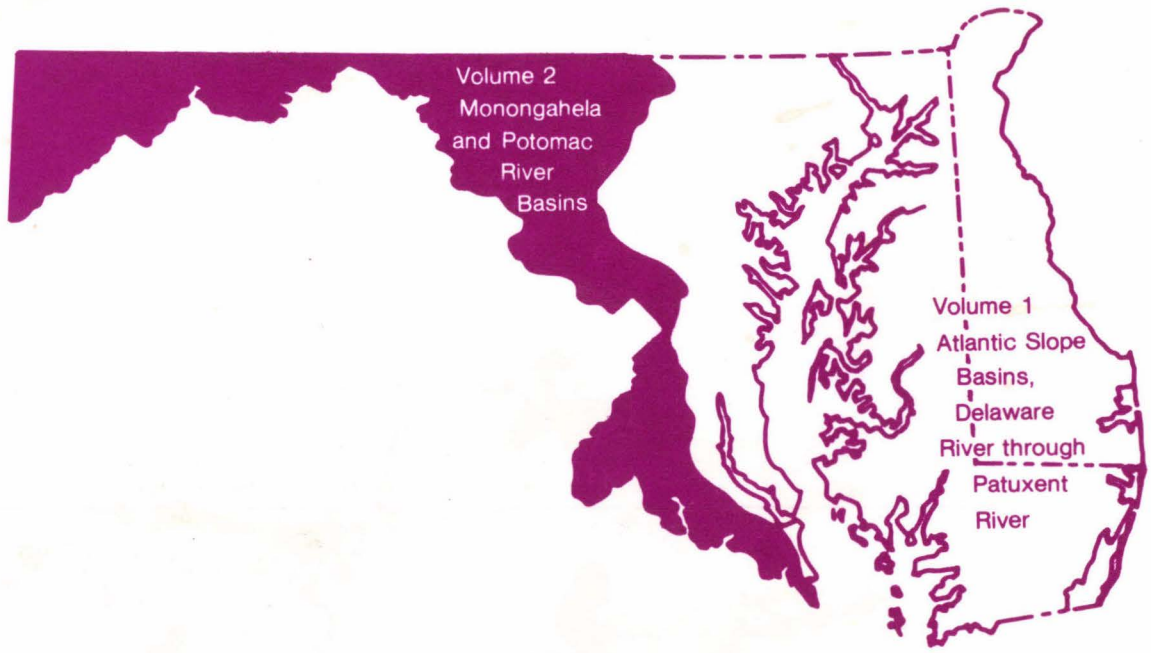
Water Resources Data Maryland and Delaware Water Year 1989

Volume 2. Monongahela and Potomac River Basins



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MD-DE-89-2
Prepared in cooperation with the States of Maryland and Delaware
and with other agencies

CALENDAR FOR WATER YEAR 1989

1988

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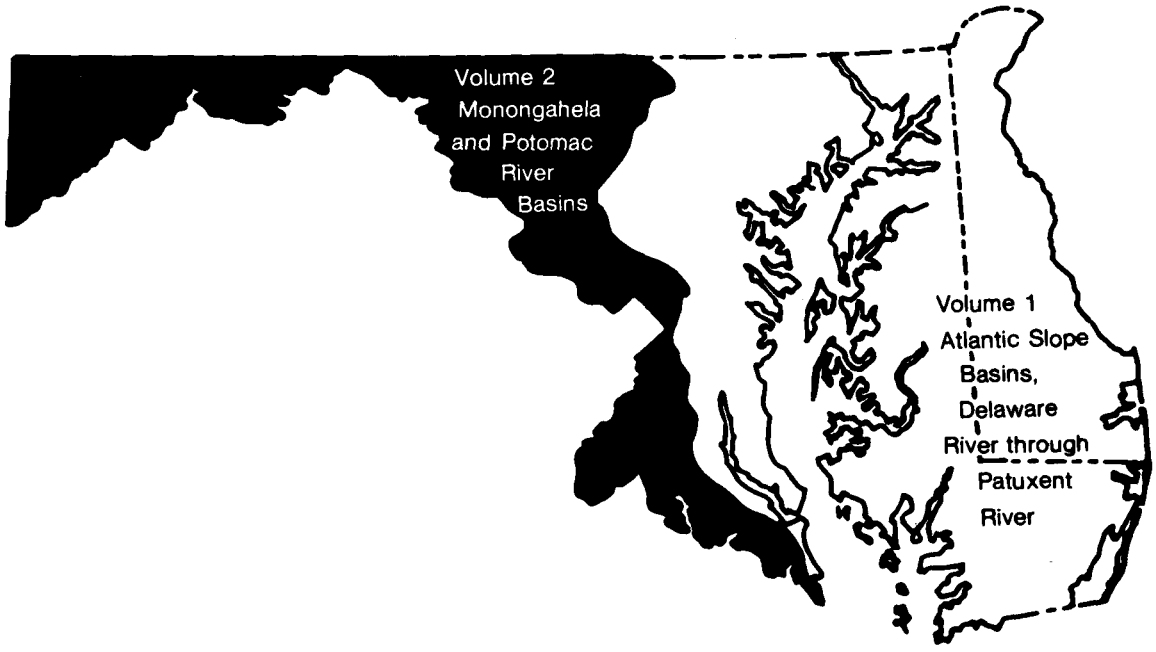
Water Resources Data Maryland and Delaware Water Year 1989

Volume 2. Monongahela and Potomac River Basins

by R.W. James, Jr., R.H. Simmons, B.F. Strain, and M.J. Smigaj



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MD-DE-89-2
Prepared in cooperation with the States of Maryland and Delaware
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

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Towson, Maryland 21204

1989

PREFACE

This volume of the annual hydrologic data report of Maryland and Delaware 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 the Trust Territories. These records of streamflow, ground-water levels, and quality of water 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. In addition to the authors, who 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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D. A. Bringman	J. L. Griffith	M. S. Martin
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M. R. Danner	J. F. Hornlein	R. J. Sexton
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This report was prepared under the general supervision of H. J. Freiberger, District Chief, Mid-Atlantic District, and S. P. Sauer, Regional Hydrologist, Northeastern Region, and in cooperation with the States of Maryland and Delaware and with other agencies.

50272 - 101

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD/90/280	2.	3. Recipient's Accession No.

4. Title and Subtitle

Water Resources Data - Maryland and Delaware, Water Year 1989
Volume 2. Monogahela and Potomac River Basins

5. Report Date
APRIL 1990

6.

7. Author(s)
R. W. James, Jr., R. H. Simmons, B. F. Strain, M. J. Smigaj

8. Performing Organization Rept. No.
USGS-WDR-MD-DE-89-2

9. Performing Organization Name and Address

U.S. Geological Survey, Water Resources Division
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10. Project/Task/Work/Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address

U.S. Geological Survey, Water Resources Division
208 Carroll Building
8600 LaSalle Road
Towson, Maryland 21204

13. Type of Report & Period Covered
Annual - Oct. 1, 1988 to Sept. 30, 1989

14.

15. Supplementary Notes

Prepared in cooperation with the states of Maryland and Delaware and with other agencies.

16. Abstract (Limit: 200 words)

Water resources data for the 1989 water year for Maryland and Delaware consist of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality and ground-water wells. This volume contains records for water discharge at 44 gaging stations; stage and contents at 1 reservoir; water quality at 10 gaging stations and 14 wells; and water levels at 78 observation wells. Also included are data for 3 crest-stage, partial-record stations. Additional water data were collected at various sites not involved in the systematic cata-collection program and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Maryland and Delaware.

17. Document Analysis a. Descriptors

*Maryland, *Delaware, *District of Columbia, * Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water anlyses.

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement: No restriction on distribution. This report may be purchased from: National Technical Information Service Springfield, VA 22161	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 225
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GROUND-WATER LEVELS

GROUND-WATER LEVELS--CONTINUED Page

QUALITY OF GROUND WATER

[Letter after station name designates type of data: (d) discharge, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (e) elevation and contents]

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WATER RESOURCES DATA - MARYLAND AND DELAWARE, 1989

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 Maryland and Delaware 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 - Maryland and Delaware."

This report series includes records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 44 gaging stations; stage and contents at 1 reservoir; water quality at 10 gaging stations and 4 wells; and water levels at 78 observation wells. Also included are data for 3 crest-stage partial-record stations. Locations of these sites are shown on figures 3, 4, and 5. Additional water data were collected at various sites not involved in the systematic data-collection program. 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 Maryland and Delaware.

This series of annual reports for Maryland and Delaware 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 Maryland and Delaware 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 Books and Open-File Reports Section, 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 MD-DE-89-2." 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 (301) 828-1535.

COOPERATION

The U.S. Geological Survey and agencies of the State of Maryland have had cooperative agreements for the collection of water-resource records from 1896 to 1909 and since 1924. Similar cooperative agreements have been had between the Survey and agencies of the State of Delaware since 1943. Organizations that assisted in collecting the data in this report through cooperative agreements with the Survey are:

Maryland Geological Survey, K. N. Weaver, director.

Delaware Geological Survey, R. R. Jordan, State geologist.

Maryland State Highway Adminstration, M. S. Caltrider, adminstrator.

Maryland Department of Environment; Toxics, Environmental Science and Health, Dr. Max Eisenberg, assistant secretary.

District of Columbia Department of Public Works, William B. Johnson, director.

Assistance with funds or services was given by the U.S. Army Corps of Engineers for collecting records at 17 gaging stations and 4 water-quality stations throughout Maryland and Delaware.

The following organizations aided in collecting records:

Delaware: State Department of Natural Resources and Environmental Control, and Water Resources Agency for New Castle County.

Maryland: Maryland Water Resources Administration, Washington Suburban Sanitary Commission, Upper Potomac River Commission, Baltimore City, Baltimore County.

Organizations that provided data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Streamflow at the start of the 1989 water year was in the normal range throughout most of the bi-State except for western Maryland where flows were in the excessive range (upper 25 percent of the record) following above-normal rainfall (1 to 2 inches) during September 1988. During October 1988, flows in western Maryland dropped into the normal range following below-normal rainfall (1 to 2 inches). From October 1988 through February 1989, flows throughout most of the bi-state area remained in the normal range. Flows in south-central and southern Maryland were in the deficient range (lower 25 percent of the record) during this period and through April. During March, flows on the Eastern shore of Maryland became excessive following above-normal rainfall, averaging 1 to 3 inches. Flow conditions changed little during April, but in May, flows throughout the entire bi-state area were in the excessive range. Above-normal rains averaging 3 to 6 inches kept flows in the excessive range for the remainder of the year for most of the bi-state area. Only in central Maryland did flows return to the normal range for July through September. Rainfall in this area averaged 1 to 2 inches below normal.

During the 1989 water year, three of the four index stations (Potomac River near Washington, D.C. and Seneca Creek at Dawsonville on the Eastern Shore in central Maryland and North Branch Potomac River at Paw Paw, W. Va., in western Maryland) were in the normal range. The Choptank River at Greensboro on the Eastern Shore of Maryland had excessive runoff for the year (157 percent of normal; reference period 1951-80). The yearly average runoff of 198 ft^3/s was the fifth highest since records began in 1949. Several new extremes were set during May. At the Potomac River near Washington, D. C., index site, a record monthly mean was set. At the Seneca Creek at Dawsonville, index site, a record monthly mean and a maximum daily discharge were recorded. At the Choptank River at Greensboro index site, a record monthly mean and a maximum daily discharge were recorded. The new monthly record discharge is 1.5 times greater than that set in 1958. A new record monthly mean was also recorded for June (1972, previous record).

Monthly and annual mean discharges are compared with long-term averages (reference period 1951-80) for two representative streamflow gaging stations in figure 1. Data for the station, Potomac River at Point of Rocks in central Maryland, reflect runoff conditions in the Potomac River basin, excluding the Coastal Plain. Data for the station, Choptank River at Greensboro on the Eastern Shore of Maryland, reflect runoff from a 113 mi^2 area, of which 21.6 mi^2 is in Delaware in the central part of the Delmarva peninsula.

Average freshwater inflow to the Chesapeake Bay was estimated to be 76,400 ft^3/s, on the basis of flows of the James, Potomac, and Susquehanna Rivers. This is 101 percent of the long-term average during the reference period 1951-89. Flows for the first 7 months averaged 40 percent below normal. For the remaining 5 months, flows averaged 90 percent above normal. A new record monthly high was set for May that was 23 percent greater than the previous high set in 1978. The monthly high for July was the second highest of record and was 36 percent lower than the record high of 1972.

The combined storage in the three major water-supply reservoirs in the Baltimore City Municipal System (combined usable capacity of 85,340 million gallons) increased from 80 percent of capacity in September 1988, to 93 percent of capacity at the end of September 1989.

Ground-Water Levels

Water levels were slightly below normal at the beginning of the 1989 water year and rose to above normal by January. This was in direct response to the above-average precipitation which, began in the winter and continued throughout the water year. A detailed explanation is given below for the water-level conditions for each physiographic province:

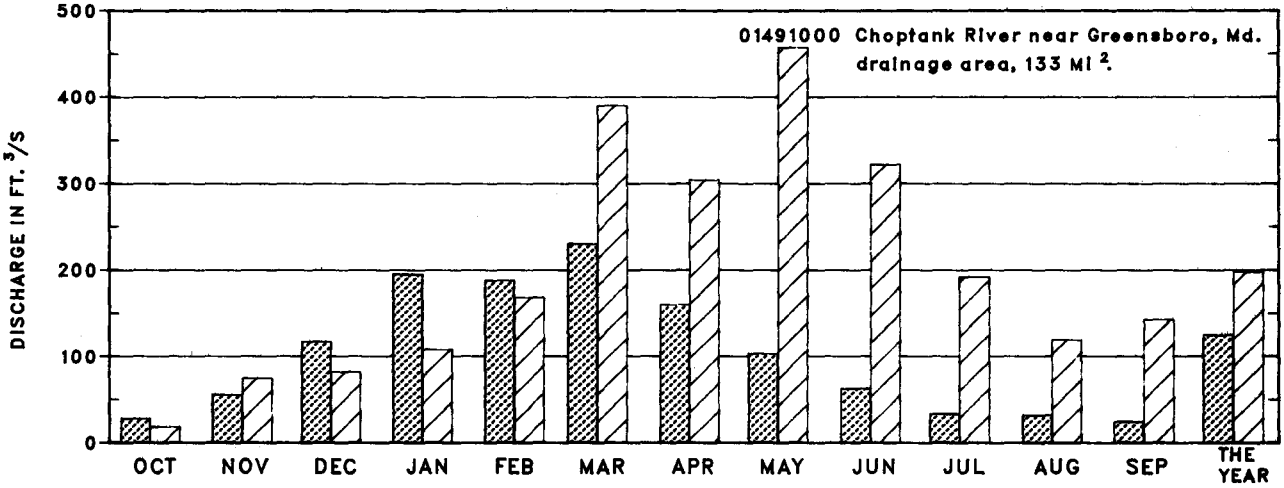
Appalachian Plateau.--Water levels were normal to slightly above normal at the start of the water year. No record water levels were measured during the year, but levels were above normal throughout most of the water year.

Valley and Ridge.--Water levels were normal to above normal at the start of the water year, followed by a rise in water level through May. Levels then declined throughout the summer but rose to above normal at the end of the water year. No record water levels were recorded.

Blue Ridge.--Water levels were above normal at the start of the water year, with levels increasing through May, when a record high level was recorded in well FR Bd 96. Water levels were above normal throughout the entire water year.

Piedmont.--As the water year started, water levels were above normal throughout Maryland and Delaware. Water levels peaked in May and began dropping during the summer months, but finished the water year above normal. Two artesian wells located in the New Oxford Formation had record water levels. A record high level occurred at well MO Db 68 on May 12, 1989 near the National Institute of Health Animal Center. Well MO Dc 72, which flowed from December 4, 1985 through June 3, 1986, measured 92.46 feet below land surface on August 8, 1989. This decrease water level may be attributable to an increase in ground-water withdrawals at Poolesville, Maryland. A well in Hampstead, Maryland (CL Bf 1) had a record high water level.

Coastal Plain.--Water levels started at normal levels at the beginning of the water year and then dropped slightly, only to rise sharply in December, and then peaking in the months of May and June, with a slight drop near the end of the water year. Two water-table wells in northern Anne Arundel County had record high water levels. The following areas in Maryland with artesian aquifers experienced record low water levels, probably due to increased ground-water withdrawal: Elkton (Potomac), Kent Island (Aquia), Lexington Park (Aquia), nothern Ocean City (Manokin), Prince Frederick (Aquia), and Solomons Island (Aquia).



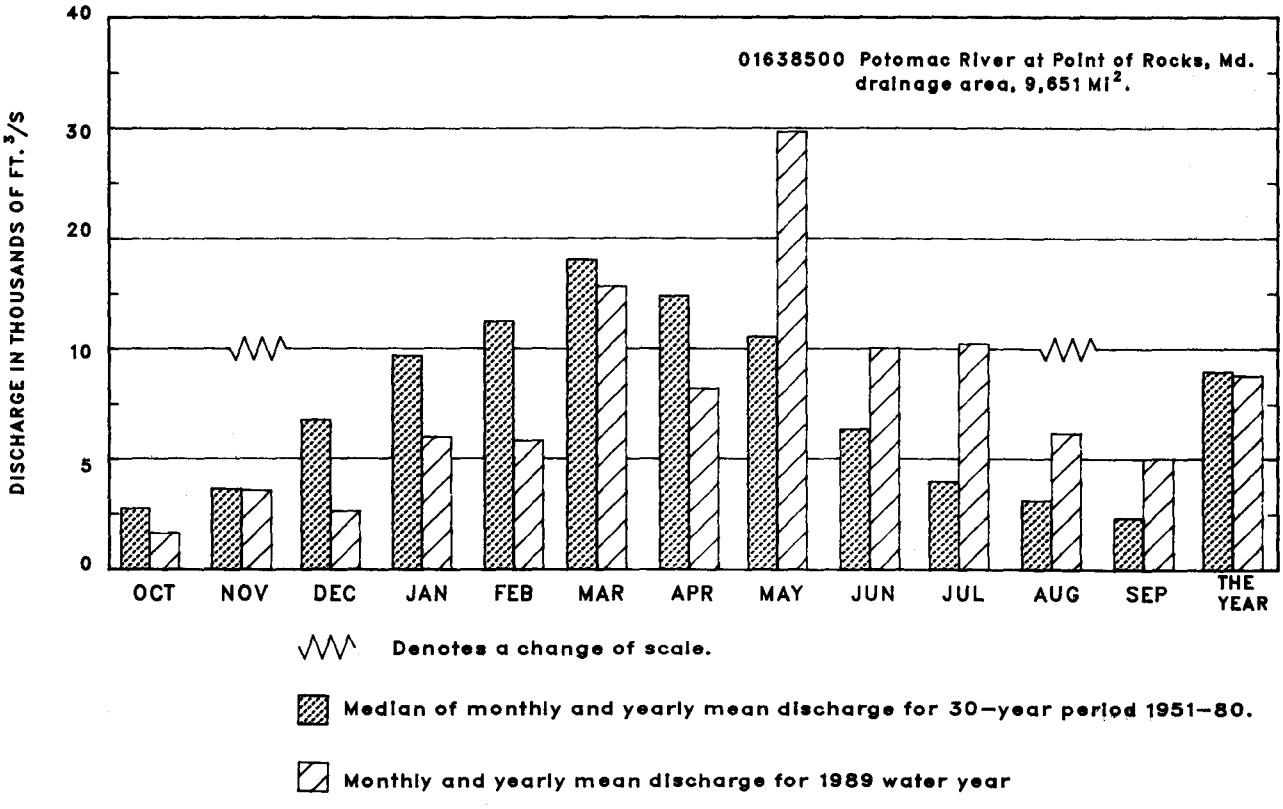


FIGURE 1. COMPARISON OF DISCHARGE AT TWO LONG—TERM REPRESENTATIVE GAGING STATIONS DURING THE 1989 WATER YEAR WITH MEDIAN DISCHARGE FOR INDICATED PERIOD.

SPECIAL NETWORKS AND PROGRAMS

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.

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 1988 water year that began October 1, 1986, and ended September 30, 1988. 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 3 and 4. 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 Maryland and Delaware, 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 indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention 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 01477800, which appears just to the left of the station name, includes the two-digit Part number "01" plus the six-digit downstream-order number "477800." The Part number designates the major river basin; for example, Part "01" is the North Atlantic slope basin.

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 2 below.)

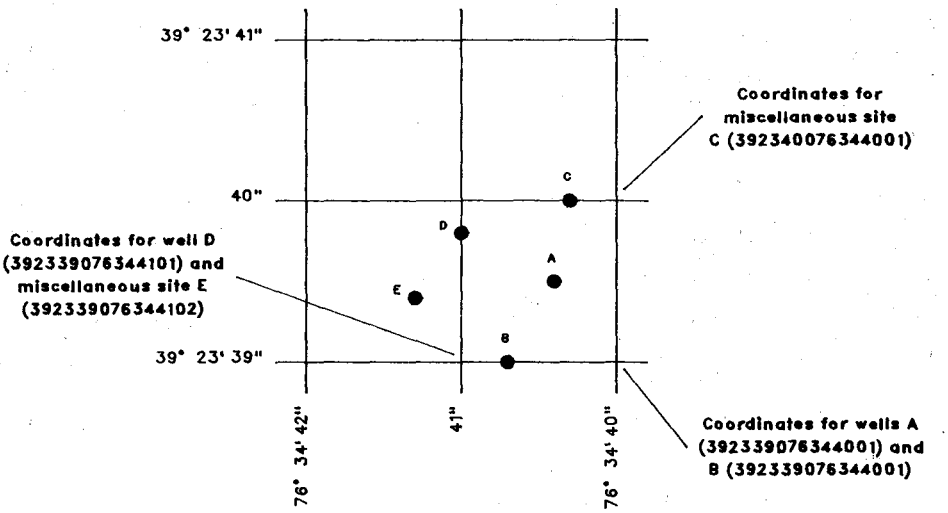


Figure 2. System for numbering wells and miscellaneous sites (latitude and longitude)

Wells in Maryland are also identified on the basis of a second numbering system established by the Maryland Geological Survey. The first two letters of the well number are the county prefix (for example, AL for Allegany). The second part of the well number consists of two letters that designate a 5-minute quadrangle within the county; the first letter (a capital letter) denotes a 5-minute segment of latitude and the second letter (lower case) denotes a 5-minute segment of longitude. The wells are numbered sequentially within each 5-minute quadrangle. For example, well AL Ah 1 is the first well inventoried within the Ah 5-minute quadrangle in Allegany County. Baltimore City well numbers are based on 1-mile grids, with reference to the Washington Monument as the center. Thus, well 7S4E-1 is in grid cell 7 miles south and 4 miles east of the Washington Monument and is the first well inventoried in that grid cell. Wells in Delaware are identified by a numbering system instituted by the Delaware Geological Survey. The State is divided into 5-minute quadrangles of latitude and longitude. The quadrangles are lettered north to south with capital letters. Each 5-minute quadrangle is further subdivided into 25 1-minute blocks which are numbered from north to south from 1 to 5 and are numbered from west to east from 1 to 5. Wells within these 1-minute blocks are assigned numbers in the sequence in which they are inventoried. The identity of a well is established by prefixing the sequence number with an upper and lower case letter followed by two numbers to designate the 5-minute and 1-minute blocks, respectively, in which the well is located. For example, well number Cb41-03 is the third well to be scheduled in the 1-minute block 41 that has coordinate "Cb41".

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 3 and 4.

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.

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 offices whose addresses are given on the back of the title page of this report 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 footnote, "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^3/s; to the nearest tenth between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures for more than 1,000 ft^3/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 Maryland and Delaware offices of the Mid-Atlantic District. 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 offices whose addresses are given on the back of the title page of this report.

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 3.

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. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey Maryland and Delaware offices.

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.

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 Geological Survey Maryland 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 Maryland and Delaware Offices.

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. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey Laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

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.

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:

PRINTED OUTPUT	REMARK
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

Water-level data from the Maryland and Delaware Observation-Well Networks and observation wells from 13 ground-water projects are reported. These data are intended to provide historical water-level information for ground-water management and identify ground-water conditions in project areas. The observation well networks were established to observe ground-water level fluctuations through time and to identify areas of man-induced stress on the ground-water flow system. The locations of these observation wells in Maryland and Delaware are shown in figure 4. The locations of project wells are shown in figure 5.

Data Collection and Computation

Measurements of water levels are made in many types of water wells under various conditions. These methods of measurement are standardized to incorporate continuous precision. The equipment and measuring techniques used at each observation well ensures that the measurements at each well are of consistent accuracy and reliability.

The water-level data tables and hydrographs are presented in alphabetical order by counties. The primary identification number is the state well number that appears in the upper left hand corner (see Latitude-Longitude System section on page 5). The secondary identification number is the 15-digit number.

Water levels are measured manually by steel tape or by an electric sensing device approximately every 4 to 6 weeks; some wells are equipped with contiuous graph or punch tape water-level recorders to observe daily fluctuations. The water levels are reported to the nearest hundreth of a foot above or below land-surface datum (lsd) or sea level. Land-surface datum is a datum plane that is approximately at land surface at each well. The elevation of the land-surface datum and the height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels for wells equipped with graphic or digital recorders report the daily maximum and minimum values.

Data Presentation

A description of each observation well precedes the water-level tables and hydrographs. The following information is given in the description:

WELL NUMBER.--(See Latitude -Longitude System section on page 5.)

SITE ID.--A 15-digit number: the first 6 digits are the latitude, the next 7 digits are the longitude, and the last 2 digits refer to the sequence number for identifying one or more wells at a particular latitude and longitude. The Site ID is the best location at the time of inventory. The actual latitude and longitude may be slightly different as a result of more up-to-date knowledge of location. The Site ID is basically used as an identification number and not an exact location.

PERMIT NUMBER.--The permit number is the state permit number required for drilling wells in Maryland. Upon completion of the well, the driller must submit a completion report which documents specific data on the construction of the well.

LOCATION.--The location is the latitude and longitude in the appropriate designation of degrees, minutes, and seconds. The hydrologic unit is a code for the river basin where the well is located (U.S. Geological Survey, 1974: Hydrologic Unit Map). Also a brief local description of the location is given along with the well-owner's name.

AQUIFER.--The aquifer is the geologic formation from which the well receives its water supply. Each aquifer is identified by its geologic age and its U. S. Geological Survey data base system code.

WELL CHARACTERISTICS.--This describes the type of well, the physical characteristics of the well, and the known construction information.

INSTRUMENTATION.--This provides information on the frequency of measurement of water levels and the equipment used.

DATUM.--This lists the altitude of land surface above sea level at the well to the nearest 10 feet as determined from a 7-1/2 minute quadrangle topographic map, or to the nearest hundreth of a foot as determined from surveying. The measuring point (MP) is the distance above or below the land-surface datum of the point at which the measurements are made.

REMARKS.--This section gives important miscellaneous data relevant to the well site.

PERIOD OF RECORD.--The period of record lists the beginning and ending month and year of water-level record or "current year" if the records are to be continued into the following year.

EXTREMES FOR PERIOD OF RECORD.--The extremes for period identify the date or dates of highest and lowest water-level measurements.

A table of water levels follows the station description for each well. Water levels are reported in feet above or below land-surface datum or sea level, with all taped measurements of water levels listed. Wells equipped with graphic or digital recorders report a daily maximum and minimum value, as well as monthly maximum and minimum values. A 5-year hydrograph follows each water-level table.

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 at the end of the introductory text. 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

DEFINITION OF TERMS

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

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

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

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

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary 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 (g/m^3), and periphyton and benthic organisms in grams per square mile (g/m^2).

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

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

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

Bottom material: See Bed material.

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

Cubic-foot-per-second day 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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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).

Organism is any living entity.

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

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

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

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

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

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

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

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

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

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

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

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

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{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 [mg C/(m^2.time)] for periphyton and macrophytes and [mg C/(m^3.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O_2/(m^2.time)] for periphyton and macrophytes and [mg O_2/(m^3.time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

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

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

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

Runoff in inches (IN., in.) 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 as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027.

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

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

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

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

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

Solute is any substance that is dissolved in water.

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

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1985, is called the "1985 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 abbreviaton for "Water-Supply Paper" in reference to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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

The reports listed below are for sale by the U.S. Geological Survey, 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. 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 measurements, and data presentation**, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

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

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

2-D2. **Application of seismic-refraction techniques to hydrologic studies**, by F. P. Haeni: USGS--TWRI Book 2, Chapter d2. 1988. 86 pages.

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

2-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 Dividian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

3-A7. **Stage measurements at gaging stations**, 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 and dispersion 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**, 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. Rathbun, N. Yotsukura, G. W. Parker, and L. L. Delong: USGS-TWRI Book 3, Chapter 18A. 1989. 52 pages.

3-B1. **Aquifer-test design, observation, and data analysis**, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pges.

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.

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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-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 of 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 determination of organic substances in water** and fluvial sediments, 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.

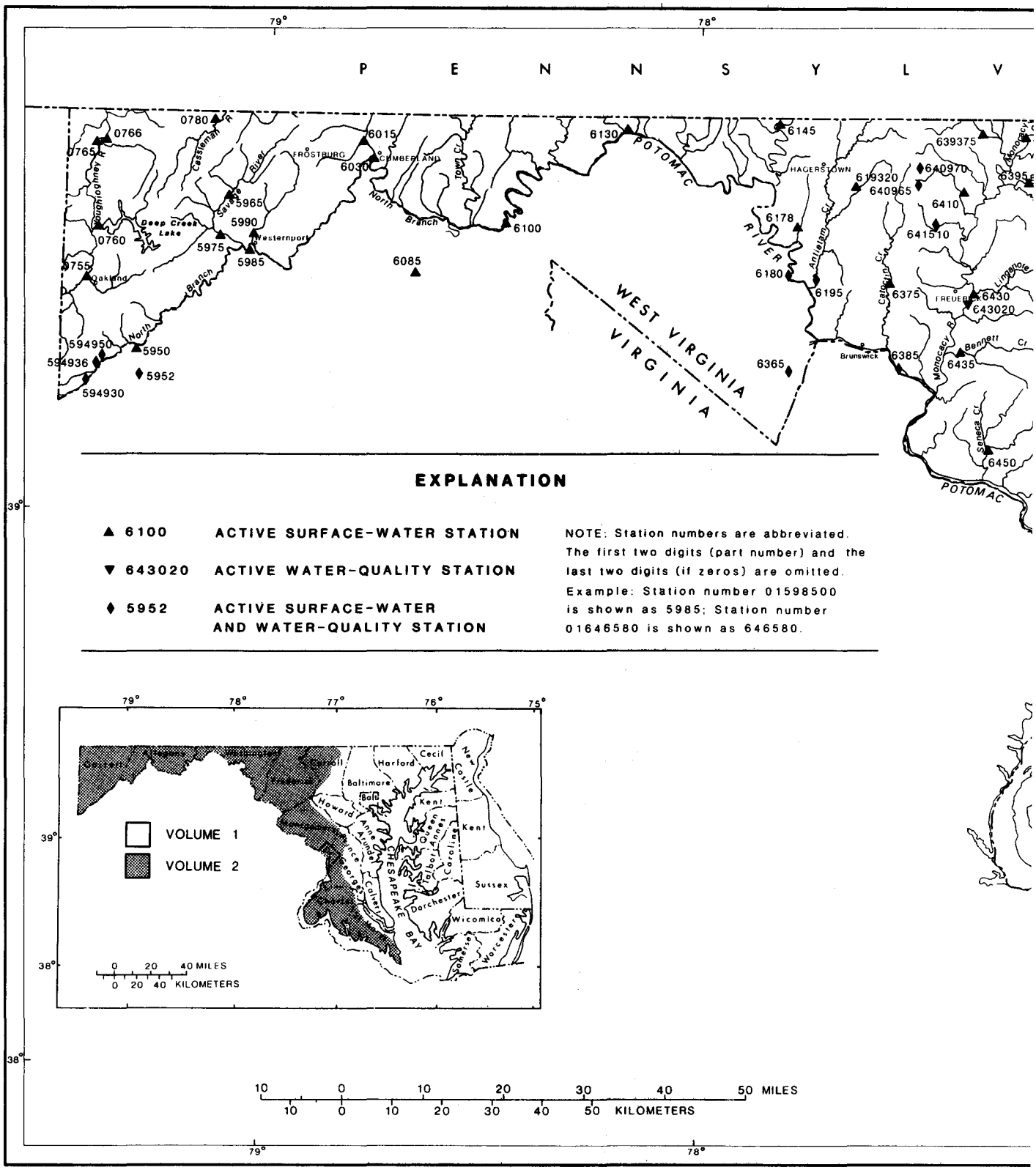
7-C2. **Computer model of two-dimensional solute transport and dispersion in ground water**, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

7-C3. **A model for simulation of flow in singular and interconnected channels**, by R. W. Schaffrannek, 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.

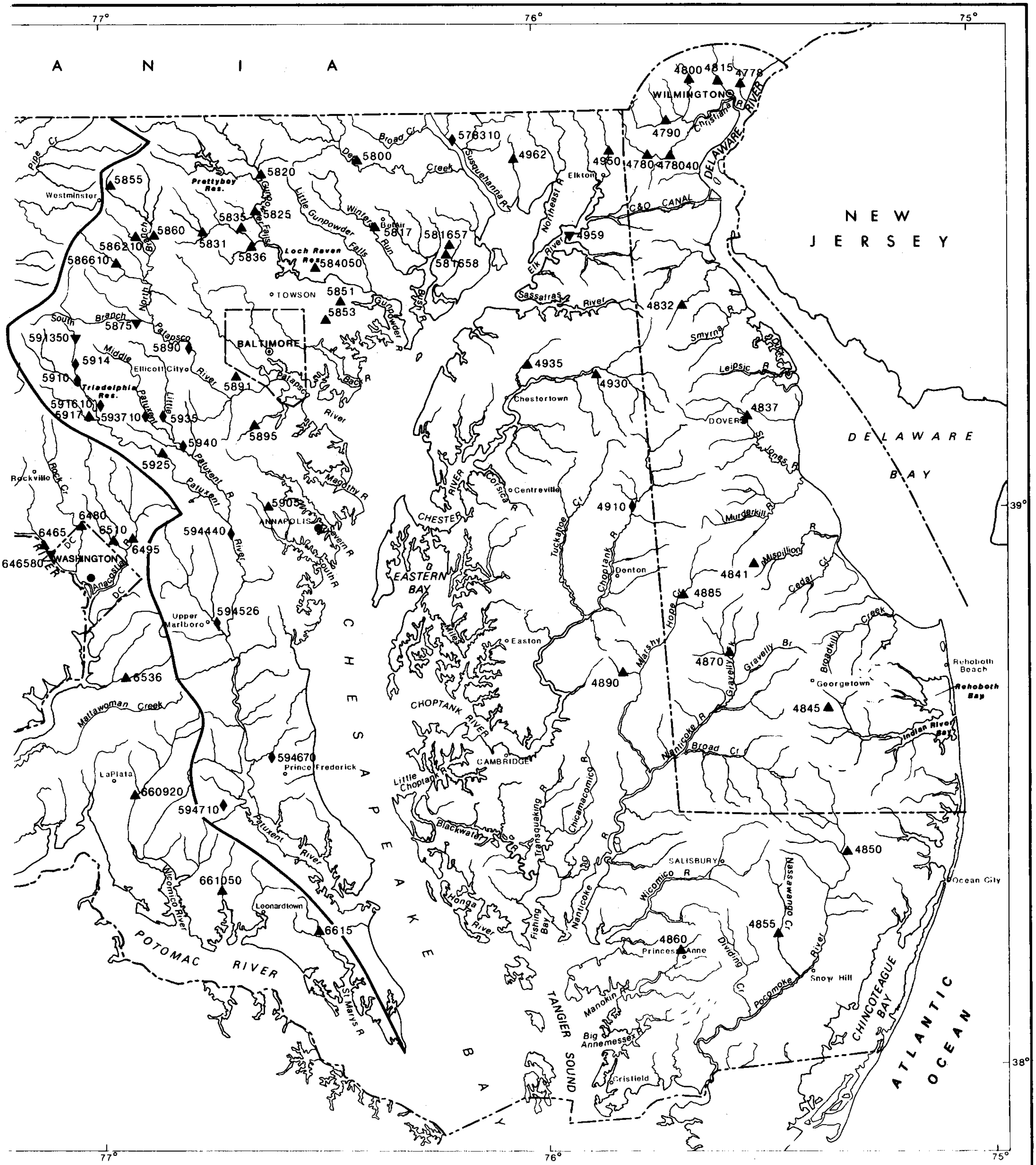
8-A2. **Installation and service manual for U. S. Geological Survey manometers**, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.

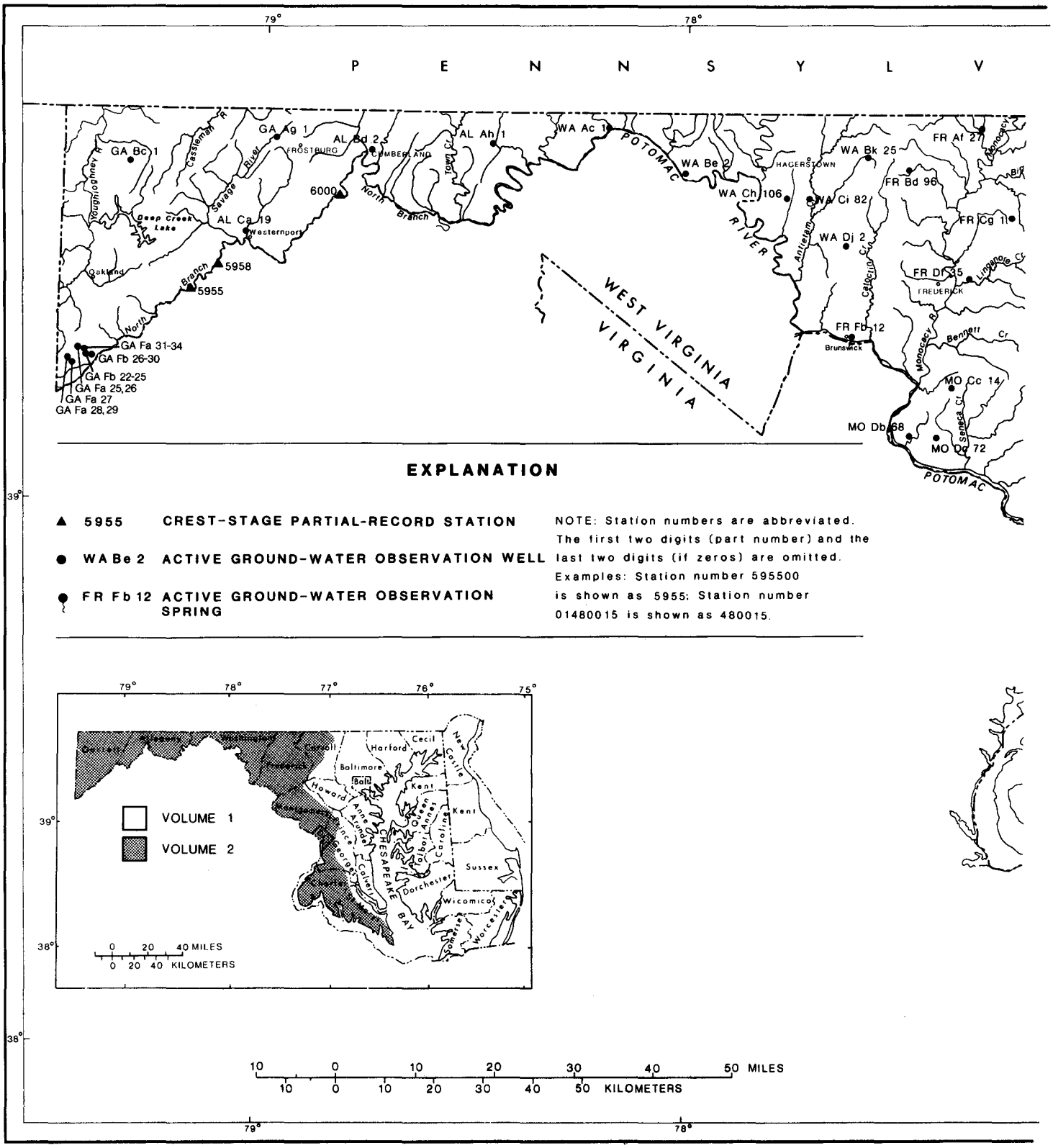
8-B2. **Calibration and maintenance of vertical-axis type current meters**, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.



Base map modified from U.S. Geological Survey 1:500,000

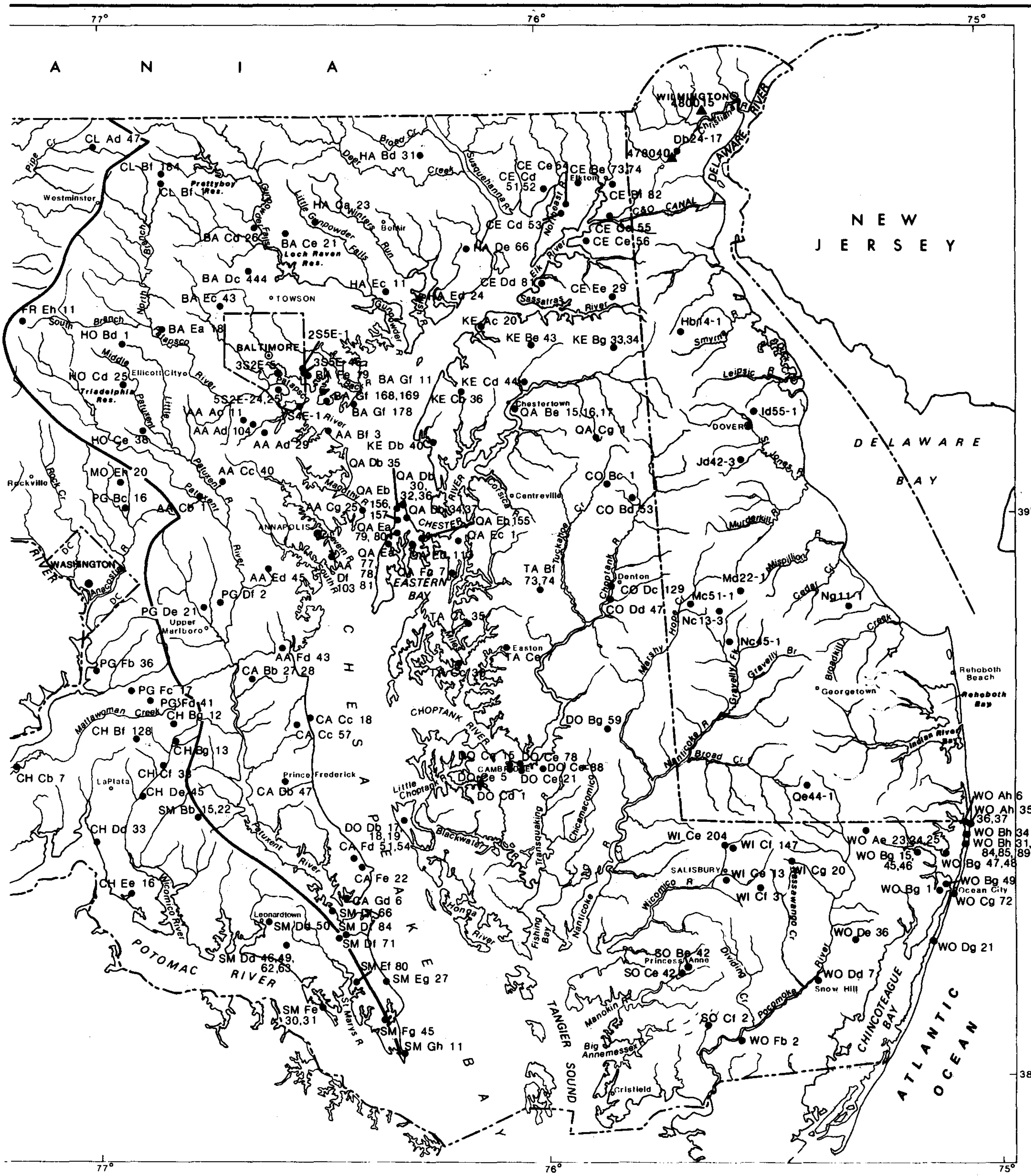
Figure 3. Location of surface-water and water-quality stations in Maryland and Delaware.

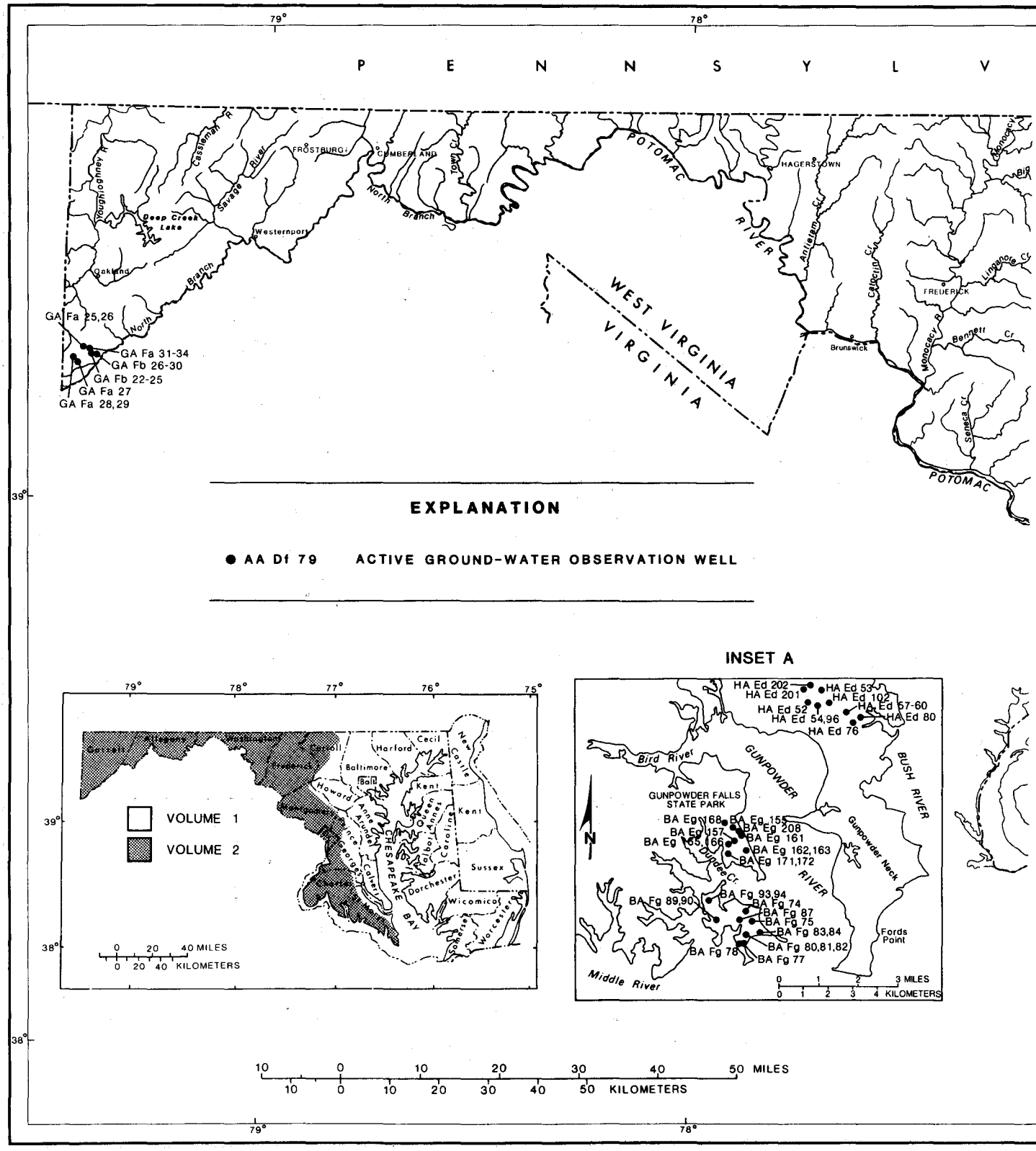

77°
76°
75°
A N I A
NEW JERSEY
DELAWARE BAY
ATLANTIC OCEAN
CHESAPEAKE BAY
TANGIER SOUND
POTOMAC RIVER
CHINCOTEAGUE BAY
WILMINGTON
BALTIMORE
WASHINGTON
ANNAPOLIS
TOWSON
Westminster
Elkton
Chestertown
Centreville
Denton
Easton
CAMBRIDGE
DOVER
Georgetown
Rehoboth Beach
Rehoboth Bay
SALISBURY
Ocean City
Snow Hill
Princess Anne
Crisfield
Rockville
Upper Marlboro
LaPlata
Prince Frederick
Leonardtown
Ellicott City
C&O CANAL
Prettyboy Res.
Loch Raven Res.
Triadelphia Res.
EASTERN BAY
CHOPTANK RIVER
CHESTER RIVER
DELAWARE RIVER
Susquehanna R
Northeast R
Elk River
Sassafras River
Smyrna R
Leipsic R
St. Jones R
Murderkill R
Mispillion R
Cedar Cr
Broadkill R
Indian River
Nanticoke R
Broad Cr
Gravelly Br
Marshy Hope Cr
Tuckahoe Cr
Choptank R
Corsica R
Little Choptank R
Blackwater R
Transquaking R
Chicamacomico R
Honga River
Fishing Bay
Wicomico R
Manokin R
Big Annemessex R
Dividing Cr
Pocomoke River
Nassawango Cr
Patuxent River
Little Patuxent R
Middle River
Patapsco River
South Branch
North Branch
Gunpowder R
Gunpowder Falls
Little Gunpowder Falls
Winters Run
Bel Air
Bush R
Deer Creek
Broad Cr
Back R
Magothy R
Severn R
South R
Rock Cr.
Anacostia R
Mattawoman Creek
Wicomico River
St. Marys R
Pipe Cr
Christina R
4800 4815 4778
4790
4780 478040
4950
4962
578310
5800
5820
5855
5835 5825
5860
58621
5831
5836
586610
5817
581657
581658
584050
5851
5853
5875
591350
5890
5914
5910
591610
5917
593710
5935
5891
5895
5940
5925
6480
6465
6510
6495
646580
594440
5905
594526
6536
594670
660920
594710
661050
6615
4959
4832
4935
4930
4837
4910
4841
4885
4870
4890
4845
4850
4855
4860
39°
38°



Base map modified from U.S. Geological Survey 1:500,000

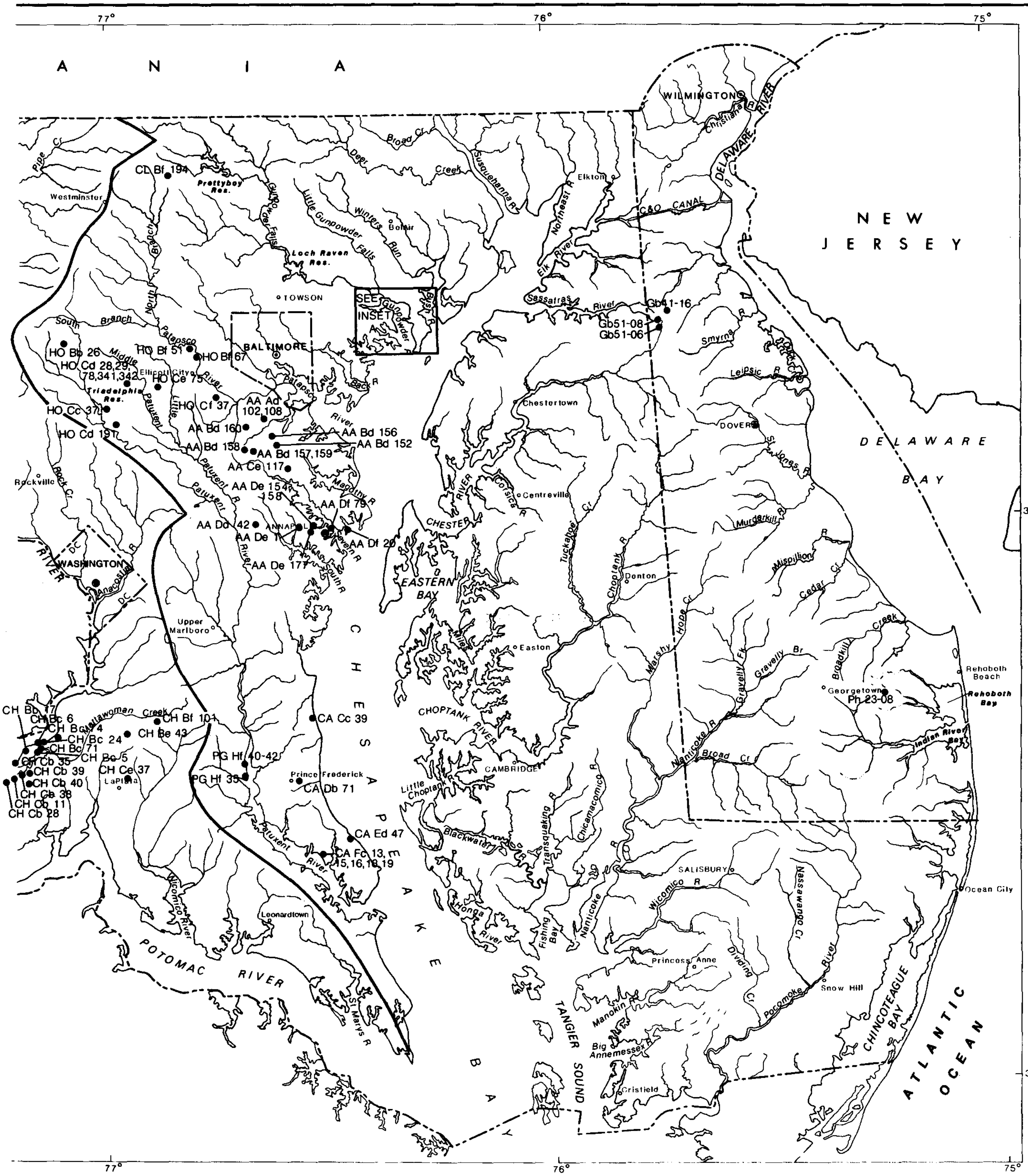
Figure 4. Location of crest-gage partial-record stations and ground-water observation wells in Maryland and Delaware.


