge, 2.8 ft<sup>3</sup>/s, July 4, 5, gage height, 0.36 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	105	90	1580	836	186	452	125	25	3.3	30	21
2	55	93	84	829	530	387	439	113	23	4.0	20	24
3	45	83	83	537	383	630	364	101	26	3.4	15	14
4	40	75	113	384	294	2150	302	92	25	3.0	13	16
5	53	70	139	296	241	1310	321	87	20	5.8	21	53
6	54	88	118	261	251	770	676	99	16	13	26	120
7	40	96	116	802	681	1070	574	152	13	15	17	82
8	33	78	114	1230	625	829	448	115	12	9.7	13	46
9	29	70	108	904	470	544	368	111	11	6.8	786	29
10	27	256	102	897	366	411	469	121	9.4	4.6	835	23
11	741	461	98	1290	287	312	378	107	8.5	4.3	221	25
12	751	319	92	2220	222	252	303	97	7.9	3.8	108	48
13	434	235	89	1580	201	370	743	89	8.4	19	67	34
14	319	184	86	898	303	713	1580	93	7.9	48	47	25
15	226	153	503	585	399	650	970	87	7.2	50	107	21
16	168	134	1850	571	297	533	722	73	6.9	26	60	18
17	134	141	924	752	e240	519	541	61	8.3	17	36	15
18	173	144	1090	594	e260	1140	432	56	9.5	13	25	15
19	685	126	1960	469	981	1850	344	56	13	14	33	127
20	387	116	1100	402	1840	1260	288	51	13	68	26	139
21	259	105	644	410	1130	1010	250	43	10	50	27	73
22	223	99	454	381	711	1120	236	39	11	28	27	48
23	1420	136	665	e300	477	3290	224	33	30	21	21	35
24	1250	194	1850	e250	349	3390	206	30	23	42	16	27
25	653	176	1220	e205	284	1020	193	28	16	45	13	24
26	407	155	673	e180	255	601	172	26	12	26	11	22
27	278	138	439	e190	208	483	160	23	8.9	18	8.8	19
28	207	126	1050	e210	182	402	169	31	6.7	14	7.1	17
29	167	115	2120	259	---	343	155	27	4.7	15	6.2	15
30	139	101	1620	314	---	383	143	21	3.8	104	7.2	13
31	120	---	3810	1190	---	370	---	21	---	54	9.6	---
TOTAL	9581	4372	23404	20970	13303	28298	12622	2208	397.1	748.7	2659.9	1188
MEAN	309	146	755	676	475	913	421	71.2	13.2	24.2	85.8	39.6
MAX	1420	461	3810	2220	1840	3390	1580	152	30	104	835	139
MIN	27	70	83	180	182	186	143	21	3.8	3.0	6.2	13
CFSM	1.65	.78	4.04	3.62	2.54	4.88	2.25	.38	.07	.13	.46	.21
IN.	1.91	.87	4.66	4.17	2.65	5.63	2.51	.44	.08	.15	.53	.24

CAL YR 1990 TOTAL 159395 MEAN 437 MAX 6330 MIN 19 CFSM 2.34 IN. 31.71  
WTR YR 1991 TOTAL 119751.7 MEAN 328 MAX 3810 MIN 3.0 CFSM 1.75 IN. 23.82

e Estimated

## MONONGAHELA RIVER BASIN

03050400 TYGART VALLEY RIVER AT ELKINS, WV

LOCATION.--Lat 38°55'00", long 79°50'43", Randolph County, Hydrologic Unit 05020001, at city water plant, at Elkins, 2.5 mi upstream from gaging station.

DRAINAGE AREA.--268 mi<sup>2</sup> upstream from water plant: 272 mi<sup>2</sup> upstream from gaging station.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: January 1947 to current year.

REMARKS.--No appreciable inflow between water plant and gaging station except during periods of heavy local rains. During flood periods part of the flow is diverted around the water plant in a flood by-pass channel. Values published are once-daily readings.

COOPERATION.--Temperature records were furnished by City of Elkins pump station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum daily, 33.0°C, July 22, 1952; minimum daily, 0.0°C on many days during winter months most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 26.0°C, May 30 to June 3, July 12; minimum daily, 2.0°C, Jan. 25-29, 31.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	9.0	8.0	6.0	4.0	5.0	8.0	19.0	26.0	24.0	25.0	24.0
2	17.0	10.0	8.0	6.0	3.0	7.0	8.0	18.0	26.0	24.0	23.0	24.0
3	16.0	10.0	8.0	5.0	5.0	9.0	8.0	18.0	26.0	24.0	24.0	22.0
4	16.0	10.0	6.0	5.0	5.0	9.0	9.0	18.0	24.0	25.0	24.0	23.0
5	16.0	11.0	5.0	5.0	5.0	8.0	11.0	18.0	24.0	25.0	24.0	25.0
6	16.0	10.0	5.0	5.0	7.0	7.0	12.0	18.0	25.0	25.0	24.0	24.0
7	16.0	10.0	4.0	5.0	7.0	9.0	11.0	18.0	25.0	25.0	24.0	23.0
8	17.0	10.0	4.0	5.0	7.0	7.0	11.0	18.0	22.0	25.0	24.0	23.0
9	17.0	9.0	4.0	5.0	7.0	7.0	12.0	18.0	23.0	24.0	24.0	22.0
10	18.0	9.0	4.0	5.0	6.0	7.0	12.0	18.0	22.0	25.0	23.0	21.0
11	18.0	10.0	3.0	6.0	6.0	6.0	13.0	19.0	24.0	25.0	24.0	21.0
12	18.0	9.0	3.0	7.0	4.0	5.0	12.0	19.0	23.0	26.0	22.0	21.0
13	17.0	9.0	5.0	5.0	5.0	6.0	12.0	19.0	23.0	25.0	21.0	22.0
14	18.0	9.0	5.0	5.0	5.0	6.0	13.0	22.0	23.0	24.0	22.0	22.0
15	17.0	7.0	5.0	5.0	5.0	5.0	12.0	22.0	23.0	23.0	22.0	23.0
16	15.0	7.0	5.0	5.0	4.0	7.0	12.0	23.0	23.0	22.0	21.0	23.0
17	15.0	7.0	4.0	5.0	4.0	5.0	12.0	23.0	24.0	23.0	21.0	23.0
18	15.0	7.0	6.0	5.0	4.0	7.0	13.0	22.0	24.0	25.0	22.0	23.0
19	14.0	7.0	5.0	5.0	3.0	8.0	14.0	22.0	25.0	23.0	22.0	22.0
20	13.0	7.0	7.0	5.0	4.0	7.0	14.0	22.0	25.0	24.0	22.0	20.0
21	11.0	7.0	8.0	5.0	4.0	9.0	14.0	22.0	25.0	24.0	22.0	16.0
22	11.0	7.0	8.0	3.0	5.0	9.0	13.0	21.0	24.0	24.0	21.0	16.0
23	12.0	7.0	8.0	3.0	6.0	10.0	9.0	21.0	23.0	24.0	21.0	16.0
24	13.0	7.0	7.0	3.0	6.0	11.0	8.0	22.0	23.0	25.0	21.0	15.0
25	13.0	7.0	6.0	2.0	6.0	10.0	11.0	23.0	25.0	25.0	22.0	14.0
26	11.0	7.0	5.0	2.0	5.0	9.0	11.0	23.0	25.0	25.0	22.0	14.0
27	10.0	8.0	5.0	2.0	5.0	10.0	14.0	22.0	23.0	25.0	22.0	14.0
28	10.0	10.0	5.0	2.0	5.0	11.0	14.0	24.0	24.0	25.0	22.0	14.0
29	10.0	10.0	5.0	2.0	---	12.0	14.0	25.0	24.0	24.0	22.0	14.0
30	9.0	9.0	5.0	3.0	---	11.0	18.0	26.0	24.0	24.0	24.0	15.0
31	9.0	---	6.0	2.0	---	8.0	---	26.0	---	25.0	25.0	---

## MONONGAHELA RIVER BASIN

03050500 TYGART VALLEY RIVER NEAR ELKINS, WV

LOCATION.--Lat 38°55'30", long 79°52'45", Randolph County, Hydrologic Unit 05020001, on left bank 1.4 mi upstream from Leading Creek, 1.5 mi west of Elkins, and at mile 78.3.

DRAINAGE AREA.--272 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1944 to current year. Prior to October 1960, published as Tygart River near Elkins.

GAGE.--Water-stage recorder. Datum of gage is 1,893.95 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Nov. 16, 1944, nonrecording gage and Nov. 16, 1944, to Sept. 30, 1951, water-stage recorder at site 200 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Jan. 23-29 and Feb. 17-28. Records good except those for periods of estimated daily discharges, which are fair. Slight regulation at times by flood-diversion dam upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--47 years, 541 ft<sup>3</sup>/s, 27.01 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 22.81 ft, from floodmarks, from rating curve extended above 13,800 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum discharge, 0.1 ft<sup>3</sup>/s, Sept. 20-29, 1959; minimum gage height, 0.97 ft, Aug. 12, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	2330	5,190	11.36	Mar. 24	1115	*5,860	*12.06

Minimum daily discharge, 3.8 ft<sup>3</sup>/s, Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	148	134	3090	1240	262	620	200	44	14	78	9.6
2	80	132	124	1170	769	376	624	180	48	16	45	14
3	66	117	128	754	546	796	520	160	64	12	37	44
4	61	108	175	535	419	2750	428	143	38	9.7	34	47
5	65	102	224	411	351	2240	411	132	38	13	22	47
6	73	112	203	361	363	1120	754	151	36	10	14	104
7	62	134	193	986	988	1540	718	192	32	10	18	144
8	49	115	188	1710	1170	1230	569	166	28	14	20	105
9	49	101	179	1220	804	799	484	169	23	18	887	56
10	51	236	167	1270	587	594	608	188	19	20	2140	32
11	459	609	157	1810	449	457	522	172	13	19	486	19
12	1140	451	148	3270	350	371	413	153	9.4	30	238	35
13	498	336	142	2540	305	460	918	138	8.4	234	155	61
14	398	268	136	1310	420	970	2970	139	9.7	133	125	62
15	303	221	539	844	596	894	1590	132	12	65	227	45
16	231	193	2600	711	409	751	1140	110	10	46	198	33
17	184	200	1390	1020	e325	748	810	91	16	45	113	22
18	230	208	1300	839	e360	1420	596	81	29	44	74	14
19	722	186	2910	643	1120	2530	459	83	34	507	79	19
20	513	169	1680	535	2640	1830	375	78	17	339	133	162
21	345	155	925	548	1670	1380	329	73	18	160	66	134
22	293	146	641	519	1020	1400	330	65	14	93	105	92
23	1330	178	932	e375	688	4260	337	57	63	81	77	44
24	1770	256	2520	e310	500	5090	326	51	115	133	57	18
25	919	249	1870	e250	403	1640	298	36	37	122	45	31
26	557	223	976	e230	362	881	266	22	9.5	76	30	40
27	381	199	627	e255	305	662	243	25	61	50	20	19
28	293	183	1210	e300	269	541	268	54	26	39	20	3.8
29	235	169	3090	e340	---	475	244	64	13	20	18	67
30	196	150	2500	416	---	472	224	49	13	86	17	34
31	167	---	4640	1490	---	475	---	48	---	112	13	---
TOTAL	11870	6054	32648	30062	19428	39414	18394	3402	898.0	2570.7	5591	1557.4
MEAN	383	202	1053	970	694	1271	613	110	29.9	82.9	180	51.9
MAX	1770	609	4640	3270	2640	5090	2970	200	115	507	2140	162
MIN	49	101	124	230	269	262	224	22	8.4	9.7	13	3.8
CFSM	1.41	.74	3.87	3.57	2.55	4.67	2.25	.40	.11	.30	.66	.19
IN.	1.62	.83	4.47	4.11	2.66	5.39	2.52	.47	.12	.35	.76	.21

CAL YR 1990 TOTAL 212390 MEAN 582 MAX 7500 MIN 22 CFSM 2.14 IN. 29.05  
WTR YR 1991 TOTAL 171889.1 MEAN 471 MAX 5090 MIN 3.8 CFSM 1.73 IN. 23.51

e Estimated



## MONONGAHELA RIVER BASIN

03051000 TYGART VALLEY RIVER AT BELINGTON, WV

LOCATION.--Lat 39°01'45", long 79°56'10", Barbour County, Hydrologic Unit 05020001, on left bank opposite mouth of Mill Creek, 0.2 mi downstream from highway bridge at Belington, and mile 61.5.

DRAINAGE AREA.--408 mi<sup>2</sup>, excluding that of Mill Creek.

PERIOD OF RECORD.--June 1907 to current year. Prior to October 1960, published as Tygart River at Belington.

REVISED RECORDS.--WSP 823: Drainage area. WSP 953: 1933(M), 1941(M). WSP 1335: 1912, 1914-15, 1916(M), 1921-22(M), 1925(M), 1928, 1933. WSP 1385: 1909(M), 1913-15(M), 1917-18, 1924(M), 1928(M), 1932, 1934, 1936, 1938-39, 1948-49.

GAGE.--Water-stage recorder. Datum of gage is 1,679.49 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Apr. 25, 1939, nonrecording gage at site 0.2 mi upstream at same datum.

REMARKS.--Estimated daily discharges: Jan. 22-28 and Feb. 16-18. Records good except those for periods of estimated daily discharges, which are fair. National Weather Service gage-height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--84 years, 818 ft<sup>3</sup>/s, 27.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,500 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 23.65 ft, from floodmarks, from rating curve extended above 18,700 ft<sup>3</sup>/s; minimum, 0.1 ft<sup>3</sup>/s, Sept. 13, 1930, gage height, 1.56 ft, site then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1888, reached a stage of 21.7 ft, former site, from floodmarks, discharge, 21,200 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	1200	7,720	12.07	Mar. 23	2000	*7,820	*12.15

Minimum discharge, 11 ft<sup>3</sup>/s, Sept. 30, gage height, 2.07 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	219	197	5060	2110	438	895	453	88	22	117	33
2	140	194	179	2020	1290	538	987	386	80	31	76	23
3	95	170	187	1250	924	1080	853	326	92	46	54	24
4	88	153	301	906	709	3790	709	284	91	36	57	50
5	89	146	463	688	592	3730	652	253	58	29	55	136
6	107	157	411	600	603	1980	949	256	53	27	42	125
7	97	176	372	1160	1540	2870	1050	327	50	25	26	157
8	80	173	337	2460	2200	2190	867	305	46	19	27	140
9	68	145	308	1980	1510	1390	769	307	40	17	413	97
10	66	221	280	2300	1080	1020	981	375	35	22	2990	63
11	398	789	256	3070	815	796	970	352	30	32	860	51
12	1700	711	234	5290	624	640	750	306	27	45	360	36
13	830	527	220	4360	524	759	1390	264	19	409	223	50
14	601	411	208	2290	696	1760	5000	242	14	288	178	71
15	468	335	643	1450	1100	1650	3100	232	13	142	172	65
16	349	286	3730	1230	e780	1280	2430	192	14	75	309	53
17	271	305	2260	1730	e660	1260	1550	155	18	61	174	43
18	344	364	2060	1520	e700	2030	1090	138	19	55	105	35
19	1210	336	4560	1150	1560	3640	819	133	27	218	88	33
20	910	295	2970	938	4270	2990	666	134	43	817	105	92
21	578	259	1560	976	3020	2120	575	120	25	274	133	170
22	466	232	1070	e970	1790	2050	649	105	41	147	92	125
23	1840	283	1600	e680	1190	6090	900	93	199	113	113	89
24	2890	404	4010	e580	867	7080	762	83	232	183	77	52
25	1600	413	3080	e490	692	2870	635	76	129	184	63	29
26	953	364	1640	e400	611	1470	531	60	52	138	51	38
27	640	316	1060	e430	516	1110	667	45	23	82	41	47
28	471	282	1770	e530	448	887	1070	50	61	65	27	36
29	373	256	4490	664	---	750	725	94	39	63	26	16
30	307	225	4170	743	---	740	557	81	24	57	25	58
31	252	---	7310	2160	---	733	---	74	---	130	24	---
TOTAL	18439	9147	51936	50075	33421	61731	33548	6301	1682	3852	7103	2037
MEAN	595	305	1675	1615	1194	1991	1118	203	56.1	124	229	67.9
MAX	2890	789	7310	5290	4270	7080	5000	453	232	817	2990	170
MIN	66	145	179	400	448	438	531	45	13	17	24	16
CFSM	1.46	.75	4.11	3.96	2.93	4.88	2.74	.50	.14	.30	.56	.17
IN.	1.68	.83	4.74	4.57	3.05	5.63	3.06	.57	.15	.35	.65	.19

CAL YR 1990 TOTAL 339701 MEAN 931 MAX 10700 MIN 35 CFSM 2.28 IN. 30.97  
WTR YR 1991 TOTAL 279272 MEAN 765 MAX 7310 MIN 13 CFSM 1.88 IN. 25.46

e Estimated

## MONONGAHELA RIVER BASIN

03052000 MIDDLE FORK RIVER AT AUDRA, WV

LOCATION.--Lat 39°02'25", long 80°04'10", Barbour County, Hydrologic Unit 05020001, on right bank at Audra, 600 ft upstream from highway bridge, and at mile 2.7.

DRAINAGE AREA.--149 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1942 to September 1979, October 1988 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,670 ft, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 24-28 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--40 years, (water years 1943-79, 1989-91), 350 ft<sup>3</sup>/s, 31.90 in/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 5, 1985, reached a stage of 15.8 ft, from floodmarks, discharge, about 15,000 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft<sup>3</sup>/s, June 23, 1972, gage height, 13.67 ft, from rating curve extended above 6,800 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow; minimum, 0.2 ft<sup>3</sup>/s, Oct. 11-27, 1953; minimum gage height, 1.07 ft Sept. 9, 1957.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0530	*5,660	*9.33	Mar. 23	1745	3,670	7.77

Minimum discharge, 6.3 ft<sup>3</sup>/s, June 19, gage height, 1.58 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	126	126	1500	814	212	317	260	33	10	15	31
2	96	113	118	864	583	267	333	213	45	11	12	14
3	73	103	124	576	430	337	307	168	48	11	9.3	9.2
4	71	96	200	405	331	1270	276	142	41	10	10	21
5	76	92	251	309	277	1080	270	124	30	11	9.7	60
6	95	103	227	269	284	844	405	117	22	10	10	85
7	72	110	221	468	617	1340	361	165	17	14	10	63
8	59	91	198	681	985	933	328	118	13	13	9.7	40
9	51	85	181	693	770	637	317	126	11	11	244	26
10	47	133	168	960	562	485	477	168	10	9.9	771	21
11	353	270	158	1210	417	365	448	137	9.9	8.8	223	24
12	439	238	147	1840	313	290	372	117	9.0	12	101	43
13	291	209	139	1560	265	412	645	103	8.5	90	62	35
14	245	181	133	946	367	1260	1430	91	8.8	65	47	24
15	195	160	353	654	472	1180	1130	81	7.8	40	42	19
16	155	146	1280	607	319	750	1020	67	7.0	30	51	16
17	130	173	833	741	e270	546	715	57	8.5	20	39	15
18	161	202	1080	631	e330	571	518	53	7.8	15	30	13
19	640	178	2310	499	832	963	390	51	7.4	12	25	17
20	372	168	1180	422	1620	955	315	45	10	17	25	75
21	269	154	742	444	1300	855	266	37	14	16	29	61
22	229	144	519	402	840	844	363	31	23	16	30	42
23	813	203	869	314	572	2560	499	30	90	19	27	33
24	1080	272	1680	e220	417	1910	455	26	64	20	20	27
25	709	241	1080	e180	328	991	392	23	31	26	16	27
26	464	213	709	e160	288	647	328	23	21	21	12	29
27	324	188	494	e190	239	521	289	37	16	15	12	26
28	252	171	791	e230	196	398	492	48	13	11	9.9	24
29	198	161	1500	294	---	315	392	67	9.3	10	8.3	19
30	163	142	1420	356	---	319	320	40	7.6	10	9.5	15
31	143	---	3920	976	---	273	---	33	---	18	13	---
TOTAL	8350	4866	23151	19601	15038	24330	14170	2798	643.6	602.7	1932.4	954.2
MEAN	269	162	747	632	537	785	472	90.3	21.5	19.4	62.3	31.8
MAX	1080	272	3920	1840	1620	2560	1430	260	90	90	771	85
MIN	47	85	118	160	196	212	266	23	7.0	8.8	8.3	9.2
CFSM	1.81	1.09	5.01	4.24	3.60	5.27	3.17	.61	.14	.13	.42	.21
IN.	2.08	1.21	5.78	4.89	3.75	6.07	3.54	.70	.16	.15	.48	.24

CAL YR 1990 TOTAL 145807 MEAN 399 MAX 3920 MIN 20 CFSM 2.68 IN. 36.40  
WTR YR 1991 TOTAL 116436.9 MEAN 319 MAX 3920 MIN 7.0 CFSM 2.14 IN. 29.07

e Estimated

## MONONGAHELA RIVER BASIN

03052500 SAND RUN NEAR BUCKHANNON, WV

LOCATION.--Lat 38°57'50", long 80°09'10", Upshur County, Hydrologic Unit 05020001, on right bank 300 ft downstream from Left Fork, 4.5 mi southeast of Buckhannon, and at mile 6.0.

DRAINAGE AREA.--14.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1946 to current year.

REVISED RECORDS.--WSP 1725: 1955(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,530 ft, above National Geodetic Vertical Datum of 1929, from topographic map. Prior to May 4, 1983, at datum 1.00 ft higher.

REMARKS.--Estimated daily discharges: Jan. 23-26 and Feb. 16-18. Records good except those for periods of estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--45 years, 27.4 ft<sup>3</sup>/s, 25.66 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,200 ft<sup>3</sup>/s, Nov. 4, 1985, gage height, 8.34 ft, from rating curve extended above 1,560 ft<sup>3</sup>/s; no flow for several days in 1951-56, 1964-66, and parts of July 19, 20, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 18	2400	636	4.49	Mar. 23	0645	401	3.79
Dec. 30	2330	*1,040	*5.41				

Minimum discharge, 0.30 ft<sup>3</sup>/s, June 21, 22, gage height, 0.88 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	7.5	10	90	54	19	40	12	1.2	.41	1.5	2.2
2	3.3	6.9	9.1	50	37	27	38	11	5.3	3.1	1.1	1.3
3	2.7	6.2	11	34	28	30	31	9.1	6.4	1.9	.87	.94
4	4.7	5.6	28	25	22	238	26	8.1	2.7	1.2	2.2	1.8
5	6.3	5.6	33	21	20	94	28	7.6	1.7	1.1	2.2	7.8
6	3.9	8.2	33	21	27	94	26	8.3	1.3	1.1	1.3	3.1
7	3.3	7.0	30	49	80	170	24	9.7	1.0	.79	.92	1.9
8	2.7	5.7	25	56	85	71	22	7.3	.91	.55	.75	1.4
9	2.7	5.1	21	73	55	45	27	8.2	.80	.45	23	1.1
10	2.6	19	19	115	39	35	45	10	.69	.58	32	1.1
11	45	31	16	119	28	28	38	7.9	.58	1.7	8.0	1.5
12	30	25	14	146	22	24	30	6.4	.53	15	4.0	1.4
13	23	19	13	112	21	52	125	5.4	.57	18	2.7	1.1
14	17	15	12	61	41	196	179	6.0	.48	5.2	2.5	.92
15	13	13	95	42	48	111	150	6.9	.36	2.9	2.1	.86
16	9.3	11	98	48	e28	57	112	4.4	.51	1.8	1.8	.80
17	7.4	12	49	67	e23	40	58	3.7	.94	1.3	1.4	.74
18	37	13	196	55	e32	48	38	3.6	.74	1.1	1.1	.72
19	40	12	294	41	130	75	29	3.7	.69	6.7	1.1	4.7
20	22	12	72	34	172	68	24	3.9	.50	5.0	2.3	3.3
21	15	11	44	33	108	52	21	3.2	.35	2.3	1.7	2.0
22	20	9.8	31	28	57	66	36	2.6	3.9	2.4	1.3	1.5
23	106	15	137	e22	38	286	40	2.2	15	3.1	.98	1.3
24	90	18	228	e18	29	109	36	1.9	3.1	13	.81	1.3
25	42	18	81	e16	24	56	29	1.8	1.7	4.6	.66	1.4
26	26	17	45	e14	22	40	25	1.6	1.2	3.0	.54	1.5
27	18	15	32	16	19	34	22	1.5	.89	2.2	.42	1.3
28	14	14	111	26	17	28	20	1.4	.71	1.7	2.9	.92
29	11	13	117	32	---	24	16	1.4	.54	3.0	4.3	.79
30	9.3	11	223	44	---	28	15	1.3	.42	3.6	1.6	.72
31	8.3	---	425	89	---	26	---	1.2	---	2.1	1.5	---
TOTAL	640.0	381.6	2552.1	1597	1306	2271	1350	163.3	55.71	110.88	109.55	51.41
MEAN	20.6	12.7	82.3	51.5	46.6	73.3	45.0	5.27	1.86	3.58	3.53	1.71
MAX	106	31	425	146	172	286	179	12	15	18	32	7.8
MIN	2.6	5.1	9.1	14	17	19	15	1.2	.35	.41	.42	.72
CFSM	1.42	.88	5.68	3.55	3.22	5.05	3.10	.36	.13	.25	.24	.12
IN.	1.64	.98	6.55	4.10	3.35	5.83	3.46	.42	.14	.28	.28	.13

CAL YR 1990 TOTAL 13016.74 MEAN 35.7 MAX 582 MIN .78 CFSM 2.46 IN. 33.39  
WTR YR 1991 TOTAL 10588.55 MEAN 29.0 MAX 425 MIN .35 CFSM 2.00 IN. 27.17

e Estimated

## MONONGAHELA RIVER BASIN

03053500 BUCKHANNON RIVER AT HALL, WV

LOCATION.--Lat 39°03'05", Long 80°06'50", Barbour County, Hydrologic Unit 05020001, on right bank 0.2 mi upstream from highway bridge at Hall, 1.0 mi upstream from Pecks Run, and at mile 7.5.

DRAINAGE AREA.--277 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1907 to May 1909 (gage heights only), April 1915 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 783: 1918(M).

GAGE.--Water-stage recorder. Datum of gage is 1,369.15 ft Baltimore & Ohio RR datum. June 1907 to May 25, 1909, nonrecording gage at site 0.2 mi downstream at datum 4.12 ft lower. Apr. 15, 1915, to June 8, 1939, nonrecording gage at site 500 ft downstream at present datum.

REMARKS.--Estimated daily discharges: Jan. 24-27 and Feb. 17-18. Records good except those for periods of estimated daily discharge, which are fair. Some regulation at low flow from mine pumpage above station.

AVERAGE DISCHARGE.--76 years, 599 ft<sup>3</sup>/s, 29.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 16.88 ft, from floodmarks, from rating curve extended above 13,000 ft<sup>3</sup>/s on basis of slope-area measurement; minimum, 0.2 ft<sup>3</sup>/s, Oct. 23, 27, 1930, gage height, 1.30 ft, site then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 19	1200	5,320	9.68	Mar. 23	2345	4,510	9.08
Dec. 31	1500	*7,230	*11.10				

Minimum discharge, 9.1 ft<sup>3</sup>/s, June 16, gage height, 3.70 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	201	209	3930	1640	393	661	345	36	13	38	37
2	116	178	190	1620	1090	481	684	297	62	18	29	30
3	96	160	221	1050	804	661	591	252	196	16	22	19
4	92	146	637	760	622	2130	508	217	95	15	22	29
5	139	138	718	583	520	2140	484	195	56	16	36	161
6	134	153	509	510	529	1530	703	185	40	29	26	120
7	107	170	420	889	1210	2770	707	216	30	27	21	113
8	88	150	366	1630	1900	1940	630	212	24	30	21	87
9	78	131	323	1560	1460	1200	593	192	20	27	35	59
10	71	263	290	1870	1050	895	840	224	17	20	868	47
11	283	634	265	1910	786	713	870	196	15	18	406	51
12	912	492	242	2460	600	602	679	162	14	23	203	99
13	657	380	224	2500	499	716	1110	143	13	141	129	89
14	503	317	210	1670	759	2320	2590	137	12	143	101	65
15	389	273	547	1140	1170	2670	2060	144	10	118	79	50
16	309	241	2080	1120	884	1520	1950	110	10	87	67	48
17	250	254	1450	1640	e590	1030	1320	95	12	58	71	42
18	356	288	1890	1330	e650	996	933	90	16	39	55	32
19	1210	260	4930	1000	1600	1540	711	84	14	52	42	36
20	810	235	2810	803	2850	1770	577	87	12	52	36	115
21	535	217	1360	771	2720	1420	478	81	22	53	38	141
22	437	203	930	724	1620	1380	554	67	43	68	42	100
23	1320	296	1460	587	1070	3430	758	56	95	55	42	81
24	1840	530	3670	e490	783	3530	748	48	89	75	31	70
25	1220	457	2460	e410	624	1740	678	41	62	73	25	65
26	791	387	1340	e360	554	1110	571	35	37	71	20	68
27	554	333	898	e400	469	923	494	31	26	48	17	61
28	415	299	1410	475	403	743	536	31	20	31	14	54
29	335	273	2330	673	---	610	491	34	16	27	14	44
30	274	243	2300	738	---	606	411	44	13	30	14	35
31	230	---	6400	1860	---	585	---	41	---	32	14	---
TOTAL	14651	8302	43089	37463	29456	44094	24920	4092	1127	1505	2578	2048
MEAN	473	277	1390	1208	1052	1422	831	132	37.6	48.5	83.2	68.3
MAX	1840	634	6400	3930	2850	3530	2590	345	196	143	868	161
MIN	71	131	190	360	403	393	411	31	10	13	14	19
CFSM	1.71	1.00	5.02	4.36	3.80	5.13	3.00	.48	.14	.18	.30	.25
IN.	1.97	1.11	5.79	5.03	3.96	5.92	3.35	.55	.15	.20	.35	.28

CAL YR 1990 TOTAL 252334 MEAN 691 MAX 7580 MIN 31 CFSM 2.50 IN. 33.89  
WTR YR 1991 TOTAL 213325 MEAN 584 MAX 6400 MIN 10 CFSM 2.11 IN. 28.65

e Estimated



## MONONGAHELA RIVER BASIN

03054500 TYGART VALLEY RIVER AT PHILIPPI, WV

LOCATION.--Lat 39°09'00", long 80°02'25", Barbour County, Hydrologic Unit 05020001, on right bank at Philippi, 0.2 mi downstream from Anglins Run, 5.0 mi downstream from Buckhannon River, and at mile 44.9.

DRAINAGE AREA.--916 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1940 to current year. Prior to October 1960, published as Tygart River at Philippi.

GAGE.--Water-stage recorder. Datum of gage is 1,280.55 ft above National Geodetic Vertical Datum of 1929. Prior to May 23, 1940, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 24-29 and Feb. 16-18. Records good except those for periods of estimated daily discharges, which are fair. National Weather Service gage-height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--51 years, 1,884 ft<sup>3</sup>/s, 27.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 31.83 ft, from floodmarks, from rating curve extended above 41,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum discharge, 4.9 ft<sup>3</sup>/s, Oct. 10-12, 21, 1953; minimum gage height, 0.92 ft Sept. 9, 10, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 25, 1912, reached a stage of 27.3 ft, read on National Weather Service gage 0.2 mi downstream, or about 26 ft, present site and datum, discharge, about 37,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 19	1000	14,400	13.05	Mar. 23	2100	16,500	14.28
Dec. 31	1000	*20,400	*16.51				

Minimum discharge, 34 ft<sup>3</sup>/s, June 16, gage height, 1.36 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	280	569	559	12800	5240	1170	1950	1210	168	57	194	63
2	359	502	504	5370	3370	1350	2190	1010	166	164	167	89
3	269	448	559	3300	2440	2080	1960	861	338	88	111	67
4	248	405	1300	2370	1900	7150	1680	744	286	91	103	59
5	318	384	1690	1820	1570	8250	1570	662	189	87	104	296
6	316	406	1380	1570	1540	4860	2050	627	137	74	104	383
7	289	447	1150	2280	3270	7640	2310	751	116	77	83	313
8	235	434	1000	4930	5710	5880	2020	736	101	77	65	311
9	198	380	897	4610	4280	3700	1850	693	88	70	80	224
10	178	527	802	5560	3050	2690	2310	851	77	62	4420	169
11	682	1640	730	6490	2300	2140	2540	792	69	62	1970	137
12	3180	1680	666	10300	1780	1760	2040	683	64	73	856	137
13	2110	1290	614	9730	1480	1950	2730	594	58	516	512	178
14	1530	1010	577	5690	1900	5680	9690	534	48	644	374	160
15	1220	836	1140	3690	3020	6480	7280	539	38	400	296	152
16	933	719	7250	3290	e2000	4100	6180	437	36	267	394	128
17	747	742	5320	4530	e1700	3090	4100	364	66	169	332	117
18	829	882	5230	4000	e1900	3490	2860	319	61	131	236	101
19	2950	838	13500	3010	3690	6220	2180	298	53	117	167	93
20	2470	747	8570	2440	9360	6370	1770	293	50	868	152	117
21	1610	671	4270	2390	8240	4680	1500	269	71	426	196	388
22	1280	609	2880	2390	4870	4430	1640	232	76	278	154	316
23	3620	813	3870	1900	3210	11900	2270	202	258	224	169	236
24	6500	1310	10600	e1500	2340	14100	2180	180	489	221	161	186
25	4140	1270	7930	e1300	1870	6900	1920	162	302	321	117	143
26	2550	1080	4290	e1100	1640	3650	1610	145	190	258	98	122
27	1760	918	2790	e1200	1420	2810	1430	122	106	201	81	129
28	1290	809	3890	e1400	1220	2260	2250	134	70	132	69	128
29	998	733	8590	e1700	---	1870	1830	157	94	115	54	109
30	802	650	8770	2020	---	1830	1470	191	69	109	48	79
31	668	---	18600	4870	---	1770	---	171	---	119	49	---
TOTAL	44559	23749	129918	119550	86310	142250	79360	14963	3934	6498	11916	5130
MEAN	1437	792	4191	3856	3082	4589	2645	483	131	210	384	171
MAX	6500	1680	18600	12800	9360	14100	9690	1210	489	868	4420	388
MIN	178	380	504	1100	1220	1170	1430	122	36	57	48	59
CFSM	1.57	.86	4.58	4.21	3.37	5.01	2.89	.53	.14	.23	.42	.19
IN.	1.81	.96	5.28	4.86	3.51	5.78	3.22	.61	.16	.26	.48	.21

CAL YR 1990 TOTAL 798870 MEAN 2189 MAX 23200 MIN 100 CFSM 2.39 IN. 32.44  
WTR YR 1991 TOTAL 668137 MEAN 1831 MAX 18600 MIN 36 CFSM 2.00 IN. 27.13

e Estimated

## MONONGAHELA RIVER BASIN

03056000 TYGART VALLEY RIVER AT TYGART DAM NEAR GRAFTON, WV

LOCATION.--Lat 39°18'50", long 80°02'00", Taylor County, Hydrologic Unit 05020001, at Tygart Dam, 2.2 mi upstream from Threefork Creek, and 2.4 mi upstream from Grafton.

DRAINAGE AREA.--1,184 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1938 to September 1982, October 1986 to September 1991, (discontinued). Prior to October 1960, published as Tygart River at Tygart Dam near Grafton.

GAGE.--Water-stage recorder. Datum of gage is 960.55 ft above National Geodetic Vertical Datum, adjustment of 1912.

REMARKS.--Estimated daily discharges: Jan. 13 to Feb. 4. Records good except those for period of estimated daily discharges, which is poor. Flow regulated since June 1938 by Tygart Dam. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--49 years (water years 1939-1982, 1987-91), 2,375 ft<sup>3</sup>/s, 27.24 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft<sup>3</sup>/s, Feb. 2, 1939; no flow Aug. 2, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,500 ft<sup>3</sup>/s, Jan. 2, gage height, 17.42 ft; minimum daily, 282 ft<sup>3</sup>/s, June 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	928	1250	1230	10800	e5500	1920	2330	2500	344	317	316	468
2	924	1020	1110	16500	e6100	1780	2150	1720	342	320	315	481
3	918	1010	1140	17700	e5200	1820	2150	1010	350	320	313	477
4	922	1010	1500	14000	e3600	2720	2430	1010	347	322	309	476
5	964	1000	2020	10600	2320	4610	2630	999	342	322	299	475
6	932	1010	2370	8570	2020	4710	2640	871	337	322	299	485
7	916	1010	2320	6930	2690	3910	2630	726	333	322	299	476
8	909	993	1910	6210	4360	7920	2630	773	331	324	311	471
9	903	984	1620	7590	5690	11200	1920	844	328	321	339	467
10	899	1090	1600	8610	5530	10500	1700	942	324	317	357	467
11	1060	1310	1580	5790	4710	8540	2570	981	282	316	343	467
12	1140	2000	1450	4990	3560	6630	2740	968	325	316	340	463
13	1100	2170	1210	e8700	2530	4160	2910	963	332	314	338	461
14	2140	1940	1090	e11000	2450	2300	3430	850	329	315	413	461
15	2900	1780	1480	e10000	3630	3780	3550	617	328	314	477	459
16	2850	1550	1840	e9900	4270	4840	5190	658	328	313	508	498
17	2790	1470	2270	e9500	3580	4890	6250	654	328	312	482	538
18	2800	1470	4480	e8400	2590	5380	4590	604	326	313	478	539
19	2910	1450	4780	e6800	2500	5520	3120	513	326	312	479	542
20	3610	1440	7710	e5400	3720	6870	3090	445	324	312	342	540
21	4110	1290	7810	e4800	6840	7710	2400	410	323	312	359	538
22	3250	1170	3200	e3700	7090	6500	1980	407	324	315	430	534
23	2960	1250	3740	e2900	2730	4510	1770	374	325	320	454	533
24	5110	1300	6490	e2400	5250	3310	2260	344	328	324	474	531
25	7040	1410	11900	e2000	7280	6400	2510	344	326	320	471	525
26	6020	1690	12800	e2000	5520	9040	2020	342	324	318	470	519
27	4530	1820	12200	e2000	3780	8850	1600	342	321	318	471	518
28	3150	1700	10100	e2100	2640	8480	1600	340	320	316	477	515
29	2570	1610	6100	e2100	---	6500	1600	340	320	322	470	514
30	2260	1470	3610	e2200	---	4460	2130	338	319	318	467	510
31	1760	---	5840	e3600	---	3140	---	339	---	319	467	---
TOTAL	75275	41667	128500	217790	117680	172900	80520	22568	9836	9846	12367	14948
MEAN	2428	1389	4145	7025	4203	5577	2684	728	328	318	399	498
MAX	7040	2170	12800	17700	7280	11200	6250	2500	350	324	508	542
MIN	899	984	1090	2000	2020	1780	1600	338	282	312	299	459

CAL YR 1990 TOTAL 988579 MEAN 2708 MAX 14400 MIN 390 CFSM 2.29 IN. 31.06  
WTR YR 1991 TOTAL 903897 MEAN 2476 MAX 17700 MIN 282 CFSM 2.09 IN. 28.40

e Estimated

## MONONGAHELA RIVER BASIN

03056250 THREE FORK CREEK NEAR GRAFTON, WV

LOCATION.--Lat 39°20'13", long 79°59'36", Taylor County, Hydrologic Unit 05020001, on right bank 20 ft downstream from bridge on State Secondary Route 50/9, 1.4 mi east of Grafton, and at mile 1.8.

DRAINAGE AREA.--97.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,000.00 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 21-29 and Feb. 16-18. Records good except those for periods of estimated daily discharges, which are fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--7 years, 174 ft<sup>3</sup>/s, 24.26 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height 20.13 ft, from floodmarks, from rating curve extended above 10,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 0.44 ft<sup>3</sup>/s, Aug. 18, 19, 1988, gage height, 1.16 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 19	0030	*5,450	*13.41	Dec. 31	0230	3,710	11.21

Minimum discharge, 0.87 ft<sup>3</sup>/s, July 21, gage height, 1.31 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	56	59	686	417	99	135	92	17	2.2	3.5	4.7
2	26	49	56	414	299	165	130	81	14	2.2	2.7	13
3	23	45	101	305	222	196	118	71	25	2.5	2.0	5.8
4	26	42	499	221	174	1210	111	64	18	3.8	1.7	4.1
5	76	40	381	171	152	615	126	59	15	7.3	1.8	8.6
6	43	57	254	176	236	569	145	59	10	7.8	1.7	19
7	31	52	191	330	972	997	133	73	8.3	5.3	1.4	9.3
8	27	42	151	318	672	491	123	55	7.3	10	1.3	5.2
9	25	39	123	320	408	335	131	82	6.7	6.6	8.0	3.5
10	23	162	107	473	302	263	321	98	6.0	4.1	29	2.9
11	154	239	94	891	223	202	243	74	5.5	3.9	11	2.4
12	184	158	85	1370	167	167	179	63	5.0	3.8	5.9	2.0
13	173	117	79	691	152	169	414	56	4.8	3.8	3.8	1.7
14	126	91	69	423	590	210	898	51	4.5	3.2	2.9	1.5
15	91	78	462	312	569	184	843	46	4.0	2.6	2.7	1.4
16	69	68	857	494	e200	202	626	38	3.9	2.0	39	1.4
17	54	86	425	633	e175	329	395	33	4.2	1.6	9.7	1.4
18	97	87	2570	448	e190	1030	284	30	4.3	1.4	6.0	1.3
19	265	79	2560	335	604	1050	211	29	3.7	1.3	6.1	1.9
20	150	74	650	272	1090	619	174	35	3.6	1.1	4.2	2.0
21	106	65	401	e215	681	400	145	27	3.1	1.0	3.5	2.1
22	93	62	304	e170	417	509	234	23	2.8	1.1	5.0	1.6
23	485	165	993	e140	299	1280	230	19	3.4	5.1	4.0	1.5
24	488	197	1140	e115	225	617	204	18	11	11	3.1	1.8
25	294	154	566	e100	179	387	182	16	6.0	5.3	2.5	2.1
26	188	120	361	e90	153	289	158	15	4.1	3.5	3.3	2.0
27	134	100	263	e105	128	232	142	14	3.3	2.8	4.0	2.1
28	104	91	387	e135	109	188	126	13	2.9	2.0	3.4	1.8
29	83	79	695	e225	---	150	116	12	2.4	2.3	2.9	1.9
30	70	66	849	374	---	147	113	12	2.3	4.6	2.2	1.7
31	63	---	2190	761	---	128	---	13	---	4.2	1.8	---
TOTAL	3798	2760	17922	11713	10005	13429	7390	1371	212.1	119.4	180.1	111.7
MEAN	123	92.0	578	378	357	433	246	44.2	7.07	3.85	5.81	3.72
MAX	488	239	2570	1370	1090	1280	898	98	25	11	39	19
MIN	23	39	56	90	109	99	111	12	2.3	1.0	1.3	1.3
CFSM	1.26	.94	5.94	3.88	3.67	4.45	2.53	.45	.07	.04	.06	.04
IN.	1.45	1.05	6.84	4.47	3.82	5.13	2.82	.52	.08	.05	.07	.04

CAL YR 1990 TOTAL 76283.3 MEAN 209 MAX 2570 MIN 6.4 CFSM 2.15 IN. 29.13  
WTR YR 1991 TOTAL 69011.3 MEAN 189 MAX 2570 MIN 1.0 CFSM 1.94 IN. 26.36

e Estimated

## MONONGAHELA RIVER BASIN

03057000 TYGART VALLEY RIVER AT COLFAX, WV

LOCATION.--Lat 39°26'15", long 80°07'55", Marion County, Hydrologic Unit 05020001 on right bank at highway bridge at Colfax, 300 ft upstream from Guysses Run, and at mile 6.0. Records include flow of Guysses Run.

DRAINAGE AREA.--1,366 mi<sup>2</sup>, including that of Guysses Run.

PERIOD OF RECORD.--May 1939 to current year. Prior to October 1960, published as Tygart River at Colfax.

REVISED RECORDS.--WSP 1083: 1942(M), WSP 1335: 1941.

GAGE.--Water-stage recorder. Datum of gage is 856.27 ft above National Geodetic Vertical Datum of 1929, supplementary adjustment of 1944. Formerly published as 855.49 ft Baltimore & Ohio RR datum. Since Jan. 19, 1945, auxiliary water-stage recorder at Fairmont waterworks, 5.7 mi downstream from base gage, at datum 856.99 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since June 1938, by Tygart Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--52 years, 2,671 ft<sup>3</sup>/s, 26.55 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,700 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 18.89 ft; maximum gage height, 19.77 ft, Mar 5, 1963, backwater from West Fork River; minimum discharge, 94 ft<sup>3</sup>/s, July 3, 1946; minimum daily, 129 ft<sup>3</sup>/s, May 5-7, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1888 reached a stage of 39.6 ft at site 1,100 ft downstream, present datum, from information by local resident. The stage on that day was probably affected by backwater from West Fork River.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,800 ft<sup>3</sup>/s, Jan. 2, gage height, 14.58 ft; minimum daily, 315 ft<sup>3</sup>/s, June 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	983	1490	1400	10500	5690	2220	2670	2680	359	336	324	457
2	972	1100	1200	16100	6580	2040	2380	2170	360	342	322	464
3	965	1090	1280	18100	5830	2110	2370	988	371	333	321	468
4	1010	1080	1890	14600	4280	3640	2540	971	365	353	344	473
5	1050	1080	2230	10500	2770	4600	2860	963	357	344	330	469
6	1010	1090	2700	8720	2380	5940	2870	926	352	338	328	471
7	976	1080	2580	7480	3910	5040	2850	665	349	338	329	467
8	963	1060	2270	6600	4780	7250	2840	671	349	343	331	462
9	954	1040	1820	7500	6170	11000	2510	800	346	336	376	457
10	942	1290	1780	8970	5890	10300	1740	878	342	336	405	457
11	1280	1510	1740	7550	5190	8870	2810	943	327	331	371	456
12	1460	1950	1640	5970	4010	6850	3020	918	315	331	366	452
13	1350	2470	1390	8450	2990	5150	3400	905	347	333	363	451
14	1890	2130	1190	11200	3110	2940	4530	865	346	327	376	451
15	3070	2010	1770	10600	4050	3910	4600	588	344	325	469	451
16	2990	1750	2860	10300	4750	5310	5440	586	346	324	489	460
17	2920	1610	2520	10100	4140	5350	6620	586	348	323	481	504
18	2980	1590	7270	8930	3150	6120	5370	572	345	322	473	504
19	3210	1560	9940	7360	3020	6400	3410	512	341	323	476	511
20	3540	1550	6940	6000	4400	6970	3340	461	341	323	463	502
21	4260	1450	9330	5230	6660	7900	2870	418	340	322	322	499
22	3660	1250	3570	4360	8220	7250	2280	412	345	330	428	497
23	3290	1400	4810	3100	3160	6490	2050	402	345	337	438	500
24	4840	1490	6850	2790	4650	4080	2410	364	342	343	466	496
25	7200	1510	11700	2160	7390	5720	2750	363	343	333	463	500
26	6380	1790	12800	2100	6080	8950	2420	362	340	327	461	491
27	4910	2010	12000	2110	4190	8750	1760	362	336	326	460	490
28	3540	1910	10600	2310	3060	8390	1740	361	335	324	475	489
29	2720	1770	7600	2440	---	7000	1740	357	335	340	459	489
30	2500	1650	4530	2510	---	4940	2110	357	333	335	456	490
31	2010	---	8640	4010	---	3620	---	357	---	328	464	---
TOTAL	79825	45760	148840	228650	130500	185100	90300	22763	10344	10306	12629	14328
MEAN	2575	1525	4801	7376	4661	5971	3010	734	345	332	407	478
MAX	7200	2470	12800	18100	8220	11000	6620	2680	371	353	489	511
MIN	942	1040	1190	2100	2380	2040	1740	357	315	322	321	451

CAL YR 1990 TOTAL 1097421 MEAN 3007 MAX 15400 MIN 426 CFSM 2.20 IN 29.89  
WTR YR 1991 TOTAL 979345 MEAN 2683 MAX 18100 MIN 315 CFSM 1.96 IN 26.67



## MONONGAHELA RIVER BASIN

03057300 WEST FORK RIVER AT WALKERSVILLE, WV

LOCATION.--Lat 38°52'07" (corrected), long 80°27'29", Lewis County, Hydrologic Unit 05020002, on left bank at downstream side of highway bridge on Secondary Route 44, in Walkersville, 100 ft downstream from Right Fork, and at mile 95.3.

DRAINAGE AREA.--28.9 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,070.64 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 6-10, 13-17, May 15 to July 13, Aug. 1-4, 8, 10-16, 26-31, Sept. 1-4, 6-10, 17-19, 22-30. Records poor due to considerable backwater from beaver dams. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--7 years, 51.0 ft<sup>3</sup>/s, 23.96 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,390 ft<sup>3</sup>/s, Nov. 4, 1985, gage height, 17.87 ft; minimum, no flow several days in September and October 1985, August 1987, and July and August, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 770 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 19	0045	1,310	12.25	Dec. 30	2330	*1,640	*13.34
Dec. 23	1630	836	10.43	Mar. 14	1000	790	10.20
Dec. 24	0545	818	10.34	Mar. 23	0530	912	10.75

Minimum daily discharge (estimated), 0.07 ft<sup>3</sup>/s, June 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	6.8	7.6	196	77	29	79	11	e1.8	e.23	e.65	e.50
2	2.2	5.9	7.3	123	52	58	61	10	e1.5	e.80	e.55	e.45
3	2.7	5.3	31	78	39	59	46	8.6	e3.0	e2.2	e.40	e.41
4	3.7	4.8	168	48	31	427	38	8.0	e2.5	e1.8	e.45	e.38
5	7.2	4.7	74	30	28	134	42	7.5	e1.9	e1.3	.50	3.7
6	e5.6	7.3	44	27	45	166	51	7.8	e1.4	e.90	.33	e3.1
7	e4.5	6.9	31	215	284	358	42	8.0	e.95	e.70	.27	e2.2
8	e3.7	5.6	23	155	164	96	36	6.5	e.70	e.55	e.25	e1.8
9	e3.2	5.0	18	168	81	56	37	6.9	e.45	e.40	2.0	e1.4
10	e2.8	141	15	188	54	44	126	6.2	e.36	e.30	e6.0	e1.2
11	32	86	12	229	39	37	65	5.1	e.25	e.40	e17	3.1
12	35	39	11	285	30	37	44	4.4	e.16	e.55	e6.0	1.7
13	e25	23	9.8	173	28	170	304	3.9	e.11	e.85	e3.2	1.6
14	e20	16	8.6	84	131	585	246	3.2	e.09	1.3	e3.5	4.3
15	e15	12	200	56	127	192	236	e2.7	e.07	1.7	e2.9	3.6
16	e12	11	165	148	66	78	182	e2.4	e.13	1.6	e2.2	2.7
17	e9.5	14	60	216	51	51	123	e2.3	e.30	1.3	1.9	e2.2
18	102	13	439	103	91	88	93	e2.2	e1.0	.89	1.7	e2.0
19	70	11	603	64	192	172	73	e2.0	e2.2	8.0	1.5	e3.5
20	27	10	109	49	319	108	57	e1.8	e1.2	3.7	6.0	5.5
21	16	9.1	61	46	155	68	43	e1.6	e.90	1.5	3.2	4.1
22	24	8.4	44	39	74	175	51	e1.4	e.75	1.1	2.1	e3.4
23	122	68	424	36	49	558	50	e1.2	e.60	2.3	1.5	e2.7
24	96	52	568	33	38	152	36	e1.0	e.50	3.5	1.2	e2.2
25	45	33	156	24	31	75	25	e.85	e.85	2.3	.98	e2.5
26	27	22	79	23	29	56	20	e.75	e.70	1.8	e.80	e4.0
27	18	17	48	24	26	54	18	e.65	e.55	1.4	e.70	e3.2
28	14	14	283	62	24	49	16	e.60	e.40	.78	e.55	e2.6
29	11	11	262	73	---	40	14	e.65	e.35	.74	e.45	e2.2
30	8.4	8.9	364	82	---	49	13	e.85	e.30	.96	e.40	e1.7
31	7.3	---	729	201	---	59	---	e1.2	---	1.1	e.38	---
TOTAL	773.1	671.7	5054.3	3278	2355	4280	2267	121.25	25.97	46.95	69.56	73.94
MEAN	24.9	22.4	163	106	84.1	138	75.6	3.91	.87	1.51	2.24	2.46
MAX	122	141	729	285	319	585	304	11	3.0	8.0	17	5.5
MIN	1.3	4.7	7.3	23	24	29	13	.60	.07	.23	.25	.38
CFSM	.86	.77	5.64	3.66	2.91	4.78	2.61	.14	.03	.05	.08	.09
IN.	1.00	.86	6.51	4.22	3.03	5.51	2.92	.16	.03	.06	.09	.10

CAL YR 1990 TOTAL 22467.10 MEAN 61.6 MAX 750 MIN .87 CFSM 2.13 IN. 28.92  
WTR YR 1991 TOTAL 19016.77 MEAN 52.1 MAX 729 MIN .07 CFSM 1.80 IN. 24.48

e Estimated

## MONONGAHELA RIVER BASIN

03058000 WEST FORK RIVER BELOW STONEWALL JACKSON DAM NEAR WESTON, WV

(Formerly published as 03058006 West Fork River at Ben Dale)  
(Formerly published as 03058000 West Fork River at Brownsville)

LOCATION.--Lat 39°00'13", long 80°28'27", Lewis County, Hydrologic Unit 05020002, on left bank, 500 ft downstream from Stonewall Jackson Dam, 3.0 mi south of Weston, and at mile 71.0. After Oct. 1, 1990, near old gaging site (West Fork River at Brownsville), which is now inundated by Stonewall Jackson Lake.

DRAINAGE AREA.--102 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1946 to September 1984, published as (West Fork River at Brownsville), October 1984 to September 1990, published as (West Fork River at Ben Dale), October 1990 to September 1991, (discontinued).

REVISED RECORDS.--WRD WV-81-1: 1981 (P). WRD WV-83-1: Datum.

GAGE.--Water-stage recorder. Datum of gage is 1,009.97 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 8, 1982, at datum 0.88 ft higher. Prior to Aug. 15, 1949, nonrecording gage at same site and datum. October 1984 to September 1990 at elevation of 1,008.6 ft from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since January 1990 by Stonewall Jackson Lake.

AVERAGE DISCHARGE.--45 years, 168 ft<sup>3</sup>/s, 22.37 in/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft<sup>3</sup>/s, Nov. 5, 1985, from rating curve extended above 3,400 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 17.20 ft; maximum gage height, 17.20 ft, June 25, 1950; no flow for several days during 1952-54, Sept. 16, 1965, and for several days during 1987.EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,460 ft<sup>3</sup>/s, Dec. 28, gage height, 11.37 ft; minimum daily, 27 ft<sup>3</sup>/s, May 4, 5.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	65	136	640	490	64	176	56	61	113	107	87
2	66	65	136	1220	676	72	174	55	63	113	117	87
3	67	65	86	1430	451	69	173	39	61	114	114	86
4	69	66	108	1410	214	87	172	27	61	118	111	92
5	55	68	185	1400	116	168	175	27	66	89	89	77
6	46	83	212	1100	91	198	175	28	71	69	88	68
7	47	94	211	936	126	119	173	40	77	69	88	68
8	49	94	210	918	326	347	173	48	81	82	100	81
9	50	95	208	1210	526	547	178	49	81	106	111	89
10	54	98	208	1110	521	544	186	48	80	116	110	90
11	60	152	208	550	518	542	230	48	81	116	97	90
12	60	211	206	279	395	296	258	48	81	123	89	90
13	57	211	205	772	270	86	308	48	81	87	101	89
14	58	178	162	1140	263	108	289	48	86	68	112	88
15	61	156	129	1130	420	332	187	48	90	91	114	85
16	62	156	98	1130	528	555	320	54	92	111	113	85
17	60	158	94	1130	526	551	585	58	88	111	112	85
18	65	157	172	1110	366	562	582	58	88	109	113	85
19	65	157	128	848	171	561	577	58	88	109	113	86
20	63	156	297	673	207	554	574	58	93	111	113	73
21	63	142	272	577	512	551	572	58	97	111	91	67
22	67	133	66	301	719	389	571	58	98	113	84	67
23	72	141	206	160	715	193	569	64	98	116	74	67
24	68	135	609	139	472	102	338	72	97	99	74	67
25	67	135	905	106	222	191	112	72	101	89	74	68
26	67	136	1150	92	122	252	65	72	108	106	74	67
27	66	135	1430	92	96	251	52	72	113	116	62	68
28	65	135	1450	98	77	251	53	72	113	116	70	68
29	65	136	713	97	---	204	56	66	113	117	74	68
30	65	136	114	102	---	173	56	61	113	102	61	67
31	65	---	208	231	---	175	---	61	---	93	67	---
TOTAL	1910	3849	10522	22131	10136	9094	8109	1671	2621	3203	2917	2355
MEAN	61.6	128	339	714	362	293	270	53.9	87.4	103	94.1	78.5
MAX	72	211	1450	1430	719	562	585	72	113	123	117	92
MIN	46	65	66	92	77	64	52	27	61	68	61	67

CAL YR 1990	TOTAL 52542	MEAN 144	MAX 1450	MIN 18	CFSM 1.41	IN 19.16
WTR YR 1991	TOTAL 78518	MEAN 215	MAX 1450	MIN 27	CFSM 2.11	IN 27.82

## MONONGAHELA RIVER BASIN

03058500 WEST FORK RIVER AT BUTCHERVILLE, WV

LOCATION.--Lat 39°05'25", long 80°28'05", Lewis County, Hydrologic Unit 05020002, on right bank at Butcherville, 0.5 mi upstream from Freemans Creek, 3,500 ft downstream from abandoned bridge on Weston-Clarksburg interurban electric railway, 3.0 mi north of Weston, and at mile 62.0.

DRAINAGE AREA.--181 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1915 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1053: 1935. WSP 1335: 1918, 1923.