77°
76°
75°
39°
38°
A N I A
N E W
J E R S E Y
D E L A W A R E
B A Y
ATLANTIC
OCEAN
CHINCOTEAGUE BAY
TANGIER SOUND
POTOMAC RIVER
CHOPTANK RIVER
EASTERN BAY
DELAWARE RIVER
C&D CANAL
WILMINGTON
BALTIMORE
TOWSON
WASHINGTON
ANNAPOLIS
Westminster
Rockville
Ellicott City
Upper Marlboro
Chestertown
Centreville
Denton
Easton
Elkton
Bel Air
DOVER
Georgetown
Rehoboth Beach
Rehoboth Bay
Ocean City
Snow Hill
SALISBURY
Princess Anne
Crisfield
LaPlata
Prince Frederick
Leonardtown
Prettyboy Res.
Loch Raven Res.
Triadelphia Res.
CL Ad 47
CL Bf 184
HA Bd 31
HA Ca 23
HA De 66
HA Ec 11
HA Ed 24
CE Cd 51,52
CE Cd 53
CE Dd 8
CE Ee 29
CE Ce 56
BA Ce 21
BA Dc 444
BA Ec 43
BA Ea 18
BA Gf 11
BA Gf 168,169
BA Gf 178
BA Bf 3
KE Ac 20
KE Be 43
KE Bg 33,34
KE Cd 44
KE Cb 36
KE Db 40
QA Be 15,16,17
QA Cg 1
QA Db 35
QA Eb 156, 157
QA Ec 1
CO Bc 1
CO Bd 53
CO Dc 129
CO Dd 47
TA Bf 73,74
FR Eh 11
HO Bd 1
HO Cd 25
HO Ce 38
MO Eh 20
PG Bc 16
PG De 21
PG Df 2
PG Fb 36
PG Fc 17
AA Ad 11
AA Ad 104
AA Ad 29
AA Cc 40
AA Cg 25
AA Ed 45
AA Fd 43
CA Bb 27,28
CA Cc 18
CA Cc 57
CA Db 47
CA Fe 22
CA Gd 6
CH Bf 128
CH Bg 12
CH Bg 13
CH Cb 7
CH De 45
CH Dd 33
CH Ee 16
SM Bb 15,22
SM Dd 50
SM Df 84
SM Df 71
SM Ef 80
SM Eg 27
SM Fg 45
SM Gh 11
DO Bg 59
DO Db 17, 18,19
DO Cd 1
DO Ce 21
DO Ce 78
DO Ce 88
WI Ce 204
WI Cf 147
WI Cf 3
WI Cg 20
SO Be 42
SO Ce 42
SO Cf 2
WO Ae 23,24,25
WO Ah 6
WO Ah 35, 36,37
WO Bh 34
WO Bh 31, 84,85,89
WO Bg 47,48
WO Bg 49
WO Bg 15, 45,46
WO Cg 72
WO De 36
WO Dd 7
WO Dg 21
WO Fb 2
Db24-17
Hb14-1
Id55-1
Jd42-3
Md22-1
Mc51-1
Nc13-3
Nc45-1
Ng11-1
Qe44-1
478040
480015



Base map modified from U.S. Geological Survey 1:500,000

Figure 5. Location of project ground-water observation wells in Maryland and Delaware.


77°
76°
75°
A N I A
NEW JERSEY
DELAWARE BAY
ATLANTIC OCEAN
CHESAPEAKE BAY
TANGIER SOUND
CHINCOTEAGUE BAY
POTOMAC RIVER
WILMINGTON
DELAWARE RIVER
Elkton
C&O CANAL
BALTIMORE
TOWSON
SEE INSET
WASHINGTON
ANNAPOLIS
CAMBRIDGE
SALISBURY
DOVER
Chestertown
Centreville
Denton
Easton
Georgetown
Rehoboth Beach
Ocean City
Snow Hill
Princess Anne
Crisfield
Leonardtown
Prince Frederick
La Plata
Upper Marlboro
Rockville
Westminster
Bel Air
Ellicott City
Prettyboy Res.
Loch Raven Res.
Triadelphia Res.
CL Bf 194
HO Bb 26
HO Bf 51
HO Bf 67
HO Cd 28,29, 78,341,342
HO Ce 75
HO Cf 37
HO Cc 37
HO Cd 191
AA Ad 102,108
AA Bd 160
AA Bd 158
AA Bd 156
AA Bd 152
AA Bd 157,159
AA Ce 117
AA De 154, 158
AA Df 79
AA Dd 42
AA De 1
AA Df 20
AA De 177
CH Bb 17
CH Bc 6
CH Bc 4
CH Bc 24
CH Bc 71
CH Bc 5
CH Bf 101
CH Be 43
CH Ce 37
CH Cb 35
CH Cb 39
CH Cb 40
CH Cb 38
CH Cb 11
CH Cb 28
PG Hf 40-42
PG Hf 35
CA Cc 39
CA Db 71
CA Ed 47
CA Fc 13, 15,16,18,19
Gb41-16
Gb51-08
Gb51-06
Ph 23-08
EASTERN BAY
CHOPTANK RIVER
Little Choptank
CHESTER RIVER
Patuxent R
Patapsco R
Susquehanna R
Sassafras River
Elk River
Northeast R
Christiana R
Smyrna R
Leipsic R
St Jones R
Murderkill R
Mispillion R
Cedar Cr
Broadkill R
Indian River Bay
Rehoboth Bay
Nanticoke R
Wicomico R
Pocomoke River
Manokin R
Big Annemessex R
Blackwater R
Honga River
Fishing Bay
Transquaking R
Chicamacomico R
Nassawango Cr
Dividing Cr
Marshy Hope Cr
Tuckahoe Cr
Corsica R
Wye R
Magothy R
Severn R
South R
Back R
Gunpowder Falls
Little Gunpowder Falls
Winters Run
Deer Creek
Broad Cr
Pipe Cr
North Branch
South Branch
Middle River
Little Patuxent
Anacostia R
Rock Cr
Mattawoman Creek
Wicomico River
St Marys R
38°
39°

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SURFACE-WATER RECORDS

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

PRINTED OUTPUT	REMARK
E	Estimated
>	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 egual to or greater than 15 percent (dominant).
&	Biological organism estimated as dominant.

NOTE: 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.

NORTH ATLANTIC SLOPE BASINS

POTOMAC RIVER BASIN

01594930 LAUREL RUN AT DOBBIN ROAD NEAR WILSON, MD

LOCATION.--Lat 39°14'37", long 79°25'43", Garrett County, Hydrologic Unit 02070002, on left bank at downstream side of bridge (abandoned) on Dobbin Road, 0.6 mi south of intersection of Kempton Road, 1.2 mi from mouth, and 3.0 mi southwest of Wilson.

DRAINAGE AREA.--8.23 mi^2.

PERIOD OF RECORD.--May 1980 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges (missing record, backwater from debris, ice effect, partially plugged intake), which are fair. Natural flow of stream affected by inflow from deep coal mine dewatering process. Several measurements of water temperature were made during the year. Water-quality records for some prior years have been collected at this location.

AVERAGE DISCHARGE.--9 years, 23.9 ft^3/s, 39.44 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 863 ft^3/s, Nov. 5, 1985, gage height, 10.10 ft, from rating curve extended above 450 ft^3/s on basis of runoff comparisons with nearby stations; minimum discharge, 1.7 ft^3/s, Aug. 17, 18, 1988.

EXTREMES FOR CURRENT YEAR--Peak discharges greater than base discharge of 170 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 15	2015	229	4.23	July 9	1745	179	3.84
Mar. 6	1545	*240	*4.32				

Minimum daily discharge, 2.5 ft^3/s, Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	e5.6	13	18	24	15	35	18	13	14	10	18
2	4.8	e5.3	12	19	21	14	31	38	12	13	8.7	16
3	5.3	e5.1	11	18	30	14	32	32	11	12	7.9	13
4	4.5	e4.9	10	16	43	21	28	26	16	11	7.3	11
5	4.1	e14	9.4	e14	32	78	26	30	19	15	7.2	9.6
6	3.8	29	9.1	18	27	181	23	66	43	11	7.6	8.8
7	e3.8	21	9.0	18	23	88	23	64	25	9.4	6.7	8.4
8	e3.5	18	9.1	54	e18	48	22	48	21	8.2	6.4	8.3
9	e3.0	17	8.5	51	e13	38	24	47	22	51	5.9	7.5
10	e2.5	15	7.9	37	e12	33	24	65	22	38	5.6	6.9
11	e3.4	15	7.5	30	e11	30	21	57	16	23	6.3	6.6
12	e4.7	13	7.3	76	12	28	19	50	15	31	6.7	6.6
13	e5.2	20	e7.0	95	13	25	18	44	15	42	5.7	7.1
14	e4.8	20	e6.8	50	32	23	17	46	20	32	5.4	10
15	4.3	17	e6.6	87	e123	21	16	57	22	26	5.3	18
16	4.3	16	7.2	51	e110	18	15	57	41	26	5.2	16
17	4.4	16	7.1	39	55	16	13	59	62	26	5.0	20
18	6.9	14	7.4	31	39	21	15	44	39	20	6.4	14
19	8.1	18	7.3	26	31	21	22	37	31	32	7.7	12
20	7.1	98	9.2	23	26	25	17	31	42	60	12	10
21	7.3	69	37	19	43	69	16	27	39	33	30	9.4
22	28	39	34	e17	40	43	15	23	32	24	18	9.9
23	e20	29	35	15	33	34	14	23	37	18	64	17
24	e15	23	79	14	27	41	13	23	38	15	35	15
25	e12	19	65	15	23	37	14	19	27	13	23	12
26	e10	16	39	16	22	30	24	20	23	15	17	25
27	e9.0	16	30	29	20	26	22	25	20	17	13	18
28	e8.0	17	27	21	17	23	19	21	30	16	11	15
29	e7.0	15	22	18	---	22	18	18	22	12	16	14
30	e6.5	14	18	27	---	30	16	17	17	10	43	12
31	e6.0	---	16	30	---	39	---	15	---	13	24	---
TOTAL	222.7	638.9	574.4	992	920	1152	612	1147	792	686.6	433.0	375.1
MEAN	7.18	21.3	18.5	32.0	32.9	37.2	20.4	37.0	26.4	22.1	14.0	12.5
MAX	28	98	79	95	123	181	35	66	62	60	64	25
MIN	2.5	4.9	6.6	14	11	14	13	15	11	8.2	5.0	6.6
CFSM	.87	2.59	2.25	3.89	3.99	4.52	2.48	4.50	3.21	2.69	1.70	1.52
IN.	1.01	2.89	2.60	4.48	4.16	5.21	2.77	5.18	3.58	3.10	1.96	1.70

CAL YR 1988 TOTAL 6167.5 MEAN 16.9 MAX 157 MIN 1.7 CFSM 2.05 IN. 27.88
WTR YR 1989 TOTAL 8545.7 MEAN 23.4 MAX 181 MIN 2.5 CFSM 2.84 IN. 38.63

e Estimated

01594936 NORTH FORK SAND RUN NEAR WILSON, MD

LOCATION.--Lat 39°15'36", long 79°24'36", Garrett County, Hydrologic Unit 02070002, on right bank, 0.1 mi northwest of Wilson-Corunna Road, 0.1 mi upstream from mouth and 0.8 mi northwest of Wilson.

DRAINAGE AREA.--1.91 mi^2.

PERIOD OF RECORD.--May 1980 to current year.

GAGE.--Water-stage recorder and steel weir plate. Elevation of gage is 2,515 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good above 0.5 ft^3/s and fair below, except those for estimated daily discharges (ice effect), which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior years have been collected at this location.

AVERAGE DISCHARGE.--9 years, 4.61 ft^3/s, 32.78 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 895 ft^3/s, May 31, 1985, gage height, 10.47 ft, from rating curve extended above 90 ft^3/s on basis of contracted-opening measurement of peak flow; minimum discharge, 0.01 ft^3/s, July 18 and Aug. 9, 1988, gage height, 1.34 ft, result of beaver activity upstream.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 40 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 15	2030	56	3.47	July 13	0845	45	3.32
Mar. 6	0745	*58	*3.50	July 19	2100	53	3.43

Minimum discharge, 0.25 ft^3/s, Oct. 1, gage height, 1.65 ft, result of beaver activity upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	.54	2.4	3.4	4.6	3.0	11	3.6	1.9	2.2	2.4	2.9
2	.53	.56	2.0	3.6	4.0	2.9	8.9	11	1.6	2.0	1.8	2.7
3	.57	.55	1.9	3.5	9.7	2.8	8.1	6.9	1.6	1.8	1.6	2.2
4	.51	.53	1.8	3.2	8.1	4.1	6.7	5.2	2.0	1.9	1.4	1.8
5	.64	3.0	1.6	2.8	5.9	17	6.1	6.8	5.3	2.7	1.3	1.6
6	.41	3.2	1.6	e3.0	5.1	41	5.4	13	10	2.2	1.3	1.4
7	.40	2.1	1.5	3.2	4.3	17	5.1	12	4.4	1.9	1.2	1.3
8	.37	1.8	1.5	14	3.6	12	4.9	10	3.4	1.6	1.0	1.3
9	.37	1.6	1.4	11	3.2	9.6	5.4	9.9	3.8	7.2	.88	1.1
10	.35	1.5	1.3	6.8	3.0	8.9	5.3	13	4.2	7.1	.77	.99
11	.46	1.3	1.2	5.5	2.7	9.5	4.2	12	2.9	3.6	1.0	.92
12	.44	1.3	1.0	20	2.5	9.4	3.7	11	2.6	3.5	1.3	.99
13	.39	2.7	e.95	21	2.3	8.1	3.4	10	2.8	22	.93	1.2
14	.35	2.6	e.90	12	7.8	7.8	3.1	11	2.9	9.3	.75	1.4
15	.33	1.9	e.85	20	29	7.1	3.0	12	3.5	6.3	.84	1.9
16	.42	1.6	e.90	12	23	5.7	2.7	12	7.0	6.7	.80	2.9
17	.42	1.6	e.95	8.1	12	4.8	2.4	13	11	6.5	.69	3.3
18	.59	1.4	1.0	6.3	8.5	6.2	2.9	10	5.7	4.4	1.5	2.1
19	.65	2.2	1.0	5.3	6.4	6.0	5.0	7.7	4.8	10	1.8	1.6
20	.56	20	1.4	4.6	5.4	7.4	3.8	6.2	7.8	12	1.5	1.4
21	.63	13	7.2	3.9	11	17	3.3	5.1	7.4	5.7	2.8	1.2
22	2.9	7.1	5.5	3.5	9.1	11	3.1	4.1	5.0	4.4	2.3	1.5
23	2.4	5.0	6.3	3.2	6.6	9.1	2.7	4.0	6.0	3.5	6.7	3.2
24	2.2	4.2	20	3.0	5.3	12	2.4	4.1	5.9	3.0	3.6	2.9
25	1.6	3.3	15	3.0	4.5	11	2.7	3.4	4.2	2.8	2.6	2.0
26	1.1	2.8	8.2	3.7	4.2	8.7	3.0	3.2	3.5	2.5	2.2	5.1
27	.88	2.8	6.0	7.5	3.8	6.9	2.6	3.6	3.2	2.6	1.9	3.3
28	.78	3.1	5.3	4.6	3.3	5.8	2.3	2.9	4.6	2.5	1.7	2.5
29	.68	2.8	4.7	3.8	---	5.2	2.4	2.5	3.1	2.0	2.8	2.2
30	.61	2.5	3.8	6.5	---	8.1	2.3	2.3	2.5	1.8	7.6	2.3
31	.54	---	3.4	5.8	---	14	---	2.1	---	3.1	3.6	---
TOTAL	23.64	98.58	112.55	217.8	198.9	299.1	127.9	233.6	134.6	148.8	62.56	61.20
MEAN	.76	3.29	3.63	7.03	7.10	9.65	4.26	7.54	4.49	4.80	2.02	2.04
MAX	2.9	20	20	21	29	41	11	13	11	22	7.6	5.1
MIN	.33	.53	.85	2.8	2.3	2.8	2.3	2.1	1.6	1.6	.69	.92
CFSM	.40	1.72	1.90	3.68	3.72	5.05	2.23	3.95	2.35	2.51	1.06	1.07
IN.	.46	1.92	2.19	4.24	3.87	5.83	2.49	4.55	2.62	2.90	1.22	1.19

CAL YR 1988 TOTAL 1280.91 MEAN 3.50 MAX 39 MIN .11 CFSM 1.83 IN. 24.95
WTR YR 1989 TOTAL 1719.23 MEAN 4.71 MAX 41 MIN .33 CFSM 2.47 IN. 33.48

e Estimated

01594950 MCMILLAN FORK NEAR FORT PENDLETON, MD

LOCATION.--Lat 39°16'36", long 79°23'26", Garrett County, Hydrologic Unit 02070002, on left bank upstream side of culvert on private driveway off Wilson-Corona Road, 1.7 mi southwest of Fort Pendleton, 1.0 mi south of Bayard, WV, and 200 ft upstream from mouth.

DRAINAGE AREA.--2.30 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1986 to September 1988.

GAGE.--Water-stage recorder and sacrete bag control. Elevation of gage is 2,441.94 ft above National Geodetic Vertical Datum of 1929 (Garrett County bench mark).

REMARKS.--Water-discharge records good except those for estimated daily discharges (ice effect, missing record, partially plugged intakes, backwater from beaver dams), which are fair. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 93 ft^3/s, July 13, 1989, gage height, 3.18 ft; minimum discharge, 0.09 ft^3/s, Aug. 4, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 20	1015	40	2.22	Mar. 5	1430	45	2.34
Dec. 24	1515	46	2.37	Mar. 6	1100	79	3.04
Jan. 12	2245	49	2.45	July 13	0745	*93	*3.18
Feb. 15	1830	58	2.67	July 19	2100	68	2.90

Minimum discharge, 0.29 ft^3/s, Oct. 17, gage height, 0.25 ft; may have been lower during period of no gage-height record.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.46	.50	e2.2	4.6	5.6	4.0	9.2	e5.0	2.4	2.4	2.8	3.7
2	e.43	.57	e1.9	4.6	5.2	4.8	7.8	11	2.2	2.1	2.2	3.3
3	e.47	e.53	e1.8	4.4	10	3.5	7.2	8.3	2.0	1.9	1.9	2.7
4	e.42	.45	e1.7	4.4	8.7	4.6	6.1	7.0	2.6	2.1	1.6	2.3
5	e.52	3.4	e1.5	5.0	7.4	20	5.5	8.6	5.4	3.0	1.7	2.1
6	e.34	2.9	e1.5	3.8	6.6	49	4.9	13	9.4	2.1	1.8	1.8
7	e.33	1.9	e1.4	3.5	5.7	e23	4.6	13	5.7	1.6	1.3	1.6
8	e.30	1.5	e1.4	14	4.9	e13	4.9	11	4.7	1.3	1.3	1.5
9	e.30	1.4	1.3	12	e4.2	e9.0	5.4	11	5.1	6.4	1.1	1.4
10	e.29	1.3	e1.2	8.6	e3.7	e8.5	5.2	13	4.8	6.4	.98	1.2
11	e.38	1.1	e1.1	7.2	e3.3	e9.0	5.1	13	3.8	4.0	1.4	1.1
12	e.37	1.0	e1.0	25	3.2	e8.8	5.0	12	3.5	3.7	1.5	1.3
13	e.31	2.8	e.90	29	5.3	e7.8	4.6	10	3.6	34	1.2	1.4
14	e.29	2.5	e.85	e16	8.0	e7.4	4.0	11	3.9	15	1.1	1.5
15	e.27	1.9	e.80	e25	31	e7.0	4.0	12	4.3	9.5	1.4	1.7
16	e.34	1.7	e.85	e18	29	e5.8	3.8	13	6.9	9.0	e1.1	2.9
17	e.34	1.7	e.90	e13	16	e5.0	3.5	15	11	8.1	e.87	2.8
18	e.47	1.5	e.95	e9.0	11	e6.2	4.1	11	7.6	6.1	2.7	1.7
19	e.52	2.7	1.0	7.3	8.9	e6.0	6.1	9.3	6.6	15	2.5	1.5
20	.44	23	1.5	6.2	7.4	e8.0	5.2	7.9	9.6	17	2.8	1.3
21	.51	14	7.1	5.1	12	e20	5.1	6.7	9.2	10	3.2	1.2
22	2.9	8.2	5.6	6.8	10	e11	e4.0	5.6	7.3	7.4	2.9	1.4
23	e1.6	6.3	7.2	4.0	8.5	e8.5	e3.8	5.3	7.0	5.7	7.1	2.8
24	e1.3	5.1	23	3.7	7.2	12	e3.5	5.1	6.1	4.6	4.8	2.3
25	e1.0	e3.1	18	3.7	9.3	11	e3.8	4.2	4.9	4.0	3.9	1.8
26	.76	e2.6	11	4.4	5.9	9.0	e6.6	4.1	4.2	3.5	3.3	4.8
27	.66	e2.6	8.3	7.0	5.2	7.8	e6.0	4.2	3.8	3.7	2.8	3.1
28	.67	e2.9	7.6	5.1	5.8	6.8	e5.2	3.5	4.9	3.4	2.4	2.7
29	.65	e2.6	6.2	4.6	---	6.2	e4.9	3.1	3.5	2.7	3.9	2.5
30	.58	e2.4	5.3	7.3	---	8.3	e4.5	2.9	2.8	2.4	7.2	2.3
31	.49	---	4.8	6.3	---	11	---	2.6	---	4.2	4.3	---
TOTAL	18.71	104.15	129.85	278.6	249.0	322.0	153.6	262.4	158.8	202.3	79.05	63.7
MEAN	.60	3.47	4.19	8.99	8.89	10.4	5.12	8.46	5.29	6.53	2.55	2.12
MAX	2.9	23	23	29	31	49	9.2	15	11	34	7.2	4.8
MIN	.27	.45	.80	3.5	3.2	3.5	3.5	2.6	2.0	1.3	.87	1.1
CFSM	.26	1.51	1.82	3.91	3.87	4.52	2.23	3.68	2.30	2.84	1.11	.92
IN.	.30	1.68	2.10	4.51	4.03	5.21	2.48	4.24	2.57	3.27	1.28	1.03

CAL YR 1988 TOTAL 1437.63 MEAN 3.93 MAX 50 MIN .11 CFSM 1.71 IN. 23.25
WTR YR 1989 TOTAL 2022.16 MEAN 5.54 MAX 49 MIN .27 CFSM 2.41 IN. 32.71

e Estimated

01594950 MCMILLAN FORK NEAR FORT PENDLETON, MD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1987 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: November 1986 to current year.
pH: November 1986 to current year.
WATER TEMPERATURE: November 1986 to current year.

INSTRUMENTATION.--Water-quality monitor since November 1986. Digital recorder set for one-hour-interval punches.

REMARKS.--Periods of missing record due to monitor malfunction or probes buried by sediment. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 281 microsiemens, Sept. 4, 1988; minimum, 58 microsiemens, Dec. 1, 2, 1987, Mar. 6, 24, 25, 1988.
pH: Maximum, 7.8 units, Aug. 28, 1988; minimum, 4.9 units, Nov. 21, 22, 1988.
WATER TEMPERATURE: Maximum, 22.0°C, Aug. 18, 1988; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT PERIOD.--
SPECIFIC CONDUCTANCE: Maximum, 205 microsiemens, Oct. 5; 72 microsiemens (minimum recorded), Mar. 6.
pH: Maximum, 7.3 units, Sept. 23, 25, 26; minimum, 4.9 units, Nov. 20, 21.
WATER TEMPERATURE: Maximum, 19.5°C, Aug. 4; minimum, 0.0°C, on many days during winter periods.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	140	137	139	---	---	---	110	108	109	104	102	103
2	164	137	151	---	---	---	111	109	110	105	103	104
3	182	154	168	---	---	---	111	109	110	110	104	107
4	190	169	178	149	142	144	112	109	110	107	104	106
5	205	150	178	155	113	136	113	112	113	107	103	105
6	152	148	149	155	125	137	114	112	113	109	101	103
7	149	148	148	125	119	122	114	113	114	113	107	110
8	148	145	146	124	120	122	114	113	114	116	100	106
9	148	146	147	127	122	124	115	113	114	102	91	94
10	150	147	148	127	121	124	120	115	118	104	96	101
11	150	147	149	123	120	121	122	117	120	104	101	102
12	160	146	153	123	118	121	128	122	126	108	85	101
13	163	157	159	123	107	115	129	120	126	86	81	82
14	168	161	162	126	115	121	121	116	118	89	82	85
15	163	160	161	115	110	113	121	112	115	107	90	98
16	163	160	161	111	108	110	128	121	126	104	96	99
17	163	161	162	110	107	108	128	122	126	102	98	99
18	162	154	158	112	110	111	123	121	122	104	101	103
19	165	151	157	122	104	111	121	120	121	105	102	104
20	167	161	165	---	---	---	121	107	117	108	104	105
21	169	157	166	---	---	---	119	105	114	107	106	106
22	166	146	154	---	---	---	105	89	95	106	103	105
23	---	---	---	88	74	79	94	85	88	106	104	105
24	---	---	---	98	88	93	125	80	96	106	104	105
25	---	---	---	103	97	100	130	81	100	106	104	105
26	---	---	---	105	102	104	85	75	78	106	98	104
27	---	---	---	105	102	104	91	82	86	111	98	105
28	---	---	---	112	105	108	103	91	95	100	96	98
29	---	---	---	112	109	110	107	103	104	106	96	98
30	---	---	---	109	108	109	105	103	104	111	93	101
31	---	---	---	---	---	---	106	104	105	103	94	96
MONTH	---	---	---	---	---	---	130	75	110	116	81	101

01594950 MCMILLAN FORK NEAR FORT PENDLETON, MD--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	95	94	94	83	82	83	83	80	82	---	---	---
2	96	95	95	85	83	84	81	80	81	---	---	---
3	108	93	100	87	83	85	84	81	83	---	---	---
4	104	97	99	100	83	87	88	83	85	---	---	---
5	98	97	98	106	78	93	89	84	87	86	77	80
6	100	97	99	96	72	81	88	84	87	101	86	97
7	103	100	101	94	81	88	90	85	88	96	83	91
8	106	102	104	84	79	82	86	83	85	84	80	81
9	110	91	100	90	84	86	91	85	87	85	81	82
10	93	90	92	98	87	90	87	85	86	108	87	93
11	97	88	92	105	88	93	86	85	86	111	86	96
12	93	88	91	100	87	95	91	86	88	106	99	102
13	94	90	93	100	97	98	91	79	84	114	96	106
14	107	87	97	97	93	95	83	79	81	105	95	98
15	91	82	87	93	87	90	---	---	---	---	---	---
16	97	83	90	88	87	87	---	---	---	---	---	---
17	97	84	88	90	88	88	---	---	---	---	---	---
18	100	93	97	96	87	90	---	---	---	---	---	---
19	104	101	102	91	88	89	---	---	---	---	---	---
20	103	100	101	90	86	88	---	---	---	---	---	---
21	111	86	98	90	83	86	---	---	---	---	---	---
22	86	80	81	83	80	81	---	---	---	---	---	---
23	81	79	80	83	81	82	---	---	---	---	---	---
24	80	79	80	93	83	88	---	---	---	---	---	---
25	81	78	79	83	81	82	---	---	---	---	---	---
26	81	78	80	84	81	83	---	---	---	93	88	91
27	82	80	81	84	82	83	---	---	---	97	88	93
28	82	80	81	83	82	82	---	---	---	95	89	91
29	---	---	---	85	82	83	---	---	---	91	89	90
30	---	---	---	92	86	89	---	---	---	97	90	92
31	---	---	---	96	82	85	---	---	---	99	94	97
MONTH	111	78	92	106	72	87	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	102	94	99	99	95	97	102	96	98	102	99	101
2	---	---	---	100	96	97	100	95	97	102	98	100
3	---	---	---	102	97	99	102	97	99	98	97	98
4	---	---	---	104	101	102	103	98	101	99	97	98
5	---	---	---	110	98	106	105	99	102	99	97	98
6	---	---	---	107	101	103	111	102	106	98	97	98
7	---	---	---	102	100	101	111	105	107	99	96	97
8	---	---	---	103	100	101	109	106	107	100	97	98
9	---	---	---	116	91	101	109	104	106	101	99	100
10	---	---	---	101	86	89	107	104	105	108	100	101
11	---	---	---	92	85	88	107	101	104	104	99	101
12	---	---	---	99	90	95	119	103	114	104	99	103
13	---	---	---	---	---	---	118	112	115	108	103	105
14	---	---	---	---	---	---	114	110	112	108	102	107
15	---	---	---	---	---	---	133	114	127	114	107	110
16	---	---	---	---	---	---	122	115	118	128	105	112
17	---	---	---	---	---	---	118	114	116	121	107	111
18	---	---	---	---	---	---	155	96	122	114	101	104
19	---	---	---	---	---	---	140	107	122	102	100	101
20	122	86	95	---	---	---	147	108	121	103	101	102
21	93	90	91	---	---	---	117	97	106	104	101	102
22	97	92	94	---	---	---	112	102	106	103	97	101
23	---	---	---	---	---	---	117	96	106	123	102	109
24	---	---	---	---	---	---	103	96	100	120	100	107
25	97	93	95	---	---	---	107	103	105	100	96	98
26	97	95	96	---	---	---	109	106	108	110	90	99
27	98	94	96	---	---	---	112	108	110	97	89	92
28	101	89	97	98	94	96	113	109	111	91	89	90
29	99	94	96	97	94	96	125	102	112	91	88	89
30	98	93	95	96	91	93	118	98	105	91	88	89
31	---	---	---	119	86	103	101	97	99	---	---	---
MONTH	---	---	---	---	---	---	155	95	109	128	88	101

01594950 MCMILLAN FORK NEAR FORT PENDELTON, MD--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	6.0	6.0	6.0	6.7	6.6	6.6	6.5	6.5	6.5	5.9	5.8	5.9
2	6.0	5.9	5.9	6.7	6.6	6.6	6.5	6.4	6.4	5.9	5.9	5.9
3	5.9	5.8	5.9	6.6	6.6	6.6	6.5	6.5	6.5	6.0	5.9	6.0
4	5.8	5.8	5.8	6.7	6.6	6.6	6.6	6.5	6.5	6.1	5.9	6.0
5	6.6	5.8	6.1	6.6	5.7	6.2	6.6	6.6	6.6	5.9	5.8	5.8
6	6.6	6.4	6.5	6.0	5.9	5.9	6.6	6.6	6.6	5.9	5.9	5.9
7	6.5	6.3	6.4	6.0	5.9	6.0	6.6	6.6	6.6	5.9	5.9	5.9
8	6.5	6.3	6.4	6.1	6.0	6.0	6.6	6.6	6.6	6.1	5.8	5.9
9	6.5	6.3	6.4	6.1	6.0	6.0	6.7	6.6	6.7	5.9	5.8	5.8
10	6.6	6.4	6.4	6.1	5.9	6.0	6.7	6.6	6.6	5.8	5.7	5.8
11	6.5	6.4	6.4	6.0	5.9	6.0	6.7	6.6	6.7	6.1	5.8	5.9
12	6.7	6.4	6.5	6.0	5.9	6.0	6.6	6.6	6.6	6.1	5.7	5.9
13	6.7	6.6	6.7	6.1	5.7	5.9	6.6	6.5	6.5	5.6	5.6	5.6
14	6.8	6.5	6.7	6.0	5.9	6.0	6.6	6.6	6.6	5.8	5.6	5.7
15	6.8	6.6	6.7	6.0	5.9	5.9	6.7	6.6	6.6	5.8	5.7	5.7
16	6.8	6.6	6.7	5.9	5.9	5.9	6.7	6.6	6.7	5.9	5.7	5.8
17	6.9	6.5	6.7	5.9	5.8	5.8	6.7	6.7	6.7	5.9	5.9	5.9
18	6.9	6.8	6.8	5.8	5.8	5.8	6.7	6.7	6.7	6.1	5.9	6.0
19	6.9	6.8	6.8	5.9	5.4	5.7	6.7	6.7	6.7	6.2	6.0	6.1
20	6.9	6.8	6.9	5.4	4.9	5.0	6.8	6.6	6.7	6.2	6.0	6.1
21	6.9	6.8	6.9	5.7	4.9	5.3	6.6	6.2	6.4	6.2	5.9	6.1
22	6.8	6.2	6.6	6.0	5.7	5.8	6.4	6.2	6.3	6.2	5.8	6.0
23	6.2	6.2	6.2	6.1	6.0	6.0	6.4	6.2	6.3	5.8	5.6	5.7
24	6.3	6.2	6.2	6.2	6.1	6.2	6.2	5.7	6.0	5.7	5.6	5.6
25	6.3	6.2	6.3	6.3	6.2	6.2	5.8	5.7	5.8	5.6	5.6	5.6
26	6.4	6.3	6.4	6.4	6.3	6.3	5.8	5.7	5.7	5.8	5.6	5.6
27	6.5	6.4	6.5	6.4	6.3	6.4	5.8	5.7	5.8	6.1	5.7	5.8
28	6.5	6.5	6.5	6.4	6.3	6.4	5.7	5.6	5.7	5.8	5.6	5.7
29	6.5	6.5	6.5	6.4	6.4	6.4	5.8	5.7	5.7	5.8	5.6	5.7
30	6.6	6.5	6.6	6.5	6.4	6.4	5.9	5.8	5.8	5.7	5.6	5.7
31	6.7	6.6	6.6	---	---	---	5.9	5.8	5.9	5.8	5.7	5.7
MONTH	6.9	5.8	6.5	6.7	4.9	6.1	6.8	5.6	6.4	6.2	5.6	5.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.8	5.7	5.7	6.1	6.0	6.0	5.9	5.9	5.9	---	---	---
2	5.7	5.6	5.7	6.1	6.0	6.0	6.0	5.9	5.9	---	---	---
3	5.7	5.6	5.7	6.0	6.0	6.0	6.0	5.9	6.0	---	---	---
4	5.8	5.7	5.8	6.0	5.9	6.0	6.0	5.9	6.0	---	---	---
5	5.8	5.7	5.7	6.0	6.0	6.0	6.0	5.9	5.9	6.4	6.4	6.4
6	5.7	5.7	5.7	6.1	6.0	6.0	5.9	5.9	5.9	6.4	6.2	6.3
7	5.8	5.7	5.7	6.0	5.9	6.0	6.0	5.9	6.0	6.2	6.1	6.2
8	5.8	5.7	5.7	6.0	5.9	5.9	6.1	6.0	6.0	6.3	6.1	6.2
9	6.2	5.7	5.9	6.0	5.9	5.9	6.1	6.1	6.1	6.4	6.2	6.3
10	6.1	5.9	6.0	6.0	5.9	6.0	6.2	6.1	6.2	6.4	6.2	6.3
11	6.3	5.9	6.0	6.1	6.0	6.0	6.3	6.2	6.3	6.3	5.9	6.1
12	6.0	5.9	5.9	6.1	6.0	6.0	6.3	6.3	6.3	6.2	6.0	6.1
13	5.9	5.8	5.9	6.1	6.0	6.0	6.4	6.3	6.4	6.2	6.0	6.1
14	5.9	5.8	5.9	6.1	6.0	6.0	6.4	6.3	6.4	6.2	6.0	6.1
15	5.9	5.7	5.9	6.2	6.1	6.1	---	---	---	6.2	6.0	6.1
16	5.9	5.7	5.8	6.2	6.0	6.1	---	---	---	6.1	5.8	6.0
17	5.9	5.7	5.8	6.1	6.0	6.0	---	---	---	6.1	5.8	5.9
18	6.0	5.8	5.9	6.0	5.9	6.0	---	---	---	5.9	5.9	5.9
19	5.8	5.6	5.6	6.0	5.9	6.0	---	---	---	6.1	5.9	6.0
20	5.6	5.6	5.6	6.0	6.0	6.0	---	---	---	6.1	6.0	6.1
21	5.6	5.6	5.6	6.0	5.9	6.0	---	---	---	6.4	6.0	6.2
22	5.7	5.6	5.6	6.1	6.0	6.0	---	---	---	6.3	6.1	6.2
23	5.9	5.7	5.8	6.3	6.0	6.1	---	---	---	6.3	6.0	6.1
24	6.0	5.8	5.9	6.4	6.1	6.3	---	---	---	6.7	6.1	6.5
25	6.0	5.9	6.0	6.2	5.9	6.1	---	---	---	6.7	6.3	6.5
26	6.0	6.0	6.0	6.0	5.9	5.9	---	---	---	6.5	6.2	6.3
27	6.1	6.0	6.0	6.1	6.0	6.1	---	---	---	6.4	6.2	6.2
28	6.1	6.0	6.0	6.1	6.1	6.1	---	---	---	6.5	6.2	6.4
29	---	---	---	6.1	6.0	6.1	---	---	---	6.5	6.2	6.3
30	---	---	---	6.1	5.9	6.0	---	---	---	6.4	6.1	6.3
31	---	---	---	6.0	5.8	5.9	---	---	---	6.4	6.1	6.3
MONTH	6.3	5.6	5.8	6.4	5.8	6.0	---	---	---	---	---	---

01594950 MCMILLAN FORK NEAR FORT PENDELTON, MD--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	6.4	6.1	6.3	6.7	6.6	6.7	6.6	6.6	6.6	---	---	---
2	6.4	6.1	6.3	6.9	6.6	6.9	6.7	6.6	6.7	---	---	---
3	6.4	6.1	6.3	7.0	6.8	6.9	6.7	6.6	6.7	---	---	---
4	6.4	6.0	6.2	7.0	6.8	6.9	6.9	6.6	6.8	---	---	---
5	6.4	6.1	6.2	6.9	6.8	6.9	6.9	6.7	6.8	---	---	---
6	6.4	6.1	6.3	7.0	6.8	6.9	6.9	6.8	6.8	---	---	---
7	6.7	6.4	6.6	7.0	6.9	7.0	6.9	6.8	6.9	7.2	7.1	7.1
8	6.8	6.7	6.8	7.0	6.9	7.0	6.9	6.8	6.9	7.2	7.0	7.1
9	7.0	6.8	6.9	7.1	6.7	6.9	7.0	6.9	6.9	7.2	7.1	7.1
10	7.1	6.9	7.0	6.8	6.7	6.8	7.1	6.9	7.0	7.2	7.1	7.1
11	7.1	7.0	7.0	6.9	6.8	6.9	7.0	7.0	7.0	7.1	7.1	7.1
12	7.0	6.5	6.8	7.0	6.9	6.9	7.0	6.9	7.0	7.2	7.1	7.1
13	6.9	6.8	6.8	6.9	6.2	6.3	7.0	6.9	7.0	7.2	7.1	7.2
14	6.9	6.2	6.7	6.6	6.3	6.5	7.0	6.9	6.9	7.2	7.1	7.2
15	6.9	6.4	6.7	6.7	6.6	6.7	7.0	6.9	6.9	7.2	7.1	7.2
16	6.7	5.9	6.3	6.8	6.7	6.7	7.0	6.9	7.0	7.2	7.1	7.1
17	6.1	5.7	6.1	6.7	6.2	6.4	7.1	6.9	7.0	7.2	7.1	7.2
18	6.1	5.7	5.9	6.3	6.1	6.2	7.1	6.9	6.9	7.2	7.2	7.2
19	6.6	6.1	6.4	6.2	6.0	6.1	6.9	6.7	6.9	7.2	7.2	7.2
20	6.6	6.4	6.5	6.6	6.1	6.4	6.8	6.7	6.8	7.2	7.1	7.2
21	6.6	6.5	6.5	6.6	6.5	6.6	6.9	6.8	6.8	7.2	7.1	7.2
22	6.6	6.5	6.5	6.7	6.6	6.6	6.9	6.8	6.8	7.2	7.2	7.2
23	---	---	---	6.7	6.6	6.6	6.9	6.6	6.7	7.3	7.2	7.2
24	---	---	---	6.7	6.6	6.7	6.8	6.6	6.7	7.2	7.2	7.2
25	6.6	6.6	6.6	6.7	6.6	6.7	6.9	6.8	6.9	7.3	7.2	7.2
26	6.6	6.5	6.6	6.7	6.6	6.7	7.0	6.9	6.9	7.3	7.1	7.1
27	6.7	6.6	6.6	6.7	6.5	6.7	7.1	6.9	7.0	7.1	7.1	7.1
28	6.7	6.6	6.6	6.7	6.6	6.6	7.1	7.0	7.1	7.2	7.1	7.1
29	6.7	6.6	6.6	6.7	6.6	6.7	7.1	7.0	7.1	7.2	7.1	7.2
30	6.7	6.6	6.7	6.7	6.7	6.7	---	---	---	7.2	7.1	7.2
31	---	---	---	6.7	6.6	6.6	---	---	---	---	---	---
MONTH	---	---	---	7.1	6.0	6.7	---	---	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	12.0	12.5	4.5	2.0	3.0	3.0	1.5	2.5	3.0	2.0	2.5
2	12.5	12.5	12.5	3.5	2.5	3.0	1.5	1.0	1.5	3.0	3.0	3.0
3	13.0	12.5	13.0	4.0	2.0	3.0	3.0	1.0	2.0	3.0	1.0	2.5
4	13.0	11.0	12.0	7.0	4.0	5.5	3.0	1.0	1.5	1.0	.5	1.0
5	11.0	7.0	9.5	9.0	7.0	8.5	1.0	.5	1.0	1.0	.5	.5
6	7.0	6.0	7.0	7.5	5.0	6.5	2.5	1.0	1.5	1.5	1.0	1.5
7	6.5	5.5	6.0	5.0	4.0	4.5	4.0	2.0	3.0	2.0	1.5	2.0
8	6.0	5.0	5.5	5.5	3.5	4.5	4.0	2.5	3.0	3.0	2.0	2.5
9	5.5	4.5	5.0	6.0	5.0	5.5	2.5	.0	1.0	2.5	2.0	2.5
10	6.5	5.0	5.5	7.5	4.0	6.0	.0	.0	.0	3.5	2.0	2.5
11	7.0	6.5	7.0	6.5	3.5	5.5	.0	.0	.0	4.0	3.0	3.5
12	6.5	4.0	5.0	4.0	2.0	3.0	.0	.0	.0	4.5	4.0	4.0
13	4.0	2.5	3.5	6.5	3.5	5.5	.0	.0	.0	4.5	3.0	3.5
14	4.0	2.0	3.0	6.0	4.0	5.0	.0	.0	.0	4.0	2.0	3.0
15	6.5	3.5	5.0	5.5	3.5	4.5	.5	.0	.0	4.5	4.0	4.5
16	8.0	5.0	6.5	8.5	5.5	7.0	.0	.0	.0	4.5	3.5	4.0
17	9.5	7.0	8.0	8.0	4.0	6.0	.0	.0	.0	4.0	3.0	3.5
18	10.5	8.5	9.5	4.0	3.0	3.5	.0	.0	.0	4.5	3.0	3.5
19	9.0	6.5	8.0	4.5	3.5	4.0	.0	.0	.0	4.5	3.5	4.0
20	7.0	5.5	6.0	6.5	4.5	5.5	.5	.0	.0	3.5	1.5	2.5
21	6.0	5.5	6.0	6.5	6.0	6.5	3.5	.5	2.0	1.5	.0	.5
22	6.0	6.0	6.0	6.0	4.5	5.5	3.0	2.0	2.5	1.5	.0	.5
23	7.5	5.5	6.5	5.0	3.0	4.5	4.5	2.5	3.5	2.5	.5	1.5
24	7.5	5.5	6.5	4.5	3.0	4.0	5.5	3.5	4.5	2.5	1.0	2.0
25	6.0	4.5	5.5	5.0	2.5	3.5	5.0	4.0	4.5	4.0	2.5	3.5
26	5.5	3.0	4.5	5.5	3.0	4.5	4.0	3.0	3.5	5.0	3.5	4.0
27	3.5	1.5	3.0	8.0	5.5	7.5	5.0	4.0	4.0	4.5	2.5	3.5
28	5.5	3.0	4.5	7.5	3.0	5.5	5.5	3.0	4.5	4.0	2.0	3.0
29	4.0	2.5	3.5	3.0	2.0	2.5	3.0	2.0	2.5	5.0	3.0	4.0
30	3.5	2.0	3.0	3.5	1.5	2.5	2.5	2.0	2.0	5.5	4.5	5.5
31	3.5	.5	2.0	---	---	---	3.0	2.5	2.5	5.0	3.5	4.5
MONTH	13.0	.5	6.5	9.0	1.5	5.0	5.5	.0	1.5	5.5	.0	3.0

01594950 MCMILLAN FORK NEAR FORT PENDELTON, MD--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	4.5	5.5	2.0	.5	1.0	5.5	4.0	5.0	---	---	---
2	7.5	5.5	6.5	2.0	.0	1.0	6.5	4.0	5.5	---	---	---
3	7.5	3.5	6.0	3.0	.5	1.5	10.0	6.0	7.5	---	---	---
4	3.5	2.0	2.5	4.5	2.0	3.0	10.5	7.0	8.5	---	---	---
5	2.5	2.0	2.5	4.0	2.5	3.5	9.0	7.0	8.0	10.0	9.0	9.5
6	2.5	2.0	2.5	4.0	1.5	2.5	7.0	5.5	6.0	10.0	7.5	9.0
7	2.0	1.0	1.5	3.0	2.0	2.5	6.0	5.0	5.5	7.5	6.0	6.5
8	1.0	.0	1.0	3.0	2.0	2.5	5.0	4.0	4.5	8.0	6.0	6.5
9	.5	.0	.5	4.5	2.0	3.0	6.5	3.5	5.0	8.0	6.0	7.0
10	.5	.0	.0	5.0	1.5	3.0	5.0	3.5	4.0	8.0	7.5	8.0
11	.5	.0	.5	5.5	2.5	4.0	5.5	2.0	3.5	8.0	7.5	7.5
12	1.5	.5	1.0	5.0	3.5	4.0	6.5	2.5	4.5	7.5	7.0	7.5
13	1.5	.5	1.0	5.0	2.5	4.0	6.5	3.5	4.5	8.5	7.0	8.0
14	2.5	.5	1.5	6.5	4.0	5.0	---	---	---	10.0	8.0	9.0
15	3.5	2.0	3.0	9.0	5.0	7.0	---	---	---	9.5	9.0	9.0
16	4.0	3.5	3.5	6.5	4.0	5.0	---	---	---	9.5	9.0	9.0
17	3.5	2.5	3.0	8.0	3.0	5.5	---	---	---	12.0	9.0	10.0
18	3.5	2.0	3.0	8.0	5.0	7.0	---	---	---	13.0	9.5	11.0
19	4.0	2.0	3.0	5.0	3.0	3.5	---	---	---	13.0	10.0	11.5
20	5.0	3.5	4.0	4.5	2.0	3.0	---	---	---	12.5	11.5	12.0
21	6.0	4.5	5.5	5.0	3.5	4.0	---	---	---	14.5	11.5	12.5
22	5.5	3.0	4.0	5.5	2.5	4.0	---	---	---	13.0	11.0	12.0
23	3.0	1.0	2.0	5.0	3.0	4.0	---	---	---	13.0	12.0	12.5
24	1.0	.0	.5	4.5	3.5	4.0	---	---	---	13.5	11.5	12.5
25	1.5	.0	.5	7.5	4.0	5.5	---	---	---	14.5	11.5	13.0
26	1.5	.0	1.0	9.0	4.5	6.5	---	---	---	15.0	12.5	14.0
27	2.0	.5	1.0	10.5	5.0	7.5	---	---	---	14.5	12.0	13.5
28	1.5	.0	.5	11.5	7.5	9.5	---	---	---	13.5	9.5	11.5
29	---	---	---	10.0	9.0	9.5	---	---	---	14.0	9.5	11.5
30	---	---	---	10.0	8.5	9.0	---	---	---	15.0	11.5	13.5
31	---	---	---	9.0	5.5	8.0	---	---	---	16.5	12.5	14.5
MONTH	7.5	.0	2.5	11.5	.0	4.5	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.0	15.0	16.5	16.0	12.5	14.5	17.5	15.0	16.0	16.0	14.5	15.5
2	17.5	16.0	16.5	16.5	13.5	15.0	16.5	14.0	15.5	16.5	15.5	16.0
3	17.0	14.5	15.5	16.0	14.5	15.5	17.5	15.0	16.0	15.5	13.5	14.5
4	16.5	15.0	15.5	15.5	15.0	15.5	19.5	16.5	18.0	14.0	11.5	13.0
5	15.0	13.5	14.0	16.0	15.0	15.5	19.0	18.0	18.5	14.0	12.0	13.0
6	14.0	13.0	13.5	17.0	15.0	16.0	19.0	17.0	18.0	15.5	13.0	14.0
7	13.0	12.5	13.0	18.0	15.5	17.0	18.0	14.5	16.5	15.5	14.0	15.0
8	15.0	12.0	13.5	17.5	16.5	17.0	14.5	12.5	13.5	17.0	14.0	15.5
9	14.0	13.0	13.5	16.5	15.0	16.0	13.5	10.5	12.0	17.5	15.0	16.0
10	14.5	13.0	14.0	19.0	15.5	17.0	14.0	11.5	13.0	18.0	15.5	16.5
11	14.0	12.5	13.5	19.0	17.5	18.0	13.5	13.0	13.5	17.5	17.0	17.0
12	13.0	11.0	12.0	17.5	16.5	17.0	14.5	13.0	14.0	17.0	16.5	16.5
13	14.0	13.0	13.5	17.0	14.5	16.0	15.5	13.5	14.5	17.0	15.5	16.5
14	15.0	13.5	14.0	15.0	13.5	14.5	15.5	14.0	15.0	17.0	16.0	16.5
15	14.5	13.5	14.0	15.0	12.5	13.5	15.5	14.0	15.0	16.5	16.0	16.5
16	14.5	13.5	14.0	14.5	13.5	14.0	16.5	14.5	15.5	16.0	15.0	15.5
17	14.5	13.0	13.5	14.5	13.5	14.0	16.5	15.5	16.0	15.0	14.0	14.5
18	14.5	11.0	12.5	14.5	13.0	14.0	16.0	14.5	15.0	14.0	13.5	14.0
19	14.5	12.0	13.0	16.0	14.0	14.5	16.0	14.5	15.5	14.0	13.5	14.0
20	14.5	13.0	13.5	16.0	14.0	15.0	17.0	14.0	15.5	16.0	14.0	15.0
21	15.0	13.0	14.0	15.5	13.5	14.5	17.0	16.0	16.5	17.0	15.0	16.0
22	14.5	13.0	13.5	17.0	13.5	15.0	17.5	16.5	17.0	17.5	16.5	17.0
23	---	---	---	16.5	14.0	15.5	18.0	16.5	17.5	17.0	11.0	14.5
24	---	---	---	16.5	14.5	15.5	17.5	16.5	16.5	11.0	9.0	10.0
25	16.0	13.5	15.0	17.0	15.0	16.0	16.5	15.5	16.0	10.5	8.0	9.5
26	17.0	14.0	15.5	17.0	15.5	16.5	17.0	15.0	16.0	12.5	10.5	11.5
27	17.5	14.5	16.0	17.0	15.5	16.5	17.5	15.0	16.0	11.0	9.0	10.0
28	16.5	15.0	15.5	17.0	15.5	16.0	17.5	15.0	16.5	10.5	7.0	9.0
29	16.0	13.5	14.5	16.5	14.5	15.5	17.5	16.0	16.5	12.5	10.0	11.0
30	16.0	11.5	14.0	15.5	14.0	15.0	17.5	16.5	17.0	13.0	12.0	12.5
31	---	---	---	16.5	15.0	15.5	16.5	14.0	15.5	---	---	---
MONTH	---	---	---	19.0	12.5	15.5	19.5	10.5	15.5	18.0	7.0	14.0

01595000 NORTH BRANCH POTOMAC RIVER AT STEYER, MD

LOCATION.--Lat 39°18'07", long 79°18'26", Garrett County, Hydrologic Unit 02070002, on left bank 0.3 mi southeast of Steyer, 0.4 mi downstream from Steyer Run, 2.0 mi northeast of Gorman, and at mile 81.8.

DRAINAGE AREA.--73.0 mi^2.

PERIOD OF RECORD.--July 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,276.01 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges (ice effect), which are poor. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--33 years, 173 ft^3/s, 32.18 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft^3/s, Nov. 5, 1985, gage height, 13.14 ft, from rating curve extended above 3,000 ft^3/s on basis of slope-area measurement at gage height 10.30 ft; minimum discharge 2.9 ft^3/s, Sept. 10, 1965, gage height, 2.03 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1954, reached a stage of 13.0 ft, from floodmarks; discharge, 11,300 ft^3/s, from rating curve extended as explained above.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 6	1300	*2,310	*6.34	No other peak greater than base discharge.			

Minimum discharge, 13 ft^3/s, Oct. 10, gage height, 1.92 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	e34	89	128	194	162	296	137	90	115	104	115
2	24	e34	78	131	169	125	249	366	77	94	76	114
3	24	36	74	129	306	117	241	271	74	82	81	89
4	26	38	63	127	304	166	221	218	132	84	71	68
5	24	175	55	152	231	617	205	258	151	112	63	55
6	24	201	73	161	205	1660	195	510	451	95	63	62
7	23	104	56	167	178	731	184	457	225	78	53	58
8	20	89	54	458	157	398	179	346	171	65	53	55
9	16	80	55	412	150	306	192	317	163	309	55	50
10	14	75	48	263	e145	279	198	516	186	370	50	45
11	25	71	41	220	e140	292	168	428	129	319	56	40
12	29	60	33	629	e135	285	156	373	108	328	70	49
13	29	84	e32	766	e130	248	141	316	114	338	50	52
14	26	92	e31	388	315	231	131	340	142	320	42	73
15	24	77	e30	713	897	214	125	362	163	240	65	264
16	24	71	e34	418	959	186	115	390	283	268	53	192
17	22	72	e38	303	446	162	100	426	505	341	46	229
18	24	64	e43	248	316	201	109	319	286	222	62	144
19	34	85	47	211	256	222	181	259	218	412	73	119
20	32	815	72	184	223	226	146	223	273	868	95	97
21	30	512	261	155	382	576	126	202	322	388	158	83
22	126	263	234	e140	352	357	116	169	251	275	143	87
23	146	196	236	e135	274	274	105	168	278	206	363	147
24	99	156	589	e130	228	375	97	166	319	173	243	135
25	82	125	516	129	206	367	102	140	213	152	168	96
26	e62	103	283	143	193	272	150	141	174	144	124	224
27	e58	98	219	257	179	232	141	187	160	197	97	167
28	e50	107	202	187	173	209	119	154	213	169	74	126
29	e46	104	184	156	---	192	119	118	174	126	107	111
30	e42	97	153	235	---	248	127	107	128	105	263	105
31	e38	---	134	234	---	351	---	99	---	134	157	---
TOTAL	1271	4118	4057	8109	7843	10281	4734	8483	6173	7129	3178	3251
MEAN	41.0	137	131	262	280	332	158	274	206	230	103	108
MAX	146	815	589	766	959	1660	296	516	505	868	363	264
MIN	14	34	30	127	130	117	97	99	74	65	42	40
CFSM	.56	1.88	1.79	3.58	3.84	4.54	2.16	3.75	2.82	3.15	1.40	1.48
IN.	.65	2.10	2.07	4.13	4.00	5.24	2.41	4.32	3.15	3.63	1.62	1.66

CAL YR 1988 TOTAL 48443 MEAN 132 MAX 1730 MIN 11 CFSM 1.81 IN. 24.69
WTR YR 1989 TOTAL 68627 MEAN 188 MAX 1660 MIN 14 CFSM 2.58 IN. 34.97

e Estimated

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 Mt. Storm, and at mile 6.4.

DRAINAGE AREA.--48.8 mi^2.

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.--Water-discharge records good except those for estimated daily discharges (ice effect), which are poor. Flow regulated by Stony River Reservoir, 14.0 mi upstream from station, prior to June 1987. Regulation since 1963 by Virginia Electric and Power Company dam (Mount Storm Lake), 4.0 mi upstream from station.

AVERAGE DISCHARGE.--28 years, 99.7 ft^3/s, 27.74 in/yr, unadjusted.

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

EXTREMES FOR CURRENT YEAR.--Maximium discharge, 2,360 ft^3/s, Mar. 6, gage height, 7.51 ft; minimum discharge, 4.3 ft^3/s, Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	11	45	26	114	58	98	59	48	22	34	56
2	4.3	12	41	25	102	46	88	151	43	18	33	50
3	4.7	12	35	e24	188	46	146	207	39	16	31	45
4	7.2	12	31	e25	151	45	141	170	46	17	27	42
5	7.1	89	28	e26	130	144	129	210	68	20	24	41
6	7.4	56	29	e30	119	1080	119	587	143	24	18	41
7	7.2	28	28	33	105	327	110	282	128	26	17	34
8	5.2	22	28	118	92	392	63	276	97	23	23	32
9	4.7	21	28	118	79	335	131	574	89	56	22	27
10	4.4	20	26	205	34	84	53	390	101	199	20	17
11	8.2	17	e24	194	30	81	55	427	82	166	23	15
12	6.9	14	e22	185	29	91	59	459	73	87	35	17
13	6.7	20	e20	301	31	88	61	81	70	96	20	18
14	6.9	21	e19	311	71	135	56	104	72	55	29	23
15	7.4	20	e17	476	279	152	55	408	73	39	32	36
16	5.6	20	e18	399	524	67	55	313	184	79	27	70
17	5.4	20	e18	146	233	64	124	351	489	428	23	182
18	7.5	18	19	112	177	81	253	315	264	60	47	175
19	10	21	21	104	56	119	58	266	133	41	103	149
20	9.6	201	27	97	57	192	39	123	60	118	39	124
21	9.8	353	51	84	125	307	37	45	77	164	69	99
22	24	301	55	49	153	260	35	48	109	152	59	399
23	22	248	69	43	134	229	33	59	146	121	106	52
24	15	202	362	46	117	258	33	57	124	121	188	37
25	16	104	962	49	93	266	37	59	102	185	228	27
26	13	38	49	56	68	231	45	57	87	170	100	59
27	11	39	39	77	65	156	47	75	81	65	45	42
28	9.6	46	37	65	65	70	48	65	77	38	43	39
29	10	47	35	60	---	75	50	58	64	31	64	64
30	8.5	47	32	94	---	195	50	54	55	26	92	111
31	7.9	---	28	112	---	429	---	52	---	36	64	---
TOTAL	279.3	2080	2243	3690	3421	6103	2308	6382	3224	2699	1685	2123
MEAN	9.01	69.3	72.4	119	122	197	76.9	206	107	87.1	54.4	70.8
MAX	24	353	962	476	524	1080	253	587	489	428	228	399
MIN	4.3	11	17	24	29	45	33	45	39	16	17	15

CAL YR 1988 TOTAL 26377.5 MEAN 72.1 MAX 1990 MIN 1.3
WTR YR 1989 TOTAL 36237.3 MEAN 99.3 MAX 1080 MIN 4.3

e Estimated

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 TEMPERATURE: 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 stopped Oct. 1-5.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 27.5°C, Aug. 14, 1984; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 25.5°C, Sept. 22; minimum, 0.5°C, Dec. 10-12, 14-21, Jan. 1, 3-7.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	2.5	3.0	1.0	8.5	4.5	8.0	13.5	18.0	18.5	17.0	17.5
2	---	2.5	3.0	1.5	9.0	3.0	8.5	11.0	18.0	18.0	16.5	17.5
3	---	2.0	2.5	1.5	10.0	4.0	12.0	12.0	17.0	17.5	17.5	17.0
4	---	4.0	3.0	1.0	7.5	6.0	13.0	14.0	16.0	17.0	19.0	16.0
5	---	6.0	2.0	1.5	6.0	6.0	13.0	12.5	15.0	16.0	19.0	16.5
6	8.0	6.0	1.0	.5	6.0	10.0	11.0	14.0	16.0	18.0	19.5	16.5
7	7.5	5.0	1.5	1.0	6.0	10.5	9.5	10.5	16.0	19.5	19.0	17.0
8	7.5	4.0	2.0	2.5	5.5	9.0	9.0	10.5	18.0	20.0	16.0	18.0
9	7.0	4.0	2.0	2.5	4.0	10.0	10.5	13.0	17.5	18.0	14.0	19.0
10	7.0	4.0	2.0	6.5	2.5	5.5	8.0	13.0	16.5	22.0	14.0	19.0
11	7.0	4.0	.5	7.0	1.5	4.5	6.5	12.0	17.0	22.5	14.0	19.0
12	6.5	4.0	.5	7.0	1.5	4.5	7.5	12.0	16.0	22.5	13.5	18.5
13	5.0	3.0	1.0	5.0	1.0	4.5	7.5	9.0	16.0	20.5	15.5	17.0
14	4.5	3.0	1.0	6.5	2.5	9.5	8.5	8.0	17.0	16.5	15.5	17.0
15	5.5	3.0	.5	7.5	7.0	11.0	8.5	14.0	17.0	16.0	14.5	17.5
16	7.0	3.5	.5	7.5	9.5	8.5	9.5	12.0	17.0	16.0	15.5	16.5
17	7.5	4.0	.5	7.5	7.5	8.0	12.5	13.0	18.0	24.0	15.0	20.5
18	8.0	3.5	1.0	4.0	7.5	8.5	13.0	14.5	20.0	23.5	15.0	20.5
19	7.5	2.0	1.0	4.0	5.0	6.5	12.5	15.0	19.0	17.0	21.0	20.5
20	6.5	4.5	.5	4.0	4.5	9.5	10.0	14.5	17.0	15.5	16.5	21.0
21	5.5	7.5	1.5	3.5	7.0	9.0	8.0	14.5	17.0	15.0	15.5	21.0
22	4.5	8.0	1.5	2.5	7.0	10.0	10.0	12.0	18.0	18.0	16.5	25.5
23	5.0	9.0	4.0	2.0	6.5	9.5	10.0	12.0	18.0	20.0	18.0	22.5
24	5.0	9.0	10.0	2.0	5.5	9.0	10.0	12.5	19.5	20.5	21.0	13.5
25	4.0	8.5	11.0	3.5	5.0	10.5	8.5	14.5	20.0	22.0	21.0	11.0
26	3.0	6.0	5.0	4.5	4.0	12.5	9.5	15.0	20.5	22.0	21.0	12.0
27	3.0	6.0	2.0	4.5	4.5	13.0	10.5	15.0	21.0	22.0	19.0	11.0
28	3.5	6.0	4.0	3.5	5.0	12.0	11.5	14.0	21.0	18.0	18.0	10.0
29	3.0	4.0	2.5	5.0	---	11.0	11.5	14.5	19.0	16.5	17.5	14.0
30	3.0	3.0	1.0	6.0	---	14.0	14.5	15.0	19.0	16.0	17.0	17.0
31	2.0	---	1.0	6.0	---	15.0	---	16.0	---	15.5	17.0	---
MAX	---	9.0	11.0	7.5	10.0	15.0	14.5	16.0	21.0	24.0	21.0	25.5

01595200 STONY RIVER NEAR MOUNT STORM, WV--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MINIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1.5	3.0	.5	6.0	3.5	6.5	11.0	15.5	15.0	15.0	16.5
2	---	2.0	2.5	1.0	8.5	2.0	5.5	10.0	16.5	15.0	15.5	17.0
3	---	1.5	1.5	.5	7.5	3.0	8.5	10.0	15.0	15.5	15.5	15.0
4	---	2.0	2.0	.5	5.5	4.0	11.0	10.5	15.0	16.0	16.5	14.0
5	---	4.0	1.0	.5	5.5	4.5	11.0	10.0	14.0	15.5	17.5	14.5
6	7.5	5.0	1.0	.5	6.0	5.0	9.5	10.0	14.0	16.0	17.0	14.5
7	7.0	4.0	1.0	.5	5.5	6.0	9.0	8.0	15.5	16.0	16.0	16.0
8	5.0	3.5	1.5	1.0	4.0	6.5	7.0	10.0	15.5	17.5	14.0	16.0
9	5.0	3.5	2.0	2.0	2.0	6.0	6.0	10.5	15.5	15.5	11.0	17.0
10	4.5	3.5	.5	2.5	1.5	3.0	5.5	8.5	14.5	15.5	11.5	17.0
11	6.0	4.0	.5	6.0	1.0	2.5	3.5	8.5	14.0	20.0	13.0	18.0
12	4.5	2.5	.5	5.0	1.0	3.5	4.0	9.0	14.0	20.0	12.5	17.0
13	3.5	2.5	1.0	3.0	1.0	3.5	5.5	7.0	16.0	16.5	13.5	16.5
14	2.5	2.5	.5	5.0	1.0	4.5	4.5	7.0	16.0	15.5	14.0	17.0
15	4.0	2.5	.5	6.5	2.5	8.5	7.5	8.0	15.0	14.5	13.0	16.5
16	5.0	2.5	.5	7.0	7.0	6.0	7.0	12.0	15.5	15.0	13.0	15.5
17	6.0	3.5	.5	3.5	6.5	5.0	6.5	12.0	16.0	16.0	14.5	15.5
18	7.5	2.0	.5	3.5	5.0	6.5	12.5	12.0	18.0	16.5	13.0	20.5
19	6.0	2.0	.5	4.0	3.0	5.5	9.0	13.0	17.0	15.0	13.0	20.0
20	5.0	2.0	.5	3.5	3.5	6.5	6.0	12.0	15.5	14.0	14.5	20.0
21	4.5	4.5	.5	2.5	4.5	8.5	6.5	11.5	15.5	14.0	15.0	21.0
22	4.0	7.5	1.5	2.0	6.5	8.5	6.0	10.0	16.5	14.0	15.0	19.0
23	4.0	8.0	2.0	1.5	5.5	9.0	5.5	11.0	16.0	17.0	16.0	13.5
24	4.0	8.5	4.0	1.5	5.0	8.5	5.5	10.5	16.5	19.0	18.0	11.0
25	3.0	6.0	5.0	2.0	3.5	8.5	6.5	10.5	18.0	20.0	21.0	10.0
26	3.0	4.5	2.0	3.5	3.5	9.5	8.0	13.5	19.0	22.0	19.0	10.5
27	2.0	5.0	2.0	2.5	3.5	10.5	8.5	13.0	19.0	18.0	16.0	9.5
28	2.0	4.0	2.0	2.5	3.5	9.0	9.5	10.5	18.5	16.5	16.0	8.0
29	2.0	3.0	1.0	4.0	---	10.0	10.5	11.0	16.5	15.0	17.0	10.0
30	2.0	3.0	1.0	5.0	---	10.5	11.0	13.5	15.5	15.0	16.0	14.0
31	1.0	---	1.0	5.0	---	7.5	---	14.0	---	15.0	15.0	---
MIN	---	1.5	.5	.5	1.0	2.0	3.5	7.0	14.0	14.0	11.0	8.0

01596500 SAVAGE RIVER NEAR BARTON, MD

LOCATION.--Lat 39°34'05", long 79°06'10", Garrett County, Hydrologic Unit 02070002, on right bank 0.9 mi upstream from Bear Pen Run, 1.5 mi downstream from Popular Lick Run, 5.4 mi northwest of Barton, and 10 mi upstream from mouth.

DRAINAGE AREA.--49.1 mi^2.

PERIOD OF RECORD.--September 1948 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,603.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Dec. 10-20, Jan. 5-7, Feb.8-13 (ice effect) and July 7-11 (missing record) which are fair. 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 thi location.

AVERAGE DISCHARGE.--41 years, 75.2 ft^3/s, 20.80 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,510 ft^3/s, Oct. 15, 1954, gage height, 8.45 ft, from rating curve extended above 1,600 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 0.40 ft^3/s Sept. 3, 4, 1966, gage height, 0.96 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 10	0730	*1,010	*3.58	No other peak greater than base discharge.			

Minimum discharge, 5.8 ft^3/s, Sept. 5, 6, 7, 8, 9, 11, 12, gage height, 1.04 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	27	41	58	79	56	156	126	26	19	60	9.5
2	23	26	36	52	73	53	139	252	23	17	50	9.3
3	20	24	31	49	76	44	131	252	21	15	41	7.7
4	16	21	28	44	71	39	118	185	21	15	33	6.4
5	13	217	25	e43	66	61	106	188	21	78	28	5.8
6	12	332	24	e41	64	358	95	415	47	85	24	5.8
7	11	187	23	e40	56	334	86	363	52	e150	22	5.8
8	9.8	126	21	83	e52	198	80	268	41	e130	19	5.8
9	9.3	96	20	145	e48	139	81	227	32	e85	16	6.9
10	8.8	80	e19	118	e47	114	73	818	30	e60	14	6.5
11	9.4	69	e18	98	e46	132	67	453	25	e50	15	5.8
12	9.4	56	e17	185	e49	168	65	318	21	41	19	38
13	8.7	75	e17	369	e52	144	64	214	20	44	15	39
14	7.9	82	e18	266	126	147	58	163	21	37	13	23
15	7.5	79	e20	324	231	212	55	140	21	29	13	27
16	7.7	75	e19	321	317	250	53	149	32	42	12	48
17	7.4	70	e18	222	225	186	46	197	65	87	11	61
18	17	58	e17	158	158	164	46	190	91	71	9.5	49
19	20	60	e16	125	121	150	68	146	87	65	9.4	38
20	14	412	e16	105	99	129	63	114	84	125	9.4	28
21	15	447	47	85	134	201	61	93	102	477	13	23
22	65	262	40	91	151	206	61	75	96	256	22	21
23	207	169	48	90	142	168	57	72	102	141	14	26
24	137	124	135	64	116	239	52	70	132	107	16	20
25	95	98	252	61	102	335	49	54	89	290	13	17
26	75	81	176	62	90	294	45	49	68	217	10	24
27	60	71	127	88	76	210	39	48	52	281	9.0	22
28	49	64	106	86	64	159	35	43	42	169	8.0	18
29	39	52	86	80	---	133	110	36	32	111	7.1	17
30	32	46	72	85	---	145	137	30	24	85	19	16
31	28	---	64	85	---	159	---	28	---	75	13	---
TOTAL	1061.9	3586	1597	3723	2931	5327	2296	5776	1520	3454	577.4	630.3
MEAN	34.3	120	51.5	120	105	172	76.5	186	50.7	111	18.6	21.0
MAX	207	447	252	369	317	358	156	818	132	477	60	61
MIN	7.4	21	16	40	46	39	35	28	20	15	7.1	5.8
CFSM	.70	2.43	1.05	2.45	2.13	3.50	1.56	3.79	1.03	2.27	.38	.43
IN.	.80	2.72	1.21	2.82	2.22	4.04	1.74	4.38	1.15	2.62	.44	.48

CAL YR 1988 TOTAL 25917.11 MEAN 70.8 MAX 750 MIN .81 CFSM 1.44 IN. 19.64
WTR YR 1989 TOTAL 32479.6 MEAN 89.0 MAX 818 MIN 5.8 CFSM 1.81 IN. 24.61

e Estimated

01597500 SAVAGE RIVER, BELOW SAVAGE RIVER DAM, NEAR BLOOMINGTON, MD

LOCATION.--Lat 39°30'05", long 79°07'25", Garrett County, Hydrologic Unit 02070002, on left bank 0.7 mi downstream from Savage River Dam, 1.1 mi downstream from Crabtree Creek, 3.2 mi northwest of Bloomington, and 3.7 mi upstream from mouth.

DRAINAGE AREA.--106 mi^2.

PERIOD OF RECORD.--October 1948 to current year.

REVISED RECORDS.--WSP 1432: 1955.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,276.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diversions upstream from station by Baltimore and Ohio Railroad and by cities of Frostburg and Westernport for municipal supply. Flow regulated by Savage River Reservoir beginning December 1950, capacity 20,000 acre-ft. 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.

AVERAGE DISCHARGE.--41 years, 166 ft^3/s, 21.27 in/yr, adjusted for storage since December 1950.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,550 ft^3/s, Nov. 4, 1985, gage height, 7.81 ft; minimum discharge, 0.35 ft^3/s, Oct. 27, 1966, gage height, 0.57 ft; minimum daily discharge, 0.6 ft^3/s, July 27-31, Aug. 5, 6, 9, 10, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,590 ft^3/s, May 10, gage height, 4.81 ft; minimum discharge, 7.5 ft^3/s, Oct. 14, gage height, 0.40 ft; minimum daily discharge, 49 ft^3/s, July 1, 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	235	174	175	85	187	91	391	271	79	49	124	87
2	257	175	174	85	187	91	391	577	74	49	110	144
3	53	176	174	148	187	91	285	642	65	49	107	168
4	54	179	173	186	187	91	223	485	83	50	106	85
5	89	196	114	184	187	92	231	442	78	51	106	85
6	69	199	79	184	187	157	244	928	174	51	106	85
7	70	186	79	184	187	230	229	879	144	51	106	85
8	70	206	79	185	187	227	223	645	132	51	97	85
9	70	202	79	184	121	247	223	534	115	52	117	85
10	70	196	79	187	85	378	145	2070	109	51	117	85
11	70	196	77	222	86	390	113	1510	83	51	151	85
12	71	196	77	301	87	412	147	952	414	51	150	85
13	71	196	78	413	87	435	154	613	383	62	149	85
14	85	193	78	459	87	383	144	463	420	74	117	85
15	70	193	77	464	91	565	138	389	412	74	110	84
16	70	193	77	559	227	703	135	386	231	75	104	85
17	72	193	77	661	300	527	118	434	294	77	87	84
18	72	191	77	656	623	443	101	443	406	77	87	83
19	99	192	77	649	240	413	141	387	261	124	87	83
20	89	200	77	450	237	362	140	313	260	429	87	83
21	89	454	77	335	241	530	139	263	260	934	87	83
22	89	624	77	332	156	586	144	215	364	701	87	84
23	90	621	77	238	95	455	137	198	317	423	87	83
24	91	616	80	198	95	569	130	194	386	277	87	83
25	91	610	83	252	740	777	122	165	310	404	87	83
26	91	698	83	252	538	723	120	160	51	323	87	83
27	91	681	84	252	196	530	112	149	51	447	87	83
28	91	564	85	249	130	422	99	121	51	295	87	83
29	91	325	85	248	---	404	179	110	59	203	87	83
30	92	177	85	209	---	393	287	122	50	163	87	83
31	145	---	85	187	---	393	---	81	---	151	87	---
TOTAL	2857	9202	2878	9198	5958	12110	5385	15141	6116	5919	3182	2667
MEAN	92.2	307	92.8	297	213	391	179	488	204	191	103	88.9
MAX	257	698	175	661	740	777	391	2070	420	934	151	168
MIN	53	174	77	85	85	91	99	81	50	49	87	83
(†)	11180	9270	11410	12500	15630	19920	20160	20080	16500	20010	16680	14180

CAL YR 1988 TOTAL 56199 MEAN 154 MAX 2010 MIN 33 CFSM 1.45 IN 19.72
WTR YR 1989 TOTAL 80613 MEAN 221 MAX 2070 MIN 49 CFSM 2.08 IN 28.29

† Monthend contents, in acre-feet, in Savage River Reservoir (contents on Sept. 30, 1988, 12,310 acre-feet). Records provided by U.S. Army Corps of Engineers.

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^2.

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 944.22 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.

AVERAGE DISCHARGE.--46 years (water years 1900-05, 1950-89), 717 ft^3/s, 24.10 in/yr, adjusted for storage since October 1949.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,400 ft^3/s, Oct. 15, 1954, gage height, 17.15 ft, from rating curve extended above 25,000 ft^3/s on basis of slope-area measurement of peak flow; minimum daily discharge, 6 ft^3/s, Sept. 4, 1904.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,170 ft^3/s, May 10, gage height, 8.30 ft; minimum discharge, 233 ft^3/s, Aug. 15, gage height, 1.88 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	930	445	446	444	694	516	1740	622	468	440	573	417
2	1190	440	443	439	691	533	1500	1350	427	375	550	885
3	319	437	439	495	709	559	1270	1680	423	335	542	1160
4	314	436	437	508	705	553	1000	1530	445	345	484	413
5	354	544	385	474	701	588	825	1580	430	379	426	412
6	352	484	341	475	701	1600	836	3280	625	402	424	410
7	309	443	339	470	697	2570	813	3520	675	381	422	410
8	309	454	324	500	697	2290	803	2510	564	358	407	411
9	308	451	308	509	620	1780	804	2020	565	393	423	410
10	306	450	306	530	518	1900	761	6110	561	675	421	409
11	307	447	305	597	441	1930	743	5620	492	1080	466	410
12	305	446	301	826	395	1850	678	4240	778	1080	464	419
13	304	456	290	1060	395	1690	589	2510	702	1280	457	412
14	319	450	273	1130	410	1410	575	1440	742	1360	421	413
15	303	425	273	1260	793	1450	673	1360	733	710	417	412
16	302	400	266	1340	1320	1560	816	1620	571	804	419	440
17	298	397	259	1410	1200	1360	543	1900	1300	1370	393	423
18	305	390	258	1360	1400	1230	529	1880	1780	1530	395	416
19	342	399	257	1370	909	1180	568	1790	1460	1030	393	414
20	348	575	258	1090	844	1050	530	1510	1290	2650	392	413
21	355	946	262	855	901	1560	472	1310	1290	3670	405	413
22	355	1040	261	845	802	1820	614	1230	1220	2720	401	444
23	353	1030	272	707	707	1580	652	1210	1180	1890	403	803
24	350	1020	350	602	692	2100	444	1200	1420	1480	433	701
25	347	1010	457	661	1220	2630	434	1070	1330	1300	513	543
26	346	1100	581	660	1050	2200	433	890	988	1160	442	511
27	345	1090	573	721	638	1790	425	720	772	1320	437	496
28	343	956	571	772	570	1510	411	679	59[illegible]	1130	436	491
29	342	695	564	768	---	1490	497	658	4[illegible]	1010	434	487
30	339	475	498	736	---	1520	629	638	4[illegible]	956	446	487
31	396	---	437	701	---	1810	---	516	[illegible]	765	421	---
TOTAL	11695	18331	11334	24315	21420	47609	21607	58193	2478[illegible]	34378	13660	14885
MEAN	377	611	366	784	765	1536	720	1877	826	1109	441	496
MAX	1190	1100	581	1410	1400	2630	1740	6110	1780	3670	573	1160
MIN	298	390	257	439	395	516	411	516	423	335	392	409

CAL YR 1988 TOTAL 228053 MEAN 623 MAX 8510 MIN 189 CFSM 1.54 IN. 21.00
WTR YR 1989 TOTAL 302212 MEAN 828 MAX 6110 MIN 257 CFSM 2.05 IN. 27.83

01599000 GEORGES CREEK AT FRANKLIN, MD

LOCATION.--Lat 39°29'38", long 79°02'42", Allegany County, Hydrologic Unit 02070002, on right bank at Franklin, and 1.2 mi upstream from Westernport and mouth.

DRAINAGE AREA.--72.4 mi^2.

PERIOD OF RECORD.--May 1905 to July 1906 (published as "at Westernport"), October 1929 to current year.

REVISED RECORDS.--WSP 726: Drainage area. WSP 1502: 1940. WDR MD-DE-86-1: 1984(M).

GAGE.--Water-stage recorder. Datum of gage is 958.96 ft Westvaco Corporation datum. May 4, 1905, to July 15, 1906, nonrecording gage at bridge 0.8 mi downstream at different datum. Oct. 16, 1929, to Oct. 1, 1937, water-stage recorder at site 95 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Records include about 0.5 ft^3/s of sewage from city of Frostburg, which obtains its water supply from Big Piney Run (Monongahela River basin) and Savage River. A negligible discharge is diverted upstream from station by Frostburg Water Co. for municipal supplies of Eckhart and Welch Hill. An undetermined amount of water is diverted from the upper third of basin into the Wills Creek basin by the Hoffman drainage tunnel (see station 01601500). Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years (water years 1930-89), 81.8 ft^3/s, 15.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,500 ft^3/s, Mar. 17, 1936, gage height, 9.6 ft, site then in use, from rating curve extended above 2,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 1.6 ft^3/s, Sept. 29 to Oct. 13, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 29, 1924, reached a stage of about 10 ft, from floodmarks, at site 95 ft downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 10	0815	1,260	6.41	July 26	1845	1,440	6.81
July 6	1815	*2,340	*8.11				

Minimum discharge, 13 ft^3/s, Sept. 10, 11. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	22	53	57	69	73	151	79	61	40	97	18
2	24	23	48	54	66	67	133	197	57	36	85	18
3	24	21	45	53	74	66	130	151	59	34	78	15
4	22	19	42	49	69	65	118	124	75	42	71	14
5	19	180	38	45	64	83	110	305	67	173	63	14
6	18	142	36	46	63	495	102	746	101	578	56	14
7	17	88	35	44	59	289	98	608	70	575	52	14
8	16	72	34	75	54	187	96	403	61	223	49	15
9	16	63	32	92	40	155	101	393	65	148	45	16
10	15	57	29	74	e40	148	93	1100	68	109	42	13
11	16	52	e27	69	e38	183	81	736	55	85	45	13
12	16	45	e26	218	e44	229	77	479	50	78	54	36
13	15	65	e25	312	46	215	72	358	56	81	43	33
14	14	64	e24	187	67	225	69	351	51	73	39	22
15	14	53	e24	402	190	300	69	388	50	65	37	23
16	14	49	e23	306	197	277	72	424	91	83	36	65
17	13	44	23	216	135	218	66	399	261	104	32	53
18	27	34	24	165	117	208	65	301	114	75	31	35
19	28	41	24	139	104	175	73	240	90	94	31	27
20	19	389	24	123	95	161	64	194	111	330	29	23
21	24	298	30	101	156	249	61	160	131	371	42	21
22	55	171	26	89	133	178	59	133	99	186	46	24
23	73	129	36	87	109	153	59	133	98	123	35	32
24	53	104	115	83	94	418	55	124	99	95	32	22
25	42	89	123	79	87	387	53	104	78	334	29	19
26	40	79	84	78	90	306	53	99	67	479	24	44
27	34	73	75	82	86	248	50	95	61	461	22	32
28	27	69	73	75	79	196	49	82	58	251	21	23
29	25	62	66	71	---	169	83	75	51	156	19	21
30	24	57	60	77	---	199	75	70	44	131	33	19
31	22	---	58	74	---	179	---	66	---	122	21	---
TOTAL	793	2654	1382	3622	2465	6501	2437	9117	2399	5735	1339	738
MEAN	25.6	88.5	44.6	117	88.0	210	81.2	294	80.0	185	43.2	24.6
MAX	73	389	123	402	197	495	151	1100	261	578	97	65
MIN	13	19	23	44	38	65	49	66	44	34	19	13
CFSM	.35	1.22	.62	1.61	1.22	2.90	1.12	4.06	1.10	2.56	.60	.34
IN.	.41	1.36	.71	1.86	1.27	3.34	1.25	4.68	1.23	2.95	.69	.38

CAL YR 1988 TOTAL 24347.2 MEAN 66.5 MAX 730 MIN 5.0 CFSM .92 IN. 12.51
WTR YR 1989 TOTAL 39182 MEAN 107 MAX 1100 MIN 13 CFSM 1.48 IN. 20.13

e Estimated

01601500 WILLS CREEK NEAR CUMBERLAND, MD

LOCATION.--Lat 39°40'07", long 78°47'18", Allegany County, Hydrologic Unit 02070002, on right bank at downstream side of Western Maryland Railway bridge, 0.15 mi downstream from Braddock Run, 2.0 mi upstream from Cumberland, and mouth.

DRAINAGE AREA.--247 mi^2.

PERIOD OF RECORD.--May 1905 to July 1906 (published as "at Cumberland"), October 1929 to current year.

REVISED RECORDS.--WSP 726: Drainage area. WSP 1432: 1906, 1930(M), 1933-34(M), 1936-37, 1945(M).

GAGE.--Water-stage recorder. Datum of gage is 640.89 ft above National Geodetic Vertical Datum of 1929. May 6, 1905, to July 14, 1906, nonrecording gage at highway bridge 700 ft upstream at different datum. Oct. 18, 1929, to Mar. 17, 1936, water-stage recorder, and Apr. 1, 1936, to Mar. 19, 1937, nonrecording gage at site 200 ft upstream at present datum.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Records include drainage from numerous active and abandoned coal mines. An undetermined amount of water is diverted into the basin from Georges Creek basin by Hoffman drainage tunnel. Miscellaneous measurements of discharge from the Hoffman drainage tunnel have been made in the water years 1944, 1964-65, and 1967-82, 84 by the U.S. Geological Survey, and in the water years 1958 and 1959 by the Maryland Geological Survey. Slight diurnal fluctuation at low flow caused by quarry upstream. 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.

DISCHARGE.--60 years (water years 1930-89), 330 ft^3/s, 18.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,100 ft^3/s, Mar. 17, 1936, gage height, 20.2 ft, from flood-marks at present site, from rating curve extended above 11,000 ft^3/s on basis of slope-area measurements at gage heights 13.45 ft and 20.2 ft; minimum discharge, 9 ft^3/s, Oct. 14, 1930.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 10	1700	3,590	6.36	July 20	0245	*5,320	*7.33
June 21	0145	3,910	6.55				

Minimum discharge, 32 ft^3/s, Oct. 17, 18, gage height, 1.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	35	118	193	280	340	950	279	213	242	333	91
2	43	35	109	180	263	285	828	653	192	213	277	86
3	42	36	100	174	264	280	753	677	181	192	238	79
4	39	36	92	161	267	248	666	635	246	179	210	72
5	37	123	85	118	240	275	592	830	217	547	190	68
6	35	323	81	153	230	1230	534	2230	367	825	172	66
7	34	167	79	145	218	1140	477	2220	290	1100	159	66
8	34	124	76	212	183	868	441	1530	236	711	150	82
9	34	100	73	393	153	713	453	1180	215	498	140	115
10	33	83	67	336	134	672	381	3200	238	377	128	92
11	33	74	62	303	e125	752	336	2850	197	290	139	76
12	34	66	e45	586	e120	954	314	1820	170	240	170	103
13	34	95	e50	1090	e115	933	299	1310	189	239	139	94
14	34	123	58	956	207	932	284	1080	184	230	122	86
15	33	100	63	1220	660	1190	281	1110	190	190	116	135
16	33	88	57	1290	1090	1370	275	1600	330	444	115	391
17	32	86	55	1040	934	1060	250	2520	748	757	110	348
18	40	80	52	802	754	904	242	1780	530	448	102	236
19	37	92	53	666	625	782	283	1230	484	562	100	193
20	34	682	56	571	532	691	251	932	1210	2920	98	165
21	40	853	70	480	695	955	230	751	2680	1920	100	143
22	51	537	79	359	698	906	223	601	1530	1220	105	135
23	56	369	85	355	651	859	217	538	1570	834	95	138
24	55	283	277	323	591	1500	211	546	1040	629	93	124
25	48	229	757	298	507	1740	207	425	898	818	91	106
26	44	193	573	281	519	1440	207	391	643	743	83	135
27	42	172	418	317	451	1100	200	367	492	748	78	123
28	40	159	339	316	379	894	191	310	443	546	74	104
29	38	141	284	300	---	783	273	277	358	416	70	96
30	37	127	227	298	---	869	269	256	283	364	143	92
31	36	---	208	304	---	970	---	238	---	418	126	---
TOTAL	1208	5611	4748	14220	11885	27635	11118	34366	16564	19860	4266	3840
MEAN	39.0	187	153	459	424	891	371	1109	552	641	138	128
MAX	56	853	757	1290	1090	1740	950	3200	2680	2920	333	391
MIN	32	35	45	118	115	248	191	238	170	179	70	66
CFSM	.16	.76	.62	1.86	1.72	3.61	1.50	4.49	2.24	2.59	.56	.52
IN.	.18	.85	.72	2.14	1.79	4.16	1.67	5.18	2.49	2.99	.64	.58

CAL YR 1988 TOTAL 103096 MEAN 282 MAX 3330 MIN 27 CFSM 1.14 IN. 15.53
WTR YR 1989 TOTAL 155321 MEAN 426 MAX 3200 MIN 32 CFSM 1.72 IN. 23.39

e Estimated

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^2.

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. 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.

AVERAGE DISCHARGE.--60 years, 1,276 ft^3/s, 19.80 in/yr, adjusted for storage since October 1981.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,200 ft^3/s, Mar. 17, 1936, gage height, 29.1 ft, from rating curve extended above 33,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge (river only), 12 ft^3/s, Sept. 22, 1932, gage height, 2.38 ft; minimum daily discharge (including flow in canal), 38 ft^3/s, Sept. 24, 1932.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,600 ft^3/s, May 10 gage height, 12.17 ft; minimum discharge, 342 ft^3/s, Oct. 16, 17, 18, gage height, 2.58 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	441	475	667	739	1070	1010	3410	1040	837	835	1180	586
2	1320	503	636	721	1040	917	2720	1910	751	743	1050	578
3	808	497	615	716	1080	948	2570	2800	725	649	958	1260
4	395	495	602	787	1080	927	2050	2540	858	616	897	851
5	376	637	590	667	1030	993	1730	2650	797	1260	774	536
6	410	1230	505	721	1020	3230	1610	6380	1080	1820	724	528
7	398	809	486	698	999	4860	1510	7800	1130	3740	692	528
8	362	685	480	811	952	4020	1440	5510	961	1770	673	569
9	359	652	457	1160	908	3090	1460	3960	899	1260	656	586
10	355	621	439	1030	751	3040	1370	10700	1010	1310	634	569
11	357	601	428	1010	e700	3330	1240	11300	861	1570	669	528
12	358	579	394	1560	685	3710	1210	7520	798	1510	801	586
13	359	630	397	2850	628	3520	1050	5510	1000	1450	708	620
14	350	692	405	2550	753	3160	1020	3430	1010	2080	673	586
15	364	635	407	3250	1400	3210	1000	3500	1010	1150	638	647
16	348	580	391	3310	2900	3600	1170	4640	1190	1400	639	981
17	346	571	374	2950	2640	3080	1070	5660	3500	2420	605	1000
18	379	554	365	2510	2290	2600	915	4530	2810	2450	599	765
19	386	576	363	2250	2030	2420	969	3680	2470	1890	600	700
20	410	1670	369	2040	1560	2120	957	3090	3030	6880	592	656
21	423	2410	391	1490	1870	2680	852	2420	4800	6980	607	620
22	472	1920	408	1330	1890	3320	810	2080	3200	5420	649	595
23	515	1610	423	1320	1610	2980	923	1960	3400	3450	611	774
24	492	1450	713	1090	1480	4160	935	1970	2820	2700	589	930
25	456	1350	1470	1070	1420	5690	755	1730	2700	2500	647	746
26	439	1310	1300	1080	2160	4710	756	1570	2090	2370	647	756
27	434	1320	1140	1120	1280	3730	746	1310	1510	3100	586	709
28	419	1260	1040	1170	1150	3050	718	1160	1300	2180	586	656
29	412	1130	971	1150	---	2690	837	1080	1030	1740	578	629
30	408	746	884	1170	---	2870	1020	1030	908	1540	673	620
31	402	---	760	1120	---	3120	---	954	---	1580	647	---
TOTAL	13753	28198	18870	45440	38376	92785	38823	115414	50485	70363	21582	20695
MEAN	444	940	609	1466	1371	2993	1294	3723	1683	2270	696	690
MAX	1320	2410	1470	3310	2900	5690	3410	11300	4800	6980	1180	1260
MIN	346	475	363	667	628	917	718	954	725	616	578	528

CAL YR 1988 TOTAL 408570 MEAN 1116 MAX 13000 MIN 244 CFSM 1.28 IN. 17.37
WTR YR 1989 TOTAL 554784 MEAN 1520 MAX 11300 MIN 346 CFSM 1.74 IN. 23.59

e Estimated

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^2.

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 1984 to February 1986, 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.--Records good except those for estimated daily discharges (ice effect), which are poor. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telementer at station.

AVERAGE DISCHARGE.--65 years (water years 1900-01, 1904-05, 1929-89), 1,318 ft^3/s, 12.17 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft^3/s, Nov. 5, 1985, gage height, 44.22 ft, from floodmarks, from rating curve extended above 145,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 29 ft^3/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^3/s.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 10,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	Unknown	*11,700	a*10.61	May 6	Unknown	11,300	a10.39
May 3	0300	10,300	9.90				

a Peak stage indicator

Minimum discharge, 132 ft^3/s, Oct. 14, 15, 16, 17, gage height, 1.87 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	214	179	379	455	542	758	2250	2520	670	640	733	1090
2	195	171	351	434	553	684	1840	5640	617	551	677	914
3	181	167	328	429	546	616	1560	8980	575	490	635	790
4	170	164	311	422	545	576	1410	5290	576	446	543	697
5	162	176	292	428	655	572	1280	3470	538	459	472	612
6	156	199	276	415	692	3770	1190	7420	555	534	414	553
7	151	518	268	416	676	10400	1100	9990	599	1010	380	511
8	146	603	257	450	636	5520	1040	6440	645	953	348	481
9	143	467	252	932	579	3290	1000	4380	826	706	333	469
10	142	378	249	1770	e450	2650	1010	6750	903	857	313	436
11	142	326	242	1360	e365	2380	1010	8360	953	804	295	428
12	139	289	e235	1180	e350	2140	991	6000	837	724	316	467
13	135	273	e194	1320	e360	1870	949	4320	726	730	462	396
14	134	266	e170	1520	e440	1610	913	3510	691	1850	500	461
15	134	257	e165	1460	657	1430	887	4050	672	1600	449	629
16	133	257	e162	1770	1580	1250	867	7870	726	1100	480	562
17	135	262	e167	1880	1960	1090	855	7030	1210	1240	646	1950
18	137	245	e175	1540	1620	1000	812	4670	1680	1670	577	2130
19	137	242	e185	1260	1350	993	771	3240	1590	1460	851	1380
20	139	388	e190	1050	1150	972	768	2500	1240	2000	1440	1040
21	147	1470	e195	900	1040	1050	758	2080	1780	1830	1360	879
22	155	1530	204	783	1020	2230	712	1760	1730	2750	1950	777
23	165	1090	214	683	1070	2010	677	1530	2160	2290	3090	1010
24	173	835	335	631	1040	3040	641	1630	2150	1720	6530	2750
25	182	684	458	591	986	6130	605	1370	1540	1160	5310	1970
26	202	577	945	558	902	5210	584	1180	1240	1180	5480	1520
27	201	509	843	521	899	3870	1550	1080	1060	2210	3300	1560
28	198	462	706	508	840	2850	2170	997	930	1840	2300	1410
29	198	417	609	519	---	2240	1790	885	854	1240	1810	1190
30	192	395	552	496	---	1940	1890	791	750	930	1470	1040
31	186	---	491	474	---	2250	---	728	---	806	1340	---
TOTAL	5024	13796	10400	27155	23503	76391	33880	126461	31031	37780	44804	30102
MEAN	162	460	335	876	839	2464	1129	4079	1034	1219	1445	1003
MAX	214	1530	945	1880	1960	10400	2250	9990	2160	2750	6530	2750
MIN	133	164	162	415	350	572	584	728	538	446	295	396
CFSM	.11	.31	.23	.60	.57	1.68	.77	2.77	.70	.83	.98	.68
IN.	.13	.35	.26	.69	.59	1.93	.86	3.20	.78	.96	1.13	.76

CAL YR 1988 TOTAL 315528 MEAN 862 MAX 18500 MIN 105 CFSM .59 IN. 7.98
WTR YR 1989 TOTAL 460327 MEAN 1261 MAX 10400 MIN 133 CFSM .86 IN. 11.64

e Estimated

01610000 POTOMAC RIVER AT PAW PAW, WV

LOCATION.--Lat 39°32'13", long 78°27'28", Allegany County, Md., Hydrologic Unit 02070003, on left bank 250 ft upstream from bridge on Maryland State Highway 51 at Paw Paw, 3.3 mi downstream from Little Cacapon River, and at mile 277.

DRAINAGE AREA.--3,109 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 487.88 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 25, 1939, nonrecording gage at bridge 250 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Low flow affected 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.

AVERAGE DISCHARGE.--51 years, 3,303 ft^3/s, 14.43 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 235,000 ft^3/s, Nov. 5, 1985, gage height, 53.58 ft, from rating curve extended above 85,000 ft^3/s on basis of slope-area measurement of peak flow at site 5.0 mi upstream at Okonoko, W. Va.; minimum discharge, 164 ft^3/s, Sept. 10, 11, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 54.0 ft on Mar. 18, 1936, discharge, 240,000 ft^3/s, from rating curve extended above 85,000 ft^3/s on basis of slope-area measurement of peak flow at site 5.0 mi upstream at Okonoko, W. Va.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	0430	24,600	17.20	May 11	0115	*28,800	*18.61
May 7	0345	23,500	16.84	May 17	0145	22,500	16.46

Minimum discharge, 604 ft^3/s, Oct. 16, 17, gage height, 3.68 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	866	719	1390	1630	2000	2610	8260	4250	2220	2230	3140	2210
2	1200	804	1290	1570	2040	2320	6690	6580	2010	1960	2620	1890
3	1630	798	1220	1560	2040	2170	5920	12800	1810	1740	2340	2030
4	863	790	1180	1600	2130	2090	5200	9320	2030	1560	2080	2250
5	723	827	1130	1490	2130	2110	4620	7230	2000	1890	1840	1450
6	706	1580	1080	1530	2200	6650	4250	15400	2100	3270	1610	1320
7	707	1510	994	1520	2180	20900	3900	21500	2430	5800	1470	1260
8	684	1720	969	1610	2080	12500	3660	14900	2270	4340	1380	1220
9	651	1460	948	2590	1890	8750	3550	10500	2290	3170	1300	1270
10	644	1290	908	3990	1660	7590	3410	18000	2780	2920	1270	1230
11	643	1180	879	3460	e1500	8070	3210	26100	2580	3140	1220	1170
12	641	1100	812	3650	e1480	8910	3060	18500	2280	3050	1390	1190
13	633	1090	e830	5970	1450	8400	2870	13600	2320	2780	1520	1270
14	622	1200	e850	5620	1620	7370	2690	10000	2160	4010	1490	1190
15	620	1180	e860	6250	2250	6870	2630	10500	2200	4120	1440	1370
16	619	1100	e800	6880	5750	6830	2700	19600	2370	3050	1340	1620
17	610	1060	e760	6360	6290	5960	2750	21000	7310	4580	1480	2840
18	625	1020	e740	5470	5330	5170	2390	14300	6580	5180	1480	3810
19	675	1010	e760	4710	4870	5000	2350	10300	5670	4560	1470	2860
20	657	2600	e780	4200	3960	4470	2380	8270	5430	10300	2080	2260
21	693	5680	808	3490	3910	4900	2250	6770	11300	10500	2680	1950
22	778	5010	801	2910	4400	6480	2090	5780	7990	9910	2250	1760
23	812	3860	824	2710	4050	6450	2110	5180	9730	7540	4310	1690
24	850	3170	1100	2450	3740	9090	2080	5740	8690	6100	6320	3680
25	803	2740	2830	2250	3380	16300	1840	4950	6630	4850	5920	3580
26	771	2440	3050	2190	3800	13000	1780	4360	5270	4360	6690	2930
27	769	2340	2900	2130	3400	10100	2190	3890	4190	7430	4780	2780
28	759	2240	2510	2140	2910	8030	3700	3390	3520	5630	3650	2710
29	745	1990	2220	2140	---	6670	3350	2990	3090	4420	3010	2360
30	731	1690	1970	2110	---	6430	3420	2720	2570	3560	2660	2130
31	720	---	1770	2070	---	8360	---	2510	---	3470	2520	---
TOTAL	23450	55198	39963	98250	84440	230550	101300	320930	123820	141420	78750	61280
MEAN	756	1840	1289	3169	3016	7437	3377	10350	4127	4562	2540	2043
MAX	1630	5680	3050	6880	6290	20900	8260	26100	11300	10500	6690	3810
MIN	610	719	740	1490	1450	2090	1780	2510	1810	1560	1220	1170
CFSM	.24	.59	.41	1.02	.97	2.39	1.09	3.33	1.33	1.47	.82	.66
IN.	.28	.66	.48	1.18	1.01	2.76	1.21	3.84	1.48	1.69	.94	.73

CAL YR 1988 TOTAL 1009724 MEAN 2759 MAX 38400 MIN 466 CFSM .89 IN. 12.08
WTR YR 1989 TOTAL 1359351 MEAN 3724 MAX 26100 MIN 610 CFSM 1.20 IN. 16.26

e Estimated

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^2.

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.--No estimated daily discharges. 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.

AVERAGE DISCHARGE.--57 years, 4,156 ft^3/s, 13.86 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 340,000 ft^3/s, Mar. 18, 1936, gage height, 47.6 ft, from rating curve extended above 120,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge observed, 180 ft^3/s, Oct. 4, 1932, gage height, 2.01 ft.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 23,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	1315	27,500	14.47	May 11	0830	33,800	16.19
May 7	1015	27,200	14.39	May 17	0545	*34,600	*16.41

Minimum discharge, 534 ft^3/s, Dec. 13, gage height, 2.63 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	995	777	1660	1880	2150	3120	10500	3870	2740	2690	4110	2480
2	927	782	1470	1750	2120	2790	9060	5330	2440	2360	3310	2130
3	1320	849	1360	1690	2150	2520	7450	13900	2200	2070	2850	1860
4	1510	855	1290	1700	2240	2400	6620	12200	2180	1860	2530	2250
5	904	911	1230	1680	2280	2360	5730	8900	2390	1920	2210	1980
6	786	1130	1190	1620	2340	3560	5130	15200	2190	2780	1920	1450
7	764	1860	1130	1670	2380	21500	4720	25700	2510	4750	1690	1350
8	771	1630	1050	1660	2310	16900	4310	19200	2590	6340	1550	1290
9	749	1760	1040	2180	2140	11200	4060	13500	2520	4400	1460	1260
10	712	1530	1020	3550	1990	8850	3900	16500	3020	3270	1380	1300
11	707	1340	973	4090	1770	9100	3690	31800	2970	3340	1360	1260
12	701	1220	915	3820	1730	10400	3460	23900	2740	3360	1330	1210
13	696	1180	686	6190	1660	10700	3290	17100	2430	3180	1520	1250
14	691	1230	864	6810	1670	9460	3050	13000	2500	3160	1600	1270
15	683	1330	1070	6690	2010	8690	2930	12400	2410	5010	1630	1200
16	679	1270	897	7940	4640	8610	2890	22600	2670	4080	1570	1500
17	681	1190	892	7540	7300	7600	2970	32100	5800	4430	1570	1860
18	681	1140	885	6580	6540	6380	2840	21100	8070	5630	1670	3610
19	693	1110	949	5540	5690	5960	2630	14100	6410	5500	1660	3390
20	727	1920	1020	4810	4830	5460	2620	10700	5540	7660	2110	2700
21	734	6330	996	4210	4290	5250	2570	8680	13100	11700	2770	2210
22	802	6160	978	3380	4860	6290	2410	7190	11100	11100	2780	1960
23	856	4860	961	3000	4820	7390	2260	6190	10100	10600	3450	1820
24	890	3820	1040	2840	4460	8010	2280	6860	11400	7580	5050	2130
25	909	3180	2100	2540	4090	19800	2240	6710	8390	5890	6720	4080
26	870	2770	3390	2410	3900	17300	2010	5540	6530	5120	6610	3360
27	839	2510	3370	2330	4270	13200	1970	4900	5140	7080	5820	2910
28	833	2410	2970	2280	3470	10300	3030	4210	4450	7330	4260	2840
29	823	2270	2600	2260	---	8310	3590	3700	3730	5600	3380	2650
30	802	2020	2290	2250	---	7400	3430	3280	3150	4330	2960	2370
31	789	---	2050	2230	---	9590	---	3000	---	4020	2630	---
TOTAL	25524	61344	44336	109120	94100	270400	117640	393360	143410	158140	85460	62930
MEAN	823	2045	1430	3520	3361	8723	3921	12690	4780	5101	2757	2098
MAX	1510	6330	3390	7940	7300	21500	10500	32100	13100	11700	6720	4080
MIN	679	777	686	1620	1660	2360	1970	3000	2180	1860	1330	1200
CFSM	.20	.50	.35	.86	.83	2.14	.96	3.12	1.17	1.25	.68	.52
IN.	.23	.56	.40	1.00	.86	2.47	1.07	3.59	1.31	1.44	.78	.57

CAL YR 1988 TOTAL 1212432 MEAN 3313 MAX 50300 MIN 500 CFSM .81 IN. 11.07
WTR YR 1989 TOTAL 1565764 MEAN 4290 MAX 32100 MIN 679 CFSM 1.05 IN. 14.30

01614500 CONOCOCHEAGUE CREEK AT FAIRVIEW, MD

LOCATION.--Lat 39°42'57", long 77°49'28", Washington County, Hydrologic Unit 02070004, on right bank 0.7 mi upstream from highway bridge in Fairview, 2.0 mi upstream from Rockdale Run, 6.5 mi northwest of Hagerstown, and 19.1 mi upstream from mouth.

DRAINAGE AREA.--494 mi^2.

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

REVISED RECORDS.--WSP 756: Drainage area. WSP 1432: 1929(M), 1930, 1931-32(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 391.85 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1932, nonrecording gage at highway bridge 0.7 mi downstream at datum 2.93 ft lower. Dec. 6, 1932, to Oct. 7, 1933, nonrecording gage 150 ft downstream from former site at datum 4.92 ft lower than present datum.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Low flow partly regulated by small powerplants near Mercersburg, Pa. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--61 years, 587 ft^3/s, 16.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,400 ft^3/s, June 23, 1972, gage height, 24.5 ft, from flood-mark, from rating curve extended above 15,000 ft^3/s on basis of contracted-opening and flow-over-road measurement of peak flow; minimum discharge, 21 ft^3/s, Aug. 8, Sept. 12, 1966; minimum daily discharge, 25 ft^3/s Nov. 28, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known prior to 1928, about 16.5 ft, present datum, sometime in 1889, from information by local residents, discharge, about 22,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 17	0315	*7,730	*10.16	July 20	1600	7,070	9.71
July 17	1430	5,400	8.46				

Minimum discharge, 83 ft^3/s, Oct. 15, 20, gage height, 1.23 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	89	200	180	262	375	1580	292	558	455	1370	174
2	102	90	187	175	244	337	1260	587	508	415	968	169
3	103	90	175	179	247	316	1120	598	468	385	778	164
4	101	88	165	181	287	304	1020	443	520	375	651	156
5	98	96	156	e130	270	317	922	439	497	1530	568	152
6	92	159	153	e130	254	735	928	1920	477	1880	509	153
7	90	229	149	e160	243	879	805	2560	461	1100	463	153
8	90	160	145	e220	227	748	729	1800	430	957	467	152
9	90	135	141	459	184	617	687	1360	411	709	409	153
10	90	122	135	455	e180	600	629	2180	444	593	371	152
11	89	114	128	350	e185	651	564	2750	387	516	350	148
12	88	107	e125	462	e180	916	524	2230	342	452	341	145
13	88	115	e145	1130	e175	1280	496	1770	339	548	330	141
14	88	192	e160	830	227	1180	466	1560	336	871	312	139
15	86	209	e145	897	296	1150	462	1580	349	690	294	138
16	87	166	e140	1100	524	1260	518	4260	569	1210	298	144
17	88	153	e140	876	531	1030	472	7250	912	4490	288	187
18	87	155	e130	713	448	898	427	4360	744	1830	260	159
19	88	149	e130	614	401	859	436	2680	533	1270	251	149
20	86	481	142	536	376	728	424	1980	456	4380	244	145
21	89	1650	146	453	441	742	382	1630	1120	3120	240	147
22	122	901	143	e370	720	689	359	1350	2490	1660	244	155
23	129	569	145	348	709	607	337	1180	1560	1480	223	174
24	132	434	e190	341	597	1040	322	1310	1170	1160	210	170
25	114	354	e390	320	491	2240	312	1120	1010	976	199	148
26	101	304	357	308	475	1540	305	980	806	855	191	163
27	98	273	269	308	474	1210	295	922	662	755	186	192
28	94	264	240	283	418	1060	284	801	734	709	183	163
29	90	243	222	259	---	942	283	694	663	606	181	145
30	89	217	198	258	---	987	290	636	524	544	185	137
31	89	---	183	282	---	1660	---	597	---	1510	186	---
TOTAL	2981	8308	5474	13307	10066	27897	17638	53819	20480	38031	11750	4667
MEAN	96.2	277	177	429	359	900	588	1736	683	1227	379	156
MAX	132	1650	390	1130	720	2240	1580	7250	2490	4490	1370	192
MIN	86	88	125	130	175	304	283	292	336	375	181	137
CFSM	.19	.56	.36	.87	.73	1.82	1.19	3.51	1.38	2.48	.77	.31
IN.	.22	.63	.41	1.00	.76	2.10	1.33	4.05	1.54	2.86	.88	.35

CAL YR 1988 TOTAL 155429 MEAN 425 MAX 7220 MIN 86 CFSM .86 IN. 11.70
WTR YR 1989 TOTAL 214418 MEAN 587 MAX 7250 MIN 86 CFSM 1.19 IN. 16.15

e Estimated

01617800 MARSH RUN AT GRIMES, MD

LOCATION.--Lat 39°30'53", long 77°46'38", Washington County, Hydrologic Unit 02070004, on right bank 220 ft upstream from bridge on Sprecher Road, 0.1 mi downstream from unnamed tributary, 0.5 mi southwest of Grimes, 1.5 mi upstream from mouth, and 2.2 mi southwest of Fairplay.