GAGE.--Water-stage recorder. Datum of gage is 993.0 ft Department of Highways datum. Prior to Feb. 17, 1937, nonrecording gage at interurban bridge 3,500 ft upstream. Feb. 17, 1937, to Apr. 7, 1939, nonrecording gage at site 2,500 ft upstream. Prior to Oct. 1, 1942, at datum 10.0 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow partially regulated since 1973 by Stonecoal Reservoir. Flow regulated since January 1990 by Stonewall Jackson Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--76 years, 302 ft<sup>3</sup>/s, 22.66 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft<sup>3</sup>/s, June 25, 1950, gage height, 16.81 ft, from rating curve extended above 7,500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times during October 1919, September, October, and December 1922, caused by either diversion or pondage at small dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1888 reached a stage of 17 ft at site 3,500 ft upstream, present datum, from information by local residents. The stage on that day may have been affected by backwater from a dam which has since been washed out.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,510 ft<sup>3</sup>/s, Dec. 18, gage height, 7.01 ft; minimum daily, 50 ft<sup>3</sup>/s, Nov. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	51	193	991	730	176	422	104	86	119	102	106
2	101	50	192	1280	893	216	361	98	113	120	115	106
3	100	51	215	1420	666	190	326	85	115	118	116	104
4	150	52	383	1380	300	526	306	56	60	145	149	137
5	123	56	350	1350	183	383	330	53	60	121	105	142
6	80	82	334	1230	165	648	317	55	65	75	91	84
7	76	111	309	1360	995	1020	291	65	73	72	90	68
8	78	113	295	1220	648	556	277	75	102	79	100	74
9	76	113	284	1480	695	790	290	92	103	106	177	109
10	74	350	280	1610	622	759	485	81	102	129	170	124
11	188	272	277	1340	581	733	370	72	94	127	115	122
12	195	309	274	959	485	580	374	69	90	238	94	110
13	148	285	272	1010	364	432	1070	68	87	190	102	109
14	83	251	237	1280	730	1270	1010	67	91	83	119	109
15	65	214	504	1220	712	760	866	66	99	90	120	109
16	57	186	429	1390	681	849	680	70	133	119	118	107
17	54	231	253	1450	630	780	824	77	142	118	117	107
18	106	217	1370	1290	632	863	749	78	93	119	117	109
19	112	214	1420	1080	732	866	728	76	88	119	117	120
20	73	213	548	885	764	759	711	74	91	121	119	100
21	61	207	523	849	840	693	698	73	97	119	98	82
22	74	194	204	592	952	793	719	71	105	136	105	82
23	201	417	824	390	889	1140	706	75	114	150	114	84
24	179	281	1280	359	715	503	568	92	99	146	124	84
25	104	232	1200	301	438	420	295	93	102	96	131	92
26	78	215	1190	269	311	479	225	91	108	102	131	86
27	66	208	1340	267	252	438	199	109	115	116	121	83
28	60	203	1790	353	232	424	196	116	116	116	138	84
29	56	198	1310	239	---	336	177	106	116	137	134	84
30	53	194	862	259	---	312	130	87	116	123	123	75
31	52	---	1880	592	---	370	---	86	---	96	104	---
TOTAL	3025	5770	20822	29695	16837	19064	14700	2480	2975	3745	3676	2992
MEAN	97.6	192	672	958	601	615	490	80.0	99.2	121	119	99.7
MAX	201	417	1880	1610	995	1270	1070	116	142	238	177	142
MIN	52	50	192	239	165	176	130	53	60	72	90	68

CAL YR 1990 TOTAL 101528 MEAN 278 MAX 2240 MIN 46 CFSM 1.54 IN. 20.87  
WTR YR 1991 TOTAL 125781 MEAN 345 MAX 1880 MIN 50 CFSM 1.90 IN. 25.85

## MONONGAHELA RIVER BASIN

03058975 WEST FORK RIVER NEAR MOUNT CLARE, WV

LOCATION.--Lat 39°14'19", long 80°21'34", Harrison County, Hydrologic Unit 05020002, on right bank 4 miles south of Clarksburg and 2 mi north of Mount Clare, 0.3 mi off County Route 25 on County Route 34, and at mile 37.5.

DRAINAGE AREA.--367 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 931.04 ft above National Geodetic Vertical Datum of 1929. U.S. Army Corps of Engineers satellite telemeter at the station.

REMARKS.--No estimated daily discharges. Records good. Flow partially regulated since 1973 by Stonecoal Reservoir. Flow regulated since January 1990 by Stonewall Jackson Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft<sup>3</sup>/s, Mar. 7, 1989, gage height, 18.22 ft; minimum daily, 7.4 ft<sup>3</sup>/s, Oct. 2, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,820 ft<sup>3</sup>/s, Dec. 19, gage height, 13.90 ft; minimum daily, 87 ft<sup>3</sup>/s, Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	120	265	2590	1050	405	824	294	107	129	133	125
2	132	112	261	1540	1090	524	730	236	166	223	131	119
3	128	107	372	1590	1010	596	629	204	653	160	136	120
4	205	105	997	1500	650	1190	567	170	197	175	169	119
5	433	107	876	1410	469	1130	609	147	117	347	210	244
6	230	150	646	1410	514	1090	746	152	105	238	134	181
7	153	180	547	1830	2880	3770	617	180	102	141	116	112
8	135	192	482	1940	2270	1230	556	160	113	111	110	87
9	135	188	441	1770	1270	1110	548	192	136	107	129	88
10	127	731	414	2810	997	1030	915	241	133	133	297	128
11	367	881	397	2670	878	977	743	177	131	163	201	145
12	656	580	381	2970	788	922	650	153	127	171	138	140
13	695	481	373	1710	632	797	1710	140	121	696	116	127
14	391	422	359	1660	1480	3460	3550	134	115	249	127	123
15	242	347	716	1490	1810	2140	2750	128	118	136	138	119
16	174	304	1810	1620	1170	1370	1720	121	129	132	137	118
17	143	313	804	2310	980	1100	1260	117	200	143	135	118
18	168	331	2660	1850	966	1340	1030	122	183	138	134	121
19	461	303	6460	1530	1840	1630	943	126	128	135	141	142
20	291	292	1670	1140	1900	1380	907	127	116	136	141	159
21	196	284	1060	1150	1700	1090	860	120	118	136	142	126
22	170	266	657	1030	1390	1390	879	110	125	216	120	103
23	463	795	1520	728	1150	4220	880	98	178	402	123	101
24	753	778	3380	676	1020	1600	829	105	151	277	128	101
25	464	508	2040	574	753	907	554	120	124	172	139	106
26	299	405	1480	482	607	830	428	116	122	128	141	118
27	213	356	1430	470	497	834	365	114	126	131	140	108
28	171	326	2060	755	460	835	344	136	132	137	130	102
29	150	300	3070	855	---	733	343	141	131	168	146	101
30	135	279	1520	692	---	655	430	126	130	296	141	98
31	125	---	5540	1180	---	709	---	110	---	176	128	---
TOTAL	8540	10543	44688	45932	32221	40994	27916	4617	4534	6102	4451	3699
MEAN	275	351	1442	1482	1151	1322	931	149	151	197	144	123
MAX	753	881	6460	2970	2880	4220	3550	294	653	696	297	244
MIN	125	105	261	470	460	405	343	98	102	107	110	87

CAL YR 1990 TOTAL 221497 MEAN 607 MAX 8850 MIN 95 CFSM 1.65 IN. 22.44  
WTR YR 1991 TOTAL 234237 MEAN 642 MAX 6460 MIN 87 CFSM 1.75 IN. 23.73



## MONONGAHELA RIVER BASIN

03061000 WEST FORK RIVER AT ENTERPRISE, WV

LOCATION.--Lat 39°25'20", long 80°16'40", Harrison County, Hydrologic Unit 05020002, on left bank 150 ft downstream from old highway bridge and 0.3 mi above new highway bridge at Enterprise, 0.8 mi upstream from Binghamon Creek, and at mile 12.1.

DRAINAGE AREA.--759 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1907 to September 1916, October 1916 to September 1918 (gage heights only), October 1932 to September 1983, October 1983 to September 1984 (gage heights, discharge measurements, and annual maximum discharge only) October 1984 to current year.

REVISED RECORDS.--WSP 803: 1936. WSP 823: Drainage area. WSP 1113: 1936-38(M), 1939, WSP 1335: 1911-15, 1937. WSP 1625: 1915(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 869.45 ft above National Geodetic Vertical Datum, adjustment of 1912. June 1907 to Sept. 30, 1918, nonrecording gage at site 150 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good above 60 cfs and fair below. Flow partially regulated since 1973 by Stonecoal Reservoir. Flow regulated since January 1990 by Stonewall Jackson Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--66 years (water years 1908-1916, 1934-83, 1985-91), 1,153 ft<sup>3</sup>/s, 20.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,100 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 30.37 ft, from rating curve extended above 36,400 ft<sup>3</sup>/s; minimum, 3.4 ft<sup>3</sup>/s, July 27, 1934; minimum gage height, 0.6 ft, Sept. 10, 14, 25, 1908.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1888 reached a stage of about 33 ft, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,900 ft<sup>3</sup>/s, Dec. 19, gage height, 18.84 ft; minimum daily, 121 ft<sup>3</sup>/s, Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	254	292	442	5940	2650	862	1590	692	196	173	195	147
2	230	265	424	3230	2220	1070	1520	549	193	235	169	150
3	214	242	724	2890	2030	1410	1260	488	841	321	171	141
4	378	230	2830	2590	1510	2770	1090	445	483	237	189	145
5	1020	228	2570	2340	1090	3520	1090	399	257	383	233	181
6	601	309	1510	2450	1640	2890	1620	451	200	374	218	276
7	378	333	1120	3810	6960	8560	1290	583	186	248	164	173
8	306	308	885	3930	6510	3840	1100	460	180	183	149	138
9	283	293	755	3530	3220	2460	1040	497	191	158	173	121
10	261	1880	683	5370	2360	2220	1960	606	196	160	261	143
11	804	2880	634	5970	1920	2010	1760	495	197	187	312	259
12	2110	1380	589	7270	1600	1830	1310	414	197	203	196	184
13	2180	954	564	4390	1370	1730	3270	362	192	617	161	168
14	1150	757	538	3300	3520	6060	7590	340	181	529	151	152
15	704	628	1520	2870	4830	6060	6130	334	173	234	160	145
16	504	538	5320	3290	2850	3190	4530	299	176	175	163	141
17	406	531	2450	4940	2220	2490	2820	265	197	174	161	138
18	607	547	10200	3990	2090	2990	2240	257	314	173	155	133
19	1380	498	16600	3110	3730	4160	1870	255	221	168	155	170
20	869	471	5090	2490	5150	3520	1710	255	184	166	182	188
21	572	447	2580	2420	4460	2640	1540	245	172	165	175	170
22	484	434	1880	2280	3040	3030	1560	229	172	165	168	146
23	1150	1120	4440	1710	2450	8910	1590	217	212	380	145	135
24	2000	2090	7720	1490	2090	5060	1440	211	240	357	149	134
25	1290	1130	4680	1230	1670	2590	1180	219	198	275	152	137
26	805	798	3010	998	1350	2010	855	219	179	190	157	143
27	587	645	2520	951	1110	1930	736	215	174	166	154	141
28	472	564	3580	2010	954	1810	676	216	174	169	153	132
29	406	522	5990	2570	---	1710	665	230	176	182	170	128
30	355	477	4820	2110	---	1480	901	224	175	315	159	130
31	317	---	14500	3300	---	1530	---	208	---	284	154	---
TOTAL	23077	21791	111168	98769	76594	96342	57933	10879	6827	7746	5454	4689
MEAN	744	726	3586	3186	2735	3108	1931	351	228	250	176	156
MAX	2180	2880	16600	7270	6960	8910	7590	692	841	617	312	276
MIN	214	228	424	951	954	862	665	208	172	158	145	121

CAL YR 1990 TOTAL 518581 MEAN 1421 MAX 16600 MIN 184 CFSM 1.87 IN. 25.42  
WTR YR 1991 TOTAL 521269 MEAN 1428 MAX 16600 MIN 121 CFSM 1.88 IN. 25.55

## MONONGAHELA RIVER BASIN

03061500 BUFFALO CREEK AT BARRACKVILLE, WV

LOCATION.--Lat 39°30'15", long 80°10'20", Marion County, Hydrologic Unit 05020003, near center of span on downstream side of highway bridge at Barrackville, 1,700 ft upstream from Finchs Run, and at mile 4.0.

DRAINAGE AREA.--115 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1907 to December 1908, May 1915 to June 1924, August 1932 to current year.

REVISED RECORDS.--WSP 783: 1917(M). WSP 1335: 1916(M), 1918-20(M), 1921, 1922(M), 1924(M), 1933(M), 1940.

GAGE.--Water-stage recorder. Datum of gage is 882.42 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1940, nonrecording gage at same site. Prior to June 4, 1943, at datum 1.98 ft higher. Datums published in error, Oct. 1985 to Sept. 1990

REMARKS.--Estimated daily discharges: Jan. 21-27 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are poor. Flow from 5.20 mi<sup>2</sup> is partially controlled, but not diverted, by three floodwater-detention reservoirs. Some additional regulation at low flow from mine pumpage above station.

AVERAGE DISCHARGE.--68 years (water years 1908, 1916-23, 1933-91), 168 ft<sup>3</sup>/s, 19.84 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 9,490 ft<sup>3</sup>/s, Jan. 22, 1917, gage height, 16.2 ft, present datum; no flow during greater part of period September to November 1908.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1912 reached a stage of about 18 ft, present site and datum, discharge, 11,600 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 18	1700	*5,690	*12.36	Dec. 31	0400	5,250	11.87

Minimum discharge, 1.6 ft<sup>3</sup>/s, Aug. 29, 30, gage height, 1.60 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	67	65	687	580	94	124	69	17	3.6	6.5	3.5
2	54	61	62	417	473	123	117	64	17	4.0	5.3	2.5
3	49	60	221	295	201	131	99	58	15	4.1	5.1	2.3
4	115	59	752	220	161	338	91	54	14	9.2	7.8	5.6
5	278	58	422	169	138	362	91	51	13	37	8.1	16
6	125	82	251	196	160	727	91	73	12	18	5.3	7.2
7	83	74	187	457	1040	1550	77	99	11	9.5	4.7	4.8
8	66	66	141	390	670	521	73	72	11	6.1	2.8	5.2
9	59	61	119	384	380	321	78	79	11	5.0	4.9	5.1
10	55	872	105	622	265	237	168	78	9.7	4.6	5.1	5.1
11	146	621	93	988	200	183	144	65	9.8	4.4	4.5	5.3
12	551	295	82	1170	152	145	122	57	12	4.1	3.1	6.2
13	624	193	74	587	140	144	799	51	12	5.0	2.6	6.4
14	297	138	68	370	1010	295	1300	46	11	9.3	2.2	6.7
15	186	114	362	265	813	365	1010	53	10	5.2	2.1	6.2
16	125	98	893	430	590	285	797	39	8.4	3.7	2.1	4.5
17	97	95	392	567	e260	229	411	32	9.4	2.9	1.9	3.4
18	187	80	3580	413	e215	396	266	29	8.1	2.8	2.0	2.7
19	327	70	2580	304	512	688	201	39	6.7	2.7	2.1	3.8
20	194	65	678	246	921	529	164	38	5.3	3.6	3.3	12
21	140	60	544	e200	619	348	132	28	5.1	2.9	5.3	7.0
22	127	57	455	e160	375	360	135	22	4.8	3.9	4.2	5.0
23	283	233	1770	e135	254	1270	124	21	31	7.5	2.9	4.7
24	367	274	1440	e120	197	602	114	19	23	4.9	2.6	4.4
25	264	183	632	e100	163	354	103	16	11	3.3	2.5	4.3
26	190	133	378	e90	136	257	91	15	7.0	2.6	2.3	4.6
27	141	114	300	e140	121	216	82	13	5.3	2.5	2.0	4.3
28	118	100	277	419	107	186	75	13	4.7	3.5	1.9	3.7
29	97	88	524	586	---	150	77	12	4.0	2.9	1.7	3.4
30	85	71	1240	500	---	142	85	16	3.6	2.9	1.7	3.1
31	76	---	2880	815	---	130	---	21	---	5.2	2.2	---
TOTAL	5563	4542	21567	12442	10853	11678	7241	1342	322.9	186.9	110.8	159.0
MEAN	179	151	696	401	388	377	241	43.3	10.8	6.03	3.57	5.30
MAX	624	872	3580	1170	1040	1550	1300	99	31	37	8.1	16
MIN	49	57	62	90	107	94	73	12	3.6	2.5	1.7	2.3
CFSM	1.56	1.32	6.05	3.49	3.37	3.28	2.10	.38	.09	.05	.03	.05
IN.	1.80	1.47	6.98	4.02	3.51	3.78	2.34	.43	.10	.06	.04	.05

CAL YR 1990 TOTAL 90779.7 MEAN 249 MAX 3580 MIN 7.3 CFSM 2.16 IN. 29.37  
WTR YR 1991 TOTAL 76007.6 MEAN 208 MAX 3580 MIN 1.7 CFSM 1.81 IN. 24.59

e Estimated

## MONONGAHELA RIVER BASIN

03062400 COBUN CREEK AT MORGANTOWN, WV

LOCATION.--Lat 39°36'30", long 79°57'20", Monongalia County, Hydrologic Unit 05020003, on left bank at Morgantown, 30 ft upstream from concrete box culvert on Greenbag Road, and at mile 1.4.

DRAINAGE AREA.--10.9 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1965 to current year.

GAGE.--Water-stage recorder and concrete and metal control. Elevation of gage is 890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 23-26 and July 10-11. Records good except those for periods of estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--26 years, 16.8 ft<sup>3</sup>/s, 20.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft<sup>3</sup>/s, Aug. 18, 1980, gage height, 19.94 ft, from floodmarks, from rating curve extended above 800 ft<sup>3</sup>/s on basis of culvert rating computation and flow-over-road measurement of peak flow; no flow for many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 18	2130	*648	*7.55	Dec. 30	2330	356	5.46

No flow many days during summer period.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	7.1	6.9	61	44	12	14	9.4	1.7	.00	.00	.00
2	3.0	6.3	6.4	40	33	21	14	8.2	.79	.00	.00	.00
3	2.4	5.6	14	29	25	24	12	7.2	.89	.00	.00	.00
4	11	5.0	35	22	21	107	11	6.4	.89	.11	.00	.08
5	9.9	5.6	28	18	18	67	11	6.0	.74	.23	.00	.04
6	5.9	7.5	22	27	19	73	11	9.9	.47	.12	.00	.00
7	4.1	5.5	18	40	79	95	10	9.0	.34	.24	.00	.00
8	3.6	4.6	15	34	61	57	9.6	6.5	.29	.09	.00	.00
9	3.5	4.4	13	38	44	41	10	12	.25	e.03	.00	.00
10	3.2	32	12	44	34	31	19	10	.21	e.02	.00	.00
11	45	26	11	58	26	24	16	8.7	.16	.00	.00	.20
12	35	19	10	83	20	20	14	7.6	.11	.00	.00	.00
13	26	15	9.5	54	18	18	38	6.3	.08	.06	.00	.00
14	19	12	8.3	37	57	20	85	5.8	.04	.00	.00	.00
15	14	11	33	29	52	21	71	4.8	.03	.00	.00	.00
16	11	9.8	66	50	36	23	56	3.7	.02	.00	.00	.00
17	8.4	11	38	59	30	27	39	3.3	.02	.00	.00	.00
18	16	9.4	341	43	26	99	28	3.2	.00	.00	.00	.00
19	20	8.4	187	33	37	102	22	2.8	.00	.00	.00	.33
20	15	7.8	61	27	78	64	19	2.6	.00	.00	.00	.00
21	12	7.1	51	25	66	45	17	2.3	.00	.00	.00	.00
22	13	7.0	38	21	44	53	27	1.9	.47	.00	.00	.00
23	64	20	115	e17	31	108	22	1.6	.17	.01	.00	.07
24	56	19	119	e14	25	63	20	1.4	e.01	.00	.00	.01
25	34	16	56	e12	21	44	18	1.3	.00	.00	.00	.03
26	23	13	36	e11	18	33	15	1.1	.00	.00	.00	.01
27	17	11	26	13	16	27	14	.87	.00	.00	.00	.00
28	13	9.9	43	26	14	22	12	.92	.00	.00	.00	.00
29	11	8.7	54	26	---	19	15	1.1	.00	.00	.00	.00
30	9.2	7.5	114	42	---	17	11	1.1	.00	.00	.00	.00
31	8.1	---	165	79	---	15	---	2.1	---	.00	.00	---
TOTAL	519.6	332.2	1752.1	1112	993	1392	680.6	149.09	7.68	0.91	0.00	0.77
MEAN	16.8	11.1	56.5	35.9	35.5	44.9	22.7	4.81	.26	.029	.000	.026
MAX	64	32	341	83	79	108	85	12	1.7	.24	.00	.33
MIN	2.4	4.4	6.4	11	14	12	9.6	.87	.00	.00	.00	.00
CFSM	1.54	1.02	5.19	3.29	3.25	4.12	2.08	.44	.02	.00	.00	.00
IN.	1.77	1.13	5.98	3.80	3.39	4.75	2.32	.51	.03	.00	.00	.00

CAL YR 1990 TOTAL 7304.83 MEAN 20.0 MAX 341 MIN .27 CFSM 1.84 IN. 24.93  
WTR YR 1991 TOTAL 6939.95 MEAN 19.0 MAX 341 MIN .00 CFSM 1.74 IN. 23.68

e Estimated

## MONONGAHELA RIVER BASIN

03065000 DRY FORK AT HENDRICKS, WV

LOCATION.--Lat 39°04'20", long 79°37'20", Tucker County, Hydrologic Unit 05020004, on right bank at Hendricks, 0.4 mi upstream from confluence with Blackwater River.

DRAINAGE AREA.--345 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1940 to current year. Published as Dry Fork River, 1949-52.

GAGE.--Water-stage recorder. Datum of gage is 1,698.76 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Dec. 21, 1941, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 21-28 and Feb. 16-18. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--51 years, 770 ft<sup>3</sup>/s, 30.31 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 20.74 ft, from floodmarks, from rating curve extended above 47,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 5.5 ft<sup>3</sup>/s, Sept. 10, 11, 1965, gage height, 0.99 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0300	10,700	7.93	Mar. 23	1400	*11,000	*8.05

Minimum discharge, 28 ft<sup>3</sup>/s, July 1, 2, gage height, 1.97 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	318	192	2990	1270	446	683	425	107	28	112	109
2	151	284	177	1660	956	770	678	387	153	60	80	89
3	125	260	189	1130	745	912	596	340	108	132	63	64
4	123	239	378	839	618	3750	539	312	88	91	57	60
5	177	225	406	637	552	2540	598	282	77	122	64	226
6	141	285	303	558	1190	1590	846	299	64	149	64	376
7	118	307	332	899	2100	2670	741	456	55	107	52	246
8	101	249	306	909	1830	1650	658	358	50	69	42	146
9	95	222	288	806	1270	1160	584	379	46	51	1120	104
10	90	398	279	1040	966	926	698	500	42	42	1960	88
11	1080	512	266	1280	762	738	546	421	39	44	705	114
12	1160	437	250	3440	573	526	480	383	37	50	387	109
13	897	397	244	3190	519	544	1190	343	35	216	258	83
14	761	360	245	1760	717	522	3860	330	35	228	194	69
15	537	326	806	1210	787	468	2620	330	35	183	205	60
16	449	300	2260	1780	e500	401	1870	281	32	120	214	54
17	373	322	1350	3040	e450	477	1230	238	32	81	145	49
18	415	352	1460	1890	e510	2220	930	216	42	62	110	42
19	973	312	2800	1250	1120	3390	732	214	60	99	164	539
20	669	285	1710	988	3060	1990	618	238	44	444	331	429
21	527	267	1200	e730	2270	2160	533	191	38	245	353	253
22	487	252	946	e580	1430	2670	521	162	34	162	247	177
23	3050	300	1310	e500	1030	7610	530	139	173	156	185	134
24	2320	333	2810	e430	790	4480	586	124	236	203	140	111
25	1350	292	1920	e350	658	2140	588	112	124	201	113	99
26	936	267	1250	e330	559	1250	512	104	73	120	89	88
27	692	249	910	e355	487	1020	482	102	53	90	75	79
28	531	235	839	e385	442	812	534	93	40	74	67	70
29	465	227	2360	422	---	640	507	103	35	69	60	61
30	401	210	5100	512	---	680	473	99	31	166	66	54
31	353	---	7580	2000	---	630	---	93	---	159	72	---
TOTAL	19719	9022	40466	37890	28161	51782	25963	8054	2018	4023	7794	4182
MEAN	636	301	1305	1222	1006	1670	865	260	67.3	130	251	139
MAX	3050	512	7580	3440	3060	7610	3860	500	236	444	1960	539
MIN	90	210	177	330	442	401	473	93	31	28	42	42
CFSM	1.84	.87	3.78	3.54	2.92	4.84	2.51	.75	.19	.38	.73	.40
IN.	2.13	.97	4.36	4.09	3.04	5.58	2.80	.87	.22	.43	.84	.45

CAL YR 1990 TOTAL 285650 MEAN 783 MAX 10400 MIN 64 CFSM 2.27 IN. 30.80  
WTR YR 1991 TOTAL 239074 MEAN 655 MAX 7610 MIN 28 CFSM 1.90 IN. 25.78

e Estimated



## MONONGAHELA RIVER BASIN

03066000 BLACKWATER RIVER AT DAVIS, WV

LOCATION.--Lat 39°07'35", long 79°28'10", Tucker County, Hydrologic Unit 05020004, on right bank 0.4 mi southwest of Davis, 0.5 mi downstream from Beaver Creek, and at mile 10.6.

DRAINAGE AREA.--86.2 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1921 to current year.

REVISED RECORDS.--WSP 583: 1921-23. WSP 803: Drainage area. WSP 1173: 1931-34(M,m). WSP 1305: 1928(M), 1932-37(M), 1939-41(M), 1944-48(M).

GAGE.--Water-stage recorder. Datum of gage is 3,058.87 ft above National Geodetic Vertical Datum of 1929 (levels by West Virginia Power and Transmission Co.). Prior to Dec. 18, 1952, nonrecording gage at site 60 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 26-28, Jan. 4-5, 18-29, and Feb. 1-4, 15-18. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--70 years, 200 ft<sup>3</sup>/s, 31.51 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 17.67 ft; minimum, 1.5 ft<sup>3</sup>/s, Sept. 11, 12, 1959, gage height, 0.90 ft, caused by filling of small water-supply pool about 1.0 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0200	*1,970	*6.87	No other peak greater than base discharge.			

Minimum discharge, 6.5 ft<sup>3</sup>/s, Sept. 4, gage height, 1.12 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	86	43	1030	e330	170	240	109	34	12	22	14
2	36	78	43	483	e205	258	197	97	37	28	14	10
3	31	70	73	337	e175	255	154	91	26	25	11	7.9
4	41	66	195	e235	e180	712	133	83	27	59	11	7.9
5	63	64	130	e180	216	482	185	76	26	232	11	30
6	47	94	143	208	474	374	244	86	19	60	10	61
7	36	80	90	305	774	684	172	102	17	44	9.4	42
8	31	66	80	257	662	419	139	75	16	316	9.1	23
9	27	59	75	211	396	273	159	95	15	82	68	15
10	26	133	70	277	282	230	266	119	13	44	128	17
11	232	126	68	267	214	199	168	82	12	39	73	19
12	267	88	64	588	175	172	129	66	12	35	29	20
13	224	70	67	626	165	168	330	58	12	118	19	18
14	183	62	67	381	343	152	772	52	11	61	16	15
15	113	60	335	282	e220	136	636	49	9.7	40	16	13
16	85	58	595	636	e125	121	485	44	23	27	18	11
17	72	77	300	880	e140	167	300	41	82	21	16	9.6
18	130	84	393	e425	e180	640	226	40	34	19	13	9.8
19	235	68	682	e240	483	678	189	41	21	18	17	22
20	140	60	405	e190	941	448	184	44	17	17	22	38
21	101	54	281	e150	614	483	176	41	13	15	22	25
22	107	53	240	e125	358	477	204	36	12	21	19	17
23	819	86	470	e105	252	1150	235	32	201	37	15	14
24	694	86	770	e85	203	1230	224	29	124	60	12	13
25	362	69	479	e80	184	649	298	28	45	36	11	13
26	234	58	e260	e75	172	368	193	26	25	23	9.7	14
27	178	54	e175	e85	147	298	171	26	17	18	8.9	12
28	146	52	e210	e100	144	246	207	28	14	15	8.6	11
29	121	50	636	e115	---	191	157	25	12	25	11	9.9
30	105	46	1300	210	---	218	131	23	11	39	9.3	8.8
31	95	---	1770	548	---	206	---	28	---	32	11	---
TOTAL	5021	2157	10509	9716	8754	12254	7304	1772	937.7	1618	670.0	540.9
MEAN	162	71.9	339	313	313	395	243	57.2	31.3	52.2	21.6	18.0
MAX	819	133	1770	1030	941	1230	772	119	201	316	128	61
MIN	26	46	43	75	125	121	129	23	9.7	12	8.6	7.9
CFSM	1.88	.83	3.93	3.64	3.63	4.59	2.82	.66	.36	.61	.25	.21
IN.	2.17	.93	4.54	4.19	3.78	5.29	3.15	.76	.40	.70	.29	.23

CAL YR 1990 TOTAL 73701 MEAN 202 MAX 1860 MIN 14 CFSM 2.34 IN. 31.81  
WTR YR 1991 TOTAL 61253.6 MEAN 168 MAX 1770 MIN 7.9 CFSM 1.95 IN. 26.43

e Estimated

## MONONGAHELA RIVER BASIN

03069000 SHAVERS FORK AT PARSONS, WV

LOCATION.--Lat 39°05'45", long 79°40'40", Tucker County, Hydrologic Unit 05020004, on right bank at Parsons, 0.7 mi upstream from confluence with Black Fork.

DRAINAGE AREA.--214 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1910 to September 1926, October 1940 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 583: 1922. WSP 923: Drainage area. WSP 1335: 1911-12, 1915-17, 1918(M), 1921-22(M), 1926(M). WSP 1705: 1955.

GAGE.--Water-stage recorder. Datum of gage is 1,634.87 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 25, 1923, nonrecording gage on old highway bridge 800 ft downstream and Aug. 25, 1923, to Sept. 30, 1926, nonrecording gage on railroad bridge 760 ft downstream at datum 3.0 ft lower. Oct. 4, 1940, to Apr. 4, 1942, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 21-29 and Feb. 16-18. Records good except those for periods of estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--67 years, 555 ft<sup>3</sup>/s, 35.22 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 19.86 ft, from floodmarks, from rating curve extended above 11,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily discharge, 3.0 ft<sup>3</sup>/s, Oct. 7, 1914.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1888, and July 17, 1907, reached a stage of approximately 12.5 ft at site and datum of former gage, discharge, 25,000 ft<sup>3</sup>/s, from rating curve extended above 8,000 ft<sup>3</sup>/s. EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0500	6,620	7.15	Aug. 9	2030	6,030	6.77
Mar. 23	2130	*8,610	*8.34				

Minimum discharge, 29 ft<sup>3</sup>/s, June 15, gage height, 0.59 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224	273	190	1940	1070	328	515	320	118	37	169	169
2	213	250	183	1130	672	471	499	286	143	50	131	128
3	193	229	190	810	534	989	444	255	106	61	97	89
4	191	211	278	620	447	2870	403	230	91	78	90	86
5	199	201	496	494	403	1660	418	214	104	114	88	187
6	212	220	331	437	531	1070	791	226	80	100	117	452
7	192	265	285	696	1440	1670	683	449	71	85	107	346
8	179	228	274	1040	1540	1150	530	336	62	74	76	218
9	169	197	249	770	1000	776	495	292	54	57	1320	165
10	163	276	227	968	724	624	571	322	38	45	2180	142
11	1380	815	219	1360	565	513	558	305	37	46	712	147
12	1540	500	211	2630	443	425	440	269	36	48	396	167
13	814	381	202	2320	384	419	833	240	33	117	286	157
14	695	324	199	1210	490	439	2480	497	31	205	231	117
15	495	288	617	856	625	390	1500	392	30	240	266	92
16	394	269	1690	921	e380	350	1250	285	30	169	290	78
17	334	276	974	1930	e320	397	861	238	33	102	202	69
18	403	290	1080	1130	e350	1210	651	213	45	76	165	64
19	1310	273	2570	805	771	2390	522	205	72	244	453	791
20	699	248	1370	669	2380	1390	443	193	60	619	320	558
21	489	231	867	e580	1860	1290	405	173	49	289	331	298
22	424	220	705	e450	1060	1970	479	156	82	194	273	217
23	1700	251	1120	e370	758	5470	551	140	213	161	209	177
24	1860	328	2330	e310	590	3290	538	132	227	201	169	154
25	1080	314	1460	e270	490	1440	482	129	192	260	143	141
26	747	272	888	e240	436	940	416	131	131	176	116	126
27	566	248	656	e260	379	776	399	133	86	132	93	113
28	452	233	781	e305	326	650	527	124	62	100	79	97
29	383	219	1850	e325	---	564	429	157	49	105	73	82
30	335	204	2550	411	---	542	366	138	41	306	103	72
31	299	---	5260	1630	---	546	---	128	---	249	148	---
TOTAL	18334	8534	30302	27887	20968	37009	19479	7308	2406	4740	9433	5699
MEAN	591	284	977	900	749	1194	649	236	80.2	153	304	190
MAX	1860	815	5260	2630	2380	5470	2480	497	227	619	2180	791
MIN	163	197	183	240	320	328	366	124	30	37	73	64
CFSM	2.76	1.33	4.57	4.20	3.50	5.58	3.03	1.10	.37	.71	1.42	.89
IN.	3.19	1.48	5.27	4.85	3.64	6.43	3.39	1.27	.42	.82	1.64	.99

CAL YR 1990 TOTAL 234053 MEAN 641 MAX 5260 MIN 108 CFSM 3.00 IN. 40.69  
WTR YR 1991 TOTAL 192099 MEAN 526 MAX 5470 MIN 30 CFSM 2.46 IN. 33.39

e Estimated

## MONONGAHELA RIVER BASIN

03069500 CHEAT RIVER NEAR PARSONS, WV

LOCATION.--Lat 39°07'20", long 79°40'50", Tucker County, Hydrologic Unit 05020004, on left bank 2.0 mi north of Parsons, 3.0 mi downstream from confluence of Black Fork and Shavers Fork, and at mile 74.8.

DRAINAGE AREA.--718 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1913 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 893: Drainage area. WSP 1305: 1917(M), 1924(M), 1932(M), 1936(M), 1938-39(M). WSP 1335: 1916. WSP 1385: 1918-19(M).

GAGE.--Water-stage recorder. Datum of gage is 1,589.66 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Aug. 17, 1944, nonrecording gage on Moss Bridge about 1,600 ft upstream at datum 1.13 ft higher. Nov. 21, 1985 to Sept. 30, 1986, recording gage on Moss Bridge at datum 1.27 ft lower.

REMARKS.--Estimated daily discharges: Jan. 24-28 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are fair. National Weather Service and Monongahela Power Company gage-height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--78 years, 1,707 ft<sup>3</sup>/s, 32.29 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 170,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 24.30 ft, from floodmarks, from rating curve extended above 55,000 ft<sup>3</sup>/s; minimum observed, 9 ft<sup>3</sup>/s, Aug. 12, 1930, gage height, 1.28 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1888, reached a stage of 20.5 ft, discharge, 51,300 ft<sup>3</sup>/s, from floodmarks, at site and datum in use prior to Aug. 17, 1944; it was not exceeded until flood of Oct. 15, 1954, which reached a stage 0.3 ft higher at that site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0400	*25,000	*12.00	Mar. 23	2100	22,200	11.45

Minimum discharge, 74 ft<sup>3</sup>/s, July 1, gage height, 1.86 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	433	697	413	6950	3150	1040	1670	973	255	79	304	265
2	394	624	385	3890	2170	1720	1610	855	321	107	223	218
3	333	566	418	2710	1700	2490	1420	754	254	248	169	157
4	323	517	910	2020	1460	8150	1290	675	221	202	159	143
5	489	485	1170	1570	1380	5270	1380	618	211	539	164	422
6	410	587	790	1420	2620	3520	2200	657	169	371	180	908
7	336	654	746	2150	4810	5800	1900	1120	142	255	157	693
8	282	541	681	2570	4720	3860	1560	851	128	454	123	393
9	254	466	619	2070	3190	2630	1490	825	118	273	2050	275
10	236	832	586	2680	2320	2080	1880	1100	108	165	4980	242
11	2760	1650	558	3340	1800	1690	1600	902	100	146	1750	297
12	3570	1140	528	7170	1400	1370	1250	767	97	150	887	296
13	2190	900	513	7280	1240	1340	2160	674	94	423	580	262
14	1920	770	516	3990	1820	1280	8300	916	89	548	434	205
15	1340	682	1820	2810	2020	1120	5650	828	83	455	443	170
16	1020	628	5250	3360	1260	957	4490	636	78	325	541	149
17	829	689	3110	6580	e1100	1150	2940	535	131	216	355	135
18	1000	770	3410	4080	e1260	4120	2160	484	141	158	278	127
19	2870	673	7200	2800	2600	7300	1720	468	162	284	591	1320
20	1760	600	4110	2280	7570	4480	1490	492	121	1160	672	1170
21	1290	555	2770	2130	5650	4430	1330	410	99	570	739	610
22	1110	522	2190	1710	3460	5660	1440	357	112	358	551	410
23	6220	680	3420	1410	2460	15800	1630	317	628	353	400	325
24	5730	819	6810	e1100	1900	10700	1710	290	685	485	310	276
25	3340	722	4470	e870	1590	4920	1730	267	395	523	257	250
26	2240	622	2860	e790	1410	3120	1380	257	229	321	208	227
27	1670	563	2070	e820	1180	2460	1220	249	157	235	173	206
28	1310	526	2090	e890	1020	2010	1530	241	120	186	153	181
29	1070	498	5460	985	---	1670	1310	280	99	182	149	158
30	904	455	10400	1180	---	1680	1130	249	85	498	172	141
31	785	---	18100	4550	---	1610	---	236	---	457	212	---
TOTAL	48418	20433	94373	88155	68260	115427	62570	18283	5632	10726	18364	10631
MEAN	1562	681	3044	2844	2438	3723	2086	590	188	346	592	354
MAX	6220	1650	18100	7280	7570	15800	8300	1120	685	1160	4980	1320
MIN	236	455	385	790	1020	957	1130	236	78	79	123	127
CFSM	2.18	.95	4.24	3.96	3.40	5.19	2.90	.82	.26	.48	.83	.49
IN.	2.51	1.06	4.89	4.57	3.54	5.98	3.24	.95	.29	.56	.95	.55

CAL YR 1990 TOTAL 669153 MEAN 1833 MAX 20000 MIN 165 CFSM 2.55 IN. 34.67  
WTR YR 1991 TOTAL 561272 MEAN 1538 MAX 18100 MIN 78 CFSM 2.14 IN. 29.08

e Estimated



## MONONGAHELA RIVER BASIN

## 03070000 CHEAT RIVER AT ROWLESBURG, WV

LOCATION.--Lat 39°20'48", long 79°39'56", Preston County, Hydrologic Unit 05020004, on right bank 800 ft upstream from Baltimore & Ohio Railroad bridge at Rowlesburg, 1,100 ft upstream from Saltlick Creek, and at mile 44.2. Prior to Nov. 5, 1985, at site 800 ft downstream.

DRAINAGE AREA.--937 mi<sup>2</sup>, revised. Area at site used prior to Nov. 5, 1985, 972 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1912 to September 1923 (gage heights only), October 1923 to current year. Gage-height records collected at practically the same site since 1884 are contained in reports of National Weather Service. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 803: Drainage area. WSP 893: 1936-37. WSP 1173: 1924-34(M,m). WSP 1725: 1924(M), 1930(M), 1932(M), 1936(M), 1938-39(M), 1944(M), 1948-49(M).

GAGE.--Water-stage recorder. Datum of gage is 1,368.24 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1986, at datum 2.00 ft higher. Prior to Nov. 5, 1985, at site 800 ft downstream at datum 1.56 ft higher. Prior to Nov. 18, 1923, nonrecording gages at several sites within 1,300 ft of present site at various datums.

REMARKS.--Estimated daily discharges: Jan. 21-25, 27-29, and Feb. 17-18. Records fair except those for periods of estimated daily discharges, which are poor. National Weather Service gage height telemeter at station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--68 years, 2,304 ft<sup>3</sup>/s, 33.39 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 36.90 ft, from floodmarks, from rating curve extended above 60,000 ft<sup>3</sup>/s; minimum, 10 ft<sup>3</sup>/s, Oct. 15, 1930; minimum gage height observed, 0.50 ft, Oct. 3, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 6, 1844, reached a stage of 18.7 ft, referred to present gage at present datum by relation curve, discharge, 89,000 ft<sup>3</sup>/s, from rating curve extended above 45,000 ft<sup>3</sup>/s. Flood of July 10, 1888, reached a stage of 18.2 ft, referred to present gage at present datum by relation curve, discharge, 84,000 ft<sup>3</sup>/s, from rating curve extended above 45,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0800	*30,000	*15.40	Mar. 23	2100	22,300	13.68

Minimum discharge, 93 ft<sup>3</sup>/s, June 16, gage height, 1.74 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	950	616	9320	5300	1350	2240	1480	269	102	422	225
2	519	839	570	5620	3670	1770	2370	1250	287	124	297	262
3	459	752	718	4120	2810	3320	2120	1080	349	160	224	219
4	426	684	2480	3160	2270	8690	1890	954	279	265	182	172
5	563	638	2790	2460	2000	7660	1860	856	241	272	168	193
6	611	668	1830	2090	2920	5220	3120	816	227	549	164	570
7	510	791	1370	2610	6040	7470	3240	1130	189	389	179	1070
8	419	762	1170	3790	6680	5890	2570	1290	162	469	167	593
9	355	638	1020	3330	4950	4210	2340	1020	144	593	175	376
10	323	749	906	4010	3740	3300	3090	1360	132	297	5520	278
11	933	2220	838	5380	2900	2680	3030	1320	122	205	2870	278
12	5660	1970	780	9630	2230	2120	2260	1090	118	176	1330	318
13	3190	1440	739	9760	1850	1890	2430	941	111	217	783	305
14	2910	1160	713	5860	2540	1900	9830	823	103	616	564	268
15	2090	995	2080	4330	3720	1680	7710	1250	97	531	465	217
16	1540	888	7460	4200	2520	1430	7030	866	103	486	588	183
17	1190	904	5100	7830	e1700	1590	4850	706	124	320	500	161
18	1260	1060	5750	5900	e1900	5060	3590	625	178	227	352	147
19	3900	1030	10600	4350	3100	9480	2810	563	171	176	282	214
20	3200	901	6350	3550	9560	6700	2330	572	178	730	732	2020
21	2140	804	4420	e3000	7920	5600	1990	547	141	920	760	905
22	1680	748	3510	e2500	5170	6530	2320	461	123	522	717	569
23	5970	996	4640	e2000	3830	14600	3000	401	346	380	522	415
24	8560	1530	9370	e1700	2950	14200	2860	357	983	436	388	334
25	5950	1380	6690	e1400	2410	6670	2840	328	655	583	305	287
26	3780	1090	4540	1180	2080	4610	2480	297	381	484	254	262
27	2440	924	3350	e1200	1740	3670	2020	290	244	314	210	234
28	1750	826	3240	e1300	1460	3090	2160	283	181	239	202	214
29	1370	753	6320	e1500	---	2530	2140	271	143	209	166	193
30	1150	680	11100	1890	---	2320	1770	310	120	213	157	172
31	1090	---	22600	6510	---	2310	---	274	---	612	222	---
TOTAL	66468	29770	133660	125480	99960	149540	94290	23811	6901	11816	19867	11654
MEAN	2144	992	4312	4048	3570	4824	3143	768	230	381	641	388
MAX	8560	2220	22600	9760	9560	14600	9830	1480	983	920	5520	2020
MIN	323	638	570	1180	1460	1350	1770	271	97	102	157	147
CFSM	2.29	1.06	4.60	4.32	3.81	5.15	3.35	.82	.25	.41	.68	.41
IN.	2.64	1.18	5.31	4.98	3.97	5.94	3.74	.95	.27	.47	.79	.46

CAL YR 1990 TOTAL 1011670 MEAN 2772 MAX 33000 MIN 200 CFSM 2.96 IN. 40.16  
WTR YR 1991 TOTAL 773217 MEAN 2118 MAX 22600 MIN 97 CFSM 2.26 IN. 30.70  
e Estimated



## MONONGAHELA RIVER BASIN

03070500 BIG SANDY CREEK AT ROCKVILLE, WV

LOCATION.--Lat 39°37'15", long 79°42'20", Preston County, Hydrologic Unit 05020004, on right bank just downstream from highway bridge at Rockville, and at mile 5.0.

DRAINAGE AREA.--200 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1909 to March 1918, April 1921 to current year.

REVISED RECORDS.--WSP 583: 1912(M), 1922-23. WSP 643: Drainage area. WSP 923: 1939. WSP 1173: 1930-34(M,m). WSP 1335: 1910-18, 1921, 1922-24(M), 1928(M), 1930-43(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,310 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 4, 1924, nonrecording gages at highway bridge at same datum.

REMARKS.--Estimated daily discharges: Jan. 21-29, Feb. 17-18, June 30, July 1, and many days July through September. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--78 years (water years 1910-17, 1922-91), 423 ft<sup>3</sup>/s, 28.72 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 21,300 ft<sup>3</sup>/s, July 24, 1912, gage height, 18.0 ft, from rating curve extended above 10,000 ft<sup>3</sup>/s on basis of velocity-area studies; minimum, 0.1 ft<sup>3</sup>/s, Oct. 21-27, 1953.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1888, reached a stage of about 20 ft, discharge, about 30,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 18	2300	*8,340	*12.37	Apr. 14	0500	5,460	10.81
Dec. 31	0400	6,760	11.56				

Minimum observed discharge, 6.5 ft<sup>3</sup>/s, Sept. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	188	150	1720	983	273	307	294	127	e9.4	e18	35
2	130	170	143	993	685	386	279	258	81	20	e14	17
3	110	153	338	703	548	425	242	224	64	39	e11	14
4	206	142	1020	535	475	1730	227	199	84	25	e10	13
5	429	136	697	430	460	1140	242	183	67	35	9.4	14
6	252	174	515	468	634	1110	275	216	49	30	e11	e16
7	192	153	416	617	2030	1840	243	383	41	18	e10	e25
8	166	130	341	537	1440	1060	229	270	36	15	e9.0	e18
9	149	119	289	522	912	721	249	340	32	16	e11	e15
10	133	330	252	631	674	579	402	364	28	16	e20	e13
11	921	431	222	758	528	471	334	301	25	15	11	e12
12	925	324	199	1520	411	395	288	250	28	12	9.8	e11
13	693	265	189	1490	375	367	1210	215	48	18	9.5	13
14	537	223	171	914	1190	349	4350	210	32	20	12	24
15	421	196	858	701	1180	309	2240	198	23	16	15	22
16	330	184	1800	1810	684	274	1510	155	19	12	e22	15
17	272	235	909	2290	e350	384	956	133	18	11	e17	e10
18	378	227	4630	1270	e410	1650	679	132	18	10	14	e6.5
19	548	200	4940	823	908	2420	531	112	16	e9.0	13	e10
20	398	187	1670	661	2870	1540	450	100	14	e20	14	15
21	332	171	1180	e540	1790	993	396	88	13	e35	e35	13
22	320	163	920	e470	1020	1140	873	78	12	e25	e25	e11
23	1230	347	2130	e380	691	1990	841	71	94	e16	e17	e9.0
24	1140	391	2370	e300	542	1320	672	65	59	e18	e14	e12
25	764	320	1340	e250	448	885	638	60	31	e21	e12	e17
26	563	267	832	e230	385	654	537	57	20	e17	e11	14
27	430	230	598	e270	330	566	451	52	15	e14	e9.3	13
28	350	210	547	e310	290	471	388	48	13	e11	e8.4	e12
29	285	191	850	e400	---	388	373	45	11	e9.5	e7.8	e11
30	239	166	2560	819	---	364	339	41	e10	e11	e7.3	e10
31	210	---	4700	1870	---	316	---	146	---	e25	14	---
TOTAL	13212	6623	37776	25232	23243	26510	20751	5288	1128	568.9	421.5	440.5
MEAN	426	221	1219	814	830	855	692	171	37.6	18.4	13.6	14.7
MAX	1230	431	4940	2290	2870	2420	4350	383	127	39	35	35
MIN	110	119	143	230	290	273	227	41	10	9.0	7.3	6.5
CFSM	2.13	1.10	6.09	4.07	4.15	4.28	3.46	.85	.19	.09	.07	.07
IN.	2.46	1.23	7.03	4.69	4.32	4.93	3.86	.98	.21	.11	.08	.08

CAL YR 1990 TOTAL 181985 MEAN 499 MAX 4940 MIN 24 CFSM 2.49 IN. 33.85  
WTR YR 1991 TOTAL 161193.9 MEAN 442 MAX 4940 MIN 6.5 CFSM 2.21 IN. 29.98

e Estimated

## MONONGAHELA RIVER BASIN

03071600 CHEAT RIVER AT LAKE LYNN, PA

LOCATION.--Lat 39°43'15", long 79°51'20", Fayette County, Hydrologic Unit 05020004, at the Lake Lynn hydro-electric plant of the West Penn Power Company at Lake Lynn, 3.0 mi upstream from mouth.

DRAINAGE AREA.--1,411 mi<sup>2</sup>.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1948 to September 1957, October 1958 to current year (partial record).

REMARKS.--Values published are once-daily readings.

COOPERATION.--Records were furnished by the West Penn Power Company.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES (Water years 1949-57): Maximum, 29.5°C, July 30, 1949, July 28, 1952, and Aug. 6, 1955; minimum, 0.5°C several days during 1951, 1952, 1954, 1955, 1957.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	12.0	---	5.5	1.0	5.0	10.0	19.0	---	28.0	26.5	---
2	19.0	12.0	---	5.5	---	---	10.5	18.0	---	28.0	26.5	---
3	18.5	---	8.0	5.5	---	---	11.0	16.5	27.0	28.0	---	26.0
4	19.5	---	7.0	4.5	1.0	4.0	11.5	---	---	---	---	26.0
5	18.0	11.0	7.0	---	2.0	6.5	12.0	---	26.0	28.0	26.5	25.0
6	---	10.5	6.5	---	2.0	6.5	---	19.0	24.5	---	27.0	25.5
7	---	10.0	6.5	3.5	3.0	5.0	---	18.5	---	---	26.5	---
8	19.5	9.0	---	3.0	3.0	5.0	13.5	19.5	---	28.0	26.5	---
9	19.5	9.0	---	3.0	---	---	14.5	19.5	---	28.0	26.5	---
10	20.0	---	6.5	2.0	---	---	---	20.0	26.0	28.0	---	25.5
11	19.0	---	6.0	2.0	---	5.0	13.5	---	26.5	28.5	---	25.5
12	18.0	9.0	6.0	---	5.0	5.5	14.5	---	26.5	27.0	26.5	25.0
13	---	9.0	5.5	---	4.5	5.0	---	---	26.0	---	26.5	25.0
14	---	10.0	5.5	4.5	4.5	4.5	---	---	26.5	---	26.5	---
15	18.0	10.0	---	4.5	3.5	4.5	12.0	23.5	---	26.5	26.0	---
16	18.0	9.5	---	4.5	---	---	11.0	---	---	26.5	26.0	26.0
17	16.5	---	4.0	---	---	---	11.5	24.5	26.5	27.0	---	---
18	16.5	---	6.0	4.0	---	5.0	12.0	---	26.5	28.0	---	26.0
19	16.0	9.0	5.5	---	2.0	4.5	12.0	---	27.0	28.5	26.0	---
20	---	9.0	---	---	2.0	6.5	---	22.0	---	---	26.0	---
21	---	9.0	---	4.5	3.5	6.5	---	25.0	28.5	29.0	26.0	---
22	15.0	9.0	---	---	4.5	5.5	12.0	---	---	29.0	---	---
23	15.5	9.0	---	3.0	---	---	13.5	---	---	29.5	---	---
24	15.5	---	6.5	2.0	---	---	12.0	25.5	26.5	29.5	---	---
25	14.5	---	---	1.5	4.5	9.0	13.0	---	26.5	29.0	26.0	21.0
26	12.0	---	---	---	4.5	9.0	13.5	---	26.5	28.5	26.0	20.0
27	---	8.5	6.0	---	---	9.5	---	---	29.0	---	26.5	---
28	---	10.0	5.5	1.0	5.5	9.5	---	26.5	28.0	---	27.0	---
29	11.5	8.0	---	1.0	---	---	16.5	26.5	---	27.0	26.5	---
30	12.0	8.0	---	1.5	---	---	18.0	28.0	---	26.5	27.0	21.0
31	12.0	---	5.5	1.0	---	---	---	28.0	---	26.5	---	---

## OHIO RIVER MAIN STEM

03111534 OHIO RIVER AT MARTINS FERRY, OH  
(Formerly published as 03112500 Ohio River at Wheeling, WV)

LOCATION.--Lat 40°06'18", long 80°42'31", Belmont County, Ohio, Hydrologic Unit 05030106, on right bank at water plant at Martins Ferry, Ohio, 300 ft downstream from Old Lock 12, 0.9 mi downstream from Glens Run (Ohio), 3.0 mi upstream from Wheeling Creek (Ohio), and at mile 87.5, measured downstream from Pittsburgh, Pa.

DRAINAGE AREA.--24,700 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--January to March 1844, January 1905 to December 1906 (gage heights only), December 1906 to February 1907, March to April 1913, February to April 1936, December 1936 to February 1937 (published as "at Wheeling"), October 1978 to current year. Monthly discharge for some periods published in WSP 1305. Gage-height records collected in this vicinity since 1882 are in reports of the National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 610.80 ft above National Geodetic Vertical Datum of 1929. See WSP 1305 for history of gages prior to 1978. Auxiliary water-stage recorder 12.9 mi downstream from base gage at same datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by Ohio River system of locks, dams, and reservoirs. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--13 years, 42,950 ft<sup>3</sup>/s, 23.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 466,000 ft<sup>3</sup>/s, Mar. 19, 1936, gage height, 55.2 ft; minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 349,000 ft<sup>3</sup>/s, Jan. 1, gage height, 38.76 ft; minimum daily, 7,670 ft<sup>3</sup>/s, Aug. 8 and Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29700	37900	33400	331000	72600	49100	38200	46700	16600	12500	9610	7920
2	27600	32400	31100	216000	57400	43000	38700	37700	11200	8760	11000	7670
3	27500	33700	36200	167000	53000	48500	35200	38600	11600	11700	10400	9800
4	28900	28100	63500	159000	49400	83400	34100	33500	12200	11400	8640	9780
5	35900	25200	90000	148000	49500	135000	30100	32000	10700	10700	9190	11700
6	41900	33100	84200	132000	48300	130000	29800	39600	10400	12500	7910	8480
7	36700	28500	70300	120000	68400	153000	27700	43200	9770	14700	8160	8580
8	31300	28700	61000	115000	106000	162000	25600	36900	10400	18700	7670	8640
9	29500	26900	51400	99200	107000	127000	32900	31800	8770	20500	8390	9540
10	29400	33800	46500	90400	94300	119000	36000	30800	10200	15300	11500	10700
11	41500	46400	44600	89600	81500	109000	38600	25900	11400	12400	10200	12100
12	76400	49300	40900	113000	74300	102000	40600	26100	18100	11500	9280	8360
13	112000	47200	37800	106000	65900	87600	38300	22000	10600	10500	10100	8820
14	96100	45000	35000	93700	62700	78700	60600	22100	9760	9540	9150	8960
15	74500	40300	38100	85200	84800	69500	82600	22400	11300	9170	9930	9760
16	68600	36800	64400	87300	78900	60100	87200	17400	12000	8020	9320	9950
17	69100	30500	69600	120000	63800	52000	79000	17400	9520	10600	11200	8120
18	71700	31000	86300	140000	48100	51600	73800	16400	11100	9610	10500	10500
19	81900	34900	243000	120000	59300	65600	59600	15800	10200	8850	10800	8380
20	91000	35100	264000	101000	89900	73300	52300	11000	7910	10100	10700	9020
21	76100	32100	149000	91300	126000	68300	46900	13400	8790	9140	11200	8430
22	67100	34000	124000	87400	123000	63500	48800	15400	10900	10500	8890	9130
23	67800	36700	100000	76500	111000	66400	60000	14100	9160	10500	9800	9410
24	81300	43600	143000	59000	90300	86500	58800	12300	9000	12000	9540	9340
25	93900	46000	159000	47700	72300	76300	56400	12300	11300	9120	8130	14900
26	81300	41500	135000	43200	73700	66000	57400	12900	11300	8690	7810	8830
27	69800	39600	122000	37700	59600	71200	47500	11100	11800	8530	8180	8790
28	57100	41300	112000	38600	54100	63100	43800	14700	9590	9630	8020	8760
29	48400	37500	117000	49700	---	61000	36400	13200	9360	9410	9200	8320
30	40600	34500	156000	50600	---	54000	46700	15900	10500	8280	8550	7980
31	42300	---	287000	66000	---	40800	---	16400	---	10200	9690	---
TOTAL	1826900	1091600	3095300	3281100	2125100	2516500	1443600	719000	325430	343050	292660	280670
MEAN	58930	36390	99850	105800	75900	81180	48120	23190	10850	11070	9441	9356
MAX	112000	49300	287000	331000	126000	162000	87200	46700	18100	20500	11500	14900
MIN	27500	25200	31100	37700	48100	40800	25600	11000	7910	8020	7670	7670
CAL YR	1990	TOTAL	20087500	MEAN	55030	MAX	2870000	MIN	14100			
WTR YR	1991	TOTAL	17340910	MEAN	47510	MAX	3310000	MIN	7670			

## WHEELING CREEK BASIN

03112000 WHEELING CREEK AT ELM GROVE, WV

LOCATION.--Lat 40°02'40", long 80°39'40", Ohio County, Hydrologic Unit 05030106, on right bank at highway bridge at Elm Grove, 500 ft downstream from Little Wheeling Creek, and at mile 7.7.

DRAINAGE AREA.--282 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only for October 1940, published in WSP 1907.

REVISED RECORDS.--WSP 1305: 1941(M).