DRAINAGE AREA.--18.9 mi^2.

PERIOD OF RECORD.--October 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 354.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--26 years, 12.0 ft^3/s, 8.62 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 459 ft^3/s, Feb. 12, 1985, gage height, 4.45 ft, from rating curve extended above 220 ft^3/s; no flow Oct. 1, 1977, result of regulation caused by construction work upstream from station.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 60 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 16	2045	*58	*1.96	No peak greater than base discharge.			

Minimum discharge, 0.43 ft^3/s, Oct. 18, gage height, 0.66 ft, result of regulation from unknown source.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.4	1.8	1.3	2.6	4.5	11	9.5	18	13	8.3	3.4
2	1.2	1.4	1.7	1.3	2.9	4.0	10	15	18	12	8.1	3.5
3	1.2	1.3	1.7	1.3	4.4	4.0	11	9.1	18	11	7.5	3.4
4	1.2	1.1	1.7	1.5	5.1	4.5	11	7.9	19	11	7.2	3.3
5	1.2	2.2	1.6	1.2	4.0	5.2	11	9.4	19	18	6.9	3.3
6	1.0	2.6	1.6	1.6	3.9	12	11	30	18	17	6.8	3.4
7	1.0	1.7	1.5	2.1	3.6	10	10	26	18	14	6.7	3.3
8	1.1	1.4	1.6	2.5	3.3	8.2	9.3	18	18	15	6.8	3.4
9	1.1	1.3	1.6	2.9	e2.9	7.9	9.0	16	18	16	6.4	3.3
10	1.1	1.3	e1.6	2.6	e2.9	8.5	8.5	22	21	14	6.5	3.1
11	1.1	1.2	e1.3	2.3	e2.9	10	8.3	20	18	14	6.3	3.0
12	1.2	1.1	e1.0	4.9	2.9	12	8.2	18	18	13	6.3	2.9
13	1.3	1.9	e1.1	7.8	2.8	11	8.4	17	17	13	5.3	3.1
14	1.3	2.0	e1.1	5.7	4.0	11	8.1	20	18	14	4.2	3.0
15	1.3	1.5	e1.1	e7.3	4.6	11	8.3	38	19	13	4.1	2.9
16	1.4	1.3	e1.0	e6.3	5.2	9.8	8.4	44	19	12	4.1	3.5
17	.99	1.5	e.90	e5.4	4.0	9.6	7.8	47	20	12	4.9	3.5
18	.46	1.3	e1.0	e4.8	3.8	9.8	7.6	35	19	12	5.7	3.1
19	.83	1.5	e1.1	3.9	3.6	9.3	7.7	31	18	11	6.0	3.0
20	1.0	8.0	1.3	3.5	3.7	8.1	7.2	30	17	12	5.8	3.1
21	1.2	5.2	1.4	e3.1	4.6	8.6	7.1	28	20	12	5.8	3.9
22	1.9	2.9	1.3	e3.1	6.5	8.2	7.0	24	19	12	5.6	4.8
23	1.5	2.4	1.5	3.2	6.2	8.8	6.5	25	17	11	5.3	4.5
24	1.4	2.1	2.9	3.1	5.1	18	6.0	30	16	10	4.8	4.0
25	1.4	2.1	3.1	3.1	e4.8	18	6.2	23	15	9.5	4.4	3.0
26	1.3	2.0	2.3	3.2	5.2	14	6.5	21	14	9.1	4.6	4.1
27	1.2	2.1	2.0	3.2	5.4	13	6.4	22	14	8.9	4.6	3.5
28	1.3	2.5	2.1	2.9	5.1	12	6.2	20	13	8.7	4.5	3.2
29	1.6	2.0	2.5	2.8	---	11	6.9	19	13	8.4	4.3	3.1
30	1.4	1.8	2.0	2.8	---	12	7.8	18	13	8.4	4.0	2.8
31	1.4	---	1.3	2.7	---	13	---	18	---	9.0	3.5	---
TOTAL	37.78	62.1	49.70	103.4	116.0	307.0	248.4	710.9	522	374.0	175.3	101.4
MEAN	1.22	2.07	1.60	3.34	4.14	9.90	8.28	22.9	17.4	12.1	5.65	3.38
MAX	1.9	8.0	3.1	7.8	6.5	18	11	47	21	18	8.3	4.8
MIN	.46	1.1	.90	1.2	2.6	4.0	6.0	7.9	13	8.4	3.5	2.8
CFSM	.06	.11	.08	.18	.22	.52	.44	1.21	.92	.64	.30	.18
IN.	.07	.12	.10	.20	.23	.60	.49	1.40	1.03	.74	.35	.20

CAL YR 1988 TOTAL 1669.11 MEAN 4.56 MAX 28 MIN .46 CFSM .24 IN. 3.29
WTR YR 1989 TOTAL 2807.98 MEAN 7.69 MAX 47 MIN .46 CFSM .41 IN. 5.53

e Estimated

01618000 POTOMAC RIVER AT SHEPHERDSTOWN, WV

LOCATION.--Lat 39°26'04", long 77°48'07", Jefferson County, Hydrologic Unit 02070004, on right bank, 0.1 mi downstream from Rumsey Bridge at Shepherdstown, 3.3 mi upstream from Antietam Creek, and at mile 184.

DRAINAGE AREA.--5,936 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to September 1953. Annual maximums, water years 1954-64. July 1964 to current year. Gage-height record and estimated discharges October 1953 to June 1964 available in files of the Mid-Atlantic district office.

REVISED RECORDS.--WSP 756: Drainage area. WSP 781: 1929(M).

GAGE.--Water-stage recorder. Datum of gage is 281.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for estimated daily discharges (ice effect), which are fair. Some regulation at low flow by power plants upstream from station, prior 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. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1929-53, 1965-89), 6,133 ft^3/s, 14.03 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 335,000 ft^3/s, Mar. 19, 1936, gage height, 42.1 ft, from floodmarks, from rating curve extended above 200,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 170 ft^3/s, Aug. 1, 1966; minimum daily discharge, 185 ft^3/s, July 31, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in June 1889 and May 1924 reached stages of 39.2 ft and 29.8 ft respectively, from floodmarks, discharges, about 290,000 ft^3/s and 168,000 ft^3/s respectively, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 23,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 8	0230	33,200	11.09	May 11	1830	45,600	13.58
Mar. 25	2400	31,700	10.77	May 17	1500	*60,100	*16.20
May 7	1930	38,300	12.14	June 22	0630	24,100	9.11

Minimum discharge, 998 ft^3/s, Nov. 2, gage height, 1.86 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1700	1350	2650	2970	2940	4960	16200	4350	5010	4490	7650	3120
2	1750	1070	2240	3050	2820	4420	15400	5820	4620	3840	6540	2840
3	1580	1350	2220	2620	3050	4100	12600	11500	4070	3570	5300	2520
4	1600	1120	2270	2560	3340	3790	10800	17900	3820	3120	4600	2320
5	2160	1360	2380	2410	3460	3840	9460	13100	3870	3980	4350	2520
6	1710	1510	2340	2290	3360	4540	8510	16000	4020	7350	3760	2480
7	1280	2090	2430	2180	3300	16200	7800	35100	3810	7650	3400	2070
8	1320	2790	2310	2620	3250	28900	7010	32100	4090	8880	2870	1800
9	1250	2440	2190	3040	3000	18500	6530	22300	4110	8480	2770	1690
10	1260	2500	2190	4130	2660	13500	6200	19900	4290	6310	2500	1740
11	1240	2370	2110	5280	2500	12200	5870	39900	4520	5080	2340	1760
12	1280	2120	1970	5500	2510	13800	5500	39200	4230	4990	2310	1820
13	1220	2030	1770	6850	2420	15800	5250	28100	3920	4840	2180	1730
14	1250	2180	1510	10300	2930	15400	5080	21400	3690	4770	2320	1750
15	1300	2390	1570	9450	3130	13600	4860	18200	3670	5420	2520	1810
16	1270	2500	e1500	10300	4060	13300	4340	24500	3660	6480	2490	1640
17	1270	2240	e1450	11300	7950	12700	4200	55300	4940	10100	2490	2020
18	1290	2090	e1400	9950	9490	10500	4250	43400	10200	11200	2480	2430
19	1350	2150	1470	8400	8270	9180	3910	27200	9440	8950	2500	4050
20	1370	2300	1420	7000	7240	8650	3780	19400	7800	10200	2440	3880
21	1340	6330	1670	5770	6270	7900	3690	15200	9620	19800	2690	3080
22	1260	10300	1680	4720	6180	7890	3540	12700	21900	15900	3250	2740
23	1370	7920	1730	3760	7220	9080	3330	10700	13600	15100	3300	2590
24	1300	6080	2230	3510	7140	9890	3150	11300	15700	12300	4040	2410
25	1250	4890	2600	3460	6650	21400	3110	13000	13700	9510	6100	2720
26	1270	4080	3980	3210	5940	28500	3090	10300	10500	7640	6750	4570
27	1280	3620	4880	3010	5550	21200	2840	8850	8140	7370	7220	4050
28	1110	3320	4690	2880	5650	16500	2750	7790	6910	10100	5790	3510
29	1080	3120	4210	2850	---	13300	4020	6710	6250	8400	4520	3390
30	1150	2940	3680	2610	---	11200	4370	6010	5290	6600	3790	3200
31	1090	---	3240	2900	---	12300	---	5520	---	5780	3350	---
TOTAL	41950	92550	73980	150880	132280	387040	181440	602750	209390	248200	118610	78250
MEAN	1353	3085	2386	4867	4724	12490	6048	19440	6980	8006	3826	2608
MAX	2160	10300	4880	11300	9490	28900	16200	55300	21900	19800	7650	4570
MIN	1080	1070	1400	2180	2420	3790	2750	4350	3660	3120	2180	1640
CFSM	.23	.52	.40	.82	.80	2.10	1.02	3.28	1.18	1.35	.64	.44
IN.	.26	.58	.46	.95	.83	2.43	1.14	3.78	1.31	1.56	.74	.49

CAL YR 1988 TOTAL 1857622 MEAN 5075 MAX 67300 MIN 852 CFSM .86 IN. 11.64
WTR YR 1989 TOTAL 2317320 MEAN 6349 MAX 55300 MIN 1070 CFSM 1.07 IN. 14.52

e Estimated

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, 1881; 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 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (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											
31...	1130	1040	426	7.5	10.0	13.0	766	1.5	10.9	96	2700
JAN											
03...	1125	2400	292	7.6	4.0	10.0	753	2.9	13.4	104	K3
MAR											
13...	1230	16000	230	7.5	6.0	15.0	760	9.8	13.2	106	--
MAY											
01...	0935	4200	300	7.3	16.0	20.0	757	3.1	8.6	88	84
JUN											
26...	1140	10900	202	7.4	24.0	28.0	755	12	8.1	97	220
SEP											
05...	1155	2480	301	7.5	23.0	23.0	766	2.5	7.8	91	120

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 WH TOT FET FIELD MG/L AS CACO3	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)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT											
31...	K4	65	12	23	3.4	101	100	35	0.10	0.51	320
JAN											
03...	K5	36	7.3	8.9	1.7	66	54	11	0.10	3.2	169
MAR											
13...	--	23	5.2	7.4	1.9	39	41	11	0.10	5.9	122
MAY											
01...	270	36	7.7	8.9	2.1	69	50	11	0.10	1.3	167
JUN											
26...	180	24	4.7	3.9	2.0	55	21	5.6	0.10	6.7	112
SEP											
05...	76	42	7.4	8.2	2.2	86	40	9.5	0.10	6.1	163

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (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)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)
OCT										
31...	304	0.980	0.020	1.00	<0.010	0.030	<0.20	0.040	0.040	0.020
JAN										
03...	167	1.09	0.010	1.10	0.030	0.020	0.40	0.020	0.010	0.020
MAR										
13...	125	--	<0.010	1.30	0.060	0.040	0.80	0.050	0.010	0.020
MAY										
01...	163	0.960	0.010	0.970	0.050	0.050	0.80	0.030	0.020	0.010
JUN										
26...	105	--	<0.010	1.00	0.040	0.040	0.40	0.040	0.030	0.020
SEP										
05...	172	1.09	0.010	1.10	0.040	0.040	0.40	0.030	0.030	0.020

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

01618000 POTOMAC RIVER AT SHEPHERDSTOWN, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT										
31...	<10	<1	38	<0.5	<1	<1	<3	2	18	<5
JAN										
03...	--	--	--	--	--	--	--	--	--	--
MAR										
13...	20	<1	34	<0.5	<1	<1	<3	<1	37	<5
MAY										
01...	20	<1	45	<0.5	<1	<1	<3	4	18	<5
JUN										
26...	--	--	--	--	--	--	--	--	--	--
SEP										
05...	20	<1	49	<0.5	<1	<1	<3	6	12	1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT										
31...	12	7	<0.1	<10	<1	<1	1.0	210	<6	12
JAN										
03...	--	--	--	--	--	--	--	--	--	--
MAR										
13...	6	50	<0.1	<10	6	<1	4.0	110	<6	8
MAY										
01...	8	8	<0.1	<10	2	<1	<1.0	190	<6	14
JUN										
26...	--	--	--	--	--	--	--	--	--	--
SEP										
05...	9	31	<0.1	<10	2	<1	<1.0	210	<6	14

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND	TEMPERATURE WATER (DEG C)	SPECIFIC CONDUCTANCE (US/CM)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT							
31...	1130	1040	10.0	426	1	2.8	50
JAN							
03...	1125	2400	4.0	292	6	39	49
MAR							
13...	1230	16000	6.0	230	29	1250	95
MAY							
01...	0935	4200	16.0	300	12	136	86
JUN							
26...	1140	10900	24.0	202	38	1120	95
SEP							
05...	1155	2480	23.0	301	7	47	97

01619320 ALBERT POWELL FISH HATCHERY SPRING AT BEAVER CREEK, MD

LOCATION.--Lat 39°35'22", long 77°38'19", Washington County, Hydrologic Unit 02070004, on left bank at spring outlet, 0.2 mi upstream from Beaver Creek, and 0.4 mi north of the town of Beaver Creek.

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 505 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17 ft^3/s, May 16, 1989, gage height, 1.69 ft; minimum discharge, 4.9 ft^3/s, Dec. 18, 19, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17 ft^3/s, May 16; minimum discharge, 4.9 ft^3/s, Dec. 18, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	5.5	5.3	5.5	5.7	5.9	7.8	6.9	11	8.7	8.1	7.2
2	6.0	5.5	5.5	5.5	5.7	6.0	7.7	7.2	11	8.7	8.1	7.2
3	5.7	5.5	5.5	5.5	5.7	6.0	7.5	7.0	11	8.7	7.9	7.2
4	5.7	5.5	5.3	5.5	5.5	6.0	7.7	6.9	11	8.7	7.8	7.2
5	5.9	5.5	5.2	5.5	5.3	6.0	7.7	7.0	11	8.7	7.8	7.2
6	6.0	5.5	5.2	5.5	5.3	6.2	7.5	9.7	11	8.7	7.7	7.2
7	5.7	5.5	5.2	5.5	5.5	6.3	7.5	9.7	10	8.7	7.5	7.2
8	5.7	5.5	5.2	5.5	5.5	6.3	7.5	9.2	10	8.6	7.5	7.2
9	5.7	5.5	5.2	5.6	5.5	6.3	7.3	9.0	10	8.7	7.5	7.2
10	5.7	5.5	5.2	5.7	5.5	6.4	7.2	9.0	10	8.7	7.6	7.2
11	5.7	5.5	5.2	5.7	5.5	6.6	7.2	9.0	10	8.5	7.8	7.2
12	5.7	5.5	5.2	5.7	5.3	6.7	7.2	9.0	10	8.4	7.8	7.2
13	5.7	5.5	5.2	5.7	5.2	6.9	7.2	9.0	9.6	8.4	7.8	7.2
14	5.7	5.5	5.2	5.6	5.4	7.0	7.2	9.3	9.3	8.4	7.8	7.2
15	5.6	5.5	5.2	5.5	5.5	7.2	7.2	11	9.4	8.4	7.8	7.2
16	5.5	5.5	5.2	5.6	5.5	7.2	7.3	16	9.7	8.4	7.8	7.2
17	5.5	5.5	5.2	5.7	5.5	7.2	7.5	16	9.7	8.4	7.8	6.9
18	5.7	5.5	5.0	5.7	5.5	7.2	7.5	14	9.6	8.4	7.7	6.9
19	5.7	5.5	5.0	5.7	5.5	7.2	7.5	14	9.3	8.4	7.5	6.9
20	5.5	5.6	5.2	5.8	5.5	7.2	7.5	14	9.3	8.4	7.5	6.9
21	5.5	5.7	5.2	6.0	5.6	7.0	7.5	13	9.2	8.4	7.3	6.9
22	5.5	5.7	5.2	6.0	5.7	6.9	7.2	12	9.0	8.4	7.2	7.0
23	5.5	5.7	5.2	5.9	5.7	6.9	7.2	12	9.0	8.4	7.2	6.7
24	5.5	5.7	5.2	5.7	5.7	7.4	7.2	12	9.0	8.4	7.2	6.6
25	5.5	5.7	5.5	5.7	5.7	8.0	7.2	12	9.0	8.4	7.2	6.6
26	5.5	5.5	5.5	5.7	5.7	8.1	7.2	11	9.0	8.2	7.2	6.8
27	5.5	5.5	5.5	5.5	5.7	8.1	7.2	11	8.8	8.1	7.2	6.9
28	5.5	5.3	5.6	5.5	5.7	8.1	7.2	11	8.7	8.1	7.2	6.9
29	5.5	5.2	5.7	5.5	---	8.1	7.2	11	8.7	8.1	7.2	6.9
30	5.5	5.2	5.7	5.5	---	8.1	7.0	11	8.7	8.1	7.2	6.9
31	5.5	---	5.7	5.6	---	7.9	---	11	---	8.1	7.2	---
TOTAL	174.9	165.3	164.4	174.6	155.1	216.4	220.8	329.9	291.0	261.7	234.1	211.0
MEAN	5.64	5.51	5.30	5.63	5.54	6.98	7.36	10.6	9.70	8.44	7.55	7.03
MAX	6.0	5.7	5.7	6.0	5.7	8.1	7.8	16	11	8.7	8.1	7.2
MIN	5.5	5.2	5.0	5.5	5.2	5.9	7.0	6.9	8.7	8.1	7.2	6.6

CAL YR 1988 TOTAL 2382.9 MEAN 6.51 MAX 14 MIN 5.0
WTR YR 1989 TOTAL 2599.2 MEAN 7.12 MAX 16 MIN 5.0

01619500 ANTIETAM CREEK NEAR SHARPSBURG, MD

LOCATION.--Lat 39°27'01", long 77°43'52", Washington County, Hydrologic Unit 02070004, on left bank 400 ft downstream from Burnside Bridge, 1.0 mi southeast of Sharpsburg, and 4.0 mi upstream from mouth.

DRAINAGE AREA.--281 mi^2.

PERIOD OF RECORD.--June 1897 to September 1905, August 1928 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 192: 1897-1905. WSP 726: Drainage area. WSP 1432: 1929-31(M), 1933, 1935(M), 1937(M), 1949(M), 1952(M).

GAGE.--Water-stage recorder. Concrete control since Mar. 29, 1934. Datum of gage is 311.05 ft above National Geodetic Vertical Datum of 1929. June 24, 1897, to Aug. 25, 1905, nonrecording gage a few hundred feet downstream from Middle Bridge, 1.2 mi upstream at datum 12 ft higher. Aug. 21, 1928, to July 13, 1933, nonrecording gage at Burnside Bridge, 0.1 mi upstream at present datum. National Weather Service gage height telemeter at station.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Some diurnal fluctuation caused by powerplant upstream from station. Since 1928 records include pumpage from the Potomac River for municipal supply of Hagerstown. This water later enters Antietam Creek upstream from station as sewage. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--66 years (water years 1898-1903, 1905, 1931-89), 274 ft^3/s, 13.24 in/yr, adjusted for inflow since January 1930.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft^3/s, July 20, 1956, gage height, 16.73 ft, from rating curve extended above 7,300 ft^3/s on basis of contracted-opening measurement of peak flow; minimum discharge, 9.4 ft^3/s, Nov. 22, 1957, result of regulation caused by construction work upstream from station; minimum daily discharge, 37 ft^3/s, Jan. 30, 1966.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 17	0500	*2,970	*7.52	No other peak greater than base discharge.			

Minimum discharge, 62 ft^3/s, Dec. 13, gage height, 2.17 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	91	103	94	125	171	353	205	439	279	253	128
2	97	90	101	94	121	164	315	368	417	268	209	124
3	100	89	98	96	135	159	309	320	397	261	196	120
4	101	88	96	98	158	159	308	258	410	261	188	118
5	95	106	94	93	145	163	311	277	387	451	181	119
6	92	155	96	93	135	275	315	1030	385	406	176	120
7	92	138	96	99	131	286	299	1090	389	317	180	121
8	92	109	94	107	127	235	286	797	372	344	175	121
9	91	100	95	139	122	215	281	664	354	285	169	120
10	91	96	93	146	117	217	270	759	463	268	165	117
11	91	93	90	131	120	233	261	774	356	266	164	115
12	89	91	87	140	118	263	252	703	328	251	165	115
13	88	97	e85	195	117	287	245	620	326	265	164	116
14	88	128	e95	190	138	288	239	576	334	321	162	115
15	89	113	90	196	140	284	242	716	339	269	159	113
16	89	100	e85	221	158	295	252	1700	434	259	156	116
17	87	104	85	198	158	289	239	2510	470	276	152	124
18	90	105	e80	184	144	285	228	1400	412	264	149	117
19	91	102	e80	171	137	308	228	1050	348	241	148	114
20	89	199	84	159	135	278	225	893	328	253	152	116
21	93	301	88	151	143	283	215	794	371	239	150	129
22	118	182	90	141	187	275	208	715	336	229	148	129
23	105	139	91	136	219	257	201	687	371	226	147	155
24	96	125	125	136	201	392	198	730	387	213	140	139
25	97	115	140	135	185	509	195	692	324	212	138	119
26	93	111	118	133	179	433	193	608	307	206	134	134
27	89	109	104	132	182	391	192	598	295	199	133	139
28	88	120	99	127	177	365	188	551	394	198	133	127
29	88	112	102	123	---	345	186	501	356	191	132	119
30	88	107	95	126	---	342	194	478	298	188	142	114
31	87	---	92	131	---	385	---	460	---	212	134	---
TOTAL	2883	3615	2971	4315	4154	8831	7428	23524	11127	8118	4994	3673
MEAN	93.0	120	95.8	139	148	285	248	759	371	262	161	122
MAX	118	301	140	221	219	509	353	2510	470	451	253	155
MIN	87	88	80	93	117	159	186	205	295	188	132	113
(†)	-15.6	-15.2	-15.3	-15.8	-15.0	-15.1	-15.3	-15.2	-15.6	-15.9	-16.5	-16.1
MEAN≠	77.4	105	81.0	123	133	270	233	744	355	246	144	106
CFSM≠	0.28	0.37	0.29	0.44	0.47	0.96	0.83	2.65	1.26	0.88	0.51	0.38
IN≠	0.32	0.41	0.33	0.51	0.49	1.11	0.93	3.06	1.41	1.02	0.59	0.42

CAL YR 1988	TOTAL	74904	MEAN 205	MAX 2400	MIN 80	MEAN≠	189	CFSM≠	0.67	IN≠	9.13	
WTR YR 1988	TOTAL	85633	MEAN 235	MAX 2510	MIN 80	MEAN≠	219	CFSM≠	0.78	IN≠	10.58	

e Estimnated
† Pumpage in cubic feet per second, from Potomac River for municipal supply of Hagerstown.
≠ Adjusted for pumpage.

01636500 SHENANDOAH RIVER AT MILLVILLE, WV

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^2.

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 of 1929. 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. Water-discharge records good. Regulation by hydroelectric plants, particularly that of Potomac Light and Power Company, 0.5 mi upstream from station. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--74 years (water years 1896-1908, 1929-89), 2,687 ft^3/s, 12.00 in/yr.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 3	1000	23,500	10.56	May 11	1515	15,100	8.44
May 7	1745	*25,100	*10.92				

Minimum discharge, 310 ft^3/s, Oct. 20, gage height, 1.08 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	582	440	656	601	756	1400	3330	2500	1780	1730	1530	2850
2	546	465	677	614	683	1350	2900	6620	1660	1590	1750	2280
3	425	481	689	632	724	1280	2520	21600	1570	1350	1990	1970
4	531	502	664	638	784	1230	2320	14200	1520	1370	1930	1750
5	515	542	621	601	785	1220	2150	9040	1360	1520	1600	1520
6	452	667	590	633	810	1470	2190	9180	1480	2030	1530	1250
7	462	773	567	649	794	2990	2200	20400	1700	1780	1380	1280
8	467	611	556	640	786	5870	1900	19100	1710	1920	1460	1330
9	456	672	587	700	766	5830	1920	12000	2650	1890	1280	1240
10	453	799	577	710	721	4550	1830	10000	3660	1470	1230	1210
11	468	668	583	822	675	3860	1780	13500	3840	1400	1090	1280
12	439	602	591	840	690	3440	1690	12600	4160	1370	1140	1220
13	426	575	529	851	706	3130	1590	9440	3330	1430	1110	1130
14	437	587	506	959	721	2800	1540	7520	2740	1910	1760	1140
15	396	565	565	1000	783	2560	1390	6590	2660	2770	1950	1510
16	419	549	682	1080	854	2300	1390	7940	2680	3010	1550	1340
17	426	545	587	1150	892	2070	1400	12000	2980	2660	1400	1280
18	427	540	560	1360	922	1970	1380	9350	2770	2300	1270	3840
19	438	547	485	1710	980	1910	1590	6960	2590	2600	1430	5430
20	446	713	523	1520	1090	1710	2340	5660	2660	2940	1970	4000
21	505	757	607	1350	1130	1710	2120	4820	2560	2520	2530	3190
22	539	855	601	1150	1220	1820	2020	4220	2560	4090	2420	2690
23	478	820	566	1100	1410	1630	1810	3780	4130	4890	2830	2490
24	469	929	573	1070	1550	2100	1560	3440	4750	3550	3960	3780
25	461	834	608	922	1640	4430	1460	3170	3620	2570	3660	5280
26	444	728	623	903	1690	6880	1410	2870	3210	2170	5810	4420
27	528	698	627	858	1580	6430	1320	2600	2820	1800	6680	3720
28	495	701	632	786	1510	5380	1360	2500	2330	1740	4810	4640
29	466	655	647	770	---	4500	2570	2190	2120	1830	3940	3850
30	441	667	657	785	---	3850	2610	1980	1920	2000	3480	3180
31	455	---	627	802	---	3510	---	1900	---	1650	3040	---
TOTAL	14492	19487	18563	28206	27652	95180	57590	249670	79520	67850	73510	76090
MEAN	467	650	599	910	988	3070	1920	8054	2651	2189	2371	2536
MAX	582	929	689	1710	1690	6880	3330	21600	4750	4890	6680	5430
MIN	396	440	485	601	675	1220	1320	1900	1360	1350	1090	1130
CFSM	.15	.21	.20	.30	.32	1.01	.63	2.65	.87	.72	.78	.83
IN.	.18	.24	.23	.35	.34	1.16	.70	3.06	.97	.83	.90	.93

CAL YR 1988 TOTAL 628191 MEAN 1716 MAX 18700 MIN 396 CFSM .56 IN. 7.69
WTR YR 1989 TOTAL 807810 MEAN 2213 MAX 21600 MIN 396 CFSM .73 IN. 9.89

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 TEMPERATURES: 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 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (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											
31...	0925	457	410	8.0	8.5	14.0	768	1.4	11.3	96	K6000
JAN											
03...	0915	645	435	8.5	40.0	10.0	753	1.3	13.6	215	K3
MAR											
14...	0945	2800	260	7.6	6.0	8.0	757	6.4	12.4	100	--
MAY											
01...	0700	2430	350	7.8	19.0	18.5	756	3.4	8.0	87	50
JUN											
26...	0915	3200	318	7.7	25.5	28.0	755	13	6.4	79	180
SEP											
05...	0905	1320	314	7.9	20.5	21.0	766	6.0	7.8	86	K65

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 WH TOT FET FIELD MG/L AS CACO3	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)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT											
31...	K1	52	17	75	3.4	11	160	29	0.20	11	436
JAN											
03...	K6	53	15	43	2.4	154	94	23	0.10	0.20	339
MAR											
14...	--	28	6.3	12	2.0	74	36	8.8	0.10	6.2	145
MAY											
01...	21	35	10	19	2.4	105	38	12	0.10	1.5	184
JUN											
26...	2000	36	9.0	12	2.7	102	29	9.7	0.10	7.6	185
SEP											
05...	320	39	9.7	10	2.6	112	24	8.4	0.10	7.1	167

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (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)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)
OCT										
31...	357	--	<0.010	0.540	<0.010	<0.010	0.30	0.020	0.020	<0.010
JAN										
03...	327	--	<0.010	0.850	0.020	0.020	0.80	0.020	0.010	0.010
MAR										
14...	149	1.09	0.010	1.10	0.070	0.060	0.90	0.080	0.040	0.050
MAY										
01...	185	0.900	0.020	0.920	0.050	0.050	1.4	0.120	0.090	0.070
JUN										
26...	175	1.58	0.020	1.60	0.050	0.040	0.40	0.110	0.090	0.100
SEP										
05...	174	--	<0.010	1.20	0.020	0.020	0.30	0.080	0.070	0.070

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

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 31...	<10	<1	28	<0.5	<1	2	<3	<1	330	<5
JAN 03...	--	--	--	--	--	--	--	--	--	--
MAR 14...	10	<1	24	<0.5	<1	<1	<3	<1	31	<5
MAY 01...	<10	<1	33	<0.5	<1	<1	<3	4	15	<5
JUN 26...	--	--	--	--	--	--	--	--	--	--
SEP 05...	10	<1	34	<0.5	<1	<1	<3	4	10	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 31...	6	80	<0.1	20	<1	<1	1.0	91	<6	18
JAN 03...	--	--	--	--	--	--	--	--	--	--
MAR 14...	6	13	<0.1	<10	6	<1	<1.0	96	<6	10
MAY 01...	6	5	<0.1	<10	1	<1	<1.0	120	<6	9
JUN 26...	--	--	--	--	--	--	--	--	--	--
SEP 05...	5	15	<0.1	<10	1	<1	<1.0	130	<6	4

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND	TEMPERATURE WATER (DEG C)	SPECIFIC CONDUCTANCE (US/CM)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 31...	0925	457	8.5	410	2	2.5	90
JAN 03...	0915	645	40.0	435	5	8.7	76
MAR 14...	0945	2800	6.0	260	17	129	92
MAY 01...	0700	2430	19.0	350	16	105	90
JUN 26...	0915	3200	25.5	318	43	372	96
SEP 05...	0905	1320	20.5	314	13	46	99

01637500 CATOCTIN CREEK NEAR MIDDLETOWN, MD

LOCATION.--Lat 39°25'35", long 77°33'25", Frederick County, Hydrologic Unit 02070008, on right bank 300 ft downstream from bridge on State Highway 17, 1.3 mi south of Middletown, 2.2 mi downstream from Little Catoctin Creek, and 14.8 mi upstream from mouth.

DRAINAGE AREA.--66.9 mi^2.

PERIOD OF RECORD.--August 1947 to current year.

REVISED RECORDS.--WSP 1432: 1947-48. WDR MD-DE-77-1: 1960(M), 1965(M), 1970(M), 1972(P), 1975(P).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 385 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for June 29 to July 25 (no gage-height record), which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--42 years, 75.2 ft^3/s, 15.26 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft^3/s, Oct. 9, 1976, gage height, 14.13 ft, from rating curve extended above 2,600 ft^3/s on basis of slope-area measurement of peak flow; no flow Aug. 27 to Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0300	1,600	5.11	May 16	1800	*2,000	*5.65

Minimum discharge, 3.0 ft^3/s, Oct. 9-15, Feb. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	6.6	17	21	31	57	125	88	75	e50	39	9.0
2	4.6	6.5	15	21	29	52	102	302	67	e46	33	7.5
3	5.3	6.4	14	22	46	50	103	149	61	e42	28	6.6
4	5.0	6.3	14	19	81	49	97	116	67	e50	25	6.0
5	4.1	11	13	15	58	57	94	210	58	e70	23	5.8
6	3.5	43	12	20	53	203	99	1050	63	e120	26	6.0
7	3.4	21	12	20	49	148	87	619	67	e70	30	6.7
8	3.4	13	12	26	43	115	81	402	59	e60	28	7.3
9	3.3	10	12	49	31	105	76	311	66	e50	25	7.5
10	3.3	9.2	11	37	e32	113	69	500	120	e44	23	6.6
11	3.3	8.7	9.3	33	e30	124	63	364	59	e40	24	6.2
12	3.1	7.8	8.5	75	e28	136	60	296	47	e36	25	5.8
13	3.0	11	10	119	e26	136	57	242	47	e80	26	5.8
14	3.1	17	10	79	52	122	54	212	61	e50	23	6.0
15	3.3	14	11	130	61	123	60	390	71	e40	22	5.8
16	3.9	11	10	133	79	116	65	1250	120	e70	21	6.9
17	3.6	12	11	94	59	99	55	964	134	e50	20	8.7
18	4.5	14	10	79	53	113	53	535	87	e40	18	8.2
19	4.9	14	10	70	51	129	55	392	69	e38	19	7.0
20	5.6	114	9.4	63	51	103	49	308	60	e80	19	8.6
21	8.9	88	13	51	57	123	46	249	61	e55	17	13
22	21	40	14	43	104	103	44	200	53	e48	15	14
23	14	28	18	e42	106	93	42	193	128	e46	14	19
24	9.9	23	54	42	88	275	40	234	151	e44	16	13
25	7.8	19	71	40	76	258	39	167	83	e44	14	9.7
26	6.9	17	39	39	78	200	38	151	68	38	11	14
27	6.7	17	29	41	71	169	37	141	57	35	11	16
28	6.5	27	26	36	64	148	35	115	95	33	10	12
29	6.4	25	27	33	---	133	39	98	e60	32	9.6	9.2
30	6.4	19	22	34	---	130	42	90	e55	30	11	8.1
31	6.0	---	21	35	---	142	---	84	---	51	11	---
TOTAL	179.0	659.5	565.2	1561	1587	3924	1906	10422	2269	1582	636.6	266.0
MEAN	5.77	22.0	18.2	50.4	56.7	127	63.5	336	75.6	51.0	20.5	8.87
MAX	21	114	71	133	106	275	125	1250	151	120	39	19
MIN	3.0	6.3	8.5	15	26	49	35	84	47	30	9.6	5.8
CFSM	.09	.33	.27	.75	.85	1.89	.95	5.03	1.13	.76	.31	.13
IN.	.10	.37	.31	.87	.88	2.18	1.06	5.80	1.26	.88	.35	.15

CAL YR 1988 TOTAL 23574.6 MEAN 64.4 MAX 2750 MIN 1.8 CFSM .96 IN. 13.11
WTR YR 1989 TOTAL 25557.3 MEAN 70.0 MAX 1250 MIN 3.0 CFSM 1.05 IN. 14.21

e Estimated

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^2.

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.--No estimated daily discharges. Water-discharge records good. 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.

AVERAGE DISCHARGE.--94 years, 9,389 ft^3/s, 13.21 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480,000 ft^3/s, Mar. 19, 1936, gage height, 41.03 ft, from rating curve extended above 300,000 ft^3/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; minimum discharge, 530 ft^3/s, Sept. 11, 12, 1966, gage height, 0.27 ft.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 26	1030	37,000	8.84	May 11	2400	61,900	12.58
May 4	0500	35,200	8.55	May 17	1900	*80,900	*15.11
May 7	2300	66,200	13.17				

Minimum discharge, 1,270 ft^3/s, Oct. 16, gage height, 0.72 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2260	1520	3500	3440	3920	6720	19400	7350	7320	6770	8880	6130
2	2050	1550	3190	3230	3790	6060	19200	11300	6770	5910	9160	5350
3	1910	1510	2910	3180	3730	5500	16100	28600	6200	5250	7720	4720
4	1730	1550	2750	3050	4050	5110	13900	33100	5800	4860	6780	4200
5	2270	1740	2560	2970	4100	4910	12400	24800	5590	5810	6020	3860
6	2190	2100	2400	2870	4300	6360	11200	27100	5950	8870	5230	4010
7	1660	2320	2370	2850	4230	13500	10400	54000	6110	10100	4760	3420
8	1520	3000	2320	2840	4200	29600	9300	57400	5950	10300	4410	3180
9	1490	2980	2230	3250	4060	25700	8670	40100	6790	11800	4070	3070
10	1510	3000	2110	3920	3740	19600	8090	32100	8070	8720	3810	2950
11	1470	2870	2160	5580	3390	16800	7700	49200	8540	6970	3490	2950
12	1470	2490	2140	6730	3310	17300	7240	56400	8790	6440	3480	3030
13	1380	2340	2060	7140	3350	19200	6750	41600	7870	6380	3450	2870
14	1380	2360	1790	11100	3400	19000	6430	31900	6980	6690	3620	2790
15	1380	2390	1440	11400	3570	17000	6130	27300	6860	7690	4390	3040
16	1320	2500	1970	11500	4230	15900	5860	36000	7060	10100	4260	3200
17	1360	2570	2160	12900	7500	15500	5910	71200	8090	10700	3810	3050
18	1390	2390	1890	12000	10900	13500	5890	63100	11800	14900	3700	4340
19	1410	2320	1850	10900	9850	11800	5760	40200	13600	12300	3740	8960
20	1430	2920	1700	9360	8760	10900	6310	29300	11400	12100	4090	8260
21	1480	4490	1880	8070	7960	10200	6110	23500	10500	20800	4820	6730
22	1770	11600	2080	6990	7680	9910	5900	19000	23500	20400	5530	5620
23	1740	9590	2040	5870	8970	10600	5490	16300	19400	20600	5850	5070
24	1700	7580	2130	5290	9270	13600	5020	15600	20900	17600	7300	5270
25	1720	6140	2420	5010	8470	22100	4830	17400	19000	13200	8910	7430
26	1720	5110	3180	4560	7980	35600	4680	14800	14900	10700	11800	8560
27	1760	4510	5090	4440	7480	29700	4520	12700	12200	9280	14600	7870
28	1680	4250	4960	4160	7740	23500	4320	11400	10100	11200	11700	7740
29	1630	4010	4620	4000	---	19000	5600	9800	9300	11300	9010	7230
30	1550	3820	4130	3950	---	16000	7310	8620	7810	9540	7560	6450
31	1530	---	3760	3960	---	15600	---	7830	---	8210	6630	---
TOTAL	50860	107520	81790	186510	163930	485770	246420	919000	303150	325490	192580	151350
MEAN	1641	3584	2638	6016	5855	15670	8214	29650	10100	10500	6212	5045
MAX	2270	11600	5090	12900	10900	35600	19400	71200	23500	20800	14600	8960
MIN	1320	1510	1440	2840	3310	4910	4320	7350	5590	4860	3450	2790
CFSM	.17	.37	.27	.62	.61	1.62	.85	3.07	1.05	1.09	.64	.52
IN.	.20	.41	.32	.72	.63	1.87	.95	3.54	1.17	1.25	.74	.58

CAL YR 1988 TOTAL 2609620 MEAN 7130 MAX 93400 MIN 1230 CFSM .74 IN. 10.06
WTR YR 1989 TOTAL 3214370 MEAN 8806 MAX 71200 MIN 1320 CFSM .91 IN. 12.39

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. Missing record from July 25 to August 25 when local observer was sick.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: 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.--
WATER TEMPERATURE: Maximum daily recorded, 29.0°C, July 11, 15 (may have been higher during period of missing record); minimum daily, 0.0°C, Dec. 10-12.
SEDIMENT CONCENTRATION: Maximum daily mean, 330 mg/L, May 7; minimum daily mean, 1 mg/L, Nov. 11, Dec. 2, 3,7-9.
SEDIMENT LOAD: Maximum daily, 53,400 tons, May 17; minimum daily, 6.0 tons, Dec. 9.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND	TEMPERATURE WATER (DEG C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM
MAY 08...	1305	1180	13.0	245	781	85	91

DATE	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM
MAY 08...	97	99	13	34	48	62	74

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	8.0	6.0	2.0	7.0	5.0	10.0	17.0	24.0	22.0	---	25.0
2	20.0	8.0	5.0	3.0	6.0	6.0	10.0	16.0	23.0	26.0	---	25.0
3	18.0	13.0	5.0	2.0	7.0	4.0	10.0	16.0	24.0	24.0	---	24.0
4	17.0	8.0	5.0	1.0	4.0	4.0	10.0	16.0	25.0	24.0	---	23.0
5	17.0	14.0	5.0	---	5.0	4.0	11.0	14.0	23.0	24.0	---	22.0
6	16.0	11.0	6.0	6.0	4.0	---	10.0	15.0	23.0	24.0	---	21.0
7	15.0	10.0	5.0	7.0	5.0	---	11.0	13.0	23.0	23.0	---	23.0
8	15.0	10.0	5.0	4.0	4.0	---	10.0	13.0	25.0	24.0	---	21.0
9	15.0	9.0	4.0	4.0	2.0	4.0	14.0	12.0	24.0	25.0	---	---
10	15.0	9.0	.0	3.0	2.0	4.0	11.0	11.0	23.0	25.0	---	26.0
11	15.0	10.0	.0	3.0	3.0	5.0	8.0	11.0	---	29.0	---	24.0
12	16.0	9.0	.0	2.0	3.0	5.0	10.0	10.0	19.0	27.0	---	25.0
13	11.0	9.0	1.0	3.0	1.0	6.0	11.0	11.0	22.0	24.0	---	24.0
14	12.0	10.0	1.0	2.0	2.0	6.0	13.0	12.0	22.0	24.0	---	24.0
15	13.0	9.0	---	4.0	4.0	7.0	11.0	12.0	22.0	29.0	---	23.0
16	15.0	10.0	---	4.0	4.0	7.0	13.0	12.0	23.0	24.0	---	22.0
17	16.0	11.0	---	3.0	2.0	7.0	13.0	15.0	22.0	23.0	---	23.0
18	14.0	9.0	---	4.0	4.0	11.0	15.0	15.0	25.0	22.0	---	20.0
19	14.0	9.0	2.0	5.0	5.0	9.0	13.0	16.0	23.0	23.0	---	20.0
20	12.0	8.0	2.0	7.0	5.0	8.0	12.0	16.0	24.0	24.0	---	20.0
21	11.0	8.0	4.0	9.0	5.0	8.0	16.0	19.0	24.0	23.0	---	22.0
22	12.0	8.0	3.0	4.0	5.0	7.0	16.0	17.0	22.0	25.0	---	22.0
23	12.0	7.0	4.0	3.0	5.0	7.0	17.0	17.0	20.0	25.0	---	19.0
24	13.0	6.0	5.0	5.0	4.0	6.0	14.0	17.0	---	---	---	18.0
25	18.0	7.0	5.0	4.0	4.0	9.0	14.0	17.0	29.0	---	---	17.0
26	11.0	8.0	3.0	3.0	5.0	9.0	15.0	8.0	23.0	---	24.0	17.0
27	11.0	9.0	4.0	5.0	4.0	8.0	19.0	19.0	25.0	---	25.0	17.0
28	10.0	7.0	5.0	4.0	3.0	3.0	18.0	20.0	24.0	---	25.0	17.0
29	9.0	7.0	2.0	5.0	---	13.0	18.0	22.0	24.0	---	24.0	16.0
30	10.0	7.0	1.0	4.0	---	12.0	17.0	21.0	23.0	---	24.0	17.0
31	9.0	---	4.0	6.0	---	13.0	---	20.0	---	---	22.0	---

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

SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	11	67	7	29	4	38	8	74	4	42	9	163
2	6	33	13	54	1	8.6	5	44	4	41	14	229
3	6	31	22	90	1	7.9	5	43	4	40	13	193
4	9	42	10	42	2	15	6	49	6	66	6	83
5	5	31	4	19	3	21	6	48	7	77	5	66
6	4	24	4	23	2	13	5	39	6	70	14	240
7	5	22	5	31	1	6.4	5	38	4	46	84	4410
8	3	12	6	49	1	6.3	3	23	5	57	262	20900
9	2	8.0	4	32	1	6.0	3	26	5	55	204	14200
10	2	8.2	3	24	2	11	4	42	4	40	104	5500
11	3	12	1	7.7	2	12	7	105	5	46	40	1810
12	4	16	2	13	3	17	11	200	4	36	26	1210
13	6	22	3	19	7	39	10	193	5	45	26	1350
14	10	37	3	19	18	87	24	719	14	129	34	1740
15	8	30	3	19	14	54	26	800	6	58	33	1510
16	7	25	3	20	8	43	21	652	5	57	28	1200
17	7	26	4	28	5	29	22	766	14	283	26	1090
18	5	19	4	26	3	15	17	551	31	912	23	838
19	3	11	5	31	2	10	14	412	19	505	21	669
20	3	12	5	39	4	18	11	278	16	378	17	500
21	5	20	8	118	5	25	8	174	11	236	12	330
22	4	19	31	971	4	22	6	113	11	228	10	268
23	3	14	22	570	3	17	5	79	10	242	9	258
24	6	28	12	246	4	23	4	57	6	150	16	588
25	7	33	5	83	3	20	4	54	6	137	38	2640
26	7	33	11	152	4	34	4	49	7	151	141	13600
27	7	33	4	49	6	82	4	48	7	141	90	7220
28	6	27	3	34	5	67	4	45	6	125	53	3360
29	5	22	3	32	4	50	4	43	---	---	29	1490
30	5	21	7	72	6	67	5	53	---	---	22	950
31	5	21	---	---	12	122	4	43	---	---	29	1220
TOTAL	---	759.2	---	2941.7	---	986.2	---	5860	---	4393	---	89825
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	43	2250	29	576	17	336	21	384	e23	551	21	348
2	41	2130	58	1770	17	311	14	223	e17	420	20	289
3	33	1430	114	8800	16	268	12	170	e17	354	17	217
4	26	976	152	13600	13	204	14	184	e19	348	16	181
5	23	770	85	5690	11	166	18	282	e13	211	15	156
6	25	756	112	8200	12	193	39	934	e14	198	14	152
7	21	590	330	48100	14	231	42	1150	e14	180	11	102
8	13	326	276	42800	16	257	45	1250	e15	179	9	77
9	13	304	134	14500	17	312	44	1400	e14	154	9	75
10	14	306	72	6240	18	392	23	542	e13	134	10	80
11	15	312	117	15500	21	484	23	433	e13	122	10	80
12	14	274	110	16800	23	546	26	452	e14	132	9	74
13	11	200	89	10000	19	404	26	448	e14	130	8	62
14	7	122	61	5250	21	396	23	415	e15	147	8	60
15	6	99	51	3760	20	370	23	478	e18	213	7	57
16	5	79	75	7290	18	343	27	736	e17	196	9	78
17	5	80	278	53400	20	437	35	1010	e17	175	9	74
18	5	80	219	37300	41	1310	60	2410	e18	180	10	117
19	6	93	112	12200	42	1540	55	1830	e17	172	42	1020
20	10	170	65	5140	46	1420	34	1110	e17	188	32	714
21	22	363	44	2790	37	1050	82	4610	e18	234	21	382
22	17	271	39	2000	119	7550	103	5670	e20	299	18	273
23	9	133	35	1540	148	7750	e93	5170	e21	332	17	233
24	7	95	35	1470	112	6320	e76	3610	e23	453	18	256
25	7	91	36	1690	66	3390	e56	2000	e25	601	37	742
26	6	76	36	1440	59	2370	e40	1160	e28	892	43	994
27	5	61	33	1130	42	1380	e36	902	47	1850	30	637
28	8	93	30	923	28	764	e37	1120	48	1520	36	752
29	27	408	29	767	26	653	e33	1010	42	1020	32	625
30	25	493	21	489	24	506	e24	618	30	612	23	401
31	---	---	18	381	---	---	e20	443	25	448	--	---
TOTAL	---	13431	---	331536	---	41653	---	42154	---	12645	---	9308

TOTAL LOAD FOR YEAR: 555492.1 TONS.

e Estimated

01639000 MONOCACY RIVER AT BRIDGEPORT, MD

LOCATION.--Lat 39°40'43", long 77°14'06", Frederick County, Hydrologic Unit 02070009, on right bank 60 ft downstream from bridge on State Highway 140 at Bridgeport, 0.9 mi upstream from Cattail Branch, 3.4 mi northwest of Taneytown, 4.8 mi downstream from confluence of Rock and Marsh Creeks at Pennsylvania-Maryland State line, and 52 mi upstream from mouth.

DRAINAGE AREA.--173 mi^2.

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1382: 1944(M).

GAGE.--Water-stage recorder. Concrete control since Sept. 15, 1947. Datum of gage is 340.83 ft above National Geodetic Vertical datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 3, 1946, nonrecording gage and crest-stage gages at site 0.3 mi downstream at datum 0.98 ft lower.

REMARKS.--Records good. Occasional regulation at low flow from unknown source upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--47 years, 203 ft^3/s, 15.94 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,300 ft^3/s, June 22, 1972, gage height, 24.05 ft, from rating curve extended above 7,000 ft^3/s on basis of slope-conveyance study; no flow July 24-29, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 24, 1933, reached a stage of about 25 ft, present site and datum, from floodmarks, discharge, about 23,000 ft^3/s. Stage exceeded that of June 1889, from information by local residents.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0800	9,330	14.25	May 16	2100	5,690	11.02
May 7	0100	5,190	10.52	June 23	0830	*9,950	*14.74
May 16	0330	6,450	11.75				

Minimum discharge, 3.0 ft^3/s, Oct. 13, 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	20	38	37	75	97	397	132	75	102	195	14
2	5.2	20	34	36	64	85	221	2310	64	83	98	13
3	5.6	21	29	36	68	79	224	433	55	70	70	11
4	5.6	22	23	41	154	78	235	209	59	73	53	11
5	5.5	25	21	27	109	84	309	325	64	1240	42	10
6	5.0	56	19	44	89	381	365	6040	54	435	34	9.1
7	4.9	43	19	46	81	301	221	2240	62	270	31	9.3
8	4.7	30	18	67	69	193	173	633	63	165	41	10
9	4.1	31	18	296	51	153	159	409	60	116	31	12
10	4.7	28	16	182	e40	168	134	1720	156	95	26	14
11	4.4	27	14	124	e40	352	111	1320	78	79	24	13
12	3.4	26	14	277	e40	785	99	696	51	65	26	10
13	3.2	29	13	718	39	669	89	458	43	141	28	11
14	3.0	50	11	233	54	359	80	364	49	292	26	10
15	3.1	48	11	1010	90	313	83	1430	51	116	23	11
16	3.2	36	13	729	219	245	125	5180	262	158	33	13
17	3.4	35	14	279	155	167	97	2350	713	196	28	26
18	4.6	31	12	198	105	192	80	737	249	101	22	27
19	4.8	33	11	167	91	421	80	457	108	76	205	17
20	4.7	227	11	141	87	185	85	334	247	152	402	16
21	5.0	391	13	99	216	309	67	266	1470	357	84	24
22	22	115	17	66	764	219	59	203	517	154	53	26
23	40	69	20	68	492	152	55	182	5120	102	41	23
24	21	51	39	64	220	1960	49	354	591	74	30	23
25	14	41	128	72	131	1230	45	267	291	59	25	17
26	10	36	76	65	134	432	44	186	194	70	20	18
27	8.9	32	62	84	135	294	42	209	139	55	19	41
28	7.7	47	46	78	114	231	40	165	647	43	17	27
29	9.2	58	44	65	---	189	40	111	283	37	16	17
30	9.3	44	45	66	---	213	50	92	141	32	15	14
31	15	---	40	87	---	598	---	83	---	229	15	---
TOTAL	250.8	1722	889	5502	3926	11134	3858	29895	11956	5237	1773	497.4
MEAN	8.09	57.4	28.7	177	140	359	129	964	399	169	57.2	16.6
MAX	40	391	128	1010	764	1960	397	6040	5120	1240	402	41
MIN	3.0	20	11	27	39	78	40	83	43	32	15	9.1
CFSM	.05	.33	.17	1.03	.81	2.08	.74	5.57	2.30	.98	.33	.10
IN.	.05	.37	.19	1.18	.84	2.39	.83	6.43	2.57	1.13	.38	.11

CAL YR 1988 TOTAL 48639.1 MEAN 133 MAX 4190 MIN 1.8 CFSM .77 IN. 10.46
WTR YR 1989 TOTAL 76640.2 MEAN 210 MAX 6040 MIN 3.0 CFSM 1.21 IN. 16.48

e Estimated

01639375 TOMS CREEK AT EMMITSBURG, MD

LOCATION.--Lat 39°42'13", long 77°20'41", Frederick County, Hydrologic Unit 02070009, on upstream face of left abutment of old bridge site, 80 ft upstream from new bridge on Hampton Valley Road, 0.5 mi west of Emmitsburg, 1.7 mi downstream from confluence with Friends Creek, and 8.0 mi upstream from mouth.