GAGE.--Water-stage recorder. Datum of gage is 667.59 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 21-28. Records fair except those for period of estimated daily discharges, which is poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--51 years, 336 ft<sup>3</sup>/s, 16.18 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,100 ft<sup>3</sup>/s, Dec. 30, 1942, gage height, 13.67 ft, from rating curve extended above 15,000 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 13.2 ft and 13.67 ft; minimum, 0.1 ft<sup>3</sup>/s, Oct. 7, 1963, Sept. 26, 27, 1964; minimum gage height, 0.58 ft, Sept. 11, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 18	2100	*8,090	*7.26	Dec. 31	0300	7,350	6.87

Minimum discharge, 1.1 ft<sup>3</sup>/s, Sept. 8, gage height, 1.08 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228	262	193	2310	829	412	374	238	75	6.6	14	3.9
2	154	229	175	1370	710	390	353	222	55	159	11	2.5
3	95	193	714	987	599	400	314	190	42	91	8.5	1.8
4	217	172	1940	768	511	769	290	170	33	44	14	8.2
5	497	167	1370	633	458	682	278	179	28	30	11	8.0
6	411	263	943	760	572	835	270	869	24	21	7.9	3.1
7	305	262	714	926	1120	2030	236	1240	21	20	7.1	2.1
8	222	209	542	797	1250	1420	220	687	18	28	5.7	1.5
9	178	176	426	739	938	1000	370	490	16	22	9.4	1.2
10	150	821	355	699	775	854	1530	390	14	15	7.4	3.3
11	285	1120	294	1360	643	701	944	298	14	15	5.0	13
12	2250	798	240	2210	515	556	619	231	40	14	3.8	5.4
13	2100	601	204	1610	472	505	1140	186	31	14	3.1	20
14	1190	474	173	1200	910	553	3880	161	31	12	3.0	22
15	823	402	690	959	1260	498	2930	149	23	10	2.7	16
16	599	357	1220	1200	868	442	2150	123	43	8.7	2.1	11
17	472	404	727	1280	756	407	1330	106	140	7.4	1.9	6.9
18	879	357	4240	1100	753	415	918	99	32	6.2	13	4.2
19	1360	307	5180	929	1090	481	750	86	29	5.0	14	5.0
20	877	270	2270	827	1610	498	625	74	24	4.6	19	3.4
21	666	239	1500	e760	1570	452	523	67	20	4.0	16	2.5
22	590	229	1280	e640	1200	418	556	61	18	4.1	10	1.8
23	836	397	2190	e500	939	766	461	54	18	4.0	8.0	3.8
24	836	445	2410	e450	777	788	402	48	15	3.5	8.7	29
25	701	388	1440	e380	665	610	375	45	13	3.0	20	69
26	588	336	979	e340	574	495	326	43	12	3.2	12	49
27	491	302	715	e310	499	471	292	44	9.2	3.1	8.6	28
28	424	283	653	e450	448	440	264	40	7.8	2.6	6.2	18
29	376	258	1200	609	---	376	250	38	6.6	13	4.2	13
30	334	217	2440	895	---	374	245	48	5.8	12	3.3	11
31	296	---	5030	1140	---	382	---	60	---	14	5.5	---
TOTAL	19430	10938	42447	29138	23311	19420	23215	6736	858.4	600.0	266.1	367.6
MEAN	627	365	1369	940	833	626	774	217	28.6	19.4	8.58	12.3
MAX	2250	1120	5180	2310	1610	2030	3880	1240	140	159	20	69
MIN	95	167	173	310	448	374	220	38	5.8	2.6	1.9	1.2
CFSM	2.22	1.29	4.86	3.33	2.95	2.22	2.74	.77	.10	.07	.03	.04
IN.	2.56	1.44	5.60	3.84	3.08	2.56	3.06	.89	.11	.08	.04	.05

CAL YR 1990 TOTAL 190804 MEAN 523 MAX 5180 MIN 10 CFSM 1.85 IN. 25.17  
WTR YR 1991 TOTAL 176727.1 MEAN 484 MAX 5180 MIN 1.2 CFSM 1.72 IN. 23.31

e Estimated



## OHIO RIVER MAIN STEM

03112510 OHIO RIVER AT BENWOOD NEAR WHEELING, WV  
(National Stream-quality accounting network station)

LOCATION.--Lat 40°00'54", long 80°44'20", Marshall County, Hydrologic Unit 05030106, at Bellaire Toll Bridge, at Benwood, and at mile 94.3.

DRAINAGE AREA.--Approximately 25,070 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1978 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT 23...	1500	68600	258	7.4	14.5	19	753	10.4	103	440	190	92
DEC 04...	1400	68200	311	7.7	7.0	20	743	12.0	101	1100	630	120
MAR 19...	1315	67200	285	7.3	6.0	11	739	13.4	111	240	K35	97
MAY 21...	1315	15400	380	8.1	23.0	4.5	752	7.6	90	K38	<1	130
JUL 23...	1230	9330	585	7.7	29.5	3.0	741	6.4	87	88	K4	180
AUG 22...	1030	10400	600	7.3	26.0	2.2	749	6.3	79	1300	K50	200

DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)
OCT 23...	26	6.6	11	2.1	44	0	36	60	9.2	<0.10	5.8	163
DEC 04...	35	8.7	13	2.1	57	0	47	76	13	0.10	5.1	207
MAR 19...	27	7.3	13	1.6	33	0	27	79	16	<0.10	5.2	165
MAY 21...	37	9.9	17	2.0	52	0	43	110	17	0.20	1.8	216
JUL 23...	52	13	39	4.0	66	0	54	170	40	0.40	1.8	353
AUG 22...	54	15	43	4.0	62	0	51	200	38	0.40	2.3	385

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	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)
OCT 23...	146	0.690	0.010	0.700	0.050	0.060	0.45	0.50	0.020	<0.010	<0.010	20
DEC 04...	185	0.770	0.030	0.800	0.110	0.100	0.39	0.50	0.090	0.020	<0.010	40
MAR 19...	169	0.850	0.020	0.870	0.090	0.060	0.31	0.40	0.040	<0.010	<0.010	--
MAY 21...	224	0.790	0.020	0.810	0.030	0.030	0.57	0.60	<0.010	<0.010	<0.010	40
JUL 23...	358	1.16	0.040	1.20	0.060	0.070	0.34	0.40	0.020	0.020	<0.010	--
AUG 22...	394	1.27	0.030	1.30	0.110	0.110	0.39	0.50	0.060	0.030	0.010	20

K: Results based on colony count outside the acceptance range (non-ideal colony count).

## OHIO RIVER MAIN STEM

03112510 OHIO RIVER AT BENWOOD NEAR WHEELING, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	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)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 23...	<1	37	<0.5	<1.0	<1	<3	4	30	1	9	25
DEC 04...	<1	37	<0.5	<1.0	1	<3	7	57	1	7	120
MAR 19...	--	--	--	--	--	--	--	--	--	--	--
MAY 21...	<1	42	<0.5	<1.0	<1	<3	3	18	<1	11	2
JUL 23...	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	<1	56	<0.5	<1.0	<1	3	3	<3	<1	19	6

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 23...	<0.1	<10	3	<1	<1.0	130	<6	<3	52	9630	92
DEC 04...	<0.1	<10	3	<3	<1.0	180	<6	5	43	7920	80
MAR 19...	--	--	--	--	--	--	--	--	18	3270	84
MAY 21...	<0.1	10	3	<1	<1.0	220	<6	25	15	624	25
JUL 23...	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	<0.1	<10	2	<1	<1.0	380	<6	<3	--	--	--

## MIDDLE ISLAND CREEK BASIN

03114500 MIDDLE ISLAND CREEK AT LITTLE, WV

LOCATION.--Lat 39°28'30", long 80°59'50", Tyler County, Hydrologic Unit 05030201, on right bank at downstream side of highway bridge at Little, 0.1 mi upstream from Stewarts Run, 5.0 mi west of Middlebourne, and at mile 24.5.

DRAINAGE AREA.--458 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1915 to September 1916, October 1916 to September 1922 (gage heights only), October 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 631.32 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to July 11, 1947, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 22-27. Records good except those for period of estimated daily discharges, which is poor.

AVERAGE DISCHARGE.--64 years, (water years 1916, 1929-91), 645 ft<sup>3</sup>/s, 19.12 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft<sup>3</sup>/s, June 26, 1950, gage height, 28.0 ft, from floodmarks; no flow during parts of 1922 and Sept. 1 to Nov. 4, Nov. 7-10, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1875 reached a stage of about 33.5 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Oct. 12	2100	10,600	13.79	Dec. 31	1200	14,600	17.64
Dec. 19	1000	*19,900	*21.54	Feb. 7	1800	9,110	13.09
Dec. 23	2400	9,780	13.65	Apr. 14	0400	9,860	13.72

Minimum discharge, 2.2 ft<sup>3</sup>/s, Sept. 6, 10, gage height, 1.77 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	167	204	3400	1710	311	795	266	17	9.3	54	3.3
2	75	150	176	1440	1010	293	652	224	15	21	40	3.0
3	71	139	1320	1000	752	360	528	192	14	13	41	2.7
4	213	124	5330	753	594	506	444	171	13	13	33	2.4
5	1240	119	2660	587	494	851	406	154	21	38	27	2.4
6	759	128	1200	724	827	1790	461	253	30	26	26	2.4
7	336	182	770	2940	6600	7400	521	821	21	14	23	2.8
8	217	216	523	2380	4370	2170	442	545	15	9.9	24	2.8
9	166	184	397	1910	1600	1120	448	372	13	8.6	35	2.5
10	134	3300	325	2950	1030	817	1320	533	10	8.7	42	3.1
11	162	3800	282	3680	761	657	1180	438	8.5	8.1	52	7.3
12	4560	1310	248	5050	570	538	736	317	7.1	10	65	6.8
13	5220	720	226	2300	488	541	3530	247	5.7	9.8	50	6.1
14	1470	459	203	1310	3630	2600	7570	204	4.7	11	35	5.1
15	761	344	526	942	4500	2840	5300	202	4.1	8.6	27	4.4
16	432	292	4070	942	1640	1320	4160	213	26	6.7	20	3.7
17	287	287	1840	1980	1060	905	1680	155	132	13	17	3.2
18	426	291	8910	1730	919	1010	1040	121	43	16	14	3.2
19	1700	255	18300	1160	2030	2500	767	89	48	13	12	3.9
20	923	222	3770	891	3160	1860	648	82	35	9.9	12	3.1
21	497	199	2150	836	3030	1190	531	69	20	8.5	12	2.9
22	382	184	1640	e740	1480	1320	505	62	16	7.2	13	2.8
23	1190	1480	5510	e600	988	6850	554	57	13	7.4	11	2.6
24	1910	1930	7090	e490	722	3140	508	44	18	6.5	9.3	7.4
25	1150	983	2650	e430	581	1320	440	40	14	121	8.2	18
26	688	585	1330	e370	483	916	372	32	16	75	6.8	35
27	451	412	884	e320	414	929	331	30	20	41	5.8	19
28	341	334	865	979	355	1020	306	31	16	28	5.4	15
29	277	289	2520	2150	---	781	285	26	12	23	4.5	13
30	229	240	3790	1720	---	707	290	23	11	57	3.6	10
31	192	---	13400	3540	---	852	---	21	---	56	3.4	---
TOTAL	26541	19325	93109	50244	45798	49414	36750	6034	639.1	698.2	732.0	199.9
MEAN	856	644	3004	1621	1636	1594	1225	195	21.3	22.5	23.6	6.66
MAX	5220	3800	18300	5050	6600	7400	7570	821	132	121	65	35
MIN	71	119	176	320	355	293	285	21	4.1	6.5	3.4	2.4
CFSM	1.87	1.41	6.56	3.54	3.57	3.48	2.67	.42	.05	.05	.05	.01
IN.	2.16	1.57	7.56	4.08	3.72	4.01	2.98	.49	.05	.06	.06	.02

CAL YR 1990 TOTAL 375446 MEAN 1029 MAX 18300 MIN 12 CFSM 2.25 IN. 30.49  
WTR YR 1991 TOTAL 329484.2 MEAN 903 MAX 18300 MIN 2.4 CFSM 1.97 IN. 26.76

e Estimated

## OHIO RIVER MAIN STEM

03150800 OHIO RIVER NEAR MARIETTA, OH

LOCATION.--Lat 39°23'21", long 81°29'03", Washington County, Hydrologic Unit 05030202, on right bank 1.5 mi southwest of Marietta, 2.0 mi downstream from Muskingum River, and at mile 174.3 measured downstream from Pittsburgh, Pa.

DRAINAGE AREA.--35,600 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1968 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 567.12 ft, Sandy Hook datum.

REMARKS.--U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 38.52 ft, Feb. 27, 1979; minimum, 10.83 ft, Oct. 6, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 37.19 ft, Jan. 1; minimum, 14.93 ft, May 20.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.69	16.19	16.19	36.91	19.90	17.24	16.91	16.90	16.16	16.11	15.73	15.56
2	15.90	15.88	15.99	35.09	18.76	16.85	16.56	16.34	15.88	16.33	15.56	15.52
3	15.53	16.04	16.68	27.56	17.82	16.89	16.44	16.62	15.69	16.35	15.91	15.39
4	16.26	15.78	20.11	24.54	17.76	18.37	16.20	15.97	16.12	16.29	16.01	15.36
5	16.85	15.57	20.97	24.27	17.09	21.14	15.90	15.80	15.89	16.01	15.43	15.55
6	16.97	15.95	20.85	23.87	17.59	23.25	16.01	16.32	15.55	15.86	15.30	15.33
7	17.04	15.70	19.70	23.98	19.73	26.03	16.08	17.03	15.39	16.27	15.36	15.30
8	16.17	15.95	18.35	23.62	22.33	26.40	15.80	16.22	15.44	16.18	15.50	15.44
9	15.73	15.56	18.08	22.48	22.41	24.19	16.66	16.10	15.82	16.03	15.72	15.64
10	15.82	16.75	17.30	22.00	21.20	22.88	16.99	15.80	15.80	15.71	15.41	15.60
11	16.05	17.50	17.08	22.28	20.34	22.02	17.28	15.57	15.63	15.53	15.53	15.74
12	16.56	17.08	16.76	24.59	19.04	21.36	16.84	15.78	16.16	15.72	15.30	15.54
13	18.05	17.23	16.79	23.87	18.44	20.55	18.11	15.64	15.56	15.60	15.17	15.63
14	19.15	16.69	16.40	22.22	19.24	20.40	21.48	15.40	15.42	15.39	15.30	15.72
15	19.50	16.36	16.54	21.22	21.03	19.93	23.10	15.45	15.58	15.34	15.53	15.74
16	18.89	16.24	18.74	21.07	20.06	18.69	23.43	15.38	15.95	15.38	15.65	15.88
17	18.62	16.03	19.58	22.42	18.85	17.86	21.52	15.42	15.80	15.57	15.59	15.75
18	18.48	16.09	22.87	24.24	17.76	17.46	20.21	15.66	15.46	15.79	15.57	15.66
19	18.66	15.96	32.03	23.73	18.17	18.39	19.27	15.41	15.49	15.80	15.70	15.54
20	18.97	16.08	34.62	22.26	20.46	19.12	18.08	15.08	15.57	15.71	15.60	15.14
21	19.18	15.93	30.19	21.53	23.04	18.72	17.90	15.51	15.61	15.86	15.38	15.34
22	18.68	16.19	24.67	20.94	23.33	18.61	17.79	15.52	16.03	15.85	15.53	15.68
23	18.36	16.79	24.40	20.45	22.26	20.27	17.94	15.82	15.86	15.86	15.65	15.70
24	18.60	17.07	25.98	19.14	20.87	20.84	17.91	15.44	15.55	15.83	15.35	15.81
25	18.95	17.15	26.32	18.23	19.33	20.12	17.73	15.45	16.10	15.57	15.38	15.62
26	19.25	16.68	24.90	18.11	18.84	18.38	17.60	15.87	16.01	15.70	15.34	15.22
27	18.77	16.34	23.53	17.39	18.38	19.24	17.35	15.79	15.97	15.79	15.13	15.13
28	17.99	16.74	22.65	17.56	17.35	18.80	16.77	15.96	15.92	15.83	15.22	15.24
29	17.03	16.22	23.19	17.88	---	18.17	16.48	15.97	15.82	15.78	15.42	15.50
30	16.60	16.29	24.87	18.41	---	17.96	16.62	15.90	15.94	15.66	15.59	15.39
31	16.37	---	33.74	19.65	---	16.80	---	15.85	---	15.82	15.59	---
MEAN	17.57	16.33	21.94	22.63	19.69	19.90	17.90	15.84	15.77	15.82	15.50	15.52
MAX	19.50	17.50	34.62	36.91	23.33	26.40	23.43	17.03	16.16	16.35	16.01	15.88
MIN	15.53	15.56	15.99	17.39	17.09	16.80	15.80	15.08	15.39	15.34	15.13	15.13

WTR YR 1991 MEAN 17.87 MAX 36.91 MIN 15.08



## LITTLE KANAWHA RIVER BASIN

03151400 LITTLE KANAWHA RIVER NEAR WILDCAT, WV

LOCATION.--Lat  $38^{\circ}44'35''$ , long  $80^{\circ}31'36''$ , Braxton County, Hydrologic Unit 05030203, on right bank on State Secondary Route 24/1, 200 ft upstream from footbridge at Gregory, 3.9 mi west of Wildcat, and at mile 138.6.

DRAINAGE AREA.--112 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1973 to September 1983, October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 23-28 and Feb. 18. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--15 years (water years 1975-83, 1986-91), 227 ft<sup>3</sup>/s, 27.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 14.81 ft; minimum discharge, 0.11 ft<sup>3</sup>/s, Aug. 17, 1987; minimum gage height, 3.33, Oct. 1, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 19	0330	3,180	9.38	Mar. 23	0800	2,660	8.85
Dec. 31	0300	*5,130	*11.10				

Minimum discharge, 1.2 ft<sup>3</sup>/s, June 30 to July 2, gage height, 3.60 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	47	64	840	474	140	238	111	10	1.2	7.4	2.7
2	22	41	59	461	337	200	236	95	8.7	5.8	5.5	2.4
3	17	37	61	311	252	253	205	80	17	12	4.3	2.1
4	15	34	153	222	196	873	178	69	15	9.3	4.4	2.1
5	23	32	182	176	167	664	211	62	9.4	21	4.9	8.8
6	24	37	160	158	173	554	338	59	6.5	25	4.6	21
7	18	40	145	562	657	1020	315	70	5.0	15	3.6	13
8	15	33	125	785	896	596	263	53	4.0	9.4	3.0	9.6
9	13	30	109	617	556	373	229	48	3.3	6.8	42	6.6
10	12	144	97	545	368	287	250	54	2.9	5.6	155	6.7
11	129	248	88	584	268	222	199	43	2.5	6.0	55	9.7
12	231	175	80	816	199	191	170	36	2.3	6.7	27	14
13	209	130	73	843	175	378	345	32	2.2	30	18	10
14	147	102	65	531	346	1470	602	28	2.0	42	20	13
15	110	85	294	361	472	957	581	25	2.0	27	16	16
16	81	75	785	380	351	511	624	22	1.8	15	11	11
17	63	83	463	559	285	346	426	19	1.7	10	9.4	8.5
18	239	82	985	463	e250	347	306	19	5.7	6.8	7.6	6.8
19	354	72	2050	353	614	674	233	18	9.8	5.4	7.5	18
20	189	67	697	288	999	672	186	15	6.8	22	21	45
21	122	62	400	266	835	467	158	14	4.9	15	18	28
22	99	59	282	227	491	585	217	11	3.9	10	14	18
23	337	191	776	e190	328	2130	313	9.9	3.0	8.9	9.4	14
24	498	252	1520	e160	245	1010	293	8.6	2.6	22	6.9	12
25	306	195	725	e140	196	511	232	7.4	5.0	17	5.4	12
26	191	147	410	e130	177	348	191	6.5	4.1	12	4.3	13
27	130	117	286	e120	146	300	168	5.7	3.0	8.5	3.4	13
28	99	101	693	e150	126	248	194	5.5	2.4	6.2	2.9	10
29	79	89	1030	218	---	206	166	5.6	1.8	5.8	2.5	8.2
30	64	74	1230	257	---	219	136	6.0	1.5	8.7	2.2	6.7
31	55	---	2970	572	---	192	---	7.3	---	9.7	2.2	---
TOTAL	3912	2881	17057	12285	10579	16944	8203	1045.5	150.8	405.8	498.4	361.9
MEAN	126	96.0	550	396	378	547	273	33.7	5.03	13.1	16.1	12.1
MAX	498	252	2970	843	999	2130	624	111	17	42	155	45
MIN	12	30	59	120	126	140	136	5.5	1.5	1.2	2.2	2.1
CFSM	1.13	.86	4.91	3.54	3.37	4.88	2.44	.30	.04	.12	.14	.11
IN.	1.30	.96	5.67	4.08	3.51	5.63	2.72	.35	.05	.13	.17	.12

CAL YR 1990 TOTAL 90412.2 MEAN 248 MAX 2970 MIN 4.7 CFSM 2.21 IN. 30.03  
WTR YR 1991 TOTAL 74323.4 MEAN 204 MAX 2970 MIN 1.2 CFSM 1.82 IN. 24.69

e Estimated

## LITTLE KANAWHA RIVER BASIN

03151520 LITTLE KANAWHA RIVER BELOW BURNSVILLE DAM, WV

LOCATION.--Lat 38°50'41", long 80°37'45", Braxton County, Hydrologic Unit 05030203, on right bank 2600 ft downstream from Burnsville Dam, 1.6 mi southeast of Burnsville, and at mile 123.7.

DRAINAGE AREA.--163 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1976 to September 1982, October 1986 to current year. October 1982 to September 1986 (gage height, discharge measurements, and annual maximum discharge only).

GAGE.--Water-stage recorder. Datum of gage is 750.00 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers Bench Mark). Prior to Oct. 1, 1983, at datum 50.0 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1979 by Burnsville Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water years 1977-1982, 1987-1991), 293 ft<sup>3</sup>/s, 24.41 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft<sup>3</sup>/s, Oct. 9, 1976, gage height, 58.81 ft, datum then in use; maximum gage height, 11.78 ft, Nov. 4, 1985, (backwater from downstream tributaries); minimum discharge, 3.6 ft<sup>3</sup>/s, May 26, 1977; minimum gage height, 4.27 ft, Sept. 28, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,210 ft<sup>3</sup>/s, Dec. 21, gage height, 7.96 ft; minimum daily, 18 ft<sup>3</sup>/s, May 22 to June 2, June 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	236	91	20	770	150	174	135	18	19	19	19
2	20	250	78	456	443	195	21	101	18	19	19	19
3	20	204	88	1090	284	354	22	101	20	19	19	19
4	20	122	229	1650	271	849	21	101	20	20	19	20
5	20	148	303	1980	243	1080	22	76	19	19	19	19
6	20	211	300	1750	215	876	22	46	18	19	19	19
7	20	191	211	1560	743	1210	22	46	20	19	19	19
8	20	179	179	1430	1110	1420	21	46	20	19	19	19
9	20	178	170	1130	1010	786	21	90	20	19	19	19
10	20	343	115	791	601	279	22	145	20	19	19	19
11	21	489	98	852	332	289	21	145	20	19	19	19
12	173	415	98	1020	295	290	20	63	20	19	19	19
13	353	297	99	1170	227	422	55	28	20	19	20	20
14	303	291	98	914	421	1010	389	28	20	19	19	21
15	176	221	222	500	735	1620	626	27	20	19	19	21
16	110	245	510	458	566	1560	636	27	20	19	19	20
17	69	236	815	758	409	881	644	28	20	19	19	19
18	133	226	763	636	343	586	546	28	20	19	19	19
19	355	227	299	473	685	987	279	28	19	23	19	19
20	365	269	1550	356	1040	905	218	25	19	19	19	19
21	231	237	1950	296	1330	574	245	19	19	19	19	19
22	138	206	1860	295	991	842	232	18	19	21	19	19
23	364	353	1110	248	451	1310	245	18	19	20	19	19
24	513	470	1090	240	320	1570	291	18	19	20	19	19
25	513	397	1350	240	279	1560	353	18	19	19	19	19
26	394	323	1290	170	246	1360	358	18	25	19	19	19
27	260	280	1010	147	198	518	255	18	23	19	19	19
28	224	295	1070	234	186	354	218	18	19	19	19	19
29	206	237	1330	345	---	222	217	18	19	19	19	19
30	206	168	1100	331	---	185	204	18	19	19	19	19
31	211	---	24	607	---	337	---	18	---	19	19	---
TOTAL	5518	7944	19500	22147	14744	24581	6420	1513	591	598	590	577
MEAN	178	265	629	714	527	793	214	48.8	19.7	19.3	19.0	19.2
MAX	513	489	1950	1980	1330	1620	644	145	25	23	20	21
MIN	20	122	24	20	186	150	20	18	18	19	19	19

CAL YR 1990 TOTAL 117653 MEAN 322 MAX 2100 MIN 19 CFSM 1.98 IN. 26.85  
WTR YR 1991 TOTAL 104723 MEAN 287 MAX 1980 MIN 18 CFSM 1.76 IN. 23.90

## LITTLE KANAWHA RIVER BASIN

## 03152000 LITTLE KANAWHA RIVER AT GLENVILLE, WV

LOCATION.--Lat 38°55'58", long 80°50'19", Gilmer County, Hydrologic Unit 05030203, on right bank at abandoned bridge on Conrad Court Street at Glenville, 1,400 ft upstream from Sycamore Run, and at mile 103.5. Prior to July 1, 1986, at bridge 400 ft downstream.

DRAINAGE AREA.--386 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1915 to September 1922 (gage heights only), October 1928 to September 1983, October 1983 to September 1984 (gage heights, occasional discharge measurements, and annual maximum discharge only), October 1984 to current year. Monthly discharge only October to December 1928, published in WSP 1305.

REVISED RECORDS.--WSP 783: Drainage area. WSP 1305: 1930, 1932(M). WSP 1435: 1954. WSP 1555: 1947(M). WRD WV-82-1: 1979.

GAGE.--Water-stage recorder. Datum of gage is 697.79 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 14, 1934, nonrecording gage at same site and datum. Prior to July 1, 1986 at site 400 ft downstream and at the same datum. May 25, 1971 to September 1983, and October 1984 to June 21, 1988, auxiliary water-stage recorder 2.7 mi downstream from base gage at datum 700.23 ft above National Geodetic Vertical Datum of 1929. Prior to May 25, 1971, auxiliary nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 31 To Jan. 2, Jan. 8-10, 24-27. Records good except those for periods of estimated daily discharges, which are poor. Flow partially regulated since 1968 by five floodwater detention reservoirs affecting 49.5 mi<sup>2</sup>. Flow regulated since March 1979 by Burnsville Lake. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--62 years (water years 1929-83, 1985-91), 606 ft<sup>3</sup>/s, 21.32 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,900 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 36.46 ft, from floodmark, from rating curve extended above 18,000 ft<sup>3</sup>/s; minimum, no flow at times in 1930-33. Minimum daily discharge since regulation, 13 ft<sup>3</sup>/s, Sept. 17, 1985.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 16, 1926, reached a stage of 33.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,040 ft<sup>3</sup>/s, Dec. 19, gage height, 23.31 ft; minimum daily, 19 ft<sup>3</sup>/s, Aug. 28 to Sept. 1, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	245	167	e1500	1440	311	1010	353	29	25	48	19
2	28	276	126	e643	981	405	475	255	27	33	36	20
3	25	269	149	1400	609	571	357	217	27	35	31	19
4	40	181	698	1560	427	1970	288	197	27	47	40	30
5	59	133	681	2130	451	2000	324	186	27	105	49	153
6	50	218	505	2040	449	2000	463	144	24	63	37	82
7	39	234	435	2780	3360	4530	355	156	22	46	33	40
8	36	204	257	e3500	2680	2220	297	122	22	35	30	30
9	33	200	295	e3000	1760	1490	287	125	23	29	74	25
10	31	1020	220	e2460	1210	712	866	193	23	27	197	25
11	86	1110	172	2390	661	517	460	225	22	27	99	35
12	447	723	163	2890	501	528	326	170	22	26	57	35
13	645	415	159	2040	459	1020	2440	100	23	27	43	28
14	526	415	153	1610	1850	5040	3060	72	23	28	50	26
15	307	297	861	987	2290	3360	2720	66	22	27	48	29
16	185	285	1890	1020	1210	2130	2000	60	23	25	38	29
17	149	306	1220	1930	926	1600	1240	54	66	24	28	26
18	110	280	3240	1410	860	1360	1010	53	49	23	26	23
19	505	270	6940	926	1850	1770	625	52	65	23	28	27
20	522	283	2220	741	2740	1780	419	51	51	82	25	33
21	400	315	2140	591	2270	1150	393	48	33	36	27	33
22	200	241	2290	555	1860	1990	426	39	31	117	34	29
23	590	649	3250	485	956	4960	404	35	37	569	29	28
24	941	823	3940	e400	583	2770	421	33	40	326	25	26
25	740	622	2220	e350	516	2000	459	31	30	133	23	28
26	617	483	1720	e300	452	1810	474	30	26	68	21	29
27	358	356	1480	e260	397	1170	412	29	23	48	20	29
28	297	376	2300	582	339	922	351	29	20	37	19	27
29	248	337	3070	778	---	644	354	29	20	68	19	25
30	240	256	2710	787	---	528	529	28	21	103	19	24
31	235	---	e6900	1760	---	713	---	27	---	67	19	---
TOTAL	8734	11822	52571	43805	34087	53971	23245	3209	898	2329	1272	1012
MEAN	282	394	1696	1413	1217	1741	775	104	29.9	75.1	41.0	33.7
MAX	941	1110	6940	3500	3360	5040	3060	353	66	569	197	153
MIN	25	133	126	260	339	311	287	27	20	23	19	19

CAL YR 1990 TOTAL 264617 MEAN 725 MAX 6940 MIN 25 CFSM 1.88 IN. 25.50  
WTR YR 1991 TOTAL 236955 MEAN 649 MAX 6940 MIN 19 CFSM 1.68 IN. 22.84

e Estimated

## LITTLE KANAWHA RIVER BASIN

03153500 LITTLE KANAWHA RIVER AT GRANTSVILLE, WV

LOCATION.--Lat 38°55'20", long 81°05'50", Calhoun County, Hydrologic Unit 05030203, on left bank 1,000 ft downstream from bridge on State Highway 16 at Grantsville, 1,200 ft downstream from Philip Run, and at mile 80.0.

DRAINAGE AREA.--913 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1928 to September 1978. Monthly discharge only October to December 1928, published in WSP 1305. October 1978 to current year (gage heights, discharge measurements, and annual maximum discharge only).

REVISED RECORDS.--WSP 1275: 1929(M), 1932-36.

GAGE.--Water-stage recorder. Datum of gage is 652.83 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Nov. 21, 1934, nonrecording gage at same site and datum.

REMARKS.--Records for winter periods not adjusted for ice effect. U.S. Army Corps of Engineers satellite telemeter and National Weather Service Hydrologger at station. Flow partially regulated since 1968 by five floodwater detention reservoirs affecting 49.5 mi<sup>2</sup>. Flow regulated since March 1979 by Burnsville Lake.

AVERAGE DISCHARGE.--50 years (water years 1929-1978), 1,328 ft<sup>3</sup>/s, 19.75 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,100 ft<sup>3</sup>/s, Mar. 7, 1967, gage height, 43.9 ft, from floodmarks; no flow Sept. 10 to Nov. 16, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,400 ft<sup>3</sup>/s, Dec. 31, gage height, 30.96 ft; minimum gage height, 6.32 ft, Sept. 2, 3, 4.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.72	7.73	7.83	18.24	13.38	8.75	12.65	---	6.48	6.37	7.68	6.33
2	6.66	7.69	7.51	11.78	11.62	8.84	11.14	---	6.60	6.64	7.28	6.33
3	6.55	7.70	7.47	11.38	10.40	9.87	10.03	8.25	6.78	6.83	6.95	6.32
4	6.58	7.70	10.80	11.55	9.64	11.83	9.44	8.07	6.72	6.81	6.79	6.33
5	7.24	7.37	11.70	12.44	9.38	14.60	9.36	7.90	6.65	6.86	7.06	6.37
6	---	7.38	10.02	12.76	9.76	14.03	10.56	7.81	6.55	7.36	7.03	7.09
7	---	7.71	9.40	16.69	19.59	23.40	9.92	7.74	6.49	7.24	6.90	6.86
8	---	7.77	8.81	17.46	19.39	16.16	9.41	7.75	6.44	7.03	6.74	6.66
9	---	7.57	8.36	15.82	14.37	13.24	9.16	7.52	6.41	6.86	6.70	6.55
10	---	11.40	8.40	16.83	12.49	11.17	11.98	7.57	6.40	6.73	7.64	6.51
11	6.74	13.61	8.01	16.54	10.86	10.08	11.13	7.77	6.39	6.63	7.82	6.49
12	9.05	10.55	7.85	18.82	9.83	9.89	9.85	7.72	6.39	6.55	7.27	6.51
13	11.87	9.43	7.73	15.58	9.50	11.19	15.33	7.45	6.38	6.52	6.92	6.59
14	9.70	8.77	7.66	13.73	14.44	22.77	20.99	7.18	6.38	7.15	6.76	7.81
15	8.76	8.60	9.39	12.00	17.72	21.19	18.83	7.04	6.45	7.11	6.78	7.19
16	8.10	8.12	16.10	11.26	13.33	14.76	17.07	6.97	6.49	6.89	6.72	6.84
17	7.61	8.13	12.50	14.81	11.58	13.18	13.34	6.90	6.45	6.72	6.61	6.70
18	7.51	8.17	16.98	13.82	11.00	12.52	11.77	6.84	6.61	6.59	6.56	6.64
19	8.38	8.08	29.51	12.02	15.05	14.83	10.72	6.81	6.76	6.51	6.51	6.59
20	9.13	7.96	17.98	11.00	17.10	14.15	9.75	6.80	6.71	6.46	6.50	6.72
21	8.66	7.94	13.50	10.45	16.64	12.51	9.30	6.78	6.73	6.65	6.50	6.81
22	8.21	7.97	13.41	10.28	14.12	14.63	9.23	6.74	6.65	6.71	6.50	6.77
23	8.75	10.6	16.77	9.78	11.86	24.76	9.23	6.67	6.60	7.25	6.53	6.70
24	11.09	12.05	22.55	9.65	10.41	18.91	9.08	6.64	7.10	7.79	6.55	6.63
25	10.27	10.24	16.19	9.31	9.85	14.12	9.02	6.61	6.84	7.82	6.52	6.60
26	9.54	9.36	13.26	8.96	9.57	12.97	9.00	6.57	6.63	7.27	6.46	6.58
27	8.84	8.84	12.07	8.81	9.23	12.68	8.97	6.53	6.51	6.90	6.42	6.58
28	8.23	8.51	14.72	9.33	8.93	12.17	---	6.51	6.45	6.73	6.40	6.57
29	7.98	8.53	18.85	11.89	---	11.29	---	6.49	6.42	6.69	6.37	6.55
30	7.80	8.18	16.63	11.25	---	10.69	---	6.49	6.38	7.34	6.36	6.51
31	7.77	---	29.11	14.42	---	10.98	---	6.49	---	7.90	6.35	---
MEAN	---	8.79	13.26	12.86	12.54	13.94	---	---	6.56	6.93	6.78	6.66
MAX	---	13.61	29.51	18.82	19.59	24.76	---	---	7.10	7.90	7.82	7.81
MIN	---	7.37	7.47	8.81	8.93	8.75	---	---	6.38	6.37	6.35	6.32



## LITTLE KANAWHA RIVER BASIN

03154000 WEST FORK LITTLE KANAWHA RIVER AT ROCKSDALE, WV

LOCATION.--Lat 38°50'48", long 81°13'26", Calhoun County, Hydrologic Unit 05030203, on right bank on State Route 11, 850 ft downstream from Henry Fork at Rocksedale, 9.0 mi southwest of Grantsville, and at mile 14.1.

DRAINAGE AREA.--205 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1928 to September 1931, October 1937 to September 1975 (monthly discharge only for some periods, published in WSP 1305), October 1975 to current year (gage heights, occasional discharge measurements, and annual maximum discharge only).

REVISED RECORDS.--WSP 953: 1929-31, 1938(M), 1939. WSP 1275: 1950.

GAGE.--Water-stage recorder. Datum of gage is 657.85 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to June 16, 1966, nonrecording gage, crest-stage gage Nov. 4, 1946, to June 15, 1966, on bridge 800 ft upstream at same datum.

REMARKS.--Records for winter periods not adjusted for ice effect. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1929-31, 1938-75), 258 ft<sup>3</sup>/s, 17.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft<sup>3</sup>/s, Apr. 16, 1939, gage height, 30.3 ft, from floodmarks, site then in use, from rating curve extended above 13,000 ft<sup>3</sup>/s; no flow at times during 1930, 1931, 1954, 1957, 1959, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,920 ft<sup>3</sup>/s, Dec. 19, gage height, 19.03 ft; minimum gage height, 2.90 ft, Sept. 3, 4.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.38	3.83	3.93	7.96	6.59	5.02	7.33	4.94	3.75	3.06	3.39	2.94
2	3.37	3.75	3.84	6.57	5.99	5.13	6.58	4.71	3.66	3.03	3.35	2.92
3	3.34	3.56	4.14	5.97	5.65	5.34	6.03	4.51	3.58	3.32	3.27	2.90
4	3.43	3.49	6.11	5.56	5.41	6.33	5.71	4.42	3.56	3.30	3.34	2.92
5	4.10	3.64	5.93	5.32	5.26	6.71	5.84	4.35	3.51	3.22	3.39	3.06
6	4.05	3.85	5.31	5.36	5.66	8.07	5.91	4.37	3.43	3.16	3.39	3.12
7	3.78	4.07	4.99	9.24	11.59	12.35	5.60	4.42	3.34	3.11	3.30	3.12
8	3.63	3.92	4.73	8.44	8.96	7.42	5.40	4.21	3.28	3.17	3.22	3.07
9	3.54	---	4.52	8.08	7.07	6.32	5.57	4.12	3.24	3.17	3.49	3.06
10	3.53	---	4.42	7.31	6.28	5.94	7.08	4.12	3.18	3.13	4.72	3.05
11	3.66	---	4.33	8.48	5.80	5.61	6.06	4.08	3.16	3.10	4.18	3.07
12	5.88	---	4.25	8.87	5.46	5.38	5.64	3.98	3.19	3.25	3.75	3.07
13	6.41	4.81	4.19	7.34	5.39	7.81	9.23	3.91	3.27	3.57	3.54	3.09
14	5.17	4.51	4.13	6.49	10.43	13.40	10.54	3.86	3.24	3.66	3.44	5.25
15	4.59	4.32	6.03	6.01	9.22	8.73	10.90	3.81	3.18	3.56	3.35	4.45
16	4.26	4.20	7.78	6.46	6.86	6.84	9.16	3.76	3.16	3.38	3.25	3.86
17	4.04	4.18	6.11	7.27	6.19	6.17	7.02	3.69	3.16	3.24	3.18	3.60
18	4.13	4.15	10.60	6.62	6.51	6.98	6.19	3.67	3.14	3.18	3.17	3.50
19	4.54	4.03	14.86	6.10	8.17	7.54	5.81	3.67	3.13	3.10	3.16	3.74
20	4.35	3.96	7.29	5.82	9.57	6.74	5.56	3.67	3.11	3.11	3.14	3.69
21	4.10	3.93	6.10	5.71	8.15	6.28	5.33	3.67	3.22	3.03	3.11	3.68
22	4.16	3.88	5.63	5.47	6.78	10.72	5.28	3.65	3.36	2.99	3.13	3.53
23	5.72	6.69	10.21	5.21	6.07	13.61	5.09	3.63	3.71	3.38	3.23	3.46
24	5.90	6.12	10.92	5.30	5.69	8.25	4.95	3.61	3.52	5.36	3.15	3.42
25	5.13	5.29	7.30	5.05	5.48	6.65	4.81	3.55	3.41	4.13	3.08	3.43
26	4.70	4.86	6.13	4.93	5.39	6.51	4.69	3.50	3.32	3.67	3.04	3.43
27	4.38	4.60	5.60	4.93	5.22	7.90	4.62	3.47	3.24	3.46	2.98	3.44
28	4.18	4.44	8.77	5.69	5.12	7.41	4.65	3.38	3.16	3.36	2.97	3.43
29	4.03	4.31	9.24	6.08	---	6.54	4.67	3.38	3.12	3.42	2.97	3.39
30	3.95	4.17	9.62	5.96	---	6.42	5.43	3.38	3.08	3.41	2.97	3.31
31	3.85	---	17.16	7.86	---	6.57	---	3.37	---	3.25	2.94	---
MEAN	4.30	---	6.91	6.50	6.78	7.44	6.22	3.90	3.31	3.36	3.31	3.40
MAX	6.41	---	17.16	9.24	11.59	13.61	10.90	4.94	3.75	5.36	4.72	5.25
MIN	3.34	---	3.84	4.93	5.12	5.02	4.62	3.37	3.08	2.99	2.94	2.90

## LITTLE KANAWHA RIVER BASIN

03155000 LITTLE KANAWHA RIVER AT PALESTINE, WV  
(National stream-quality accounting network station)

LOCATION.--Lat 39°03'35", long 81°23'25", Wirt County, Hydrologic Unit 05030203, on left bank at end of Washington Street in Elizabeth, 1.0 mi upstream from Tucker Creek, 2.3 mi northeast of Palestine, 2.4 mi upstream from old lock 3, and at mile 27.9.

DRAINAGE AREA.--1,515 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1915 to September 1922 (gage heights only), July to September 1939 (fragmentary), October 1939 to current year. Monthly discharge only October 1939 to September 1941, published in WSP 1305.

REVISED RECORDS.--WSP 953: 1940(M).

GAGE.--Water-stage recorder. Datum of gage is 585.51 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 17, 1950, water-stage recorders or nonrecording gages at old locks 3 and 4 at various datums. Auxiliary water-stage recorder 3.0 mi upstream from base gage at old lock 4 at datum 596.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 24-27, Apr. 13-14, and May 21-23. Water discharge records good except those for periods of estimated daily discharges, which are poor. Flow partially regulated since 1968 by five floodwater-detention reservoirs affecting 49.5 mi<sup>2</sup>. Flow regulated since March 1979 by Burnsville Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--52 years, 2,130 ft<sup>3</sup>/s, 19.09 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,700 ft<sup>3</sup>/s, Mar. 7, 1967, gage height, 39.14 ft, backwater, from rating curve extended above 39,000 ft<sup>3</sup>/s; minimum, 0.6 ft<sup>3</sup>/s, July 14, 1959 (filling pool above old lock 3). Minimum daily discharge since regulation, 15 ft<sup>3</sup>/s, Aug. 21, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1939, reached a stage of 32.25 ft, from floodmarks at old lock 4, discharge about 53,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30,900 ft<sup>3</sup>/s, Dec. 31, gage height, 29.60 ft; minimum daily, 25 ft<sup>3</sup>/s, Sept. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	458	728	24200	5750	1360	3820	1850	116	47	230	37
2	142	419	611	6170	3810	1260	4370	1520	137	49	289	30
3	134	396	817	2910	2670	1380	2890	1230	132	44	208	25
4	163	395	2030	2800	1990	2120	2200	1040	109	42	162	30
5	241	398	3530	2630	1590	4890	1920	908	118	77	121	36
6	244	369	2550	3420	2410	6410	2300	1050	104	109	102	31
7	309	345	1730	7780	12200	17100	2470	1940	93	121	134	34
8	318	358	1380	11100	15500	13700	1920	1120	80	180	143	74
9	234	429	1100	8910	8620	6150	1620	930	66	144	145	118
10	181	2380	896	8720	4960	4070	3340	828	58	109	156	106
11	160	5350	825	9040	3410	2740	4000	704	50	89	231	110
12	576	3520	720	11300	2320	2070	2560	690	47	74	526	77
13	2940	1890	620	9190	1820	3200	e8000	662	45	84	362	62
14	2490	1310	545	5710	6220	11400	e16000	581	40	105	227	143
15	1410	1010	1320	4080	12000	17800	15700	475	41	87	157	454
16	1010	890	6440	3110	7540	9780	13200	384	47	121	117	506
17	717	748	5920	4700	4140	5400	7690	337	60	130	102	250
18	564	701	11700	5810	3350	4590	4400	330	83	97	106	158
19	810	687	26700	4170	5580	6030	3120	312	80	82	91	129
20	839	623	21800	2970	9820	6240	2390	314	65	72	84	110
21	1080	559	6300	2540	10500	5030	2100	e300	75	55	77	100
22	947	542	4190	2200	6870	7160	2090	e220	92	44	69	101
23	1570	1770	10500	1890	4710	21000	1930	e160	96	43	59	122
24	2220	3780	17300	e1500	3000	17900	1780	122	87	135	52	124
25	2340	2750	12000	e1300	2190	8290	1630	111	79	1030	48	168
26	1670	1780	5720	e1100	1900	5250	1540	98	106	678	48	141
27	1290	1320	3680	e1000	1690	6200	1470	88	116	366	51	115
28	984	1070	4750	1340	1510	5300	1400	81	89	216	50	96
29	768	902	11300	2590	---	4510	1370	74	70	151	44	87
30	635	830	10900	3220	---	3460	1380	69	57	116	43	81
31	527	---	26600	4790	---	3370	---	62	---	98	50	---
TOTAL	27675	37979	205202	162190	148070	215160	120600	18590	2438	4795	4284	3655
MEAN	893	1266	6619	5232	5288	6941	4020	600	81.3	155	138	122
MAX	2940	5350	26700	24200	15500	21000	16000	1940	137	1030	526	506
MIN	134	345	545	1000	1510	1260	1370	62	40	42	43	25

CAL YR 1990 TOTAL 1006925 MEAN 2759 MAX 26700 MIN 90  
WTR YR 1991 TOTAL 950638 MEAN 2604 MAX 26700 MIN 25

e Estimated

## LITTLE KANAWHA RIVER BASIN

03155000 LITTLE KANAWHA RIVER AT PALESTINE, WV--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-61, 1965-67, 1976 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT												
24...	1530	2320	147	7.3	13.5	40	744	9.1	89	1300	2000	52
DEC												
05...	1500	3800	128	7.3	5.5	43	755	11.4	91	1500	1300	46
MAR												
20...	1430	5890	106	7.2	9.0	26	744	10.9	97	500	K190	36
MAY												
09...	1400	921	127	7.4	18.5	23	750	7.9	86	480	K71	49
JUL												
24...	1600	76	181	7.3	27.5	4.5	744	3.8	49	K30	K16	53
AUG												
29...	1230	44	187	7.1	26.5	5.6	749	3.0	38	K22	K7	58

DATE	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 HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)
OCT												
24...	15	3.6	6.4	2.0	40	0	33	17	9.4	<0.10	6.4	95
DEC												
05...	13	3.2	5.4	1.7	32	0	26	17	6.9	<0.10	5.4	72
MAR												
20...	10	2.6	3.6	1.1	21	0	17	19	3.9	<0.10	6.0	73
MAY												
09...	14	3.3	5.0	1.4	38	0	31	22	6.4	0.40	5.4	84
JUL												
24...	14	4.4	12	2.6	45	0	37	22	14	0.10	2.2	99
AUG												
29...	16	4.4	11	2.3	46	0	38	30	17	<0.10	2.6	100

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	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)
OCT												
24...	81	--	<0.010	0.300	0.020	0.030	0.68	0.70	0.050	<0.010	<0.010	10
DEC												
05...	70	--	<0.010	0.300	0.040	0.010	0.56	0.60	0.090	0.020	<0.010	50
MAR												
20...	58	--	<0.010	0.260	<0.010	0.020	--	0.30	0.060	0.010	<0.010	--
MAY												
09...	78	0.190	0.010	0.200	0.040	0.030	0.46	0.50	0.050	0.020	0.010	70
JUL												
24...	93	--	<0.010	<0.050	<0.010	0.030	--	<0.20	0.020	0.020	<0.010	--
AUG												
29...	107	--	0.010	<0.050	0.010	0.050	0.39	0.40	0.040	<0.010	<0.010	10

K: Results based on colony count outside the acceptance range (non-ideal colony count).

## LITTLE KANAWHA RIVER BASIN

03155000 LITTLE KANAWHA RIVER AT PALESTINE, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	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)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 24...	<1	53	<0.5	<1.0	<1	<3	2	200	1	<4	19
DEC 05...	<1	46	<0.5	<1.0	<1	<3	3	130	<1	<4	22
MAR 20...	--	--	--	--	--	--	--	--	--	--	--
MAY 09...	<1	49	<0.5	<1.0	1	<3	1	100	<1	<4	26
JUL 24...	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	<1	59	<0.5	<1.0	<1	<3	1	12	<1	<4	350

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 24...	<0.1	<10	1	<1	<1.0	93	<6	<3	63	395	96
DEC 05...	<0.1	<10	<1	<2	<1.0	80	<6	<3	84	862	83
MAR 20...	--	--	--	--	--	--	--	--	51	811	92
MAY 09...	<0.1	<10	2	<1	<1.0	84	<6	<3	26	65	97
JUL 24...	--	--	--	--	--	--	--	--	6	1.2	44
AUG 29...	<0.1	<10	<1	<1	<1.0	120	<6	<3	9	1.1	100



## LITTLE KANAWHA RIVER BASIN

03155500 HUGHES RIVER AT CISCO, WV

LOCATION.--Lat 39°07'10", long 81°16'40", Ritchie County, Hydrologic Unit 05030203, on right bank 100 ft downstream from confluence of North and South Forks, 1.0 mi upstream from Cisco, 5.0 mi south of Petroleum, and at mile 14.0.

DRAINAGE AREA.--452 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1915 to September 1922 (gage heights only), October 1928 to September 1931, October 1938 to current year. Monthly discharge only for some periods, published in WSP 1305. Prior to October 1965, published as "at Cisco."

REVISED RECORDS.--WSP 893: 1939. WSP 1113: 1947.

GAGE.--Water-stage recorder. Datum of gage is 607.92 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to Sept. 30, 1931, nonrecording gage at site 0.9 mi downstream and Mar. 5, 1939, to Sept. 30, 1945, nonrecording gage at site 1.0 mi downstream, both at datum 2.56 ft lower. Oct. 1, 1945, to June 30, 1946, nonrecording gage at bridge across mouth of North Fork at present datum.

REMARKS.--Estimated daily discharges: Jan. 24-27 and July 23-25. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--56 years, 579 ft<sup>3</sup>/s, 17.40 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,700 ft<sup>3</sup>/s, June 26, 1950, gage height, 32.69 ft; no flow July 26, Aug. 2-6, Sept. 4 to Dec. 5, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 19	0800	*18,500	*27.14	Mar. 7	0800	9,700	17.50
Dec. 23	2130	9,850	18.45	Mar. 23	1200	10,500	18.42
Dec. 31	1130	15,200	23.11	Apr. 14	0230	10,000	17.91
Feb. 7	1500	10,600	18.51				

Minimum discharge, 3.0 ft<sup>3</sup>/s, Sept. 1, 2, 4, gage height, 1.57 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	98	157	2600	1500	326	810	200	19	8.1	29	3.1
2	22	91	140	1260	888	305	659	170	18	13	27	3.3
3	22	81	533	869	669	322	519	148	33	16	20	3.3
4	91	69	3170	671	540	412	435	128	24	12	28	3.9
5	490	63	1700	550	469	648	447	119	16	9.7	30	10
6	309	77	738	727	1790	1500	651	441	16	8.5	34	11
7	157	106	528	3210	8270	6770	571	1440	15	9.9	29	13
8	103	130	405	2470	3970	1920	474	555	13	7.6	22	19
9	71	104	327	2030	1570	1000	463	505	11	5.8	95	14
10	55	2570	273	2970	993	758	971	725	9.3	8.3	215	11
11	64	2530	239	3050	746	625	865	453	8.1	27	191	12
12	1850	779	211	3910	575	533	568	310	7.1	17	85	16
13	3340	465	191	1990	495	1200	4090	235	6.3	14	47	17
14	706	332	172	1180	3080	3980	7050	189	5.3	15	31	93
15	382	256	657	870	3940	2640	5030	211	5.0	11	23	49
16	248	212	3150	867	1610	1220	4020	166	15	9.0	17	33
17	178	203	1250	1600	1040	833	1540	122	132	12	14	21
18	211	200	8460	1370	949	1030	907	96	43	10	17	15
19	783	177	15600	954	2120	1980	667	80	24	8.1	17	34
20	437	152	2240	759	3060	1420	555	70	17	7.2	19	48
21	275	134	1350	789	2630	996	456	60	13	6.5	20	38
22	239	124	1150	815	1380	3140	415	54	15	5.2	16	32
23	870	1430	5570	594	925	9090	404	47	156	e4.2	15	25
24	1000	1450	5850	e440	685	2830	354	45	95	e20	13	26
25	559	630	2070	e330	559	1210	308	39	41	e80	11	106
26	372	426	1010	e280	477	844	270	39	29	39	8.9	103
27	269	323	673	e300	416	1080	243	33	22	24	6.9	68
28	202	272	976	620	365	950	230	29	17	17	5.4	42
29	165	231	2570	1270	---	773	225	25	13	13	4.2	30
30	133	189	2660	1240	---	696	225	23	10	13	3.7	23
31	113	---	12300	3190	---	792	---	21	---	17	3.3	---
TOTAL	13740	13904	76320	43775	45711	51823	34422	6778	848.1	468.1	1097.4	922.6
MEAN	443	463	2462	1412	1633	1672	1147	219	28.3	15.1	35.4	30.8
MAX	3340	2570	15600	3910	8270	9090	7050	1440	156	80	215	106
MIN	22	63	140	280	365	305	225	21	5.0	4.2	3.3	3.1
CFSM	.98	1.03	5.45	3.12	3.61	3.70	2.54	.48	.06	.03	.08	.07
IN.	1.13	1.14	6.28	3.60	3.76	4.27	2.83	.56	.07	.04	.09	.08

CAL YR 1990 TOTAL 300467 MEAN 823 MAX 15600 MIN 14 CFSM 1.82 IN. 24.73  
WTR YR 1991 TOTAL 289809.2 MEAN 794 MAX 15600 MIN 3.1 CFSM 1.76 IN. 23.85

e Estimated

## KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA  
(National stream-quality accounting network station)

LOCATION.--Lat 37°22'22", long 80°51'39", Giles County, Hydrologic Unit 05050002, on right bank 90 ft upstream from bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi upstream from East River, and 6.3 mi downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1927 to current year.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1305: 1928(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 1,490.11 ft above National Geodetic Vertical Datum of 1929. Aug. 11, 1927, to Oct. 16, 1934, on left bank opposite present site at same datum, and Oct. 17, 1934, to June 16, 1939, on left bank at site 200 ft upstream at same datum.

REMARKS.--Records good except those for periods of no gage-height record, May 17-21 and May 31 to July 8, which are fair. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 226,000 ft<sup>3</sup>/s, from rating curve extended above 89,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow. Minimum gage height, 2.10 ft, Sept. 8, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31,600 ft<sup>3</sup>/s, Mar. 31, gage height, 9.61 ft; minimum, 1,160 ft<sup>3</sup>/s, Oct. 2, gage height, 2.56 ft; minimum daily, 1,280 ft<sup>3</sup>/s, Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	4210	2650	10200	4690	5890	18000	7610	e6400	e3900	3190	2170
2	1760	3980	1550	8930	3600	9480	15300	7020	e6200	e3800	2730	2610
3	1790	2780	1570	8070	2120	13000	12100	5800	e7000	e3900	2740	1610
4	1610	4090	4110	7540	2050	17700	9860	5770	e6800	e4500	2570	1880
5	1510	2790	5480	7550	4910	12400	8900	5550	e6500	e5200	1770	2070
6	1540	1850	5420	2890	5120	11700	7770	5630	e5600	e2800	2510	1880
7	1400	1790	4430	2880	5730	11100	7660	5320	e4600	e3600	2340	2180
8	1320	1700	4490	7200	5640	9270	6690	5500	e4500	e3400	4200	2010
9	1470	3170	1880	6770	5830	8710	6980	5490	e3700	3070	3080	1770
10	1900	6780	1710	5850	4630	7730	8160	5470	e3800	3020	2590	1930
11	8820	6910	1770	14700	2480	7860	7990	5470	e3700	2080	1630	1930
12	10600	3220	3480	26100	4960	7630	7820	4970	e4200	2830	1520	1840
13	11800	5380	3050	18300	5950	10600	7730	4540	e4800	3060	2170	1870
14	15300	5310	3000	12000	6730	7820	8590	5690	e4500	2220	2630	2030
15	13100	4700	3060	10500	8390	8510	8290	5610	e3500	3940	2720	2670
16	9660	4050	1710	11400	7030	8340	8520	7280	e3600	2310	3750	2200
17	5580	5050	1720	12200	5840	8020	8260	e6200	e5800	2590	2790	1870
18	5860	2010	4090	8650	4610	10100	7810	e6000	e5200	2550	2650	3080
19	14900	1850	4070	10900	11000	9420	7570	e9000	e7000	2230	2750	4630
20	13200	4650	5090	9000	13700	8450	13600	e11000	e8500	1980	2090	2750
21	10700	4100	5030	4540	12800	8220	13500	e14500	e6600	2230	2060	1480
22	9380	4110	6350	6560	12600	8040	10000	13700	e5400	2810	2210	1460
23	17100	1770	5290	6350	11200	8810	8720	10100	e6000	3190	2150	1280
24	17300	3430	13300	6070	10600	10300	8370	7660	e5000	2690	2230	1340
25	14000	1690	12900	6010	9030	8670	7740	6120	e4800	2760	1560	1320
26	12000	1610	7400	5960	7090	8310	6480	5650	e3500	3300	1310	1310
27	10500	3150	8720	2610	6290	8090	7090	5650	e4000	4470	1340	1560
28	6770	3560	9310	5640	6030	11700	5170	11300	e3800	5000	1760	1650
29	5680	3940	8650	5490	---	12800	6300	13300	e3600	3330	1880	1410
30	4430	3270	10100	5570	---	28100	9990	9690	e3800	4690	2660	1400
31	4630	---	10300	5670	---	27400	---	e6600	---	3670	2160	---
TOTAL	236980	106900	161680	262100	190650	334170	270960	229190	152400	101120	73740	59190
MEAN	7645	3563	5215	8455	6809	10780	9032	7393	5080	3262	2379	1973
MAX	17300	6910	13300	26100	13700	28100	18000	14500	8500	5200	4200	4630
MIN	1320	1610	1550	2610	2050	5890	5170	4540	3500	1980	1310	1280
(*)	-307	+299	-21	-47	+49	+174	-181	+55	+47	-31	+20	-74
MEAN $\Psi$	7339	3872	5194	8408	6858	10950	8851	7448	5127	3231	2399	1899
CFSM $\Psi$	1.95	1.02	1.38	2.23	1.82	2.91	2.35	1.98	1.36	.86	.64	.50
IN. $\Psi$	2.25	1.14	1.59	2.57	1.90	3.35	2.62	2.28	1.52	.99	.73	.56

CAL YR 1990 TOTAL 2159260 MEAN 5916 MAX 26400 MIN 1250 MEAN $\Psi$  5920 CFSM $\Psi$  1.57 IN. $\Psi$  21.34  
WTR YR 1991 TOTAL 2179080 MEAN 5970 MAX 28100 MIN 1280 MEAN $\Psi$  5968 CFSM $\Psi$  1.58 IN. $\Psi$  21.51

\* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; provided by Appalachian Power Company.

$\Psi$  Adjusted for change in contents.

e Estimated.

## KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA--Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1938, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4319	4112	4543	6919	6141	7665	7007	5225	3920	3322	3436	3343
MAX	11250	9016	7798	13770	10980	13050	11390	7093	8351	7956	8211	10840
(WY)	1938	1930	1928	1937	1936	1936	1936	1933	1929	1938	1928	1928
MIN	1094	1249	1685	1795	1494	3307	3899	2491	1908	1206	1330	1145
(WY)	1931	1932	1934	1934	1934	1931	1930	1934	1930	1930	1930	1932

## SUMMARY STATISTICS

## WATER YEARS 1928 - 1938

ANNUAL MEAN	4992
HIGHEST ANNUAL MEAN	6859
LOWEST ANNUAL MEAN	3208
HIGHEST DAILY MEAN	57600
LOWEST DAILY MEAN	820
ANNUAL SEVEN-DAY MINIMUM	914
INSTANTANEOUS PEAK FLOW	99000
INSTANTANEOUS PEAK STAGE	16.75
INSTANTANEOUS LOW FLOW	770
ANNUAL RUNOFF (CFSM)	1.32
ANNUAL RUNOFF (INCHES)	17.99
10 PERCENT EXCEEDS	9340
50 PERCENT EXCEEDS	3800
90 PERCENT EXCEEDS	1520

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1991, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4319	4112	4543	6919	6141	7665	7007	5225	3920	3322	3436	3343
MAX	11250	9016	7798	13770	10980	13050	11390	7093	8351	7956	8211	10840
(WY)	1938	1930	1928	1937	1936	1936	1936	1933	1929	1938	1928	1928
MIN	1094	1249	1685	1795	1494	3307	3899	2491	1908	1206	1330	1145
(WY)	1931	1932	1934	1934	1934	1931	1930	1934	1930	1930	1930	1932

## SUMMARY STATISTICS

## FOR 1990 CALENDAR YEAR

## FOR 1991 WATER YEAR

## WATER YEARS 1939 - 1991

ANNUAL TOTAL	2159260	2179080	
ANNUAL MEAN	5916	5970	4998
HIGHEST ANNUAL MEAN			7424
LOWEST ANNUAL MEAN			2626
HIGHEST DAILY MEAN	26400	Jan 1	28100
LOWEST DAILY MEAN	1250	Sep 4	1280
ANNUAL SEVEN-DAY MINIMUM	1520	Oct 3	1390
INSTANTANEOUS PEAK FLOW	29300	Jan 1	31600
INSTANTANEOUS PEAK STAGE	9.28	Jan 1	9.61
INSTANTANEOUS LOW FLOW	1120	Sep 4	1160
ANNUAL RUNOFF (CFSM)	1.57		1.58
ANNUAL RUNOFF (INCHES)	21.32		21.51
10 PERCENT EXCEEDS	11200		11300
50 PERCENT EXCEEDS	5090		5200
90 PERCENT EXCEEDS	1740		1770

## KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1955-56, 1965 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to September 1988.

WATER TEMPERATURE: October 1964 to September 1988.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML) (31673)
NOV 14...	1000	7170	120	6.7	11.0	9.0	735	3.5	11.4	102	62	15
JAN 09...	1000	7740	122	7.0	5.0	5.0	733	1.9	11.6	94	230	--
MAR 19...	1000	10400	118	7.7	7.0	8.0	721	8.0	11.2	100	570	45
MAY 22...	1000	14000	110	7.0	22.0	17.0	730	9.0	9.1	98	920	160
JUL 30...	1115	4740	130	7.4	21.0	23.0	723	25	7.7	95	400	69
SEP 04...	1100	1400	178	7.8	24.0	22.0	722	1.0	9.6	116	130	K13

DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)	ALKA-LINITY LAB (MG/L AS CaCO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
NOV 14...	50	12	4.8	3.5	1.7	48	0	40	43	10	4.6	<0.10
JAN 09...	51	13	4.5	4.2	1.4	53	0	44	45	11	5.1	<0.10
MAR 19...	55	14	4.9	3.4	1.3	55	0	45	47	9.4	4.2	<0.10
MAY 22...	48	12	4.4	3.4	1.3	51	0	42	42	7.3	3.9	<0.10
JUL 30...	57	13	5.9	3.7	1.8	56	0	46	49	10	4.1	0.10
SEP 04...	76	16	8.6	5.1	1.6	76	0	62	62	19	4.1	0.10

&lt; Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).



## KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	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, AMMONIA TOTAL (MG/L AS N) (00610)	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)
NOV 14...	8.1	75	71	0.010	0.600	0.030	0.020	0.70	0.040	0.030	0.010
JAN 09...	7.5	74	76	0.010	0.800	0.070	0.070	0.40	0.030	0.020	<0.010
MAR 19...	7.1	81	74	0.010	0.690	0.020	0.030	0.30	0.030	0.010	0.010
MAY 22...	8.1	61	68	0.020	0.610	0.060	0.050	0.60	0.060	0.020	<0.010
JUL 30...	7.0	76	76	<0.010	0.520	0.060	0.030	0.40	0.040	0.030	<0.010
SEP 04...	6.5	102	100	<0.010	0.340	0.030	<0.010	0.40	0.190	0.160	0.070
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC, DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	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)	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)
NOV 14...	30	13	33	<0.5	<1.0	<1	<3	1	63	1	<4
JAN 09...	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	--	--	--	--	--	--	--	--	--	--	--
MAY 22...	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
SEP 04...	<10	<1	68	<0.5	<1.0	<1	<3	3	16	<1	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY, DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 14...	4	<0.1	<10	1	<1	<1.0	53	<6	7	7	80
JAN 09...	--	--	--	--	--	--	--	--	--	12	68
MAR 19...	--	--	--	--	--	--	--	--	--	18	75
MAY 22...	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	7	92
SEP 04...	5	<0.1	<10	2	<1	<1.0	84	<6	22	10	39

&lt; Actual value is known to be less than the value shown.

## KANAWHA RIVER BASIN

03179000 BLUESTONE RIVER NEAR PIPESTEM, WV

LOCATION.--Lat 37°32'38", long 81°00'38", Summers County, Hydrologic Unit 05050002, on left bank 1.2 mi downstream from Mountain Creek, 2.5 mi west of Pipestem, and at mile 10.6.

DRAINAGE AREA.--394 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1950 to current year.

REVISED RECORDS.--WSP 1705: 1959. WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,527.35 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Jan. 23-28 and Feb. 17. Records good except those for periods of estimated daily discharges which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--41 years, 469 ft<sup>3</sup>/s, 16.17 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft<sup>3</sup>/s, Apr. 5, 1977, gage height, 15.82 ft; minimum, 7.0 ft<sup>3</sup>/s, Sept. 21-23, 30, 1955, gage height, 1.60 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0130	5,440	9.71	Mar. 30	0700	*6,710	*10.37

Minimum discharge, 25 ft<sup>3</sup>/s, Sept. 3, 4, gage height, 1.88 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	114	71	2310	291	390	1890	319	387	88	63	36
2	36	105	67	1280	262	1020	1260	274	756	83	52	29
3	35	99	71	876	253	1470	945	238	2150	85	45	27
4	36	92	82	660	244	2340	767	221	1130	101	40	25
5	38	89	109	523	238	1990	687	209	602	105	64	31
6	43	93	102	445	271	1290	632	208	398	104	62	43
7	44	97	90	1070	426	1340	555	209	296	82	48	47
8	39	85	88	2100	548	1130	495	180	239	68	50	40
9	37	83	85	1420	566	904	467	179	203	60	57	36
10	38	375	80	979	515	770	428	226	176	57	57	30
11	223	459	77	2380	448	653	372	232	156	59	92	33
12	413	308	75	3700	378	572	321	745	143	67	82	35
13	1260	231	73	2040	351	767	501	908	135	127	58	90
14	685	187	72	1270	662	2310	806	1230	126	143	47	179
15	327	159	105	937	890	2150	740	1710	113	114	44	148
16	207	142	526	1160	673	1340	647	975	105	84	41	103
17	154	135	531	1520	e520	986	535	584	120	69	39	63
18	283	129	1420	1140	781	1090	464	426	518	59	35	48
19	655	120	1350	874	3170	1140	472	1020	820	55	33	71
20	412	109	1010	794	3300	985	522	1470	308	52	35	71
21	257	102	1130	764	2000	849	477	1580	292	51	47	72
22	295	97	1010	678	1370	951	461	1090	202	47	54	51
23	1280	96	836	e540	1000	2330	433	698	243	43	38	43
24	923	98	1520	e460	783	2780	393	498	291	76	33	40
25	527	93	1330	e410	660	1620	355	383	243	187	30	37
26	350	86	834	e360	603	1110	317	303	181	121	28	36
27	257	80	598	e330	509	991	302	342	145	87	27	34
28	198	78	667	e360	440	838	297	2740	124	69	27	33
29	165	77	1540	353	---	2070	284	1430	110	75	27	31
30	142	75	3120	324	---	6230	342	707	98	95	33	28
31	127	---	4460	324	---	3560	---	466	---	84	36	---
TOTAL	9525	4093	23129	32381	22152	47966	17167	21800	10810	2597	1424	1590
MEAN	307	136	746	1045	791	1547	572	703	360	83.8	45.9	53.0
MAX	1280	459	4460	3700	3300	6230	1890	2740	2150	187	92	179
MIN	35	75	67	324	238	390	284	179	98	43	27	25
CFSM	.78	.35	1.89	2.65	2.01	3.93	1.45	1.78	.91	.21	.12	.13
IN.	.90	.39	2.18	3.06	2.09	4.53	1.62	2.06	1.02	.25	.13	.15

CAL YR 1990 TOTAL 194786 MEAN 534 MAX 7630 MIN 33 CFSM 1.35 IN. 18.39  
WTR YR 1991 TOTAL 194634 MEAN 533 MAX 6230 MIN 25 CFSM 1.35 IN. 18.38

e Estimated

## KANAWHA RIVER BASIN

03180300 EAST FORK GREENBRIER RIVER AT FRANK, WV

LOCATION.--Lat 38°32'34", long 79°48'24", Pocahontas County, Hydrologic Unit 05050003, on right bank at Frank, 2,400 ft downstream from Johns Run, 1.0 mi east of Durbin, and at mile 1.5.

DRAINAGE AREA.--67.1 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,750 ft above National Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 22 to Feb. 21. Records good except those for period of estimated daily discharges, which is poor. Natural flow of stream affected by diversion for industrial use just upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,080 ft<sup>3</sup>/s, Mar. 23, 1991, gage height, 5.51 ft; minimum daily discharge, 0.79 ft<sup>3</sup>/s, Aug. 18, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0230	1,910	4.08	Mar. 23	1400	*5,080	*5.51

Minimum daily discharge, 2.0 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	50	27	527	e180	77	150	47	14	17	18	13
2	11	44	28	311	e150	127	134	45	12	36	12	9.0
3	9.2	41	40	200	e130	175	118	42	12	20	8.8	6.8
4	11	38	106	141	e110	918	107	41	12	12	7.6	6.4
5	16	38	99	106	e95	525	128	40	9.8	9.5	7.8	16
6	12	63	95	96	e120	340	170	67	8.8	11	5.6	21
7	10	48	86	120	e260	291	168	64	8.2	8.0	4.6	14
8	9.4	44	78	103	e240	219	148	56	8.1	5.4	4.5	10
9	9.4	44	72	103	e190	184	131	65	8.1	4.6	86	8.0
10	9.3	129	65	114	e160	158	122	68	6.2	3.9	58	7.0
11	163	139	61	197	e130	122	97	65	6.1	3.9	31	9.7
12	113	121	55	400	e110	105	87	64	5.7	4.4	21	8.7
13	100	101	53	363	e95	101	316	68	6.1	16	17	6.8
14	77	84	48	263	e125	89	591	75	5.4	17	14	6.9
15	63	73	103	183	e115	77	434	63	5.1	13	13	6.3
16	49	67	322	473	e100	70	283	54	4.7	7.3	11	5.2
17	40	66	263	657	e85	83	207	48	5.0	5.2	9.7	5.0
18	114	59	253	391	e100	347	168	44	10	4.3	11	5.1
19	183	51	395	262	e150	444	134	39	7.7	4.7	25	33
20	135	47	326	184	e390	358	118	35	11	17	29	12
21	99	42	249	146	e330	324	102	31	6.0	9.8	22	6.6
22	102	41	183	e120	261	380	91	28	5.7	6.5	16	5.0
23	576	45	253	e100	188	2370	81	26	26	5.3	13	3.9
24	417	43	562	e80	146	1310	73	24	19	11	11	3.8
25	255	40	413	e70	121	522	68	27	10	9.8	9.8	3.5
26	165	35	270	e65	106	303	62	23	6.9	7.5	8.2	3.3
27	116	33	177	e60	89	211	58	20	5.5	8.1	7.2	2.8
28	90	32	156	e65	83	168	58	21	4.6	7.8	7.3	2.3
29	74	31	232	e70	---	138	56	18	4.0	44	9.6	2.3
30	64	29	772	e90	---	158	52	15	4.1	30	8.2	2.0
31	57	---	1390	e200	---	142	---	14	---	45	17	---
TOTAL	3161.3	1718	7232	6260	4359	10836	4512	1337	257.8	405.0	523.9	245.4
MEAN	102	57.3	233	202	156	350	150	43.1	8.59	13.1	16.9	8.18
MAX	576	139	1390	657	390	2370	591	75	26	45	86	33
MIN	9.2	29	27	60	83	70	52	14	4.0	3.9	4.5	2.0

CAL YR 1990 TOTAL 48086.7 MEAN 132 MAX 1490 MIN 4.1 CFSM 1.97 IN 26.66  
WTR YR 1991 TOTAL 40847.4 MEAN 112 MAX 2370 MIN 2.0 CFSM 1.67 IN 22.65

e Estimated

## KANAWHA RIVER BASIN

03180500 GREENBRIER RIVER AT DURBIN, WV

LOCATION.--Lat 38°32'37", long 79°50'00", Pocahontas County, Hydrologic Unit 05050003, on left bank at Durbin, 500 ft downstream from confluence of East and West Forks, and at mile 153.4.

DRAINAGE AREA.--133 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1943 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,699.71 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 23-29 and Feb. 17. Records good except those for periods of estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--48 years, 260 ft<sup>3</sup>/s, 26.55 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,100 ft<sup>3</sup>/s, Nov. 4, 1985, gage height, 15.82 ft, from floodmarks, from rating curve extended above 5,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow part of each day, Oct. 2, 3, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0230	4,060	5.78	Mar. 23	1330	*5,670	*6.53

Minimum discharge, 13 ft<sup>3</sup>/s, June 30, July 1, 12, gage height, 0.68 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	123	77	1230	437	168	333	96	34	32	53	32
2	38	110	77	661	368	275	304	90	31	97	36	23
3	32	100	123	466	302	365	262	83	32	52	27	18
4	32	92	301	347	253	1730	229	78	30	30	28	16
5	46	91	262	270	227	1070	279	77	26	26	29	40
6	35	142	237	235	314	641	366	253	22	36	20	67
7	28	108	216	333	568	597	347	265	20	21	16	41
8	26	100	195	304	570	497	311	215	19	16	16	28
9	25	100	174	301	457	424	274	213	19	15	305	22
10	24	328	159	322	369	355	262	195	17	14	252	20
11	413	356	147	513	291	286	209	176	16	13	120	29
12	328	311	135	1150	229	235	189	163	16	13	74	24
13	293	254	130	921	218	228	619	181	16	49	55	19
14	234	215	119	590	300	206	1180	265	16	63	45	18
15	193	184	238	450	259	172	841	215	14	45	39	17
16	159	165	789	1190	221	153	585	169	14	26	32	15
17	143	168	605	1590	e190	194	456	139	15	18	26	14
18	335	153	586	904	237	942	366	118	21	16	23	28
19	496	134	957	567	353	1250	299	104	19	54	46	837
20	372	125	703	442	893	821	253	90	27	95	62	215
21	275	114	539	363	791	772	216	78	18	48	48	114
22	275	108	426	259	571	1090	198	70	16	33	32	72
23	1260	128	570	e220	431	3540	175	63	52	25	25	53
24	944	123	1200	e180	334	2130	156	58	50	63	22	45
25	566	111	884	e150	281	905	143	59	24	41	19	38
26	400	101	561	e130	238	553	127	52	18	28	17	33
27	289	95	413	e120	199	431	120	46	16	24	16	27
28	223	93	354	e110	177	358	120	52	14	21	21	23
29	184	90	440	e130	---	303	116	48	13	133	40	21
30	157	83	1490	181	---	349	105	38	13	105	25	18
31	139	---	2940	440	---	320	---	35	---	110	48	---
TOTAL	8008	4405	16047	15069	10078	21360	9440	3784	658	1362	1617	1967
MEAN	258	147	518	486	360	689	315	122	21.9	43.9	52.2	65.6
MAX	1260	356	2940	1590	893	3540	1180	265	52	133	305	837
MIN	24	83	77	110	177	153	105	35	13	13	16	14
CFSM	1.94	1.10	3.89	3.65	2.71	5.18	2.37	.92	.16	.33	.39	.49
IN.	2.24	1.23	4.49	4.21	2.82	5.97	2.64	1.06	.18	.38	.45	.55

CAL YR 1990 TOTAL 108083 MEAN 296 MAX 2940 MIN 17 CFSM 2.23 IN. 30.23  
WTR YR 1991 TOTAL 93795 MEAN 257 MAX 3540 MIN 13 CFSM 1.93 IN. 26.23

e Estimated



## KANAWHA RIVER BASIN

03182500 GREENBRIER RIVER AT BUCKEYE, WV

LOCATION.--Lat 38°11'09", long 80°07'51", Pocahontas County, Hydrologic Unit 05050003, on right bank at upstream side of highway bridge at Buckeye, 1,000 ft upstream from Swago Creek, 3.5 mi downstream from Knapp Creek, and at mile 105.1 (corrected). Records include flow of Swago Creek.

DRAINAGE AREA.--540 mi<sup>2</sup>, includes that of Swago Creek.

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 758: 1933. WSP 953: 1930-32, 1934-35(M), 1936, 1937(M), 1938-39, 1940(M). WSP 1275: 1936.

GAGE.--Water-stage recorder. Datum of gage is 2,085.89 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 27, 1939, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 24-29 and Feb. 17. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--62 years, 880 ft<sup>3</sup>/s, 22.13 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,000 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 23.20 ft, from floodmarks, from rating curve extended above 33,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 3.8 ft<sup>3</sup>/s, Aug. 13, 1930, gage height, 1.19 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0600	14,100	10.97	Mar. 23	1700	*22,600	*13.60

Minimum discharge, 33 ft<sup>3</sup>/s, Sept. 18, 19; minimum gage height, 1.75 ft, July 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	365	185	4510	1010	541	1530	370	106	39	252	69
2	76	322	173	2430	1000	922	1240	334	98	39	166	69
3	71	287	219	1650	867	1530	1020	304	98	48	114	69
4	71	262	1010	1210	752	6270	857	280	97	110	94	63
5	71	249	1070	946	659	4070	811	270	88	85	83	72
6	73	298	833	802	644	2300	1110	329	80	66	78	76
7	80	358	713	2020	893	2040	1110	644	75	56	134	78
8	67	284	608	2740	1220	1690	1030	544	70	56	137	95
9	60	269	530	1760	1110	1400	941	486	65	51	645	68
10	59	1660	469	1430	981	1170	844	500	61	44	1080	55
11	934	1880	426	2580	837	970	726	451	59	40	537	53
12	1510	1250	387	6850	681	802	613	414	56	37	316	48
13	1160	941	354	4500	623	772	1670	387	53	44	216	48
14	1030	736	332	2560	1220	743	4790	491	49	44	164	51
15	717	596	407	1770	1620	660	2840	545	47	47	130	44
16	532	515	2190	4320	1080	654	2030	451	50	79	110	39
17	417	473	2050	5360	e800	816	1500	366	53	68	92	35
18	559	447	1940	3120	916	3840	1210	312	59	52	83	33
19	1970	395	3330	1990	1600	4320	1010	362	62	89	100	212
20	1220	346	2570	1520	3780	2760	896	308	61	188	78	544
21	862	311	2100	1260	2750	2100	774	273	72	136	108	261
22	912	282	1840	994	1950	2270	690	249	69	110	109	160
23	7460	281	2240	755	1440	12200	616	222	62	82	83	112
24	4060	306	5380	e580	1110	8470	546	199	59	74	68	89
25	2070	285	3370	e500	929	3400	490	186	95	76	61	75
26	1340	258	2030	e450	835	2060	441	168	84	107	53	67
27	950	236	1400	e400	694	1800	419	161	65	373	46	58
28	714	222	1240	e350	585	1480	449	162	53	154	61	49
29	576	213	1370	e430	---	1280	421	145	47	891	87	45
30	482	201	5250	494	---	1850	409	135	43	720	74	38
31	416	---	10900	945	---	1840	---	118	---	372	81	---
TOTAL	30602	14528	56916	61226	32586	77020	33033	10166	2036	4377	5440	2775
MEAN	987	484	1836	1975	1164	2485	1101	328	67.9	141	175	92.5
MAX	7460	1880	10900	6850	3780	12200	4790	644	106	891	1080	544
MIN	59	201	173	350	585	541	409	118	43	37	46	33
CFSM	1.83	.90	3.40	3.66	2.16	4.60	2.04	.61	.13	.26	.32	.17
IN.	2.11	1.00	3.92	4.22	2.24	5.31	2.28	.70	.14	.30	.37	.19

CAL YR 1990 TOTAL 362631 MEAN 994 MAX 10900 MIN 59 CFSM 1.84 IN. 24.98  
WTR YR 1991 TOTAL 330705 MEAN 906 MAX 12200 MIN 33 CFSM 1.68 IN. 22.78

e Estimated

## KANAWHA RIVER BASIN

03183500 GREENBRIER RIVER AT ALDERSON, WV

LOCATION.--Lat 37°43'27", long 80°38'30", Monroe County, Hydrologic Unit 05050003, on left bank 400 ft upstream from highway bridge at Alderson, 0.5 mi upstream from Muddy Creek, and at mile 29.2.

DRAINAGE AREA.--1,364 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1895 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 536: 1907-9. WSP 803: 1918(M). WSP 953: 1930-41. WSP 1275: 1897, 1905, 1910, 1914(M), 1915-16, 1917(M), 1919-20(M), 1924-25(M), 1927(M), 1929, 1949, WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,529.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 15, 1929, nonrecording gage at bridge 400 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Jan. 24-29. Records good except those for period of estimated daily discharges, which is poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--96 years, 1,998 ft<sup>3</sup>/s, 19.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,600 ft<sup>3</sup>/s, Nov. 5, 1985, gage height, 23.95 ft, from floodmarks, from rating curve extended above 37,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 24 ft<sup>3</sup>/s, Aug. 12, Oct. 1, 2, 1930; minimum gage height, 1.63 ft, Sept. 20, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 19,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	1300	28,800	12.59	Mar. 24	0600	*35,200	*14.43
Jan. 12	0500	21,900	10.63				

Minimum discharge, 74 ft<sup>3</sup>/s, July 17, 18, 19, gage height, 1.93 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	204	737	403	14500	2450	1510	5820	1110	402	123	836	146
2	185	667	381	7200	2200	2070	4250	1010	367	112	525	123
3	170	607	373	4740	2030	4100	3280	908	340	107	399	116
4	162	559	497	3470	1800	8250	2660	832	332	107	296	114
5	165	520	1610	2690	1600	11200	2320	794	291	106	221	114
6	162	515	1670	2210	1450	6400	2350	796	265	101	186	127
7	166	520	1310	2920	1420	4910	2590	1070	240	114	178	123
8	154	555	1100	9160	1930	4380	2490	1300	218	142	167	119
9	157	562	927	6250	2370	3640	2320	1220	204	126	516	123
10	163	1610	797	4320	2190	3100	2130	1140	192	112	1280	113
11	384	4830	726	6990	1960	2600	1880	1100	179	112	1660	130
12	2120	3390	673	20300	1700	2200	1660	1030	169	110	920	116
13	3280	2310	627	13400	1470	2230	1820	1060	158	115	595	105
14	2740	1720	593	7850	1920	2610	8690	1130	149	117	448	106
15	1930	1340	585	5150	4310	2690	7560	1140	141	97	342	99.0
16	1280	1090	1430	5120	3550	2940	5430	1190	145	85	273	91.0
17	922	912	4580	10900	2490	2960	4140	1010	172	79	229	88.0
18	784	812	4050	7830	2240	6810	3320	849	154	79	199	87.0
19	2450	752	5870	5240	3400	11400	2810	852	177	78	185	106
20	3390	700	6420	3990	10500	7540	2550	1100	194	104	166	98.0
21	2060	636	5120	3360	8130	5290	2310	1190	183	107	147	138
22	1600	588	5430	2840	5620	4620	2090	977	182	149	155	516
23	10300	560	4400	2250	4130	12100	1890	815	171	190	135	330
24	12100	545	9320	e1900	3170	26700	1690	694	173	201	146	238
25	5750	540	9160	e1600	2580	10100	1490	599	163	175	158	186
26	3420	537	5550	e1400	2290	6070	1320	543	153	149	137	155
27	2280	503	3800	e1200	2000	7920	1210	492	138	146	119	132
28	1640	477	3420	e1100	1730	6340	1190	502	142	371	114	116
29	1250	451	4350	e1200	---	5790	1240	703	158	525	124	106
30	993	429	9450	1280	---	10400	1180	559	136	940	102	98.0
31	836	---	24900	1570	---	8360	---	459	---	1420	99.0	---
TOTAL	63197	29974	119522	163930	82630	197230	85680	28174	6088	6499	11057.0	4259.0
MEAN	2039	999	3856	5288	2951	6362	2856	909	203	210	357	142
MAX	12100	4830	24900	20300	10500	26700	8690	1300	402	1420	1660	516
MIN	154	429	373	1100	1420	1510	1180	459	136	78	99	87
CFSM	1.49	.73	2.83	3.88	2.16	4.66	2.09	.67	.15	.15	.26	.10
IN.	1.72	.82	3.26	4.47	2.25	5.38	2.34	.77	.17	.18	.30	.12

CAL YR 1990 TOTAL 814647 MEAN 2232 MAX 28600 MIN 154 CFSM 1.64 IN. 22.22  
WTR YR 1991 TOTAL 798240.0 MEAN 2187 MAX 26700 MIN 78 CFSM 1.60 IN. 21.77

e Estimated

## KANAWHA RIVER BASIN

03184000 GREENBRIER RIVER AT HILLDALE, WV

LOCATION.--Lat 37°38'24", long 80°48'19", Summers County, Hydrologic Unit 05050003, on left bank 100 ft downstream from State Highway 3 bridge at Hilldale, 0.1 mi upstream from Howard Creek, 0.9 mi upstream from Powley Creek, 5.0 mi southeast of Hinton, and at mile 5.5. Records include flow of Howard Creek.

DRAINAGE AREA.--1,619 mi<sup>2</sup>, includes that of Howard Creek.

PERIOD OF RECORD.--June 1936 to current year.

REVISED RECORDS.--WSP 1435: 1955. WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,388.66 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharge: Jan. 24-27. Records good except those for period of estimated daily discharges, which is poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--55 years, 2,272 ft<sup>3</sup>/s, 19.06 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 83,800 ft<sup>3</sup>/s, Nov. 6, 1985, gage height, 25.68 ft, from floodmarks, from rating curve extended above 57,000 ft<sup>3</sup>/s; minimum discharge, 39 ft<sup>3</sup>/s, Sept. 18-20, 1946, Sept. 16, 1964; minimum gage height, 0.32 ft, Sept. 16, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of 21.85 ft from data furnished by U.S. Army Corps of Engineers, discharge, 60,800 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 24,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	1900	31,800	15.28	Mar. 24	1100	*38,100	*16.92
Jan. 12	1000	25,000	13.29				

Minimum discharge, 73 ft<sup>3</sup>/s, July 18, 20, 21, gage height, 0.55 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	236	920	441	20200	2590	1730	7420	1260	456	147	982	108
2	213	801	418	9370	2590	2360	5330	1160	444	132	650	145
3	195	716	420	5950	2280	4800	4050	1040	457	138	435	133
4	186	643	458	4290	2030	8760	3250	947	404	126	356	125
5	177	592	1250	3300	1770	13900	2820	896	361	118	282	130
6	175	571	2070	2670	1630	8030	2730	865	320	114	225	127
7	173	559	1640	3170	1550	6050	2880	982	291	107	206	135
8	183	574	1390	10100	1820	5310	2880	1350	267	110	193	133
9	170	641	1220	8160	2480	4380	2670	1420	244	146	207	128
10	171	1450	1050	5380	2400	3670	2430	1300	229	133	975	130
11	424	4990	918	7340	2170	3050	2140	1240	214	121	1600	126
12	1430	4100	823	22800	1890	2550	1890	1240	201	115	1260	136
13	3520	2770	756	17200	1660	2660	1900	1170	189	122	744	136
14	3010	2090	705	10100	1990	3540	8410	1300	177	118	513	122
15	2240	1660	678	6410	4690	3650	9510	1330	168	117	397	120
16	1570	1380	981	5750	4440	3530	6480	1370	164	100	328	111
17	1160	1190	4540	12500	3100	3600	4920	1210	201	85	280	103
18	964	1060	4760	9600	2620	6400	3890	1000	221	75	241	95
19	1790	953	6320	6350	3690	13800	3290	911	216	76	220	121
20	3820	872	7530	4780	11900	9360	2990	1180	222	74	205	116
21	2460	780	5950	4010	10300	6400	2740	1520	233	88	186	116
22	2000	703	6450	3400	6950	5450	2460	1290	227	105	167	223
23	9460	652	5270	2780	5050	10600	2220	1040	215	144	168	404
24	15300	614	9010	e2200	3840	31100	1970	857	198	192	153	300
25	7140	607	11400	e1900	3100	13500	1730	724	195	206	155	236
26	4240	600	6830	e1700	2720	7510	1520	626	184	178	167	194
27	2890	580	4580	e1500	2370	9650	1400	568	173	162	151	166
28	2130	534	4190	1500	2000	8290	1350	670	157	159	138	145
29	1680	501	5340	1490	---	7380	1380	698	159	511	134	131
30	1330	466	9890	1450	---	14200	1350	721	170	445	148	121
31	1080	---	25800	1460	---	11100	---	551	---	909	149	---
TOTAL	71517	34569	133078	198810	95620	236310	100000	32436	7357	5373	12015	4516
MEAN	2307	1152	4293	6413	3415	7623	3333	1046	245	173	388	151
MAX	15300	4990	25800	22800	11900	31100	9510	1520	457	909	1600	404
MIN	170	466	418	1450	1550	1730	1350	551	157	74	134	95
CFSM	1.42	.71	2.65	3.96	2.11	4.71	2.06	.65	.15	.11	.24	.09
IN.	1.64	.79	3.06	4.57	2.20	5.43	2.30	.75	.17	.12	.28	.10

CAL YR 1990 TOTAL 958430 MEAN 2626 MAX 31700 MIN 170 CFSM 1.62 IN. 22.02  
WTR YR 1991 TOTAL 931601 MEAN 2552 MAX 31100 MIN 74 CFSM 1.58 IN. 21.41

e Estimated

## KANAWHA RIVER BASIN

03184500 NEW RIVER AT HINTON, WV

LOCATION.--Lat 37°40'13", long 80°53'45", Summers County, Hydrologic Unit 05050004, on right bank at Hinton, 0.2 mi upstream from Madam Creek, 1.5 mi downstream from Greenbrier River, at New River mile 62.0 and Kanawha River mile 160.0.

DRAINAGE AREA.--6,256 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1936 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area. WDR WV-85-1: 1984(m).

GAGE.--Water-stage recorder. Datum of gage is 1,355.18 ft above National Geodetic Vertical Datum of 1929. Prior to June 5, 1949, water-stage recorder at site 400 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1939 by Claytor Lake and since 1949 by Bluestone Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--55 years, 7,909 ft<sup>3</sup>/s, 17.17 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246,000 ft<sup>3</sup>/s, Aug. 15, 1940, gage height, 18.97 ft, from rating curve extended above 80,000 ft<sup>3</sup>/s on basis of slope-area measurement at station at Bluestone Dam, and gaged inflow from Greenbrier River; minimum, 238 ft<sup>3</sup>/s, Aug. 21, 1962, gage height, 1.03 ft; minimum daily, 620 ft<sup>3</sup>/s, Nov. 3, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 57,400 ft<sup>3</sup>/s, Mar. 24, gage height, 8.41 ft; minimum daily, 1,240 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1580	4950	4350	22700	7220	6740	37900	9370	6200	2620	4120	2030
2	1560	4120	3080	11000	6320	11800	28700	7340	6620	3010	3400	2050
3	1560	3800	2330	16700	4880	19500	19600	7000	9020	3460	2990	2060
4	1580	4200	3270	21800	4310	30200	13800	6510	7760	3020	2680	1800
5	1750	3790	5940	18800	5900	32900	12500	6340	7020	3210	2210	1670
6	1750	2900	7440	15100	6330	23900	10700	6320	6030	3920	2120	1630
7	1560	2220	6310	10900	6630	18400	11000	6400	4810	3730	2350	1430
8	1580	2360	5290	14100	7800	17300	10000	6630	4290	2740	3020	1820
9	1550	3180	4020	17000	7910	13600	8700	6730	4020	3150	3200	2020
10	1870	7310	3130	16800	7610	12300	9860	6580	3600	2990	3130	1640
11	7160	12600	2810	23300	5670	10800	10200	6510	3560	2750	2590	1440
12	11700	8090	3480	50600	5830	10800	9320	6540	3160	2300	3190	1620
13	16000	7570	3980	45100	7350	13200	9910	6430	3290	2110	2690	1740
14	18900	6960	3590	30500	8900	15100	17000	6890	3740	2560	2260	1940
15	15000	6200	3500	19600	13100	15300	20000	9420	3620	2800	2450	2470
16	11400	5280	3620	17400	12600	13900	15600	9220	3330	2820	3130	2360
17	6800	5530	6870	26800	8720	13000	13600	8140	4000	2600	3050	2120
18	6220	4170	9180	22000	7890	16300	12200	6660	3970	2320	2750	2430
19	15200	2760	11800	16400	16900	26000	10700	8580	7150	2390	2340	3540
20	17500	4620	13500	15000	32200	21800	14900	11300	6290	2300	2110	2420
21	13000	4830	12200	10900	27700	17400	17600	13700	6740	2190	2020	1860
22	10900	4400	14200	9920	21600	14900	14300	15900	5020	2230	1720	2070
23	27000	3580	11500	8990	17000	23800	10900	12400	4680	2620	2050	1920
24	35800	2850	20800	8970	13500	49400	10000	8390	4370	2930	2060	1590
25	22200	3020	28600	8200	9900	25700	9250	7140	4200	2900	1580	1530
26	16800	2940	17300	7600	12200	18700	7950	6370	3940	3110	1540	1250
27	13300	3180	14300	5320	13000	19700	7370	5890	3360	3810	1660	1520
28	8720	3660	14900	6150	6450	20700	7520	12800	3110	4480	1410	1450
29	6650	4340	17600	5440	---	22400	7230	17100	3340	4610	1510	1440
30	5910	5310	26100	7340	---	41900	10400	11700	3450	4300	1920	1240
31	5090	---	38500	6980	---	43600	---	7750	---	4680	2090	---
TOTAL	307590	140720	323490	517410	305420	641040	398710	268050	143690	94660	75340	56100
MEAN	9922	4691	10440	16690	10910	20680	13290	8647	4790	3054	2430	1870
MAX	35800	12600	38500	50600	32200	49400	37900	17100	9020	4680	4120	3540
MIN	1550	2220	2330	5320	4310	6740	7230	5890	3110	2110	1410	1240

CAL YR 1990 TOTAL 3361650 MEAN 9210 MAX 50300 MIN 1540 CFSM 1.47 IN. 19.99  
WTR YR 1991 TOTAL 3272220 MEAN 8965 MAX 50600 MIN 1240 CFSM 1.43 IN. 19.46



## KANAWHA RIVER BASIN

03185400 NEW RIVER AT THURMOND, WV

LOCATION.--Lat 37°57'18", long 81°04'36", Fayette County, Hydrologic Unit 05050004, on right bank at Thurmond, at Chessie System pump house, 0.1 mi upstream from Dunloup Creek, 0.3 mi upstream from railroad/highway bridge, at New River mile 25.8 and Kanawha River mile 122.4.

DRAINAGE AREA.--6,687 mi<sup>2</sup>, excluding that of Dunloup Creek.

PERIOD OF RECORD.--February 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,030.71 (corrected) ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Claytor Lake and Bluestone Lake. National Park Service gage-height telemeter at station.

AVERAGE DISCHARGE.--10 years, 8,798 ft<sup>3</sup>/s, 17.87 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,400 ft<sup>3</sup>/s, Nov. 6, 1985, gage height, 18.95 ft, from rating curve extended above 59,000 ft<sup>3</sup>/s; minimum daily, 808 ft<sup>3</sup>/s, July 11, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 66,900 ft<sup>3</sup>/s, Mar. 24, gage height, 16.99 ft; minimum daily, 1,180 ft<sup>3</sup>/s, Sept. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1860	5440	5400	31200	9070	5980	43500	11400	7130	3380	4680	2240
2	1670	4930	3570	15400	8320	12200	33700	8200	6520	2360	3960	2160
3	1640	4250	2840	14600	6620	19400	24000	7720	8680	3640	3250	2190
4	1690	3900	2520	23800	5210	30300	16000	7190	9170	3540	3100	2180
5	1720	4750	4840	20700	5840	37800	14200	6680	7520	2990	2490	1970
6	1940	3430	7950	17500	7600	26500	13700	6720	6890	3670	2260	1870
7	1750	2770	7310	15800	7460	22100	11700	6700	5520	4290	2340	1690
8	1660	2100	6010	18100	8500	19300	13200	6880	4410	3120	2820	1530
9	1680	2750	4900	17900	9360	16100	9810	7100	4350	2920	3590	2160
10	1640	6380	3480	20800	8920	14500	11100	7060	3730	3390	3770	2150
11	4100	13200	3170	22500	7820	12400	11900	6920	3630	2910	2820	1570
12	13400	11000	2840	55500	5990	12200	11000	6850	3520	2760	3010	1520
13	15900	7860	4140	54200	7780	13800	11300	7140	3050	2320	3480	2030
14	20300	8420	3950	37400	10200	19000	16500	7130	3570	2290	2500	2110
15	17200	6940	3570	23100	14300	19300	23400	9620	3870	2880	2410	2320
16	13400	6320	4400	19500	15300	16800	18900	9820	3510	2930	2860	2910
17	9510	5880	6370	27200	11600	15000	16100	9290	3750	2850	3610	2320
18	6510	5310	10800	26300	9340	16200	14700	7780	4550	2540	2990	2300
19	14300	3700	14300	18600	15500	28600	12800	7960	7270	2310	2890	3060
20	19000	3510	15400	17800	34900	24000	15000	11500	6140	2560	2280	3990
21	15300	5280	15900	13800	33200	21100	19600	13500	7250	2250	2230	1640
22	12800	4960	16100	11200	25200	17500	17600	16100	6100	2240	2010	2160
23	26000	4420	14900	10900	19700	27900	13000	15400	5000	2330	1870	2280
24	42800	3050	18400	10000	15900	56200	11900	9340	4820	3110	2300	1790
25	25700	3150	31900	9860	12800	33900	10800	8350	4310	3050	2180	1660
26	19100	3100	21900	8790	10400	22600	9660	6900	4260	3080	1400	1580
27	15500	3050	14900	7690	18000	24300	8350	6500	3760	3520	1900	1180
28	11300	3490	17200	5720	9950	23100	8370	9230	3190	4400	1570	1690
29	7530	4080	19100	7330	---	24300	8160	18200	3220	5100	1510	1480
30	6950	5030	29400	7300	---	45800	9800	14000	3520	4630	1730	1470
31	5870	---	48000	9970	---	50100	---	8840	---	4810	2290	---
TOTAL	339720	152450	365460	600460	354780	728280	459750	286020	152210	98170	82100	61200
MEAN	10960	5082	11790	19370	12670	23490	15320	9226	5074	3167	2648	2040
MAX	42800	13200	48000	55500	34900	56200	43500	18200	9170	5100	4680	3990
MIN	1640	2100	2520	5720	5210	5980	8160	6500	3050	2240	1400	1180

CAL YR 1990 TOTAL 3745140 MEAN 10260 MAX 62400 MIN 1640 CFSM 1.53 IN. 20.83  
WTR YR 1991 TOTAL 3680600 MEAN 10080 MAX 56200 MIN 1180 CFSM 1.51 IN. 20.48

## KANAWHA RIVER BASIN

03186500 WILLIAMS RIVER AT DYER, WV

LOCATION.--Lat 38°22'44", long 80°29'03", Webster County, Hydrologic Unit 05050005, on left bank at Dyer, 0.2 mi downstream from Craig Run, 7.0 mi southwest of Webster Springs, and at mile 2.3.

DRAINAGE AREA.--128 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1929 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1275: 1930.

GAGE.--Water-stage recorder. Datum of gage is 2,193.46 ft above National Geodetic Vertical Datum, adjustment of 1912. Prior to June 11, 1930, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 1, Jan. 24-28, and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--62 years, 333 ft<sup>3</sup>/s, 35.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft<sup>3</sup>/s, July 4, 1932, gage height, 18.45 ft, from floodmarks, from rating curve extended above 7,000 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 12.33 ft and 18.45 ft; minimum daily, 0.5 ft<sup>3</sup>/s, Oct. 13-16, 21, 1953; minimum gage height, 0.44 ft, Oct. 5, 6, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 23	1300	*9,280	*10.90	No other peak greater than base discharge.			

Minimum discharge, 4.9 ft<sup>3</sup>/s, July 12, gage height, 0.72 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e77	147	100	1130	676	202	456	148	27	7.1	48	13
2	63	129	93	717	482	872	378	133	28	9.2	28	10
3	51	115	100	510	366	659	313	119	24	26	19	8.5
4	52	104	369	375	294	1090	265	109	23	21	31	8.0
5	79	100	251	296	254	737	293	105	19	17	30	21
6	62	143	198	256	330	630	517	374	16	15	21	69
7	48	123	178	877	485	1000	380	370	13	12	43	50
8	42	104	159	963	494	680	321	253	12	9.2	81	28
9	41	99	141	640	370	490	282	217	11	7.7	576	19
10	38	648	129	545	311	390	245	218	9.7	6.4	504	19
11	1450	511	121	656	257	308	202	183	8.9	5.8	230	59
12	1030	361	113	1660	204	250	173	155	8.6	6.2	126	69
13	926	283	109	1200	208	315	582	138	7.9	20	85	40
14	617	229	107	751	518	440	881	171	7.2	32	62	31
15	421	195	422	549	514	361	620	133	7.0	20	51	25
16	306	172	1070	1460	338	261	522	106	7.1	13	39	20
17	237	184	635	1130	e270	266	398	94	8.6	9.4	30	23
18	1020	174	1270	696	e230	1170	323	97	62	7.4	24	35
19	1140	150	1560	507	1570	1320	268	118	51	17	85	106
20	628	137	867	439	2110	837	237	108	81	101	67	73
21	443	126	708	455	1180	931	216	91	52	63	55	48
22	461	118	570	354	744	1360	223	82	32	35	36	35
23	2520	203	772	287	528	4050	225	71	43	25	26	27
24	1390	225	1490	e230	397	1710	254	60	46	50	20	22
25	821	189	909	e180	324	896	216	53	29	39	19	21
26	559	167	606	e160	276	659	190	48	20	25	14	20
27	405	149	451	e140	223	785	180	41	15	18	13	17
28	300	137	649	e130	194	595	188	36	11	15	13	15
29	238	126	1130	197	---	491	171	39	9.2	61	16	12
30	200	110	1660	304	---	612	163	55	8.1	112	19	11
31	170	---	2780	1230	---	503	---	34	---	62	15	---
TOTAL	15835	5658	19717	19024	14147	24870	9682	3959	697.3	867.4	2426	954.5
MEAN	511	189	636	614	505	802	323	128	23.2	28.0	78.3	31.8
MAX	2520	648	2780	1660	2110	4050	881	374	81	112	576	106
MIN	38	99	93	130	194	202	163	34	7.0	5.8	13	8.0
CFSM	3.98	1.47	4.97	4.79	3.95	6.27	2.52	1.00	.18	.22	.61	.25
IN.	4.60	1.64	5.73	5.53	4.11	7.23	2.81	1.15	.20	.25	.71	.28

CAL YR 1990 TOTAL 131180 MEAN 359 MAX 2910 MIN 12 CFSM 2.81 IN. 38.12  
WTR YR 1991 TOTAL 117837.2 MEAN 323 MAX 4050 MIN 5.8 CFSM 2.52 IN. 34.25

e Estimated

## KANAWHA RIVER BASIN

03187500 CRANBERRY RIVER NEAR RICHWOOD, WV

LOCATION.--Lat 38°17'43", long 80°31'36", Nicholas County, Hydrologic Unit 05050005, Monongahela National Forest, on left bank 30 ft downstream from U.S. Forest Service highway bridge, 0.6 mi upstream from Barren Run, 5.0 mi north of Richwood, and at mile 5.6.

DRAINAGE AREA.--80.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1944 to December 1951, June 1964 to September 1982, March 1984 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,100 ft above National Geodetic Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 24-28 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are poor. Gage-height data for water years 1972-79 provided by U.S. Forest Service.

AVERAGE DISCHARGE.--32 years (water years 1945-51, 1965-82, 1985-91), 237 ft<sup>3</sup>/s, 40.03 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft<sup>3</sup>/s, Aug. 21, 1989, gage height, 11.93 ft, from rating curve extended above 9,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 11.00 ft, from floodmarks; minimum, 0.14 ft<sup>3</sup>/s, Aug. 22, 1987, gage height, 1.26 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 19, 1954, reached a stage of 12.22 ft, discharge, 18,000 ft<sup>3</sup>/s, from floodmarks, present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 23	1200	*6,260	*8.68	No other peak greater than base discharge.			

Minimum discharge, 1.8 ft<sup>3</sup>/s, July 12, gage height, 1.66 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	97	61	702	419	123	295	106	16	5.0	29	9.5
2	46	85	58	434	295	463	244	92	14	7.0	16	6.6
3	38	76	67	309	224	379	202	82	14	8.5	10	4.6
4	37	69	222	227	182	660	177	75	13	6.8	10	3.8
5	54	67	154	181	158	446	185	73	11	7.6	9.0	9.5
6	43	93	123	158	188	382	296	258	9.5	7.7	6.7	33
7	33	82	112	545	285	573	221	257	8.1	6.0	12	32
8	29	69	102	619	295	400	189	169	7.2	4.6	46	18
9	27	66	91	398	220	291	170	145	6.4	4.0	216	12
10	27	393	85	330	185	234	150	154	5.8	3.0	198	11
11	844	314	81	356	155	188	123	125	5.2	2.5	87	25
12	800	221	76	954	123	157	105	104	4.6	2.3	47	35
13	696	177	74	734	121	193	347	90	4.1	17	30	22
14	424	146	73	444	292	280	571	146	3.4	22	22	17
15	282	125	229	325	286	230	378	99	3.1	14	18	14
16	203	111	645	890	199	179	314	76	5.2	9.5	15	13
17	157	115	400	733	e170	169	237	65	7.9	7.0	12	20
18	794	109	856	429	e150	640	192	64	25	5.4	9.9	30
19	833	94	1010	310	1120	854	164	65	54	4.7	9.1	78
20	418	86	554	264	1530	515	151	66	43	6.0	11	50
21	284	80	465	271	793	584	134	54	24	9.8	14	32
22	315	75	381	210	481	908	140	49	27	8.6	11	22
23	1700	106	418	170	339	2770	146	43	34	6.9	8.8	17
24	911	115	866	e150	251	1180	157	37	47	15	7.5	16
25	528	99	548	e120	204	644	134	33	26	18	6.5	15
26	360	90	374	e100	176	471	119	30	17	12	5.6	14
27	256	83	281	e90	144	654	114	25	13	8.4	4.9	12
28	196	78	419	e80	123	465	141	22	9.9	6.5	4.3	10
29	156	74	732	111	---	372	121	23	7.7	10	3.6	8.9
30	130	67	932	169	---	425	116	24	6.1	28	12	7.6
31	111	---	1720	797	---	340	---	19	---	50	10	---
TOTAL	10786	3462	12209	11610	9108	16169	6033	2670	472.2	323.8	901.9	598.5
MEAN	348	115	394	375	325	522	201	86.1	15.7	10.4	29.1	19.9
MAX	1700	393	1720	954	1530	2770	571	258	54	50	216	78
MIN	27	66	58	80	121	123	105	19	3.1	2.3	3.6	3.8
CFSM	4.33	1.44	4.90	4.66	4.05	6.49	2.50	1.07	.20	.13	.36	.25
IN.	4.99	1.60	5.65	5.37	4.21	7.48	2.79	1.24	.22	.15	.42	.28

CAL YR 1990 TOTAL 87897 MEAN 241 MAX 2000 MIN 10 CFSM 3.00 IN. 40.67  
WTR YR 1991 TOTAL 74343.4 MEAN 204 MAX 2770 MIN 2.3 CFSM 2.53 IN. 34.40

e Estimated

## KANAWHA RIVER BASIN

03189100 GAULEY RIVER NEAR CRAIGSVILLE, WV

LOCATION.--Lat 38°17'27", long 80°38'57", Nicholas County, Hydrologic Unit 05050005, on right bank at downstream side of highway bridge on State Highway 20, 200 ft downstream from Cherry River, 1.8 mi downstream from Cranberry River, 2.7 mi south of Craigsville, and at mile 61.5.

DRAINAGE AREA.--529 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1964 to September 1982, October 1982 to September 1983 (gage heights, discharge measurements, and annual maximum discharge only), October 1985 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,870.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 24-27 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--24 years (water years 1965-82, 1986-91), 1,444 ft<sup>3</sup>/s, 37.07 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,800 ft<sup>3</sup>/s, Nov. 4, 1985, gage height, 25.72 ft, from rating curve extended above 35,000 ft<sup>3</sup>/s; minimum discharge, 7.6 ft<sup>3</sup>/s, Aug. 22, 1987, gage height, 8.27 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 12,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0700	14,800	16.46	Mar. 23	1600	*24,900	*19.22

Minimum discharge, 26 ft<sup>3</sup>/s, July 12, gage height, 8.58 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	285	589	415	5000	3120	842	2110	662	115	33	183	62
2	270	522	392	3120	2250	2600	1800	581	102	48	113	43
3	230	463	427	2230	1690	2750	1480	512	164	75	76	34
4	213	423	1120	1650	1340	4390	1220	454	137	79	63	30
5	275	401	1040	1280	1110	3350	1180	433	102	85	66	52
6	284	491	813	1080	1130	2800	1810	819	83	73	62	144
7	224	494	733	3290	1540	3930	1510	1300	70	60	65	183
8	190	414	675	4640	1800	3010	1290	870	59	46	140	127
9	172	388	604	2990	1480	2220	1140	734	52	38	908	83
10	163	1870	553	2330	1280	1760	1010	747	46	32	1610	76
11	4030	2110	527	2450	1100	1400	833	651	41	29	710	199
12	4110	1570	493	5370	894	1140	702	557	38	27	368	227
13	3730	1230	468	4920	839	1620	1680	538	35	48	241	176
14	2510	992	451	3170	1860	3080	3720	624	33	85	180	152
15	1710	826	768	2350	2340	2630	2610	649	32	85	152	131
16	1230	711	3570	4130	1590	1780	2200	462	34	66	123	96
17	946	712	2510	4220	e1200	1450	1700	379	56	47	95	115
18	3040	709	4070	2810	e1000	3650	1370	358	139	36	79	135
19	5000	613	6190	2120	5460	5330	1150	379	257	31	77	230
20	2630	556	3760	1830	8310	3640	1020	372	241	28	137	311
21	1800	516	2890	1990	5090	3650	913	312	188	104	147	212
22	1730	482	2370	1740	3240	4940	957	276	167	86	109	150
23	8790	625	2470	1360	2330	14400	1040	245	171	102	79	112
24	6100	856	5240	e1100	1760	7930	1080	217	181	129	63	93
25	3570	727	3800	e860	1410	3970	986	255	154	121	53	84
26	2400	651	2600	e740	1210	2900	864	212	102	91	46	79
27	1700	588	1930	e640	982	3720	827	176	75	65	43	74
28	1270	547	2930	865	809	2850	913	162	58	49	37	64
29	1000	520	4430	942	---	2340	804	147	44	54	40	56
30	813	457	5390	1150	---	2680	736	135	37	154	46	47
31	684	---	10800	4570	---	2310	---	141	---	248	57	---
TOTAL	61099	22053	74429	76937	58164	105062	40655	14359	3013	2254	6168	3577
MEAN	1971	735	2401	2482	2077	3389	1355	463	100	72.7	199	119
MAX	8790	2110	10800	5370	8310	14400	3720	1300	257	248	1610	311
MIN	163	388	392	640	809	842	702	135	32	27	37	30
CFSM	3.73	1.39	4.54	4.69	3.93	6.41	2.56	.88	.19	.14	.38	.23
IN.	4.30	1.55	5.23	5.41	4.09	7.39	2.86	1.01	.21	.16	.43	.25

CAL YR 1990 TOTAL 538908 MEAN 1476 MAX 13000 MIN 69 CFSM 2.79 IN. 37.90  
WTR YR 1991 TOTAL 467770 MEAN 1282 MAX 14400 MIN 27 CFSM 2.42 IN. 32.89

e Estimated



## KANAWHA RIVER BASIN

03189600 GAULEY RIVER BELOW SUMMERSVILLE DAM, WV

LOCATION.--Lat 38°12'54", long 80°53'18", Nicholas County, Hydrologic Unit 05050005, on right bank 0.4 mi downstream from Summersville Dam, 5.0 mi southwest of Summersville, and at mile 35.3.

DRAINAGE AREA.--806 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1966 to September 1982, October 1986 to current year. October 1982 to September 1986 gage heights, discharge measurements, and annual maximum discharge only.

REVISED RECORDS.--WDR WV-67: 1966. WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,350.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since May 1965 by Summersville Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--21 years (water years 1967-82, 1987-1991), 2,084 ft<sup>3</sup>/s, 35.11 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,200 ft<sup>3</sup>/s, Aug. 24, 1989, gage height, 19.39 ft; minimum, 1.9 ft<sup>3</sup>/s, Feb. 16, 17, 1967, gage height, 3.67 ft; minimum daily, 2.4 ft<sup>3</sup>/s, Feb. 10, 13-16, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,000 ft<sup>3</sup>/s, Oct. 23, gage height, 18.66 ft; minimum daily, 99 ft<sup>3</sup>/s, June 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2250	2270	1960	224	6380	1250	1620	140	141	110	143	346
2	1740	2260	1650	178	3660	2250	194	140	141	111	143	712
3	1730	2260	862	2290	2570	3830	155	140	141	110	468	1110
4	2130	2250	898	7050	2410	5180	155	141	141	108	895	1110
5	2600	3510	1490	6930	3050	4940	157	141	141	108	806	1110
6	2590	4580	1290	6760	2780	3890	157	141	141	108	658	1980
7	2580	4520	988	6610	2260	4950	157	141	141	173	368	2240
8	2570	4470	919	4320	2140	4670	158	141	141	240	150	2190
9	1380	4420	918	3870	2140	3190	160	141	141	165	151	1780
10	671	3410	767	6110	1850	2520	161	141	141	114	152	883
11	673	2480	690	5840	1690	2000	161	141	141	108	152	895
12	816	2480	689	5850	1340	1530	161	141	141	108	152	1070
13	1700	1950	689	7120	1090	2520	163	141	141	108	176	1780
14	1530	1610	689	5220	2440	5350	165	141	121	108	225	1900
15	645	1770	689	3520	3340	5150	166	141	103	108	247	1780
16	647	1970	2690	3330	2300	3420	167	141	103	108	261	1730
17	648	2120	3510	5290	2030	2420	167	141	102	188	261	1050
18	651	2110	3050	4400	2470	3950	168	141	101	249	228	896
19	655	1840	5940	3170	6600	6110	169	141	101	246	135	1060
20	660	944	7700	2210	11000	5030	170	141	101	355	255	1800
21	661	916	5340	1570	8350	4570	170	141	101	452	347	1890
22	2840	915	4050	2480	5780	5550	170	141	100	452	336	1810
23	11400	916	3680	2720	3040	10900	170	141	99	395	336	1770
24	15800	915	4660	1740	1920	14500	170	141	109	275	336	1370
25	12200	916	5030	885	1990	9450	170	141	122	257	336	1370
26	4270	965	4730	454	1770	4470	159	141	122	192	336	1580
27	2300	1030	3300	426	1470	4900	139	141	118	137	336	2180
28	2290	1810	3850	430	1150	5010	139	141	110	141	521	2240
29	2290	2210	6140	430	---	3930	139	141	110	143	603	2180
30	2280	1980	7170	861	---	3480	139	141	110	145	447	2230
31	2280	---	7850	4730	---	3510	---	141	---	145	347	---
TOTAL	87477	65797	93878	107018	89010	144420	6296	4368	3666	5767	10307	46042
MEAN	2822	2193	3028	3452	3179	4659	210	141	122	186	332	1535
MAX	15800	4580	7850	7120	11000	14500	1620	141	141	452	895	2240
MIN	645	915	689	178	1090	1250	139	140	99	108	135	346

CAL YR 1990 TOTAL 743800 MEAN 2038 MAX 15800 MIN 96 CFSM 2.53 IN. 34.33  
WTR YR 1991 TOTAL 664046 MEAN 1819 MAX 15800 MIN 99 CFSM 2.26 IN. 30.65

## KANAWHA RIVER BASIN

03190400 MEADOW RIVER NEAR MOUNT LOOKOUT, WV

LOCATION.--Lat 38°11'23", long 80°56'49", Nicholas County, Hydrologic Unit 05050005, on right bank 1,000 ft upstream from mouth, and 2.5 mi northwest of Mount Lookout.