DRAINAGE AREA.--41.3 mi^2.

PERIOD OF RECORD.--March 1986 to current year.

REVISED RECORDS.--WDR MD-DE-88-1: 1986-87(P).

GAGE.--Water-stage recorder. Elevation of gage is 408 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,910 ft^3/s, May 19, 1988, gage height, 8.36 ft; minimum daily discharge, 1.2 ft^3/s, Aug. 17, 18, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0300	1,190	5.62	May 16	1645	1,140	5.50
May 6	2030	834	4.79	July 5	0300	*1,990	*7.05
May 15	2115	1,190	5.61				

Minimum discharge, 0.60 ft^3/s, Feb. 9, result of freezeup; minimum daily discharge, 1.6 ft^3/s, Oct. 7, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	3.0	7.7	8.8	16	28	88	86	51	30	33	4.5
2	2.3	3.2	6.8	9.0	16	26	74	227	45	28	26	5.1
3	2.6	3.4	6.5	9.6	22	25	81	112	41	27	21	4.8
4	2.3	3.4	6.5	7.9	35	25	74	89	48	27	18	4.7
5	1.9	13	6.0	6.8	25	29	73	158	39	377	16	4.1
6	1.7	32	6.2	7.0	23	72	72	668	41	100	14	4.1
7	1.6	14	6.1	8.9	21	56	61	376	42	73	13	4.3
8	1.7	9.9	5.9	23	19	40	57	247	38	57	13	4.5
9	1.7	7.8	5.5	41	14	38	54	199	57	45	11	4.9
10	1.7	6.4	4.8	23	18	42	47	597	63	39	11	4.4
11	1.6	5.9	4.3	18	16	58	43	422	37	34	12	3.7
12	1.7	4.8	3.1	46	17	83	40	297	32	30	13	3.2
13	1.8	8.2	4.1	70	15	83	38	226	33	66	13	3.2
14	1.8	13	6.9	36	21	76	36	210	34	48	12	3.6
15	1.7	8.3	5.0	97	27	92	41	545	35	33	13	3.6
16	1.9	6.5	5.4	74	39	92	41	843	52	35	11	7.7
17	1.7	6.6	5.3	46	28	78	34	562	63	39	9.1	9.5
18	2.0	6.3	4.1	36	24	114	32	359	39	30	8.1	5.2
19	3.2	6.3	3.9	33	24	99	35	258	31	26	23	4.7
20	3.3	110	4.2	30	22	78	30	203	57	51	16	9.8
21	4.7	58	5.8	23	33	89	28	163	54	33	11	9.4
22	17	23	6.4	21	67	69	27	130	57	32	10	12
23	8.9	16	8.5	21	60	60	26	119	130	27	8.6	13
24	6.0	13	20	19	44	278	25	193	58	23	7.4	8.0
25	4.6	11	24	18	37	197	23	117	45	22	7.1	5.6
26	3.6	11	15	19	38	137	23	111	40	25	6.4	12
27	3.3	9.6	12	22	36	112	22	100	34	19	6.5	9.8
28	3.1	13	11	18	31	96	21	78	77	17	6.4	5.6
29	3.3	11	e11	17	---	84	23	67	42	15	6.2	5.0
30	3.3	9.1	9.1	18	---	103	24	61	34	17	6.9	5.2
31	3.1	---	8.5	19	---	113	---	56	---	59	5.9	---
TOTAL	101.1	446.7	239.6	846.0	788	2572	1293	7879	1449	1484	388.6	185.2
MEAN	3.26	14.9	7.73	27.3	28.1	83.0	43.1	254	48.3	47.9	12.5	6.17
MAX	17	110	24	97	67	278	88	843	130	377	33	13
MIN	1.6	3.0	3.1	6.8	14	25	21	56	31	15	5.9	3.2
CFSM	.08	.36	.19	.66	.68	2.01	1.04	6.15	1.17	1.16	.30	.15
IN.	.09	.40	.22	.76	.71	2.32	1.16	7.10	1.31	1.34	.35	.17

CAL YR 1988 TOTAL 15115.5 MEAN 41.3 MAX 1140 MIN 1.2 CFSM 1.00 IN. 13.61
WTR YR 1989 TOTAL 17672.2 MEAN 48.4 MAX 843 MIN 1.6 CFSM 1.17 IN. 15.92

e Estimated

01639500 BIG PIPE CREEK AT BRUCEVILLE, MD

LOCATION.--Lat 39°36'45", long 77°14'10", Carroll County, Hydrologic Unit 02070009, on left bank 300 ft downstream from bridge on State Highway 194, 800 ft downstream from Bruceville, 3.5 mi upstream from Detour, and confluence with Little Pipe Creek.

DRAINAGE AREA.--102 mi^2.

PERIOD OF RECORD.--October 1947 to current year. Prior to December 1947, monthly discharge only, published in WSP 1302.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 336.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for June 28 to July 27 and Aug. 25 to Sept. 30 (doubtful or missing record), which are fair. Occasional diversion for irrigation upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--42 years, 110 ft^3/s, 14.65 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,000 ft^3/s, Sept. 26, 1975, gage height, 18.98 ft, from rating curve extended above 3,900 ft^3/s on the basis of contracted-opening measurement at gage height 17.86 ft; minimum daily discharge, 1.0 ft^3/s, Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0300	3,100	8.00	June 23	0230	*6,490	*11.65
May 16	1800	1,620	5.16				

Minimum daily discharge, 19 ft^3/s, Oct. 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	24	41	41	47	77	127	147	115	e100	81	e28
2	22	26	38	42	44	70	106	520	105	e95	67	e30
3	38	25	36	46	63	68	117	163	99	e90	61	e28
4	28	24	35	45	110	67	107	112	121	e90	57	e26
5	24	26	33	e38	69	75	101	284	101	e600	52	e24
6	20	66	32	45	61	338	128	2230	108	e300	49	e24
7	20	39	31	49	55	187	101	812	189	e220	47	e26
8	20	31	31	74	49	122	94	370	161	e180	49	e27
9	20	28	31	138	e42	104	92	273	250	e150	45	e29
10	21	27	e30	82	e40	119	83	410	436	e130	44	e26
11	21	26	e28	71	e40	191	77	347	144	e110	46	e22
12	19	24	e28	246	e40	244	74	263	121	e100	50	e21
13	19	28	28	263	e40	185	72	211	118	e200	50	e21
14	20	48	29	117	53	150	68	203	121	e150	46	e23
15	20	33	31	399	75	145	79	298	123	e110	51	e23
16	21	29	27	203	161	124	95	1300	142	e120	51	e40
17	21	32	27	126	92	106	76	827	188	e140	46	e46
18	22	41	24	103	73	112	71	390	118	e110	42	e32
19	24	34	e24	90	66	134	76	289	101	e90	117	e29
20	25	225	27	79	64	101	68	238	106	e180	95	e46
21	23	183	33	68	174	160	64	204	129	e110	58	e46
22	73	71	42	e60	352	118	62	178	264	e100	55	e50
23	41	53	40	e55	219	101	58	181	1900	e90	48	e55
24	31	46	85	e50	133	600	57	466	e270	e85	44	e40
25	29	41	118	e50	103	382	56	221	e160	e80	e40	e30
26	25	38	62	54	104	218	55	205	127	e90	e34	e55
27	24	38	49	60	100	173	54	203	108	e65	e34	e46
28	23	75	47	51	86	151	52	159	e220	58	e34	e30
29	24	57	54	49	---	134	57	136	e140	53	e34	e28
30	24	44	44	52	---	130	67	126	e110	52	e36	e28
31	23	---	41	55	---	151	---	121	---	102	e32	---
TOTAL	786	1482	1226	2901	2555	5037	2394	11887	6395	4150	1595	979
MEAN	25.4	49.4	39.5	93.6	91.2	162	79.8	383	213	134	51.5	32.6
MAX	73	225	118	399	352	600	128	2230	1900	600	117	55
MIN	19	24	24	38	40	67	52	112	99	52	32	21
CFSM	.25	.48	.39	.92	.89	1.59	.78	3.76	2.09	1.31	.50	.32
IN.	.29	.54	.45	1.06	.93	1.84	.87	4.34	2.33	1.51	.58	.36

CAL YR 1988 TOTAL 29161 MEAN 79.7 MAX 1580 MIN 14 CFSM .78 IN. 10.64
WTR YR 1989 TOTAL 41387 MEAN 113 MAX 2230 MIN 19 CFSM 1.11 IN. 15.09

e Estimated

01640965 HUNTING CREEK NEAR FOXVILLE, MD

LOCATION.--Lat 39°37'10", long 77°28'00", Frederick County, Hydrologic Unit 02070008, on left downstream wingwall of culvert on park road in Cunningham Falls State Park, 0.25 mi upstream from Hunting Creek Lake, and 2.9 mi west of Thurmont.

DRAINAGE AREA.--2.14 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,030 ft above National Geodetic Vertical datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Water-discharge records good except those below 1.0 ft^3/s and above 40 ft^3/s, which are fair.

AVERAGE DISCHARGE.--8 years, 3.23 ft^3/s, 20.50 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 814 ft^3/s, May 19, 1988, gage height, 4.71 ft, from rating curve extended above 40 ft^3/s on basis of computation of peak flow through culvert; minimum daily discharge, 0.03 ft^3/s, Aug. 21, 25, Sept. 2, 3, 4, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0145	*68	*3.08	May 16	1600	56	2.96
May 6	1800	58	2.98	July 5	0100	60	3.00
May 10	0715	57	2.97				

Minimum daily discharge, 0.06 ft^3/s, Oct. 10, 11, 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.26	.60	.81	1.7	2.7	6.5	9.0	2.4	1.5	1.3	.18
2	.13	.25	.52	.78	1.7	2.5	5.4	19	2.2	1.3	1.1	.17
3	.13	.26	.47	.84	3.4	2.3	5.9	9.3	2.0	1.2	.72	.16
4	.12	.25	.48	.72	4.1	2.3	5.0	7.0	2.3	2.1	.54	.16
5	.10	1.6	.51	.62	2.8	3.0	4.8	20	2.0	19	.46	.16
6	.09	1.6	.51	.67	2.5	7.7	4.8	48	2.1	7.2	.42	.16
7	.07	.68	.51	.75	2.3	4.7	4.0	31	2.2	5.2	.43	.17
8	.08	.46	.48	2.3	2.2	3.7	3.6	18	2.0	3.9	.43	.17
9	.07	.36	.45	2.4	1.8	3.4	3.4	15	7.4	3.2	.37	.17
10	.06	.30	.45	1.8	1.5	3.3	3.0	46	5.3	2.8	.35	.16
11	.06	.27	.42	1.7	1.7	3.9	2.8	28	2.9	2.4	.36	.15
12	.06	.26	.36	4.3	1.7	5.4	2.7	15	2.3	2.1	.41	.16
13	.06	.57	.32	5.7	1.6	5.3	2.5	11	2.2	3.6	.38	.16
14	.07	.58	.34	3.4	2.7	5.0	2.4	10	2.3	2.8	.34	.15
15	.07	.38	.42	9.1	3.5	7.2	2.8	26	3.0	2.1	.32	.15
16	.07	.29	.39	6.5	4.0	6.4	2.7	42	4.9	2.2	.32	.32
17	.07	.44	.39	4.4	2.9	5.0	2.4	29	5.2	2.1	.27	.25
18	.11	.44	.37	3.6	2.8	6.2	2.3	15	3.3	1.8	.26	.19
19	.14	.49	.36	3.5	2.6	6.0	2.4	11	2.7	1.6	.37	.18
20	.14	10	.36	3.1	2.5	5.2	2.2	8.4	2.6	2.9	.32	.28
21	.34	3.2	.48	2.6	3.6	6.2	2.2	7.1	2.5	2.0	.33	.32
22	.70	1.3	.46	2.3	6.4	4.7	2.0	6.0	2.7	1.7	.32	.94
23	.36	.95	.54	2.2	5.2	4.2	1.9	5.8	3.6	1.4	.33	.41
24	.34	.80	2.3	2.1	4.0	17	1.9	7.4	3.3	1.2	.25	.28
25	.29	.75	2.1	2.0	3.4	13	1.8	5.2	2.4	1.1	.24	.23
26	.26	.70	1.3	2.1	3.4	9.3	1.8	4.7	2.1	.80	.23	.73
27	.25	.72	1.0	2.2	3.2	7.9	1.7	4.4	1.8	.56	.23	.34
28	.25	1.2	1.1	1.9	2.9	7.0	1.7	3.7	3.3	.50	.23	.25
29	.25	.80	1.1	1.8	---	6.3	1.7	3.2	2.1	.44	.22	.22
30	.25	.66	.96	2.0	---	7.1	1.7	2.9	1.7	.72	.25	.20
31	.25	---	.88	1.9	---	7.9	---	2.7	---	1.9	.20	---
TOTAL	5.36	30.82	20.93	80.09	82.1	181.8	90.0	470.8	86.8	83.32	12.30	7.57
MEAN	.17	1.03	.68	2.58	2.93	5.86	3.00	15.2	2.89	2.69	.40	.25
MAX	.70	10	2.3	9.1	6.4	17	6.5	48	7.4	19	1.3	.94
MIN	.06	.25	.32	.62	1.5	2.3	1.7	2.7	1.7	.44	.20	.15
CFSM	.08	.48	.32	1.21	1.37	2.74	1.40	7.10	1.35	1.26	.19	.12
IN.	.09	.54	.36	1.39	1.43	3.16	1.56	8.18	1.51	1.45	.21	.13

CAL YR 1988 TOTAL 998.12 MEAN 2.73 MAX 98 MIN .04 CFSM 1.27 IN. 17.35
WTR YR 1989 TOTAL 1151.89 MEAN 3.16 MAX 48 MIN .06 CFSM 1.47 IN. 20.02

01640965 HUNTING CREEK NEAR FOXVILLE, MD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1982 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1987 to current year.
WATER TEMPERATURE: October 1987 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1987.

REMARKS.--Periods of missing record are due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (water year 1989): Maximum daily, 21.5°C, July 25, 1989; minimum daily, 0.0°C, on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum daily, 21.5°C, July 25; minimum daily, 0.0°C, on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT 13...	1315	0.10	84	7.2	8.0	7.3
NOV 17...	1045	0.36	92	7.2	9.0	7.8
DEC 15...	1100	3.9	78	7.2	4.0	6.7
JAN 19...	1115	3.2	72	7.3	1.0	5.2
FEB 16...	1050	5.4	72	7.2	2.0	5.8
MAR 15...	1145	2.3	69	7.4	4.0	5.7
APR 12...	1220	4.1	68	7.2	8.0	6.3
MAY 17...	1140	3.2	77	6.9	14.0	6.3
JUN 14...	1110	1.3	89	7.0	16.0	7.2
JUL 12...	1100	0.62	96	6.8	20.0	9.9
AUG 16...	1330	0.11	77	6.6	21.0	6.6
SEP 13...	1025	0.17	84	6.7	16.0	7.1

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT 13...	2.6	3.0	0.44	3.8	6.1	11	48
NOV 17...	3.5	3.3	0.92	9.1	5.7	6.7	51
DEC 15...	2.6	2.5	0.40	9.8	4.3	9.1	45
JAN 19...	2.8	2.6	0.20	9.3	4.7	8.4	41
FEB 16...	2.8	3.4	0.48	9.7	5.6	9.0	43
MAR 15...	2.6	3.1	0.68	9.0	5.2	9.0	43
APR 12...	2.8	2.9	0.72	9.6	5.2	14	50
MAY 17...	2.7	3.4	0.28	8.7	5.3	10	47
JUN 14...	3.1	4.0	0.28	6.0	6.9	11	52
JUL 12...	3.6	4.2	0.52	6.3	6.4	10	58
AUG 16...	2.1	3.4	0.51	2.7	6.9	9.7	46
SEP 13...	2.7	3.2	0.44	4.3	5.9	9.6	49

01640965 HUNTING CREEK NEAR FOXVILLE, MD--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	76	73	74	82	79	81	84	82	83	85	80	82
2	76	72	73	82	79	80	84	81	82	85	82	83
3	76	73	75	83	79	81	85	81	82	84	81	82
4	75	72	74	85	80	81	84	81	82	83	79	81
5	74	71	73	101	81	89	84	81	82	86	81	84
6	72	69	71	99	94	96	84	81	82	84	81	82
7	73	71	71	96	92	94	83	80	81	81	78	80
8	73	71	72	95	91	92	82	79	81	88	77	80
9	73	71	72	96	90	92	82	78	80	90	82	86
10	74	72	73	95	90	92	81	77	79	83	80	81
11	76	74	75	95	88	91	81	78	80	81	79	80
12	76	72	74	91	88	89	82	80	81	119	75	91
13	73	71	72	96	86	91	84	81	83	113	93	103
14	72	71	72	96	91	93	85	83	84	93	80	88
15	74	71	72	93	91	92	83	80	82	97	78	91
16	77	73	75	92	91	92	86	82	84	92	83	86
17	76	74	75	93	91	92	86	82	85	83	80	81
18	79	74	75	93	91	92	85	82	84	81	78	80
19	81	78	79	92	88	90	85	82	83	81	78	80
20	78	75	76	91	78	83	83	79	82	81	78	79
21	86	74	77	83	80	82	81	75	79	80	77	78
22	95	86	92	85	83	84	83	81	82	79	76	78
23	92	87	89	85	84	84	85	79	81	79	76	78
24	89	86	87	85	84	84	94	82	86	79	77	78
25	88	85	86	86	83	85	85	82	83	79	77	78
26	88	83	86	85	83	83	84	82	83	80	77	79
27	85	83	84	85	81	84	84	82	83	80	78	79
28	85	82	83	86	81	83	86	81	83	80	78	79
29	83	81	82	83	81	82	86	82	84	81	78	79
30	84	80	82	84	81	82	85	82	83	81	78	80
31	83	79	81	---	---	---	85	82	84	81	78	80
MONTH	95	69	77	101	78	87	94	75	82	119	75	82
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	82	77	80	77	75	76	76	72	73	80	65	71
2	82	78	80	77	75	76	76	72	74	75	66	69
3	82	77	80	77	75	76	78	73	75	78	64	70
4	82	77	80	78	75	77	77	75	75	82	64	73
5	78	75	77	81	73	77	77	75	76	81	62	70
6	77	74	76	86	76	80	79	76	77	63	57	61
7	75	73	74	81	76	78	78	76	77	66	61	63
8	75	72	74	78	75	77	79	75	76	68	64	66
9	76	73	74	78	73	76	82	76	79	70	67	69
10	77	73	74	77	73	74	80	76	77	70	62	64
11	75	72	73	76	71	73	80	76	77	66	63	65
12	74	71	72	77	73	75	79	76	77	70	66	67
13	74	70	73	75	70	72	80	76	77	---	---	---
14	75	70	73	73	69	71	79	76	77	---	---	---
15	81	74	76	76	71	73	81	77	79	---	---	---
16	82	78	80	74	69	71	81	77	78	---	---	---
17	80	76	78	72	69	71	84	78	79	---	---	---
18	78	75	77	77	69	73	85	79	80	---	---	---
19	78	76	77	75	72	74	84	78	81	---	---	---
20	79	77	78	75	72	73	83	78	80	---	---	---
21	84	76	80	79	75	77	84	78	80	---	---	---
22	86	79	83	77	73	75	80	76	78	---	---	---
23	82	79	80	75	71	73	80	76	78	---	---	---
24	80	76	77	88	71	74	79	75	77	79	75	77
25	78	75	76	72	70	71	80	74	77	90	76	81
26	76	74	75	77	71	72	81	74	77	98	80	88
27	78	73	75	73	70	71	79	73	75	97	82	88
28	77	75	76	76	71	73	78	72	75	82	79	80
29	---	---	---	94	71	79	76	71	74	87	79	82
30	---	---	---	77	71	73	74	69	71	---	---	---
31	---	---	---	76	71	73	---	---	---	---	---	---
MONTH	86	70	77	94	69	74	85	69	77	---	---	---

01640965 HUNTING CREEK NEAR FOXVILLE, MD--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	77	72	74	---	---	---	---	---	---
7	84	77	81	86	72	79	---	---	---	---	---	---
8	89	70	79	82	73	77	---	---	---	---	---	---
9	84	77	80	78	66	72	---	---	---	---	---	---
10	87	75	80	87	70	78	---	---	---	---	---	---
11	82	68	75	89	79	83	---	---	---	---	---	---
12	78	65	72	83	77	80	---	---	---	---	---	---
13	97	78	87	80	75	77	---	---	---	---	---	---
14	96	88	92	83	72	77	---	---	---	---	---	---
15	99	87	92	83	70	77	---	---	---	83	78	80
16	95	87	90	83	78	80	---	---	---	85	77	81
17	89	79	84	87	77	82	---	---	---	85	82	84
18	89	70	79	96	78	86	---	---	---	83	80	81
19	93	75	84	96	84	90	---	---	---	82	79	80
20	86	79	83	96	90	92	---	---	---	88	81	84
21	92	80	85	93	86	89	---	---	---	92	88	90
22	92	83	88	92	87	89	---	---	---	103	85	95
23	90	82	86	97	84	89	---	---	---	102	95	99
24	90	75	84	91	81	86	---	---	---	97	90	93
25	92	78	85	86	80	82	---	---	---	92	89	90
26	97	81	88	---	---	---	---	---	---	102	90	96
27	---	---	---	---	---	---	---	---	---	101	91	97
28	---	---	---	---	---	---	---	---	---	94	88	91
29	---	---	---	---	---	---	---	---	---	92	86	88
30	---	---	---	---	---	---	---	---	---	91	87	89
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.5	14.0	15.0	8.5	7.0	7.5	5.5	3.5	4.5	2.0	1.0	1.5
2	15.5	14.5	15.0	7.5	7.0	7.5	4.5	3.0	3.5	3.0	1.5	2.0
3	15.5	14.0	15.0	8.0	6.5	7.0	5.5	3.0	4.5	2.5	1.0	1.5
4	14.0	13.0	14.0	9.0	7.0	8.0	5.5	3.0	4.0	1.0	1.0	1.0
5	13.0	11.0	12.0	11.0	9.0	10.0	4.5	3.0	3.5	1.0	1.0	1.0
6	11.0	10.0	10.5	10.0	8.5	9.5	5.0	3.0	3.5	1.0	.5	1.0
7	10.0	9.0	9.5	8.5	7.0	8.0	5.5	3.0	4.0	1.0	.5	1.0
8	9.5	8.5	9.0	8.0	6.0	7.0	4.5	3.5	4.5	1.0	.5	1.0
9	9.5	8.0	8.5	8.0	6.5	7.0	3.5	1.5	3.0	2.0	1.0	1.5
10	10.0	9.0	9.5	8.0	6.0	7.0	1.5	.5	1.0	2.0	1.0	1.5
11	10.5	9.5	10.0	7.5	5.5	7.0	1.0	.0	.5	2.5	1.0	2.0
12	10.0	8.5	9.0	6.0	4.5	5.5	.0	.0	.0	3.0	2.0	2.5
13	8.5	7.5	8.0	8.0	5.5	6.5	.5	.0	.0	3.0	1.5	2.5
14	8.0	7.0	7.5	8.0	5.5	6.5	.0	.0	.0	2.0	.5	1.5
15	9.5	7.5	8.5	8.0	5.5	6.5	.5	.0	.0	4.0	2.0	3.0
16	10.5	9.5	10.0	9.0	6.5	7.5	.0	.0	.0	3.5	2.0	3.0
17	11.5	10.0	11.0	9.0	6.5	8.0	.5	.0	.0	3.0	1.5	2.5
18	12.0	11.0	11.5	7.0	5.5	6.0	.5	.5	.5	4.0	2.0	3.0
19	11.5	10.0	11.0	6.0	5.5	6.0	.5	.5	.5	4.5	3.5	4.0
20	10.0	9.0	9.5	8.5	6.0	7.5	.5	.5	.5	4.0	2.0	3.0
21	9.5	9.0	9.0	8.5	6.5	7.5	1.5	.5	1.0	2.0	1.0	1.0
22	9.0	8.5	9.0	6.5	4.5	5.5	1.5	.5	1.0	2.0	1.0	1.0
23	9.5	8.5	9.0	6.0	4.0	5.0	1.5	.5	1.0	3.0	1.0	1.5
24	9.5	8.5	9.0	5.0	3.5	4.0	3.5	1.0	1.5	4.0	1.5	2.5
25	8.5	7.5	8.5	6.0	3.5	4.5	3.5	2.0	3.0	4.0	3.5	3.5
26	8.0	7.0	8.0	7.0	4.5	5.5	2.0	1.0	1.5	4.5	3.0	4.0
27	7.5	6.5	7.0	9.5	6.0	8.5	2.5	1.5	2.0	4.5	3.0	4.0
28	8.5	7.0	7.5	9.5	6.0	8.0	5.5	2.0	3.5	4.0	2.0	3.0
29	8.0	7.0	7.5	6.0	4.5	5.5	2.5	1.0	1.5	5.0	2.5	4.0
30	8.0	7.0	7.5	5.5	4.0	5.0	2.0	1.0	1.5	6.5	4.5	5.5
31	7.0	6.0	6.5	---	---	---	2.5	1.0	1.5	6.0	3.5	4.5
MONTH	15.5	6.0	9.8	11.0	3.5	6.8	5.5	.0	1.8	6.5	.5	2.4

01640965 HUNTING CREEK NEAR FOXVILLE, MD--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.0	4.0	5.5	3.0	.5	1.5	8.0	5.5	6.5	13.0	11.5	12.5
2	7.0	5.0	6.0	3.0	.5	1.5	8.0	5.0	6.5	13.0	10.0	11.5
3	6.0	4.0	6.0	2.5	1.0	2.0	11.0	6.5	8.5	12.0	9.5	10.5
4	4.0	2.0	2.5	2.5	2.0	2.5	11.5	8.0	10.0	12.5	8.5	10.5
5	3.0	2.0	2.0	3.5	2.5	3.0	10.5	8.5	9.5	10.5	10.0	10.5
6	4.0	2.0	2.5	3.5	.0	1.0	9.5	7.0	8.5	12.0	10.0	11.0
7	3.0	1.5	2.0	.5	.0	.0	7.5	6.0	6.5	10.5	8.5	9.5
8	2.5	1.0	1.5	.5	.0	.0	7.5	5.0	6.5	11.0	8.5	9.5
9	1.0	1.0	1.0	2.0	.0	.5	9.5	6.0	7.5	10.5	8.5	9.5
10	1.0	1.0	1.0	3.0	.0	1.5	7.0	5.0	6.0	9.5	9.0	9.0
11	1.5	1.0	1.0	3.5	.5	2.0	8.5	4.0	6.0	9.0	8.5	9.0
12	2.5	1.0	1.5	4.0	1.0	2.5	9.5	4.5	6.5	9.5	8.0	8.5
13	1.5	1.0	1.0	3.5	1.0	2.0	8.5	5.5	7.0	---	---	---
14	3.5	1.5	2.5	3.0	2.0	2.5	10.0	4.5	7.5	---	---	---
15	5.0	3.0	4.0	6.5	3.0	4.5	8.0	7.5	8.0	---	---	---
16	4.5	2.5	4.0	6.0	3.0	4.5	11.5	7.5	9.0	---	---	---
17	2.5	1.5	2.0	8.0	3.0	5.5	12.0	7.0	9.5	---	---	---
18	2.5	1.0	1.5	8.5	5.0	6.5	14.0	10.0	11.5	---	---	---
19	2.5	.5	1.5	6.0	3.0	4.5	13.5	9.5	11.0	---	---	---
20	4.0	1.5	2.5	3.5	2.5	3.0	13.0	8.0	10.0	---	---	---
21	4.0	2.5	3.5	5.0	3.0	4.0	12.0	8.5	10.0	---	---	---
22	4.0	3.0	3.5	5.5	2.0	3.5	12.5	7.5	9.5	---	---	---
23	3.0	1.5	2.5	5.0	2.0	3.5	11.5	6.5	8.5	---	---	---
24	2.0	.0	1.0	4.0	3.0	3.5	12.0	6.5	9.0	13.0	12.0	12.5
25	1.0	.0	.5	8.0	3.0	5.0	12.5	8.0	10.0	15.0	12.0	13.5
26	2.0	1.0	1.5	9.0	4.5	6.5	14.0	9.0	11.5	15.5	13.5	14.5
27	2.5	.5	1.5	10.5	5.5	8.0	14.5	9.5	12.0	15.0	13.5	14.5
28	2.5	.5	1.5	12.0	8.0	10.0	13.5	10.0	12.0	13.5	11.5	13.0
29	---	---	---	11.5	9.5	10.0	11.5	10.5	11.0	14.5	11.5	13.0
30	---	---	---	10.0	8.5	9.0	15.5	10.5	12.5	15.5	13.0	14.5
31	---	---	---	9.0	6.5	8.0	---	---	---	16.0	14.5	15.5
MONTH	7.0	.0	2.4	12.0	.0	3.9	15.5	4.0	8.9	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	15.0	16.5	17.0	14.5	15.5	---	---	---	---	---	---
2	18.0	16.0	16.5	17.5	15.5	16.5	---	---	---	---	---	---
3	16.5	15.0	16.0	17.5	16.5	17.0	---	---	---	---	---	---
4	17.5	15.5	16.5	18.5	16.5	17.0	---	---	---	---	---	---
5	15.5	14.5	15.0	18.0	17.0	17.5	---	---	---	---	---	---
6	16.0	15.0	15.5	17.0	16.5	17.0	---	---	---	---	---	---
7	15.0	14.5	14.5	18.5	16.5	17.5	---	---	---	---	---	---
8	15.5	13.5	14.5	18.0	16.5	17.5	---	---	---	---	---	---
9	16.5	14.5	15.0	18.0	16.0	17.0	18.0	15.5	16.5	---	---	---
10	16.0	15.0	15.5	19.0	16.5	18.0	17.5	15.5	16.5	---	---	---
11	15.0	13.5	14.5	20.0	18.0	19.0	17.0	16.5	16.5	---	---	---
12	15.0	13.0	14.0	18.5	17.5	18.0	17.5	17.0	17.0	---	---	---
13	15.5	15.0	15.0	17.5	16.5	17.0	19.0	17.0	18.0	---	---	---
14	15.5	15.0	15.0	17.5	16.0	17.0	19.5	17.5	18.5	---	---	---
15	16.5	15.0	15.5	17.0	15.5	16.5	19.5	18.0	18.5	18.0	17.0	18.0
16	16.5	15.5	16.0	16.5	16.0	16.5	---	---	---	17.0	16.5	17.0
17	16.0	15.0	15.5	17.0	15.5	16.0	---	---	---	17.5	16.0	16.5
18	16.5	14.0	15.5	17.5	15.5	16.5	---	---	---	16.0	15.5	15.5
19	17.0	15.0	16.0	17.5	16.0	17.0	---	---	---	15.5	15.0	15.0
20	16.5	15.5	16.0	18.5	17.5	18.0	---	---	---	16.0	15.0	15.5
21	17.0	16.0	16.5	19.0	18.0	18.5	---	---	---	17.5	16.0	16.5
22	17.5	16.5	17.0	19.5	18.5	19.0	---	---	---	19.0	17.0	18.0
23	17.5	16.5	17.0	20.5	19.0	19.5	20.5	18.0	19.0	18.5	13.5	16.5
24	17.5	16.0	17.0	20.5	19.5	20.0	19.0	17.5	18.5	13.5	11.5	12.5
25	18.0	16.5	17.5	21.5	20.0	20.5	17.5	16.0	17.0	12.0	10.0	11.0
26	19.0	17.0	18.0	---	---	---	17.5	16.0	16.5	13.5	12.0	12.5
27	19.5	17.5	18.0	---	---	---	17.5	16.0	16.5	12.0	10.5	11.0
28	18.5	17.5	18.0	---	---	---	18.5	16.5	17.5	11.5	9.0	10.5
29	17.5	16.0	17.0	---	---	---	---	---	---	12.5	10.5	11.5
30	16.5	14.5	15.5	---	---	---	---	---	---	13.0	12.0	12.5
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	19.5	13.0	16.0	---	---	---	---	---	---	---	---	---

01640970 HUNTING CREEK TRIBUTARY NEAR FOXVILLE, MD

LOCATION.--Lat 39°37'42", long 77°27'44", Frederick County, Hydrologic Unit 02070003, on left downstream wingwall of culvert of park road in Cunningham Falls State Park, 600 ft upstream from Hunting Creek Lake, and 2.7 mi west of Thurmont.

DRAINAGE AREA.--4.01 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year.

REVISED RECORDS.--WDR MD-DE-88-1: 1984(P), 1987(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,030 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Water-discharge records good except those below 1.0 ft^3/s and those for Oct. 11-13 (backwater), Dec. 16-20 and Jan. 4-7 (frozen well), Feb. 9-13 and Mar. 8 (ice effect), which are fair.

AVERAGE DISCHARGE.--8 years, 6.47 ft^3/s, 21.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,905 ft^3/s, May 19, 1988, gage height, 3.78 ft, from rating curve extended above 80 ft^3/s on basis of computation of peak flow through culvert; minimum discharge, 0.12 ft^3/s, Sept. 10, 11, 12, 20, 1983, Aug. 17, 18, Sept. 16, 17, 24, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 90 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 1	1945	99	2.07	May 15	2015	112	2.15
May 6	0145	152	2.37	May 16	1630	142	2.32
May 6	1930	105	2.11	July 5	0145	*555	*3.26
May 15	2015	112	2.15				

Minimum daily discharge, 0.24 ft^3/s, Oct. 11, 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.27	.51	1.2	1.4	3.2	4.7	9.7	21	6.0	3.2	3.4	.72
2	.27	.51	1.0	1.5	3.0	4.4	8.6	32	5.5	2.9	2.8	.70
3	.37	.53	.97	1.6	6.4	4.4	9.8	13	5.1	2.7	2.1	.66
4	.31	.53	.93	e1.3	6.9	4.6	8.6	10	7.0	3.9	1.8	.66
5	.26	5.3	.86	e1.1	4.8	6.3	8.8	28	5.3	76	1.6	.66
6	.25	3.8	.86	e1.2	4.5	12	8.9	76	6.0	15	1.5	.71
7	.25	1.3	.86	e1.4	4.2	9.4	7.7	36	6.2	10	1.7	.74
8	.26	.86	.86	6.5	3.6	e8.2	7.3	21	5.2	7.9	1.5	.74
9	.27	.70	.81	5.3	e3.0	7.4	7.1	20	17	6.5	1.4	.72
10	.26	.63	.76	3.0	e2.5	5.6	6.4	74	10	5.8	1.3	.66
11	e.24	.58	.72	2.4	e2.8	6.5	6.1	42	5.7	5.1	1.5	.62
12	e.24	.53	.66	7.3	e2.8	8.7	5.8	25	5.0	4.7	1.7	.62
13	e.24	2.1	.66	10	e2.7	8.3	5.6	19	5.1	6.4	1.5	.64
14	.27	1.6	.88	5.4	6.2	7.8	5.3	19	5.3	5.5	1.3	.63
15	.30	.89	1.5	13	7.3	12	6.6	51	7.1	4.4	1.3	.62
16	.30	.73	e1.2	9.3	7.5	9.6	6.3	87	8.5	5.2	1.3	1.7
17	.30	1.3	e.80	6.5	5.0	8.0	5.4	52	8.9	4.8	1.2	1.1
18	.37	.93	e.78	5.6	4.4	18	5.1	31	5.5	4.1	1.1	.67
19	.44	1.2	e.76	5.6	4.2	13	5.5	22	4.6	3.8	1.6	.69
20	.33	18	e1.7	5.1	4.3	10	4.9	18	5.1	6.3	1.3	1.4
21	1.1	6.6	2.4	3.1	6.7	12	4.8	15	5.1	4.1	1.4	1.5
22	2.2	2.7	1.6	2.9	11	9.2	4.6	13	5.1	3.7	1.2	3.3
23	.64	1.8	1.9	3.4	8.2	8.3	4.3	13	7.0	3.1	1.4	1.4
24	.66	1.4	6.1	3.6	6.3	30	4.2	16	6.6	2.9	.96	.90
25	.63	1.3	4.5	3.6	4.4	19	4.1	11	4.7	2.8	.91	.72
26	.50	1.1	2.2	3.8	5.5	13	4.0	11	4.1	2.5	.87	2.5
27	.49	1.3	1.7	4.5	5.4	12	3.9	10	3.6	2.4	.87	1.1
28	.49	3.1	2.2	3.5	5.0	10	3.8	8.4	7.7	2.2	.90	.76
29	.49	1.6	2.3	3.2	---	9.6	4.4	7.4	4.3	2.0	.82	.71
30	.49	1.3	1.5	3.9	---	11	4.4	7.0	3.6	2.7	1.3	.67
31	.49	---	1.4	3.6	---	12	---	6.6	---	5.4	.76	---
TOTAL	13.98	64.73	46.57	133.6	141.8	315.0	182.0	815.4	185.9	218.0	44.29	29.22
MEAN	.45	2.16	1.50	4.31	5.06	10.2	6.07	26.3	6.20	7.03	1.43	.97
MAX	2.2	18	6.1	13	11	30	9.8	87	17	76	3.4	3.3
MIN	.24	.51	.66	1.1	2.5	4.4	3.8	6.6	3.6	2.0	.76	.62
CFSM	.11	.54	.37	1.07	1.26	2.53	1.51	6.56	1.55	1.75	.36	.24
IN.	.13	.60	.43	1.24	1.32	2.92	1.69	7.56	1.72	2.02	.41	.27

CAL YR 1988 TOTAL 1930.09 MEAN 5.27 MAX 257 MIN .12 CFSM 1.32 IN. 17.91
WTR YR 1989 TOTAL 2190.49 MEAN 6.00 MAX 87 MIN .24 CFSM 1.50 IN. 20.32

e Estimated

01640970 HUNTING CREEK TRIBUTARY NEAR FOXVILLE, MD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1982 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1987 to current year.
WATER TEMPERATURE: October 1987 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1987.

REMARKS.--Periods of missing record are due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water year 1989): Maximum, 360 microsiemens, Jan. 8, 1989; minimum, 61 microsiemens, Sept. 11, 1989.
WATER TEMPERATURE: Maximum daily, 36.0°C, Aug. 15, 17, 1988; minimum daily, 0.0°C, on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE (water year 1989): Maximum, 360 microsiemens, Jan. 8; minimum, 61 microsiemens, Sept. 11.
WATER TEMPERATURE: Maximum daily, 23.5°C, Aug. 6; minimum daily, 0.0°C, on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT							
13...	1450	0.37	150	7.9	9.0	11	3.4
NOV							
17...	1200	2.8	165	7.6	8.0	12	3.7
DEC							
15...	1200	8.9	134	7.4	3.0	9.3	2.6
JAN							
19...	1205	4.4	157	7.5	0.0	9.2	3.3
FEB							
16...	1125	8.2	144	7.2	2.0	8.8	3.0
MAR							
15...	1230	4.2	106	7.4	3.0	7.7	2.7
APR							
12...	1300	5.2	105	7.0	8.0	6.3	2.8
MAY							
17...	1215	6.3	103	7.3	15.0	8.1	2.7
JUN							
14...	1145	3.8	107	7.3	17.0	9.2	2.9
JUL							
12...	1120	2.6	118	7.2	21.0	12	3.3
AUG							
16...	1245	0.17	142	7.6	26.0	14	3.9
SEP							
13...	1141	0.33	128	7.3	18.0	11	3.5

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT						
13...	7.3	1.2	4.8	14	15	76
NOV						
17...	13	1.2	8.7	23	12	90
DEC						
15...	9.1	1.0	8.1	19	12	72
JAN						
19...	10	0.80	7.9	24	9.7	73
FEB						
16...	12	0.88	8.2	26	10	76
MAR						
15...	8.2	1.2	7.5	17	11	65
APR						
12...	10	0.85	7.4	18	12	67
MAY						
17...	6.6	0.68	6.7	13	13	62
JUN						
14...	6.4	0.88	3.9	10	15	63
JUL						
12...	5.8	1.3	5.9	11	15	72
AUG						
16...	5.9	1.4	3.3	12	16	85
SEP						
13...	6.2	1.2	4.2	12	14	76

01640970 HUNTING CREEK TRIBUTARY NEAR FOXVILLE, MD--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	---	---	---	123	120	122	153	137	142
2	---	---	---	---	---	---	121	119	120	154	149	152
3	---	---	---	---	---	---	120	119	120	167	153	159
4	---	---	---	---	---	---	120	118	119	208	162	196
5	---	---	---	153	124	136	118	118	118	210	189	200
6	---	---	---	161	153	159	118	117	118	189	167	178
7	---	---	---	159	155	157	118	117	117	178	166	174
8	---	---	---	155	151	153	118	116	117	360	172	262
9	---	---	---	152	150	151	118	115	116	288	238	261
10	---	---	---	151	147	149	123	103	118	238	205	220
11	---	---	---	149	138	146	---	---	---	205	193	197
12	---	---	---	138	124	130	---	---	---	275	194	230
13	---	---	---	145	127	134	---	---	---	221	180	192
14	---	---	---	145	139	143	---	---	---	208	175	182
15	---	---	---	146	145	145	---	---	---	267	180	219
16	---	---	---	145	117	132	---	---	---	180	166	171
17	---	---	---	143	115	134	---	---	---	166	163	165
18	---	---	---	141	136	138	---	---	---	163	159	162
19	---	---	---	141	122	130	---	---	---	160	154	157
20	---	---	---	131	114	122	---	---	---	155	152	154
21	---	---	---	123	114	119	---	---	---	153	148	150
22	---	---	---	123	122	123	---	---	---	150	143	147
23	---	---	---	123	122	122	---	---	---	143	137	140
24	---	---	---	122	120	121	288	164	209	138	135	136
25	---	---	---	121	120	120	194	168	181	135	134	134
26	---	---	---	121	120	120	168	157	162	143	135	137
27	---	---	---	122	118	121	157	150	154	153	142	149
28	---	---	---	122	118	120	162	143	150	151	143	146
29	---	---	---	124	122	123	155	150	152	143	139	141
30	---	---	---	124	122	123	153	147	151	150	139	143
31	---	---	---	---	---	---	147	141	144	150	143	147
MONTH	---	---	---	---	---	---	---	---	---	360	134	172

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	144	139	142	128	125	127	115	113	114	119	100	114
2	140	136	138	127	125	126	114	112	112	109	101	104
3	160	134	144	127	125	126	116	111	113	113	107	110
4	160	149	154	128	125	127	116	116	116	115	111	113
5	150	143	146	142	128	133	116	113	115	112	94	106
6	144	138	142	162	139	153	116	114	115	94	86	89
7	139	134	136	174	153	160	115	112	113	93	87	90
8	138	133	135	159	147	152	113	111	112	96	92	94
9	145	133	139	154	143	147	112	111	111	99	95	97
10	145	140	143	172	154	160	111	109	110	96	82	85
11	141	137	140	179	170	176	110	108	109	88	85	86
12	139	137	138	178	156	169	109	107	108	92	88	90
13	159	138	142	156	145	151	108	106	107	94	92	93
14	219	159	201	145	137	140	107	105	106	96	93	95
15	194	182	189	138	120	130	108	105	106	96	84	91
16	191	175	184	122	119	120	109	107	108	87	76	83
17	175	161	169	126	121	123	109	107	108	100	82	88
18	162	154	159	143	124	129	109	108	108	95	90	92
19	154	144	149	134	129	131	---	---	---	98	94	96
20	145	140	142	137	128	130	---	---	---	101	98	99
21	148	138	142	141	132	137	---	---	---	102	100	101
22	148	143	146	133	127	130	---	---	---	113	102	106
23	148	139	143	128	123	125	---	---	---	115	103	108
24	143	137	140	151	113	126	---	---	---	108	103	106
25	140	132	137	117	113	114	110	108	109	109	105	107
26	136	129	132	117	115	116	111	108	110	113	107	110
27	136	129	133	116	113	114	112	109	110	114	109	112
28	130	126	128	115	112	113	111	110	110	114	111	112
29	---	---	---	114	112	113	121	110	115	116	113	114
30	---	---	---	116	112	114	120	116	119	118	115	116
31	---	---	---	116	113	115	---	---	---	120	115	116
MONTH	219	126	148	179	112	133	---	---	---	120	76	101

01640970 HUNTING CREEK TRIBUTARY NEAR FOXVILLE, MD--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	118	116	117	116	114	114	124	118	122	132	119	122
2	119	116	117	115	113	114	118	115	116	138	106	122
3	118	114	115	116	114	115	116	114	115	124	88	111
4	116	109	113	116	101	114	117	114	115	127	67	107
5	114	109	111	110	76	96	128	115	117	134	99	116
6	111	107	109	119	99	106	134	120	125	123	115	118
7	113	109	111	134	102	116	122	113	118	120	116	118
8	116	112	114	145	104	122	114	112	112	121	117	119
9	117	85	109	109	106	107	113	111	113	131	117	119
10	104	89	98	110	107	109	112	110	111	134	101	120
11	108	104	105	111	109	110	112	110	111	124	61	103
12	110	106	108	110	108	109	114	111	112	124	88	113
13	112	109	110	112	104	109	116	114	115	125	113	120
14	113	111	112	112	109	111	115	113	114	126	111	120
15	114	104	112	110	107	109	121	114	117	126	101	114
16	110	105	108	110	104	107	121	117	119	125	97	113
17	111	106	109	109	106	108	120	116	118	127	122	125
18	112	108	110	109	105	107	119	115	117	128	124	126
19	113	111	112	108	106	107	116	111	114	128	119	123
20	113	111	112	116	101	111	119	115	116	120	115	118
21	122	112	117	118	115	116	119	114	116	125	117	122
22	126	115	123	119	117	118	120	117	118	135	119	129
23	118	111	115	119	117	118	125	117	121	137	129	132
24	116	112	114	120	118	119	125	121	123	130	122	125
25	126	116	120	123	119	121	124	120	122	128	121	124
26	129	116	124	123	121	122	124	121	122	131	120	124
27	119	113	116	122	119	121	124	121	123	131	123	126
28	119	108	115	123	118	121	126	122	123	134	130	132
29	124	118	120	119	115	117	125	119	122	130	126	128
30	118	114	116	116	112	114	123	116	119	131	127	130
31	---	---	---	123	112	119	125	120	122	---	---	---
MONTH	129	85	113	145	76	113	134	110	118	138	61	121

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.5	12.5	15.0	7.0	5.0	6.0	4.5	3.0	4.0	1.0	.5	1.0
2	20.0	14.0	16.5	6.5	5.0	6.0	3.5	3.0	3.0	1.5	1.0	1.5
3	17.0	13.0	14.5	7.0	5.0	6.0	4.5	2.5	3.5	1.5	.5	1.0
4	15.5	8.5	12.5	8.5	6.0	7.5	4.5	2.0	3.0	.5	.5	.5
5	11.5	7.0	9.0	10.5	8.5	9.5	3.0	2.0	2.5	.5	.5	.5
6	11.5	5.0	8.0	10.0	9.0	9.5	3.5	2.0	2.5	.5	.5	.5
7	12.0	3.5	7.5	9.0	7.5	8.0	4.0	2.5	3.5	.5	.5	.5
8	11.5	4.5	7.0	8.0	6.5	7.0	4.0	3.0	3.5	1.0	.5	.5
9	12.0	3.5	8.0	8.0	6.5	7.0	3.0	1.0	2.5	1.0	1.0	1.0
10	15.0	7.5	11.0	8.0	6.0	7.0	1.0	.5	1.0	1.0	.5	1.0
11	12.5	8.0	10.5	8.0	6.0	7.0	.5	.5	.5	1.5	1.0	1.0
12	9.0	3.0	6.5	6.0	5.0	5.5	.5	.5	.5	2.0	1.5	1.5
13	8.5	1.5	4.5	7.5	5.5	6.5	.5	.5	.5	2.5	1.0	2.0
14	9.0	1.5	4.5	7.5	6.0	7.0	.5	.5	.5	1.5	1.0	1.0
15	14.5	4.0	8.5	7.5	6.0	6.5	.5	.5	.5	3.0	1.5	2.5
16	14.5	7.0	10.0	8.5	6.5	7.5	.5	.5	.5	3.0	2.0	2.5
17	13.5	5.5	10.0	8.5	6.5	8.0	.5	.5	.5	2.5	1.5	2.0
18	13.5	9.0	11.0	6.5	5.0	6.0	.5	.5	.5	2.5	1.5	2.0
19	9.5	4.0	7.0	5.0	5.0	5.0	.5	.5	.5	3.5	2.5	3.0
20	10.0	2.5	5.5	7.5	5.0	6.0	.5	.5	.5	3.0	1.5	2.5
21	8.0	4.0	6.5	7.5	5.5	6.5	.5	.5	.5	1.5	1.0	1.0
22	8.5	8.0	8.0	5.5	3.5	4.5	.5	.5	.5	1.0	1.0	1.0
23	9.0	7.0	8.0	4.0	3.0	3.5	.5	.5	.5	1.5	1.0	1.0
24	9.5	8.0	8.5	3.5	2.5	3.0	2.0	.5	1.0	1.5	1.0	1.0
25	8.5	6.5	7.5	4.0	2.5	3.0	2.5	2.0	2.0	2.0	1.5	2.0
26	8.0	5.0	6.5	5.0	3.0	4.0	2.0	1.0	1.5	3.0	2.0	2.5
27	7.0	4.0	5.5	8.0	5.0	7.0	1.5	1.0	1.5	3.0	2.5	2.5
28	8.5	5.5	7.0	8.0	5.5	7.0	4.5	1.5	3.0	2.5	1.5	2.0
29	7.5	4.5	6.0	5.5	4.0	5.0	2.5	.5	1.0	3.5	2.0	3.0
30	6.5	3.5	5.0	4.5	3.5	4.0	1.0	.5	1.0	5.0	3.5	4.5
31	5.5	2.5	4.0	---	---	---	1.5	.5	1.0	4.5	3.5	4.0
MONTH	20.0	1.5	8.4	10.5	2.5	6.2	4.5	.5	1.5	5.0	.5	1.7

01640970 HUNTING CREEK TRIBUTARY NEAR FOXVILLE, MD--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	4.0	4.5	1.0	.0	.5	7.5	6.0	6.5	12.5	11.5	12.5
2	5.5	4.5	5.0	1.0	.0	.5	6.5	5.0	6.0	12.0	10.5	11.0
3	5.5	4.0	5.0	1.5	.5	1.0	9.5	6.5	8.0	11.0	9.0	10.0
4	4.0	1.5	2.5	1.5	1.0	1.5	11.0	9.0	10.0	11.0	8.5	10.0
5	1.5	1.0	1.5	2.5	1.5	2.0	11.0	9.5	10.0	10.5	10.0	10.5
6	2.0	1.0	1.5	2.5	.0	1.0	9.5	7.5	8.5	11.5	10.0	11.0
7	1.5	.5	1.0	.0	.0	.0	7.5	6.5	7.0	10.0	8.0	9.0
8	1.0	.5	.5	.0	.0	.0	6.5	5.5	6.0	10.0	7.5	9.0
9	.5	.5	.5	.5	.0	.0	7.5	6.0	6.5	10.0	8.0	9.0
10	.5	.5	.5	1.0	.0	.5	6.0	4.5	5.5	9.5	8.5	9.0
11	.5	.5	.5	1.5	.0	.5	6.0	3.5	4.5	9.0	8.5	8.5
12	1.0	.5	.5	2.5	.5	1.5	6.5	3.5	5.0	9.0	8.0	8.5
13	1.0	.5	1.0	2.0	.5	1.5	7.0	4.5	5.5	9.5	8.0	9.0
14	1.5	1.0	1.0	2.5	1.5	2.0	7.0	4.0	6.0	10.5	9.0	9.5
15	3.5	1.5	2.0	5.0	2.5	3.5	7.0	6.5	7.0	10.5	10.0	10.0
16	3.5	2.0	3.0	4.5	3.0	3.5	9.0	7.0	8.0	10.5	10.0	10.0
17	2.0	1.0	1.5	6.0	3.0	4.5	9.5	6.5	8.0	12.5	10.0	11.0
18	1.0	.5	.5	8.5	6.0	7.0	---	---	---	13.5	10.5	12.0
19	1.0	.5	.5	6.0	4.0	4.5	---	---	---	14.0	11.5	13.0
20	2.5	1.0	1.5	4.0	3.0	3.5	---	---	---	14.5	12.5	13.5
21	3.5	2.0	3.0	4.5	3.5	4.0	---	---	---	14.5	13.0	13.5
22	4.0	3.0	3.5	4.5	2.5	3.5	---	---	---	13.5	12.0	13.0
23	3.0	1.5	2.0	4.0	2.5	3.5	---	---	---	13.0	12.5	12.5
24	1.5	.0	.5	4.0	3.5	3.5	---	---	---	13.0	12.0	12.5
25	.5	.0	.5	6.5	3.5	5.0	10.5	7.5	9.0	14.5	11.5	13.0
26	1.0	.5	.5	8.0	5.5	7.0	12.0	9.0	10.5	15.5	13.5	14.5
27	1.0	.5	.5	9.5	6.5	8.0	12.5	9.5	11.0	15.0	13.5	14.5
28	1.0	.0	.5	11.5	9.0	10.5	12.0	10.0	11.0	13.5	11.5	12.5
29	---	---	---	11.5	10.5	11.0	11.0	10.5	10.5	13.5	11.5	12.5
30	---	---	---	11.0	9.0	10.0	13.5	10.0	11.5	15.0	13.0	14.0
31	---	---	---	9.0	7.0	8.5	---	---	---	16.0	14.5	15.5
MONTH	5.5	.0	1.6	11.5	.0	3.7	---	---	---	16.0	7.5	11.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	15.5	16.5	17.0	15.0	16.0	19.0	18.0	18.5	19.5	17.0	18.5
2	18.0	16.5	17.0	17.5	16.0	17.0	19.5	18.0	19.0	20.0	17.0	18.5
3	17.0	16.0	16.5	17.5	17.0	17.0	21.0	19.0	20.0	18.5	15.0	16.5
4	17.5	16.5	17.0	18.0	17.0	17.5	22.0	20.0	21.0	17.0	14.0	15.5
5	16.5	15.5	15.5	18.0	17.0	17.5	23.0	21.0	22.0	16.5	14.0	15.5
6	16.0	15.5	16.0	17.0	16.5	17.0	23.5	21.5	22.5	16.5	15.0	15.5
7	15.5	14.5	15.0	18.5	17.0	18.0	22.0	19.0	21.0	17.0	15.5	16.0
8	15.5	14.0	15.0	18.5	17.5	18.0	19.0	17.0	18.0	17.0	15.5	16.5
9	16.0	15.0	15.5	18.0	16.5	17.5	18.0	15.5	17.0	18.5	16.0	17.5
10	16.0	15.0	15.5	19.5	17.5	18.5	17.0	15.5	16.5	20.0	17.5	18.5
11	15.0	14.0	14.5	21.0	19.5	20.0	17.0	16.5	16.5	20.0	18.0	19.0
12	14.5	13.0	14.0	20.0	19.0	19.5	17.5	16.5	17.0	18.5	18.0	18.0
13	15.5	14.5	15.0	19.0	17.5	18.5	19.0	17.0	18.0	18.5	17.5	18.0
14	15.5	15.0	15.5	18.5	17.0	17.5	19.5	18.0	18.5	19.5	18.0	18.5
15	16.5	15.0	15.5	17.5	16.0	17.0	19.5	18.0	18.5	19.0	17.5	18.5
16	16.5	16.0	16.0	17.0	17.0	17.0	20.0	18.5	19.5	17.5	17.0	17.0
17	16.0	15.0	16.0	17.0	16.5	17.0	19.5	18.5	19.0	18.0	16.0	17.0
18	16.0	14.5	15.5	17.5	16.0	17.0	19.0	18.0	18.0	16.0	15.5	16.0
19	17.0	15.0	16.0	18.0	17.0	17.5	18.0	17.5	18.0	15.5	15.0	15.5
20	16.5	16.0	16.5	19.0	18.0	18.5	19.0	17.5	18.5	16.5	15.5	16.0
21	17.5	16.5	17.0	19.0	18.0	18.5	19.5	18.5	19.0	17.5	16.5	17.0
22	18.0	17.0	17.5	20.0	19.0	19.5	20.5	18.5	19.5	19.0	17.5	18.0
23	18.0	17.0	17.5	21.0	19.5	20.0	21.5	19.5	20.0	19.0	14.0	17.0
24	18.0	16.5	17.5	21.0	19.5	20.5	20.5	19.0	20.0	14.0	11.5	13.0
25	18.5	17.0	18.0	21.5	20.0	21.0	19.5	18.0	18.5	12.5	10.5	11.5
26	19.5	18.0	19.0	22.5	21.0	21.5	19.5	18.0	18.5	13.5	12.0	12.5
27	20.0	18.5	19.5	22.0	20.5	21.5	19.5	18.0	18.5	12.5	10.0	11.5
28	19.5	18.5	19.0	22.5	21.0	21.5	20.5	18.5	19.5	11.5	9.0	10.5
29	18.5	16.5	17.5	21.0	19.0	20.0	20.0	19.0	19.5	12.5	10.0	11.5
30	17.0	15.5	16.0	19.0	18.0	18.5	20.5	18.0	19.5	13.0	11.5	12.5
31	---	---	---	18.5	18.0	18.0	19.5	17.0	18.0	---	---	---
MONTH	20.0	13.0	16.4	22.5	15.0	18.5	23.5	15.5	19.0	20.0	9.0	15.9

01641000 HUNTING CREEK AT JIMTOWN, MD

LOCATION.--Lat 39°35'40", long 77°23'50", Frederick County, Hydrologic Unit 02070009, on right bank just downstream from highway bridge, 0.4 mi southwest of Jimtown, about 2.2 mi southeast of Thurmont, 2.2 mi upstream from Little Hunting Creek, and 5.2 mi upstream from mouth.