DRAINAGE AREA.--365 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1966 to September 1983, October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,200 ft, above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 24-27 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--23 years, (water years 1967-83, 1986-91), 743 ft<sup>3</sup>/s, 27.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,500 ft<sup>3</sup>/s, Mar. 7, 1967, gage height, 13.44 ft; minimum discharge, 3.0 ft<sup>3</sup>/s, Aug. 22, 1987; minimum gage height, 2.51 ft, Sept. 12, 13, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0800	6,070	9.08	Mar. 23	1500	*9,020	*10.41

Minimum discharge, 7.1 ft<sup>3</sup>/s, Aug. 27, 28, gage height, 2.55 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	326	210	4340	1890	523	2180	335	176	27	38	10
2	60	286	200	2730	1490	1140	1710	304	197	27	44	8.2
3	56	250	203	1820	1150	2050	1280	269	187	48	38	9.3
4	59	227	327	1300	874	2370	944	249	173	72	28	9.4
5	69	216	575	955	713	2350	788	242	147	63	22	14
6	76	235	567	744	620	1930	840	254	125	69	17	27
7	79	233	516	1650	620	2020	815	344	101	49	16	33
8	64	210	459	3030	821	1810	739	309	84	38	15	31
9	56	200	402	2240	873	1450	661	276	75	35	20	27
10	52	635	358	1750	816	1170	599	288	67	30	30	23
11	439	1230	330	1700	724	906	516	297	61	26	40	25
12	1180	1020	302	2680	615	765	435	288	54	24	34	26
13	1480	845	280	2990	550	1150	633	671	49	22	29	19
14	1260	681	261	2380	1110	2460	2070	812	44	23	24	28
15	887	517	276	1760	1910	1980	1910	732	42	23	19	38
16	660	420	988	1780	1470	1460	1740	580	43	21	16	30
17	477	392	1320	e740	e1100	1290	1370	445	58	18	14	27
18	771	366	1860	e600	e940	1970	1060	354	95	17	14	22
19	1930	329	2960	e500	2470	2940	828	373	268	15	15	28
20	1370	297	2370	e420	4080	2600	724	690	193	14	14	36
21	959	267	2020	1220	3340	2080	653	684	110	14	14	25
22	832	243	1900	1120	2420	1970	670	644	87	12	12	19
23	3970	284	1680	869	1740	5760	686	529	76	12	10	16
24	3820	339	2250	858	1270	5380	648	370	66	20	9.6	14
25	2690	328	2190	691	953	3240	574	264	58	61	8.9	12
26	1820	304	1680	554	796	2460	505	213	49	66	8.2	12
27	1190	278	1280	544	670	3830	458	181	43	43	7.7	11
28	833	259	1730	541	574	2820	436	174	37	30	7.3	10
29	590	252	2150	580	---	2300	404	235	32	26	9.3	9.4
30	453	228	2830	636	---	2690	369	194	28	25	9.5	8.9
31	377	---	5610	1850	---	2540	---	163	---	27	9.1	---
TOTAL	28624	11697	40084	45572	36599	69404	27245	11763	2825	997	592.6	608.2
MEAN	923	390	1293	1470	1307	2239	908	379	94.2	32.2	19.1	20.3
MAX	3970	1230	5610	4340	4080	5760	2180	812	268	72	44	38
MIN	52	200	200	420	550	523	369	163	28	12	7.3	8.2
CFSM	2.53	1.07	3.54	4.03	3.58	6.13	2.49	1.04	.26	.09	.05	.06

CAL YR 1990 TOTAL 278584 MEAN 763 MAX 6000 MIN 37 CFSM 2.09  
WTR YR 1991 TOTAL 276010.8 MEAN 756 MAX 5760 MIN 7.3 CFSM 2.07

e Estimated

## KANAWHA RIVER BASIN

03192000 GAULEY RIVER ABOVE BELVA, WV

LOCATION.--Lat 38°14'00", long 81°10'52", Nicholas County, Hydrologic Unit 05050005, on right bank 0.5 mi upstream from Belva, 1.0 mi upstream from Twentymile Creek, and at mile 6.3.

DRAINAGE AREA.--1,317 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 873: 1938. WSP 1275: 1929-30, WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 669.00 ft above National Geodetic Vertical Datum, adjustment of 1912.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since May 1965 by Summersville Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--63 years, 2,736 ft<sup>3</sup>/s, 28.21 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft<sup>3</sup>/s, July 5, 1932, gage height, 28.60 ft, from rating curve extended above 65,000 ft<sup>3</sup>/s on basis of velocity-area studies and inflow and storage adjustment to record for Kanawha River at Kanawha Falls; minimum, 3.2 ft<sup>3</sup>/s, Oct. 21, 1953, gage height, 0.10 ft. Minimum daily discharge since regulation, 11 ft<sup>3</sup>/s, Sept. 10, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,600 ft<sup>3</sup>/s, Mar. 23, gage height, 13.44 ft; minimum daily, 121 ft<sup>3</sup>/s, July 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2450	2680	2210	6210	9310	1740	5300	543	307	132	217	423
2	1790	2620	2130	3800	5770	2710	2530	510	355	140	200	382
3	1780	2580	1460	2990	4350	5800	1840	474	360	183	199	1020
4	1930	2540	918	8460	3310	7700	1420	449	339	328	704	1080
5	2750	3190	2100	7930	4000	8290	1170	442	310	262	979	1170
6	2720	4990	2090	7580	3640	6440	1160	436	282	207	678	1800
7	2710	4930	1700	8960	3330	7100	1150	482	262	191	691	2360
8	2690	4850	1500	9410	2950	7680	1050	500	243	242	278	2280
9	2200	4790	1440	6250	3340	5400	951	464	228	299	484	2230
10	791	4590	1340	7970	2910	4220	886	453	218	214	382	946
11	1070	3860	1140	8260	2570	3500	785	467	211	153	268	935
12	2090	3680	1110	8210	2290	2560	696	455	205	135	232	903
13	3190	3300	1080	11100	1750	3670	925	626	200	143	212	1780
14	3330	2310	1060	8580	3030	8390	2660	932	194	140	229	2300
15	1810	2400	1120	5890	5950	8810	2670	851	175	128	302	1970
16	1470	2370	2580	5120	4570	6030	2360	760	144	126	306	1820
17	1280	2610	5780	7570	3350	4370	1920	625	152	121	300	1310
18	1890	2560	4540	7050	3890	5330	1520	543	186	195	306	959
19	3050	2620	9860	5160	8610	9780	1230	523	315	281	284	1070
20	2430	1400	11000	4110	16200	8840	1050	701	349	275	175	1940
21	1870	1280	7940	3090	13700	7130	949	799	289	446	325	2010
22	2430	1260	6460	3440	8740	8100	933	769	297	480	376	1890
23	14300	1290	5650	4250	6140	17800	952	694	266	488	367	1820
24	20600	1340	7550	2890	3260	22500	918	577	208	475	362	1390
25	16900	1350	7840	2130	3300	15700	839	462	183	330	361	1370
26	7400	1320	6980	1170	2740	8080	762	396	188	357	358	1360
27	3680	1390	5310	1060	2470	10000	690	353	175	256	356	2210
28	3300	1680	6600	1070	1830	9270	648	325	165	187	367	2260
29	3010	2670	8600	1090	---	7210	621	348	142	189	613	2240
30	2840	2250	10800	1160	---	6750	582	378	136	187	602	2210
31	2750	---	18200	5250	---	6970	---	335	---	234	395	---
TOTAL	122501	80700	148088	167210	137300	237870	41167	16672	7084	7524	11908	47438
MEAN	3952	2690	4777	5394	4904	7673	1372	538	236	243	384	1581
MAX	20600	4990	18200	11100	16200	22500	5300	932	360	488	979	2360
MIN	791	1260	918	1060	1750	1740	582	325	136	121	175	382

CAL YR 1990 TOTAL 1117675 MEAN 3062 MAX 23200 MIN 134 CFSM 2.33 IN. 31.57  
WTR YR 1991 TOTAL 1025462 MEAN 2809 MAX 22500 MIN 121 CFSM 2.13 IN. 28.97

## KANAWHA RIVER BASIN

## 03193000 KANAWHA RIVER AT KANAWHA FALLS, WV

LOCATION.--Lat 38°08'17", long 81°12'52", Fayette County, Hydrologic Unit 05050006, on right bank 150 ft downstream from bridge, 0.8 mi downstream from village of Kanawha Falls, 2.0 mi downstream from Gauley Bridge, 2.0 mi downstream from confluence of New River and Gauley River, and at mile 94.3.

DRAINAGE AREA.--8,371 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1877 to current year. October 1916 to September 1918 and October 1927 to October 1928, published as "at Lock 2, Montgomery".

REVISED RECORDS.--WSP 923: 1878, 1886, 1897, 1899, 1901-3. WSP 1305: 1902(M), 1940. WSP 1335: 1931. WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 621.20 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 27, 1928, nonrecording gages at several sites within 9.0 mi of present site at various datums. Oct. 27, 1928, to Sept. 30, 1964, water-stage recorder at present site at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Apr. 2 to June 3. Records good except those for period of estimated daily discharges, which is fair. Flow regulated since 1939 by Claytor Lake, since 1949 by Bluestone Lake, and since 1965 by Summersville Lake. U.S. Army Corps of Engineers satellite telemeter and Appalachian Power Co. remote sender at station.

AVERAGE DISCHARGE.--114 years, 12,550 ft<sup>3</sup>/s, 20.36 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 320,000 ft<sup>3</sup>/s, Sept. 14, 1878, gage height, 37.8 ft, site and datum then in use, from gage-height relation and rating curve extended above 150,000 ft<sup>3</sup>/s; minimum, 640 ft<sup>3</sup>/s, Aug. 15, 1930, gage height, -0.95 ft datum then in use; minimum daily, 690 ft<sup>3</sup>/s, Oct. 29, 1921.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 90,700 ft<sup>3</sup>/s, Mar. 24, gage height, 16.25 ft; minimum daily, 2,060 ft<sup>3</sup>/s, Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4650	8380	8230	46100	21500	9100	53900	13500	e8000	3920	5410	2940
2	3680	8200	6360	25200	17300	13600	e40000	e10000	e7400	2790	4630	2710
3	3540	7180	5020	16800	13600	24800	e29000	e9000	e10000	3940	3790	3230
4	3680	6810	3920	34000	10400	37600	e20000	e8500	10300	4210	3930	3500
5	4650	8120	6410	32100	10700	50600	e17000	e8500	8720	3610	3960	3550
6	4770	9050	10400	28700	12500	38500	e16000	e8600	7860	4000	3180	3760
7	4830	8270	9930	28400	12100	34500	e14000	e8700	6420	4860	3180	4290
8	4440	7430	8090	32400	12500	31000	e16000	e9000	5170	3930	3220	3970
9	4290	7780	7030	26700	14000	26400	e12000	e9300	4990	3350	4450	4410
10	2660	10600	5680	32800	13600	22900	13100	e9000	4470	3900	4510	3560
11	3890	16800	4830	31000	12500	19400	14000	e9000	4140	3390	3690	2920
12	15000	17300	4360	60400	9780	16900	e13000	e9000	4100	3160	3260	2630
13	19100	12000	5480	70600	10400	18400	e14000	e9000	3510	2800	4000	3570
14	24900	11800	5580	53100	13800	29800	e21000	e9000	3920	2600	3090	4900
15	21200	9980	5220	35200	21700	32700	e27000	e12000	4400	3080	2900	4510
16	16200	9380	7080	28500	23700	27200	e23000	e12000	4050	3220	3170	4930
17	12500	8470	12500	35700	19100	23100	e20000	11200	4100	3200	4120	4230
18	8710	8960	15600	38800	15500	23300	e17000	e9200	5040	2940	3650	3550
19	15900	7030	26300	28500	22500	38300	e16000	e10000	7880	2800	3490	4200
20	23500	4730	29200	25700	50800	36700	e18000	e13000	6860	2960	2810	6280
21	19100	7200	26900	21100	53500	32700	e22000	e16000	7720	2910	2600	4250
22	16200	6770	24900	17200	39800	29100	e20000	e19000	7220	2870	2680	4150
23	37500	6300	24100	18100	31700	46500	e16000	17600	5730	2920	2320	4270
24	67000	5210	26100	15100	24100	80400	14800	e11000	5540	3800	2730	3700
25	47300	4880	41900	14400	20300	60900	13500	e10000	4920	3670	2700	3280
26	30300	4880	34500	11900	15000	37100	12200	e8000	4900	3640	2150	3170
27	21800	4840	23000	11000	20600	40700	e10000	e7400	4390	3860	2060	3600
28	16800	5330	27200	7780	15100	37900	e10000	e11000	3700	4760	2230	3860
29	11600	6980	30400	10300	---	35800	e9800	e20000	3610	5590	2210	3980
30	10500	7390	41600	8680	---	50800	e11000	16400	3940	5210	2350	3800
31	9320	---	70300	15800	---	61300	---	12300	---	5230	2790	---
TOTAL	489510	248050	558120	862060	558080	1068000	553300	346200	173000	113120	101260	115700
MEAN	15790	8268	18000	27810	19930	34450	18440	11170	5767	3649	3266	3857
MAX	67000	17300	70300	70600	53500	80400	53900	20000	10300	5590	5410	6280
MIN	2660	4730	3920	7780	9780	9100	9800	7400	3510	2600	2060	2630

CAL YR 1990 TOTAL 5214010 MEAN 14280 MAX 72200 MIN 2570 CFSM 1.71 IN. 23.17  
WTR YR 1991 TOTAL 5186400 MEAN 14210 MAX 80400 MIN 2060 CFSM 1.70 IN. 23.05

e Estimated



## KANAWHA RIVER BASIN

03193742 KANAWHA RIVER AT GLASGOW, WV

LOCATION.--Lat 38°12'23", long 81°25'30", Kanawha County, Hydrologic Unit 05050006, on right bank at Glasgow Power Plant, at Glasgow, 0.6 mi upstream from Kellys Creek, and at mile 78.4.

DRAINAGE AREA.--8,631 mi<sup>2</sup>.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1977 to current year.

REMARKS.--Values published are once-daily readings.

COOPERATION.--Records were furnished by Appalachian Power Company.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum daily, 30.0°C, Aug. 21, 1978, Aug. 3, 1981, July 22, Aug. 21, 1983, July 12, 1984, July 25, 1986, July 25-27, 1987; minimum daily, -1.0°C, Jan. 10, 12, 1988.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.5	---	9.5	4.5	4.5	5.0	9.0	18.0	---	25.0	25.5	26.0
2	18.5	10.5	9.5	4.5	3.5	5.5	8.5	18.5	---	26.5	25.5	25.5
3	19.0	10.5	9.5	---	4.0	8.0	8.5	18.0	24.5	26.5	25.5	25.5
4	---	10.5	9.5	5.0	4.0	6.5	10.0	---	24.0	27.0	26.0	25.0
5	19.0	10.5	9.0	5.5	4.5	6.5	11.0	---	24.0	27.0	26.5	24.5
6	19.0	10.5	---	5.5	4.5	6.5	---	18.5	23.5	27.0	26.5	23.0
7	19.5	10.5	6.5	5.5	---	---	---	18.0	22.0	27.0	26.0	23.0
8	19.5	11.5	5.0	5.5	---	---	13.5	18.5	22.0	27.0	---	21.5
9	19.5	11.5	6.5	5.5	---	---	14.5	19.0	23.0	26.0	---	21.0
10	20.0	11.0	5.0	5.5	---	---	15.0	---	23.0	28.0	25.5	20.0
11	19.5	11.0	5.0	---	---	6.0	15.5	---	23.0	26.5	25.5	20.0
12	19.0	9.0	5.0	---	5.5	6.0	15.5	19.5	23.0	26.5	25.5	---
13	19.0	9.5	---	---	5.0	6.0	15.5	20.0	23.5	---	---	21.0
14	18.5	9.0	---	5.0	5.0	6.5	15.5	21.0	23.5	---	---	22.0
15	22.5	---	---	5.0	4.5	6.0	---	23.0	23.5	26.5	25.5	23.0
16	18.0	---	---	5.5	4.5	5.5	13.0	22.0	24.5	---	25.0	22.0
17	18.5	---	5.5	---	2.5	6.0	13.0	22.0	24.5	---	25.0	21.5
18	18.0	---	6.5	5.5	2.5	7.0	---	20.5	24.5	26.5	25.0	22.0
19	---	---	6.5	5.5	2.5	8.0	15.0	---	25.0	27.0	25.0	22.0
20	---	---	6.5	5.5	4.0	7.5	15.5	21.5	25.5	27.0	24.5	21.5
21	---	---	7.0	5.5	5.0	---	14.5	21.0	25.5	---	24.5	---
22	14.5	---	6.5	4.5	5.0	8.0	13.5	20.0	25.5	---	24.0	---
23	14.5	9.0	8.0	3.5	5.0	8.5	11.5	---	25.5	28.5	24.5	20.5
24	14.5	---	---	---	5.0	7.0	11.5	18.5	25.5	28.0	---	18.5
25	---	9.5	---	3.0	5.0	9.5	11.5	19.5	25.0	---	---	19.0
26	13.0	9.5	6.0	2.5	4.5	10.0	12.0	20.5	25.0	---	24.5	18.5
27	12.0	9.5	---	---	4.5	10.0	14.0	21.0	25.0	---	---	18.0
28	11.5	9.5	4.5	---	---	10.5	14.5	23.0	24.5	---	25.0	17.5
29	11.5	10.0	4.5	---	---	11.0	16.0	24.0	---	26.5	26.0	17.5
30	11.0	9.5	5.0	3.5	---	10.5	17.0	24.5	---	26.0	26.0	16.5
31	11.0	---	4.5	4.0	---	8.5	---	---	---	25.5	25.0	---

## KANAWHA RIVER BASIN

03194700 ELK RIVER BELOW WEBSTER SPRINGS, WV

LOCATION.--Lat 38°35'50", long 80°29'26", Webster County, Hydrologic Unit 05050007, on right bank 200 ft upstream from bridge on County Highway 7, 6.5 mi upstream from town of Centralia, 8.9 mi southwest of Salisbury Station, 8.9 mi northwest of Webster Springs, and at mile 125.2.

DRAINAGE AREA.--266 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to September 1983, October 1985 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,020.1 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 24-27 and Feb. 17-18. Records good except those for periods of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--30 years (water years 1960-83, 1986-91), 696 ft<sup>3</sup>/s, 35.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft<sup>3</sup>/s, Nov. 4, 1985, gage height, 17.2 ft, from floodmarks, from rating curve extended above 24,000 ft<sup>3</sup>/s; minimum discharge, 6.5 ft<sup>3</sup>/s, Oct. 1, 1959, minimum gage height, 2.72 ft, Aug. 20, 21, 1987, and July 10-13, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1861, probably in September, reached a stage of 26.34 ft and flood of July 26, 1896, reached a stage of 25.87 ft, present datum, at site 0.2 mi upstream, from levels to floodmarks pointed out by a local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 23	1700	*10,900	*10.24	No other peaks greater than base discharge.			

Minimum discharge, 22 ft<sup>3</sup>/s, Aug. 29; minimum gage height, 2.86 ft, July 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	168	268	221	2640	1730	389	764	348	78	25	85	77
2	149	237	203	1630	1180	868	714	313	103	31	62	80
3	122	213	198	1120	860	1240	631	275	90	62	50	53
4	109	193	352	816	662	2150	558	249	91	129	53	43
5	141	181	502	629	543	1830	537	233	81	97	99	59
6	156	210	377	534	534	1460	860	239	72	78	96	219
7	121	237	336	1290	793	1840	803	606	62	77	70	156
8	101	204	311	2150	956	1520	706	421	54	57	105	107
9	91	182	282	1480	851	1100	629	345	48	46	843	78
10	86	502	259	1140	721	851	638	335	45	39	1240	64
11	1530	916	241	1110	598	666	555	304	41	33	585	103
12	1690	650	225	2570	481	535	485	266	40	33	306	148
13	1260	505	214	2590	417	667	787	236	40	39	183	105
14	953	409	207	1700	563	1530	2130	287	37	47	128	84
15	672	345	420	1220	886	1420	1540	338	35	101	123	72
16	497	301	2210	1580	650	936	1240	256	35	76	132	59
17	396	310	1500	1930	e540	764	963	210	43	58	86	52
18	569	340	1890	1350	e500	1510	785	186	49	48	67	61
19	1910	298	3170	1000	1450	2750	651	184	62	40	56	77
20	1100	272	2000	840	3320	2080	558	160	70	33	51	199
21	755	250	1360	865	2470	1930	500	141	58	80	53	134
22	604	233	1050	792	1630	2210	527	128	70	80	58	98
23	3180	372	1250	650	1130	5380	635	116	70	70	53	79
24	2650	595	2770	e500	828	3780	644	107	72	72	43	69
25	1670	515	2050	e430	658	2000	604	97	56	86	37	64
26	1100	430	1370	e370	572	1320	537	90	47	69	31	58
27	754	367	964	e310	466	1120	486	87	42	56	27	53
28	570	322	1290	398	387	938	471	90	36	48	24	46
29	448	290	1940	464	---	792	427	78	31	52	24	41
30	365	253	2560	541	---	810	388	75	28	83	32	37
31	307	---	5610	2480	---	786	---	70	---	130	34	---
TOTAL	24224	10400	37332	37119	26376	47172	21753	6870	1686	1975	4836	2575
MEAN	781	347	1204	1197	942	1522	725	222	56.2	63.7	156	85.8
MAX	3180	916	5610	2640	3320	5380	2130	606	103	130	1240	219
MIN	86	181	198	310	387	389	388	70	28	25	24	37
CFSM	2.94	1.30	4.53	4.50	3.54	5.72	2.73	.83	.21	.24	.59	.32
IN.	3.39	1.45	5.22	5.19	3.69	6.60	3.04	.96	.24	.28	.68	.36

CAL YR 1990 TOTAL 284044 MEAN 778 MAX 7650 MIN 59 CFSM 2.93 IN. 39.72  
WTR YR 1991 TOTAL 222318 MEAN 609 MAX 5610 MIN 24 CFSM 2.29 IN. 31.09

e Estimated

## KANAWHA RIVER BASIN

03195500 ELK RIVER AT SUTTON, WV

LOCATION.--Lat 38°39'47", long 80°42'35", Braxton County, Hydrologic Unit 05050007, on left bank 150 ft upstream from highway bridge at Sutton, 0.5 mi upstream from Granny Creek, 0.9 mi downstream from Sutton Dam, 2.5 mi downstream from Wolf Creek, and at mile 102.1.

DRAINAGE AREA.--542 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only October 1938 to February 1939, published in WSP 1305.

REVISED RECORDS.--WSP 1305: 1942(M), 1948-50(M). WDR WV82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 800.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 5, 1940, nonrecording gage and Apr. 5, 1940, to Sept. 30, 1960, water-stage recorder at site 150 ft downstream at datum 8.03 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1960 by Sutton Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--53 years, 1,147 ft<sup>3</sup>/s, 28.74 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,200 ft<sup>3</sup>/s, Jan. 29, 1957, gage height, 39.30 ft, present datum; minimum, 0.4 ft<sup>3</sup>/s, Oct. 25, 26, 28, 29, 1953; minimum gage height, 9.87 ft, Oct. 25, 1953, present datum. Minimum daily discharge since regulation, 11 ft<sup>3</sup>/s, Mar. 9, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 13, 1918, reached a stage of 45.2 ft, present datum, from floodmarks, discharge, about 49,000 ft<sup>3</sup>/s, from rating curve extended above 28,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,740 ft<sup>3</sup>/s, Mar. 24, gage height, 19.64 ft; minimum daily, 60 ft<sup>3</sup>/s, July 3, 6-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	432	766	798	98	2880	644	559	598	63	63	70	153
2	447	760	787	88	2850	653	152	500	65	63	70	152
3	447	760	643	2040	2050	1020	152	358	63	60	167	116
4	450	683	585	5060	1390	1810	154	176	63	67	320	79
5	448	636	577	4660	1010	1230	162	170	62	62	294	80
6	447	636	576	4340	771	1770	162	166	63	60	212	78
7	385	549	574	4330	836	3320	163	166	63	60	153	76
8	345	420	574	4600	858	3470	168	166	63	60	79	73
9	335	365	574	5030	873	3960	173	306	64	60	81	72
10	336	397	574	4670	880	3940	180	384	64	60	71	75
11	349	378	573	3160	1800	2300	168	455	64	64	105	76
12	1580	459	570	2200	2560	776	168	568	63	73	173	77
13	2440	643	568	2940	2210	747	206	567	63	72	401	77
14	2410	1230	568	3440	1780	1530	389	562	63	72	475	79
15	2040	1570	601	3370	1580	2490	1570	560	63	71	316	77
16	1260	1380	612	2880	1420	2640	2350	372	64	70	271	76
17	903	1200	805	2450	1200	2600	2790	175	63	100	198	75
18	918	1190	2330	2440	1210	2590	2070	156	65	134	129	74
19	922	1180	2660	2110	1360	3520	1160	154	63	135	184	75
20	953	1170	3200	1630	2480	4310	854	153	63	163	358	73
21	1400	1160	4490	1310	3240	3950	780	152	63	189	398	72
22	1720	900	4350	1110	3220	4040	784	151	64	191	395	72
23	2380	732	4370	955	3170	5310	783	151	63	171	393	72
24	3340	763	4350	812	3090	6700	784	150	63	115	393	72
25	3320	821	4260	820	2310	5790	784	150	62	114	393	72
26	3280	822	4160	815	1210	4420	891	150	62	89	392	72
27	3210	820	3790	804	864	2780	953	150	62	70	390	72
28	2550	817	3200	807	737	1380	950	150	62	70	389	71
29	1690	814	3060	808	---	1380	948	150	62	71	387	71
30	858	808	3590	956	---	1380	885	129	62	70	250	70
31	704	---	3420	2090	---	1170	---	75	---	70	155	---
TOTAL	42299	24829	61789	72823	49839	83620	22292	8270	1892	2789	8062	2429
MEAN	1364	828	1993	2349	1780	2697	743	267	63.1	90.0	260	81.0
MAX	3340	1570	4490	5060	3240	6700	2790	598	65	191	475	153
MIN	335	365	568	88	737	644	152	75	62	60	70	70

CAL YR 1990 TOTAL 480371 MEAN 1316 MAX 7860 MIN 73 CFSM 2.43 IN. 32.97  
WTR YR 1991 TOTAL 380933 MEAN 1044 MAX 6700 MIN 60 CFSM 1.93 IN. 26.15

## KANAWHA RIVER BASIN

03196600 ELK RIVER NEAR FRAMETOWN, WV

LOCATION.--Lat 38°35'32", long 80°53'05", Braxton County, Hydrologic Unit 05050007, on right bank opposite mouth of Birch River, at village of Glendon, 2.2 mi upstream from Strange Creek, 3.2 mi southwest of Frametown, and at mile 82.6. Records include flow of Birch River.

DRAINAGE AREA.--751 mi<sup>2</sup>, includes that of Birch River.

PERIOD OF RECORD.--October 1958 to September 1981, October 1981 to current year (gage heights and annual maximum discharge only).

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 775.51 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 25, 1959, nonrecording gage at same site and datum.

REMARKS.--Records for winter periods not adjusted for ice effect. Flow regulated since October 1960 by Sutton Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--23 years (water years 1958-81), 1,572 ft<sup>3</sup>/s, 28.39 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft<sup>3</sup>/s, Mar. 15, 1967, gage height, 16.05 ft; minimum discharge, 9.0 ft<sup>3</sup>/s, Sept. 28, 29, 1959; minimum gage height, 1.09 ft, June 15, 16, July 1, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,000 ft<sup>3</sup>/s, Dec. 31, gage height, 12.70 ft; minimum gage height, 1.09 ft, June 15, 16, July 1.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.32	2.92	2.99	4.17	5.43	2.91	3.57	2.89	1.26	1.10	1.39	1.72
2	2.37	2.90	2.97	2.97	5.25	3.04	2.71	2.61	1.21	1.13	1.31	1.70
3	2.36	2.89	2.91	2.91	4.84	3.30	2.53	2.54	1.52	1.21	1.30	1.69
4	2.40	2.84	3.19	6.80	3.84	5.06	2.40	2.00	1.32	1.44	1.94	1.48
5	2.42	2.71	3.11	6.64	3.62	4.48	2.53	1.91	1.24	1.77	2.25	1.42
6	2.40	2.73	3.00	6.25	3.13	4.25	2.72	1.93	1.17	1.49	1.91	1.51
7	2.35	2.68	2.93	7.02	3.94	6.53	2.55	1.96	1.13	1.30	1.81	1.47
8	2.18	2.47	2.86	7.38	3.85	6.07	2.44	1.85	1.12	1.20	1.48	1.41
9	2.14	2.27	2.82	7.46	3.66	6.07	2.40	1.92	1.12	1.16	2.09	1.37
10	2.14	3.09	2.78	7.01	3.51	6.09	2.62	2.33	1.11	1.14	2.91	1.37
11	2.52	3.07	2.76	6.38	3.81	5.24	2.53	2.32	1.10	1.14	2.10	1.42
12	3.60	2.83	2.73	5.24	4.84	3.25	2.43	2.59	1.11	1.21	1.89	1.41
13	4.88	2.87	2.72	5.53	4.65	3.70	3.32	2.59	1.12	1.70	1.95	1.41
14	4.71	3.30	2.69	5.96	5.10	5.54	3.52	2.58	1.10	1.54	2.61	1.76
15	4.45	3.88	3.19	5.73	4.72	5.74	4.19	2.58	1.09	1.42	2.29	1.61
16	3.77	3.77	3.80	5.56	4.27	5.36	5.07	2.48	1.11	1.33	2.09	1.48
17	3.12	3.50	3.43	5.19	3.83	5.11	5.04	1.89	1.18	1.28	2.02	1.42
18	3.34	3.47	5.47	5.08	3.89	5.16	4.89	1.69	1.12	1.46	1.71	1.41
19	3.74	3.44	7.60	4.80	4.37	5.63	3.74	1.68	1.46	1.58	1.58	1.58
20	3.41	3.42	5.47	4.30	5.48	6.74	3.30	1.67	1.30	1.59	2.13	1.69
21	3.54	3.40	6.67	3.97	6.15	6.25	3.12	1.65	1.21	1.73	2.38	1.53
22	4.06	3.26	6.41	3.62	5.75	7.09	3.14	1.64	1.20	1.75	2.34	1.45
23	4.84	3.39	7.26	3.52	5.50	8.85	3.13	1.63	1.36	1.83	2.31	1.43
24	6.02	3.27	8.10	3.23	5.33	9.21	3.12	1.62	1.32	2.18	2.30	1.41
25	5.66	3.23	6.92	3.18	4.90	8.18	3.09	1.63	1.23	1.68	2.30	1.41
26	5.45	3.16	6.43	3.14	3.88	6.73	3.13	1.62	1.17	1.56	2.29	1.40
27	5.30	3.11	6.04	3.12	3.22	5.89	3.26	1.61	1.14	1.36	2.29	1.38
28	4.93	3.08	6.70	3.22	3.12	4.12	3.24	1.63	1.12	1.27	2.29	1.36
29	4.16	3.06	6.33	3.28	---	4.00	3.22	1.62	1.11	1.29	2.29	1.34
30	3.30	3.02	6.49	3.37	---	4.05	3.20	1.61	1.10	1.31	2.24	1.33
31	2.79	---	10.42	4.41	---	3.92	---	1.47	---	1.42	1.75	---
MEAN	3.57	3.10	4.75	4.85	4.42	5.41	3.20	1.99	1.19	1.44	2.05	1.48
MAX	6.02	3.88	10.42	7.46	6.15	9.21	5.07	2.89	1.52	2.18	2.91	1.76
MIN	2.14	2.27	2.69	2.91	3.12	2.91	2.40	1.47	1.09	1.10	1.30	1.33

WTR YR 1991 MEAN 3.12 MAX 10.42 MIN 1.09



## KANAWHA RIVER BASIN

03196800 ELK RIVER AT CLAY, WV

LOCATION.--Lat 38°27'38", long 81°05'16", Clay County, Hydrologic Unit 05050007, on right bank at downstream side of pier of highway bridge at Clay, 0.9 mi downstream from Buffalo Creek, 2.1 mi downstream from Lower Two Run Creek, and at mile 53.7.

DRAINAGE AREA.--992 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to September 1978, October 1978 to current year (gage heights, occasional discharge measurements, and annual maximum discharge only). Gage height records collected at same site since 1915 are contained in reports of National Weather Service.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 677.46 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 27, 1959, nonrecording gage at same site and datum.

REMARKS.--Records for winter periods not adjusted for ice effect. Flow regulated since October 1960 by Sutton Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1959-78), 1,926 ft<sup>3</sup>/s, 26.31 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft<sup>3</sup>/s, Mar. 15, 1967, gage height, 22.80 ft; minimum, 1.5 ft<sup>3</sup>/s, Sept. 22, 1959, gage height, -0.13 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 14, 1918, reached a stage of 32.4 ft, from reports of National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,500 ft<sup>3</sup>/s, Dec. 31, gage height, 16.28 ft; minimum gage height, 0.56 ft, June 15, 16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.57	2.39	2.99	7.02	6.60	2.94	4.74	3.03	.85	.60	.79	.91
2	1.59	2.39	2.69	3.97	6.33	3.09	3.58	2.50	.72	.71	.73	.88
3	1.60	2.35	2.89	3.14	5.99	3.38	2.96	2.29	.69	1.17	.67	.86
4	1.63	2.32	3.48	6.78	4.46	6.18	2.66	2.00	.86	.77	.87	.86
5	1.75	2.16	3.57	7.57	4.14	6.50	2.73	1.53	.73	1.02	1.37	.84
6	1.68	2.17	3.17	7.09	3.43	5.18	3.35	1.52	.68	1.11	1.39	.76
7	1.64	2.12	3.00	8.42	4.99	8.42	2.97	1.68	.62	.88	1.13	.75
8	1.51	1.92	2.90	9.29	5.09	7.69	2.77	1.43	.61	.73	1.06	.72
9	1.39	1.71	2.75	8.81	4.58	7.13	2.68	1.45	.60	.67	1.63	.66
10	1.35	2.88	2.62	8.27	4.17	7.26	3.04	1.86	.60	.64	3.82	.69
11	1.63	3.65	2.62	8.12	3.84	6.75	2.81	2.02	.58	.62	2.26	.81
12	2.67	2.91	2.50	6.94	5.44	3.91	2.54	1.88	.57	.60	1.40	.74
13	5.50	2.71	2.59	6.82	5.46	4.31	3.88	2.10	.57	.76	1.28	.71
14	5.13	2.86	2.52	7.25	6.84	7.56	5.15	2.11	.58	1.09	1.54	1.03
15	4.90	3.88	2.88	6.84	6.83	7.71	4.99	2.02	.56	.90	1.78	1.21
16	4.08	4.06	4.79	6.82	5.58	6.80	6.45	2.01	.78	.79	1.48	.94
17	2.87	3.51	3.95	6.61	4.71	6.25	6.01	1.71	.81	.71	1.31	.81
18	2.80	3.45	5.90	6.29	4.63	6.34	6.23	1.26	.75	.67	1.20	.85
19	3.91	3.49	10.97	5.92	5.77	6.58	4.33	1.11	.88	.77	.95	1.11
20	3.43	3.56	6.85	5.20	7.02	7.91	3.67	1.08	.90	.88	.93	1.08
21	3.12	3.61	7.70	4.62	8.05	7.51	3.22	1.07	.77	.88	1.48	1.00
22	3.99	3.47	7.46	4.10	7.25	8.83	3.17	1.03	.81	.98	1.57	.85
23	5.16	3.72	8.76	3.87	6.71	11.15	3.19	1.00	.94	1.03	1.53	.79
24	6.92	3.59	10.74	3.51	6.31	11.09	3.18	1.01	.86	1.60	1.50	.76
25	6.55	3.26	8.86	3.25	6.05	9.79	3.15	.99	.79	1.30	1.48	.75
26	6.14	3.18	7.79	3.15	4.76	8.39	3.12	.98	.72	.95	1.46	.74
27	5.88	3.07	7.25	3.13	3.49	8.00	3.28	.94	.66	.85	1.45	.72
28	5.66	3.05	8.74	3.29	3.28	5.61	3.38	.96	.63	.72	1.45	.69
29	4.56	3.07	8.58	3.52	---	4.89	3.37	.95	.62	.66	1.44	.67
30	3.53	3.06	8.59	3.55	---	4.98	3.29	.93	.61	.68	1.43	.66
31	2.42	---	13.80	4.98	---	4.94	---	.93	---	.74	1.29	---
MEAN	3.44	2.99	5.61	5.75	5.42	6.68	3.66	1.53	.71	.85	1.41	.83
MAX	6.92	4.06	13.80	9.29	8.05	11.15	6.45	3.03	.94	1.60	3.82	1.21
MIN	1.35	1.71	2.50	3.13	3.28	2.94	2.54	.93	.56	.60	.67	.66

WTR YR 1991 MEAN 3.23 MAX 13.80 MIN .56

## KANAWHA RIVER BASIN

03197000 ELK RIVER AT QUEEN SHOALS, WV

LOCATION.--Lat 38°28'15", long 81°17'03", Kanawha County, Hydrologic Unit 05050007, on right bank 50 ft upstream from Queen Shoals Creek, 100 ft downstream from highway bridge at Queen Shoals, 4.0 mi upstream from Big Sandy Creek, and at mile 26.2. Records include flow of Queen Shoals Creek.

DRAINAGE AREA.--1,145 mi<sup>2</sup>, includes that of Queen Shoals Creek.

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only October, November 1928, published in WSP 1305.

REVISED RECORDS.--WSP 783: Drainage area. WSP 1335: 1929-32, 1935(M), 1936, 1939, 1943(M).

GAGE.--Water-stage recorder. Datum of gage is 604.09 ft above National Geodetic Vertical Datum of 1929. Prior to June 19, 1932, nonrecording gage and June 19, 1932, to Sept. 30, 1946, water-stage recorder, at bridge 100 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1960 by Sutton Lake. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--63 years, 2,052 ft<sup>3</sup>/s, 24.34 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 72,000 ft<sup>3</sup>/s, July 5, 1932, gage height, 29.2 ft, from rating curve extended above 40,000 ft<sup>3</sup>/s; minimum, 0.3 ft<sup>3</sup>/s, Nov. 4, 5, 1953. Minimum daily discharge since regulation, 48 ft<sup>3</sup>/s, Sept. 8, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft<sup>3</sup>/s, Dec. 31, gage height, 14.55 ft; minimum daily, 58 ft<sup>3</sup>/s, June 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	466	841	1020	8500	4720	1400	3370	1410	205	71	123	288
2	458	910	991	3070	4820	1330	2530	1080	175	66	140	186
3	472	884	1000	1950	4470	1560	1640	845	145	85	123	171
4	491	866	1330	3930	3160	3870	1330	782	126	82	113	168
5	539	831	1930	6350	2410	5470	1340	546	166	99	198	239
6	532	764	1530	5740	1920	3890	1920	459	123	255	411	212
7	504	760	1330	7130	3070	7120	1640	501	99	245	334	149
8	481	722	1180	9650	3760	6780	1360	491	83	171	268	134
9	409	610	1060	8320	3140	5760	1220	418	71	124	388	121
10	381	828	977	7540	2640	5910	1780	410	66	99	1490	112
11	431	2150	927	7230	2250	5400	1590	568	62	88	1230	180
12	789	1460	885	6180	3170	3090	1300	574	60	79	554	163
13	3020	1130	853	5550	3790	2330	1950	736	59	76	346	132
14	3300	1080	824	5930	5280	6140	4170	732	58	140	323	411
15	2980	1570	918	5540	6160	7130	3570	707	61	248	564	358
16	2370	2000	2750	5320	4330	5620	4940	686	90	180	479	308
17	1530	1790	2440	5430	3340	4830	4620	649	169	141	380	205
18	1040	1540	3750	4910	2970	4780	4720	427	162	115	342	187
19	1590	1480	12300	4500	4240	5050	3260	377	177	103	276	333
20	1640	1450	6650	3790	5510	6380	2290	305	176	142	205	351
21	1330	1410	6100	3120	7120	6360	1740	272	188	178	239	291
22	1680	1380	6240	2610	6160	7890	1570	253	281	181	448	239
23	2800	1640	7290	2200	5330	12400	1550	239	348	227	448	185
24	4960	2050	11300	2010	4830	12200	1490	233	231	358	432	158
25	4990	1540	8930	1660	4510	9880	1430	230	182	501	420	148
26	4420	1400	6880	1520	3400	7830	1360	223	149	293	411	141
27	4080	1270	5990	1490	2150	7600	1490	218	122	201	407	129
28	3870	1200	7740	1570	1600	4950	1700	218	102	163	405	119
29	2980	1140	8560	1820	---	3490	1570	217	87	127	403	108
30	2050	1070	7590	1820	---	3420	1580	214	78	102	412	99
31	1220	---	18200	2990	---	3380	---	216	---	108	405	---
TOTAL	57803	37766	139465	139370	110250	173240	66020	15236	4101	5048	12717	6025
MEAN	1865	1259	4499	4496	3937	5588	2201	491	137	163	410	201
MAX	4990	2150	18200	9650	7120	12400	4940	1410	348	501	1490	411
MIN	381	610	824	1490	1600	1330	1220	214	58	66	113	99

CAL YR 1990 TOTAL 890219 MEAN 2439 MAX 18500 MIN 96 CFSM 2.13 IN. 28.92  
WTR YR 1991 TOTAL 767041 MEAN 2101 MAX 18200 MIN 58 CFSM 1.84 IN. 24.92

## KANAWHA RIVER BASIN

03198000 KANAWHA RIVER AT CHARLESTON, WV

LOCATION.--Lat 38°22'10", long 81°42'05", Kanawha County, Hydrologic Unit 05050008, on left bank at old lock 6, 1.0 mi upstream from Davis Creek, 1.5 mi downstream from Twomile Creek, 2.0 mi downstream from Patrick Street Bridge at Charleston, 3.5 mi downstream from Elk River, and at mile 54.5.

DRAINAGE AREA.--10,448 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1939 to current year. Monthly discharge only September 1939 to February 1940, published in WSP 1305.

REVISED RECORDS.--WSP 1335: 1943.

GAGE.--Water-stage recorder. Datum of gage is 548.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Auxiliary water-stage recorder 2.3 mi upstream from base gage at datum 547.00 ft, U.S. Army Corps of Engineers datum. Prior to Oct. 1, 1955, auxiliary gages at different sites and datum.

REMARKS.--Estimated daily discharges: Oct. 1-11, Nov. 23-24, May 5-22, 28-29, June 30 to July 24, Aug. 19 to Sept. 3 and Sept. 10-13, 23-30. Records good except those for periods of estimated daily discharges, which are fair. The rating is not well established at flows below 10,000 ft<sup>3</sup>/s. All flow is compared to the inflow, and for periods when differences are 10% or greater or record is missing, the inflow is used. Since 1939, flow regulated by increasing number of reservoirs upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--52 years, 15,030 ft<sup>3</sup>/s, 19.59 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 216,000 ft<sup>3</sup>/s, Aug. 15, 1940; maximum gage height, 39.72 ft, Mar. 7, 1955; minimum discharge, less than 1,030 ft<sup>3</sup>/s, during period Oct. 1-5, 1953; minimum gage height, 16.79 ft, Aug. 7, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 29, 1861, reached a stage of about 54.3 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 97,100 ft<sup>3</sup>/s, Dec. 31; minimum daily, 2,500 ft<sup>3</sup>/s, Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5200	9700	9730	69700	27400	11700	57300	15200	8570	e4100	5000	e3300
2	e4200	9250	8130	30600	23700	14400	43900	12500	6950	e3000	3990	e3000
3	e4100	8040	7380	19800	19700	25000	31000	10300	8870	e4200	3650	e3500
4	e4300	7920	7790	34500	15400	37300	22500	9430	10800	e4500	3850	3780
5	e5400	8640	9780	36300	14600	54900	19800	e9600	8010	e3900	4090	4580
6	e5500	10200	11900	32800	15800	41600	20100	e9600	7890	e4400	3160	4480
7	e5500	9390	12500	34900	19200	41200	17000	e9800	5960	e5300	3660	4760
8	e5100	8410	10200	45300	19700	36600	18100	e10000	5000	e4200	4070	4190
9	e4800	8760	9480	34700	20000	30500	14300	e10000	5480	e3600	4780	4370
10	e3200	12100	7870	38900	17800	27300	16300	e9900	4990	e4100	5450	e3800
11	e4500	18900	6850	36300	17200	24100	16000	e10000	4900	e3600	4640	e3200
12	14600	19800	6320	62100	13800	20500	14600	e10000	4860	e3500	4100	e2900
13	20000	14200	7600	76800	15300	21300	15000	e10000	4000	e3200	4410	e4000
14	25700	13400	7430	60400	22300	37900	22900	e10000	4020	e3300	3620	6550
15	23400	11900	7330	39800	31500	41200	33200	e13000	4830	e3800	4350	5110
16	19000	12200	10600	31500	29700	32000	30500	e13000	4640	e3700	3960	5270
17	14600	11500	15700	38000	23900	27100	25200	e12000	5280	e3600	4800	5040
18	10800	11600	22400	42700	20500	27900	22100	e10000	5510	e3200	4110	4400
19	15900	9160	44600	30800	28400	41800	19800	e11000	8030	e3000	e3900	5460
20	23600	7080	37400	28000	56200	41600	17300	e14000	7590	e3200	e3100	6870
21	20100	9070	31300	24800	63500	36700	22000	e17000	8270	e3200	e2900	4940
22	17200	8520	29400	20300	45700	38100	22200	e20000	8100	e3200	e3300	4880
23	31200	e8200	32500	20700	35800	61700	17100	17500	6610	e3300	e2900	e4700
24	65700	e7600	37800	18700	26700	91800	16300	11800	5680	e4300	e3300	e4000
25	54700	7180	51300	17200	24200	78200	14900	9930	5320	4600	e3200	e3600
26	34000	7320	41600	14500	19300	44500	13100	7790	5150	5120	e2600	e3500
27	24300	6310	28200	13900	23200	52600	12400	8140	5300	4590	e2500	e3900
28	20700	7070	36600	10800	17500	43600	11600	e12000	4300	4860	e2700	e4100
29	15300	9160	40100	14000	---	37200	11800	e21000	3990	6010	e2700	e4200
30	13100	8960	50100	12200	---	49300	10800	15500	e4200	5330	e2800	e4000
31	11300	---	97100	21300	---	63500	---	11000	---	5060	e3300	---
TOTAL	527000	301540	736990	1012300	708000	1233100	629100	370990	183100	124970	114890	130380
MEAN	17000	10050	23770	32650	25290	39780	20970	11970	6103	4031	3706	4346
MAX	65700	19800	97100	76800	63500	91800	57300	21000	10800	6010	5450	6870
MIN	3200	6310	6320	10800	13800	11700	10800	7790	3990	3000	2500	2900

CAL YR 1990 TOTAL 6377520 MEAN 17470 MAX 97100 MIN 2840  
WTR YR 1991 TOTAL 6072360 MEAN 16640 MAX 97100 MIN 2500

e Estimated

## KANAWHA RIVER BASIN

03198500 BIG COAL RIVER AT ASHFORD, WV

LOCATION.--Lat 38°10'47", long 81°42'42", Boone County, Hydrologic Unit 05050009, on left bank at downstream side of highway bridge at Ashford, 300 ft upstream from Lick Creek, 1.0 mi downstream from Brush Creek, 1.8 mi upstream from Bull Creek, and at mile 30.2 upstream from Kanawha River.

DRAINAGE AREA.--391 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1908 to September 1916, May 1930 to current year. Published as Coal River at Brushton, June 1908 to September 1916 and as Coal River at Ashford, May 1930 to September 1960.

REVISED RECORDS.--WSP 1305: 1913-14(M). WSP 1335: 1912, 1916(M). WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 622.46 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 9, 1916, nonrecording gage at site 1.0 mi upstream at different datum. May 7, 1930, to Feb. 10, 1939, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 18-27. Records good except those for period of estimated daily discharges, which is poor.

AVERAGE DISCHARGE.--69 years, 519 ft<sup>3</sup>/s, 18.03 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 35,800 ft<sup>3</sup>/s, Aug. 9, 1916, gage height, 36.3 ft, from floodmark, site and datum then in use, or 35.66 ft, from floodmark, present site and datum, from rating curve extended above 25,000 ft<sup>3</sup>/s; no flow Sept. 18-21, 24, Oct. 6-12, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0430	5,800	10.75	Mar. 23	2000	*10,100	*15.29

Minimum discharge, 19 ft<sup>3</sup>/s, Aug. 29, gage height, 1.37 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	73	79	2680	1520	531	1710	281	99	58	57	24
2	35	67	74	1570	1130	585	1360	260	103	55	44	29
3	30	65	100	1120	908	848	1100	234	176	63	37	28
4	41	64	282	868	756	1590	932	220	168	65	35	24
5	48	65	504	713	651	1730	839	213	120	58	35	72
6	49	72	380	631	616	1320	846	214	94	86	31	80
7	43	76	285	1160	982	1490	768	211	82	68	30	53
8	46	68	225	2920	913	1430	709	177	75	56	42	39
9	43	70	185	1770	859	1150	652	169	71	51	112	35
10	42	183	156	1230	798	965	612	183	67	45	135	31
11	60	361	134	1260	712	807	528	171	63	53	128	32
12	134	275	122	2380	615	700	465	158	60	104	84	39
13	202	204	114	2000	576	846	567	258	57	145	61	396
14	190	157	106	1470	1270	2610	919	238	52	269	48	617
15	133	129	108	1140	2260	2470	1080	203	50	134	40	404
16	93	112	169	1020	1450	1590	1050	187	68	89	35	189
17	72	114	371	1060	1090	1200	890	173	176	67	31	133
18	69	111	1190	e960	1140	1240	767	148	177	53	29	118
19	474	102	2660	e820	2430	1320	686	189	237	46	28	104
20	264	92	1460	e780	2780	1240	642	226	347	45	33	196
21	153	85	1070	e780	2250	1100	576	185	257	43	42	143
22	125	82	1160	e780	1650	1510	554	153	169	42	34	106
23	218	106	1220	e720	1250	5440	509	133	164	37	29	86
24	473	120	2150	e660	1000	4850	467	120	130	41	26	72
25	300	125	1750	e580	856	2140	419	128	103	84	24	69
26	201	115	1090	e540	770	1930	381	114	88	75	23	69
27	147	105	805	e520	666	3220	359	107	75	73	24	61
28	121	98	2790	557	588	2110	360	130	67	79	22	55
29	103	93	2710	604	---	1670	343	105	64	71	20	51
30	88	84	2230	656	---	2320	315	92	63	68	22	50
31	77	---	5080	1420	---	2240	---	92	---	57	22	---
TOTAL	4112	3473	30759	35369	32486	54192	21405	5472	3522	2280	1363	3405
MEAN	133	116	992	1141	1160	1748	713	177	117	73.5	44.0	113
MAX	474	361	5080	2920	2780	5440	1710	281	347	269	135	617
MIN	30	64	74	520	576	531	315	92	50	37	20	24
CFSM	.34	.30	2.54	2.92	2.97	4.47	1.82	.45	.30	.19	.11	.29
IN.	.39	.33	2.93	3.37	3.09	5.16	2.04	.52	.34	.22	.13	.32

CAL YR 1990 TOTAL 195887 MEAN 537 MAX 5080 MIN 30 CFSM 1.37 IN. 18.64  
WTR YR 1991 TOTAL 197838 MEAN 542 MAX 5440 MIN 20 CFSM 1.39 IN. 18.82

e Estimated



## KANAWHA RIVER BASIN

## 03200500 COAL RIVER AT TORNADO, WV

LOCATION.--Lat 38°20'20", long 81°50'30", Kanawha County, Hydrologic Unit 05050009, on downstream side of highway bridge at Tornado, 0.2 mi upstream from Falls Creek, and at mile 11.5.

DRAINAGE AREA.--862 mi<sup>2</sup>, includes that of Falls Creek.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1908 to September 1911, October 1911 to June 1912 (gage heights only), November 1928 to September 1931, August 1961 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 570.46 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1961 to Jan. 9, 1973, nonrecording gage at same site and datum. Prior to Aug. 1, 1961, nonrecording gage at same site at different datum.

REMARKS.--Estimated daily discharges: Oct. 27-29. Water-discharge records good except those for period of estimated daily discharges, which is poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--35 years (water years 1909-11, 1930-31, 1962-91), 1,209 ft<sup>3</sup>/s, 19.05 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,500 ft<sup>3</sup>/s, Mar. 7, 1967, gage height, 31.98 ft; minimum (estimated), 2.0 ft<sup>3</sup>/s, Oct. 1-10, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 24	0300	*17,400	*19.77	No other peak greater than base discharge.			

Minimum discharge, 62 ft<sup>3</sup>/s, Aug. 31, gage height, 9.96 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	169	194	6320	3090	1160	3580	631	422	140	188	66
2	94	163	186	3510	2430	1140	2960	588	382	138	160	71
3	85	156	221	2500	1940	1400	2420	550	479	131	126	77
4	102	150	581	1850	1610	2100	2020	519	658	158	115	83
5	166	150	1060	1490	1390	2870	1760	505	433	143	110	89
6	160	168	893	1310	1340	2470	1720	505	332	148	107	293
7	135	188	666	2350	3090	2970	1560	524	274	189	90	223
8	117	198	532	5030	2890	2930	1440	462	240	135	89	133
9	123	192	431	3780	2330	2450	1340	433	217	122	301	98
10	124	409	369	2720	1970	2050	1380	458	205	118	409	90
11	127	761	327	2720	1670	1700	1180	454	184	120	423	84
12	243	661	297	3830	1410	1470	1060	418	166	269	284	81
13	454	484	274	3850	1280	1850	1460	427	161	296	202	277
14	454	370	259	3060	2360	4940	1940	532	151	518	153	750
15	354	305	277	2430	4200	5590	2780	447	140	395	124	689
16	258	267	351	2150	3250	3600	2850	408	168	272	114	412
17	207	252	535	2180	2480	2750	2230	422	451	204	101	276
18	186	254	2000	2010	2550	2760	1820	376	491	161	92	257
19	345	240	5960	1800	4590	2810	1580	367	415	138	90	245
20	544	221	3670	1680	5480	2620	1440	592	677	136	94	264
21	319	208	2060	1690	4850	2340	1270	463	636	137	103	324
22	275	196	1940	1650	3710	3900	1190	388	429	112	126	247
23	414	244	2570	1550	2880	8170	1090	342	433	102	106	194
24	664	295	3780	1470	2270	13000	992	311	376	108	91	164
25	604	291	4010	1300	1890	4810	898	301	303	271	81	148
26	428	277	2730	1160	1670	3860	823	293	245	225	75	149
27	e347	255	1790	1090	1450	7050	774	273	215	290	72	153
28	e296	235	4860	1130	1270	4420	765	340	182	210	72	134
29	e254	222	5710	1200	---	3470	749	348	166	193	71	118
30	210	211	4880	1290	---	3940	689	268	152	198	65	112
31	182	---	13800	2630	---	4270	---	257	---	241	62	---
TOTAL	8356	8192	67213	72730	71340	110860	47760	13202	9783	6018	4296	6301
MEAN	270	273	2168	2346	2548	3576	1592	426	326	194	139	210
MAX	664	761	13800	6320	5480	13000	3580	631	677	518	423	750
MIN	85	150	186	1090	1270	1140	689	257	140	102	62	66
CFSM	.31	.32	2.52	2.72	2.96	4.15	1.85	.49	.38	.23	.16	.24
IN.	.36	.35	2.90	3.14	3.08	4.78	2.06	.57	.42	.26	.19	.27

CAL YR 1990 TOTAL 415442 MEAN 1138 MAX 13800 MIN 83 CFSM 1.32 IN. 17.93  
WTR YR 1991 TOTAL 426051 MEAN 1167 MAX 13800 MIN 62 CFSM 1.35 IN. 18.39

e Estimated

## KANAWHA RIVER BASIN

03200500 COAL RIVER AT TORNADO, WV--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to September 1991, discontinued.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1973 to September 1983.

TEMPERATURE: May to July 1975 (partial-record station), June to September 1976 (published as once-daily), October 1976 to September 1984.

TURBIDITY: October 1980 to September 1991.

SUSPENDED-SEDIMENT DISCHARGE: December 1972 to September 1984.

COOPERATION.--Once-daily observed turbidity records from October 1984 to current year were furnished by Washington Public Service District.

INSTRUMENTATION.--Temperature recorder November 1973 to September 1984. Turbidity recorder October 1981 to September 1982.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,020 microsiemens, Oct. 23, 24, 1973; minimum daily, 88 microsiemens, Dec. 9, 1978, June 22, 1979.

WATER TEMPERATURE: Maximum recorded, 31.5°C, July 8, 19, 20, 1977; minimum recorded, -0.5°C, Dec. 31, 1980, Jan. 1, 2, 1981.

TURBIDITY: Maximum, 1,500 NTU, May 30, 1982; minimum, 0.2 NTU, Nov. 15, 1982.

SEDIMENT CONCENTRATION: Maximum daily mean, 4,000 mg/L, Mar. 17, 1973; minimum daily mean, 0 mg/L, on several days in April 1978, Feb. 5, Mar. 21, 22, 1979, Jan. 17, Apr. 29, 1982.