DRAINAGE AREA.--18.4 mi^2.

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1332: 1952.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 355 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges (backwater from beaver dam), which are fair. Slight regulation at irregular intervals caused by pumpage at recreation camp near Foxville, and from occasional draining and refilling of pond near Thurmont by Maryland Game and Inland Fish Commission. Regulation since spring of 1970 at low flow by Hunting Creek Lake, 5.6 miles upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--40 years, 26.6 ft^3/s, 19.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,670 ft^3/s, Oct. 9, 1976, gage height, 6.32 ft; minimum discharge, 0.4 ft^3/s, Sept. 9, 1966, gage height, 1.48 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0230	*691	*3.95	May 15	2000	538	3.64
May 6	1800	524	3.61	May 16	1700	466	3.48
May 10	0830	432	3.40	June 9	1930	448	3.44

Minimum daily discharge, 4.2 ft^3/s, Oct. 11, 12, 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.5	e6.9	6.2	7.1	13	16	38	62	24	20	12	e4.8
2	e4.5	e7.0	6.0	7.7	12	15	33	132	22	18	11	e4.5
3	e7.0	e7.0	5.8	7.6	22	15	36	64	20	17	9.8	e4.5
4	e6.0	e7.0	6.1	7.1	19	15	33	48	24	19	9.2	e4.5
5	e5.0	e17	5.7	6.4	15	18	31	106	21	150	8.6	e4.5
6	e4.7	e13	5.4	6.7	14	44	32	383	22	72	8.1	e4.7
7	e4.5	e7.5	5.5	7.1	14	24	28	191	22	56	8.5	e4.7
8	e4.5	e7.0	5.4	14	13	19	26	109	20	46	7.8	e4.7
9	e4.9	e6.3	5.5	14	12	19	24	88	70	37	7.1	e4.5
10	e4.5	e6.0	5.4	10	12	24	21	293	58	33	6.8	e4.3
11	e4.2	e5.8	5.3	10	12	29	20	177	29	28	7.5	e4.3
12	e4.2	e5.6	4.6	38	11	30	19	116	22	19	7.6	e4.4
13	e4.2	e8.0	6.3	24	11	27	18	90	21	30	7.3	e4.2
14	e4.2	e6.0	6.4	16	17	24	18	78	21	25	6.9	e4.2
15	e5.0	e5.4	5.6	51	22	24	20	174	22	22	7.0	e9.0
16	e5.2	e5.2	5.2	24	20	22	20	345	41	26	6.8	e14
17	e5.4	e5.0	5.1	18	16	22	18	231	53	21	6.5	e7.0
18	e5.6	4.9	5.0	16	15	27	17	136	32	19	6.3	e5.0
19	e8.0	6.7	5.1	14	15	34	17	100	26	18	16	e7.0
20	e9.0	50	5.2	13	15	34	16	83	36	31	8.0	e8.0
21	e13	16	6.4	11	20	37	15	71	30	20	7.9	e25
22	10	8.7	5.8	10	28	30	14	60	47	18	7.2	e12
23	7.4	7.4	7.4	10	21	26	13	56	61	16	6.9	e6.4
24	8.1	6.9	20	11	18	107	13	71	47	15	6.4	e8.0
25	7.3	6.3	13	13	17	83	12	54	38	15	6.4	e15
26	7.0	6.1	8.7	17	18	59	12	47	32	14	6.3	e9.0
27	e7.0	6.7	7.7	16	17	48	12	45	26	13	6.3	e7.0
28	e6.9	10	8.4	14	17	42	11	36	36	13	6.3	e6.0
29	e6.8	7.0	7.7	13	---	38	12	31	25	12	6.2	e5.6
30	e6.8	6.6	7.1	15	---	41	12	29	22	16	6.5	e5.4
31	e6.8	---	6.8	14	---	45	---	27	---	19	5.7	---
TOTAL	192.2	269.0	209.8	455.7	456	1038	611	3533	970	878	240.9	212.2
MEAN	6.20	8.97	6.77	14.7	16.3	33.5	20.4	114	32.3	28.3	7.77	7.07
MAX	13	50	20	51	28	107	38	383	70	150	16	25
MIN	4.2	4.9	4.6	6.4	11	15	11	27	20	12	5.7	4.2
CFSM	.34	.49	.37	.80	.89	1.82	1.11	6.19	1.76	1.54	.42	.38
IN.	.39	.54	.42	.92	.92	2.10	1.24	7.14	1.96	1.78	.49	.43

CAL YR 1988 TOTAL 8015.9 MEAN 21.9 MAX 874 MIN 3.1 CFSM 1.19 IN. 16.21
WTR YR 1989 TOTAL 9065.8 MEAN 24.8 MAX 383 MIN 4.2 CFSM 1.35 IN. 18.33

e Estimated

01641510 FISHING CREEK TRIBUTARY NEAR LEWISTOWN, MD

LOCATION.--Lat 39°32'09", long 77°26'48", Frederick County, Hydrologic Unit 02070009, on right bank 800 ft upstream from entrance to Lewistown State Fish Hatchery, 1.2 mi west of U.S. Route 15, 1.7 mi west of Lewistown, and 0.6 mi upstream from Fishing Creek.

DRAINAGE AREA.--0.40 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 575 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Water-discharge records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33 ft^3/s, May 18, 1988, gage height, 2.60 ft; minimum discharge, 0.03 ft^3/s, Aug. 15, 1988, gage height, 1.54 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	1815	*7.2	*2.11	No peak greater than base discharge.			

Minimum discharge, 0.04 ft^3/s, Oct. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.10	.10	.11	.23	.30	.84	1.2	.87	.55	.37	.18
2	.15	.09	.09	.12	.23	.30	.77	1.3	.84	.52	.34	.18
3	.13	.11	.11	.13	.34	.30	.72	1.0	.81	.52	.32	.18
4	.13	.10	.13	.13	.25	.30	.69	1.0	.86	.56	.30	.18
5	.11	.26	.12	.11	.23	.35	.69	1.5	.76	.73	.29	.18
6	.10	.12	.11	.11	.23	.56	.69	4.5	.75	.57	.29	.18
7	.08	.10	.11	.11	.23	.39	.69	4.0	.74	.50	.33	.18
8	.10	.10	.11	.25	.22	.38	.69	3.3	.67	.47	.28	.18
9	.08	.09	.11	.22	.20	.36	.69	2.6	.85	.45	.26	.18
10	.08	.09	.10	.19	.21	.37	.66	4.1	.69	.43	.25	.17
11	.10	.10	.09	.18	.20	.45	.59	3.4	.60	.43	.25	.17
12	.07	.10	.09	.44	.20	.50	.57	3.0	.57	.43	.26	.16
13	.07	.19	.10	.36	.19	.43	.57	2.6	.57	.64	.26	.16
14	.07	.12	.09	.27	.32	.43	.57	2.4	.74	.47	.25	.18
15	.06	.10	.10	.51	.29	.43	.62	2.9	.61	.43	.25	.18
16	.07	.09	.11	.39	.27	.43	.59	3.6	.63	.52	.25	.31
17	.06	.15	.11	.35	.26	.43	.57	3.6	.69	.45	.23	.22
18	.08	.13	.11	.34	.26	.51	.58	3.2	.55	.41	.23	.20
19	.07	.18	.11	.27	.26	.48	.58	2.8	.52	.38	.26	.19
20	.06	.53	.11	.27	.24	.45	.52	2.6	.55	.59	.25	.21
21	.18	.22	.14	.30	.30	.53	.52	2.4	.55	.41	.23	.21
22	.12	.12	.12	.30	.35	.49	.52	2.2	.79	.38	.22	.26
23	.08	.11	.16	.27	.30	.48	.52	2.1	1.0	.41	.20	.19
24	.09	.11	.32	.26	.30	1.0	.49	2.0	.82	.43	.20	.18
25	.09	.11	.19	.26	.30	.84	.47	1.6	.69	.44	.20	.18
26	.09	.11	.13	.25	.30	.84	.47	1.5	.65	.40	.20	.22
27	.10	.15	.12	.24	.30	.84	.47	1.4	.63	.34	.20	.18
28	.08	.17	.14	.23	.30	.84	.47	1.2	.76	.34	.20	.18
29	.09	.13	.14	.22	---	.84	.51	1.1	.61	.34	.20	.18
30	.08	.11	.13	.22	---	.85	.46	.97	.57	.42	.20	.16
31	.07	---	.11	.23	---	.86	---	.92	---	.44	.18	---
TOTAL	2.87	4.19	3.81	7.64	7.31	16.56	17.79	71.99	20.94	14.40	7.75	5.71
MEAN	.093	.14	.12	.25	.26	.53	.59	2.32	.70	.46	.25	.19
MAX	.18	.53	.32	.51	.35	1.0	.84	4.5	1.0	.73	.37	.31
MIN	.06	.09	.09	.11	.19	.30	.46	.92	.52	.34	.18	.16
CFSM	.23	.35	.31	.62	.65	1.34	1.48	5.81	1.74	1.16	.62	.48
IN.	.27	.39	.35	.71	.68	1.54	1.65	6.70	1.95	1.34	.72	.53

CAL YR 1988 TOTAL 194.60 MEAN .53 MAX 11 MIN .06 CFSM 1.33 IN. 18.10
WTR YR 1989 TOTAL 180.96 MEAN .50 MAX 4.5 MIN .06 CFSM 1.24 IN. 16.83

01641510 FISHING CREEK TRIBUTARY NEAR LEWISTOWN, MD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1988 to current year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1987 to current year.
WATER TEMPERATURE: October 1987 to current year.
INSTRUMENTATION.--Water-quality monitor since October 1987.
REMARKS.--Periods of missing record are due to instrument malfunction, battery failure, or probe malfunction.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 90 microsiemens, Oct. 29, 1988; minimum, 13 microsiemens, Sept. 6, 7, 1989.
WATER TEMPERATURE: Maximum daily, 23.0°C, Aug. 15, 1988; minimum daily, 1.0°C, Jan. 6, 7, 8, 15, 16, 1988, Mar. 6, 1989.
EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 36 microsiemens, Nov. 20; minimum 13 microsiemens, Sept. 6,7.
WATER TEMPERATURE: Maximum daily, 20.0°C, July 25-28, Aug. 6; minimum daily, 1.0°C, Mar.6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT							
05...	1515	0.07	17	6.6	12.0	0.76	0.49
13...	1045	0.11	16	6.6	10.0	0.80	0.43
20...	1030	0.11	16	--	12.0	1.1	0.59
27...	1245	0.33	22	6.3	9.0	0.92	0.51
NOV							
02...	1245	0.15	18	6.5	12.0	1.0	0.57
10...	0900	0.48	22	6.4	10.0	1.0	0.61
17...	0905	0.15	21	6.4	10.0	1.0	0.64
24...	0930	0.19	18	6.4	7.0	0.98	0.56
DEC							
01...	1240	0.60	20	6.2	8.0	0.98	0.53
08...	1530	0.48	18	6.3	7.0	0.80	0.54
15...	0850	0.82	24	6.6	7.0	0.97	0.53
22...	0920	0.66	17	6.6	6.0	0.92	0.52
30...	1000	0.38	16	6.6	3.0	0.64	0.55
JAN							
05...	0920	0.38	16	6.4	2.0	0.49	0.55
12...	1030	0.38	16	6.0	2.0	0.60	0.56
19...	0945	0.38	18	6.6	3.0	0.57	0.64
27...	1000	0.76	18	6.2	3.0	--	--
FEB							
02...	1300	0.69	18	6.5	9.0	0.80	0.61
09...	0930	0.69	16	6.4	4.0	0.73	0.57
16...	0930	0.69	18	6.4	5.0	0.94	0.69
23...	1030	0.63	17	6.6	6.0	0.51	0.56
MAR							
01...	0930	0.63	17	6.5	5.0	0.47	0.55
08...	1015	0.63	17	6.5	7.0	0.99	0.52
15...	1015	0.63	16	6.6	6.0	0.50	0.53
22...	0945	0.57	17	6.2	6.0	0.51	0.53
29...	0945	0.52	18	6.2	10.0	0.76	0.57
APR							
05...	0945	0.43	18	6.5	12.0	0.52	0.50
12...	0945	0.63	16	6.3	10.0	0.51	0.50
19...	0940	0.63	16	6.3	9.0	0.55	0.58
26...	0935	0.52	16	6.3	11.0	0.52	0.55
MAY							
03...	1000	0.47	17	6.3	11.0	0.54	0.60
10...	0930	1.2	18	6.5	13.0	0.58	0.49
17...	1010	1.0	17	6.2	13.0	0.57	0.51
24...	1515	3.7	17	5.9	13.0	0.53	0.46
31...	1310	1.6	16	5.7	15.0	0.43	0.49
JUN							
07...	0930	1.0	16	5.8	15.0	0.56	0.50
14...	0920	0.57	15	6.0	15.0	0.50	0.52
21...	0920	0.43	16	6.1	18.0	0.66	.48
27...	1215	0.34	15	6.0	17.0	0.49	.48
JUL							
06...	1230	0.23	16	6.0	18.0	0.36	.35
12...	0930	0.30	25	5.6	19.0	0.88	.78
19...	0950	0.23	19	5.9	20.0	0.65	0.55
28...	1000	0.18	16	5.8	20.0	0.52	0.46
AUG							
02...	0945	0.16	17	5.8	21.0	0.54	0.46
09...	0930	0.13	17	5.8	20.0	0.55	0.50
16...	1000	0.08	17	6.0	22.0	0.54	0.44
23...	1315	0.11	15	5.9	19.0	0.50	0.45
30...	1000	0.16	17	6.1	20.0	0.62	0.51
SEP							
06...	1450	0.11	16	6.0	17.0	0.65	0.47
13...	0900	0.11	16	5.9	18.0	0.53	0.46
19...	1230	0.11	16	5.8	18.0	0.62	0.46
27...	0925	0.16	16	5.8	15.0	0.53	0.44

01641510 FISHING CREEK TRIBUTARY NEAR LEWISTOWN, MD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
OCT						
05...	1.2	1.0	1.6	1.9	8.1	17
13...	1.2	0.76	1.7	2.0	8.2	17
20...	1.3	0.92	2.3	1.5	7.7	17
27...	1.2	0.97	2.3	1.5	7.0	16
NOV						
02...	1.2	1.0	2.1	1.7	7.2	17
10...	1.3	1.4	3.2	1.7	7.5	19
17...	1.2	1.3	2.5	1.8	7.6	18
24...	0.69	0.96	1.9	1.1	7.4	15
DEC						
01...	0.78	0.92	1.8	1.4	6.9	15
08...	0.90	1.0	1.8	1.4	7.2	15
15...	1.3	0.86	4.3	1.3	6.4	16
22...	0.64	1.0	2.5	1.3	6.5	14
30...	0.60	1.1	2.3	1.2	6.5	14
JAN						
05...	1.2	0.96	2.3	1.5	5.3	14
12...	1.1	0.89	2.2	1.5	6.8	15
19...	1.2	1.1	2.7	1.5	6.6	15
27...	--	--	2.3	1.5	--	--
FEB						
02...	1.1	1.1	2.4	1.7	6.3	15
09...	1.1	0.96	2.5	1.5	6.3	15
16...	1.0	1.0	2.7	1.8	6.1	16
23...	0.68	0.76	2.2	1.6	6.1	14
MAR						
01...	1.1	1.0	2.0	1.8	6.0	14
08...	1.1	0.92	2.2	1.8	6.0	15
15...	1.1	1.2	2.0	1.8	6.0	15
22...	1.0	1.2	2.1	1.8	6.2	15
29...	1.1	1.0	2.2	1.8	6.4	15
APR						
05...	0.96	0.90	2.2	1.4	6.0	14
12...	0.91	0.84	2.3	1.7	6.0	14
19...	1.1	0.88	2.7	1.4	6.2	15
26...	1.0	0.96	2.0	1.4	6.1	14
MAY						
03...	1.0	0.92	1.9	1.7	5.9	14
10...	1.1	1.0	2.1	1.7	6.6	15
17...	0.93	0.77	2.0	1.7	6.6	15
24...	0.91	0.95	2.6	1.4	6.3	13
31...	0.96	0.84	1.7	1.6	7.4	15
JUN						
07...	1.0	0.88	1.6	1.5	7.5	16
14...	1.0	0.80	1.5	1.5	7.6	15
21...	1.0	0.80	1.7	1.5	7.8	16
27...	1.0	0.68	1.8	1.5	8.0	16
JUL						
06...	1.0	0.67	1.6	1.2	7.2	14
12...	1.1	1.3	4.4	1.2	6.1	17
19...	1.0	0.95	2.5	1.1	6.7	15
28...	0.93	0.70	1.5	1.3	7.2	14
AUG						
02...	0.92	0.65	1.5	1.3	7.4	14
09...	1.0	0.67	1.4	1.3	7.5	15
16...	0.95	0.62	1.4	1.3	7.8	14
23...	0.87	0.64	1.5	1.3	7.2	14
30...	0.92	0.73	2.0	1.2	7.2	15
SEP						
06...	0.91	0.68	1.9	1.2	7.3	14
13...	0.93	0.62	1.6	1.2	7.5	14
19...	0.92	0.64	1.6	1.3	7.3	14
27...	0.90	0.62	1.7	1.2	7.4	14

01641510 FISHING CREEK TRIBUTARY NEAR LEWISTOWN, MD--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18	16	17	---	---	---	18	17	17	20	18	19
2	19	16	18	---	---	---	17	16	17	20	19	19
3	18	16	17	---	---	---	17	16	17	21	20	20
4	17	16	16	---	---	---	17	16	16	21	19	20
5	17	15	16	---	---	---	17	16	16	21	19	20
6	19	15	17	---	---	---	17	15	16	20	18	19
7	17	15	16	---	---	---	17	15	16	20	19	19
8	17	15	16	---	---	---	17	16	16	28	19	25
9	18	15	17	19	18	18	17	16	16	26	23	24
10	18	15	17	19	16	17	17	16	16	24	21	22
11	18	16	17	17	16	17	17	16	16	22	20	21
12	16	15	16	17	16	17	16	15	16	30	20	25
13	17	15	16	33	16	23	17	15	16	29	23	26
14	16	15	16	24	20	21	17	15	16	24	21	22
15	17	15	16	20	18	19	17	16	16	25	22	24
16	17	15	16	19	18	18	17	15	16	24	20	22
17	19	16	16	22	18	20	17	15	16	21	19	20
18	20	16	18	20	18	19	16	15	16	20	19	19
19	18	16	17	28	18	20	16	15	16	20	18	19
20	19	15	16	36	28	34	17	15	16	19	18	18
21	---	---	---	31	25	27	21	16	19	19	17	18
22	---	---	---	25	22	23	20	18	19	19	18	18
23	---	---	---	23	19	21	23	18	21	20	18	19
24	---	---	---	20	18	19	29	21	26	19	18	19
25	---	---	---	19	17	18	28	22	24	20	18	19
26	---	---	---	19	17	18	22	20	21	20	18	19
27	---	---	---	22	18	19	22	20	21	19	18	19
28	---	---	---	22	20	21	21	19	20	19	18	18
29	---	---	---	21	18	19	20	19	20	18	17	18
30	---	---	---	19	17	18	20	19	20	18	17	18
31	---	---	---	---	---	---	20	19	19	18	17	18
MONTH	---	---	---	---	---	---	17	15	18	30	17	20

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	19	17	18	17	16	17	17	16	16	---	---	---
2	19	17	18	17	16	17	17	16	16	---	---	---
3	23	18	20	17	16	17	17	16	16	19	17	18
4	22	20	21	17	15	16	18	16	17	18	16	17
5	21	19	20	20	16	18	19	16	17	22	16	19
6	19	18	19	24	18	22	18	16	17	23	21	22
7	19	18	18	21	18	19	18	16	17	22	19	20
8	19	18	18	18	17	18	17	16	16	20	18	18
9	19	17	18	20	17	18	20	16	17	20	17	18
10	19	17	18	18	17	17	19	15	17	24	19	22
11	19	17	18	19	17	18	17	15	16	23	21	22
12	18	17	18	21	18	19	17	15	16	23	21	22
13	21	17	18	20	19	20	18	15	16	22	15	19
14	24	21	23	20	19	20	16	15	15	23	15	19
15	24	21	23	20	19	20	17	16	17	22	15	17
16	23	20	21	19	17	18	17	16	16	22	18	19
17	21	19	20	18	17	17	17	16	17	21	19	20
18	20	19	19	21	17	19	19	16	17	20	18	19
19	19	18	19	22	20	21	19	15	17	19	17	18
20	20	18	19	23	19	22	17	15	16	18	17	17
21	23	18	21	20	18	19	17	15	16	17	16	17
22	24	21	23	22	18	21	17	16	17	17	16	17
23	22	19	20	22	19	21	18	16	17	18	16	16
24	20	18	19	34	18	27	18	16	17	18	17	17
25	19	17	18	32	23	30	18	16	17	18	17	18
26	18	17	17	---	---	---	19	17	18	19	18	18
27	17	16	17	---	---	---	20	18	19	20	18	19
28	17	16	17	---	---	---	20	19	20	19	18	18
29	---	---	---	---	---	---	---	---	---	19	16	17
30	---	---	---	---	---	---	---	---	---	17	16	17
31	---	---	---	---	---	---	---	---	---	18	15	16
MONTH	24	16	19	---	---	---	---	---	---	---	---	---

01641510 FISHING CREEK TRIBUTARY NEAR LEWISTOWN, MD--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17	15	16	18	17	17	21	20	20	17	15	16
2	16	15	16	18	16	17	21	19	20	17	15	16
3	30	15	17	18	16	17	20	18	19	16	15	15
4	31	15	18	18	16	17	21	19	20	17	14	15
5	17	15	16	20	17	18	21	19	20	15	14	14
6	17	15	16	18	17	17	22	18	20	15	13	14
7	17	15	16	17	16	17	20	19	19	16	13	14
8	16	15	16	17	16	17	20	18	19	16	14	15
9	19	15	17	17	16	16	19	18	18	16	14	15
10	16	15	15	17	16	16	19	17	18	17	15	16
11	16	14	15	17	15	16	18	17	18	17	16	16
12	16	15	16	17	15	16	18	17	17	18	15	16
13	17	15	16	23	15	19	17	16	17	19	14	15
14	21	15	17	18	17	17	18	16	17	17	14	16
15	17	15	16	18	16	17	18	15	16	16	15	16
16	17	15	16	19	16	18	19	15	16	34	15	24
17	17	15	16	19	16	18	16	15	16	24	17	20
18	17	15	16	18	16	17	17	15	16	18	16	17
19	18	16	17	18	17	17	18	16	17	18	16	17
20	18	16	17	22	17	20	17	16	16	20	17	18
21	19	17	18	20	19	19	17	16	16	20	16	18
22	21	17	18	19	18	19	17	16	16	29	17	20
23	19	16	17	20	18	19	19	15	16	20	17	19
24	18	15	17	20	19	19	17	16	16	20	17	19
25	16	15	16	20	19	19	19	16	16	20	16	17
26	17	15	16	20	18	19	17	16	16	22	17	20
27	21	16	17	19	17	18	17	16	17	17	15	16
28	23	18	19	18	17	18	17	16	16	19	14	16
29	19	17	18	19	17	19	17	16	17	18	15	17
30	18	17	18	25	16	19	19	16	17	17	15	16
31	---	---	---	24	20	21	18	15	16	---	---	---
MONTH	31	14	17	25	15	18	22	15	17	34	13	17

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	16.5	15.5	16.0	---	---	---	7.0	6.0	6.5	3.5	3.0	3.5
2	17.0	16.0	16.5	---	---	---	6.0	5.5	6.0	4.0	3.5	4.0
3	16.5	16.0	16.0	---	---	---	7.0	5.5	6.5	4.0	3.5	3.5
4	16.0	15.0	15.5	---	---	---	7.0	5.5	6.0	3.5	2.5	3.0
5	15.0	13.0	14.0	---	---	---	6.0	5.5	5.5	3.0	2.0	2.5
6	13.0	12.5	12.5	---	---	---	---	---	---	2.5	1.5	2.5
7	12.5	11.5	12.0	---	---	---	---	---	---	3.0	2.5	3.0
8	12.0	11.0	11.5	---	---	---	6.5	6.0	6.5	3.5	3.0	3.5
9	11.5	10.5	11.0	9.5	8.5	9.0	6.0	5.0	5.5	4.0	3.5	3.5
10	12.0	11.0	11.5	9.5	8.5	9.0	5.0	4.0	4.5	---	---	---
11	12.0	11.5	12.0	9.0	8.0	9.0	4.5	3.0	4.0	---	---	---
12	11.5	10.0	10.5	8.5	7.5	8.0	3.0	2.0	2.5	---	---	---
13	10.0	9.0	9.5	9.5	8.0	9.0	2.5	2.0	2.0	---	---	---
14	10.0	8.5	9.5	9.5	8.5	9.0	3.0	2.0	2.5	---	---	---
15	11.0	9.5	10.0	9.5	9.0	9.0	4.0	3.0	3.5	---	---	---
16	12.0	11.0	11.5	10.0	9.0	9.5	3.0	2.5	2.5	---	---	---
17	12.5	11.5	12.0	10.5	8.5	9.5	3.0	2.0	2.5	---	---	---
18	13.0	12.5	12.5	8.5	7.5	8.0	2.5	2.0	2.0	5.0	4.0	4.5
19	12.5	11.5	12.0	8.0	7.5	7.5	3.0	2.0	2.5	5.5	5.0	5.0
20	11.5	10.5	11.0	8.5	7.5	8.0	3.5	2.5	3.0	5.5	4.0	5.0
21	---	---	---	8.5	7.5	8.0	4.0	3.5	4.0	4.0	3.0	3.5
22	---	---	---	7.5	6.5	7.0	3.5	3.0	3.5	3.5	2.5	3.0
23	---	---	---	6.5	6.0	6.0	3.5	3.0	3.5	3.5	2.5	3.0
24	---	---	---	6.5	5.5	6.0	4.5	3.5	4.0	---	---	---
25	---	---	---	6.5	5.5	6.0	4.5	4.0	4.5	---	---	---
26	---	---	---	7.5	6.0	6.5	4.0	3.0	3.5	---	---	---
27	---	---	---	9.5	7.5	8.5	3.5	3.0	3.5	---	---	---
28	---	---	---	9.5	7.5	9.0	5.5	3.5	4.5	---	---	---
29	---	---	---	---	---	---	4.0	3.0	3.5	---	---	---
30	---	---	---	7.0	6.5	7.0	3.5	3.0	3.5	---	---	---
31	---	---	---	---	---	---	3.5	3.0	3.5	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

POTOMAC RIVER BASIN

01641510 FISHING CREEK TRIBUTARY NEAR LEWISTOWN, MD--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	3.5	2.5	3.0	9.5	8.0	9.0	---	---	---
2	---	---	---	4.0	2.5	3.0	9.0	8.0	8.5	---	---	---
3	---	---	---	4.0	3.0	3.5	11.0	8.5	10.0	12.0	11.0	11.5
4	---	---	---	4.0	3.5	4.0	12.0	10.0	11.0	12.0	10.5	11.5
5	---	---	---	4.5	4.0	4.5	11.5	10.5	11.0	11.5	11.0	11.5
6	---	---	---	4.5	1.0	3.5	11.0	9.5	10.5	12.0	11.0	11.5
7	---	---	---	3.0	2.5	2.5	9.5	9.0	9.5	11.0	10.0	10.5
8	4.0	3.0	3.5	2.5	2.0	2.5	9.5	8.0	9.0	11.0	10.0	10.5
9	3.0	2.0	2.5	3.5	2.0	2.5	10.0	8.5	9.0	11.0	10.5	10.5
10	2.5	2.0	2.0	4.0	2.5	3.0	9.0	8.0	8.5	11.0	10.5	10.5
11	3.0	2.0	2.5	4.0	2.5	3.5	9.5	7.0	8.5	10.5	10.5	10.5
12	3.5	2.5	3.0	4.5	3.0	4.0	10.0	7.0	8.5	10.5	10.0	10.5
13	3.0	2.5	2.5	4.5	3.0	4.0	10.0	7.5	9.0	11.0	10.0	10.5
14	4.0	3.0	3.5	5.0	4.0	4.5	10.5	7.5	9.0	11.5	10.5	11.0
15	5.5	4.0	4.5	7.0	5.0	6.0	9.5	9.5	9.5	11.5	11.0	11.0
16	5.5	4.5	5.0	7.5	5.5	6.5	11.5	9.0	10.0	11.5	11.0	11.5
17	4.5	3.5	4.0	8.0	5.5	7.0	12.0	9.0	10.5	12.0	11.0	11.5
18	3.5	3.0	3.5	9.0	7.5	8.0	13.5	11.0	12.0	12.5	11.5	12.0
19	3.5	2.5	3.0	7.5	6.0	6.5	13.0	11.0	12.0	12.5	12.0	12.0
20	4.5	3.5	4.0	6.0	5.5	5.5	12.5	10.0	11.0	13.0	12.0	12.5
21	---	---	---	6.5	5.5	6.0	12.0	10.5	11.0	13.0	12.0	12.5
22	---	---	---	6.5	5.0	5.5	12.0	10.0	11.0	12.5	12.0	12.5
23	---	---	---	6.0	4.5	5.5	11.5	9.0	10.5	12.5	12.0	12.0
24	---	---	---	6.0	5.5	5.5	12.0	9.5	10.5	12.5	12.0	12.0
25	---	---	---	8.5	6.0	7.0	12.5	10.0	11.5	13.0	12.0	12.5
26	---	---	---	---	---	---	13.0	11.0	12.0	13.5	12.5	13.0
27	---	---	---	---	---	---	13.0	11.5	12.0	13.5	13.0	13.0
28	---	---	---	---	---	---	13.0	11.5	12.5	13.0	12.0	12.5
29	---	---	---	---	---	---	12.5	11.5	12.0	13.0	12.0	12.5
30	---	---	---	---	---	---	13.5	11.5	12.5	13.5	12.5	13.0
31	---	---	---	---	---	---	---	---	---	14.0	13.5	13.5
MONTH	---	---	---	---	---	---	13.5	7.0	10.4	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.0	14.0	14.5	15.5	14.5	15.0	18.0	17.5	17.5	18.5	17.5	18.0
2	15.5	14.5	15.0	15.5	15.0	15.5	18.0	17.5	18.0	18.5	18.0	18.0
3	15.0	14.5	14.5	15.5	15.5	15.5	19.0	18.0	18.5	18.0	16.5	17.0
4	15.0	14.5	15.0	16.0	15.5	15.5	19.5	18.5	19.0	16.5	16.0	16.5
5	14.5	14.0	14.5	16.0	15.5	16.0	19.5	19.0	19.5	16.5	15.5	16.0
6	14.5	14.0	14.5	16.0	15.5	16.0	20.0	19.5	19.5	16.5	16.5	16.5
7	14.5	14.0	14.0	16.5	15.5	16.5	19.5	18.0	19.0	17.0	16.0	16.5
8	14.5	13.5	14.0	16.5	16.0	16.5	18.0	17.0	17.0	17.0	16.5	17.0
9	14.5	14.0	14.5	16.5	16.0	16.5	17.0	16.0	16.5	18.0	17.0	17.0
10	15.0	14.5	14.5	17.5	16.5	17.0	17.0	16.5	17.0	18.5	17.5	18.0
11	14.5	14.0	14.0	18.0	17.0	17.5	17.0	17.0	17.0	18.5	18.0	18.5
12	14.0	13.5	14.0	17.5	17.0	17.5	17.5	17.0	17.0	18.5	18.0	18.0
13	14.5	14.0	14.5	17.0	16.0	16.5	18.0	17.5	18.0	18.0	17.5	18.0
14	15.0	14.5	14.5	16.5	16.0	16.0	18.5	18.0	18.5	18.5	17.5	18.0
15	15.5	14.5	15.0	16.5	15.5	16.0	18.5	18.5	18.5	18.5	18.0	18.0
16	15.5	15.0	15.0	16.0	16.0	16.0	19.0	18.5	18.5	18.0	17.5	17.5
17	15.5	15.0	15.0	16.0	15.5	16.0	19.0	18.5	18.5	17.5	17.0	17.0
18	15.5	14.5	15.0	16.5	15.5	16.0	18.5	17.5	18.0	17.0	16.5	16.5
19	15.5	15.0	15.5	17.0	16.0	16.5	17.5	17.0	17.5	16.5	16.5	16.5
20	15.5	15.0	15.5	17.5	17.0	17.0	18.0	17.0	17.5	17.0	16.5	16.5
21	16.0	15.0	15.5	18.0	17.5	17.5	18.0	17.5	18.0	18.0	17.0	17.5
22	16.5	15.5	16.0	18.5	18.0	18.0	18.5	17.5	18.0	18.5	17.5	18.0
23	17.0	16.0	16.0	19.0	18.5	19.0	19.0	18.0	18.5	18.5	15.0	17.5
24	16.0	15.5	16.0	19.5	19.0	19.0	19.0	18.0	18.5	15.0	13.5	14.0
25	16.0	15.5	16.0	20.0	19.5	19.5	18.0	17.0	17.5	14.0	13.0	13.5
26	16.5	15.5	16.0	20.0	19.5	20.0	17.5	17.0	17.5	15.0	14.0	14.5
27	17.0	16.0	16.5	20.0	19.5	20.0	17.5	17.0	17.5	14.0	13.0	13.5
28	17.0	16.0	16.0	20.0	19.5	19.5	18.0	17.5	17.5	13.0	12.0	12.5
29	16.0	15.0	15.5	19.5	18.5	19.0	18.5	18.0	18.0	14.0	12.5	13.5
30	15.5	14.5	15.0	18.5	18.0	18.0	18.5	18.0	18.5	14.5	14.0	14.0
31	---	---	---	18.0	17.5	17.5	18.0	17.5	18.0	---	---	---
MONTH	17.0	13.5	15.0	20.0	14.5	17.2	20.0	16.0	18.0	18.5	12.0	16.4

01643000 MONOCACY RIVER AT JUG BRIDGE NEAR FREDERICK, MD

LOCATION.--Lat 39°24'13", long 77°21'58", Frederick County, Hydrologic Unit 02070009, on right bank 0.2 mi upstream from Jug Bridge on U.S. Highway 40, 0.4 mi downstream from Linganore Creek, 2.0 mi east of Frederick, and 16.9 mi upstream from mouth.

DRAINAGE AREA.--817 mi^2.

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for October, November 1929, published in WSP 1302.

REVISED RECORDS.--WSP 711: 1930.

GAGE.--Water-stage recorder. Nonrecording gage at site 0.2 mile downstream. Datum of gage is 231.92 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Occasional regulation at low and medium flows since September 1972 by Linganore Reservoir, total capacity, 883,200,000 gal, 2.8 mi upstream from station. National Weather Service 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.

AVERAGE DISCHARGE.--60 years, 928 ft^3/s, 15.42 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,600 ft^3/s, June 23, 1972, gage height, 35.9 ft, from floodmark; minimum daily, 19 ft^3/s, Sept. 7-13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1889 reached a stage of 30 ft, from floodmarks, discharge, 56,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 7	0100	*20,000	*17.04	June 23	2330	15,000	14.66
May 17	0630	14,600	14.45				

Minimum discharge, 88 ft^3/s, Dec. 12, result of freezeup; minimum daily discharge, 94 ft^3/s, Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	114	269	256	425	653	1720	551	806	787	941	175
2	108	117	238	260	387	579	1260	5110	734	688	614	168
3	123	116	221	271	425	535	1130	2820	665	624	464	158
4	133	115	208	288	784	514	1170	1380	661	603	386	154
5	124	134	194	224	755	540	1150	1490	677	2010	339	148
6	106	185	183	202	581	1520	1300	13800	672	2360	307	151
7	102	290	179	250	521	2040	1190	13600	728	1430	289	153
8	98	256	175	338	474	1200	973	3880	870	1050	284	154
9	102	184	175	807	391	975	898	2610	723	828	279	157
10	101	162	171	998	297	993	822	5120	1640	709	258	157
11	98	152	161	680	340	1310	718	5680	957	634	255	155
12	97	144	119	1040	e340	2120	660	3680	670	557	264	152
13	97	168	e140	2620	330	2250	618	2600	605	634	268	150
14	94	189	142	1500	415	1540	583	2160	616	1160	260	149
15	98	220	151	2340	566	1360	603	2570	889	813	264	143
16	97	214	e140	2860	970	1270	719	11300	782	689	277	162
17	101	204	e140	1500	964	1050	688	12300	1750	967	249	183
18	102	201	134	1080	692	947	594	4530	1510	751	237	187
19	104	214	138	910	588	1390	583	2970	843	590	286	187
20	103	633	138	778	549	1130	555	2330	854	732	919	195
21	122	1790	155	654	623	1300	510	1950	2640	818	551	286
22	196	878	167	502	1890	1330	465	1640	1670	903	357	403
23	262	490	206	451	2290	1000	437	1510	11200	626	296	251
24	225	365	283	474	1330	2720	413	2240	6290	523	262	207
25	180	300	620	460	931	6200	398	2100	1890	475	234	200
26	146	263	591	460	821	2490	387	1440	1370	466	217	210
27	127	244	381	483	821	1800	378	1450	1110	449	205	219
28	119	308	327	479	744	1500	370	1310	1420	402	205	220
29	114	380	307	420	---	1320	372	1060	1570	369	198	203
30	113	317	294	412	---	1230	407	927	986	342	198	176
31	111	---	266	425	---	1760	---	865	---	489	188	---
TOTAL	3805	9347	7013	24422	20244	46566	22071	116973	47798	24478	10351	5613
MEAN	123	312	226	788	723	1502	736	3773	1593	790	334	187
MAX	262	1790	620	2860	2290	6200	1720	13800	11200	2360	941	403
MIN	94	114	119	202	297	514	370	551	605	342	188	143
CFSM	.15	.38	.28	.96	.88	1.84	.90	4.62	1.95	.97	.41	.23
IN.	.17	.43	.32	1.11	.92	2.12	1.00	5.33	2.18	1.11	.47	.26

CAL YR 1988 TOTAL 250820 MEAN 685 MAX 19900 MIN 89 CFSM .84 IN. 11.42
WTR YR 1989 TOTAL 338681 MEAN 928 MAX 13800 MIN 94 CFSM 1.14 IN. 15.42

e Estimated

01643020 MONOCACY RIVER AT REICH'S FORD BRIDGE NEAR FREDERICK, MD

LOCATION.--Lat 39°23'16", long 77°22'40", Frederick County, Hydrologic Unit 02070009, at Reich's Ford Bridge, 1.1 mi downstream from U.S. Highway 40, 1.2 mi downstream from gaging station, 2 mi southeast of Frederick, and 15.0 mi upstream from mouth.

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. Missing record April 22 to June 7 and June 30 to July 13 when local observers resigned. Water-discharge records for Monocacy River at Jug bridge near Frederick (station 01643000) are used for computation of sediment loads. Prior to 1970, published as Monocacy River at Jug Bridge near Frederick (station 01643000).

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (water years 1961-72, 1975, 1977, 1980-87, 1989): Maximum daily, 32.0°C, July 21, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION: Maximum daily mean, 2,000 mg/L, July 10, 1970; minimum daily mean, 1 mg/L on many days in water years 1961-67, 1970, 1972, 1982, 1985, 1989.
SEDIMENT LOAD: Maximum daily, 134,000 tons, June 22, 1972; minimum daily, 0.25 ton, Oct. 14, 1988.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum daily, 29.0 °C, July 28, 29, Aug. 2, 4, 27; minimum daily, 3.0 °C, Feb. 5, 24, Mar. 1, 10.
SEDIMENT CONCENTRATION: Maximum daily mean, 716 mg/L, May 6; minimum daily mean, 1 mg/L, Oct.14.
SEDIMENT LOAD: Maximum daily, 26,700 tons, May 6; minimum daily, 0.25 ton, Oct. 14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	10.0	8.0	5.0	4.0	3.0	13.0	---	---	---	27.0	26.0
2	20.0	9.0	8.0	7.0	4.0	6.0	10.0	---	---	---	29.0	26.0
3	19.0	11.0	7.0	7.0	4.0	5.0	12.0	---	---	---	26.0	---
4	17.0	13.0	6.0	5.0	4.0	5.0	16.0	---	---	---	29.0	22.0
5	18.0	14.0	5.0	5.0	3.0	6.0	14.0	---	---	---	27.0	24.0
6	16.0	13.0	6.0	5.0	4.0	4.0	13.0	---	---	---	26.0	22.0
7	17.0	11.0	6.0	5.0	4.0	---	11.0	---	---	---	26.0	23.0
8	14.0	8.0	6.0	5.0	5.0	---	11.0	---	20.0	---	25.0	25.0
9	15.0	10.0	6.0	6.0	5.0	4.0	12.0	---	23.0	---	25.0	---
10	16.0	11.0	5.0	7.0	5.0	3.0	10.0	---	22.0	---	23.0	28.0
11	15.0	9.0	5.0	6.0	5.0	4.0	13.0	---	24.0	---	23.0	26.0
12	13.0	9.0	5.0	7.0	5.0	5.0	12.0	---	22.0	---	22.0	24.0
13	11.0	11.0	5.0	5.0	5.0	4.0	12.0	---	21.0	---	25.0	24.0
14	12.0	12.0	5.0	5.0	4.0	5.0	14.0	---	22.0	25.0	27.0	26.0
15	20.0	11.0	5.0	5.0	4.0	8.0	14.0	---	22.0	27.0	25.0	23.0
16	16.0	10.0	7.0	5.0	5.0	10.0	11.0	---	24.0	24.0	27.0	22.0
17	16.0	10.0	5.0	5.0	4.0	12.0	14.0	---	23.0	25.0	25.0	22.0
18	14.0	11.0	4.0	7.0	4.0	13.0	14.0	---	24.0	25.0	24.0	22.0
19	15.0	8.0	6.0	7.0	4.0	11.0	18.0	---	25.0	27.0	24.0	21.0
20	11.0	10.0	5.0	5.0	6.0	8.0	19.0	---	24.0	25.0	24.0	21.0
21	11.0	8.0	5.0	4.0	5.0	7.0	19.0	---	24.0	26.0	26.0	23.0
22	12.0	9.0	5.0	5.0	6.0	8.0	---	---	24.0	28.0	26.0	24.0
23	12.0	8.0	5.0	4.0	5.0	6.0	---	---	23.0	27.0	27.0	20.0
24	13.0	6.0	5.0	5.0	3.0	6.0	---	---	23.0	27.0	26.0	20.0
25	13.0	8.0	8.0	6.0	4.0	8.0	---	---	25.0	27.0	28.0	19.0
26	9.0	8.0	6.0	4.0	4.0	10.0	---	---	27.0	28.0	28.0	20.0
27	11.0	8.0	6.0	4.0	4.0	15.0	---	---	27.0	27.0	29.0	20.0
28	11.0	10.0	6.0	4.0	4.0	18.0	---	---	25.0	29.0	26.0	19.0
29	12.0	9.0	6.0	5.0	---	18.0	---	---	25.0	29.0	26.0	20.0
30	12.0	8.0	5.0	4.0	---	15.0	---	---	---	26.0	27.0	---
31	8.0	---	7.0	4.0	---	13.0	---	---	---	28.0	28.0	---

01643020 MONOCACY RIVER AT REICH'S FORD BRIDGE NEAR FREDERICK, MD--Continued

SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	9	2.5	6	1.8	13	9.4	9	6.2	9	10	12	21
2	8	2.3	7	2.2	42	27	10	7.0	21	22	18	28
3	11	3.7	8	2.5	11	6.6	14	10	25	29	22	32
4	10	3.6	12	3.7	6	3.4	16	12	31	66	18	25
5	7	2.3	21	7.6	5	2.6	23	14	29	59	12	17
6	6	1.7	37	18	6	3.0	38	21	22	35	92	378
7	11	3.0	39	31	8	3.9	29	20	14	20	109	600
8	19	5.0	25	17	9	4.3	12	11	10	13	70	227
9	16	4.4	16	7.9	10	4.7	32	70	9	9.5	50	132
10	5	1.4	7	3.1	9	4.2	34	92	40	32	33	88
11	3	.79	8	3.3	8	3.5	20	37	39	36	29	103
12	3	.79	6	2.3	7	2.2	25	90	33	30	56	321
13	2	.52	8	3.6	6	2.3	162	1150	26	23	61	371
14	1	.25	16	8.2	6	2.3	49	198	19	21	43	179
15	2	.53	12	7.1	8	3.3	123	821	24	37	29	106
16	2	.52	15	8.7	8	3.0	100	772	29	76	28	96
17	4	1.1	20	11	6	2.3	36	146	29	75	23	65
18	5	1.4	16	8.7	6	2.2	25	73	26	49	33	84
19	4	1.1	10	5.8	7	2.6	17	42	23	37	57	214
20	7	1.9	79	181	9	3.4	24	50	22	33	50	153
21	5	1.6	198	957	11	4.6	48	85	23	39	40	140
22	31	16	81	192	9	4.1	49	66	108	591	28	101
23	50	35	32	42	8	4.4	48	58	112	692	19	51
24	36	22	17	17	20	15	22	28	38	136	281	2470
25	15	7.3	13	11	32	54	8	9.9	25	63	328	6160
26	20	7.9	16	11	30	48	6	7.5	23	51	69	464
27	18	6.2	32	21	22	23	9	12	13	29	48	233
28	16	5.1	29	24	13	11	12	16	11	22	38	154
29	10	3.1	22	23	12	9.9	12	14	---	---	62	221
30	6	1.8	9	7.7	16	13	11	12	---	---	38	126
31	6	1.8	---	---	10	7.2	10	11	---	---	56	266
TOTAL	---	146.60	---	1640.2	---	290.4	---	3961.6	---	2335.5	---	13626
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	59	274	e31	46	e51	111	e70	149	45	114	11	5.2
2	63	214	e546	7530	e45	89	e66	123	32	53	8	3.6
3	59	180	e254	1930	e40	72	e62	104	24	30	9	3.8
4	45	142	e101	376	e39	70	e60	98	15	16	10	4.1
5	33	102	e112	451	e41	75	e295	2460	10	9.2	9	3.5
6	42	147	e716	26700	e70	127	e517	3530	17	14	7	2.8
7	35	112	e702	25800	e140	275	e434	1710	29	23	9	3.7
8	22	58	e383	4010	e200	470	e85	241	19	14	10	4.1
9	23	56	e230	1620	238	465	e65	145	8	6.0	9	3.7
10	17	38	e548	7580	211	934	e48	92	12	8.4	8	3.3
11	12	23	e626	9600	106	274	e39	67	22	15	14	5.7
12	14	25	e358	3560	91	165	e35	53	44	31	10	4.0
13	15	25	e229	1610	108	176	e45	77	71	51	6	2.4
14	18	28	e181	1060	64	106	79	247	52	37	5	2.0
15	15	24	e226	1570	59	142	40	88	22	16	4	1.5
16	29	56	e553	16900	106	224	55	102	7	5.2	13	5.6
17	22	41	e617	20500	197	931	56	146	18	12	7	3.4
18	18	29	e468	5720	148	603	57	116	32	20	6	3.0
19	19	30	e272	2180	92	209	33	53	38	29	6	3.0
20	23	34	e199	1250	160	369	39	77	45	112	8	4.1
21	e22	30	e158	832	322	2450	41	91	16	24	19	15
22	e19	24	e127	562	90	406	37	90	11	11	21	23
23	e18	21	e114	465	326	11000	29	49	11	8.8	15	10
24	e18	20	e189	1140	232	5240	31	44	17	12	9	5.0
25	e17	18	e174	987	63	321	27	35	20	12	7	3.7
26	e17	18	e107	416	55	203	22	28	18	10	8	4.5
27	e16	16	e108	423	58	174	24	29	15	8.3	8	4.7
28	e16	16	e95	336	e202	883	29	31	12	6.6	6	3.6
29	e17	17	e72	206	e96	422	33	33	9	4.7	7	3.8
30	e19	21	e61	153	e74	197	25	23	9	4.7	7	3.3
31	---	---	e56	131	---	---	28	37	16	8.0	---	---
TOTAL	---	1839	---	145644	---	27183	---	10168	---	725.9	---	149.1

TOTAL LOAD FOR YEAR: 207709.30 TONS.

e Estimated

01643500 BENNETT CREEK AT PARK MILLS, MD

LOCATION.--Lat 39°17'40", long 77°24'30", Frederick County, Hydrologic Unit 02070009, on left bank 75 ft downstream from highway bridge, 0.2 mi south of Park Mills, 1.8 mi upstream from mouth, and 3.7 mi southwest of Urbana.

DRAINAGE AREA.--62.8 mi^2.

PERIOD OF RECORD.--July 1948 to September 1958. Annual maximum, water years 1960-66. August 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 240 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges (no gage-height record) which are poor. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--33 years (water years 1949-58, 1967-89), 69.4 ft^3/s, 15.00 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,200 ft^3/s, June 21, 1972, gage height, 22.1 ft, from flood-mark, from rating curve extended above 2,700 ft^3/s on basis of contracted-opening measurements at gage heights 11.15 ft, 14.33 ft, and 22.1 ft; minimum discharge, 0.30 ft^3/s, Sept. 8, 1966, gage height, 0.80 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0200	*6,710	*10.88	No other peak greater than base discharge.			