SEDIMENT LOAD: Maximum daily, 263,000 tons, Jan. 26, 1978; minimum daily, 0 ton, on several days in April 1978, Feb. 5, Mar. 21, 22, 1979, Jan. 17, Apr. 29, 1982.

## EXTREMES FOR CURRENT YEAR.--

TURBIDITY: Maximum observed, 380 NTU, Mar. 24; minimum observed, 2.6 NTU, May 12 and June 1.

TURBIDITY (NTU), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	11	12	76	42	12	21	16	2.6	15	14	11
2	16	13	11	27	38	15	21	15	6.8	20	14	11
3	16	14	17	19	22	19	19	16	7.2	13	16	9.0
4	17	12	22	17	14	17	17	14	6.5	13	14	8.0
5	28	10	22	16	12	52	12	18	180	12	12	6.5
6	22	10	22	14	14	17	22	16	28	11	11	6.5
7	17	12	19	37	60	41	19	8.0	23	11	13	16
8	15	12	17	73	51	35	17	3.5	8.5	14	5.5	14
9	14	12	14	40	42	28	16	10	8.6	16	23	8.6
10	25	11	12	21	22	19	20	8.0	8.1	15	48	5.6
11	15	32	9.0	26	20	15	16	3.5	5.2	12	29	5.9
12	12	19	9.0	42	12	12	15	2.6	5.0	5.4	27	5.6
13	48	14	11	27	14	14	19	11	5.0	15	19	9.6
14	32	16	11	25	34	69	48	3.1	5.1	19	20	36
15	21	15	12	25	53	65	24	11	6.3	11	12	56
16	22	11	22	15	48	48	31	3.5	6.1	95	14	32
17	22	18	12	21	32	32	22	10	44	11	16	30
18	15	16	140	22	14	34	24	3.5	28	15	14	27
19	15	17	200	19	25	25	28	3.4	24	13	12	25
20	19	17	53	16	45	25	22	3.8	45	13	12	32
21	22	19	28	14	42	18	19	7.8	52	12	13	28
22	23	16	22	13	40	120	19	6.5	48	8.0	8.9	19
23	21	36	42	14	34	320	14	3.4	32	5.7	8.9	18
24	17	28	53	12	28	380	16	3.0	27	5.3	8.7	20
25	16	19	38	11	26	45	21	3.5	21	5.8	6.5	21
26	18	17	20	11	23	26	15	3.8	19	5.9	6.5	17
27	16	12	15	10	14	120	15	3.5	21	5.8	6.5	22
28	14	12	73	11	12	35	16	3.6	16	5.8	7.0	20
29	14	14	100	12	---	31	17	3.8	18	6.1	4.1	11
30	11	11	75	14	---	19	16	3.5	16	20	4.2	7.8
31	13	---	220	52	---	42	---	3.4	---	18	4.6	---
MEAN	19	16	43	24	30	56	20	7.3	24	14	14	18

## KANAWHA RIVER BASIN

03200650 KANAWHA RIVER AT POCA, WV

LOCATION.--Lat 38°28'29", long 81°49'09", Putnam County, Hydrologic Unit 05050008, on left bank at John Amos Power Plant, at Poca, 200 ft upstream from Pocatalico River, and at mile 39.2.

DRAINAGE AREA.--11,435 mi<sup>2</sup>, excludes that of Pocatalico River.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1975 to current year.

REMARKS.--Values published are once-daily readings.

COOPERATION.--Records were furnished by Appalachian Power Company.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum daily, 37.0°C, July 27, 1982; minimum daily, 0.0°C, Jan. 18, 1977.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	11.0	---	6.5	5.5	9.0	16.5	---	28.0	29.5	---
2	---	12.0	---	7.0	6.5	6.0	9.0	18.0	---	28.0	29.5	28.5
3	---	12.0	11.0	---	---	---	9.0	18.0	25.5	28.5	29.0	29.0
4	---	---	11.5	8.0	5.0	6.0	10.0	---	25.5	29.0	---	28.5
5	22.0	12.0	11.0	---	5.5	6.0	11.0	---	24.5	29.0	29.0	28.5
6	22.0	12.0	---	---	5.5	6.0	---	20.0	24.5	28.5	29.5	28.0
7	---	11.5	9.5	6.5	---	---	---	19.0	24.5	---	30.5	28.0
8	21.0	---	8.5	8.0	---	---	11.0	19.0	25.5	29.5	---	28.0
9	21.5	12.0	---	8.0	---	---	12.0	19.0	---	29.0	---	26.5
10	22.0	12.0	9.5	8.0	---	---	12.0	19.0	---	29.0	30.0	26.5
11	21.5	12.0	9.5	---	6.0	6.5	13.0	---	26.0	29.0	---	26.5
12	20.0	11.0	8.5	---	6.5	6.0	13.0	---	26.0	28.5	29.0	---
13	---	11.0	---	---	6.0	6.0	13.0	21.0	---	---	---	28.0
14	---	10.0	---	8.0	7.0	6.0	---	21.0	26.0	---	---	---
15	19.5	---	---	7.0	6.5	6.0	---	22.0	---	29.0	27.5	---
16	16.5	---	---	7.0	5.5	6.5	14.5	---	---	---	27.5	25.5
17	19.5	---	8.0	---	---	---	14.5	23.5	25.5	---	27.5	25.5
18	19.5	---	8.5	8.0	---	6.0	---	---	26.0	29.0	---	25.5
19	---	---	10.0	7.5	4.0	6.5	15.0	---	26.5	29.0	27.5	25.0
20	---	---	9.5	---	5.0	6.5	---	23.5	26.5	29.5	27.5	24.5
21	---	---	10.0	6.5	---	---	---	23.5	26.5	28.0	26.5	---
22	16.5	---	9.0	6.0	6.5	6.5	14.0	23.0	---	---	26.5	---
23	---	10.0	---	5.5	6.5	7.0	---	---	---	29.5	28.0	23.5
24	16.5	---	---	---	6.5	---	14.5	23.5	26.5	30.0	---	22.5
25	---	---	---	5.5	6.5	10.0	12.5	23.5	26.5	---	---	---
26	20.0	---	6.5	5.0	6.0	6.5	12.5	---	---	---	27.0	22.5
27	14.5	---	---	---	6.0	11.0	13.5	---	26.5	---	---	22.5
28	---	11.0	7.0	---	---	11.0	---	24.0	26.5	---	28.0	20.0
29	---	---	7.0	---	---	---	15.5	24.0	---	29.5	35.5	---
30	14.5	11.0	---	6.0	---	10.5	16.5	25.5	---	30.0	28.0	21.0
31	12.5	---	7.0	6.5	---	---	---	26.0	---	27.5	29.0	---

## KANAWHA RIVER BASIN

03201300 KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, WV  
(National stream-quality accounting network station)

LOCATION.--Lat 38°31'32", long 81°54'40", Putnam County, Hydrologic Unit 05050008, on left bank at intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Kanawha Valley Power Company raw water intake at Winfield Dam, 1.0 mi downstream from Winfield Bridge, and at mile 31.1.

DRAINAGE AREA.--11,809 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1957-70, 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1957 to September 1970, January 1974 to September 1980.

pH: October 1974 to September 1980.

WATER TEMPERATURE: October 1956 to September 1970, January 1974 to September 1980.

DISSOLVED OXYGEN: October 1974 to September 1980.

REMARKS.--Discharges in water-quality tables are estimated. All prior daily records furnished by ORSANCO. NASQAN samples since January 1974 taken at Winfield Bridge.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,700 microsiemens, Apr. 21, 1961; minimum 76 microsiemens, Mar. 17, 1978.

pH: Maximum daily, 8.6 units, May 14, 1977; minimum daily, 5.3 units, July 16, 1979.

WATER TEMPERATURE: Maximum daily, 33.0°C, July 24, 1964; minimum daily, 0.0°C, Feb. 14, 1958, Mar. 12, 1960, Jan. 30, 1978.

DISSOLVED OXYGEN: Maximum daily, 16.0 mg/L, Feb. 19, 20, 1977; minimum daily, 3.1 mg/L, July 28, 1977.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED OF (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (COLS./ 100 ML) (31625)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31673)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 17...	1500	E14900	158	7.6	19.5	7.5	750	8.2	91	K210	24
MAR 22...	1300	E44300	124	7.4	12.0	32	743	11.0	105	1200	290
MAY 07...	1200	E10600	202	7.7	19.0	6.0	751	8.0	88	360	K10
AUG 30...	1430	E3400	250	7.4	28.0	5.2	747	6.6	86	K7	K8
DATE	HARD- NESS TOTAL (MG/L AS CAC03) (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)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 17...	58	15	4.9	6.9	1.8	52	0	43	19	7.3	<0.10
MAR 22...	46	12	3.9	4.7	1.2	27	0	22	24	4.4	<0.10
MAY 07...	72	18	6.4	12	1.5	57	0	47	40	11	0.20
AUG 30...	74	17	7.5	17	2.3	68	0	56	35	16	0.10
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
OCT 17...	5.9	87	89	--	<0.010	0.500	0.050	0.060	0.45	0.50	0.030
MAR 22...	5.3	64	72	--	<0.010	0.640	0.040	0.050	0.36	0.40	0.080
MAY 07...	5.6	107	126	0.620	0.010	0.630	0.060	0.060	0.34	0.40	0.040
AUG 30...	4.5	135	135	--	<0.010	0.380	0.180	0.180	0.32	0.50	0.080

E: Estimated.

K: Results based on colony count outside the acceptance range (non-ideal colony count).



WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

## OHIO RIVER MAIN STEM

03201500 OHIO RIVER AT POINT PLEASANT, WV

LOCATION.--Lat 38°50'25", long 82°08'30", Mason County, Hydrologic Unit 05030202, on left bank at Point Pleasant, 1,200 ft upstream from Kanawha River, and at mile 265.4 measured downstream from Pittsburgh, Pa.

DRAINAGE AREA.--52,760 mi<sup>2</sup>, approximately, includes that of Kanawha River.

PERIOD OF RECORD.--March 1940 to September 1977, (since October 1952, no low-flow records). October 1977 to current year (gage heights only). Records of gage heights collected in this vicinity since 1889 are in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 514.10 ft, Sandy Hook datum. Prior to Oct. 1, 1951, water-stage recorder at site 0.3 mi upstream at same datum.

REMARKS.--U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--12 years (water years 1941-52), 74,350 ft<sup>3</sup>/s, 19.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 55.00 ft, Apr. 16, 1948; minimum gage height recorded, 22.52 ft, Sept. 10, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1896, 62.8 ft, Mar. 30, 1913. Flood of Jan. 27, 1937, reached a stage of 62.7 ft.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 42.29 ft, Jan. 3; minimum, 24.37 ft, Oct. 2, 3.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.53	24.75	24.68	39.33	27.03	25.08	26.31	25.12	25.31	25.27	25.24	25.12
2	24.40	24.62	24.63	41.55	26.80	25.12	25.73	24.78	25.11	25.01	25.07	25.10
3	24.46	24.56	24.68	41.83	25.95	25.31	25.32	24.71	24.96	25.24	25.01	24.96
4	24.71	24.67	25.51	36.02	25.95	25.79	24.84	24.63	25.13	25.42	25.12	24.96
5	24.76	24.60	26.46	31.15	25.21	26.71	24.97	24.65	24.99	25.44	24.91	24.79
6	24.68	24.60	26.64	29.52	25.46	27.92	24.96	24.68	24.80	25.05	24.71	24.48
7	24.74	24.65	26.33	29.81	26.95	29.53	24.90	24.77	24.85	25.21	25.03	24.52
8	24.62	24.61	25.66	30.62	28.33	31.38	24.70	24.67	24.74	25.34	25.09	24.73
9	24.62	24.53	25.27	30.07	28.19	31.66	24.90	24.67	25.04	24.89	24.85	24.84
10	24.64	24.63	24.94	28.86	27.32	28.59	25.14	24.62	25.30	24.89	24.82	25.05
11	24.53	25.19	24.80	28.50	26.47	27.83	25.29	24.64	24.99	24.91	24.80	24.89
12	24.94	25.37	24.90	29.30	25.88	27.11	25.12	24.72	24.91	24.93	24.70	24.64
13	27.13	25.07	24.72	31.06	25.56	26.97	25.87	24.59	25.12	25.12	24.74	24.78
14	27.83	25.01	24.70	31.45	26.13	27.51	28.22	24.80	24.61	24.97	24.68	25.09
15	26.84	24.82	24.64	28.78	27.62	28.14	29.96	24.85	24.74	24.93	24.62	24.91
16	25.87	24.80	25.33	27.66	27.68	27.25	31.22	24.86	25.22	24.76	24.91	24.86
17	25.45	24.78	26.07	27.63	26.38	26.14	28.70	24.58	25.35	24.91	24.92	24.85
18	25.44	24.76	27.60	28.59	25.67	25.70	27.09	24.70	24.73	25.06	24.80	24.91
19	25.59	24.70	27.29	29.25	25.89	26.04	26.49	24.80	24.97	25.03	24.86	24.88
20	26.16	24.66	40.53	28.61	27.12	26.67	25.64	24.52	25.31	24.85	24.61	24.78
21	26.28	24.65	40.68	27.69	28.87	26.79	25.76	25.09	25.05	25.06	24.53	24.81
22	25.65	24.74	37.97	27.19	29.95	27.18	25.45	25.04	25.06	25.12	24.92	24.69
23	25.75	24.78	33.13	26.89	29.07	29.82	25.47	25.15	25.41	24.96	24.97	24.92
24	27.09	24.90	33.30	26.42	27.51	32.23	25.53	24.91	25.04	24.87	25.01	24.90
25	27.78	24.97	33.83	25.89	26.45	31.78	25.32	25.08	25.22	24.78	24.94	24.73
26	27.19	24.94	33.81	24.89	25.79	27.64	25.06	25.22	25.38	25.16	24.84	24.51
27	26.15	24.75	30.38	25.24	25.97	27.86	25.04	25.06	25.11	25.08	24.69	24.70
28	25.54	24.75	28.84	25.20	25.24	27.58	24.88	25.12	25.25	25.19	24.59	24.73
29	25.11	24.81	29.18	25.31	---	26.63	24.90	25.38	25.13	25.21	24.80	24.94
30	24.94	24.73	29.58	25.48	---	26.44	24.81	24.90	25.05	24.99	25.14	24.79
31	24.80	---	33.83	26.47	---	26.72	---	25.31	---	25.15	25.04	---
MEAN	25.56	24.78	29.03	29.56	26.80	27.65	25.92	24.86	25.06	25.06	24.87	24.83
MAX	27.83	25.37	40.68	41.83	29.95	32.23	31.22	25.38	25.41	25.44	25.24	25.12
MIN	24.40	24.53	24.63	24.89	25.21	25.08	24.70	24.52	24.61	24.76	24.53	24.48

WTR YR 1991 MEAN 26.17 MAX 41.83 MIN 24.40

## GUYANDOTTE RIVER BASIN

03202400 GUYANDOTTE RIVER NEAR BAILEYSVILLE, WV

LOCATION.--Lat 37°36'14", long 81°38'43", Wyoming County, Hydrologic Unit 05070101, on right bank 75 ft upstream from Doublecamp Branch, 3.1 mi east of Baileysville, and at mile 130.8.

DRAINAGE AREA.--306 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,140.00 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 10, 1969, at site 25 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 13 and Jan. 23-27. Records good except those for periods of estimated daily discharges, which are fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--23 years, 426 ft<sup>3</sup>/s, 18.91 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,700 ft<sup>3</sup>/s, Apr. 5, 1977, gage height, 26.89 ft, from rating curve extended above 14,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 21 ft<sup>3</sup>/s, Oct. 14, 1970, gage height, 2.44 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0930	*4,640	*9.42	Mar. 23	1930	4,590	9.37

Minimum discharge, 44 ft<sup>3</sup>/s, Oct. 4, gage height, 2.74 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	83	64	1950	828	444	1380	282	228	91	90	49
2	47	77	66	1220	632	750	1060	266	295	88	77	55
3	46	76	76	885	536	1050	862	248	375	99	70	47
4	51	73	99	683	463	1530	723	238	312	111	67	53
5	71	77	110	565	417	1460	729	252	234	96	63	113
6	65	85	106	507	422	1140	729	237	191	88	61	91
7	52	84	101	1560	466	1210	673	234	168	85	57	66
8	56	73	99	2460	554	1130	632	207	154	78	60	54
9	70	73	91	1430	597	935	589	215	148	75	82	48
10	67	152	82	1010	567	799	536	244	138	77	169	48
11	159	221	79	1100	501	670	460	212	133	76	113	47
12	218	177	76	1700	439	595	411	300	125	79	77	51
13	e300	150	74	1360	423	716	501	550	120	273	66	63
14	222	124	74	1030	877	2220	577	1500	114	178	61	309
15	136	107	85	821	1320	1960	589	1110	109	107	61	264
16	98	100	391	792	960	1350	559	670	128	86	58	110
17	81	101	607	793	750	1010	495	522	153	76	55	79
18	385	98	1840	736	871	1230	466	418	129	72	54	67
19	715	90	1810	676	2300	1420	460	396	188	71	60	74
20	273	85	1080	651	2580	1240	460	390	304	72	76	83
21	171	80	1800	638	1870	1040	427	392	229	84	77	65
22	159	77	1270	595	1370	1120	422	355	191	72	59	57
23	839	82	885	e530	1060	2900	396	313	199	70	54	55
24	631	88	1000	e480	845	2740	375	278	166	114	51	55
25	339	81	942	e440	723	1590	343	250	135	114	49	55
26	223	76	689	e400	657	1170	323	227	119	85	48	55
27	161	72	548	e380	559	1050	322	220	110	84	49	51
28	127	70	1630	401	501	896	342	410	103	81	48	47
29	107	70	1930	375	---	1230	310	284	98	112	51	46
30	97	66	1690	411	---	2650	297	226	93	167	50	46
31	89	---	3550	1100	---	1930	---	202	---	106	48	---
TOTAL	6101	2868	22944	27679	24088	41175	16448	11648	5189	3067	2061	2303
MEAN	197	95.6	740	893	860	1328	548	376	173	98.9	66.5	76.8
MAX	839	221	3550	2460	2580	2900	1380	1500	375	273	169	309
MIN	46	66	64	375	417	444	297	202	93	70	48	46
CFSM	.64	.31	2.42	2.92	2.81	4.34	1.79	1.23	.57	.32	.22	.25
IN.	.74	.35	2.79	3.36	2.93	5.01	2.00	1.42	.63	.37	.25	.28

CAL YR 1990 TOTAL 158790 MEAN 435 MAX 4240 MIN 45 CFSM 1.42 IN. 19.30  
WTR YR 1991 TOTAL 165571 MEAN 454 MAX 3550 MIN 46 CFSM 1.48 IN. 20.13

e Estimated

## GUYANDOTTE RIVER BASIN

03202750 CLEAR FORK AT CLEAR FORK, WV

LOCATION.--Lat 37°37'23", long 81°42'27", Wyoming County, Hydrologic Unit 05070101, on left bank 0.2 mi downstream from Walls Branch, 0.7 mi upstream from Spratt Branch, 1.4 mi southwest of Clear Fork, and at mile 2.6.

DRAINAGE AREA.--126 mi<sup>2</sup>.

REVISED RECORDS.--WDR WV-81-1: Drainage area.

PERIOD OF RECORD.--June 1974 to current year. Prior to October 22, 1974, partial record station.

GAGE.--Water-stage recorder. Elevation of gage is 1,150 ft above National Geodetic Vertical Datum of 1929, from topographic map. June 28, 1974 to Oct. 22, 1974, nonrecording gage; Oct. 23, 1974 to Oct. 26, 1977, digital recorder at site 0.9 mi upstream at different datum; Oct. 27, 1977 to Dec. 31, 1980, digital recorder at site 0.2 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Feb. 13-20. Records good except those for Apr. 5 to May 17 and period of estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--17 years, 191 ft<sup>3</sup>/s, 20.59 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,900 ft<sup>3</sup>/s, Apr. 5, 1977, gage height, 18.64 ft, site and datum then in use, from rating curve extended above 3,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 2.3 ft<sup>3</sup>/s, Aug. 17-19, 1988, gage height, 1.38 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0730	1,800	6.41	Mar. 23	1630	*3,800	*9.30
Mar. 14	1130	2,250	7.13				

Minimum discharge, 3.3 ft<sup>3</sup>/s, Sept. 1, 2, gage height, 1.43 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	23	23	798	619	133	499	90	33	27	14	3.6
2	6.1	20	22	470	386	218	356	80	77	25	12	3.6
3	5.5	19	31	322	283	317	282	70	162	22	10	3.9
4	6.8	18	79	247	239	410	235	65	129	22	9.0	4.2
5	16	17	121	195	204	431	224	70	74	23	8.6	6.6
6	15	19	104	170	190	373	258	65	52	26	8.0	11
7	12	20	86	559	232	529	253	63	41	21	7.3	8.9
8	13	18	70	1090	274	500	218	52	34	17	13	7.1
9	15	18	58	562	281	366	185	52	30	14	14	5.8
10	14	81	49	353	260	286	159	63	27	16	43	4.4
11	33	106	43	500	218	230	125	60	24	22	34	5.0
12	76	79	39	1140	184	195	105	61	23	23	21	5.3
13	114	62	35	741	e150	274	146	98	21	103	15	7.5
14	74	50	33	466	e290	1820	246	159	20	65	12	54
15	45	41	37	342	e650	957	264	125	18	37	11	50
16	31	37	162	299	e400	508	231	85	29	26	9.3	25
17	24	35	251	297	e250	352	190	77	114	20	8.1	16
18	126	32	991	289	e350	453	162	64	67	17	7.2	12
19	249	29	952	269	e600	579	151	151	209	16	6.9	9.8
20	95	27	505	250	e1000	497	139	154	227	14	8.3	9.1
21	57	24	880	254	745	391	126	118	135	13	9.6	8.3
22	56	22	630	226	492	518	124	90	253	12	7.8	7.2
23	177	30	489	213	355	2460	115	72	208	12	6.4	6.2
24	175	38	868	201	276	1470	106	59	135	35	5.7	6.2
25	104	36	635	176	231	631	93	50	85	27	5.3	6.0
26	72	34	366	152	205	416	85	44	62	23	4.8	5.8
27	53	31	276	145	171	368	80	40	48	21	4.5	5.4
28	41	29	1250	156	147	322	123	59	39	29	3.9	4.9
29	34	28	1110	153	---	524	121	50	34	22	3.9	4.4
30	29	25	662	201	---	1110	105	38	30	19	3.9	4.0
31	26	---	1190	914	---	779	---	34	---	16	4.1	---
TOTAL	1800.3	1048	12047	12150	9682	18417	5506	2358	2440	785	331.6	311.2
MEAN	58.1	34.9	389	392	346	594	184	76.1	81.3	25.3	10.7	10.4
MAX	249	106	1250	1140	1000	2460	499	159	253	103	43	54
MIN	5.5	17	22	145	147	133	80	34	18	12	3.9	3.6
CFSM	.46	.28	3.08	3.11	2.74	4.72	1.46	.60	.65	.20	.08	.08
IN.	.53	.31	3.56	3.59	2.86	5.44	1.63	.70	.72	.23	.10	.09

CAL YR 1990 TOTAL 67246.5 MEAN 184 MAX 2070 MIN 5.5 CFSM 1.46 IN. 19.85  
WTR YR 1991 TOTAL 66876.1 MEAN 183 MAX 2460 MIN 3.6 CFSM 1.45 IN. 19.74

e Estimated



## GUYANDOTTE RIVER BASIN

03202915 GUYANDOTTE RIVER BELOW R. D. BAILEY DAM, WV

LOCATION.--Lat 37°35'53", long 81°49'46", Mingo County, Hydrologic Unit 05070101, on right bank, 500 ft upstream from Little Huff Creek, 2,500 ft downstream from R. D. Bailey Dam and 0.5 mi northeast of Justice, and at river mile 111.6.

DRAINAGE AREA.--535 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1978 to September 1982, October 1982 to September 1986 (gage heights, discharge measurements and annual maximum discharge only), October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 880.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since February 1980 by R. D. Bailey Lake at mile 112. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--8 years, (water years 1980-82, 1987-91), 778 ft<sup>3</sup>/s, 19.75 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft<sup>3</sup>/s, June 22, 1979, gage height, 13.90 ft; minimum discharge, 2.1 ft<sup>3</sup>/s, Dec. 18, 1978; minimum daily discharge, 34 ft<sup>3</sup>/s, Nov. 1, 1987; minimum gage height observed, 1.91 ft, Aug. 30, 1983 (gates closed) but may have been less Sept. 14, 30, 1983 (gates closed).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,350 ft<sup>3</sup>/s, Dec. 31, gage height, 9.25 ft; minimum daily, 45 ft<sup>3</sup>/s, Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	204	124	190	2390	783	3440	509	240	165	163	47
2	109	203	124	148	2360	1000	3730	451	416	165	68	48
3	123	246	125	1300	2310	1750	2270	410	695	144	66	48
4	124	206	156	3640	1240	2530	1340	430	729	127	65	49
5	126	179	267	4730	462	2980	1150	439	409	127	65	90
6	125	188	303	4820	463	2760	1170	439	281	127	65	179
7	125	167	292	4900	832	2670	1110	439	225	127	65	178
8	125	119	244	4930	1260	2570	1070	350	243	127	65	113
9	216	141	163	4870	1330	2020	1060	323	199	127	99	73
10	291	230	129	4410	1320	1580	1060	400	176	109	225	53
11	328	268	133	2790	1040	1250	904	400	176	84	224	48
12	432	336	139	2810	922	1120	807	371	176	82	159	45
13	487	433	152	3050	805	1350	897	624	176	457	108	51
14	480	411	151	3020	2040	3710	1100	1830	160	396	57	129
15	300	356	183	2250	2890	4680	1320	2460	100	266	57	418
16	182	213	534	1860	2770	4490	1320	1110	148	158	57	245
17	158	183	1150	1600	2010	3030	1120	976	326	78	57	127
18	255	164	2560	1500	1730	2760	956	681	204	77	56	96
19	570	123	3030	1330	2640	3000	852	743	401	102	55	95
20	782	125	2970	1230	4170	2970	906	672	587	121	76	95
21	775	141	3190	1240	4840	2390	830	603	568	121	103	95
22	665	127	3000	1230	4750	2260	790	524	581	119	112	95
23	924	128	2960	1080	4170	3410	816	485	577	108	112	95
24	1400	145	2960	1010	2570	3830	674	432	414	92	99	67
25	820	154	2920	907	1490	4510	605	317	89	129	72	49
26	499	181	2100	810	1160	4830	605	255	48	247	72	49
27	461	144	1140	740	1170	4700	605	358	96	171	57	49
28	382	123	2220	804	833	3190	605	606	176	84	48	49
29	203	125	2860	674	---	2520	605	492	165	80	48	49
30	141	124	3010	744	---	2990	566	366	165	105	49	49
31	183	---	3100	1730	---	2970	---	273	---	281	48	---
TOTAL	11872	5887	42389	66347	55967	86603	34283	18768	8946	4703	2672	2873
MEAN	383	196	1367	2140	1999	2794	1143	605	298	152	86.2	95.8
MAX	1400	433	3190	4930	4840	4830	3730	2460	729	457	225	418
MIN	81	119	124	148	462	783	566	255	48	77	48	45

CAL YR 1990 TOTAL 297821 MEAN 816 MAX 4900 MIN 52 CFSM 1.53 IN. 20.71  
WTR YR 1991 TOTAL 341310 MEAN 935 MAX 4930 MIN 45 CFSM 1.75 IN. 23.73

## GUYANDOTTE RIVER BASIN

03203600 GUYANDOTTE RIVER AT LOGAN, WV

LOCATION.--Lat 37°50'32", long 81°58'34", Logan County, Hydrologic Unit 05070101, on right bank 200 ft downstream from Midelburg Bridge at Logan, 0.8 mi downstream from Dingess Run, 1.1 mi upstream from Island Creek, and at mile 81.0.

DRAINAGE AREA.--833 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1960 to September 1962 (annual maximum only), October 1962 to current year. Gage-height records collected in this vicinity since November 1915 are contained in reports of National Weather Service.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 640.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1962, at datum 1.32 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since February 1980 by R. D. Bailey Lake at mile 112. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--29 years, 1,164 ft<sup>3</sup>/s, 18.98 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,000 ft<sup>3</sup>/s, Mar. 12, 1963, gage height, 34.98 ft, from rating curve extended above 26,000 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 25.6 ft and 34.98 ft; minimum discharge, 33 ft<sup>3</sup>/s, Sept. 17, 1964; minimum gage height, 3.96 ft, Sept. 16, Oct. 2, 1983. Minimum daily discharge since regulation, 48 ft<sup>3</sup>/s, July 10 and Aug. 18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,200 ft<sup>3</sup>/s, Mar. 23, gage height, 18.01 ft; minimum daily, 54 ft<sup>3</sup>/s, Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	233	160	1960	2920	1020	3790	675	368	205	399	70
2	96	239	159	1060	2610	1250	4070	646	393	209	156	62
3	139	238	234	956	2410	1770	3160	543	682	205	93	56
4	181	291	458	2900	1970	2460	1800	535	987	182	96	57
5	204	224	467	4580	916	3200	1630	558	572	193	95	78
6	173	229	499	4680	774	3110	1680	578	444	195	88	157
7	162	233	442	5580	1080	3180	1640	575	302	171	98	252
8	186	195	401	6320	1500	3110	1520	528	306	165	98	198
9	197	155	325	5550	1600	2490	1470	421	310	161	104	136
10	324	348	225	4990	1560	1920	1440	517	239	181	245	103
11	457	428	200	4050	1420	1630	1330	496	227	233	298	76
12	568	424	198	4090	1170	1410	1130	489	228	153	280	64
13	787	479	202	3970	1130	1600	1260	466	224	478	182	61
14	698	536	211	3470	2700	6050	1540	1140	221	853	149	96
15	627	446	231	2850	4080	6220	1700	2510	197	335	82	238
16	315	396	485	2130	3330	5320	1820	1520	154	329	74	474
17	254	232	1180	1980	2560	4000	1620	1040	419	192	69	240
18	414	254	3250	1770	2600	3090	1440	943	431	117	72	149
19	705	200	4500	1680	4850	3580	1280	778	428	126	84	130
20	961	164	3370	1570	5640	3410	1230	867	738	155	94	132
21	923	164	4100	1580	6130	2980	1230	790	820	171	97	122
22	922	182	3460	1550	5530	2620	1070	656	745	165	128	118
23	859	196	3720	1470	4850	9860	1100	646	801	161	137	116
24	1530	197	4390	1330	3340	6410	1010	549	724	239	136	116
25	1300	209	3610	1260	1860	5180	847	523	351	169	125	103
26	632	215	2830	1060	1560	5510	827	350	160	384	85	67
27	539	243	1720	1020	1420	5190	814	402	100	394	81	60
28	505	183	5480	1040	1260	4260	802	758	138	205	74	58
29	375	172	4190	1030	---	2990	790	698	229	145	54	57
30	197	163	3760	1000	---	4630	776	634	206	130	56	58
31	177	---	6470	2310	---	4070	---	372	---	177	61	---
TOTAL	15503	7868	60927	80786	72770	113520	45816	22203	12144	7178	3890	3704
MEAN	500	262	1965	2606	2599	3662	1527	716	405	232	125	123
MAX	1530	536	6470	6320	6130	9860	4070	2510	987	853	399	474
MIN	96	155	159	956	774	1020	776	350	100	117	54	56

CAL YR 1990 TOTAL 413774 MEAN 1134 MAX 6470 MIN 85 CFSM 1.36 IN. 18.48  
WTR YR 1991 TOTAL 446309 MEAN 1223 MAX 9860 MIN 54 CFSM 1.47 IN. 19.93

## GUYANDOTTE RIVER BASIN

03204000 GUYANDOTTE RIVER AT BRANCHLAND, WV  
(National stream-quality accounting network station)

LOCATION.--Lat 38°13'15", long 82°12'10", Lincoln County, Hydrologic Unit 05070102, on right bank at upstream side of highway bridge at Branchland, opposite mouth of Fourmile Creek, and at mile 35.3. Records include flow of Fourmile Creek.

DRAINAGE AREA.--1,224 mi<sup>2</sup>, includes that of Fourmile Creek.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1915 to September 1917, October 1917 to September 1922 (gage heights only), December 1928 to current year. Prior to October 1959, published as Guyandot River at Branchland. Monthly discharge only for July to September 1916, published in WSP 1305.

REVISED RECORDS.--WSP 853: 1918(M). WSP 1335: 1916-17, 1929-30, 1932-35. WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 547.91 ft above National Geodetic Vertical Datum of 1929. Prior to June 20, 1932, nonrecording gage and June 20, 1932, to Oct. 24, 1968, water-stage recorder at site 20 ft downstream at same datum. Oct. 1, 1942, to Jan. 23, 1969, auxiliary nonrecording gage and Jan. 24, 1969, to Dec. 12, 1986, auxiliary water-stage recorder 4.0 mi upstream from base gage at datum 4.99 ft higher.

REMARKS.--No estimated daily discharges. Water-discharge records good. Flow regulated since February 1980 by R. D. Bailey Lake at mile 112. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1916-17, 1930-91), 1,633 ft<sup>3</sup>/s, 18.12 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,500 ft<sup>3</sup>/s, Mar. 13, 1963, gage height, 43.83 ft; minimum, 3.6 ft<sup>3</sup>/s, Oct. 25, 1930, gage height, 2.66 ft. Minimum daily discharge since regulation, 77 ft<sup>3</sup>/s, Aug. 19, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood, probably in 1907, reached a stage of about 44 ft, from floodmark, discharge, 43,500 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,500 ft<sup>3</sup>/s, Mar. 24, gage height, 23.93 ft; minimum daily, 88 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	224	207	8680	3760	1560	5450	994	646	256	200	106
2	125	249	202	3080	3640	1470	5200	892	514	313	427	108
3	120	261	282	1950	3250	1740	4960	829	694	388	269	106
4	145	258	937	2170	2980	2950	3380	729	921	288	159	99
5	229	296	972	4170	2060	3800	2470	717	1050	263	143	167
6	227	265	810	5030	1470	4270	2370	744	647	262	142	211
7	195	259	729	6390	2970	4710	2280	791	519	251	151	199
8	181	250	618	8370	3160	4510	2130	715	377	217	162	263
9	196	231	535	7490	2920	3990	2010	682	353	206	242	261
10	212	397	433	6370	2590	3160	2080	637	356	211	315	208
11	281	650	331	6040	2290	2520	1880	674	297	404	311	157
12	509	613	283	5440	1890	2090	1680	645	272	379	365	145
13	727	557	273	5490	1690	2330	1810	626	268	381	340	116
14	796	570	268	4830	2690	5650	2150	658	264	730	266	108
15	683	582	297	4270	5460	9020	3420	1800	258	868	223	125
16	589	503	448	3350	4990	7330	4070	2310	263	413	158	215
17	336	459	822	2970	4140	6090	3210	1390	382	375	126	455
18	280	316	3740	2550	4040	4840	2560	1150	530	274	116	298
19	435	289	8630	2320	6560	4750	2190	1040	568	183	117	220
20	682	264	5580	2150	8390	4670	1960	1000	777	197	137	166
21	886	217	4420	2070	8670	4350	1800	953	857	231	163	166
22	905	211	4580	2000	7640	5610	1680	889	990	217	140	153
23	1070	265	5660	1920	6540	8700	1530	761	1040	210	156	148
24	1150	286	6640	1800	5290	14700	1480	753	921	254	180	144
25	1550	275	5700	1640	3540	8290	1320	639	798	295	178	147
26	1140	273	4380	1480	2520	7610	1180	593	433	241	177	156
27	680	270	3100	1350	2030	7970	1140	444	264	447	142	121
28	580	285	6790	1350	1860	6840	1110	651	184	425	122	98
29	536	254	8330	1390	---	4860	1090	919	171	286	119	90
30	410	222	7390	1380	---	5420	1050	750	263	213	109	88
31	265	---	14000	2500	---	6270	---	772	---	188	97	---
TOTAL	16245	10051	97387	111990	109030	162070	70640	27147	15877	9866	5952	5044
MEAN	524	335	3142	3613	3894	5228	2355	876	529	318	192	168
MAX	1550	650	14000	8680	8670	14700	5450	2310	1050	868	427	455
MIN	120	211	202	1350	1470	1470	1050	444	171	183	97	88

CAL YR 1990 TOTAL 604606 MEAN 1656 MAX 14000 MIN 114 CFSM 1.35 IN. 18.38  
WTR YR 1991 TOTAL 641299 MEAN 1757 MAX 14700 MIN 88 CFSM 1.44 IN. 19.49

## GUYANDOTTE RIVER BASIN

03204000 GUYANDOTTE RIVER AT BRANCHLAND, WV--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961, 1965, 1975 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to November 1976, February to September 1977.

WATER TEMPERATURE: March to December 1976, February to September 1977.

TURBIDITY: October 1975 to December 1976.

SUSPENDED SEDIMENT DISCHARGE: March 1976 to September 1977.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 845 microsiemens, Aug. 27, 1976; minimum daily, 108 microsiemens, Feb. 11, 1977.

WATER TEMPERATURE: Maximum daily, 32.0°C, July 14, 1977; minimum daily, 1.0°C, several days in February 1977.

TURBIDITY: Maximum daily, 200 NTU, Mar. 21, Aug. 15, 1976, minimum daily, 1 NTU, on several days in 1976.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,250 mg/L, Dec. 9, 1976; minimum daily mean, 5 mg/L, Oct. 24, 1976, and July 17, 20, 1977.

SEDIMENT LOADS: Maximum daily, 205,000 tons, Apr. 5, 1977; minimum daily, 2.3 tons, July 20, 1977.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT												
16...	1830	575	498	8.0	18.0	10	749	8.0	86	1300	160	120
DEC												
06...	1430	802	355	7.7	5.5	10	748	11.6	94	2000	420	110
MAR												
21...	1300	4170	204	7.4	10.5	11	742	9.9	91	1300	360	64
MAY												
08...	1200	714	440	7.8	19.0	3.5	756	8.2	89	240	K30	130
JUL												
26...	1200	223	562	8.0	27.0	6.0	749	6.2	79	100	66	140
AUG												
28...	1500	120	650	8.1	25.5	5.9	750	7.0	87	K49	K55	160

DATE	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 HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)
OCT												
16...	28	12	55	3.2	124	0	102	120	9.7	<0.10	5.0	304
DEC												
06...	25	11	30	2.9	62	0	51	95	11	<0.10	5.7	208
MAR												
21...	14	7.0	12	1.7	27	0	22	61	3.6	<0.10	7.3	125
MAY												
08...	29	14	39	2.6	78	0	64	140	18	0.20	4.9	298
JUL												
26...	33	13	56	4.2	117	0	96	140	21	0.30	3.3	327
AUG												
28...	36	17	74	4.5	148	0	121	170	31	0.20	2.6	406

K: Results based on colony count outside the acceptance range (non-ideal colony count).



## GUYANDOTTE RIVER BASIN

03204000 GUYANDOTTE RIVER AT BRANCHLAND, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	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)
OCT 16...	297	--	<0.010	0.600	0.010	<0.010	0.29	0.30	<0.010	<0.010	<0.010	30
DEC 06...	215	--	<0.010	0.700	0.050	0.040	0.25	0.30	0.030	<0.010	<0.010	<10
MAR 21...	123	--	<0.010	0.530	0.010	<0.010	0.19	0.20	0.070	0.020	<0.010	60
MAY 08...	289	0.610	0.010	0.620	0.020	0.020	0.28	0.30	0.010	0.010	0.010	--
JUL 26...	331	--	<0.010	0.570	0.020	0.030	--	<0.20	0.020	<0.010	<0.010	--
AUG 28...	411	--	<0.010	0.440	<0.010	0.030	--	0.20	0.040	<0.010	<0.010	30

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	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)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 16...	<1	48	<0.5	<1.0	<1	<3	2	13	<1	22	8
DEC 06...	<1	43	0.7	<1.0	<1	<3	1	10	<1	13	13
MAR 21...	<1	30	<0.5	<1.0	<1	<3	1	36	1	10	16
MAY 08...	--	--	--	--	--	--	--	--	--	--	--
JUL 26...	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	<1	80	<0.5	<1.0	<1	<3	2	7	<1	26	51

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 16...	<0.1	<10	1	<1	<1.0	430	<6	<3	36	56	82
DEC 06...	<0.1	<10	1	<2	<1.0	350	<6	<3	18	39	88
MAR 21...	<0.1	<10	2	<1	<1.0	210	<6	4	115	1290	27
MAY 08...	--	--	--	--	--	--	--	--	7	13	77
JUL 26...	--	--	--	--	--	--	--	--	23	14	73
AUG 28...	<0.1	<10	<1	<1	<1.0	670	<6	4	15	4.9	96

## OHIO RIVER MAIN STEM

03206000 OHIO RIVER AT HUNTINGTON, WV

LOCATION.--Lat 38°24'48", long 82°30'02", Lawrence County, Ohio, Hydrologic Unit 05090101, on right bank at lock 28 at Sybene, Ohio, 0.1 mi upstream from Fourpole Creek, 3.0 mi downstream from Symmes Creek, and at mile 311.6, measured downstream from Pittsburgh, Pa.

DRAINAGE AREA.--55,900 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--August 1934 to September 1986, October 1986 to current year (gage heights only). No low-flow records since October 1968. Gage-height records collected at same site since 1913 are in reports of National Weather Service.

REVISED RECORDS.--WSP 853: 1934, 1936. WSP 893: Drainage area. WSP 1305: 1935(M), 1939(M).

GAGE.--Water-stage recorder. Datum of gage is 490.263 ft, Sandy Hook datum. Prior to July 8, 1942, at datum 1.737 ft higher. Prior to September 30, 1986, auxiliary water-stage recorder 4.7 mi upstream from base gage at datum 490.102 ft (Sandy Hook datum).

REMARKS.--Flow regulated by Ohio River system of locks, dams, and reservoirs upstream. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--34 years (water years 1935-68), 75,240 ft<sup>3</sup>/s, 18.28 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 654,000 ft<sup>3</sup>/s, Jan. 28, 1937; maximum gage height, 69.45 ft, Jan. 27, 1937, present datum; minimum daily discharge determined, 3,200 ft<sup>3</sup>/s, Sept. 6, 13, Nov. 2, 1934, Oct. 3, 1935, Oct. 1, 1937.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 51.75 ft, Jan. 2; minimum, 24.70 ft, Sept. 26.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.61	26.09	25.80	50.71	30.67	27.23	30.90	26.83	26.23	26.46	25.93	26.13
2	25.60	25.83	26.07	51.57	30.73	26.64	29.82	26.53	26.37	25.83	25.81	26.11
3	25.38	25.73	25.87	49.74	29.06	27.04	28.34	26.37	25.96	26.33	26.01	25.61
4	25.91	25.89	27.98	44.97	28.11	28.48	27.27	26.10	26.01	26.22	25.54	25.87
5	26.07	25.59	29.74	39.52	27.71	31.38	26.93	25.90	26.54	26.48	25.54	26.17
6	26.34	25.86	30.14	36.19	27.58	34.33	26.73	26.03	25.91	25.99	25.35	25.46
7	26.48	26.01	29.51	36.18	30.34	37.33	26.53	26.62	25.75	26.30	25.41	25.64
8	26.19	25.69	28.18	37.53	33.44	39.15	26.33	26.39	25.68	26.49	25.94	26.09
9	25.55	25.69	27.29	37.58	33.89	38.44	26.12	25.98	26.03	26.19	25.89	25.98
10	25.52	26.28	26.74	35.20	32.58	34.96	27.53	26.14	26.37	25.88	25.59	25.99
11	25.64	27.33	26.35	34.30	30.79	32.73	27.54	25.70	26.17	25.73	25.96	25.78
12	26.76	27.48	26.26	35.70	29.50	31.57	27.32	25.55	25.95	25.99	25.75	25.40
13	30.32	26.82	26.12	38.15	28.48	30.95	27.73	25.82	26.12	26.38	25.27	25.39
14	31.69	26.62	26.22	37.94	29.32	32.53	31.64	25.72	25.76	26.21	25.47	25.88
15	30.13	26.34	26.28	34.84	32.62	34.34	34.85	25.79	25.66	26.45	25.39	26.00
16	28.39	26.05	27.43	32.34	33.49	33.23	37.38	25.67	26.11	25.84	25.34	25.68
17	27.57	26.01	28.64	32.00	30.96	30.36	36.05	25.52	26.55	25.84	25.50	25.37
18	27.39	25.81	31.09	33.93	29.35	29.08	32.63	25.48	26.04	26.31	25.72	25.52
19	27.87	25.82	39.20	35.07	29.60	29.74	30.57	25.98	26.25	25.99	26.11	25.98
20	28.72	26.03	45.80	33.49	32.65	31.23	29.25	25.95	26.06	25.91	26.10	25.78
21	29.15	25.81	47.18	31.87	36.60	31.11	28.21	25.50	26.00	26.09	25.17	25.15
22	28.08	26.09	45.23	30.93	37.46	31.53	28.25	25.94	26.38	26.28	25.34	25.11
23	28.03	26.29	42.13	30.20	35.69	35.89	27.86	26.43	26.56	25.95	25.76	25.21
24	30.34	26.61	42.09	29.65	33.13	38.97	27.94	26.18	26.03	26.41	25.33	25.26
25	31.65	26.71	42.26	28.42	30.95	40.03	27.71	25.68	26.10	25.89	25.27	25.54
26	30.80	26.43	41.24	27.60	29.33	36.18	27.17	26.15	26.33	26.06	25.30	25.03
27	29.16	26.04	37.81	27.32	28.76	33.64	27.12	26.11	26.08	25.84	25.10	25.26
28	27.87	26.10	34.64	26.97	28.10	33.70	26.82	25.90	26.36	26.18	25.13	25.21
29	26.93	26.11	36.34	27.26	---	31.63	26.67	26.29	25.99	26.58	25.22	25.47
30	26.38	25.95	36.77	27.71	---	30.61	26.16	26.58	26.12	25.89	25.76	25.28
31	26.03	---	44.23	28.93	---	31.77	---	26.23	---	26.25	26.14	---
MEAN	27.66	26.17	33.25	34.96	31.10	32.77	28.85	26.03	26.12	26.14	25.59	25.61
MAX	31.69	27.48	47.18	51.57	37.46	40.03	37.38	26.83	26.56	26.58	26.14	26.17
MIN	25.38	25.59	25.80	26.97	27.58	26.64	26.12	25.48	25.66	25.73	25.10	25.03

WTR YR 1991 MEAN 28.69 MAX 51.57 MIN 25.03

## TWELVEPOLE CREEK BASIN

03206600 EAST FORK TWELVEPOLE CREEK NEAR DUNLOW, WV

LOCATION.--Lat 38°01'02", long 82°17'46", Wayne County, Hydrologic Unit 05090102, on left bank 0.2 mi upstream from Maynard Branch, 0.9 mi downstream from McComas Branch, 1.5 mi upstream from Deviltrace Branch, and 7.5 mi east of Dunlow, and at mile 60.2.

DRAINAGE AREA.--38.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1964 to current year.

REVISED RECORDS.--WDR WV-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 710.00 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 22, 1964, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 23-25. Records good except those for period of estimated daily discharges, and October, November and September, which are fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--27 years, 52.8 ft<sup>3</sup>/s, 18.62 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,040 ft<sup>3</sup>/s, Dec. 9, 1978, gage height, 15.84 ft, from rating curve extended above 1,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum discharge, 0.01 ft<sup>3</sup>/s, July 2-13, 1966, Sept. 18-28, 1967, Sept. 8, 9, 1973; minimum gage height, 4.43 ft, July 8-10, 1988, Aug. 6, 7, 8, 31, Sept. 25, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 840 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 18	2030	1,430	10.74	Dec. 30	2300	*2,370	*12.39

Minimum discharge, 0.14 ft<sup>3</sup>/s, Aug. 6, 7, 8, 31, and Sept. 25, gage height, 4.43 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	3.2	4.9	236	96	35	105	17	4.8	1.6	.53	1.5
2	2.0	3.0	4.7	131	75	36	84	15	3.7	1.6	.66	1.1
3	2.0	2.8	26	82	60	41	67	13	3.7	2.6	.45	.54
4	8.4	2.7	86	57	50	92	55	13	2.7	1.4	.31	.49
5	6.0	3.0	44	46	44	86	51	12	2.2	5.4	.20	3.1
6	2.7	4.0	29	45	72	114	43	17	1.8	3.5	.17	4.1
7	1.9	4.4	22	163	243	169	38	18	1.6	2.2	.24	1.8
8	2.4	4.1	17	193	199	127	35	11	1.4	1.7	1.1	.96
9	3.0	5.9	14	138	142	94	34	14	1.3	1.7	3.7	.57
10	2.4	40	12	101	103	73	37	16	1.1	7.6	4.2	.48
11	2.4	30	10	150	73	57	31	12	1.0	26	1.6	.48
12	5.2	17	9.0	150	56	50	29	9.8	.92	13	.80	.49
13	7.2	12	8.4	120	63	119	51	8.6	.93	23	.57	.51
14	4.5	9.1	7.3	92	253	448	57	8.5	.80	10	.55	.64
15	3.6	7.2	13	71	207	227	276	7.3	.94	5.7	.72	.66
16	3.0	6.3	28	69	129	138	251	6.1	5.3	3.6	.67	.56
17	2.7	7.5	32	59	99	99	149	7.7	54	2.7	.45	.42
18	4.6	6.5	602	51	243	163	100	5.9	12	2.1	.32	.33
19	4.1	5.5	535	47	374	142	81	8.9	16	1.8	1.4	.33
20	3.5	5.2	144	48	363	116	63	7.4	21	1.7	6.4	.32
21	2.8	4.6	84	46	248	93	52	5.3	8.5	1.7	2.0	.24
22	11	5.0	62	39	159	287	46	4.4	11	1.2	1.1	.21
23	25	18	325	e35	107	486	40	3.9	7.5	1.1	.68	.19
24	15	13	259	e32	77	290	35	4.1	5.1	1.2	.49	.18
25	9.4	10	142	e30	63	159	30	3.6	3.8	.83	.36	.19
26	6.5	8.3	85	29	54	123	27	3.1	3.1	1.2	.25	.32
27	5.2	7.3	84	28	45	114	25	3.0	2.6	1.1	.22	.28
28	4.6	6.9	530	35	39	106	23	14	2.2	1.1	.21	.20
29	4.0	6.5	251	32	---	101	22	5.6	2.0	1.0	.20	.20
30	3.5	5.5	691	63	---	117	19	4.0	1.8	1.2	.18	.21
31	3.3	---	1130	132	---	114	---	3.2	---	1.0	.16	---
TOTAL	163.7	264.5	5291.3	2550	3736	4416	1956	282.4	184.79	131.53	30.89	21.60
MEAN	5.28	8.82	171	82.3	133	142	65.2	9.11	6.16	4.24	1.00	.72
MAX	25	40	1130	236	374	486	276	18	54	26	6.4	4.1
MIN	1.8	2.7	4.7	28	39	35	19	3.0	.80	.83	.16	.18
CFSM	.14	.23	4.43	2.14	3.47	3.70	1.69	.24	.16	.11	.03	.02
IN.	.16	.26	5.11	2.46	3.61	4.27	1.89	.27	.18	.13	.03	.02

CAL YR 1990 TOTAL 19907.20 MEAN 54.5 MAX 1130 MIN .66 CFSM 1.42 IN. 19.24  
WTR YR 1991 TOTAL 19028.71 MEAN 52.1 MAX 1130 MIN .16 CFSM 1.35 IN. 18.39

e Estimated

## BIG SANDY RIVER BASIN

03212750 TUG FORK AT WELCH, WV

LOCATION.--Lat 37°26'28", long 81°36'00", McDowell County, Hydrologic Unit 05070201, on left bank at bridge in the Hemphill section of Welch, 20 ft downstream from Mod Branch at mile 131.5.

DRAINAGE AREA.--174 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,268.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Mar. 7-12. Records good except those for period of estimated daily discharges, which is fair. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--6 years, 198 ft<sup>3</sup>/s, 15.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,490 ft<sup>3</sup>/s, Apr. 24, 1987, gage height, 11.90 ft; minimum, 24 ft<sup>3</sup>/s, Sept. 4-5, 1987; minimum gage height, 2.57 ft, Sept. 4-5, 1987, Dec. 19, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 30	0530	*1,810	*7.45	No peak greater than base discharge.			

Minimum discharge, 32 ft<sup>3</sup>/s, Dec. 1, gage height, 2.63 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	59	33	523	170	262	858	204	239	131	93	68
2	41	58	33	357	167	517	700	200	237	131	89	66
3	43	58	39	282	166	509	602	194	341	133	86	65
4	60	57	44	234	162	957	530	192	257	130	96	68
5	58	60	53	208	159	709	510	184	227	125	93	103
6	53	67	37	191	187	589	454	184	209	120	83	85
7	51	62	37	519	203	e530	422	178	197	116	90	71
8	56	58	36	698	246	e450	385	174	189	114	85	66
9	56	65	35	435	237	e400	379	186	182	111	111	64
10	60	111	35	339	218	e350	344	180	175	110	127	66
11	145	95	38	372	202	e340	316	170	169	110	98	65
12	100	83	37	445	188	e320	299	172	167	112	87	63
13	140	78	37	399	187	386	330	166	159	137	81	87
14	88	74	36	343	246	984	313	1140	150	111	78	106
15	70	70	45	311	264	780	299	569	151	103	79	83
16	62	70	69	335	238	600	289	374	172	98	77	68
17	60	69	97	325	237	527	276	335	154	95	76	62
18	221	66	302	301	400	571	273	282	169	94	76	61
19	162	64	367	279	843	548	276	463	207	100	78	164
20	91	64	212	281	853	501	260	560	247	104	85	91
21	74	64	219	269	688	458	253	566	185	94	71	75
22	101	62	198	247	551	522	246	408	256	91	68	68
23	213	67	186	231	450	1170	230	335	386	97	66	65
24	138	64	265	225	387	1110	213	295	226	147	66	62
25	100	62	224	210	353	793	204	267	179	99	65	61
26	85	57	174	200	327	665	198	247	160	104	66	62
27	78	51	164	195	297	586	206	260	150	107	57	61
28	74	52	771	195	279	518	226	443	141	99	58	58
29	63	46	520	183	---	994	215	294	138	179	67	58
30	63	34	384	189	---	1590	215	259	134	117	72	57
31	61	---	874	187	---	1080	---	237	---	103	71	---
TOTAL	2709	1947	5601	9508	8905	20316	10321	9718	5953	3522	2495	2199
MEAN	87.4	64.9	181	307	318	655	344	313	198	114	80.5	73.3
MAX	221	111	874	698	853	1590	858	1140	386	179	127	164
MIN	41	34	33	183	159	262	198	166	134	91	57	57
CFSM	.50	.37	1.04	1.76	1.83	3.77	1.98	1.80	1.14	.65	.46	.42
IN.	.58	.42	1.20	2.03	1.90	4.34	2.21	2.08	1.27	.75	.53	.47

CAL YR 1990 TOTAL 89326 MEAN 245 MAX 1880 MIN 33 CFSM 1.41 IN. 19.10  
WTR YR 1991 TOTAL 83194 MEAN 228 MAX 1590 MIN 33 CFSM 1.31 IN. 17.79

e Estimated



## BIG SANDY RIVER BASIN

03212980 DRY FORK AT BEARTOWN, WV

LOCATION.--Lat 37°23'43", long 81°48'10", McDowell County, Hydrologic Unit 05070201, on left bank 20 ft upstream from bridge on State Highway 80/3, .4 mi upstream from Grapevine Branch, at mile 7.1.

DRAINAGE AREA.--209 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,056.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--6 years, 225 ft<sup>3</sup>/s, 14.62 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,840 ft<sup>3</sup>/s, May 6, 1989, gage height, 9.90 ft; minimum discharge, 13 ft<sup>3</sup>/s, Oct. 30, 1987; minimum gage height, 2.23 ft, Sept. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 23	1900	3,330	7.41	Mar. 29	2400	*3,480	*7.65

Minimum discharge, 20 ft<sup>3</sup>/s, Oct. 4, gage height, 2.29 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	42	31	799	148	219	864	151	121	79	71	39
2	28	42	32	485	144	682	630	142	144	79	62	37
3	22	41	39	338	145	748	502	135	145	94	54	36
4	30	42	51	259	144	1060	423	131	133	144	62	40
5	33	43	48	222	142	856	383	131	112	117	121	66
6	26	46	51	197	180	643	343	129	102	89	85	58
7	25	42	52	702	312	587	310	121	97	79	70	50
8	28	38	49	1200	321	503	289	111	94	70	60	45
9	29	38	44	683	310	437	274	125	92	64	164	43
10	25	78	39	467	288	385	261	127	88	68	478	40
11	96	96	37	440	256	328	237	111	85	67	195	39
12	114	80	36	577	228	299	225	103	88	76	120	33
13	155	69	39	531	223	327	242	105	93	232	91	59
14	107	63	40	423	296	1160	234	851	90	145	76	112
15	67	57	44	349	365	902	227	437	87	108	68	71
16	51	52	61	378	316	615	221	261	108	81	61	53
17	45	53	87	386	302	485	212	211	102	69	58	54
18	186	48	251	335	535	538	203	179	88	65	56	65
19	267	44	510	294	1430	565	211	203	158	75	63	148
20	126	42	323	286	1310	534	204	360	239	76	82	101
21	85	40	317	266	1020	476	192	519	185	66	60	66
22	75	42	302	236	707	501	186	344	156	63	52	57
23	147	48	275	217	516	1750	177	248	410	63	48	53
24	162	46	664	216	400	1670	170	199	228	120	45	49
25	117	44	466	199	336	908	164	165	153	98	42	45
26	91	45	294	182	300	624	161	144	124	181	42	39
27	74	43	235	178	259	522	162	131	107	107	40	37
28	62	40	1360	183	234	437	164	158	95	88	40	34
29	54	38	848	165	---	1260	158	146	86	213	40	34
30	47	33	528	160	---	2600	159	129	82	123	45	34
31	43	---	1280	162	---	1320	---	124	---	89	41	---
TOTAL	2448	1475	8433	11515	11167	23941	8188	6431	3892	3088	2592	1637
MEAN	79.0	49.2	272	371	399	772	273	207	130	99.6	83.6	54.6
MAX	267	96	1360	1200	1430	2600	864	851	410	232	478	148
MIN	22	33	31	160	142	219	158	103	82	63	40	33
CFSM	.38	.24	1.30	1.78	1.91	3.70	1.31	.99	.62	.48	.40	.26
IN.	.44	.26	1.50	2.05	1.99	4.26	1.46	1.14	.69	.55	.46	.29

CAL YR 1990 TOTAL 98955 MEAN 271 MAX 3210 MIN 22 CFSM 1.30 IN. 17.61  
WTR YR 1991 TOTAL 84807 MEAN 232 MAX 2600 MIN 22 CFSM 1.11 IN. 15.09

## BIG SANDY RIVER BASIN

03213620 TUG FORK AT VULCAN, W. VA.

LOCATION.--Lat 37°33'06", long 82°07'28", Mingo County, Hydrologic Unit 05070201, on right bank at highway bridge at Vulcan, and 5.8 mi downstream from Knox Creek (Kentucky), and 1.9 mi upstream from Peter Creek, and at mile 78.7.

DRAINAGE AREA.--778 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 695.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Sept. 27-30. Records good except those for May 15 to Sept. 30, which are fair. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--6 years, 853 ft<sup>3</sup>/s, 14.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,300 ft<sup>3</sup>/s, Oct. 17, 1989, gage height, 22.15 ft; minimum, 62 ft<sup>3</sup>/s, Aug. 18, 19, 1988, gage height, 0.92 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 28	1100	8,250	11.07	Mar. 23	1400	*12,600	*13.64
Mar. 14	1100	7,660	10.67	Mar. 30	0600	10,200	12.32

Minimum discharge, 92 ft<sup>3</sup>/s, Oct. 1, 3, 4, gage height, 1.14 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	150	118	3520	1250	899	3340	559	451	251	287	153
2	94	145	110	2110	1010	1310	2520	525	494	243	220	137
3	93	141	132	1480	880	2200	2020	492	555	255	193	128
4	103	138	205	1130	788	2830	1710	472	616	260	175	128
5	145	137	244	924	726	3030	1680	498	482	305	211	386
6	135	145	224	809	774	2380	1700	473	405	263	254	338
7	116	155	201	2990	1150	2240	1560	459	367	232	209	215
8	123	141	180	5190	1540	2000	1410	408	342	214	201	171
9	142	137	164	2850	1480	1740	1300	426	326	199	450	149
10	131	259	148	1940	1280	1530	1210	511	307	191	1400	141
11	143	363	138	1940	1090	1320	1060	433	295	198	788	140
12	439	328	131	2810	925	1170	958	400	285	207	421	137
13	528	270	128	2460	858	1260	1040	446	290	734	296	154
14	445	226	128	1890	1500	5950	1150	1280	280	536	241	253
15	284	203	141	1540	1940	4170	1360	1780	267	340	214	282
16	201	187	372	1400	1570	2620	1300	1020	346	258	192	214
17	162	184	534	1410	1320	2040	1120	928	762	212	175	169
18	354	180	1980	1280	2180	2310	1020	728	381	194	169	155
19	1010	167	2970	1170	5080	2640	983	875	588	198	168	189
20	544	157	1700	1140	4870	2330	929	925	830	243	205	394
21	325	148	3550	1130	3870	1980	854	1520	634	237	224	251
22	262	145	1870	1020	2810	1990	815	1220	598	200	168	189
23	423	163	1560	932	2110	7800	768	904	976	179	147	167
24	648	171	2360	904	1670	6900	717	725	945	341	136	159
25	474	162	2000	825	1400	3560	651	612	573	370	131	153
26	346	152	1270	745	1270	2560	613	534	425	975	126	147
27	266	148	965	714	1100	2160	589	486	357	497	124	e140
28	223	140	6450	734	981	1830	627	768	315	325	123	e130
29	197	143	3870	688	---	3050	612	723	286	452	119	e120
30	177	135	2260	774	---	8790	583	551	268	641	127	e110
31	155	---	5800	1600	---	5050	---	488	---	392	132	---
TOTAL	8781	5320	41903	50049	47422	91639	36199	22169	14046	10142	8026	5599
MEAN	283	177	1352	1614	1694	2956	1207	715	468	327	259	187
MAX	1010	363	6450	5190	5080	8790	3340	1780	976	975	1400	394
MIN	93	135	110	688	726	899	583	400	267	179	119	110
CFSM	.36	.23	1.74	2.08	2.18	3.80	1.55	.92	.60	.42	.33	.24
IN.	.42	.25	2.00	2.39	2.27	4.38	1.73	1.06	.67	.48	.38	.27

CAL YR 1990 TOTAL 355497 MEAN 974 MAX 9220 MIN 93 CFSM 1.25 IN. 17.00  
WTR YR 1991 TOTAL 341295 MEAN 935 MAX 8790 MIN 93 CFSM 1.20 IN. 16.32

e Estimated

## BIG SANDY RIVER BASIN

03213700 TUG FORK AT WILLIAMSON, WV

LOCATION.--Lat  $37^{\circ}40'23''$ , long  $82^{\circ}16'49''$ , Pike County, Ky., Hydrologic Unit 05070201, on left bank at Williamson, 100 ft upstream from bridge on U.S. Highway 119, 0.8 mi downstream from Pond Creek, and at mile 56.5.

DRAINAGE AREA.--936 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1967 to current year. Gage-height records collected in this vicinity since 1926 are contained in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 620.90 ft, Ohio River Datum (levels by U.S. Army Corps of Engineers). Prior to Jan. 21, 1969, at datum 0.92 ft lower.

REMARKS.--No estimated daily discharges. Records fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--24 years, 1,123 ft<sup>3</sup>/s, 16.29 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft<sup>3</sup>/s, Apr. 5, 1977, gage height, 52.56 ft, from floodmarks, from rating curve extended above 18,000 ft<sup>3</sup>/s; minimum discharge, 59 ft<sup>3</sup>/s, Oct. 18-20, 1969; minimum gage height, 1.29 ft, Aug. 19, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Jan. 30, 1957, Mar. 12, 1963, and Mar. 7, 1967, reached stages of 43.6 ft, 44.5 ft, and 40.7 ft respectively, from readings by National Weather Service.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 23	1930	*11,600	*20.30	No other peak greater than base discharge.			

Minimum discharge, 94 ft<sup>3</sup>/s, Oct. 4, gage height, 1.45 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	183	154	4550	1920	1210	4210	672	499	291	345	164
2	99	174	137	2800	1510	1420	3260	617	481	283	257	163
3	98	168	198	2020	1290	2480	2710	570	548	285	213	141
4	132	166	283	1560	1130	2900	2350	548	662	288	197	137
5	172	169	347	1290	1020	3550	2230	555	531	309	198	264
6	173	172	329	1120	1040	2940	2320	559	445	322	247	462
7	147	178	299	2210	1380	2790	2170	543	396	267	246	276
8	148	181	256	5750	1890	2570	2000	485	370	248	216	209
9	171	184	231	3710	1910	2300	1860	498	353	230	290	174
10	164	296	206	2590	1710	2060	1730	573	337	220	1570	162
11	164	437	187	2420	1480	1820	1510	523	323	217	1170	157
12	361	443	174	3270	1270	1590	1340	467	312	225	554	146
13	677	370	167	3180	1170	1700	1430	481	311	640	371	154
14	562	308	162	2530	1900	4950	1600	576	305	694	311	232
15	420	268	189	2080	2600	5140	1860	2420	296	429	260	277
16	285	244	412	1850	2170	3390	1950	1360	335	319	228	264
17	217	233	682	1830	1800	2690	1710	1100	934	257	206	196
18	303	230	2180	1690	2230	2720	1500	885	638	224	193	167
19	1100	215	3490	1560	5190	3120	1420	862	650	218	210	179
20	828	197	2390	1510	5470	2920	1330	1040	985	245	204	300
21	466	188	3440	1500	4710	2560	1190	1600	833	282	260	331
22	366	182	2550	1380	3640	2480	1110	1570	717	238	215	229
23	433	205	2220	1270	2840	7180	1030	1110	834	208	177	189
24	723	213	2820	1220	2330	8180	950	841	1350	267	161	170
25	638	208	2650	1110	2000	4580	848	678	733	418	152	174
26	470	191	1780	999	1800	3340	779	577	504	929	145	158
27	362	180	1370	942	1540	2850	738	580	416	742	138	146
28	296	175	5970	971	1340	2490	750	714	364	397	133	136
29	256	170	5060	933	---	3010	768	884	331	334	142	128
30	225	167	2980	1020	---	7650	709	619	308	698	151	123
31	199	---	5520	2320	---	6010	---	523	---	467	140	---
TOTAL	10758	6695	48833	63185	60280	104590	49362	25030	16101	11191	9300	6008
MEAN	347	223	1575	2038	2153	3374	1645	807	537	361	300	200
MAX	1100	443	5970	5750	5470	8180	4210	2420	1350	929	1570	462
MIN	98	166	137	933	1020	1210	709	467	296	208	133	123
CFSM	.37	.24	1.68	2.18	2.30	3.60	1.76	.86	.57	.39	.32	.21
IN.	.43	.27	1.94	2.51	2.40	4.16	1.96	.99	.64	.44	.37	.24

CAL YR 1990 TOTAL 424033 MEAN 1162 MAX 9910 MIN 98 CFSM 1.24 IN. 16.85  
WTR YR 1991 TOTAL 411333 MEAN 1127 MAX 8180 MIN 98 CFSM 1.20 IN. 16.35

## BIG SANDY RIVER BASIN

03214500 TUG FORK AT KERMIT, WV

LOCATION.--Lat 37°50'14", long 82°24'32", Mingo County, Hydrologic Unit 05070201, behind fire station, at Kermit, 0.8 mi downstream from Wolf Creek, and at mile 34.9.

DRAINAGE AREA.--1,280 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1915 to September 1917, October 1917 to December 1920 (gage heights only), January 1929 to September 1934. Records published as "near Kermit" at different site and datum July 1934 to September 1985. Present site, February 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 574.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--13 years (water years 1916-17, 1930-34, 1986-91), 1,427 ft<sup>3</sup>/s, 15.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft<sup>3</sup>/s, Apr. 9, 1987, gage height, 35.12 ft; minimum, 69 ft<sup>3</sup>/s, Aug. 19, 1988, gage height, 1.76 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 6, 1977, reached a stage of 53.7 ft; May 8, 1984 was about 49 ft and Mar. 13, 1963, was about 46 ft; Jan. 30, 1957 was about 45 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 28	2130	12,600	21.81	Mar. 30	2130	11,700	20.74
Mar. 24	0230	*17,100	*26.73				

Minimum discharge, 140 ft<sup>3</sup>/s, Oct. 2, 3, 4, gage height, 2.12 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	241	226	7950	2970	1650	6060	883	570	349	414	190
2	147	229	215	4460	2330	1690	4460	819	557	330	323	181
3	141	219	336	3070	1960	2540	3560	747	726	332	260	169
4	168	216	805	2330	1710	3390	2990	704	684	324	234	162
5	234	221	682	1890	1520	4420	2730	675	644	363	222	212
6	218	238	589	1650	1540	3960	2820	765	516	369	229	446
7	207	227	499	2770	2500	4110	2650	733	453	320	273	360
8	213	224	424	8020	2950	3690	2440	620	420	287	247	247
9	224	227	372	5800	2920	3150	2240	642	396	268	255	204
10	216	416	336	3800	2600	2730	2090	808	382	258	1040	189
11	207	538	302	3490	2240	2380	1860	715	359	280	1430	183
12	253	563	278	4300	1900	2090	1660	656	343	252	737	165
13	636	490	261	4570	1730	2250	1760	623	332	446	442	162
14	601	412	248	3680	3030	6280	1930	607	333	922	370	200
15	513	360	270	2970	4320	8490	2780	2070	321	565	300	261
16	366	328	497	2610	3540	5110	3480	1640	438	387	258	281
17	283	315	824	2470	2870	3770	2760	1240	807	306	227	239
18	251	298	3010	2290	3400	3680	2300	1090	989	269	210	190
19	687	287	5930	2100	7490	4070	2100	921	759	261	217	179
20	1020	270	3810	2020	9420	3910	1970	1120	1070	292	260	205
21	566	251	3610	2010	7700	3390	1750	1310	962	300	243	350
22	450	245	3600	1860	5490	3300	1620	1710	1160	290	259	262
23	587	291	3650	1710	4050	9110	1490	1280	977	248	205	212
24	702	301	4400	1630	3170	15200	1360	989	1360	254	182	187
25	770	294	3970	1510	2660	7680	1200	815	986	396	171	192
26	589	280	2690	1350	2370	4840	1090	687	641	668	166	195
27	462	262	2010	1260	2090	3940	1030	614	502	1040	158	170
28	376	254	9140	1300	1830	3480	992	783	435	512	148	157
29	328	248	9470	1260	---	3450	1000	964	398	385	148	150
30	293	235	5160	1260	---	9180	936	777	376	556	184	144
31	265	---	9160	3020	---	9610	---	620	---	617	162	---
TOTAL	12132	8980	76774	90410	92300	146540	67108	28627	18896	12446	9974	6444
MEAN	391	299	2477	2916	3296	4727	2237	923	630	401	322	215
MAX	1020	563	9470	8020	9420	15200	6060	2070	1360	1040	1430	446
MIN	141	216	215	1260	1520	1650	936	607	321	248	148	144
CFSM	.31	.23	1.93	2.28	2.58	3.69	1.75	.72	.49	.31	.25	.17
IN.	.35	.26	2.23	2.63	2.68	4.26	1.95	.83	.55	.36	.29	.19

CAL YR 1990 TOTAL 561798 MEAN 1539 MAX 15300 MIN 141 CFSM 1.20 IN. 16.33  
WTR YR 1991 TOTAL 570631 MEAN 1563 MAX 15200 MIN 141 CFSM 1.22 IN. 16.58



## BIG SANDY RIVER BASIN

03214900 TUG FORK AT GLENHAYES, WV

LOCATION.--Lat 38°00'09", long 82°31'09", Lawrence County, Ky., Hydrologic Unit 05070201, on left bank 2,000 ft upstream from Lost Creek, 300 ft downstream from Rockcastle Creek, 1.0 mi southeast of Glenhayes, and at mile 10.3. Prior to Oct. 1, 1990 at site 1,600 ft downstream at same datum.

DRAINAGE AREA.--1,507 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1976 to September 1982, October 1982 to September 1983 (gage heights, discharge measurements, and annual maximum discharge only). October 1984 to December 1989, periodic discharge measurements (gage-heights collected by U.S. Army Corps of Engineers), at original site 1,600 ft downstream. October 1990 to current year.

REVISED RECORDS.--WDR WV-78-1: 1977.

GAGE.--Water-stage recorder. Datum of gage is 536.57 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-17, Dec. 25-27, and Jan. 1-2. Records fair.

AVERAGE DISCHARGE.--7 years (water years 1977-82, 1991), 1,944 ft<sup>3</sup>/s, 17.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft<sup>3</sup>/s, Apr. 6, 1977, gage height, 44.00 ft; minimum discharge, 125 ft<sup>3</sup>/s, Sept. 9, 1976; minimum gage height, 2.07 ft, Sept. 30, 1983. At original site 1,600 ft downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Mar. 24	1630	*13,400	*23.95	No other peak greater than base discharge.			

Minimum daily discharge, 165 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e190	308	273	e10000	3560	2010	7410	1100	751	432	598	200
2	e180	286	264	e8000	2820	1900	5530	1030	759	408	438	230
3	e170	272	292	4130	2330	2220	4420	958	906	437	346	209
4	e190	262	988	3080	2020	3530	3700	898	871	392	293	197
5	e270	260	1090	2490	1810	4420	3220	870	851	401	267	214
6	e260	268	831	2140	1760	4630	3220	876	725	453	254	291
7	e240	277	677	2600	3240	4930	3110	979	611	429	272	540
8	e250	269	564	6560	3650	4610	2880	864	538	369	302	362
9	e260	266	474	7360	3600	3920	2650	792	495	342	280	270
10	e270	411	425	4990	3230	3350	2550	972	468	342	398	228
11	e240	672	389	4260	2750	2900	2300	953	447	500	1490	217
12	e260	685	357	4620	2320	2510	2060	873	422	374	1090	209
13	e300	622	335	5260	2030	2570	2030	820	409	423	677	195
14	e720	508	318	4520	3140	5150	2280	785	402	1070	460	193
15	e680	435	316	3690	5040	8850	3220	1120	399	939	404	237
16	e470	391	461	3150	4450	6630	5400	2180	469	610	331	296
17	e370	367	746	2900	3490	4770	4040	1450	609	441	289	307
18	311	352	3020	2680	3690	4440	3170	1280	1090	361	257	259
19	351	334	7840	2430	6830	4660	2700	1130	950	329	265	213
20	1100	322	5740	2290	9880	4670	2540	1060	948	335	300	202
21	818	302	3750	2250	9120	4160	2260	1170	1140	354	317	256
22	576	288	4790	2130	7010	4580	2050	1630	1250	361	293	371
23	733	317	4880	1930	5220	6740	1890	1540	1220	331	279	279
24	795	371	5690	1840	4050	12600	1740	1210	1200	294	232	235
25	930	353	e4800	1720	3330	10200	1580	1010	1370	319	204	212
26	790	340	e3800	1550	2910	6280	1430	873	924	536	194	218
27	606	322	e2600	1440	2550	4950	1320	782	698	962	189	216
28	478	304	6620	1440	2240	4320	1260	852	583	873	179	190
29	411	297	10300	1460	---	3830	1230	961	510	528	171	176
30	374	285	7370	1400	---	6500	1190	1010	469	429	187	165
31	336	---	10400	2430	---	9790	---	821	---	723	210	---
TOTAL	13929	10746	90400	106740	108070	156620	84380	32849	22484	15097	11466	7387
MEAN	449	358	2916	3443	3860	5052	2813	1060	749	487	370	246
MAX	1100	685	10400	10000	9880	12600	7410	2180	1370	1070	1490	540
MIN	170	260	264	1400	1760	1900	1190	782	399	294	171	165
CFSM	.30	.24	1.94	2.28	2.56	3.35	1.87	.70	.50	.32	.25	.16
IN.	.34	.27	2.23	2.63	2.67	3.87	2.08	.81	.56	.37	.28	.18

WTR YR 1991 TOTAL 660168 MEAN 1809 MAX 12600 MIN 165 CFSM 1.20 IN. 16.30

e Estimated

## MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

01595200

- STONY RIVER NEAR MOUNT STORM, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)
OCT 12...	0955	26	14.0
DEC 17...	1125	34	3.0
FEB 11...	1135	70	3.0
APR 08...	1140	63	14.0
JUN 05...	1400	21	17.5
AUG 07...	1210	13	20.0

01604500

- PATTERSON CREEK NEAR HEADSVILLE, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
JAN 09...	1220	343	205	7.1	2.0	751	12.3	90
MAR 05...	1425	717	165	6.5	7.5	738	10.5	90
MAY 07...	1450	74	240	7.5	19.5	749	9.1	101
JUL 16...	1300	17	280	7.4	24.5	748	8.1	99

01607500

- SO FK SO BR POTOMAC R AT BRANDYWINE, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT 18...	1400	70	145	7.2	16.0	709	8.9	97
JAN 08...	1250	203	120	6.7	2.5	728	12.2	94
MAR 06...	1500	341	95	6.7	7.0	703	10.7	96
MAY 08...	1115	33	160	7.7	15.5	725	9.0	95
JUL 15...	1040	14	170	7.2	21.0	721	8.8	105
SEP 11...	0945	6.5	175	7.6	20.0	718	8.4	98

## MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

01608000 - SO FK SOUTH BRANCH POTOMAC R NR MOOREFIELD, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT								
18...	1140	143	165	7.0	17.0	728	8.5	92
MAR								
06...	0910	1440	90	6.4	7.0	726	11.5	99
MAY								
08...	0900	99	170	7.3	15.0	746	8.4	85
JUL								
15...	1330	51	190	7.2	25.0	740	9.3	116

03056250 - THREE FORK CREEK NR GRAFTON, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)
OCT					
01...	0930	25	400	4.5	15.5
15...	1215	64	230	5.0	15.5
NOV					
01...	1000	56	330	4.7	8.5
13...	1000	122	230	5.0	4.0
DEC					
07...	1030	194	230	5.0	3.0
FEB					
04...	1015	176	270	4.2	2.0
28...	1030	110	330	4.5	2.0
MAR					
14...	0945	216	330	5.0	1.0
27...	0850	238	250	4.2	8.0
APR					
09...	0900	132	260	4.5	14.5
25...	0900	186	230	4.8	8.0
MAY					
10...	0920	99	280	4.4	16.0
20...	0950	38	410	3.8	18.5
JUN					
03...	0840	35	540	3.8	24.0
07...	0850	8.4	550	4.1	18.5
10...	1100	6.0	650	3.8	22.0
13...	0730	5.0	720	3.8	22.0
17...	1100	4.1	800	4.0	24.0
21...	0745	3.6	850	3.8	24.0
24...	0800	12	850	3.8	21.5
28...	0750	2.9	900	3.8	23.0
JUL					
03...	1130	2.5	815	4.1	25.0
09...	1045	6.5	650	4.0	24.5
12...	1130	3.6	750	3.9	24.5
19...	0740	1.3	700	3.8	25.0
22...	1045	1.0	750	4.1	26.0
26...	1000	3.5	800	4.0	25.0
29...	1110	2.0	730	4.1	23.0
AUG					
02...	0730	2.9	740	4.2	23.0
05...	1100	1.8	770	4.1	23.0
09...	1130	2.5	780	4.2	24.0
13...	0800	3.9	580	4.5	22.0
16...	1200	32	620	4.3	22.0
19...	1015	6.7	420	4.8	23.0
22...	1520	5.2	450	4.5	23.0
26...	1030	2.0	675	4.5	23.0
30...	0845	2.3	780	4.3	25.0
SEP					
17...	0915	1.3	630	4.3	24.0

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS  
 WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
 03058000 - WEST FORK R BL STONEWALL JACKSON DAM NR WESTON

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT								
02...	1220	65	130	6.5	19.5	736	7.1	80
DEC								
08...	1030	212	150	6.6	8.0	735	10.3	90
FEB								
14...	1015	273	120	6.4	5.0	712	12.3	103
28...	0800	96	125	6.9	4.0	734	12.5	99
MAR								
12...	1500	167	120	6.4	5.5	743	12.4	101
25...	1600	255	130	6.0	6.5	735	11.5	97
APR								
09...	1415	173	120	6.6	8.0	726	10.2	90
25...	1140	83	125	6.8	9.0	735	11.0	99
MAY								
10...	1045	49	120	6.3	9.0	739	11.0	98
20...	1200	58	125	6.1	9.5	737	10.3	93
JUN								
03...	1200	61	118	6.2	11.5	727	9.0	87
07...	1020	79	114	6.2	11.5	739	9.5	90
10...	1245	79	118	6.4	12.5	736	10.4	101
14...	0815	81	117	6.4	11.5	733	10.0	95
17...	1215	90	117	6.4	13.0	730	10.0	99
21...	0930	98	120	6.1	12.5	730	9.8	96
24...	0930	98	118	6.4	13.0	736	9.9	97
27...	1015	113	128	6.3	13.5	737	9.7	96
JUL								
03...	1900	116	123	7.4	16.0	729	8.2	87
09...	0730	92	122	6.1	16.0	731	8.5	90
12...	1245	113	116	6.2	17.0	728	8.6	93
19...	1015	111	110	6.2	23.0	733	8.6	104
22...	1230	111	109	6.8	24.0	734	8.5	105
26...	1245	116	110	6.9	23.5	735	8.0	98
29...	1245	119	108	6.8	23.0	732	7.9	96
AUG								
02...	1200	116	110	7.1	24.0	733	8.1	100
05...	1215	72	113	6.9	23.0	735	8.0	97
09...	0900	111	113	7.1	24.0	727	7.5	94
12...	1245	87	111	7.1	24.0	736	8.5	105
16...	1400	111	119	6.2	23.0	735	8.5	103
19...	1130	113	113	7.3	23.0	727	8.0	98
23...	0915	74	114	6.5	22.0	736	8.1	96
26...	1215	74	117	6.9	23.0	740	8.0	96
30...	1045	54	116	6.8	24.0	734	8.0	99
SEP								
13...	1015	90	104	7.3	23.0	733	8.0	97

03185400 - NEW RIVER AT THURMOND, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT								
04...	1500	1710	193	8.4	19.0	734	8.2	92
NOV								
16...	1300	6490	134	7.9	9.5	735	10.8	98
28...	1200	3400	150	8.1	10.5	733	11.0	103
JUN								
21...	1130	7270	155	7.8	25.5	733	6.7	85
JUL								
19...	1225	2280	170	8.2	27.5	--	6.7	--
AUG								
07...	0930	2260	151	8.1	26.5	739	6.8	87



## WATER RESOURCES DATA - WEST VIRGINIA, 1991

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations and the second is a table of discharge measurements at low-flow partial-record stations.

## Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

## Maximum discharge at crest-stage partial-record stations

Maximum discharge at cross bridge partial record stations								
Station name and number	Location and drainage area	Period of record	Water year 1991 maximum		Period of record maximum			
			Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)
KANAWHA RIVER BASIN								
Gauley River at Camden-on- Gauley, WV (03187000)	Lat 38°21'57", long 80°36'04", Webster County, Hydrologic Unit 05050005, on right bank in town of Camden on Gauley, 0.2 mile downstream from Coon Creek, and 0.9 mile upstream from Strouds Creek, and at mile 69.6. Drainage area is 236 mi <sup>2</sup> .	1909-16, 03-23-91 1930-75*, 1976-91a		14.92	12,500	07-04-32	27.38	42,500
GUYANDOTTE RIVER BASIN								
Guyandotte River at Man, WV (03203000)	Lat 37°44'25", long 81°52'37", Logan County, Hydrologic Unit 05070101, on right bank at downstream side of highway bridge at Man, 500 feet up- stream from Buffalo Creek, and 0.7 mile downstream from Huff Creek, and at mile 93.4. Drainage area is 758 mi <sup>2</sup> .	1928-62*, 03-23-91 1963-91a		12.80	13,500	03-12-63	24.78	49,000

\* Operated as a continuous-record gaging station.  
a Gage-height records on file in district office.

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

Samples are collected at partial-record, special study, and miscellaneous sites to give better areal coverage. The results of these samples are given herein.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

381143080275001 - SOUTH FORK CHERRY RIVER NR RICHWOOD, WV

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT 16...	1050	116	34	6.3	9.0	698	9.9	94	K8	K8	12	2.7
NOV 14...	0930	82	40	6.1	3.0	701	12.0	97	K6	K5	12	2.7
DEC 04...	1110	190	38	6.2	4.0	690	10.7	90	K6	13	13	2.9
JAN 29...	1130	53	37	6.2	2.0	693	11.4	91	K1	K1	13	3.0
FEB 27...	1215	77	40	5.8	0.5	692	12.7	97	<1	<1	--	--
MAR 19...	1015	500	36	5.0	2.5	689	11.3	92	K3	K2	11	2.5
APR 23...	1110	116	36	6.3	5.0	689	10.5	91	<1	K2	11	2.6
MAY 21...	1100	27	34	5.6	14.0	700	8.2	87	K2	34	12	2.8
JUN 18...	1000	20	33	5.4	17.0	693	8.9	101	<1	K600	12	2.8
JUL 23...	1040	36	39	5.9	18.5	705	8.1	94	300	350	13	3.3
AUG 14...	1045	5.3	41	6.0	17.0	694	8.8	100	K53	120	14	3.8
SEP 04...	1045	1.1	40	6.6	17.5	695	8.1	93	K11	280	18	4.9

DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
OCT 16...	1.3	0.50	0.50	6	0	5	6.5	0.70	0.20	3.7	21	21
NOV 14...	1.2	0.50	0.40	2	0	2	7.8	0.20	<0.10	3.2	15	20
DEC 04...	1.3	0.50	0.50	4	0	3	8.5	0.50	<0.10	3.2	19	23
JAN 29...	1.4	0.50	0.50	1	0	1	6.9	0.50	<0.10	3.2	17	20
FEB 27...	--	--	--	2	0	2	8.0	0.50	<0.10	2.9	31	--
MAR 19...	1.2	0.30	0.40	1	0	1	7.3	0.70	0.20	2.4	43	20
APR 23...	1.1	0.40	0.40	1	0	1	7.5	0.50	<0.10	2.9	27	19
MAY 21...	1.2	0.50	0.50	1	0	1	6.9	0.70	<0.10	3.0	12	18
JUN 18...	1.2	0.50	0.60	5	0	4	5.5	0.30	0.10	3.1	18	19
JUL 23...	1.2	0.50	0.60	2	0	2	7.3	0.30	0.10	3.0	27	20
AUG 14...	0.98	0.70	0.60	5	0	4	9.4	0.50	<0.10	3.4	21	23
SEP 04...	1.5	0.90	0.60	18	0	15	8.6	0.80	<0.10	3.1	30	30

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

381143080275001 - SOUTH FORK CHERRY RIVER NR RICHWOOD, WV--Continued

DATE	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)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	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)
OCT 16...	<0.010	0.500	<0.010	<0.010	--	--	--	--	--	--	--
NOV 14...	<0.010	0.700	0.040	<0.010	--	--	--	--	--	--	--
DEC 04...	<0.010	0.700	0.030	<0.010	90	<1	37	<0.5	<1.0	<5	<3
JAN 29...	0.010	0.800	0.010	<0.010	--	--	--	--	--	--	--
FEB 27...	<0.010	0.850	<0.010	<0.010	--	--	--	--	--	--	--
MAR 19...	<0.010	0.910	<0.010	<0.010	120	<1	36	<0.5	<1.0	<5	<3
APR 23...	0.010	0.700	0.010	<0.010	--	--	--	--	--	--	--
MAY 21...	<0.010	0.490	0.030	<0.010	--	--	--	--	--	--	--
JUN 18...	<0.010	0.470	0.010	<0.010	70	<1	31	<0.5	<1.0	<5	<3
JUL 23...	<0.010	0.540	0.240	0.050	--	--	--	--	--	--	--
AUG 14...	<0.010	0.270	<0.010	0.010	--	--	--	--	--	--	--
SEP 04...	<0.010	0.220	<0.010	<0.010	<10	<1	42	<0.5	<1.0	<5	<3

DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	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)	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)
OCT 16...	--	44	--	--	15	--	--	--	--	--	--
NOV 14...	--	17	--	--	11	--	--	--	--	--	--
DEC 04...	<10	49	<10	<4	22	<10	<10	<1.0	13	<6	62
JAN 29...	--	18	--	--	11	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	<10	23	<10	<4	37	<10	<10	<1.0	12	<6	74
APR 23...	--	25	--	--	13	--	--	--	--	--	--
MAY 21...	--	23	--	--	3	--	--	--	--	--	--
JUN 18...	<10	43	<10	13	7	<10	<10	<1.0	12	<6	<3
JUL 23...	--	110	--	--	68	--	--	--	--	--	--
AUG 14...	--	17	--	--	6	--	--	--	--	--	--
SEP 04...	<10	16	<10	<4	7	<10	<10	<1.0	22	<6	5

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

391331081061701 - NORTH FORK HUGHES RIVER NR HARRISVILLE, WV

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)
OCT												
17...	0900	35	180	6.7	13.5	747	9.3	91	2600	430	61	17
NOV												
15...	1040	43	160	6.7	5.0	751	11.9	95	5300	670	58	16
DEC												
18...	0945	--	95	6.2	9.0	728	9.7	88	5000	8000	35	9.7
JAN												
30...	1045	196	150	6.5	2.0	736	10.3	77	1500	730	64	19
FEB												
26...	1200	79	142	6.6	4.0	743	11.9	93	1100	400	51	14
MAR												
20...	1120	236	130	6.2	6.0	745	11.8	97	1000	350	45	12
APR												
24...	1030	66	155	7.0	10.5	738	10.7	99	2600	250	57	16
MAY												
22...	0920	9.0	190	6.5	20.0	747	6.6	74	K110	K160	75	21
JUN												
19...	0930	1.1	235	7.0	22.0	742	7.0	82	<10	240	82	23
JUL												
25...	0920	19	313	7.1	25.0	741	6.6	82	200	520	95	27
AUG												
13...	1040	4.9	255	7.3	21.0	743	7.7	89	90	130	82	24
SEP												
06...	0910	5.5	220	5.9	21.0	746	6.7	77	150	160	87	25

DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
OCT												
17...	4.6	7.9	2.3	61	0	50	21	10	<0.10	7.6	99	101
NOV												
15...	4.4	7.6	1.6	51	0	42	20	9.9	<0.10	6.3	88	92
DEC												
18...	2.5	3.0	2.1	24	0	20	19	5.1	<0.10	5.8	90	62
JAN												
30...	3.9	5.8	1.2	44	0	36	17	7.1	<0.10	5.7	68	83
FEB												
26...	4.0	5.9	1.2	46	0	38	22	7.7	<0.10	5.3	81	84
MAR												
20...	3.7	5.2	1.1	26	0	21	20	6.2	0.20	6.2	84	69
APR												
24...	4.2	6.6	1.4	33	0	27	19	7.2	0.10	3.9	96	75
MAY												
22...	5.4	9.7	2.2	67	0	55	19	11	0.10	2.4	110	106
JUN												
19...	5.9	13	2.5	91	0	75	29	18	0.10	1.4	125	139
JUL												
25...	6.6	22	4.2	98	0	80	22	24	0.20	1.6	181	165
AUG												
13...	5.4	17	3.1	73	0	60	26	23	0.20	4.4	147	142
SEP												
06...	5.8	18	4.1	12	0	10	29	25	<0.10	1.4	147	115



## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

391331081061701 - NORTH FORK HUGHES RIVER NR HARRISVILLE, WV--Continued

DATE	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)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	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)
OCT 17...	<0.010	<0.500	0.020	<0.010	--	--	--	--	--	--	--
NOV 15...	<0.010	0.300	0.070	0.010	--	--	--	--	--	--	--
DEC 18...	0.020	0.400	0.070	0.020	--	<1	57	<0.5	<1.0	<5	<3
JAN 30...	0.020	0.300	0.050	0.010	--	--	--	--	--	--	--
FEB 26...	<0.010	0.230	0.010	<0.010	--	--	--	--	--	--	--
MAR 20...	<0.010	0.200	0.010	<0.010	50	<1	45	<0.5	<1.0	<5	<3
APR 24...	<0.010	<0.050	0.010	<0.010	--	--	--	--	--	--	--
MAY 22...	0.010	0.480	0.050	<0.010	--	--	--	--	--	--	--
JUN 19...	<0.010	0.180	0.020	<0.010	20	<1	71	<0.5	<1.0	<5	<3
JUL 25...	0.030	2.10	0.020	0.060	--	--	--	--	--	--	--
AUG 13...	0.010	0.700	0.040	0.030	--	--	--	--	--	--	--
SEP 06...	<0.010	0.120	0.050	<0.010	10	<1	81	<0.5	<1.0	<5	<3

DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	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)	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)
OCT 17...	--	98	--	--	57	--	--	--	--	--	--
NOV 15...	--	66	--	--	41	--	--	--	--	--	--
DEC 18...	<10	620	<10	<4	80	<10	<10	<1.0	54	<6	10
JAN 30...	--	360	--	--	30	--	--	--	--	--	--
FEB 26...	--	59	--	--	31	--	--	--	--	--	--
MAR 20...	<10	58	<10	<4	24	<10	<10	<1.0	80	<6	6
APR 24...	--	50	--	--	29	--	--	--	--	--	--
MAY 22...	--	29	--	--	14	--	--	--	--	--	--
JUN 19...	<10	20	<10	6	13	<10	<10	<1.0	140	<6	<3
JUL 25...	--	20	--	--	23	--	--	--	--	--	--
AUG 13...	--	54	--	--	13	--	--	--	--	--	--
SEP 06...	<10	15	<10	<4	4	<10	<10	<1.0	140	<6	<3

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 390059079283401 - CLUB RUN NEAR HEADWATERS

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATUR-ATION (00301)	COLI-FORM, FECAL, UM-MF (COLS. / 100 ML) (31625)	STREP-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
MAR 06...	0800	0.25	32	5.9	4.0	660	10.3	91	K2	<1
MAY 13...	1845	0.04	35	6.0	18.5	675	5.5	66	K310	150

DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
MAR 06...	11	3.6	0.53	0.50	0.40	5	0	4	5.7
MAY 13...	15	4.7	0.91	0.60	0.40	11	0	9	3.8

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)
MAR 06...	0.60	<0.10	2.6	17	18	<0.010	0.030	0.390	0.010
MAY 13...	1.4	<0.10	2.7	20	22	<0.010	<0.010	0.210	0.020

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 (MG/L AS N) (00630)	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)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAR 06...	0.020	<0.20	0.380	0.010	<0.010	<0.010	<0.010	100	21
MAY 13...	0.030	0.70	0.200	0.050	<0.010	<0.010	<0.010	690	110

## 390136079273301 - MILL RUN AT CANAAN VALLEY STATE PARK, WV

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATUR-ATION (00301)	COLI-FORM, FECAL, UM-MF (COLS. / 100 ML) (31625)	STREP-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
JAN 08...	1300	4.7	115	6.5	0.0	679	11.4	88	31	K5	42	15
MAR 06...	1000	6.9	126	7.3	3.0	661	10.9	93	K9	K4	42	15
MAY 13...	1700	0.94	131	8.7	29.0	675	10.6	157	K480	K12	58	21
JUL 30...	1115	0.44	203	7.1	20.5	678	7.0	88	1300	--	94	34
AUG 21...	0815	2.2	134	6.7	16.0	679	6.3	72	650	1100	57	20

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

390136079273301 - MILL RUN AT CANAAN VALLEY STATE PARK, WV.--Continued

DATE	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)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
JAN 08...	1.1	3.6	0.70	33	0	27	8.9	6.0	0.10	--	61	53
MAR 06...	1.2	6.6	0.50	33	0	27	7.9	12	<0.10	2.3	62	64
MAY 13...	1.4	3.9	0.60	55	0	45	5.2	7.1	<0.10	1.9	78	70
JUL 30...	2.3	6.1	1.2	--	--	--	18	9.0	<0.10	2.2	146	113
AUG 21...	1.6	4.9	0.70	51	0	42	13	6.6	<0.10	2.7	93	75
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
JAN 08...	<0.010	0.010	0.400	0.050	0.050	0.70	0.400	0.010	0.020	<0.010	<0.010	--
MAR 06...	0.010	0.010	0.410	0.030	0.030	0.30	0.410	0.010	<0.010	<0.010	<0.010	150
MAY 13...	0.020	0.020	0.150	0.040	0.040	0.60	0.140	<0.010	0.040	<0.010	<0.010	910
JUL 30...	<0.010	<0.010	<0.050	0.060	0.080	0.80	<0.050	0.060	0.030	<0.010	<0.010	860
AUG 21...	<0.010	<0.010	<0.050	0.030	0.040	0.60	<0.050	0.040	0.020	<0.010	<0.010	340
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)	DI- SYSTON TOTAL (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PER- THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	54	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	160	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	440	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	110	<0.01	<0.01	<0.01	<0.1	<0.01	<0.10	<0.001	<0.001	<0.1	<0.001	<0.001
DATE	DDT, TOTAL (UG/L) (39370)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX- APHENE, TOTAL (UG/L) (39400)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA- THION, TOTAL (UG/L) (39530)	PARA- THION, TOTAL (UG/L) (39540)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	<0.001	<0.001	<0.001	<0.001	<0.01	<1	<0.001	<0.001	<0.01	<0.1	<0.01	<0.01

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 390136079273301 - MILL RUN AT CANAAN VALLEY STATE PARK, WV --Continued

DATE	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA- THION, TOTAL (UG/L) (39600)	PICLO- RAM (TOR- DON) (AMDON) TOTAL (UG/L) (39720)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRI- THION (UG/L) (39786)	DICAMBA (MED- IBEN) (BAN- VEL D) TOTAL (UG/L) (82052)	2, 4-DP TOTAL (UG/L) (82183)	FONOFOS (DY- FONATE) WATER WHOLE TOT. REC (UG/L) (82614)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0

## 390211079253601 - BLACKWATER RIVER ON TIMBERLINE ROAD

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	COLI- FORM, FECAL, 0.7 KF AGAR (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
JAN 09...	1440	E58	82	6.2	3.0	678	11.4	95	K11	K5	34	12
MAR 05...	1545	E94	72	7.2	5.5	667	11.0	100	<1	K1	25	8.6
MAY 14...	0800	E13	108	7.1	16.5	675	7.0	81	220	K33	54	19
JUL 31...	1415	2.3	165	8.6	26.0	680	13.1	182	420	--	78	28
AUG 20...	1630	E8.4	140	7.4	22.0	676	8.6	111	490	880	62	22

DATE	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)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
JAN 09...	0.97	1.6	0.50	28	0	23	7.2	2.7	0.10	--	44	41
MAR 05...	0.82	2.0	0.50	20	0	16	6.7	3.2	<0.10	2.5	37	36
MAY 14...	1.6	1.6	0.40	52	0	43	4.3	2.5	<0.10	3.0	70	60
JUL 31...	1.9	5.1	0.80	--	--	--	9.0	5.4	<0.10	3.3	98	94
AUG 20...	1.6	4.2	0.70	57	0	47	12	5.2	<0.10	3.2	94	78

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	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)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
JAN 09...	<0.010	0.010	0.400	0.040	0.050	0.80	0.500	<0.010	<0.010	<0.010	0.020	--
MAR 05...	0.010	0.010	0.340	0.020	0.020	0.30	0.350	<0.010	<0.010	<0.010	<0.010	130
MAY 14...	0.010	0.010	0.280	0.040	0.050	0.40	0.270	0.060	0.020	<0.010	<0.010	420
JUL 31...	<0.010	<0.010	0.061	0.020	0.030	0.60	0.063	0.060	0.030	<0.010	0.010	580
AUG 20...	<0.010	0.010	0.059	<0.010	0.030	0.50	0.086	0.050	0.020	<0.010	<0.010	430

E Estimated



## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 390211079253601 - BLACKWATER RIVER ON TIMBERLINE ROAD.--Continued

DATE	MANGA-NESE, DIS-SOLVED (UG/L (01056)	CHLOR-DYRIFOS TOTAL (UG/L) (38932)	DI-SYSTON TOTAL (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PER-THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLOR-DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	26	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	130	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	57	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	46	<0.01	<0.01	<0.01	<0.1	<0.01	<0.10	<0.001	<0.001	<0.1	<0.001	<0.001

DATE	DDT, TOTAL (UG/L) (39370)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<0.001	<0.001	<0.001	<0.001	<0.01	<1	<0.001	<0.001	<0.01	<0.1	<0.01	<0.01

DATE	DI-AZINON, TOTAL (UG/L) (39570)	METHYL-PARA-THION, TOTAL (UG/L) (39600)	PICLO-RAM (TOR-DON) TOTAL (UG/L) (39720)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRI-THION (UG/L) (39786)	DICAMBA (MED-IBEN) (BAN-VEL D) TOTAL (UG/L) (82052)	2, 4-DP TOTAL (UG/L) (82183)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0

## 390222079272001 - BLACKWATER RIVER AT CANAAN VALLEY STATE PARK, WV

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATUR- ATION (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
JAN 08...	1445	38	64	5.9	0.0	679	11.0	84	35	K2	21	7.4
MAR 06...	1145	33	62	7.0	3.5	659	10.6	92	K4	K3	20	6.8
MAY 15...	0830	4.2	83	6.6	18.5	678	5.4	65	540	K57	41	14
JUL 30...	1400	1.9	116	6.9	26.0	678	7.9	110	450	--	46	16
AUG 21...	1030	--	118	6.7	18.0	679	5.6	67	K670	1600	49	17

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 390222079272001 - BLACKWATER RIVER AT CANAAN VALLEY STATE PARK, WV.--Continued

DATE	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)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
JAN 08...	0.72	1.7	0.40	15	0	12	5.9	2.5	0.10	--	33	27
MAR 06...	0.76	2.2	0.40	15	0	12	6.0	4.1	<0.10	2.4	35	32
MAY 15...	1.5	1.6	0.50	39	0	32	4.5	3.3	<0.10	2.6	64	49
JUL 30...	1.5	3.8	0.60	--	--	--	13	4.9	0.10	3.3	84	66
AUG 21...	1.5	4.2	0.70	40	0	33	14	5.6	<0.10	2.8	97	66
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (70507)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
JAN 08...	<0.010	0.010	0.300	0.030	0.050	0.30	0.300	0.020	<0.010	<0.010	<0.010	--
MAR 06...	<0.010	0.020	0.340	0.020	0.020	<0.20	0.330	0.030	<0.010	<0.010	<0.010	150
MAY 15...	0.020	0.020	0.120	0.060	0.080	0.60	0.120	0.080	0.020	<0.010	<0.010	690
JUL 30...	<0.010	<0.010	<0.050	0.020	0.050	0.70	<0.050	0.040	0.020	<0.010	<0.010	820
AUG 21...	<0.010	0.010	<0.050	0.030	0.050	0.70	<0.050	0.050	0.020	<0.010	<0.010	500
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	BROM- ACIL ATER HLREC (UG/L) (30234)	BUTA- CHLOR ATER HLREC (UG/L) (30235)	BUTYL- ATE ATER HLREC (UG/L) (30236)	CARBO - IN ATER HOLE RECOV- ERABLE (UG/L) (30245)	CYCLO- ATE ATER HOLE RECOV- ERABLE (UG/L) (30254)	DIPHEN- AMID WATER WHOLE RECOV- ERABLE (UG/L) (30255)	HEXAZI- NONE WATER WHOLE RECOV- ERABLE (UG/L) (30264)	PROPA- CHLOR WATER WHOLE RECOV. (UG/L) (30295)	TER- BACIL WATER WHOLE RECOV. (UG/L) (30311)	VER- NOLATE WATER WHOLE RECOV. (UG/L) (30324)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	40	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	230	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	160	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	110	<0.20	<0.10	<0.10	<0.20	<0.10	<0.10	<0.20	<0.10	<0.20	<0.1	<0.01
DATE	DI- SYSTON TOTAL (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PRO- PAZINE TOTAL (UG/L) (39024)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	PER- THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	SIME- TRYNE TOTAL (UG/L) (39054)	SIMA- ZINE TOTAL (UG/L) (39055)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	<0.01	<0.01	<0.10	<0.10	<0.1	<0.01	<0.1	<0.10	<0.2	<0.1	<0.10	<0.001

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1990

## 390222079272001 - BLACKWATER RIVER AT CANAAN VALLEY STATE PARK, WV.--Continued

DATE	LINDANE TOTAL (UG/L) (39340)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX- APHENE, TOTAL (UG/L) (39400)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	<0.001	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<1	<0.001	<0.001

DATE	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA- THION, TOTAL (UG/L) (39530)	PARA- THION, TOTAL (UG/L) (39540)	DI- AZINON, TOTAL (UG/L) (39570)	METHYL PARA- THION, TOTAL (UG/L) (39600)	ATRA- ZINE, TOTAL (UG/L) (39630)	PICLO- RAM (TOR- DON) (AMDON) TOTAL (UG/L) (39720)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.10	0.04	<0.01	<0.01	<0.01	<0.01

DATE	TOTAL TRI- THION (UG/L) (39786)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	DEETHYL ATRA- ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	CYAN- AZINE TOTAL (UG/L) (81757)	DICAMBA (MED- IBEN) (BAN- VEL D) TOTAL (UG/L) (82052)	2, 4-DP TOTAL (UG/L) (82183)	AME- TRYNE TOTAL (82184)	METRI- BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	METOLA- CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 08...	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	<0.01	<0	<0	<0.10	<0.20	<0.01	<0.01	<0.10	<0.1	<0.1	<0.0

## 390346079244801 - YOAKUM RUN AT MOUTH

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS. / 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. / PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
JAN 09...	1330	6.6	58	5.8	2.5	679	11.3	93	K7	K5	22	7.2
MAR 05...	1315	11	52	7.3	5.5	668	11.3	102	K1	K2	19	6.3
MAY 14...	1200	1.7	54	7.6	21.0	677	8.0	101	42	K12	24	7.8
AUG 01...	1245	0.13	93	7.8	22.0	683	8.2	105	67	--	36	12
20...	1400	0.68	95	7.6	21.0	677	7.9	100	200	370	39	13

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

390346079244801 - YOAKUM RUN AT MOUTH.--Continued

DATE	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)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)
JAN 09...	0.91	1.1	0.60	16	0	13	5.9	0.80	0.10	--	33	26
MAR 05...	0.76	0.90	0.60	15	0	12	6.2	0.80	<0.10	2.4	26	27
MAY 14...	1.1	1.0	0.60	21	0	17	4.5	0.90	<0.10	3.0	34	31
AUG 01...	1.5	2.9	0.80	--	--	--	5.3	2.5	0.10	3.5	75	50
20...	1.6	3.4	1.0	39	0	32	8.5	2.7	<0.10	4.0	72	55
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (70507)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
JAN 09...	<0.010	0.010	0.400	0.170	0.180	0.90	0.400	0.030	0.010	<0.010	0.010	--
MAR 05...	0.010	0.050	0.420	0.110	0.100	0.30	0.440	0.020	0.010	<0.010	<0.010	99
MAY 14...	0.010	0.010	0.220	0.030	0.030	0.50	0.220	0.060	<0.010	<0.010	<0.010	430
AUG 01...	<0.010	<0.010	0.110	0.020	0.030	0.50	0.130	0.020	0.040	<0.010	<0.010	920
20...	<0.010	<0.010	0.092	0.010	0.030	0.50	0.110	0.030	0.020	<0.010	<0.010	790
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	BROM- ACIL ATER HLREC (UG/L) (30234)	BUTA- CHLOR ATER HLREC (UG/L) (30235)	BUTYL- ATE ATER HLREC (UG/L) (30236)	CARBO - IN ATER HOLE RECOV- ERABLE (UG/L) (30245)	CYCLO- ATE ATER HOLE RECOV- ERABLE (UG/L) (30254)	DIPHEN- AMID WATER WHOLE RECOV- ERABLE (UG/L) (30255)	HEXAZI- NONE WATER WHOLE RECOV- ERABLE (UG/L) (30264)	PROPA- CHLOR WATER WHOLE RECOV. (UG/L) (30295)	TER- BACIL WATER WHOLE RECOV. (UG/L) (30311)	VER- NOLATE WATER WHOLE RECOV. (UG/L) (30324)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	23	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	65	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	66	--	--	--	--	--	--	--	--	--	--	--
20...	47	<0.20	<0.10	<0.10	<0.20	<0.10	<0.10	<0.20	<0.10	<0.20	<0.1	<0.01
DATE	DI- SYSTON TOTAL (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PRO- PAZINE TOTAL (UG/L) (39024)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	PER- THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	SIME- TRYNE TOTAL (UG/L) (39054)	SIMA- ZINE TOTAL (UG/L) (39055)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--
20...	<0.01	<0.01	<0.10	<0.10	<0.1	<0.01	<0.1	<0.10	<0.2	<0.1	<0.10	<0.001



## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 390346079244801 - YOAKUM RUN AT MOUTH.--Continued

DATE	LINDANE TOTAL (UG/L) (39340)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX- APHENE, TOTAL (UG/L) (39400)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--
20...	<0.001	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<1	<0.001	<0.001

DATE	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA- THION, TOTAL (UG/L) (39530)	PARA- THION, TOTAL (UG/L) (39540)	DI- AZINON, TOTAL (UG/L) (39570)	METHYL PARA- THION, TOTAL (UG/L) (39600)	ATRA- ZINE, TOTAL (UG/L) (39630)	PICLO- RAM (TOR- DON) (AMDON) TOTAL (UG/L) (39720)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--
20...	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01	0.02	<0.01	<0.01	<0.01

DATE	TOTAL TRI- THION (UG/L) (39786)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	DEETHYL ATRA- ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	CYAN- AZINE TOTAL (UG/L) (81757)	DICAMBA (MED- IBEN) (BAN- VEL D) TOTAL (UG/L) (82052)	2, 4-DP TOTAL (UG/L) (82183)	AME- TRYNE TOTAL (82184)	METRI- BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	METOLA- CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--
20...	<0.01	<0	<0	<0.10	<0.20	<0.01	<0.01	<0.10	<0.1	<0.1	<0.0

## 390351079244901 - BLACKWATER RIVER AT CORTLAND, WV

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
JAN 09...	1230	65	75	6.3	3.0	679	11.6	97	K10	K3	29
MAR 05...	1115	105	61	7.0	3.0	668	11.7	99	K6	K6	22
MAY 14...	1045	11	89	7.4	20.0	676	7.9	98	K9	K30	42
AUG 20...	1200	9.1	134	7.9	20.5	677	8.8	110	180	740	59

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

390351079244901 - BLACKWATER RIVER AT CORTLAND, WV.--Continued

[illegible]

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

390400079253301 - NORTH BRANCH AT CORTLAND, WV

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCHI, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)
JAN 09...	0830	18	112	6.0	5.0	680	10.8	95	25	K15	45	16
MAR 05...	0830	26	101	7.2	2.5	668	11.2	94	K18	K10	37	13
MAY 15...	1130	3.9	121	7.2	17.5	679	9.5	112	K1100	K17	57	20
JUL 31...	0948	1.5	152	7.5	18.5	680	8.1	97	1000	--	64	22
AUG 20...	0830	1.0	216	7.1	17.0	677	8.4	98	K2200	2500	100	35
DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
JAN 09...	1.3	2.3	0.50	39	0	32	6.6	3.7	0.10	--	67	52
MAR 05...	1.2	3.5	0.40	33	0	27	6.8	6.2	<0.10	3.0	56	52
MAY 15...	1.7	2.5	0.40	55	0	45	6.3	4.4	<0.10	3.1	65	67
JUL 31...	2.3	5.5	1.6	--	--	--	10	7.9	0.10	2.4	99	85
AUG 20...	3.1	5.6	1.1	101	0	83	15	8.1	0.10	3.5	126	124
DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	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)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
JAN 09...	<0.010	0.020	0.400	0.050	0.050	0.40	0.500	0.040	0.020	<0.010	0.020	--
MAR 05...	0.010	0.020	0.400	0.020	0.020	<0.20	0.380	0.010	<0.010	<0.010	<0.010	95
MAY 15...	0.010	0.010	0.270	0.030	0.030	0.30	0.270	0.060	<0.010	<0.010	<0.010	190
JUL 31...	0.010	0.010	0.230	0.060	0.090	1.3	0.210	0.070	0.030	<0.010	<0.010	560
AUG 20...	0.050	0.060	0.590	0.020	0.030	0.60	0.620	0.080	0.030	<0.010	0.020	310
DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	BROM-ACIL ATER HLREC (UG/L) (30234)	BUTA-CHLOR ATER HLREC (UG/L) (30235)	BUTYL-ATE ATER HLREC (UG/L) (30236)	CARBO - IN ATER HOLE RECOV-ERABLE (UG/L) (30245)	CYCLO-ATE ATER HOLE RECOV-ERABLE (UG/L) (30254)	DIPHEN-AMID WATER WHOLE RECOV-ERABLE (UG/L) (30255)	HEXAZI-NONE WATER WHOLE RECOV-ERABLE (UG/L) (30264)	PROPA-CHLOR WATER WHOLE RECOV. (UG/L) (30295)	TER-BACIL WATER WHOLE RECOV. (UG/L) (30311)	VER-NOLATE WATER WHOLE RECOV. (UG/L) (30324)	CHLOR-DYRIFOS TOTAL RECOVER (UG/L) (38932)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	33	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	80	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	160	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	130	<0.20	<0.10	<0.10	<0.20	<0.10	<0.10	<0.20	<0.10	<0.20	<0.1	<0.01

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

390400079253301 - NORTH BRANCH AT CORTLAND, WV.--Continued

DATE	DI-SYSTON TOTAL (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PRO-PAZINE TOTAL (UG/L) (39024)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	PER-THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	SIME-TRYNE TOTAL (UG/L) (39054)	SIMA-ZINE TOTAL (UG/L) (39055)	PROME-TONE TOTAL (UG/L) (39056)	PROME-TRYNE TOTAL (UG/L) (39057)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<0.01	<0.01	<0.10	<0.10	<0.1	<0.01	<0.1	<0.10	<0.2	<0.1	<0.10	<0.001

DATE	LINDANE TOTAL (UG/L) (39340)	CHLOR-DANE, TOTAL (UG/L) (39350)	DDD TOTAL (UG/L) (39360)	DDE TOTAL (UG/L) (39365)	DDT TOTAL (UG/L) (39370)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<0.001	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<1	<0.001	<0.001

DATE	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)	ATRA-ZINE, TOTAL (UG/L) (39630)	PICLO-RAM (TOR-DON) TOTAL (UG/L) (39720)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.10	0.02	<0.01	<0.01	<0.01	<0.01

DATE	TOTAL TRI-THION (UG/L) (39786)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	CYAN-AZINE TOTAL (UG/L) (81757)	DICAMBA (MED-IBEN) (BAN-VEL D) TOTAL (UG/L) (82052)	2, 4-DP TOTAL (UG/L) (82183)	AME-TRYNE TOTAL (UG/L) (82184)	METRI-BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	METOLA-CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 09...	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--
MAY 15...	--	--	--	--	--	--	--	--	--	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	<0.01	<0	<0	<0.10	<0.20	<0.01	<0.01	<0.10	<0.1	<0.1	<0.0



## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

## WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 390824079251201 - BLACKWATER RIVER NR. DAVIS, WV

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCICI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
JAN 07...	1615	211	51	7.4	1.0	681	11.2	88	K20	K7	20	6.8
MAR 04...	1645	360	47	6.6	3.5	660	9.2	80	48	K34	19	6.4
MAY 14...	1715	34	76	7.2	22.0	677	7.9	102	42	K2	35	12
AUG 01...	1358	12	108	7.4	26.5	682	8.0	112	K7	--	47	16
19...	1745	18	124	7.5	25.0	677	7.6	104	K63	K33	54	19
DATE	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
JAN 07...	0.72	0.90	0.60	15	0	12	6.0	0.90	0.10	--	30	25
MAR 04...	0.77	1.4	0.60	11	0	9	5.6	1.7	<0.10	2.1	60	26
MAY 14...	1.3	1.3	0.40	34	0	28	4.7	2.1	<0.10	2.0	40	42
AUG 01...	1.6	2.3	0.60	--	--	--	6.2	2.6	<0.10	2.3	69	57
19...	1.7	2.6	0.70	56	0	46	8.8	3.1	<0.10	1.8	78	66
DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	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)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
JAN 07...	<0.010	0.010	0.300	0.030	0.050	0.30	0.300	0.020	<0.010	<0.010	<0.010	--
MAR 04...	0.010	0.040	0.250	0.030	0.020	0.40	0.250	0.010	0.020	<0.010	<0.010	350
MAY 14...	<0.010	0.010	0.120	0.020	0.020	1.0	0.120	0.050	<0.010	<0.010	<0.010	480
AUG 01...	<0.010	<0.010	<0.050	0.010	0.030	0.50	<0.050	0.020	0.010	<0.010	<0.010	770
19...	<0.010	<0.010	<0.050	<0.010	0.020	0.40	<0.050	0.020	0.020	<0.010	<0.010	470
DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	BROM-ACIL-ATER HLREC (30234)	BUTA-CHLOR-ATER HLREC (30235)	BUTYL-ATE-ATER HLREC (30236)	CARBO-IN-ATER HOLE RECOV-ERABLE (UG/L) (30245)	CYCLO-ATE-ATER HOLE RECOV-ERABLE (UG/L) (30254)	DIPHEN-AMID WATER WHOLE RECOV-ERABLE (UG/L) (30255)	HEXAZI-NONE WATER WHOLE RECOV-ERABLE (UG/L) (30264)	PROPA-CHLOR WATER WHOLE RECOV. (UG/L) (30295)	TER-BACIL WATER WHOLE RECOV. (UG/L) (30311)	VER-NOLATE WATER WHOLE RECOV. (UG/L) (30324)	CHLOR-DYRIFOS TOTAL RECOVER (UG/L) (38932)
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	59	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	76	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	120	--	--	--	--	--	--	--	--	--	--	--
19...	140	<0.20	<0.10	<0.10	<0.20	<0.10	<0.10	<0.20	<0.10	<0.20	<0.1	<0.01

## ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

390824079251201 - BLACKWATER RIVER NR. DAVIS, WV.--Continued

DATE	DI-SYSTON TOTAL (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PRO-PAZINE TOTAL (UG/L) (39024)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	PER-THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	SIME-TRYNE TOTAL (UG/L) (39054)	SIMA-ZINE TOTAL (UG/L) (39055)	PROME-TONE TOTAL (UG/L) (39056)	PROME-TRYNE TOTAL (UG/L) (39057)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--
19...	<0.01	<0.01	<0.10	<0.10	<0.1	<0.01	<0.1	0.40	<0.2	<0.1	<0.10	<0.001

DATE	LINDANE TOTAL (UG/L) (39340)	CHLOR-DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--
19...	0.001	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<1	<0.001	<0.001

DATE	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)	ATRA-ZINE, TOTAL (UG/L) (39630)	PICLO-RAM (TOR-DON) TOTAL (UG/L) (39720)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--
19...	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	TOTAL TRI-THION (UG/L) (39786)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	CYAN-AZINE TOTAL (UG/L) (81757)	DICAMBA (MED-IBEN) (BAN-VEL D) TOTAL (UG/L) (82052)	2, 4-DP TOTAL (UG/L) (82183)	AME-TRYNE TOTAL (UG/L) (82184)	METRI-BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	METOLA-CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 07...	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--
19...	<0.01	<0	<0	<0.10	<0.20	<0.01	<0.01	<0.10	<0.1	<0.1	<0.0

## GROUND-WATER-QUALITY RECORDS

REMARK CODES.--The following remark codes may appear with the water-quality data in this section:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (Organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

NOTE: Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's and 100's of nanograms per liter ( $\text{ng/L}$ ). Present data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey will begin using new trace-element protocols in the near future.