Minimum daily discharge, 11 ft^3/s, Sept. 3-5, 11-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e15	20	32	28	e35	58	105	75	77	42	42	13
2	e16	21	28	30	e33	53	89	224	73	41	37	12
3	e20	18	27	33	e40	51	89	96	70	40	33	11
4	e17	18	27	33	e70	51	84	76	69	43	29	11
5	e16	30	26	32	e50	60	85	363	65	50	27	11
6	e15	41	25	27	e45	214	96	2050	71	72	26	12
7	e15	25	24	32	e40	127	80	415	106	54	28	13
8	e16	21	24	42	e37	88	77	247	76	44	28	13
9	e16	19	24	68	e35	83	76	190	82	39	25	13
10	e16	18	24	54	e33	93	70	342	76	38	24	12
11	e15	18	23	e48	e30	99	66	232	63	35	26	11
12	14	17	20	e90	e28	98	64	186	61	33	27	11
13	13	25	18	e220	e30	87	62	158	62	58	27	11
14	14	29	20	e80	e110	80	61	147	87	47	25	11
15	15	20	24	e150	81	77	76	162	80	38	26	11
16	14	19	21	e100	86	70	79	524	65	52	24	17
17	14	43	20	e80	66	65	66	388	64	47	22	30
18	16	34	19	e70	60	78	66	233	59	39	21	15
19	17	30	19	e60	56	82	89	183	54	37	26	15
20	15	165	20	e50	55	70	70	157	91	57	26	27
21	21	75	26	e45	82	173	65	141	69	41	23	22
22	63	44	29	e42	183	105	63	126	62	37	23	26
23	24	36	33	e42	120	89	62	135	76	33	20	21
24	20	31	47	e40	87	544	59	225	107	31	19	19
25	19	28	55	e37	73	264	57	130	61	32	18	17
26	18	27	37	e40	73	168	56	111	55	30	17	42
27	18	27	31	e43	69	135	54	120	51	28	18	24
28	18	58	31	e37	63	119	52	99	52	29	19	18
29	18	41	31	e35	---	105	54	89	50	27	18	18
30	18	35	28	e38	---	99	56	84	44	28	17	17
31	17	---	27	e40	---	144	---	81	---	83	14	---
TOTAL	563	1033	840	1766	1770	3629	2128	7789	2078	1305	755	504
MEAN	18.2	34.4	27.1	57.0	63.2	117	70.9	251	69.3	42.1	24.4	16.8
MAX	63	165	55	220	183	544	105	2050	107	83	42	42
MIN	13	17	18	27	28	51	52	75	44	27	14	11
CFSM	.29	.55	.43	.91	1.01	1.86	1.13	4.00	1.10	.67	.39	.27
IN.	.33	.61	.50	1.05	1.05	2.15	1.26	4.61	1.23	.77	.45	.30

CAL YR 1988 TOTAL 26635 MEAN 72.8 MAX 2220 MIN 13 CFSM 1.16 IN. 15.78
WTR YR 1989 TOTAL 24160 MEAN 66.2 MAX 2050 MIN 11 CFSM 1.05 IN. 14.31

e Estimated

01645000 SENECA CREEK AT DAWSONVILLE, MD

LOCATION.--Lat 39°07'41", long 77°20'13", Montgomery County, Hydrologic Unit 02070008, on right bank 60 ft downstream from bridge on State Highway 28, 150 ft downstream from mouth of Great Seneca Creek, 0.5 mi east of Dawsonville, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--101 mi^2.
PERIOD OF RECORD.--September 1930 to current year.
REVISED RECORDS.--WSP 726: Drainage area. WSP 1232: 1930. WSP 1272: 1933. WSP 1432: 1934-35(M), 1941(M). WDR MD-DE-74-1: 1970(M).
GAGE.--Water-stage recorder. Concrete control since Mar. 3, 1934. Datum of gage is 214.02 ft above National Geodetic Vertical Datum of 1929. Sept. 26 to Nov. 9, 1930, chain gage, and Nov. 10, 1930, to Apr. 6, 1934, water-stage recorder, at highway bridge 60 ft upstream at same datum.
REMARKS.--Records good. Small diversion at times for irrigation upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--59 years, 104 ft^3/s, 13.98 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,100 ft^3/s, June 22, 1972, gage height, 16.4 ft, from high-water mark in gage house, from rating curve extended above 3,000 ft^3/s on basis of contracted-opening and flow over-road measurement at gage height 12.17 ft at gage; and contracted-opening and flow-over-road measurement at gage height 16.32 ft at site 5.0 mi downstream, adjusted for flow from intervening area; minimum discharge observed, 1.7 ft^3/s, Sept. 28, 29, 1930, gage height, 0.56 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 24	1415	2,080	7.03	May 16	2015	1,600	6.29
May 6	0015	*8,250	*10.09	June 7	0845	1,990	6.91
May 6	1030	8,000	10.01				

Minimum discharge, 25 ft^3/s, Aug. 23, gage height, 1.87 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	80	77	61	64	90	237	118	115	89	64	38
2	42	57	70	70	62	84	167	327	112	87	47	38
3	55	45	65	71	79	82	159	140	110	87	58	36
4	45	42	63	70	133	84	146	113	106	96	56	34
5	42	68	58	58	87	110	167	650	138	103	53	34
6	40	115	57	62	80	397	208	5210	737	98	52	35
7	40	58	56	65	74	268	150	1470	1020	94	54	36
8	41	50	56	88	69	154	143	444	300	82	55	36
9	41	47	56	137	e65	139	143	303	322	77	51	38
10	41	45	56	101	e60	143	124	555	245	75	50	34
11	40	43	54	90	e56	135	110	328	144	70	52	33
12	38	42	49	470	e56	125	105	264	134	69	55	32
13	39	61	49	332	58	111	102	223	134	123	53	33
14	41	67	51	166	174	106	99	205	134	98	52	33
15	42	52	53	321	140	102	160	255	156	82	56	33
16	43	49	52	183	142	96	165	1020	141	159	52	69
17	43	129	48	137	108	90	123	809	141	106	51	89
18	46	90	47	113	94	99	132	366	137	84	49	47
19	51	75	48	100	87	116	292	281	116	80	52	56
20	45	301	48	92	84	98	161	247	188	237	53	91
21	64	171	60	85	186	314	136	213	180	154	51	85
22	157	100	69	74	344	168	121	173	155	139	53	100
23	57	83	73	75	217	134	108	195	158	134	43	64
24	50	76	96	71	148	1280	101	347	213	87	38	56
25	47	68	123	69	119	564	233	206	131	81	43	48
26	41	64	82	73	109	278	111	192	113	62	42	146
27	40	65	69	76	106	203	82	408	104	56	45	80
28	40	317	70	67	95	168	79	260	103	52	46	58
29	42	120	78	65	---	150	89	219	101	57	43	48
30	47	90	61	71	---	211	94	145	93	57	42	42
31	52	---	58	73	---	554	---	122	---	106	39	---
TOTAL	1493	2670	1952	3586	3096	6653	4247	15808	5981	2981	1550	1602
MEAN	48.2	89.0	63.0	116	111	215	142	510	199	96.2	50.0	53.4
MAX	157	317	123	470	344	1280	292	5210	1020	237	64	146
MIN	38	42	47	58	56	82	79	113	93	52	38	32
CFSM	.48	.88	.62	1.15	1.09	2.12	1.40	5.05	1.97	.95	.50	.53
IN.	.55	.98	.72	1.32	1.14	2.45	1.56	5.82	2.20	1.10	.57	.59

CAL YR 1988 TOTAL 48196 MEAN 132 MAX 3910 MIN 37 CFSM 1.30 IN. 17.75
WTR YR 1989 TOTAL 51619 MEAN 141 MAX 5210 MIN 32 CFSM 1.40 IN. 19.01

e Estimated

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC

LOCATION.--Lat 38°56'58", long 77°07'40", Montgomery County, Md., Hydrologic Unit 02070008, on left bank just above Little Falls Dam, 1 mi upstream from District of Columbia boundary line, 1.2 mi upstream from Chain Bridge, 1.8 mi east of Langley, Fairfax County, Va., and at mile 117.4.

DRAINAGE AREA.--11,560 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year.
REVISED RECORDS.--WSP 726: Drainage area. WDR MD-DE-75-1: 1973-74(M).
GAGE.--Water-stage recorder and concrete control. Datum of gage is 37.95 ft above National Geodetic Vertical Datum of 1929. Prior to June 7, 1930, nonrecording gage, and June 7, 1930, to Jan. 22, 1965, water-stage recorder at site 1 mi upstream on right bank at same datum.
REMARKS.--No estimated daily discharges. Water-discharge records good. Diversions at Great Falls through aqueducts, and since June 1959, from gage pool at Little Falls Dam, for municipal supply of Washington, D.C.; since October 1958, at Rockville Filtration Plant, for municipal supply of city of Rockville; since April 1961, at Potomac Filtration Plant for water supply of Washington Suburban Sanitary District; since October 1961, at Fairfax Water Treatment Plant for water supply of city of Fairfax (from Goose Creek); since April 1964, at Violets Lock to Chesapeake and Ohio Canal; and since October 1985, at Fairfax County Water Authority Treatment Plant for water supply of the county. Low flow affected slightly prior 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. Gage-height telemeter at station.

AVERAGE DISCHARGE.--59 years, 11,510 ft^3/s, 13.52 in/yr, adjusted for diversions.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 484,000 ft^3/s, Mar. 19, 1936, gage height, 28.1 ft, site then in use; minimum daily discharge observed at gaging station, 121 ft^3/s, Sept. 9, 1966, does not include diversion of 489 ft^3 for municipal use; minimum daily discharge (adjusted), 601 ft^3/s, Sept. 10, 1966, includes diversion of 449 ft^3/s for municipal use.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, was of approximately the same magnitude as that of March 19, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 45,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 26	1745	45,800	6.48	May 12	0730	75,700	7.90
May 6	0715	74,300	7.84	May 18	0115	*107,000	*9.10
May 8	0015	88,200	8.41				

Minimum daily discharge, 1,050 ft^3/s, Oct. 14, does not include diversion for municipal use; minimum daily (adjusted) discharge, 1,700 ft^3/s, Oct. 14, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2020	1540	3980	4150	4270	8810	22500	8690	9590	8740	8960	6300
2	1970	1500	3560	3860	4210	7560	24000	16100	8710	7410	10700	5900
3	1850	1320	3190	3570	4190	6830	21400	29800	8120	6370	9790	4990
4	1730	1220	2870	3510	4540	6180	18000	41200	7360	5960	8240	4410
5	1490	1370	2640	3320	4870	5780	16200	35200	6950	6090	7210	3900
6	1720	2180	2470	3340	4940	7930	15600	65400	8740	9200	6180	3510
7	2080	2080	2330	3130	4900	13100	14200	75600	12100	12600	5300	3680
8	1630	2250	2270	3350	4720	31600	12900	79800	10200	11800	4800	3110
9	1300	2830	2280	3800	4570	35900	11700	55200	8790	12700	4380	2860
10	1210	2890	2140	4430	4280	26000	10800	44600	9820	11700	4050	2670
11	1210	2810	2000	5500	3820	21100	10000	53500	11300	8880	3730	2470
12	1170	2680	1880	8380	3610	20100	9340	72500	10700	7200	3480	2590
13	1070	2480	1790	11500	3470	22100	8790	56800	10300	7000	3410	2750
14	1050	2380	1690	12400	3920	23500	8140	42400	9540	7260	3280	2580
15	1090	2320	1560	16100	4270	21400	7900	35200	9680	8040	3580	2490
16	1090	2260	1260	16300	4720	19400	8100	47400	8780	10000	4190	2850
17	1080	2890	1470	16500	5710	18700	7490	89200	9010	11100	4110	3360
18	1090	2770	1710	15700	10300	17300	7400	92000	11600	14700	3690	2880
19	1110	2460	1540	14200	11800	15300	9250	58200	15900	14600	3660	4970
20	1120	3200	1500	12500	10300	14300	8520	40300	14500	15900	3610	9550
21	1260	4060	1490	10600	10300	14400	8160	31300	13600	19800	4430	8190
22	2120	8200	1690	9300	10700	13500	7680	25500	19700	24700	5220	6650
23	1810	12400	1980	7940	12500	12900	7230	21600	29800	22800	5600	5750
24	1760	9670	2270	6770	12500	20200	6610	22800	33900	21100	6000	5090
25	1720	7680	2480	6230	11000	29100	6030	21800	26300	16700	7650	5600
26	1620	6220	2810	5760	9910	42900	5870	20500	19900	13300	9860	8860
27	1560	5230	3840	5350	9180	40300	5500	17800	15900	11100	13600	9290
28	1510	6300	5630	5130	8930	31300	5170	16100	13000	10300	14300	8060
29	1480	4850	5500	4820	---	25200	5130	13800	11900	12700	11100	8090
30	1380	4280	5040	4480	---	21000	7400	11800	10800	11300	8620	7320
31	1320	---	4510	4300	---	20300	---	10500	---	10400	7290	---
TOTAL	45620	114320	81370	236220	192430	613990	317010	1252590	396490	371450	200020	150720
MEAN	1472	3811	2625	7620	6872	19810	10570	40410	13220	11980	6452	5024
MAX	2120	12400	5630	16500	12500	42900	24000	92000	33900	24700	14300	9550
MIN	1050	1220	1260	3130	3470	5780	5130	8690	6950	5960	3280	2470
(†)	611	582	573	552	525	531	558	580	615	651	672	666
MEAN≠	2083	4394	3198	8175	7391	20340	11120	40990	13830	12630	7124	5691
CFSM≠	.18	.38	.28	.71	.64	1.76	.96	3.55	1.20	1.09	.62	.49
IN≠	.21	.42	.32	.82	.67	2.03	1.07	4.09	1.33	1.26	.71	.55

CAL YR 1988 TOTAL 3188490 MEAN 8712 MAX 125000 MIN 742 MEAN≠ 9326 CFSM≠ .81 IN≠ 10.98
WTR YR 1989 TOTAL 3972230 MEAN 10880 MAX 92000 MIN 1050 MEAN≠ 11480 CFSM≠ .99 IN≠ 13.48

† Diversions, in cubic feet per second, for municipal supply of Washington, D.C., Washington Suburban Sanitary District, city of Rockville, city of Fairfax (from Goose Creek), Fairfax County, and the Chesapeake and Ohio Canal (insignificant diversion to canal during current water year). Records provided by U.S. Army Corps of Engineers, Washington Suburban Sanitary Commission, city of Rockville, city of Fairfax, and Fairfax County Water Authority.
≠ Adjusted for diversion.

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1988 to September 1989.
WATER TEMPERATURE: October 1988 to September 1989.

INSTRUMENTATION.--Water-quality monitor October 1988 to September 1989.

REMARKS--Periods of missing record due to monitor malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD--
SPECIFIC CONDUCTANCE: Maximum, 543 microsiemens, Jan. 9, 1989; minimum, 80 microsiemens, May 6, 1989.
WATER TEMPERATURE: Maximum, 29.5°C, July 11, 12, 1989; minimum, 0.5°C, Dec. 13-15, 17-20, 1988, Jan. 6, 1989.

EXTREMES FOR CURRENT PERIOD.--
SPECIFIC CONDUCTANCE: Maximum, 543 microsiemens, Jan. 9; minimum, 80 microsiemens, May 6.
WATER TEMPERATURE: Maximum, 29.5°C, July 11, 12; minimum, 0.5°C, Dec. 13-15, 17-20, Jan. 6.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	479	450	466	488	479	484	297	285	291	406	381	396
2	490	477	484	479	447	462	299	295	297	417	384	400
3	490	485	488	491	455	479	296	293	294	414	387	402
4	498	486	492	508	489	499	298	293	296	417	388	409
5	509	497	502	507	499	502	305	298	301	409	361	382
6	508	497	504	506	434	485	310	305	307	369	355	360
7	499	485	491	491	474	479	321	310	315	410	363	389
8	485	475	480	502	487	494	330	321	326	480	410	424
9	479	463	471	509	498	505	342	330	336	543	428	485
10	468	458	463	507	492	498	354	342	348	428	388	405
11	462	402	454	506	491	498	361	353	358	390	385	388
12	457	339	439	520	507	516	365	360	363	390	331	371
13	468	382	448	518	501	512	367	364	366	345	338	342
14	472	464	467	501	478	491	370	366	369	343	323	336
15	472	463	469	497	490	494	376	367	371	323	276	306
16	478	449	468	497	492	495	378	374	376	315	272	292
17	488	460	476	493	359	453	383	377	380	272	259	262
18	490	437	483	420	380	413	389	380	386	268	261	265
19	489	481	485	420	399	414	390	386	388	261	253	256
20	483	471	478	399	280	339	399	390	395	263	253	258
21	479	454	472	366	334	356	405	398	400	272	263	268
22	464	326	395	367	346	362	420	405	412	273	270	271
23	440	362	405	376	333	357	426	418	423	273	270	272
24	467	437	456	370	351	365	425	412	419	273	271	272
25	485	463	473	351	270	299	412	360	378	277	271	273
26	511	484	496	279	269	275	411	383	399	290	277	283
27	512	504	507	279	276	277	413	404	409	294	290	292
28	508	489	499	278	175	225	411	405	409	300	294	297
29	489	471	480	270	240	258	432	404	417	304	300	301
30	475	470	473	284	271	277	440	432	437	312	304	309
31	488	473	480	---	---	---	434	405	418	310	302	305
MONTH	512	326	472	520	175	419	440	285	367	543	253	331

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	313	303	310	297	286	292	218	209	213	304	287	299
2	320	313	317	287	282	284	223	218	221	287	235	271
3	317	312	316	290	283	285	218	208	213	264	226	236
4	310	269	291	298	290	294	209	205	207	262	207	220
5	327	302	315	307	298	302	226	208	214	214	92	193
6	337	325	332	305	162	248	228	223	225	137	80	120
7	341	333	336	283	236	263	236	228	231	170	138	153
8	344	339	341	270	235	251	243	235	239	170	159	163
9	346	341	344	252	213	224	250	243	247	167	161	163
10	348	343	346	213	195	201	255	250	252	169	164	166
11	350	342	347	208	199	201	258	254	256	181	167	173
12	345	340	343	214	208	211	263	258	259	183	161	168
13	343	339	341	220	213	217	271	263	268	169	164	165
14	345	325	335	219	215	217	276	271	273	175	169	172
15	342	329	337	215	206	209	277	265	274	183	173	176
16	340	332	336	207	203	205	277	267	272	180	172	177
17	339	328	335	209	206	208	281	277	280	176	160	167
18	340	331	335	216	209	213	286	281	284	175	155	161
19	358	341	346	219	210	213	286	237	267	166	151	161
20	341	301	319	232	211	215	278	267	273	179	166	173
21	313	229	282	264	225	238	290	270	283	195	179	188
22	278	248	265	228	225	226	302	290	298	207	195	200
23	272	258	262	231	225	228	311	301	306	217	207	213
24	267	262	265	237	163	205	308	297	304	217	205	211
25	274	266	270	209	197	201	298	289	292	232	212	220
26	283	271	274	234	209	224	299	291	296	245	232	239
27	296	283	288	209	182	190	297	285	291	243	225	236
28	298	295	296	198	186	193	292	287	290	234	227	230
29	---	---	---	204	198	201	296	290	293	248	235	243
30	---	---	---	213	204	208	297	289	292	260	248	253
31	---	---	---	216	208	211	---	---	---	265	260	263
MONTH	358	229	315	307	162	228	311	205	264	304	80	199
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	271	265	269	260	246	255	248	240	246	252	248	249
2	275	270	273	256	252	254	261	247	253	257	251	253
3	277	275	276	271	256	264	264	260	262	262	256	260
4	280	276	278	272	247	262	---	---	---	271	262	266
5	283	280	282	268	246	260	---	---	---	275	271	273
6	282	265	273	271	257	266	---	---	---	282	275	279
7	267	191	241	271	256	263	---	---	---	289	282	286
8	251	228	236	287	271	283	---	---	---	297	289	294
9	269	253	263	345	277	287	---	---	---	308	297	302
10	287	269	283	338	249	266	---	---	---	315	308	312
11	301	287	295	276	249	261	---	---	---	320	315	319
12	311	300	304	358	276	289	---	---	---	330	320	325
13	313	308	310	286	273	281	---	---	---	334	329	331
14	317	257	305	273	267	268	---	---	---	344	334	339
15	286	260	278	272	265	268	---	---	---	350	343	346
16	276	269	272	277	252	267	---	---	---	357	345	351
17	282	274	278	298	264	284	---	---	---	352	316	336
18	283	278	281	305	300	303	---	---	---	366	352	361
19	295	283	288	303	287	293	325	321	323	359	356	358
20	303	272	298	287	189	224	332	323	327	364	350	356
21	272	248	255	273	188	208	350	332	340	385	364	375
22	259	240	254	257	223	247	358	350	353	372	351	365
23	251	185	234	230	200	211	362	357	359	362	347	357
24	185	176	179	288	220	229	363	359	362	347	328	335
25	210	183	203	231	226	228	359	350	354	328	317	321
26	216	199	208	237	209	230	351	349	350	317	223	270
27	223	203	216	231	228	230	349	315	332	273	263	268
28	225	220	222	240	229	234	315	274	298	284	271	279
29	237	224	231	250	240	245	274	255	266	291	284	287
30	246	237	239	253	250	252	255	247	248	291	276	285
31	---	---	---	252	235	241	250	246	248	---	---	---
MONTH	317	176	261	358	188	257	---	---	---	385	223	311

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	21.5	20.0	20.5	10.5	9.5	10.0	7.0	6.5	6.5	4.0	2.5	3.0
2	22.0	20.5	21.0	9.5	9.0	9.5	7.0	5.5	6.0	3.0	2.5	3.0
3	21.5	21.0	21.0	9.5	8.5	9.0	6.0	5.0	5.5	3.5	2.5	3.0
4	21.0	20.0	20.5	10.5	9.0	9.5	6.5	5.5	5.5	3.5	2.5	2.5
5	20.0	19.0	19.5	11.5	10.5	11.0	5.5	5.0	5.5	2.5	1.0	1.5
6	19.0	17.5	18.5	12.5	11.0	11.5	5.5	5.0	5.0	2.0	.5	1.0
7	18.0	16.5	17.0	12.5	12.0	12.0	5.5	4.5	5.0	1.0	1.0	1.0
8	16.5	15.5	15.5	12.0	11.5	11.5	5.0	4.5	5.0	1.5	1.0	1.5
9	15.5	14.5	15.5	11.5	11.0	11.5	5.0	4.5	5.0	2.0	1.5	1.5
10	15.5	14.5	15.0	11.5	10.5	11.0	4.5	3.5	4.0	2.5	1.5	2.0
11	15.5	14.5	15.0	11.0	10.5	10.5	4.0	3.0	3.5	3.0	2.0	2.5
12	15.0	14.0	14.5	10.5	9.5	10.0	3.0	2.0	2.5	3.5	2.5	3.0
13	14.0	12.5	13.0	10.0	9.5	9.5	2.0	.5	1.0	4.0	3.0	3.5
14	13.5	11.5	12.5	10.0	9.5	10.0	1.0	.5	.5	3.0	2.0	2.5
15	14.0	11.5	12.5	10.5	9.5	10.0	1.5	.5	1.0	3.0	2.5	2.5
16	13.5	11.5	12.5	11.0	10.0	10.5	1.5	1.0	1.0	3.5	3.0	3.0
17	14.5	12.5	13.5	11.5	10.5	11.0	1.0	.5	1.0	3.5	3.0	3.5
18	14.5	14.0	14.0	11.0	10.0	10.5	1.0	.5	.5	3.5	3.0	3.5
19	14.5	14.5	14.5	11.0	9.0	10.0	1.0	.5	.5	4.5	3.5	4.0
20	14.5	14.0	14.5	9.0	8.5	9.0	1.5	.5	1.0	4.5	4.0	4.0
21	14.5	13.5	14.0	9.0	8.5	9.0	2.5	1.5	2.0	4.0	2.0	3.5
22	13.5	12.0	12.5	8.5	7.5	8.0	3.0	2.0	2.5	3.0	2.0	2.5
23	13.0	11.5	12.0	8.0	7.5	7.5	3.0	3.0	3.0	3.0	2.0	2.5
24	13.5	12.0	13.0	8.0	6.5	7.5	4.0	3.0	3.0	3.5	2.0	2.5
25	13.0	12.0	12.5	7.5	6.5	6.5	5.0	4.0	4.5	3.5	3.0	3.0
26	12.5	11.5	12.0	7.5	6.0	6.5	5.0	4.0	4.5	4.0	3.5	3.5
27	12.0	11.0	12.0	8.0	7.0	7.5	4.5	4.0	4.5	5.5	4.0	4.5
28	12.0	11.0	11.5	10.5	8.0	9.5	5.5	4.0	5.0	5.5	4.0	4.5
29	11.5	10.5	11.0	8.5	7.5	8.0	5.0	4.5	4.5	5.0	4.0	4.5
30	11.5	10.5	11.0	7.5	6.5	7.0	4.5	3.5	3.5	5.5	5.0	5.0
31	11.0	10.0	10.5	---	---	---	4.0	3.0	3.5	6.0	5.0	5.5
MONTH	22.0	10.0	14.6	12.5	6.0	9.5	7.0	.5	3.4	6.0	.5	3.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.5	5.0	6.0	5.0	3.5	4.0	13.0	11.5	12.0	18.5	17.5	18.0
2	8.0	6.0	7.0	5.5	4.0	4.5	11.5	11.0	11.5	18.5	16.5	17.5
3	8.0	7.5	7.5	5.0	4.0	4.5	12.0	10.5	11.5	17.5	16.0	16.5
4	7.5	6.0	6.5	5.0	4.5	5.0	13.5	12.0	12.5	17.0	15.5	16.0
5	6.0	5.0	5.5	5.5	5.0	5.0	13.5	13.0	13.5	16.5	15.5	15.5
6	5.5	4.5	5.0	5.5	4.0	5.0	13.0	12.0	12.5	15.5	14.5	15.0
7	5.5	4.5	5.0	4.0	3.0	3.5	12.0	11.0	11.5	14.5	13.5	14.0
8	5.0	4.0	4.5	3.0	1.5	2.0	11.0	10.5	10.5	13.5	13.0	13.5
9	4.0	2.5	3.0	3.0	1.5	2.0	11.0	10.5	10.5	13.0	12.5	13.0
10	3.0	1.5	2.0	4.0	2.5	3.0	11.5	10.5	11.0	12.5	12.5	12.5
11	3.5	1.0	2.0	5.0	3.0	4.0	12.0	10.0	11.0	12.5	11.5	12.0
12	3.5	1.5	2.5	5.5	4.5	5.0	12.5	10.5	11.0	12.0	11.5	11.5
13	3.5	2.0	2.5	6.0	5.0	5.5	12.5	10.5	11.5	12.0	11.5	12.0
14	4.0	2.5	3.0	6.0	5.5	5.5	13.5	11.0	12.0	12.5	11.5	12.0
15	5.5	3.5	4.0	8.0	6.0	6.5	12.5	12.0	12.5	13.0	12.5	12.5
16	5.5	5.0	5.0	8.5	7.5	8.0	14.0	12.0	12.5	13.0	13.0	13.0
17	5.0	4.0	4.5	9.5	8.0	9.0	15.0	12.5	13.5	14.0	13.0	13.5
18	4.5	3.5	4.0	11.0	9.5	10.0	17.0	13.5	15.5	14.5	13.5	14.0
19	4.0	3.0	3.5	11.0	9.5	10.0	17.0	15.5	16.0	16.5	14.5	15.5
20	5.0	3.5	4.0	9.5	8.5	9.0	17.5	15.5	16.0	18.0	16.0	17.0
21	6.0	4.5	5.0	8.5	8.0	8.0	17.0	15.5	16.0	19.0	17.5	18.5
22	6.5	5.5	6.0	8.5	7.0	8.0	17.5	15.5	16.5	20.0	18.0	19.0
23	5.5	5.0	5.5	8.0	7.5	8.0	17.5	15.5	16.5	19.5	18.5	19.0
24	5.0	3.5	4.0	8.0	6.5	7.0	17.5	15.0	16.0	19.5	18.5	19.0
25	4.0	2.5	3.0	8.0	6.0	7.0	18.0	15.5	16.5	20.0	18.0	19.0
26	3.5	3.0	3.0	9.0	7.5	8.0	19.0	16.5	17.5	20.5	19.0	20.0
27	4.5	3.0	3.5	10.5	8.0	9.0	19.5	17.0	18.5	21.0	20.0	20.5
28	4.5	4.0	4.0	13.0	10.0	11.5	20.5	18.0	19.0	20.5	19.5	20.0
29	---	---	---	14.0	12.5	13.5	19.0	17.5	18.0	21.0	20.0	20.5
30	---	---	---	14.0	13.5	13.5	19.5	17.0	18.0	21.5	21.0	21.5
31	---	---	---	14.0	13.0	13.5	---	---	---	23.0	21.5	22.0
MONTH	8.0	1.0	4.3	14.0	1.5	7.0	20.5	10.0	14.0	23.0	11.5	16.2

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	25.0	22.5	23.5	27.5	25.5	26.5	---	---	---	27.0	25.5	26.0
2	26.0	24.0	25.0	28.0	26.0	26.5	---	---	---	27.0	25.5	26.0
3	26.5	25.0	25.5	28.0	26.5	27.0	---	---	---	26.5	25.0	25.5
4	27.0	25.0	26.0	27.0	26.0	27.0	---	---	---	25.0	23.5	24.5
5	26.0	25.5	25.5	26.5	26.0	26.5	---	---	---	24.5	23.0	23.5
6	25.5	24.5	25.0	26.5	25.5	26.0	---	---	---	24.5	22.5	23.5
7	24.5	22.0	23.5	27.0	25.5	26.0	---	---	---	25.0	23.0	24.0
8	24.0	22.5	23.0	27.5	27.0	27.0	26.5	---	---	25.0	23.5	24.5
9	24.0	23.5	24.0	27.5	26.5	27.0	25.5	24.0	25.0	25.5	24.0	24.5
10	25.0	23.5	24.0	27.5	26.5	27.0	24.5	23.0	24.0	26.5	24.5	25.5
11	24.5	23.0	24.0	29.5	27.5	28.5	24.0	23.0	23.0	27.5	26.0	26.5
12	23.5	23.0	23.5	29.5	28.5	29.0	23.0	22.5	23.0	27.0	26.5	27.0
13	24.0	23.0	23.5	28.5	26.5	28.0	25.0	23.0	23.5	27.0	26.0	26.0
14	24.5	22.5	23.5	27.5	26.0	26.5	26.0	24.0	25.0	26.5	25.5	26.0
15	24.5	23.0	24.0	28.0	26.0	27.0	26.0	24.5	25.5	26.5	25.5	26.0
16	25.0	24.0	24.0	27.0	25.5	26.5	27.5	24.5	26.0	26.5	24.5	25.5
17	24.5	23.5	24.0	26.0	25.0	25.5	28.0	26.0	27.0	25.0	23.5	24.0
18	25.0	23.5	24.0	26.0	25.0	25.5	27.0	26.0	26.5	24.0	23.0	23.5
19	25.0	24.5	24.5	26.0	25.5	25.5	26.0	25.0	25.5	23.5	21.5	22.5
20	25.0	24.5	25.0	25.5	24.5	25.0	26.5	24.5	25.5	21.5	21.0	21.5
21	25.0	24.5	24.5	26.5	25.5	25.5	26.5	25.5	26.0	23.0	21.0	22.0
22	25.5	24.5	25.0	26.5	25.5	26.0	27.0	25.5	26.0	24.0	22.5	23.0
23	25.5	23.5	24.5	27.0	25.5	26.5	28.5	26.0	27.5	24.0	22.0	23.0
24	24.0	23.0	23.5	27.5	26.0	27.0	28.0	27.0	27.5	22.0	20.0	21.0
25	25.0	23.5	24.0	27.5	26.5	27.0	27.5	26.0	26.5	20.0	18.5	19.0
26	26.5	24.5	25.5	27.5	26.5	27.0	26.0	25.0	26.0	19.0	17.0	18.5
27	27.0	26.0	26.5	28.5	27.0	27.5	26.0	25.0	25.5	19.0	17.5	18.5
28	27.0	26.5	27.0	---	---	---	26.0	25.5	26.0	19.0	17.5	18.0
29	27.0	26.0	26.5	---	---	---	26.0	25.5	26.0	18.5	17.5	18.0
30	26.5	25.5	26.0	---	---	---	27.5	25.5	26.5	18.5	18.0	18.0
31	---	---	---	---	---	---	27.0	25.5	26.0	---	---	---
MONTH	27.0	22.0	24.6	---	---	---	---	---	---	27.5	17.0	23.2

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC
(National stream-quality accounting network station)

LOCATION.--Lat 38°55'46", long 77°07'02", Arlington County, Va., Hydrologic Unit 02070010, under right downstream side of bridge on Virginia State Highway 123, and at river mile 115.9.

DRAINAGE AREA.--11,570 mi^2.

PERIOD OF RECORD.--Water years 1973 to current year. Prior to October 1977, published as "at Great Falls."

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: June 1978 to September 1981 (discontinued).
pH: June 1978 to September 1981 (discontinued).
WATER TEMPERATURE: June 1978 to September 1981 (discontinued).
DISSOLVED OXYGEN: June 1978 to September 1981 (discontinued).
SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1981 (discontinued).

INSTRUMENTATION.--Water-quality monitor June 1978 to September 1981.

REMARKS--High flows are sampled from the George Mason Memorial Bridge (14th Street) located 6 mi downstream from Chain Bridge. Duplicate samples taken on some days for quality-assurance checks.

EXTREMES FOR PERIOD OF DAILY RECORD--
SPECIFIC CONDUCTANCE (water years 1979, 1981): Maximum, 598 microsiemens, Sept. 12, 1981; minimum, 116 microsiemens, Jan. 25, 1979.
pH (water years 1979, 1981): Maximum, 9.3 units, Mar. 29, 1981; minimum, 6.7 units, June 2, 1981.
WATER TEMPERATURE (water years 1979, 1981): Maximum, 31.0°C, July 23-24, 1978; minimum, 0.0°C on many days during winter periods.
DISSOLVED OXYGEN (water years 1979, 1981): Maximum, 16.4 mg/L, on many days in 1979; minimum, 5.6 mg/L, June 2, 1981.
SEDIMENT CONCENTRATION: Maximun daily mean, 812 mg/L, Sept. 6, 1979; minimum daily mean, 1 mg/L on many days during winter periods.
SEDIMENT LOAD: Maximum daily, 281,000 tons, Feb. 27, 1979; minimum daily, 3.2 tons, Jan. 5, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (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)
NOV											
01...	1020	1600	420	7.7	10.0	16.0	763	1.9	10.7	95	520
01...	1025	1600	440	7.5	10.0	16.0	763	--	10.7	95	--
JAN											
05...	1100	3280	363	7.6	2.0	5.0	772	2.2	13.8	99	K85
05...	1105	3280	382	7.5	2.0	5.0	772	--	13.8	99	--
MAR											
15...	1050	21700	240	7.4	7.0	16.0	758	16	12.8	106	--
15...	1055	21700	227	7.3	7.0	16.0	758	--	12.8	106	--
MAY											
04...	1040	46600	228	7.5	15.0	19.0	770	20	10.4	102	1200
04...	1045	46600	232	7.5	15.0	19.0	770	--	10.4	102	--
JUN											
27...	1030	16300	230	7.5	25.0	31.0	761	67	8.3	101	750
27...	1035	16300	233	7.6	25.0	31.0	761	--	8.3	101	--
SEP											
06...	1050	3460	280	7.8	23.0	23.0	771	3.3	8.9	103	K3
06...	1055	3460	285	7.7	23.0	23.0	771	--	8.9	103	--

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 WH TOT FET FIELD MG/L AS CACO3	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)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
01...	1000	51	13	30	3.5	105	94	26	0.10	0.20	300
01...	--	--	--	--	--	103	--	--	--	<0.50	--
JAN											
05...	24	36	8.5	19	2.6	82	53	21	0.10	1.4	201
05...	--	--	--	--	--	81	--	--	--	1.7	--
MAR											
15...	--	26	5.7	8.5	2.0	49	37	12	0.10	6.4	139
15...	--	--	--	--	--	49	--	--	--	6.7	--
MAY											
04...	540	26	5.9	7.1	2.4	74	21	7.6	0.10	5.8	136
04...	--	--	--	--	--	76	--	--	--	6.2	--
JUN											
27...	740	27	5.7	6.2	2.7	65	27	8.3	0.10	7.2	122
27...	--	--	--	--	--	63	--	--	--	7.6	--
SEP											
06...	100	37	7.8	8.4	2.5	89	25	10	0.10	6.7	160
06...	--	--	--	--	--	92	--	--	--	--	--

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

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS TOTAL (MG/L AS P)	PHOSPHORUS DISSOLVED (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)
NOV											
01...	285	--	<0.010	0.850	<0.010	<0.010	0.50	--	0.030	0.030	0.010
01...	--	0.862	0.018	0.880	--	<0.010	0.70	0.40	0.030	0.030	0.010
JAN											
05...	195	0.970	0.010	0.980	0.010	0.020	0.30	--	0.020	<0.010	0.020
05...	--	0.961	0.009	0.970	--	0.010	0.70	0.70	0.020	<0.010	<0.010
MAR											
15...	134	1.59	0.010	1.60	0.060	0.060	0.60	--	0.050	0.030	0.020
15...	--	1.59	0.010	1.60	--	0.060	0.50	0.50	0.060	0.020	0.030
MAY											
04...	125	0.960	0.040	1.00	0.130	0.140	0.50	--	0.120	0.060	0.050
04...	--	0.961	0.039	1.00	--	0.130	1.2	0.70	0.090	0.050	0.040
JUN											
27...	130	1.48	0.020	1.50	0.060	0.070	0.60	--	0.040	0.030	0.050
27...	--	1.48	0.017	1.50	--	0.060	0.60	0.70	0.070	0.060	0.060
SEP											
06...	158	--	<0.010	1.50	0.040	0.050	0.20	--	0.080	0.070	0.060
06...	--	1.49	0.006	1.50	--	0.060	0.30	0.60	0.070	0.060	0.060

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
NOV											
01...	<10	<1	42	<0.5	1	<1	<3	3	16	<5	6
01...	20	--	--	--	--	--	--	--	--	--	--
JAN											
05...	--	--	--	--	--	--	--	--	--	--	--
05...	10	--	--	--	--	--	--	--	--	--	--
MAR											
15...	20	<1	32	<0.5	<1	<1	<3	1	39	<5	5
15...	20	--	--	--	--	--	--	--	--	--	--
MAY											
04...	10	<1	29	<0.5	<1	<1	<3	8	33	<1	<4
04...	10	--	--	--	--	--	--	--	--	--	--
JUN											
27...	--	--	--	--	--	--	--	--	--	--	--
27...	40	--	--	--	--	--	--	--	--	--	--
SEP											
06...	20	<1	37	<0.5	<1	2	<3	5	6	<1	<4
06...	--	--	--	--	--	--	--	--	--	--	--

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV										
01...	13	<0.1	<10	2	<1	<1.0	250	<6	7	3.7
01...	--	--	--	--	--	--	--	--	--	3.8
JAN										
05...	--	--	--	--	--	--	--	--	--	3.6
05...	--	--	--	--	--	--	--	--	--	3.8
MAR										
15...	19	2.1	<10	1	<1	<1.0	110	<6	6	4.4
15...	--	--	--	--	--	--	--	--	--	4.2
MAY										
04...	10	<0.1	<10	2	<1	<1.0	110	<6	8	--
04...	--	--	--	--	--	--	--	--	--	16
JUN										
27...	--	--	--	--	--	--	--	--	--	6.5
27...	--	--	--	--	--	--	--	--	--	1.1
SEP										
06...	10	<0.1	<10	2	<1	<1.0	160	<6	5	2.7
06...	--	--	--	--	--	--	--	--	--	3.4

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	TEMPER-ATURE WATER (DEG C)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV							
01...	1020	1600	10.0	420	5	22	84
01...	1025	1600	10.0	440	7	30	--
JAN							
05...	1100	3280	2.0	363	4	35	85
05...	1105	3280	2.0	382	4	35	--
MAR							
15...	1050	21700	7.0	240	42	2460	95
15...	1055	21700	7.0	227	36	2110	--
MAY							
04...	1040	46600	15.0	228	271	34100	94
04...	1045	46600	15.0	232	260	32700	--
JUN							
27...	1030	16300	25.0	230	119	5240	--
27...	1035	16300	25.0	233	116	5110	--
SEP							
06...	1050	3460	23.0	280	9	84	89
06...	1055	3460	23.0	285	11	103	--

RADIOCHEMICAL ANALYSES

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	URANIUM NATURAL DIS-SOLVED (UG/L AS U)
MAR										
15...	1050	21700	<0.4	1.1	2.3	1.4	0.06	1.9	1.3	0.06

01648000 ROCK CREEK AT SHERRILL DRIVE, WASHINGTON, DC

LOCATION.--Lat 38°58'21", long 77°02'25", District of Columbia, Hydrologic Unit 02070010, on left bank 125 ft downstream from Sherrill Drive Bridge in Rock Creek Park in Washington, and 7.5 mi upstream from mouth.

DRAINAGE AREA.--62.2 mi^2.

PERIOD OF RECORD.--October 1929 to current year.

REVISED RECORDS.--WSP 1432: 1933(M).

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 148.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good . Flow affected by two upstream reservoirs which control flow from about 25 mi^2, Needwood Lake on Rock Creek since Sept. 1966 and Bernard Frank Lake on North Branch Rock Creek since February 1968. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--60 years, 62.3 ft^3/s, 13.60 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft^3/s, June 22, 1972, gage height, 16.2 ft, from flood-mark, from rating curve extended above 5,640 ft^3/s on basis of contracted-opening measurements at gage heights 13.19 ft and 16.2 ft; minimum discharge, 0.5 ft^3/s, Oct. 1-7, 1930, gage height, 1.04 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0515	*5,500	*12.13	July 20	0845	1,380	6.26
June 7	1245	1,250	5.85				

Minimum discharge, 7.4 ft^3/s, Oct., 14, gage height, 1.21 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	88	35	30	29	38	78	110	55	37	50	17
2	11	27	28	46	27	35	59	219	47	36	43	16
3	13	18	25	33	87	34	78	85	42	35	37	15
4	14	15	23	35	92	36	56	63	40	286	34	14
5	10	72	22	25	43	68	97	257	71	105	31	16
6	10	83	21	29	36	307	129	2380	427	137	29	14
7	9.4	31	21	38	37	137	88	343	667	61	28	15
8	8.6	22	20	94	32	85	80	254	223	47	29	15
9	8.3	18	23	97	28	67	88	241	341	41	25	15
10	8.6	16	23	52	27	58	58	408	183	38	25	15
11	8.9	15	20	40	e26	51	52	209	147	36	24	15
12	8.6	14	19	176	25	46	48	177	125	34	25	46
13	8.4	56	19	118	28	42	46	173	108	67	27	23
14	8.0	30	20	77	113	40	44	137	168	49	27	20
15	8.2	20	20	228	76	39	121	195	121	38	40	16
16	8.0	17	19	93	68	38	75	376	78	168	28	163
17	8.3	179	19	66	44	37	57	250	86	59	26	113
18	11	48	17	50	38	44	67	146	73	44	24	25
19	16	66	18	41	34	45	223	122	56	38	25	28
20	8.7	177	18	36	33	51	91	100	85	494	25	129
21	113	68	27	33	264	228	69	80	129	102	29	99
22	137	43	29	30	200	83	60	67	82	68	25	83
23	29	32	46	29	115	64	52	158	95	52	24	52
24	28	26	107	29	78	646	48	131	81	42	23	45
25	19	23	66	28	57	200	46	77	63	38	21	27
26	14	20	36	35	53	140	45	65	55	116	20	284
27	14	44	30	34	48	118	44	138	50	127	20	55
28	11	371	35	29	41	94	42	80	49	67	20	35
29	10	75	39	27	---	73	86	61	43	46	20	27
30	12	48	25	53	---	65	57	54	39	36	20	24
31	12	---	23	36	---	144	---	51	---	127	18	---
TOTAL	596.0	1762	893	1767	1779	3153	2184	7207	3829	2671	842	1461
MEAN	19.2	58.7	28.8	57.0	63.5	102	72.8	232	128	86.2	27.2	48.7
MAX	137	371	107	228	264	646	223	2380	667	494	50	284
MIN	8.0	14	17	25	25	34	42	51	39	34	18	14
CFSM	.31	.94	.46	.92	1.02	1.64	1.17	3.74	2.05	1.39	.44	.78
IN.	.36	1.05	.53	1.06	1.06	1.89	1.31	4.31	2.29	1.60	.50	.87

CAL YR 1988 TOTAL 20710.1 MEAN 56.6 MAX 754 MIN 8.0 CFSM .91 IN. 12.39
WTR YR 1989 TOTAL 28144.0 MEAN 77.1 MAX 2380 MIN 8.0 CFSM 1.24 IN. 16.83

e Estimated

01649500 NORTHEAST BRANCH ANACOSTIA RIVER AT RIVERDALE, MD

LOCATION.--Lat 38°57'37", long 76°55'34", Prince Georges County, Hydrologic Unit 02070010, on right bank at downstream side of bridge on Riverdale Road, 1.8 mi downstream from Indian Creek, and 1.8 mi upstream from confluence with Northwest Branch.

DRAINAGE AREA.--72.8 mi^2.

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

REVISED RECORDS.--WDR MD-DE-75-1: 1972(M).

GAGE.--Water-stage recorders, crest-stage gage, and concrete control. Datum of gage is 12.68 ft above National Geodetic Vertical Datum of 1929 (Washington Suburban Sanitary Commission bench mark). Prior to June 12, 1942, nonrecording gage; June 12, 1942 to Mar. 22, 1966, and Apr. 12, 1967 to Sept. 3, 1969, water-stage recorder, all at bridge at datum 14.00 ft above mean sea level. Mar. 23, 1966 to Apr. 11, 1967, nonrecording gage 600 ft downstream from bridge at datum 9.25 ft above mean sea level.

REMARKS.--Records fair except those for estimated daily discharges (ice effect and manometer malfunction), which are poor. Some regulation at low flow by sand and gravel plants upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--51 years, 84.2 ft^3/s, 15.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft^3/s, June 22, 1972, gage height, 9.52 ft, from rating curve extended above 3,800 ft^3/s on basis of the average of contracted-opening and slope-area measurements at gage height 9.52 ft; maximum gage height, 12.93 ft, prior to major channel improvements, Oct. 16, 1942; minimum daily discharge, 1.4 ft^3/s Sept. 12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 23 or 24, 1933, reached a stage of about 15.5 ft at datum 14.00 ft above mean sea level, from floodmarks, discharge, 10,500 ft^3/s, from rating curve extended above 3,000 ft^3/s on basis of velocity-area study.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 6	0315	*8,100	*9.56	No other peak greater than base discharge.			

Minimum daily discharge, 14 ft^3/s, Oct. 1, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	120	e60	e44	44	49	84	192	e60	e40	e55	18
2	18	34	e44	e70	41	43	58	703	e50	e40	e46	19
3	25	25	e40	e50	147	42	88	150	e44	e38	42	18
4	22	24	e36	e50	121	45	63	78	e40	e340	37	17
5	18	66	e34	e40	62	77	88	379	e90	e180	34	17
6	15	72	e32	e44	51	639	216	3280	288	e220	31	17
7	16	27	e32	e60	56	275	139	436	670	e70	30	18
8	15	25	e30	e150	47	99	136	159	181	e55	29	e18
9	16	24	e36	e140	e42	88	130	130	253	e46	28	e18
10	15	24	e36	e75	e40	79	72	561	e120	e42	27	e17
11	15	26	e30	59	e40	65	58	193	e70	e40	27	e17
12	14	25	e28	158	39	58	53	118	e60	e38	27	19
13	16	70	e28	116	e46	50	49	98	e55	e80	27	34
14	15	36	e30	69	e190	49	47	80	e300	e50	87	38
15	16	30	e30	152	112	49	177	114	e210	e44	62	23
16	15	28	e28	115	142	45	117	547	e160	e240	e34	231
17	15	e300	e28	70	74	43	67	685	e80	e60	28	97
18	18	e70	e26	56	58	53	93	178	e55	e48	26	35
19	19	e100	e28	50	52	47	378	100	e48	e44	26	56
20	18	e300	e28	47	47	74	121	77	e150	e700	26	305
21	183	e150	e50	43	515	344	75	64	e190	e150	30	281
22	151	e70	e40	e42	425	104	61	56	e220	e60	26	73
23	29	e50	e60	42	167	73	53	551	e360	e50	23	63
24	32	e40	e200	e42	88	1130	49	566	e140	e46	22	48
25	24	e34	e120	e42	66	335	49	147	82	e42	21	37
26	23	e30	e55	55	73	119	47	91	e55	e150	20	530
27	21	e60	e40	45	65	84	42	e200	e50	e80	20	79
28	20	e700	e55	40	57	71	40	e100	e50	e70	21	44
29	20	e170	e50	40	---	61	102	e60	e46	e40	20	35
30	21	e80	e38	71	---	72	68	e55	e42	e36	21	33
31	20	---	e36	52	---	134	---	e50	---	e150	18	---
TOTAL	879	2810	1408	2129	2907	4496	2820	10198	4219	3289	971	2255
MEAN	28.4	93.7	45.4	68.7	104	145	94.0	329	141	106	31.3	75.2
MAX	183	700	200	158	515	1130	378	3280	670	700	87	530
MIN	14	24	26	40	39	42	40	50	40	36	18	17
CFSM	.39	1.29	.62	.94	1.43	1.99	1.29	4.52	1.93	1.46	.43	1.03
IN.	.45	1.44	.72	1.09	1.49	2.30	1.44	5.21	2.16	1.68	.50	1.15

CAL YR 1988 TOTAL 26486 MEAN 72.4 MAX 1170 MIN 10 CFSM .99 IN. 13.53
WTR YR 1989 TOTAL 38381 MEAN 105 MAX 3280 MIN 14 CFSM 1.44 IN. 19.61

e Estimated

01651000 NORTHWEST BRANCH ANACOSTIA RIVER NEAR HYATTSVILLE, MD

LOCATION.--Lat 38°57'09", long 76°58'00", Prince Georges County, Hydrologic Unit 02070010, on right bank at downstream side of bridge on Queens Chapel Road (State Highway 500), 0.8 mi downstream from Sligo Branch, 1.0 mi west of Hyattsville, and 1.6 mi upstream from confluence with Northeast Branch.

DRAINAGE AREA.--49.4 mi^2.

PERIOD OF RECORD.--July 1938 to current year. Monthly discharge only for July 1938 published in WSP 1302.

REVISED RECORDS.--WSP 971: 1942(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 17.10 ft above National Geodetic Vertical Datum of 1929 (Washington Suburban Sanitary Commission bench mark). Prior to Oct. 22, 1938, nonrecording gage; Oct. 22, 1938 to Sept. 17, 1951, water-stage recorder; Sept. 17, 1951 to Aug. 29, 1952, nonrecording gage and crest-stage gage.

REMARKS.--Records good except for those for estimated daily discharges (ice effect and manometer malfunction), which are fair. Prior to June 1961, low flow regulated by storage at Burnt Mills Dam, 7.0 mi upstream from station. Inflow pumped from Patuxent River to augment water supply for Washington Suburban Sanitary District, August 1939 to August 1960. Small diversion since 1962 for irrigation of golf courses upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--51 years, 46.9 ft^3/s, 12.89 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft^3/s, June 22, 1972, gage height, 14.47 ft, from rating curve extended above 4,000 ft^3/s on the basis of the average of slope-area and step-backwater measurements of peak flow 14.47 ft; minimum discharge, 0.2 ft^3/s, Sept. 11, 1966.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 5	2400	*6,620	*7.08	July 20	0530	1,820	4.41

Minimum discharge, 4.1 ft^3/s Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	78	22	37	30	34	50	128	39	25	30	10
2	10	20	18	38	29	31	38	235	34	25	27	11
3	16	12	17	32	98	29	60	52	31	24	e22	10
4	12	11	18	32	77	34	42	41	30	215	e20	9.1
5	8.4	79	17	e20	34	60	81	374	103	132	e19	10
6	7.4	51	18	e30	30	365	122	2400	344	e150	e18	10
7	6.6	17	18	42	36	100	74	187	532	e40	17	9.6
8	6.0	12	16	97	29	50	58	83	81	e32	16	9.8
9	6.6	9.9	19	91	24	48	66	86	246	e28	15	9.8
10	6.8	11	18	42	23	47	44	349	73	e26	15	9.3
11	6.6	11	15	34	e23	42	39	97	46	24	15	9.1
12	5.7	11	13	178	e22	39	37	74	42	22	16	20
13	5.4	46	15	74	e28	36	36	80	37	40	18	28
14	6.6	26	17	44	106	38	35	62	131	33	58	24
15	5.6	15	e17	231	66	37	122	108	104	22	33	10
16	5.8	12	e16	55	73	34	59	365	56	116	18	147
17	6.6	188	16	40	39	32	41	276	46	39	16	68
18	8.9	32	15	36	34	42	63	83	41	25	15	16
19	9.3	61	16	34	33	36	207	65	34	22	15	25
20	8.4	161	20	31	32	60	56	57	82	460	15	163
21	140	38	30	28	309	201	45	52	113	48	17	112
22	92	21	23	e26	193	54	41	48	119	31	16	50
23	14	17	39	e26	68	48	40	269	234	26	15	42
24	18	16	103	e26	46	696	39	153	84	24	14	27
25	13	15	53	e26	40	116	39	60	e42	22	13	18
26	8.5	15	23	e32	45	60	37	50	e34	59	13	286
27	7.8	98	20	31	40	50	36	122	e32	40	13	33
28	7.8	406	32	25	36	47	36	64	e30	33	13	19
29	8.7	42	31	25	---	44	79	42	29	20	13	16
30	8.0	26	21	52	---	55	46	41	26	18	13	16
31	7.5	---	20	37	---	100	---	38	---	80	12	---
TOTAL	482.7	1557.9	736	1552	1643	2665	1768	6141	2875	1901	570	1227.7
MEAN	15.6	51.9	23.7	50.1	58.7	86.0	58.9	198	95.8	61.3	18.4	40.9
MAX	140	406	103	231	309	696	207	2400	532	460	58	286
MIN	5.4	9.9	13	20	22	29	35	38	26	18	12	9.1
CFSM	.32	1.05	.48	1.01	1.19	1.74	1.19	4.01	1.94	1.24	.37	.83
IN.	.36	1.17	.55	1.17	1.24	2.01	1.33	4.62	2.16	1.43	.43	.92

CAL YR 1988 TOTAL 16058.7 MEAN 43.9 MAX 627 MIN 5.4 CFSM .89 IN. 12.09
WTR YR 1989 TOTAL 23119.3 MEAN 63.3 MAX 2400 MIN 5.4 CFSM 1.28 IN. 17.41

e Estimated

01653600 PISCATAWAY CREEK AT PISCATAWAY, MD

LOCATION.--Lat 38°42'20", long 76°58'00", Prince Georges County, Hydrologic Unit 02070010, on left bank 75 ft downstream from bridge on State Highway 223, at Piscataway, 0.4 mi upstream from Tinker Creek, and 4.8 mi upstream from mouth.