## GROUND-WATER RECORDS

## GROUND-WATER LEVELS

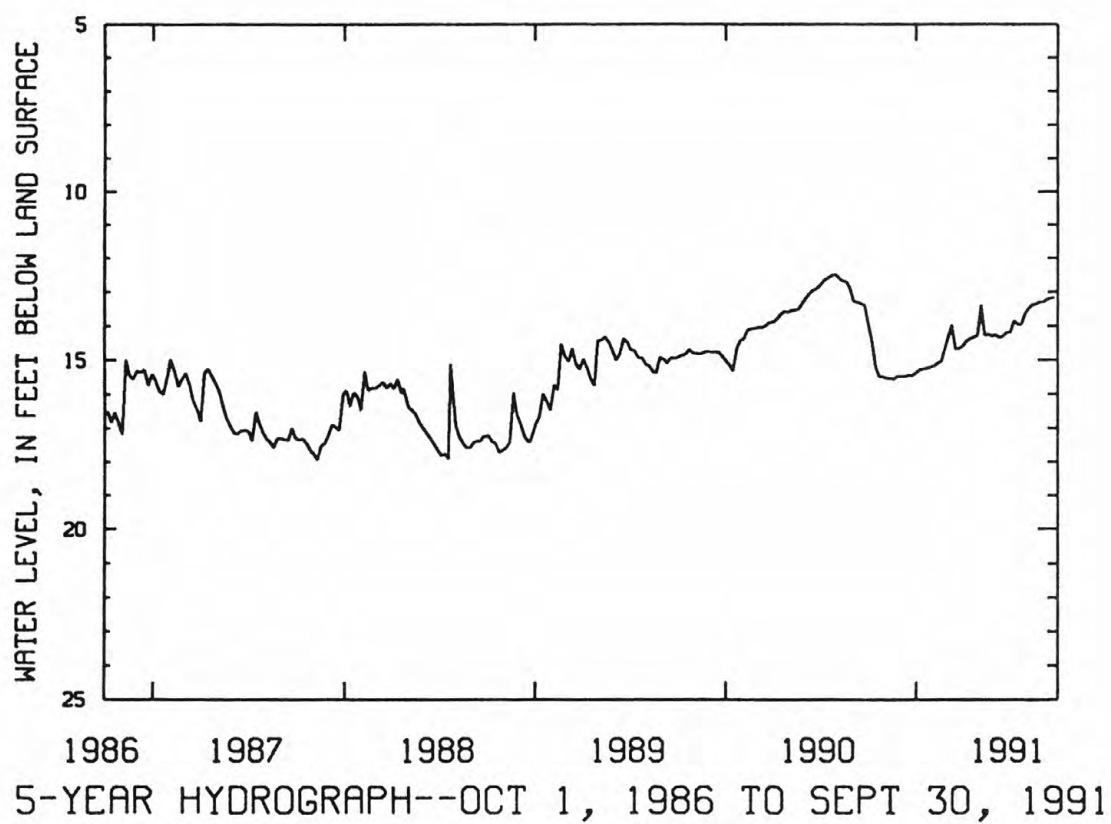


Figure 6.--Water-level fluctuations for the index well in Gilmer County, for the 1987-1991 water years.



## GROUND-WATER RECORDS

## GROUND-WATER LEVELS

## BERKELEY COUNTY

392725077582401. Local number 20-5-7.

LOCATION.--Lat 39°27'25", long 77°58'24", Hydrologic Unit 02070004, at John Street and Porter Avenue, Martinsburg.  
Owner: Martinsburg Mills, Inc.

AQUIFER.--Beekmantown Group of Lower Ordovician age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in., depth 250 ft, cased with steel to 10 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 445 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base, 3.30 ft above land-surface datum.

PERIOD OF RECORD.--November 1956 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 23.00 ft, estimated, below land-surface datum, June 24, 1972; lowest, 68.45 ft below land-surface datum, Dec. 7, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	54.87	40.81	43.43	39.69	39.54	40.51	40.20	43.09	47.10	50.56	55.06	55.94
10	55.68	41.17	44.53	39.83	39.69	40.87	41.09	42.98	47.94	51.19	55.20	56.06
15	39.57	42.12	45.51	38.25	39.92	41.51	40.59	43.76	48.74	51.38	55.54	56.24
20	40.62	43.19	44.56	35.37	40.38	41.80	40.80	44.50	49.01	52.30	55.13	45.92
25	37.04	43.97	43.22	37.21	41.09	38.83	41.36	45.30	49.09	53.30	55.31	48.10
EOM	39.68	45.02	39.58	38.54	41.51	39.33	42.24	46.21	50.00	54.34	55.77	49.79

WATER YEAR 1991      HIGHEST    34.89    JAN 18, 1991      LOWEST    56.33    SEP 18, 1991

## BRAXTON COUNTY

384003080462601. Local number, 34-2-15.

LOCATION.--Lat 38°40'03", long 80°46'26", Hydrologic Unit 05050007, at Kanawha Street, Gassaway.  
Owner: Claude Cunningham.

AQUIFER.--Conemaugh Group of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 100 ft, cased with steel.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is about 1,100 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing, 1.92 ft above land-surface datum.

PERIOD OF RECORD.--August 1971 to January 1991. Discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 72.28 ft below land-surface datum, Mar. 7, 1973; lowest measured, 74.88 ft below land-surface datum, Aug. 11, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	73.63	OCT 24	73.64	NOV 14	73.63	DEC 05	73.59	DEC 26	73.38	JAN 16	73.18
10	73.64	31	73.64	21	73.62	12	73.58	JAN 02	73.08	23	73.19
17	73.64	NOV 07	73.64	28	73.61	19	73.48	09	73.17		

WATER YEAR 1991      HIGHEST    73.08    JAN 02, 1991      LOWEST    73.64    OCT 10, 17, 24, 31, NOV 07, 1990

## GROUND-WATER LEVELS

## BROOKE COUNTY

401216080362703.

LOCATION.--Lat 40°12'16", long 80°36'27", Hydrologic Unit 05030106, about 2.5 mi west of Bethany on hilltop about 1,700 ft west of Buffalo Creek.  
Owner: C. E. Reeves.

AQUIFER.--Waynesburg coal in the Monongahela Group of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 50.5 ft, cased with steel to 46.5 ft and set in bentonite clay seal.

INSTRUMENTATION.--Continuous strip-chart water-level recorder.

DATUM.--Elevation of land-surface datum is about 1,150 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--No water-level record Oct. 1-9, Jan. 5-30, Apr. 4 to May 14, May 26 to July 19, July 21 to Aug. 1, Aug. 4-11, due to recorder malfunction. Aquifer test data available.

PERIOD OF RECORD.--July 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.87 ft below land-surface datum, Apr. 3, 1985; lowest, 42.09 ft below land-surface datum, Oct. 17, 18, 29, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	38.60	36.99	---	37.35	37.90	---	---	---	---	---	41.77
10	39.10	38.69	37.05	---	36.80	36.73	---	---	---	---	---	41.80
15	36.70	37.42	37.89	---	37.09	37.39	---	39.02	---	---	41.71	41.82
20	37.13	38.06	36.16	---	37.05	37.60	---	39.78	---	41.31	41.73	41.86
25	36.99	37.65	36.05	---	36.93	37.60	---	40.17	---	---	41.75	41.76
EOM	37.81	38.03	36.12	37.35	37.56	37.70	---	---	---	---	41.75	41.86

WATER YEAR 1991      HIGHEST    35.99    JAN 2, 1991      LOWEST    41.88    SEP 21, 1991

## FAYETTE COUNTY

380154080571301.

LOCATION.--Lat 38°01'54", long 80°57'13", Hydrologic Unit 05050005, 1.6 mi south of U.S. Route 60 along State Route 11, near Clifftop.  
Owner: Nuttall heirs.

AQUIFER.--New River Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 41.5 ft, cased with wrought iron.

INSTRUMENTATION.--Weekly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is about 2,280 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing cover, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--February 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.23 ft above land-surface datum, Oct. 17, 1989; lowest measured, 12.00 ft below land-surface datum, July 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	8.98	DEC 11	8.46	FEB 12	7.92	APR 30	9.50	JUL 02	11.58	SEP 03	10.13
09	9.57	18	5.16	19	4.28	MAY 07	10.09	09	10.88	10	9.54
23	3.25	26	5.62	MAR 05	5.43	14	10.56	16	11.24	17	8.13
30	8.00	JAN 02	5.53	19	5.35	21	10.90	23	11.43	24	8.60
NOV 06	9.15	08	4.21	26	6.23	28	11.22	30	10.22		
13	6.67	15	6.04	APR 02	5.80	JUN 04	11.46	AUG 06	10.65		
20	8.66	22	5.35	09	8.49	11	11.73	13	10.10		
27	8.11	29	7.52	16	7.40	18	11.44	20	10.58		
DEC 04	7.18	FEB 05	7.71	23	8.75	25	11.30	27	10.99		

WATER YEAR 1991      HIGHEST    3.25    OCT 23, 1990      LOWEST    11.73    JUN 11, 1991

## GROUND-WATER LEVELS

## GILMER COUNTY

385604080495901. Local number, 33-3-1.

LOCATION.--Lat 38°56'04", long 80°49'59", Hydrologic Unit 05030203, at Glenville State College Campus, Glenville.  
Owner: Glenville State College.

AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 3 ft, depth 25 ft, cased with concrete tile. July 1988, installed 4-in plastic casing fitted with screened well point, and backfilled dug well with gravel and sand.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is about 820 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of concrete cover at land-surface datum.

REMARKS.--West Virginia index well.

PERIOD OF RECORD.--October 1953 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.49 ft below land-surface datum, July 30, 1990; lowest measured, 18.75 ft below land-surface datum, Nov. 30, 1953.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	13.92	DEC 03	15.49	FEB 04	15.18	APR 08	14.45	JUN 10	14.35	AUG 12	13.38
08	14.44	10	15.50	11	15.10	15	14.38	17	14.30	19	13.36
15	15.20	17	15.45	18	15.05	22	14.33	24	14.19	26	13.29
22	15.49	24	15.47	25	14.68	29	14.29	JUL 01	14.18	SEP 02	13.30
29	15.50	31	15.38	MAR 04	14.32	MAY 06	13.38	08	13.85	09	13.22
NOV 05	15.53	JAN 07	15.29	11	13.98	13	14.27	15	13.94	16	13.18
12	15.55	14	15.27	18	14.68	20	14.25	22	13.97	23	13.17
19	15.57	21	15.25	25	14.67	27	14.30	29	13.64	30	13.13
26	15.48	28	15.21	APR 01	14.59	JUN 03	14.26	AUG 05	13.49		

WATER YEAR 1991    HIGHEST    13.13    SEP 30, 1991    LOWEST    15.57    NOV 19, 1990

## GRANT COUNTY

391652079181401.

LOCATION.--Lat 39°16'52", long 79°18'14", Hydrologic Unit 02070002, about 200 ft north of U.S. Route 50, about 3.5 mi west of Mount Storm.  
Owner: Buffalo Coal Company.

AQUIFER.--Thin bed of coal in the Conemaugh Group of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 24 ft, cased with plastic to 23 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 2,890 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base, 1.50 ft above land-surface datum.

REMARKS.--Well is near reclaimed surface mine.

PERIOD OF RECORD.--June 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.33 ft below land-surface datum, Mar. 11-15, 1979; lowest, 21.24 ft below land-surface datum, Nov. 28, 29, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	17.30	15.55	15.60	11.94	12.19	11.24	12.10	13.30	15.56	16.65	17.32	17.72
10	17.34	15.37	15.21	11.94	11.27	11.47	11.80	13.93	15.93	16.79	17.34	17.76
15	17.20	15.96	14.93	11.78	10.99	12.02	11.36	14.18	16.05	16.92	17.49	17.93
20	17.33	15.77	13.94	10.94	11.48	11.69	11.32	14.79	16.24	16.87	17.47	18.19
25	16.45	15.52	12.81	11.91	11.49	11.17	11.99	14.93	16.50	16.89	17.90	18.03
EOB	16.11	16.21	11.65	11.60	11.95	11.82	12.52	15.00	16.31	17.16	17.62	18.66

WATER YEAR 1991    HIGHEST    10.70    FEB 14, 1991    LOWEST    18.66    SEP 30, 1991

GROUND-WATER LEVELS  
GREENBRIER COUNTY

374804080174001. Local number, 45-8-2.

LOCATION.--Lat 37°48'04", long 80°17'40", Hydrologic Unit 05050003, at Fish Culture Station, U.S. Fish and Wildlife Service Hatchery, White Sulphur Springs.  
Owner: U.S. Government.

AQUIFER.--Marcellus Formation and Harrell Shale of Middle Devonian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 61 ft, cased with steel.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is about 1,875 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing, 0.90 ft above land-surface datum.

PERIOD OF RECORD.--November 1953 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.80 ft below land-surface datum, Mar. 16, 1955;  
lowest measured, 14.82 ft below land-surface datum, Aug. 29, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	5.97	DEC 29	5.20	FEB 23	5.48	APR 20	5.67	JUN 15	6.07	AUG 10	5.88
10	5.20	JAN 05	5.63	MAR 02	5.36	27	5.85	22	6.60	17	6.21
17	5.88	12	4.56	09	5.55	MAY 04	5.84	29	6.25	24	6.42
24	6.20	19	5.49	16	5.26	11	6.00	JUL 06	6.20	31	6.40
DEC 01	6.10	26	5.72	23	4.33	18	5.95	13	6.15	SEP 07	6.30
08	6.30	FEB 02	5.90	30	4.60	25	5.74	20	6.24	14	6.56
15	6.50	09	5.90	APR 06	5.65	JUN 01	6.00	27	6.01	21	6.54
22	5.50	16	5.80	13	5.45	08	6.12	AUG 03	6.10	28	7.04

WATER YEAR 1991    HIGHEST    4.33    MAR 23, 1991    LOWEST    7.04    SEP 28, 1991

HAMPSHIRE COUNTY

391257078404601. Local number, 23-6-46.

LOCATION.--Lat 39°12'57", long 78°40'46", Hydrologic Unit 02070003, about 4 mi south of Augusta on State Route 29.  
Owner: Loring Hott.

AQUIFER.--Hampshire Formation of Upper Devonian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 24 ft, cased with tile.

INSTRUMENTATION.--Continuous strip-chart water-level recorder.

DATUM.--Elevation of land-surface datum is about 1,400 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing at land-surface datum.

REMARKS.--No water-level record Dec. 15 to Jan. 8, Jan. 26-28, Apr. 7-8, Apr. 21 to May 6, due to recorder malfunction.

PERIOD OF RECORD.--February 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.30 ft below land-surface datum, Sept. 25, 1975; lowest, 16.69 ft, estimated, below land-surface datum, July 15, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	12.83	10.17	5.95	---	9.67	.50	5.95	---	12.82	13.74	14.18	14.83
10	13.16	10.29	10.41	4.25	4.45	2.76	11.07	11.43	13.13	13.92	14.17	14.89
15	1.24	10.28	---	2.15	6.19	7.23	15.09	11.38	13.30	14.03	14.43	15.00
20	1.90	10.95	---	.61	6.35	3.27	10.81	11.92	13.48	14.15	14.52	15.05
25	.67	11.22	---	5.05	8.17	.55	---	12.12	13.65	13.94	14.58	14.60
EOM	8.47	11.86	---	7.29	9.65	2.74	---	12.41	13.69	14.05	14.65	14.91

WATER YEAR 1991    HIGHEST    .38    OCT 23, 24, 1990    LOWEST    16.25    APR 13, 1991



## GROUND-WATER LEVELS

## HARDY COUNTY

385714078441301. Local number, 25-4-5.

LOCATION.--Lat 38°57'14", long 78°44'13", Hydrologic Unit 02070003, about 3 mi east of Lost River near entrance to Trout Pond Recreation Area.  
Owner: U.S. Forest Service.

AQUIFER.--Helderberg Group of Early Devonian age and Tonoloway Formation of Late Silurian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 460 ft, cased with steel to 190 ft.

INSTRUMENTATION.--Continuous strip-chart water-level recorder prior to November 1976, then periodic measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is about 1,920 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of well casing, 0.90 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 263.00 ft, estimated, below land-surface datum, July 15, 1972; lowest, 274.80 ft below land-surface datum, Oct. 1, 1985.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL
MAY 07	271.30

## JEFFERSON COUNTY

391142077551701. Local number 037166.

LOCATION.--Lat 39°11'42", long 77°55'17", Hydrologic Unit 02070007, about 6 mi south of Charles Town adjacent to U.S. Route 340.  
Owner: James Louthan.

AQUIFER.--Conococheague Formation of Upper Cambrian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 153 ft, cased with steel.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 572 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base, at land-surface datum.

REMARKS.--Water-quality and well log data available.

PERIOD OF RECORD.--March 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 43.82 ft, below land-surface datum, May 30, 1988; lowest, 61.89 ft below land-surface datum, Sept. 28, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	53.46	50.57	51.35	48.99	46.84	48.73	47.27	48.55	49.75	50.86	52.23	53.01
10	53.59	50.63	51.42	48.56	47.35	49.09	47.50	48.76	50.03	51.12	52.26	53.18
15	52.78	50.91	51.53	47.88	47.60	49.10	47.64	48.79	50.09	51.40	52.49	53.38
20	52.06	50.96	51.60	46.23	48.17	49.23	47.83	49.16	50.32	51.63	52.57	53.51
25	51.43	50.96	51.34	45.85	48.50	48.83	48.11	49.28	50.55	51.76	52.80	53.49
EOM	50.76	51.32	50.67	46.23	48.62	47.44	48.34	49.48	50.62	51.93	52.86	53.91

WATER YEAR 1991      HIGHEST    45.78    JAN 24, 1991      LOWEST    53.91    SEP 30, 1991

## GROUND-WATER LEVELS

## JEFFERSON COUNTY (Continued)

392104077554801. Local number 037166.

LOCATION.--Lat 39°21'04", long 77°55'48", Hydrologic Unit 02070007, at Leetown Fish Research Station, Leetown.  
Owner: U.S. Government.

AQUIFER.--Beekmantown Group of Lower Ordovician age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in., depth 155 ft, cased with steel to 36.7 ft, screened from 36.7 to 155 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 480 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base, 2.40 ft above land-surface datum.

REMARKS.--Water-quality and well log data available.

PERIOD OF RECORD.--March 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.85 ft, below land-surface datum, May 21, 22, 1988; lowest, 24.41 ft below land-surface datum, Dec. 22, 23, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	20.32	18.22	19.13	17.74	18.76	19.61	18.85	20.27	23.64	22.33	22.53	23.57
10	21.03	18.90	19.53	18.13	19.04	19.78	19.20	19.57	23.91	21.65	22.67	23.81
15	16.99	19.99	20.04	17.77	19.39	19.88	19.45	22.80	24.04	21.44	23.00	23.87
20	16.95	19.93	19.31	16.45	19.66	19.92	19.56	22.18	24.07	21.28	23.09	23.85
25	16.35	19.22	18.81	17.37	19.78	17.88	19.90	21.59	24.02	21.78	23.26	23.99
EOM	17.71	18.89	17.83	18.19	19.87	18.49	20.11	21.41	24.13	22.02	23.41	24.03

WATER YEAR 1991      HIGHEST    16.21    OCT 24, 1990      LOWEST    24.14    JUL 01, 1991

## LEWIS COUNTY

390553080280802. Local number, 16-1-9.

LOCATION.--Lat 39°05'53", long 80°28'08", Hydrologic Unit 05020002, at Jackson's Mill State 4-H Camp, Jackson's Mill.  
Owner: West Virginia University.

AQUIFER.--Conemaugh Group and Allegheny Formation of Upper and Middle Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 122 ft, cased.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer prior to October 1977, then periodic measurement by USGS personnel.

DATUM.--Elevation of land-surface datum is about 1,020 ft above National Geodetic Vertical Datum of 1929. Measuring point: Drilled hole in steel plate covering casing at land-surface datum.

REMARKS.--Water level affected by stage of West Fork River.

PERIOD OF RECORD.--May 1961 to May 1976, October 1977 to current year. No measurements May 1976 to October 1977.

REVISED RECORDS.--WDR WV-85-1: Highest water level.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.00 ft below land-surface datum, Dec. 11, 1972; lowest measured, 24.80 ft below land-surface datum, Oct. 6, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	22.25	APR 12	20.97

## GROUND-WATER LEVELS

## MARION COUNTY

393101080150501.

LOCATION.--Lat 39°31'01", long 80°15'05", Hydrologic Unit 05020003, about 1,250 ft north of State Route 91 and 100 ft west of State Route 15 in Farmington.  
 Owner: State of West Virginia.

AQUIFER.--Open to a mine in Pittsburgh coal, Member of Monongahela Group of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 266 ft, cased with steel to 252 ft.

INSTRUMENTATION.--Daily water-level measurements by observer.

DATUM.--Elevation of land-surface datum is about 970 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of steel plate at land-surface datum.

REMARKS.--Well formerly used by U.S. Bureau of Mines to back-fill abandoned mine with shale slurry. Water level possibly affected by mine pumpage. No water-level record Dec. 25, Apr. 25, and July 31. Some unpublished daily values also missing.

PERIOD OF RECORD.--April 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 117.60 ft below land-surface datum, June 26, 1991; lowest measured, 219.47 ft below land-surface datum, May 12, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
 DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	126.71	125.88	125.68	124.76	122.97	121.32	119.60	118.59	117.96	117.83	118.07	118.40
10	126.58	126.32	125.74	124.34	122.56	121.18	119.42	118.39	117.78	117.87	118.06	118.49
15	126.59	126.00	125.51	123.98	122.27	120.83	119.04	118.22	117.78	118.02	118.08	118.59
20	126.58	126.09	125.82	123.55	122.31	120.42	118.92	118.14	117.94	117.99	118.14	118.72
25	126.33	125.91	---	123.32	121.82	120.29	---	118.24	117.64	118.30	118.32	118.64
EOM	126.36	125.96	125.21	123.40	121.66	118.91	118.54	118.45	117.77	---	118.32	118.86

WATER YEAR 1991 HIGHEST 117.60 JUN 26, 1991 LOWEST 126.89 OCT 2, 1990

## MERCER COUNTY

372149081055001. Local number, 48-5-1.

LOCATION.--Lat 37°21'49", long 81°05'50", Hydrologic Unit 05050002, at Princeton Water Service, Company No. 1 well, Princeton.  
 Owner: West Virginia Service Company.

AQUIFER.--Hinton Formation of Upper Mississippian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 249 ft, cased. Measured depth 165 ft, Oct. 24, 1985.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is about 2,387 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing extension, 5.50 ft above land-surface datum. Prior to September 1975 measuring point was top of casing at land-surface datum.

REMARKS.--Water level affected by nearby pumping. Geophysical logs available. Casing extension installed Oct. 24, 1985.

PERIOD OF RECORD.--March 1960 to current year.

REVISED RECORDS.--WDR WV-79-1: 1977-78 (water levels).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.14 ft above land-surface datum, Apr. 15, 1987, (flowing at land-surface datum, many days 1968 to 1985); lowest measured, 90.58 ft below land-surface datum, Dec. 10, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	1.76	DEC 05	.52	FEB 06	++.35	APR 10	++.81	JUN 12	+.15	AUG 14	1.47
10	1.54	12	.73	13	++.83	17	++.09	19	+.41	21	4.23
17	.63	19	.45	20	++.10	24	++.68	26	+.38	28	1.97
24	++.29	26	++.21	27	++.87	MAY 01	++.64	JUL 03	.03	SEP 04	1.66
31	.28	JAN 02	++.73	MAR 06	++.45	08	++.45	10	.16	11	1.53
NOV 07	.45	09	++.10	13	++.39	15	++.56	17	.09	18	1.17
14	.08	16	++.39	20	++.00	22	++.90	24	.05	25	1.00
21	.36	23	++.64	27	++.30	29	++.15	31	.18		
28	.60	30	++.62	APR 03	++.12	JUN 05	.90	AUG 07	.06		

\* Flowing well; readings are above land-surface datum.

WATER YEAR 1991 HIGHEST ++1.45 MAR 06, 1991 LOWEST 4.23 AUG 21, 1991

## GROUND-WATER LEVELS

## MINERAL COUNTY

392114079081101. Local number, 22-5-23.

LOCATION.--Lat 39°21'14", long 79°08'11", Hydrologic Unit 02070002, 2.20 mi north of U.S. Route 50 on State Route 42 at Sulphur City near Elk Garden.  
Owner: Gerald Whisner.

AQUIFER.--Conemaugh Group of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 37 ft, cased with steel.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer 1968 to 1976, periodic measurement with chalked tape by USGS personnel 1977 to current year.

DATUM.--Elevation of land-surface datum is about 2,480 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing extension, 0.70 ft above land-surface datum.

REMARKS.--Well flows at times. Water level affected by pumpage at times from a nearby dug well of 6 ft depth.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.69 ft above land-surface datum, many days since 1968; lowest measured, 10.81 ft below land-surface datum, Oct. 29, 1968.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	4.85	APR 08	*+.70

\* Flowing well; readings are above land-surface datum.

## MINGO COUNTY

373554081493401.

LOCATION.--Lat 37°35'54", long 81°49'34", Hydrologic Unit 05070101, downstream of toe of R. D. Bailey Dam northeast of Justice.  
Owner: U.S. Army Corps of Engineers.

AQUIFER.--New River Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in., depth 66 ft, cased with steel.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 920 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base, flush with top of casing, 1.00 ft above land-surface datum.

REMARKS.--At times, water level affected by Guyandotte River.

PERIOD OF RECORD.--March 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 28.42 ft below land-surface datum, May 10, 1989; lowest, 44.29 ft below land-surface datum, Oct. 6, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	36.79	36.61	36.70	30.42	35.07	32.25	34.08	35.91	36.14	37.14	37.41	37.43
10	36.33	36.60	37.00	29.97	33.74	33.70	34.20	36.18	36.87	37.18	36.84	37.53
15	36.09	36.28	36.98	31.90	32.07	30.80	34.00	33.38	37.23	36.74	37.52	36.46
20	35.01	36.95	31.95	33.58	31.24	32.04	34.62	35.70	35.74	37.19	37.39	37.27
25	35.10	36.90	31.28	34.27	33.67	30.99	35.31	36.44	37.19	37.39	37.42	37.48
EOM	36.60	37.05	30.57	33.11	34.80	31.90	35.42	36.21	36.94	36.80	37.56	37.46

WATER YEAR 1991      HIGHEST    29.73    JAN 09, 1991      LOWEST    37.57    AUG 28, 1991



## GROUND-WATER LEVELS

## MONONGALIA COUNTY

392923079571801. Local number, 9-7-33.

LOCATION.--Lat 39°29'23", long 79°57'18", Hydrologic Unit 05020003, 1 mi northwest of Halleck on Secondary State Route 79.

Owner: Paul H. Price.

AQUIFER.--Buffalo Mahoning sandstone member of Conemaugh Group of Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 141 ft, cased with steel to 21 ft.

INSTRUMENTATION.--Digital water-level recorder, 1961-62, 1978 to 1985; monthly measurement with chalked tape by USGS personnel, 1953 to 1961, 1962 to 1978, 1985 to current year.

DATUM.--Elevation of land-surface datum is about 1,850 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.35 ft above land-surface datum.

PERIOD OF RECORD.--March 1953 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.95 ft below land-surface datum, Jan. 4, 1960; lowest measured, 83.08 ft below land-surface datum, Oct. 25, 1988.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	64.22	DEC 27	53.28	FEB 22	50.15	APR 22	52.35	JUN 20	77.43	AUG 22	74.15
NOV 26	55.17	JAN 25	56.08	MAR 25	53.70	MAY 22	75.23	JUL 22	77.62	SEP 27	69.05
WATER YEAR 1991		HIGHEST	50.15	FEB 22, 1991	LOWEST	77.62	JUL 22, 1991				

394006080194801. Local number, 9-1-47.

LOCATION.--Lat 39°40'06", long 80°19'48", Hydrologic Unit 05020005, 1 mi east of Wadestown on State Route 7. Owner: Howard Shriver.

AQUIFER.--Dunkard Group of Upper Pennsylvanian and Permian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 65 ft, cased with steel.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is about 1,060 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.20 ft above land-surface datum.

PERIOD OF RECORD.--July 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.35 ft below land-surface datum, Jan. 15, 1991; lowest measured, 11.35 ft below land-surface datum, Aug. 6, 1971.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	6.05	DEC 04	5.20	FEB 05	7.06	APR 09	6.61	JUN 18	7.58	SEP 03	9.39
09	6.03	11	5.60	12	6.39	16	6.38	24	7.97	10	9.28
16	6.10	18	4.50	19	6.67	23	6.35	JUL 02	7.58	17	9.28
23	5.82	25	4.95	26	6.55	MAY 07	7.27	09	8.27	24	9.18
30	6.15	JAN 01	4.25	MAR 05	6.51	14	6.68	16	8.39		
NOV 06	6.35	08	4.84	12	6.29	21	7.18	23	8.48		
13	5.88	15	3.35	19	6.35	28	7.27	AUG 06	8.89		
20	6.17	22	7.66	26	6.29	JUN 04	7.75	13	8.99		
27	5.80	29	7.67	APR 02	6.86	11	7.81	20	9.29		
WATER YEAR 1991		HIGHEST	3.35	JAN 15, 1991	LOWEST	9.39	SEP 03, 1991				

## GROUND-WATER LEVELS

## MORGAN COUNTY

393043078174001. Local number, 19-5-14.

LOCATION.--Lat 39°30'43", long 78°17'40", Hydrologic Unit 02070004, on Cacapon State Park south of Berkeley Springs on U.S. Route 522.

Owner: West Virginia Department of Natural Resources.

AQUIFER.--Tonoloway Formation of Upper Silurian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in., reported depth 250 ft, cased with steel to 33 ft.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer, 1971-75; monthly measurement with chalked tape by USGS personnel, 1976-77; digital water-level recorder--60-minute punch, 1977 to current year.

DATUM.--Elevation of land-surface datum is about 875 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base, 1.10 ft above land-surface datum. Prior to Aug. 16, 1977 measuring point was 1.20 ft above land-surface datum.

PERIOD OF RECORD.--July 1971 to July 1973, November 1974 to March 1975, July 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 27.80 ft below land-surface datum, June 22, 1989; lowest measured, 39.52 ft below land-surface datum, Sept. 19, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	35.19	33.86	32.72	32.44	33.48	33.10	33.33	33.59	34.47	34.44	38.16	38.49
10	35.57	32.33	33.44	31.67	33.39	33.34	33.41	33.55	35.31	36.10	38.53	39.14
15	33.55	33.77	33.53	31.71	33.38	33.31	32.64	33.65	35.50	36.46	38.83	39.28
20	33.44	34.05	32.60	31.13	33.28	33.35	33.37	33.86	34.89	36.83	39.07	32.72
25	33.24	34.04	32.25	32.29	33.47	33.01	33.46	33.69	34.91	37.47	35.81	34.14
EOM	33.81	34.58	30.24	33.31	33.48	33.14	33.50	33.74	35.77	37.93	37.56	36.64

WATER YEAR 1991      HIGHEST    29.74    JAN 17, 1991      LOWEST    39.48    SEP 18, 1991

## NICHOLAS COUNTY

381513081094201.

LOCATION.--Lat 38°15'13", long 81°09'42", Hydrologic Unit 05050005, about 3 mi east of Belva and Route 16 on left of Secondary Route 20/21.

Owner: Burt Whiston.

AQUIFER.--Kanawha Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 95 ft, cased with galvanized iron to 13 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 742.6 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--No water-level record Oct. 14 to Dec. 21, due to recorder malfunction.

PERIOD OF RECORD.--July 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 2.52 ft below land-surface datum, Apr. 25, 1983; lowest, 12.71 ft below land-surface datum, Aug. 21, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.92	---	---	10.23	10.38	9.60	10.13	11.08	11.97	12.01	12.26	12.09
10	11.98	---	---	9.85	10.36	9.91	10.39	11.27	12.06	12.07	11.78	12.08
15	---	---	---	9.88	9.87	9.42	9.84	11.42	12.11	12.12	12.04	11.67
20	---	---	---	10.13	9.27	9.82	10.33	11.40	11.87	12.27	12.13	11.65
25	---	---	9.36	10.49	10.04	9.19	10.68	11.66	11.91	12.00	12.27	11.80
EOM	---	---	5.43	10.46	10.40	9.66	10.96	11.83	12.02	12.18	12.28	12.05

WATER YEAR 1991      HIGHEST    5.43    DEC 31, 1990      LOWEST    12.30    AUG 06, 1991

## GROUND-WATER LEVELS

## POCAHONTAS COUNTY

380653080155301.

LOCATION.--Lat 38°06'53", long 80°15'53", Hydrologic Unit 05050003, on Droop Mountain State Park north of Droop on U.S. Route 219.

Owner: West Virginia Department of Natural Resources.

AQUIFER.--Mauch Chunk Group of Upper Mississippian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 86 ft, cased with steel.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer, 1970-76; periodic measurement by USGS personnel, 1978-80; digital water-level recorder--60-minute punch, 1980 to current year.

DATUM.--Elevation of land-surface datum is about 3,000 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelter base at land-surface datum. May 28, 1980 to July 7, 1983, measuring point 0.65 ft above land-surface datum. Prior to May 28, 1980 measuring point was top of casing at land-surface datum.

REMARKS.--No water-level record Nov. 1 to Jan. 15, Mar. 23 to Apr. 11, and May 28 to July 16, due to recorder malfunction.

PERIOD OF RECORD.--December 1970 to January 1976, April 1978 to current year. Published as local well number "44-4-1", 1973-78.

REVISED RECORDS.--WDR WV-79-1: Well location, well characteristics, and water levels. WDR WV-83-1: Station identification number and lowest water level.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 62.86 ft below land-surface datum, May 30, 1982; lowest, 70.20 ft below land-surface datum, Oct. 13, 1988. (73.39 ft below land-surface datum, Oct. 25, 1984, due to pumping.)

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	69.77	---	---	---	68.95	68.58	---	69.16	---	---	69.95	70.02
10	69.80	---	---	---	68.73	68.72	---	69.20	---	---	69.91	70.01
15	69.34	---	---	---	68.58	69.05	68.48	69.31	---	---	69.95	70.03
20	69.03	---	---	67.25	68.44	68.55	68.68	69.39	---	69.90	69.95	---
25	68.71	---	---	68.09	68.69	---	68.89	69.47	---	69.89	69.99	---
EOM	69.21	---	---	68.62	68.90	---	68.96	---	---	69.86	69.99	---

WATER YEAR 1991      HIGHEST    66.93    JAN 16, 1991      LOWEST    70.04    SEP 01, 1991

## PRESTON COUNTY

393306079474501. Local number, 11-3-8.

LOCATION.--Lat 39°33'06", long 79°47'45", Hydrologic Unit 05020003, East Depot Street, Masontown.  
Owner: G. E. Lemmons.

AQUIFER.--Pottsville Group of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 8 in., depth 785 ft, cased to 350 ft, perforated at or near Upper Freeport coal. Measured depth approximately 330 ft, September 1984.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer, 1941-46, and 1948-50; digital water-level recorder--60-minute punch, 1946-48; monthly measurement by USGS personnel, 1950 to current year.

DATUM.--Elevation of land-surface datum is about 1,770 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of extended casing, 3.53 ft above land-surface datum. Prior to July 1978 measuring point was 3.00 ft below land-surface datum.

PERIOD OF RECORD.--July 1941 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.15 ft below land-surface datum, Jan. 20, 1947; lowest measured, 108 ft below land-surface datum, Feb. 3, 1959.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	45.41	DEC 27	43.78	FEB 22	45.12	APR 22	44.82	JUN 20	46.89	AUG 22	45.17
NOV 26	44.62	JAN 25	45.69	MAR 25	45.57	MAY 22	51.13	JUL 22	46.57	SEP 27	45.30

WATER YEAR 1991      HIGHEST    43.78    DEC 27, 1990      LOWEST    51.13    MAY 22, 1991

## GROUND-WATER LEVELS

## RANDOLPH COUNTY

385100079522901.

LOCATION.--Lat 38°51'00", long 79°52'29", Hydrologic Unit 05020001, 1,800 ft west of U.S. Route 250 and 0.60 mi north of intersection of State Route 33 and U.S. Route 250, at Beverly.  
Owner: Edsel Lucas.

AQUIFER.--Shale of Upper-Middle Devonian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 98 ft, cased with plastic to 14 ft.

INSTRUMENTATION.--Periodic measurement with chalked tape by USGS personnel, 1978-79, and 1982 to current year; digital water-level recorder--60-minute punch, 1979-82.

DATUM.--Elevation of land-surface datum is about 1,940 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of casing 3.00 ft above land-surface datum.

REMARKS.--U.S. Geological Survey Test Well No. 2. Geologic log and aquifer test data available. At times, water level affected by stage of Tygart Valley River.

PERIOD OF RECORD.--November 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.00 ft above land-surface datum, Mar. 20, 1982; lowest, 3.60 ft below land-surface datum, Oct. 16, 1985.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	2.25	APR 10	1.90

385341079575401. Local number, 18-3-110.

LOCATION.--Lat 38°53'41", long 79°57'54", Hydrologic Unit 05020001, 0.20 mi east of Coalton High School, Coalton.  
Owner: Presbyterian Church.

AQUIFER.--Homewood Sandstone Member of Kanawha Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled exploratory water-table well, diameter 6 in., depth 155 ft, cased to 18 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel, 1966-67; digital water-level recorder--60-minute punch, 1968-77; periodic measurement with chalked tape by USGS personnel, 1977 to current year.

DATUM.--Elevation of land-surface datum is 2,171 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.60 ft above land-surface datum. Prior to Jan. 4, 1983, measuring point was 2.45 ft above land-surface datum.

REMARKS.--Water level affected by nearby pumping.

PERIOD OF RECORD.--December 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.85 ft below land-surface datum, Dec. 12, 1966; lowest, 23.35 ft below land-surface datum, Oct. 28, 1971.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	14.08	APR 10	13.73



## GROUND-WATER LEVELS

## RITCHIE COUNTY

391226081024901. Local number, 28-3-3.

LOCATION.--Lat 39°12'26", long 81°02'49", Hydrologic Unit 05030203, at Stout and East South Street, Harrisville.  
Owner: Terry Stonestreet.

AQUIFER.--Dunkard Group of Upper Pennsylvanian and Permian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 118 ft, cased with steel.

INSTRUMENTATION.--Weekly measurements with chalked tape by observer, 1966; graphic water-level recorder, 1968-70; digital water-level recorder--60-minute punch, 1970-75; monthly measurements with chalked tape by USGS personnel, 1975-76; digital water-level recorder--60-minute punch, 1976 to current year.

DATUM.--Elevation of land-surface datum is about 840 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.20 ft above land-surface datum.

REMARKS.--Formerly public-supply well.

PERIOD OF RECORD.--August 1966 to October 1966, April 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.46 ft below land-surface datum, Jan. 25, 1978; lowest measured, 22.03 ft below land-surface datum, July 18, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	19.65	19.20	19.09	18.93	19.00	19.10	19.06	19.48	20.11	20.27	20.48	20.39
10	19.42	19.16	19.15	18.76	18.68	18.97	19.04	19.12	20.19	20.63	20.24	20.34
15	18.96	19.29	19.25	18.82	18.66	18.88	18.38	19.32	20.33	20.41	20.17	---
20	19.12	19.42	18.87	18.72	18.73	18.79	18.86	19.68	20.30	20.53	20.17	---
25	18.84	19.13	18.84	19.26	18.89	18.80	19.31	19.60	19.91	20.50	20.29	---
EOM	19.32	19.65	18.84	19.03	19.08	19.09	19.37	19.64	19.94	20.55	20.41	---

WATER YEAR 1991      HIGHEST    18.34    JAN 12, 1991      LOWEST    20.68    JUL 27, 1991

## TUCKER COUNTY

390135079275601. Local number, 15-6-17.

LOCATION.--Lat 39°01'35", long 79°27'56", Hydrologic Unit 05020004, at Canaan Valley State Park off W. Va. State Route 32.  
Owner: West Virginia Department of Natural Resources.

AQUIFER.--Pocono Group of Lower Mississippian age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in., depth 281 ft, cased with steel.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer, 1971-75; periodic measurement by USGS personnel, 1978-80; digital water-level recorder--60-minute punch, 1980 to current year.

DATUM.--Elevation of land-surface datum is about 3,275 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelter base, 1.60 ft above land-surface datum. Prior to May 29, 1980 measuring point was top of casing, 1.55 ft above land-surface datum.

PERIOD OF RECORD.--June 1971 to December 1975, April 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.48 ft below land-surface datum, Nov. 5, 1985; lowest measured, 11.79 ft below land-surface datum, Aug. 21, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	10.65	10.60	10.63	9.70	9.97	9.44	10.09	10.62	10.89	11.22	11.14	10.80
10	10.83	10.56	10.73	9.78	9.54	9.62	10.02	10.58	11.01	11.43	10.47	10.96
15	10.45	10.74	10.61	9.34	9.70	10.13	9.14	10.85	11.17	11.10	10.88	10.90
20	10.37	10.77	9.70	9.50	9.23	9.50	9.85	10.85	11.38	11.43	10.79	10.63
25	9.71	10.75	9.33	10.09	9.85	8.53	9.97	11.10	10.98	11.02	11.00	10.81
EOM	10.34	10.86	7.64	9.75	10.15	9.86	10.30	10.89	11.18	11.06	11.26	10.96

WATER YEAR 1991      HIGHEST    7.64    DEC 31, 1990      LOWEST    11.48    JUL 22, 1991

## GROUND-WATER LEVELS

## TYLER COUNTY

393211081021201.

LOCATION.--Lat 39°32'11", long 81°02'12", Hydrologic Unit 05030201, 2.50 mi southwest of Sistersville along Route 2, 15 ft northwest of gravel road, between railroad and river.  
Owner: U.S. Geological Survey.

AQUIFER.--Monongahela Formation of the Upper Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 70 ft, cased with steel to 58 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 620 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of well casing, 3.90 ft above land-surface datum.

REMARKS.--Aquifer test data available. No water-level record Dec. 13, and Sept. 18, due to recorder malfunction.

PERIOD OF RECORD.--November 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.05 ft below land-surface datum, Jan. 1, 1991; lowest, 22.69 ft below land-surface datum, Oct. 3, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	18.18	18.98	16.65	13.48	18.11	15.59	18.62	18.69	18.81	18.43	18.99	18.87
10	18.88	18.48	18.34	15.97	16.07	14.93	18.41	18.46	18.82	18.40	18.48	18.64
15	17.01	18.46	18.71	16.23	16.65	17.23	16.46	18.73	18.55	18.47	18.55	18.49
20	16.75	18.58	6.08	15.59	16.85	17.00	17.90	19.03	18.44	18.44	19.02	19.16
25	16.51	18.29	12.85	17.91	16.86	16.51	17.70	18.80	18.02	18.45	18.72	18.93
ECM	18.55	18.69	6.32	17.40	17.76	18.32	18.05	18.49	18.28	18.41	18.54	18.80

WATER YEAR 1991      HIGHEST      3.15      JAN 02, 1991      LOWEST      19.16      SEP 20, 1991

## WAYNE COUNTY

375827082211501. Local number, 50-6-5.

LOCATION.--Lat 37°58'27", long 82°21'15", Hydrologic Unit 05090102, on Cabwaylingo State Forest along Secondary State Route 35.  
Owner: West Virginia Department of Natural Resources.

AQUIFER.--Kanawha Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 119 ft, cased with steel to 10 ft.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is about 740 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing cover, 1.33 ft above land-surface datum. Prior to Nov. 27, 1979 measuring point was top of casing, 1.30 ft above land-surface datum.

PERIOD OF RECORD.--May 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.87 ft below land-surface datum, Oct. 18, 1989; lowest measured, 32.17 ft below land-surface datum, July 21, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	29.67	DEC 12	28.27	FEB 13	29.37	APR 17	29.17	JUN 19	29.47	AUG 21	29.67
10	31.57	19	28.07	20	29.77	24	29.47	26	29.67	28	28.77
17	29.57	26	28.07	27	28.77	30	29.57	JUL 03	29.57	SEP 04	28.97
24	29.47	JAN 02	29.17	MAR 06	30.47	MAY 08	29.67	10	29.67	11	29.17
31	29.27	09	28.97	13	28.77	15	29.47	17	29.37	18	29.47
NOV 07	29.27	16	29.77	20	29.37	22	29.57	24	29.47	25	29.57
14	29.07	23	29.87	27	29.57	29	29.67	31	30.77		
28	29.17	30	29.37	APR 03	29.67	JUN 05	30.77	AUG 07	28.87		
DEC 05	28.77	FEB 06	29.17	10	28.77	12	29.57	14	29.22		

WATER YEAR 1991      HIGHEST      28.07      DEC 19, 26, 1990      LOWEST      31.57      OCT 10, 1990

## GROUND-WATER LEVELS

## WEBSTER COUNTY

382008080292801.

LOCATION.--Lat 38°20'08", long 80°29'28", Hydrologic Unit 05050005, at Bishop Knob Campground about 0.50 mi from junction of U.S. Forest Service Roads 81 and 82 and about 4 mi from Dyer.  
Owner: U.S. Forest Service.

AQUIFER.--Kanawha Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 80 ft, cased with galvanized iron to 60 ft.

INSTRUMENTATION.--Periodic measurement with chalked tape by USGS personnel, 1980-82; digital water-level recorder--60-minute punch, 1982 to current year.

DATUM.--Elevation of land-surface datum is about 3,100 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of extended casing, 2.00 ft above land-surface datum.

PERIOD OF RECORD.--March 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 21.05 ft below land-surface datum, Jan. 7, 1985; lowest, 27.51 ft below land-surface datum, Aug. 22, 1988.

REVISION.--The lowest water level for period of record reported in 1988 water year as 27.67 ft is in error.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	23.53	21.70	23.09	21.68	22.11	22.33	22.09	23.39	25.44	26.34	26.59	26.58
10	23.66	21.94	23.22	21.75	22.25	22.18	22.28	23.83	25.96	26.58	26.25	26.41
15	22.46	21.93	23.41	21.48	22.38	22.29	22.58	24.12	26.21	26.68	25.80	26.15
20	21.88	22.05	22.77	21.33	22.48	22.01	22.56	24.45	26.35	26.61	25.77	25.92
25	21.17	22.34	22.16	21.75	22.14	21.83	22.99	24.33	26.25	26.65	26.16	25.29
EOM	21.32	22.78	21.72	22.27	22.37	21.86	23.04	24.94	26.20	26.66	26.33	25.54

WATER YEAR 1991      HIGHEST    21.12 OCT 28, 1990      LOWEST    26.71 JUL 28, 1991

## WYOMING COUNTY

373839081255201. Local number, 54-2-12.

LOCATION.--Lat 37°38'39", long 81°25'52", Hydrologic Unit 05070101, at Twin Falls State Park.  
Owner: U.S. Geological Survey.

AQUIFER.--New River Formation of Lower Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 80 ft, cased with steel to 28 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is about 2,015 ft above National Geodetic Vertical Datum of 1929.  
Measuring point: Top of recorder shelter floor, 2.62 ft above land-surface datum.

REMARKS.--Aquifer test data available. No water-level record June 30 @ 1800 hrs to Aug. 6 @ 1800 hrs due to recorder malfunction. Water-level record affected by nearby pumping at times.

PERIOD OF RECORD.--December 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.19 ft below land-surface datum, Mar. 13, 1980; lowest, 52.40 ft below land-surface datum, Nov. 24, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
NOON VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	42.62	35.50	31.28	26.05	24.83	24.50	24.83	26.04	27.61	---	---	46.35
10	42.86	34.93	29.69	25.67	24.50	24.70	25.06	26.93	27.87	---	42.02	47.18
15	42.19	33.23	29.04	25.08	24.36	24.85	24.89	26.71	30.34	---	42.83	47.91
20	40.60	32.37	28.10	24.74	24.69	24.54	25.01	26.44	---	---	43.49	48.32
25	38.23	31.43	27.56	25.32	24.45	24.49	25.71	26.26	---	---	44.43	48.56
EOM	36.37	32.09	26.48	25.08	24.76	24.57	25.97	27.47	---	---	45.42	48.77

WATER YEAR 1991      HIGHEST    24.09 FEB 14, 1991      LOWEST    48.79 SEP 28, 1991

## SPECIAL STUDY AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

## 380935079590301 - MINNEHAHA SPRINGS

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE	SPE- CIFIC CON- DUCT- ANCE	PH	PH	TEMPER- ATURE	BARO- METRIC PRES- SURE	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED	HARD- NESS TOTAL	CALCIUM DIS- SOLVED	MAGNE- SIUM, DIS- SOLVED	
		(US/CM) (00095)	(US/CM) (90095)	(STAND- ARD UNITS) (00400)	(STAND- ARD UNITS) (00403)	(DEG C) (00010)	(MM OF HG) (00025)	(MG/L) (00300)	(PER- CENT SATUR- ATION) (00301)	(MG/L AS CACO3) (00900)	(MG/L AS CA) (00915)	(MG/L AS MG) (00925)	
MAY 09...	0930	255	255	7.4	8.0	18.5	705	3.1	36	130	42	5.1	
DATE	TIME	SODIUM, DIS- SOLVED	POTAS- SIUM, DIS- SOLVED	ALKA- LINITY WAT DIS TOT IT	SULFATE DIS- SOLVED	CHLO- RIDE, DIS- SOLVED	FLUO- RIDE, DIS- SOLVED	SOLIDS, RESIDUE AT 180 DEG. C	IRON, TOTAL RECOV- ERABLE	IRON, DIS- SOLVED	MANGA- NESE, TOTAL RECOV- ERABLE	MANGA- NESE, DIS- SOLVED	TRITIUM TOTAL
		(MG/L AS NA) (00930)	(MG/L AS K) (00935)	(MG/L AS CACO3) (39086)	(MG/L AS SO4) (00945)	(MG/L AS CL) (00940)	(MG/L AS F) (00950)	(MG/L) (70300)	(UG/L AS FE) (01045)	(UG/L AS FE) (01046)	(UG/L AS MN) (01055)	(UG/L AS MN) (01056)	(PCI/L) (07000)
MAY 09...	2.2	0.80	90	37	1.3	<0.10	167	20	<3	<10	<1	<5.7	

## 390745078282201 - 2307004/CAPON SPRING

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE	SPE- CIFIC CON- DUCT- ANCE	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE WATER	BARO- METRIC PRES- SURE	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED	HARD- NESS TOTAL	CALCIUM DIS- SOLVED	MAGNE- SIUM, DIS- SOLVED	
		(US/CM) (00095)	(US/CM) (90095)	(00400)	(00403)	(DEG C) (00010)	(MM OF HG) (00025)	(MG/L) (00300)	(PER- CENT SATUR- ATION) (00301)	(MG/L AS CACO3) (00900)	(MG/L AS CA) (00915)	(MG/L AS MG) (00925)	
MAY 07...	1100	260	271	6.7	7.5	18.0	729	5.7	63	140	48	5.7	
DATE	TIME	SODIUM, DIS- SOLVED	POTAS- SIUM, DIS- SOLVED	ALKA- LINITY WAT DIS TOT IT FIELD	SULFATE DIS- SOLVED	CHLO- RIDE, DIS- SOLVED	FLUO- RIDE, DIS- SOLVED	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED	IRON, TOTAL RECOV- ERABLE	IRON, DIS- SOLVED	MANGA- NESE, TOTAL RECOV- ERABLE	MANGA- NESE, DIS- SOLVED	TRITIUM TOTAL
		(MG/L AS NA) (00930)	(MG/L AS K) (00935)	(MG/L AS CACO3 (39086)	(MG/L AS SO4) (00945)	(MG/L AS CL) (00940)	(MG/L AS F) (00950)	(MG/L) (70300)	(UG/L AS FE) (01045)	(UG/L AS FE) (01046)	(UG/L AS MN) (01055)	(UG/L AS MN) (01056)	(PCI/L) (07000)
MAY 07...	1.2	0.70	100	7.5	0.40	0.20	144	20	11	<10	2	<5.7	

## 393734078134601 - 1901001/BERKELEY SPRINGS

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE	SPE- CIFIC CON- DUCT- ANCE	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE WATER	BARO- METRIC PRES- SURE	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED	HARD- NESS TOTAL	CALCIUM DIS- SOLVED	MAGNE- SIUM, DIS- SOLVED	
		(US/CM) (00095)	(US/CM) (90095)	(00400)	(00403)	(DEG C) (00010)	(MM OF HG) (00025)	(MG/L) (00300)	(PER- CENT SATUR- ATION) (00301)	(MG/L AS CACO3) (00900)	(MG/L AS CA) (00915)	(MG/L AS MG) (00925)	
MAY 06...	1230	285	294	6.8	7.5	22.0	740	4.3	51	140	50	4.8	
DATE	TIME	SODIUM, DIS- SOLVED	POTAS- SIUM, DIS- SOLVED	ALKA- LINITY WAT DIS TOT IT FIELD	SULFATE DIS- SOLVED	CHLO- RIDE, DIS- SOLVED	FLUO- RIDE, DIS- SOLVED	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED	IRON, TOTAL RECOV- ERABLE	IRON, DIS- SOLVED	MANGA- NESE, TOTAL RECOV- ERABLE	MANGA- NESE, DIS- SOLVED	TRITIUM TOTAL
		(MG/L AS NA) (00930)	(MG/L AS K) (00935)	(MG/L AS CACO3) (39086)	(MG/L AS SO4) (00945)	(MG/L AS CL) (00940)	(MG/L AS F) (00950)	(MG/L) (70300)	(UG/L AS FE) (01045)	(UG/L AS FE) (01046)	(UG/L AS MN) (01055)	(UG/L AS MN) (01056)	(PCI/L) (07000)
MAY 06...	4.9	0.90	100	15	3.4	0.10	165	<10	<3	<10	2	<5.7	



## SPECIAL STUDY AND MISCELLANEOUS SITES

391800078003501 - 2102048/PRIESTFIELD SPRING

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)
FEB			
01...	1340	4.0	12.5
21...	0910	4.0	12.5
MAR			
08...	1725	3.6	13.0
20...	1320	2.9	12.5
APR			
12...	1540	8.3	12.5
25...	1030	4.3	12.5
MAY			
02...	1645	3.6	12.5
07...	1435	3.7	13.0
24...	1550	3.2	12.5
JUN			
28...	0950	3.1	12.5
JUL			
16...	1410	3.1	13.0
27...	1140	2.2	13.0
AUG			
15...	1520	1.6	13.0
SEP			
10...	1510	2.7	12.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

JAN			
10...	1405	11	13.0
MAY			
07...	0925	8.6	12.0
31...	1120	5.8	13.0
JUL			
18...	0745	4.8	12.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

OCT			
08...	1350	1.0	12.5

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## FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons

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