DRAINAGE AREA.--39.5 mi^2.

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--24 years, 45.4 ft^3/s, 15.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,540 ft^3/s, Sept. 6, 1979, gage height, 11.21 ft, from rating curve extended above 1,700 ft^3/s on basis of contracted-opening measurement of peak flow at bridge 100 ft upstream; no flow at times in 1966, 1970, 1977, 1980-83, 1985-89.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	0300	464	5.65	May 24	1130	755	6.67
Mar. 24	1630	547	5.99	June 7	1500	849	6.92
May 2	2300	*856	*6.94	June 10	0500	505	5.82
May 6	2330	792	6.77				

No flow Oct. 15-21, Sept. 8-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.27	28	24	13	19	30	57	123	48	22	16	.82
2	.18	24	19	20	16	27	48	695	40	21	19	.63
3	4.5	8.0	17	16	20	26	52	342	36	20	16	.37
4	3.3	5.2	15	15	35	26	50	108	33	20	11	.15
5	1.8	4.9	14	12	22	33	77	109	42	e25	8.9	.09
6	.79	15	14	23	19	205	229	630	288	e31	7.4	.05
7	.37	8.1	14	49	19	290	113	426	680	e100	6.9	.03
8	.67	4.8	14	31	19	85	168	149	322	e49	6.3	.01
9	.15	4.4	14	30	15	80	94	117	234	e27	4.7	.00
10	.13	8.8	14	23	14	96	75	254	366	e20	4.5	.00
11	.06	8.4	13	21	15	78	64	141	110	e18	6.5	.00
12	.08	8.0	e10	35	14	65	56	105	86	e16	9.2	3.8
13	.03	7.1	e9.0	35	15	54	50	90	82	14	10	14
14	.02	12	11	24	32	52	46	79	115	17	8.7	14
15	.01	6.1	12	135	31	48	86	73	150	14	7.5	7.1
16	.00	5.1	11	63	47	40	99	168	157	44	7.1	26
17	.00	89	10	37	39	35	68	265	85	38	5.5	103
18	.00	36	9.2	30	27	55	65	114	65	21	5.4	16
19	.00	15	8.8	27	23	81	104	95	55	16	7.9	11
20	.00	98	8.2	25	21	50	65	82	50	32	7.3	50
21	3.5	42	9.2	21	99	107	54	62	55	19	6.3	55
22	46	19	11	19	157	75	49	55	59	14	7.3	20
23	9.2	13	10	18	86	57	43	286	77	12	4.7	18
24	4.7	12	15	17	49	361	43	670	60	10	3.5	17
25	3.6	11	32	17	38	276	42	158	50	9.2	3.0	11
26	5.4	9.6	15	16	39	105	41	101	38	17	2.4	299
27	9.3	12	12	17	43	84	38	114	33	60	2.6	71
28	7.3	312	12	15	34	69	34	85	31	106	2.9	25
29	1.8	72	14	15	---	58	195	65	28	24	2.8	19
30	1.5	32	11	20	---	56	300	57	24	13	2.4	16
31	1.3	---	10	23	---	59	---	51	---	17	1.4	---
TOTAL	105.96	930.5	412.4	862	1007	2763	2505	5869	3499	866.2	215.1	798.05
MEAN	3.42	31.0	13.3	27.8	36.0	89.1	83.5	189	117	27.9	6.94	26.6
MAX	46	312	32	135	157	361	300	695	680	106	19	299
MIN	.00	4.4	8.2	12	14	26	34	51	24	9.2	1.4	.00
CFSM	.09	.79	.34	.70	.91	2.26	2.11	4.79	2.95	.71	.18	.67
IN.	.10	.88	.39	.81	.95	2.60	2.36	5.53	3.30	.82	.20	.75

CAL YR 1988 TOTAL 11019.68 MEAN 30.1 MAX 512 MIN .00 CFSM .76 IN. 10.38
WTR YR 1989 TOTAL 19833.21 MEAN 54.3 MAX 695 MIN .00 CFSM 1.38 IN. 18.68

e Estimated

01660920 ZEKIAH SWAMP RUN NEAR NEWTOWN, MD

LOCATION.--Lat 38°29'26", long 76°55'37", Charles County, Hydrologic Unit 02070011, on left-center downstream side of bridge on Maryland Route 6, 1.0 miles southeast of Newtown, and 1.7 miles downstream from Kerrick Swamp.

DRAINAGE AREA.--79.9 mi^2.

PERIOD OF RECORD.--June 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 34.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good above 50 ft^3/s and fair below except those for estimated daily discharges (frozen well), which are also fair. Low flow affected by ground-water diversions from municipal well fields at Waldorf and St. Charles, and occasional farm irrigation upstream from station during summer months. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 85.9 ft^3/s, 14.60 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,740 ft^3/s, Mar. 29, 1984, gage height, 4.71 ft; no flow for several days in 1983, 1985-89.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 29	1230	592	3.71	June 10	1830	699	3.75
Mar. 25	1700	736	3.79	June 16	0730	736	3.79
May 2	1800	1,420	4.35	Sept. 14	1500	612	3.65
May 7	0630	1,140	4.15	Sept. 27	1600	504	3.51
June 7	2300	*1,650	*4.49				

No flow Oct. 18, 19, 20, 21.

DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	25	124	37	58	90	148	195	66	60	218	6.1
2	1.8	96	88	64	45	74	129	1100	56	54	87	5.4
3	2.3	106	68	e60	40	63	123	1070	49	49	146	4.6
4	3.2	48	58	e46	49	59	134	500	43	49	62	4.1
5	3.3	27	49	e36	53	72	139	257	41	77	36	3.5
6	3.8	25	43	45	47	149	267	660	156	258	25	3.2
7	4.0	25	40	100	44	423	324	979	1110	380	21	3.4
8	3.6	23	39	102	e40	e300	380	581	1140	208	18	3.7
9	3.3	18	38	80	e36	e220	363	321	539	94	15	3.9
10	2.9	15	42	63	35	212	225	346	574	68	14	4.0
11	2.5	12	42	51	32	223	165	407	542	53	16	4.0
12	2.0	10	e34	55	32	200	142	314	221	53	21	28
13	1.7	9.8	e30	85	e30	169	130	219	163	61	27	323
14	1.3	12	e28	74	47	155	121	183	262	54	27	532
15	1.0	15	34	131	71	147	160	166	563	45	23	301
16	.75	17	37	203	76	135	288	236	687	75	22	72
17	.34	74	e34	145	98	115	228	420	678	219	18	134
18	.01	167	e30	96	75	111	163	380	468	135	16	96
19	.00	149	e28	76	54	152	206	229	237	73	18	47
20	.00	149	28	65	44	141	213	162	164	54	19	104
21	2.2	180	30	e50	83	189	159	137	148	46	16	270
22	44	127	36	e44	222	225	131	118	152	38	16	129
23	78	66	37	44	240	161	115	125	155	31	15	67
24	38	43	39	43	162	404	103	257	301	25	13	58
25	16	33	60	40	e105	714	97	302	313	23	12	48
26	9.6	27	61	39	100	532	92	165	143	35	10	261
27	6.9	30	44	39	100	268	86	128	113	155	9.5	468
28	5.7	356	37	37	100	195	81	138	97	70	10	224
29	5.4	554	39	32	---	168	105	103	86	73	9.4	79
30	4.7	299	39	37	---	152	177	83	72	37	8.7	58
31	4.5	---	36	61	---	148	---	74	---	248	8.0	---
TOTAL	254.80	2737.8	1372	2080	2118	6366	5194	10355	9339	2900	976.6	3344.9
MEAN	8.22	91.3	44.3	67.1	75.6	205	173	334	311	93.5	31.5	111
MAX	78	554	124	203	240	714	380	1100	1140	380	218	532
MIN	.00	9.8	28	32	30	59	81	74	41	23	8.0	3.2
CFSM	.10	1.14	.55	.84	.95	2.57	2.17	4.18	3.90	1.17	.39	1.40
IN.	.12	1.27	.64	.97	.99	2.96	2.42	4.82	4.35	1.35	.45	1.56

CAL YR 1988 TOTAL 25796.09 MEAN 70.5 MAX 870 MIN .00 CFSM .88 IN. 12.01
WTR YR 1989 TOTAL 47038.10 MEAN 129 MAX 1140 MIN .00 CFSM 1.61 IN. 21.90

e Estimated

01661050 ST. CLEMENT CREEK NEAR CLEMENTS, MD

LOCATION.--Lat 38°20'00", long 76°43'31", St. Marys County, Hydrologic Unit 02070011, on left bank 60ft downstream from bridge on State Highway 242, 0.5 mi north of Clements, 2.3 mi upstream from mouth, and 5.7 mi northwest of Leonardtown.

DRAINAGE AREA.--18.5 mi^2.

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

REVISED RECORDS.--WDR MD-DE-79-1: 1974(P).

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Elevation of gage is 8 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges (periods of backwater from trees), which are fair. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 19.8 ft^3/s, 14.54 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,500 ft^3/s, Sept. 6, 1979, from rating curve extended above 480 ft^3/s on basis of contracted-opening and flow-over-road measurement of peak flow; maximum gage height, 6.96 ft, Sept. 6, 1979 (backwater from tide); maximum gage height unaffected by backwater, 6.55 ft, June 22, 1972; no flow at times in 1977, 1980, 1981, 1983, 1985-89.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 16	2230	Unknown	*a5.19	July 16	2100	Unknown	a4.50
June 23	1730	Unknown	a4.80	July 31	1030	Unknown	a4.96

a Backwater

No flow Oct. 1-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	6.9	8.3	5.6	5.8	11	34	15	9.0	5.9	71	2.8
2	.00	13	6.4	7.9	5.3	9.8	19	142	7.9	5.2	22	2.7
3	.00	8.2	5.6	7.3	5.4	8.9	19	51	8.7	4.6	17	2.4
4	.00	4.5	5.0	6.0	8.3	9.3	20	23	7.6	4.7	12	2.3
5	.00	3.1	4.7	4.7	7.6	12	17	22	6.3	11	9.8	2.1
6	.12	2.8	4.6	6.4	7.1	38	71	112	8.0	21	7.8	2.3
7	.41	2.5	4.8	11	8.3	78	58	52	42	65	7.6	2.7
8	.45	2.2	4.4	9.2	8.8	25	126	27	23	19	6.7	2.8
9	.45	2.0	4.5	7.4	6.8	17	41	21	15	9.1	6.0	3.0
10	.41	1.9	5.2	6.4	5.2	17	28	71	16	6.5	5.5	2.5
11	.22	1.8	5.3	5.1	4.9	15	22	42	9.7	5.3	11	2.1
12	.18	1.8	3.9	8.5	5.1	13	19	27	7.2	4.6	13	3.9
13	.14	1.8	3.3	12	5.0	12	17	21	6.7	4.3	17	19
14	.11	1.7	3.2	8.2	8.3	14	16	18	19	5.8	11	16
15	.09	1.9	4.4	24	8.5	14	35	17	72	5.1	10	7.9
16	.08	1.9	4.7	20	9.4	18	47	e190	54	e130	9.7	6.7
17	.07	11	3.8	11	11	16	26	e230	55	e150	8.0	10
18	.03	17	3.6	8.4	8.1	15	22	51	22	26	9.4	7.7
19	.10	9.0	4.0	7.1	7.2	19	32	32	12	18	11	8.0
20	.20	16	3.6	6.5	7.0	14	24	25	13	12	9.2	26
21	1.1	15	4.5	5.8	48	32	19	21	20	9.8	7.4	31
22	4.4	9.2	6.4	5.1	69	25	17	17	38	7.9	6.7	11
23	3.8	6.4	6.3	5.1	37	16	15	18	e180	7.1	5.9	7.2
24	2.6	5.6	6.4	5.2	20	141	15	35	63	6.3	5.4	6.5
25	1.8	4.9	6.3	5.4	14	73	14	21	20	5.3	5.0	6.2
26	1.3	4.4	5.7	5.1	14	30	13	16	15	4.6	4.2	44
27	1.1	4.9	4.7	5.2	15	21	11	14	15	5.6	4.3	25
28	.90	63	5.0	4.9	13	18	11	12	11	5.4	4.3	9.6
29	.80	33	6.6	4.9	---	16	13	10	8.1	4.9	4.3	7.6
30	.79	13	5.2	5.2	---	21	18	10	6.8	4.2	4.1	7.0
31	.98	---	4.8	6.1	---	36	---	9.6	---	e290	3.4	---
TOTAL	22.63	270.4	155.2	240.7	373.1	805.0	839	1372.6	791.0	864.2	329.7	288.0
MEAN	.73	9.01	5.01	7.76	13.3	26.0	28.0	44.3	26.4	27.9	10.6	9.60
MAX	4.4	63	8.3	24	69	141	126	230	180	290	71	44
MIN	.00	1.7	3.2	4.7	4.9	8.9	11	9.6	6.3	4.2	3.4	2.1
CFSM	.04	.49	.27	.42	.72	1.40	1.51	2.39	1.43	1.51	.57	.52
IN.	.05	.54	.31	.48	.75	1.62	1.69	2.76	1.59	1.74	.66	.58

CAL YR 1988 TOTAL 3401.61 MEAN 9.29 MAX 228 MIN .00 CFSM .50 IN. 6.84
WTR YR 1989 TOTAL 6351.53 MEAN 17.4 MAX 290 MIN .00 CFSM .94 IN. 12.77

e Estimated

01661500 ST. MARYS RIVER AT GREAT MILLS, MD

LOCATION.--Lat 38°14'36", long 76°30'13", St. Marys County, Hydrologic Unit 02070011, on left bank at downstream side of bridge on State Highway 471 in Great Mills, 0.3 mi downstream from Western Branch, and 12.0 mi upstream from mouth.

DRAINAGE AREA.--24.0 mi^2.

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

REVISED RECORDS.--WSP 1702: 1946, 1948-49, 1955, 1957-58. WDR MD-DE-83-1: 1981-82(M).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Occasional regulation by reservoir on Western Branch of St. Marys River, 2.0 mi upstream since 1975, total capacity, 3,200 acre feet. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--43 years, 23.8 ft^3/s, 13.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,950 ft^3/s, Aug. 20, 1969, gage height, 13.34 ft, from rating curve extended above 1,500 ft^3/s on basis of contracted-opening measurement at gage height 12.08 ft; minimum discharge, 0.2 ft^3/s, Sept. 7, 1966, gage height, 1.13 ft.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 24	1500	468	4.72	May 2	1230	406	4.32
Apr. 8	0200	438	4.52	July 16	2000	*968	*7.76

Minimum discharge, 1.1 ft^3/s, Oct. 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	16	18	8.9	5.6	19	61	18	7.0	3.9	18	3.2
2	1.7	14	14	11	5.3	15	42	195	6.5	3.9	10	3.0
3	2.4	8.7	51	8.8	5.6	12	35	98	6.3	3.8	7.3	2.8
4	6.2	6.6	138	8.6	7.3	13	31	53	6.8	4.0	6.3	2.4
5	5.1	5.9	131	6.7	6.8	16	29	41	9.5	6.0	5.3	2.5
6	3.9	6.3	122	8.5	7.1	102	117	149	9.7	8.4	4.5	2.6
7	2.4	4.9	101	11	14	173	129	105	12	9.5	5.6	2.5
8	1.7	4.2	79	8.2	11	40	253	65	13	6.6	6.0	2.7
9	1.7	4.0	62	7.7	7.5	25	124	45	18	5.4	4.4	2.7
10	1.7	3.9	39	6.9	6.4	21	70	72	13	4.2	4.5	2.4
11	1.6	4.1	25	6.2	6.1	17	47	57	9.3	3.5	8.4	2.3
12	1.4	3.5	17	15	5.9	14	35	42	7.1	2.8	16	2.5
13	1.4	3.6	13	15	5.6	12	29	32	6.8	3.2	18	3.5
14	1.4	3.9	11	9.7	8.0	20	25	26	8.1	10	12	5.4
15	1.5	3.9	11	21	7.1	16	61	22	13	5.7	9.7	8.9
16	1.5	4.1	9.2	16	8.7	15	80	64	17	368	9.8	11
17	2.4	12	8.1	10	9.0	12	45	92	25	214	8.2	19
18	2.3	12	7.2	8.7	7.4	20	41	58	14	71	29	8.9
19	2.8	8.6	6.9	7.3	8.2	33	35	39	9.7	37	25	13
20	2.0	14	6.9	6.8	8.9	19	28	29	12	21	14	38
21	4.0	11	7.2	5.9	109	78	23	22	23	14	10	34
22	12	7.8	9.0	5.5	107	43	21	18	20	11	8.3	17
23	7.7	6.9	7.8	5.8	45	28	18	17	16	8.8	6.9	12
24	4.9	6.5	8.1	5.7	25	313	17	20	17	7.0	6.3	9.3
25	3.3	5.6	10	5.5	17	171	16	18	15	6.3	5.3	7.3
26	2.7	5.1	8.1	5.5	17	98	15	14	11	5.1	4.7	71
27	2.5	25	7.4	6.1	18	57	14	12	9.3	4.8	4.6	31
28	2.4	184	7.5	5.0	19	42	12	10	7.2	5.5	4.3	16
29	2.3	55	7.7	5.2	---	33	17	8.8	6.3	4.4	4.0	12
30	2.2	28	7.0	5.7	---	68	25	7.9	4.8	5.3	4.2	9.7
31	2.4	---	6.9	5.8	---	108	---	7.3	---	32	3.6	---
TOTAL	93.4	479.1	957.0	263.7	508.5	1653	1495	1457.0	353.4	896.1	284.2	358.6
MEAN	3.01	16.0	30.9	8.51	18.2	53.3	49.8	47.0	11.8	28.9	9.17	12.0
MAX	12	184	138	21	109	313	253	195	25	368	29	71
MIN	1.4	3.5	6.9	5.0	5.3	12	12	7.3	4.8	2.8	3.6	2.3
CFSM	.13	.67	1.29	.35	.76	2.22	2.08	1.96	.49	1.20	.38	.50
IN.	.14	.74	1.48	.41	.79	2.56	2.32	2.26	.55	1.39	.44	.56

CAL YR 1988 TOTAL 6388.9 MEAN 17.5 MAX 352 MIN 1.1 CFSM .73 IN. 9.90
WTR YR 1989 TOTAL 8799.0 MEAN 24.1 MAX 368 MIN 1.4 CFSM 1.00 IN. 13.64

03075500 YOUGHIOGHENY RIVER NEAR OAKLAND, MD

LOCATION.--Lat 39°25'19", long 79°25'32", Garrett County, Hydrologic Unit 05020006, on left bank 200 ft downstream from Baltimore and Ohio Railroad bridge, 250 ft downstream from Little Youghiogheny River, 1.2 mi northwest of Oakland, and 1.5 mi upstream from Dunkard Lick Run.

DRAINAGE AREA.--134 mi^2.

PERIOD OF RECORD.--August 1941 to current year.

REVISED RECORDS.--WSP 1113: 1947(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,353.61 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1946, nonrecording gage at bridge 200 ft upstream at same datum.

REMARKS.--Records good except those for Dec. 14-20, Feb. 9 (ice effect) and June 21-July 10 (missing record), which are fair. Town of Oakland diverted an average of 0.4 ft^3/s for water supply. The diversion is returned upstream from station as sewage. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--48 years, 301 ft^3/s, 30.50 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft^3/s, Oct. 16, 1954, gage height, 12.16 ft, from rating curve extended above 7,000 ft^3/s; minimum daily discharge, 2.5 ft^3/s, Oct. 4, 1953.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1936 reached a stage of 15.3 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 20	2200	2,000	5.26	Feb. 16	0445	2,780	6.06
Jan. 13	0130	2,280	5.56	Mar. 6	2030	*4.190	*7.30

Minimum discharge, 20 ft^3/s, Oct. 19, gage height, 1.96 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	41	137	243	387	221	618	280	170	e190	183	227
2	51	40	121	300	323	191	508	687	145	e150	129	188
3	57	41	108	289	581	185	452	597	126	e160	109	146
4	57	38	105	274	671	266	395	459	145	e150	93	116
5	49	117	95	271	498	964	344	431	176	e180	89	97
6	45	327	97	249	400	3020	304	895	1090	e170	96	85
7	42	197	83	317	318	2660	283	1160	523	e260	81	77
8	39	161	80	1020	272	1070	268	873	355	e160	69	73
9	38	140	76	1190	e230	680	298	714	292	e320	59	66
10	36	122	66	669	193	588	290	1540	332	e800	51	58
11	41	113	64	476	174	586	257	1220	230	396	52	52
12	42	96	57	1140	159	589	233	1000	191	320	65	56
13	39	176	55	1960	140	493	215	788	192	728	54	80
14	36	228	e60	1100	450	453	196	684	201	614	47	65
15	35	167	e66	1560	1330	433	182	685	241	390	137	73
16	33	142	e60	1090	2430	369	174	834	690	497	96	90
17	32	144	e56	710	1230	311	152	950	1090	1350	68	121
18	27	125	e54	515	747	319	153	708	707	612	64	89
19	27	140	e54	397	537	374	275	529	457	482	121	75
20	30	1180	e54	321	414	334	237	413	771	1270	124	64
21	27	1610	376	264	831	1180	205	377	e1400	605	144	54
22	133	820	518	236	991	885	191	291	e1100	414	176	49
23	223	505	494	245	708	596	174	295	e850	297	545	111
24	169	350	990	195	517	641	158	305	e600	259	410	160
25	143	266	1390	180	405	657	154	254	e370	257	279	103
26	103	218	777	211	353	510	193	287	e380	194	206	170
27	79	192	526	475	304	422	176	356	e330	237	160	156
28	66	193	418	352	261	349	155	307	e300	202	130	114
29	57	170	371	293	---	303	240	254	e390	158	118	98
30	49	146	291	468	---	371	310	231	e270	129	625	87
31	45	---	252	491	---	640	---	203	---	197	344	---
TOTAL	1906	8205	7951	17501	15854	20660	7790	18607	14114	12148	4924	3000
MEAN	61.5	273	256	565	566	666	260	600	470	392	159	100
MAX	223	1610	1390	1960	2430	3020	618	1540	1400	1350	625	227
MIN	27	38	54	180	140	185	152	203	126	129	47	49
CFSM	.46	2.04	1.91	4.21	4.23	4.97	1.94	4.48	3.51	2.92	1.19	.75
IN.	.53	2.28	2.21	4.86	4.40	5.74	2.16	5.17	3.92	3.37	1.37	.83

CAL YR 1988 TOTAL 83892.2 MEAN 229 MAX 2180 MIN 6.1 CFSM 1.71 IN. 23.29
WTR YR 1989 TOTAL 132660 MEAN 363 MAX 3020 MIN 27 CFSM 2.71 IN. 36.83

e Estimated

03076000 DEEP CREEK RESERVOIR NEAR OAKLAND, MD

LOCATION.--Lat 39°30′34″, long 79°23′28″, Garrett County, Hydrologic Unit 05020006, on Deep Creek at dam, 1.8 mi upstream from mouth and 7.0 mi north of Oakland.

DRAINAGE AREA.--64.7 mi^2.

PERIOD OF RECORD.--July 1925 to current year. Prior to October 1950, monthend contents published in WSP 1305, and October 1950 to September 1955, monthend contents published in WSP 1385.

GAGE.--Water-stage recorder at right end of spillway. Datum of gage is at mean sea level, unadjusted.

REMARKS.--Reservoir is formed by an earthfill dam completed January 1925, with storage beginning at that time. Usable capacity, 92,975 acre-ft between elevations 2,425 ft, top of intake to outlet tunnel, and 2,462 ft, crest of spillway. Dead storage, 13,085 acre-ft. Figures given herein represent usable contents. Reservoir is used for hydroelectric power.

COOPERATION.--Elevations and capacity table furnished by Pennsylvania Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 93,258 acre-ft, July 24, 25, 1949, elevation, 2,462.075 ft; minimum observed, 11,763 acre-ft, Sept. 30, 1925, elevation, 2,433.45 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 90,000 acre-ft, June 21, elevation, 2,461.2 ft; minimum, 66,000 acre-ft, Sept. 30, elevation, 2,454.5 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTBER 1988 TO SEPTEMBER 1989

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2457.2	75400	
Oct. 31	2455.9	70800	-4600
Nov. 30	2456.4	72500	+1700
Dec. 31	2456.3	72200	- 300
CAL YR 1988			+1400
Jan. 31	2456.6	73200	+1000
Feb. 29	2456.5	72900	- 300
Mar. 31	2458.8	81100	+8200
Apr. 30	2459.2	82600	+1500
May 31	2460.8	88500	+5900
June 30	2460.8	88500	0
July 31	2450.1	85900	-2600
Aug. 31	2458.6	80400	-5500
Sept. 30	2454.5	66000	-4400
WTR YR 1989			-9400

03076500 YOUGHIOGHENY RIVER AT FRIENDSVILLE, MD

LOCATION.--Lat 39°39'13", long 79°24'31", Garrett County, Hydrologic Unit 05020006, on left bank 0.7 mi upstream from bridge on State Highway 42 at Friendsville, and 1.5 mi upstream from Bear Creek.

DRAINAGE AREA.--295 mi^2.

PERIOD OF RECORD.--August 1898 to December 1904 and October 1940 to current year. Annual maximum, water years 1905, 1923-31, 1940, published in WSP 1675. October, November 1940 monthly discharge only, published in WSP 1305. September 1922 to September 1926 (gage heights only) in reports of Pennsylvania Department of Forests and Waters.

REVISED RECORDS.--WSP 1385: Drainage area at former site, 1898-1905, 1941(M), 1942, 1944-45, 1948-49, 1951(M).

GAGE.--Water-stage recorder. Datum of gage is 1,487.33 ft above National Geodetic Vertical Datum of 1929. Aug. 17, 1898, to Dec. 31, 1904, and Sept. 1, 1922, to Sept. 30, 1926, nonrecording gages at bridge 0.7 mi downstream at datum 16.24 ft and 16.29 ft lower, respectively.

REMARKS.--No estimated daily discharges. Records good. Low and medium flow regulated since July 1925 by Deep Creek Reservoir, 12 mi upstream from station (see station 03076000). 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.

AVERAGE DISCHARGE.--55 years (water years 1899-1904, 1941-89), 645 ft^3/s, 29.69 in/yr, adjusted for storage since October 1940.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,600 ft^3/s, Mar. 29, 1924, gage height, 14.2 ft, from flood-marks, site and datum then in use or 10.2 ft, present site and datum, from rating curve extended above 5,800 ft^3/s on basis of slope-area measurement of peak flow; minimum daily discharge, 8.2 ft^3/s, Sept. 11, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,350 ft^3/s, Mar. 6, gage height, 5.87 ft; minimum discharge, 73 ft^3/s, Oct. 17, gage height, 2.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	213	306	475	448	927	662	1110	616	630	360	387	424
2	202	290	431	479	815	569	906	1050	494	306	296	370
3	127	242	277	658	1060	579	1060	1050	257	317	292	309
4	111	300	244	646	1180	391	982	835	257	293	438	263
5	102	246	327	588	881	1110	816	883	365	367	395	469
6	88	701	354	467	860	4340	696	1520	1480	353	177	425
7	81	649	331	519	786	4260	647	1920	934	513	262	489
8	169	448	322	1140	620	2310	501	1630	656	319	236	458
9	167	442	327	2000	544	1390	517	1380	551	590	211	290
10	185	387	202	1160	617	1190	631	3220	545	1810	194	399
11	210	365	226	858	403	972	511	3030	426	933	188	423
12	226	257	584	1900	343	1070	477	2530	406	740	133	472
13	225	319	339	3740	442	998	442	1500	404	909	129	515
14	267	583	257	2030	692	953	417	1290	450	1350	262	483
15	161	478	297	2700	2200	971	351	1280	466	739	269	513
16	85	406	332	2170	4410	852	332	1820	1070	674	361	298
17	152	516	263	1510	2700	724	380	2070	1810	2020	344	356
18	308	396	153	1330	1430	583	323	1660	1260	1230	213	486
19	307	292	272	1120	977	695	557	1210	1050	880	159	474
20	276	2060	211	977	868	701	570	854	1470	2110	181	353
21	277	3220	436	858	1710	2020	457	703	2470	1470	339	465
22	295	1860	957	748	2380	1730	385	700	1970	933	513	499
23	582	1160	788	727	1580	1240	359	615	1690	859	854	321
24	603	783	1500	690	1290	1230	375	675	1050	682	963	327
25	568	668	2480	655	743	1160	335	556	719	744	564	571
26	427	483	1390	852	637	916	353	756	760	600	428	536
27	393	420	1010	1280	828	869	336	610	637	636	299	603
28	349	523	828	727	828	748	352	586	589	486	390	528
29	218	515	770	526	---	667	513	490	769	359	337	492
30	189	461	658	897	---	917	681	447	491	253	913	296
31	266	---	486	1150	---	1360	---	475	---	310	812	---
TOTAL	7829	19776	17527	35550	32751	38177	16372	37961	26126	24145	11539	12907
MEAN	253	659	565	1147	1170	1232	546	1225	871	779	372	430
MAX	603	3220	2480	3740	4410	4340	1110	3220	2470	2110	963	603
MIN	81	242	153	448	343	391	323	447	257	253	129	263
(†)	-74.6	+28.6	-4.9	+16.3	-5.4	+134	+25.2	+95.8	0	-42.3	-89.2	-242
MEAN≠	178	688	560	1163	1165	1366	571	1321	871	737	283	188
CFSM≠	0.60	2.33	1.90	3.94	3.95	4.63	1.94	4.48	2.95	2.50	0.96	0.64
IN≠	0.69	2.60	2.19	4.54	4.26	5.34	2.16	5.16	3.29	2.88	1.11	0.71

CAL YR 1988 TOTAL 167215 MEAN 491 MAX 3220 MIN 31 MEAN≠ 493 CFSM≠ 1.67 IN≠ 22.74
WTR YR 1989 TOTAL 280660 MEAN 769 MAX 4410 MIN 81 MEAN≠ 756 CFSM≠ 2.56 IN≠ 34.78

† Change in contents, equivalent in cubic feet per second, in Deep Creek Reservoir, provided by Pennsylvania Electric Co.
≠ Adjusted for change in contents.

03076600 BEAR CREEK AT FRIENDSVILLE, MD

LOCATION.--Lat 39°39'22", long 79°23'41", Garrett County, Hydrologic Unit 05020006, on right bank 0.2 mi downstream from bridge on Accident-Friendsville Road, 0.6 mi downstream from South Branch Bear Creek, 0.8 mi southeast of Friendsville, and 1.2 mi upstream from mouth.

DRAINAGE AREA.--48.9 mi^2.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,551.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges (ice effect), which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--25 years, 91.0 ft^3/s, 25.27 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,650 ft^3/s, Sept. 14, 1971, gage height, 9.6 ft, from flood-marks, from rating curve extended above 2,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 1.5 ft^3/s, Sept. 12, 1966, gage height, 0.42 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 20	2000	1,310	4.47	Mar. 6	1200	*1,350	*4.54
Dec. 24	2245	623	3.38	May 10	2100	820	3.68
Jan. 12	2230	814	3.67	June 21	0215	1,020	3.99
Feb. 15	2330	1,080	4.09	July 19	2245	770	3.60

Minimum discharge, 13 ft^3/s, Oct. 18, gage height, 1.08 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	41	53	77	91	61	192	116	37	47	39	24
2	41	39	48	70	84	56	157	234	34	43	34	23
3	40	37	46	66	96	54	149	256	32	39	31	20
4	34	34	44	63	92	59	133	197	34	36	29	17
5	29	137	41	e60	86	160	116	227	48	52	29	16
6	26	200	39	57	83	946	105	391	107	40	27	15
7	24	147	38	51	74	621	92	356	68	40	24	15
8	22	108	36	241	69	318	85	337	55	32	23	15
9	21	90	34	325	59	194	84	318	69	115	20	15
10	20	77	32	207	e56	143	72	720	82	94	19	16
11	23	66	30	135	e54	172	63	666	65	73	21	30
12	20	58	e27	403	52	223	61	493	55	95	25	26
13	18	80	e25	553	50	166	60	337	60	117	20	31
14	16	80	e27	326	88	156	56	268	58	95	30	22
15	16	71	e30	440	467	173	54	200	59	76	59	23
16	14	69	28	323	802	150	51	155	97	194	26	26
17	14	72	e27	242	389	124	46	229	282	296	21	27
18	40	58	e26	164	243	112	49	192	206	187	18	24
19	37	66	e25	118	153	93	118	153	168	216	21	22
20	28	746	e24	100	119	95	103	125	536	410	29	21
21	27	831	51	80	229	318	92	106	887	276	34	19
22	70	416	48	80	253	263	82	86	462	156	35	19
23	153	275	68	64	216	175	73	84	312	108	33	32
24	147	174	315	58	144	186	66	74	217	85	55	31
25	118	122	485	56	118	174	62	65	130	71	40	26
26	93	97	294	58	98	147	59	60	99	68	34	33
27	72	83	184	93	82	125	53	54	82	61	30	30
28	63	79	143	83	72	105	49	48	78	53	26	25
29	54	66	112	80	---	100	98	44	63	46	23	24
30	47	59	91	98	---	140	116	42	53	45	43	23
31	44	---	82	96	---	188	---	39	---	46	30	---
TOTAL	1417	4478	2553	4867	4419	5997	2596	6672	4535	3312	928	690
MEAN	45.7	149	82.4	157	158	193	86.5	215	151	107	29.9	23.0
MAX	153	831	485	553	802	946	192	720	887	410	59	33
MIN	14	34	24	51	50	54	46	39	32	32	18	15
CFSM	.93	3.05	1.68	3.21	3.23	3.96	1.77	4.40	3.09	2.18	.61	.47
IN.	1.08	3.41	1.94	3.70	3.36	4.56	1.97	5.08	3.45	2.52	.71	.52

CAL YR 1988 TOTAL 33035.5 MEAN 90.3 MAX 831 MIN 2.2 CFSM 1.85 IN. 25.13
WTR YR 1989 TOTAL 42464 MEAN 116 MAX 946 MIN 14 CFSM 2.38 IN. 32.30

e Estimated

03078000 CASSELMAN RIVER AT GRANTSVILLE, MD

LOCATION.--Lat 39°42'08", long 79°08'12", Garrett County, Hydrologic Unit 05020006, on left bank at downstream side of highway bridge, 0.3 mi upstream from Slaubaugh Run, 0.7 mi downstream from U.S. Highway 40, and 1.0 mi northeast of Grantsville.

DRAINAGE AREA.--62.5 mi^2.

PERIOD OF RECORD.--July 1947 to current year.

REVISED RECORDS.--WSP 1143: 1948.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,088.97 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily dischareges (ice effect), which are fair. 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.

AVERAGE DISCHARGE.--42 years, 119 ft^3/s, 25.86 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,400 ft^3/s, Oct. 15, 1954, gage height, 10.70 ft, from rating curve extended above 1,600 ft^3/s on basis of contracted-opening measurement at gage height 8.13 ft; no flow Aug. 31, 1962, result of regulation from unknown source.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 20	1615	1,260	4.04	May 10	0730	*1,340	*4.13
Mar. 6	1230	1,250	4.03	July 17	0145	1,030	3.77

Minimum discharge, 8.3 ft^3/s, Sept. 11, gage height, 1.08 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	53	90	99	138	102	236	150	45	47	64	21
2	44	54	78	93	120	89	206	348	41	43	47	20
3	44	57	70	88	152	84	226	276	38	39	41	16
4	40	55	66	79	144	90	211	198	43	48	37	13
5	35	345	61	e76	116	271	184	277	66	218	35	12
6	32	433	64	e74	105	875	158	544	257	175	33	12
7	30	217	51	73	99	429	140	438	110	255	28	11
8	28	163	48	232	94	264	127	347	77	108	27	12
9	26	136	46	243	76	199	146	344	72	168	25	12
10	25	117	e47	149	e70	187	140	1130	84	186	22	10
11	34	102	e40	121	e68	245	114	684	56	100	23	9.5
12	33	88	e39	411	73	272	101	458	47	114	33	42
13	27	169	e37	646	80	227	94	334	68	112	26	75
14	24	162	e41	305	189	239	87	276	73	97	21	35
15	22	118	e44	543	563	299	83	251	75	70	25	45
16	21	102	e40	376	640	245	79	257	139	225	28	58
17	20	103	e38	259	308	189	70	283	256	537	20	66
18	72	89	e35	208	221	193	78	211	138	208	17	41
19	83	114	e34	183	182	192	221	172	127	166	17	34
20	46	798	e34	164	158	171	142	149	526	430	17	28
21	44	636	194	139	345	489	110	135	559	264	44	23
22	270	320	302	135	298	292	96	113	297	177	55	22
23	385	235	135	126	208	221	86	135	220	130	36	34
24	223	190	377	115	166	337	77	157	198	104	52	38
25	154	158	440	106	143	332	73	113	138	95	34	27
26	115	137	222	133	141	254	73	100	106	108	24	37
27	92	125	165	252	121	204	70	95	87	113	18	37
28	81	120	157	159	110	175	62	77	97	86	15	26
29	71	106	147	132	---	174	208	65	77	71	14	22
30	63	94	122	181	---	268	208	58	58	63	53	21
31	55	---	105	173	---	283	---	51	---	79	37	---
TOTAL	2288	5596	3369	6073	5128	7891	3906	8226	4175	4636	968	859.5
MEAN	73.8	187	109	196	183	255	130	265	139	150	31.2	28.6
MAX	385	798	440	646	640	875	236	1130	559	537	64	75
MIN	20	53	34	73	68	84	62	51	38	39	14	9.5
CFSM	1.18	2.98	1.74	3.13	2.93	4.07	2.08	4.25	2.23	2.39	.50	.46
IN.	1.36	3.33	2.01	3.61	3.05	4.70	2.32	4.90	2.48	2.76	.58	.51

CAL YR 1988 TOTAL 41332.9 MEAN 113 MAX 908 MIN 2.4 CFSM 1.81 IN. 24.60
WTR YR 1989 TOTAL 53115.5 MEAN 146 MAX 1130 MIN 9.5 CFSM 2.33 IN. 31.61

e Estimated

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 a table of annual maximum stage and discharge at crest-stage stations.

Crest-stage partial-record stations

The following table contains annual maximum discharges 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.

Annual maximum discharge at crest-stage partial-record stations during water year 1989

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum Date	Gage height (ft)	Discharge (ft^3/s)
		POTOMAC RIVER BASIN					
01595500	North Branch Potomac River at Kitzmiller, Md.	Lat 39°23'38", long 79°10'55", Garrett County, Hydrologic Unit 02070002, on left bank 0.6 mi downstream from bridge on State Highway 38 in Kitzmiller.	225	1950-85≠, 1986-89	11- 5-85	14.85	50,400
					4-16-87	7.85	5,890
					5-19-88	8.75	8,750
					3- 6-89	7.50	5,000
01595800	North Branch Potomac River at Barnum, W. Va.	Lat 39°26'44", long 79°06'39", Garrett County, Hydrologic Unit 02070002, on right bank at highway bridge at Barnum.	266	1967-85≠, 1986-89	11- 7-85	8.06	6,580
					4-18-87	7.20	4,740
					5- 6-88	8.29	7,150
					5-10-89	6.52	3,540
01600000	North Branch Potomac River at Pinto, Md.	Lat 39°26'44", long 79°06'39", Mineral County, W. Va., Hydrologic Unit 02070002, on right bank at downstream side of Western Maryland railroad bridge at Pinto, 2.8 mi downstream from Mill Run.	596	1939-85≠, 1986-89	11- 5-85	16.05	17,700
					4-18-87	9.48	6,970
					5- 6-88	12.75	12,000
					5-10-89	11.09	9,330

≠ Operated as a continuous-record station.

Georges Creek seepage investigations--Headwaters to Midland, Allegany County, MD

Three series of discharge measurements were made during the 1989 water year, on November 14 & 15, 1988, August 7 and September 5, 1989, on Georges Creek and its tributaries in Maryland, to study channel gains and losses. The reach is 4.70 mi in length and extends from Midland, Md., to its headwaters at Frostburg, Md. The measurements were made during a period of base flow; for 5 days before the investigations no measurable precipitation had fallen. Tributary flow was considered a contribution and not a gain. Indicated gains or losses may be substantially in error as affected by small inaccuracies in open-channel measurements.

Georges Creek mile	Stream	Location	Meas. discharge (ft^3/s)	Gain or loss	Meas. discharge (ft^3/s)	Gain or loss	Meas. discharge (ft^3/s)	Gain or loss
			November 14, 15, 1988		August 7, 1989		September 5, 1989	
17.1	Georges Creek (A)	Lat 39°38'49", long 78°55'26", Allegany Co., at Frostburg.	Dry	-	0.03	-	Dry	-
17.0	....do.... (B)	Lat 39°38'43", long 78°55'29", Allegany Co., at Frostburg.	Dry	-	Dry	-	Dry	-
16.6	....do.... (C)	Lat 39°38'28", long 78°55'47", Allegany Co., at Frostburg.	Dry	-	0.15	-	Dry	-
16.4	....do.... (D)	Lat 39°38'19", long 78°55'59", Allegany Co., above confluence with Sand Spring Run, at Frostburg.	0.12	-	0.27	+ .12	Dry	-
	Sand Spring Run (E)	Lat 39°39'29", long 78°56'24", Allegany Co., 1.4 mi upstream from mouth, at Frostburg	1.89	-	2.13	-	0.35	-
	....do.... (F)	Lat 39°39'14", long 78°56'20", Allegany Co., 1.1 mi upstream from mouth, at Frostburg.	2.18	+ .29	2.16	+ .03	0.27	- .08
	....do.... (G)	Lat 39°39'00", long 78°56'13", Allegany Co., 0.8 mi upstream from mouth, at Frostburg.	1.90	- .28	2.01	- .15	0.22	- .05
	....do.... (H)	Lat 39°38'40", long 78°56'10", Allegany Co., 0.4 mi upstream from mouth, at Frostburg.	1.76	- .14	1.76	- .25	0.28	+ .06
16.3	....do.... (I)	Lat 39°38'21", long 78°56'01", Allegany Co., at mouth, at Frostburg.	1.91	+ .15	1.86	+ .10	0.24	- .04
		Overall net gain or loss on Sand Spring Run		+ .02		- .27		- .11
15.9	Georges Creek (J)	Lat 39°37'59", long 78°56'11", Allegany Co., downstream of culvert on U.S. Highway 48, at Frostburg.	2.41	+ .38	1.55	- .58	.003	-
15.4	....do.... (K)	Lat 39°37'37", long 78°56'23", Allegany Co., 0.2 mi above confluence with Winebrenner Run.	2.12	- .29	2.13	+ .58	0.05	+ .05
14.6	....do.... (L)	Lat 39°36'59", long 78°56'27", Allegany Co., above confluence with Vale Run.	4.35	+2.23	3.56	+1.43	Dry	- .05
	Vale Run (M)	Lat 39°37'04", long 78°55'56", Allegany Co., 0.5 mi upstream from mouth.	.005	-	.004	-	Dry	-
	....do.... (N)	Lat 39°36'59", long 78°56'24", Allegany Co., at mouth.	.014	-	.035	-	Dry	-
	Unnamed Trib. (O)	Lat 39°37'07", long 78°57'09", Allegany Co., 0.8 mi upstream from mouth, at Carlos.	Dry	-	Dry	-	Dry	-
14.0	Georges Creek (P)	Lat 39°36'29", long 78°56'36", Allegany Co., 0.4 mi upstream from mouth of Woodland Creek.	5.14	+ .77	3.59	- .01	Dry	-
	Woodland Creek (Q)	Lat 39°36'36", long 78°58'04", Allegany Co., 1.5 mi upstream from mouth, at Klondike.	2.72	-	1.47	-	0.20	-
	....do.... (R)	Lat 39°36'35", long 78°57'43", Allegany Co., 1.1 mi upstream from mouth, at Klondike.	2.05	- .67	1.32	- .15	0.15	- .15

Georges Creek seepage investigations--Headwaters to Midland, Allegany County, MD

Georges Creek mile	Stream	Location	Meas. discharge (ft^3/s)	Gain or loss	Meas. discharge (ft^3/s)	Gain or loss	Meas. discharge (ft^3/s)	Gain or loss
			November 14, 15, 1988		August 7, 1989		September 5, 1989	
	Staub Run (S)	Lat 39°36'37", long 78°57'37", Allegany Co., at mouth, at Klondike.	0.85	-	0.44	-	Dry	-
	Woodland Creek (T)	Lat 39°36'25", long 78°57'15", Allegany Co., 0.5 mi upstream from mouth, at Woodland.	2.59	- .31	1.15	- .61	Dry	-
	....do.... (U)	Lat 39°36'21", long 78°56'53", Allegany Co., 0.1 mi upstream from mouth, at Woodland.	2.15	- .44	0.88	- .27	Dry	-
13.6	....do.... (V)	Lat 39°36'15", long 78°56'48", Allegany Co., at mouth, at Woodland.	2.07	- .08	0.71	- .17	Dry	-
		Overall net gain or loss on Woodland Creek		-1.50		-1.20		- .05
13.6	Georges Creek (X)	Lat 39°36'12", long 78°56'48", Allegany Co., below confluence with Woodland Creek, at Woodland.	5.70	-1.51	3.65	- .65	Dry	-
12.9	....do.... (Y)	Lat 39°35'41", long 78°56'41", Allegany Co., above confluence with Neff Run, at Midland.	5.78	+ .08	3.04	- .61	Dry	-
	Squirrel Neck Run (Z)	Lat 39°35'42", long 78°57'24", Allegany Co., 0.3 mi upstream from mouth, at Midland.	0.10	-	0.20	-	.004	-
	....do.... (AA)	Lat 39°35'36", long 78°57'11", Allegany Co., 0.1 mi upstream from mouth, at Midland.	Dry	-	0.20	-	.003	-
12.4	Georges Creek (BB)	Lat 39°35'32", long 78°57'06", Allegany Co., below confluence with Squirrel Neck Run, at Midland.	9.73	+3.85	8.11	+4.87	0.89	+ .89
		Overall net gain or loss		+5.51		+5.15		+0.73

Water-quality partial-record stations are particular sites where chemical-quality, biological, and/or sediment data are collected systematically over a period of years for use in hydrologic analyses. The data are collected usually less than quarterly. Samples collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin are referred to as miscellaneous sites.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

POTOMAC RIVER BASIN

383330077141000 - POTOMAC RIVER AT BUOY 45/46 BETWEEN INDIAN HEAD, MD AND QUANTICO, VA

DATE	TIME	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	BROMIDE DIS-SOLVED (MG/L AS BR)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV												
01...	1245	40	56	390	150	710	2.2	2.4	1450	1380	<3	11

01655480 - POTOMAC RIVER AT INDIAN HEAD, MD

DATE	TIME	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	BROMIDE DIS-SOLVED (MG/L AS BR)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV												
01...	1300	34	19	92	85	170	0.38	2.5	480	442	7	4

GROUND-WATER SPRING DISCHARGE

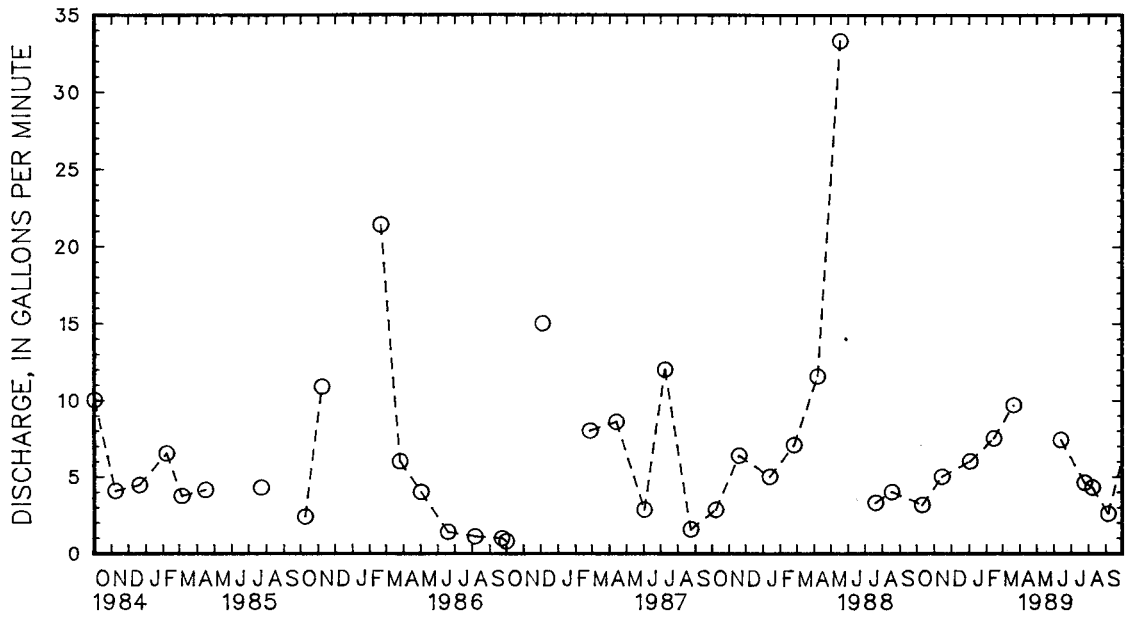
MARYLAND

FREDERICK COUNTY

SPRING NUMBER.--FR Fb 12. SITE ID.--391846077370501.
LOCATION.--Lat 39°18'46", long 77°37'05", Hydrologic Unit 02070008, at Brunswick, off Park Ave., 300 ft north of intersection of Potomac St.
Owner: Town of Brunswick.
AQUIFER.--Precambrian Erathem of Precambrian age. Aquifer code: 400PCMB.
SPRING IMPROVEMENTS.--2 in. outflow pipe.
INSTRUMENTATION.--Monthly volumetric measurements by USGS personnel.
DATUM.--Elevation of land-surface is 300 ft above National Geodetic Vertical Datum of 1929, from topographic map.
REMARKS.--Temperatures available.
PERIOD OF RECORD.--January 1960 to April 1964, March 1965, August 1967, December 1968, July 1972, April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge measured, 36.0 gal/min, Apr. 30, 1964; minimum discharge measured, 0.8 gal/min, Oct. 1, 1986.

DISCHARGE, IN GALLONS PER MINUTE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	DISCHARGE	DATE	DISCHARGE	DATE	DISCHARGE	DATE	DISCHARGE	DATE	DISCHARGE
OCT 11	3.16	JAN 3	6.00	MAR 21	9.68	JUL 25	4.62	SEP 5	2.60
NOV 15	5.00	FEB 14	7.50	JUN 13	7.40	AUG 8	4.30		

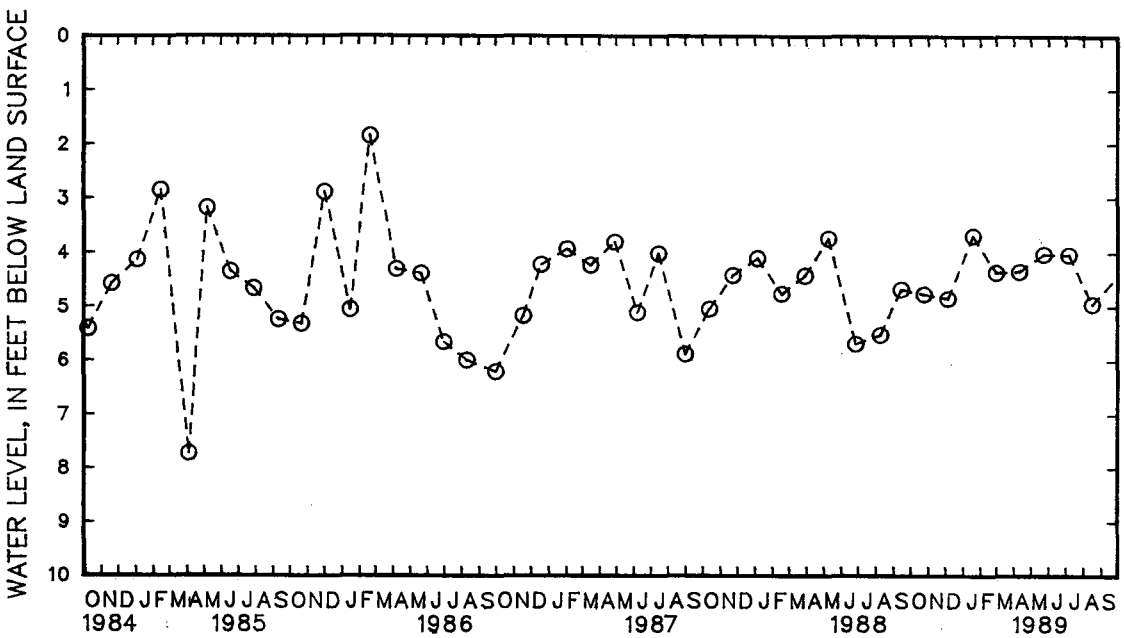


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--AL Ah 1. SITE ID.--394024078273401.
LOCATION.--Lat 39°40'24", long 78°27'34", Hydrologic Unit 02070003, near Fifteen Mile Creek, 2.8 mi southeast of Pratt.
Owner: Green Ridge State Forest.
AQUIFER.--Jennings Formation of Upper Devonian Age. Aquifer code: 341JNGS.
WELL CHARACTERISTICS.--Drilled, unused, artesian well, reported depth 300 ft, measured depth 113 ft; casing diameter 8 in. to unknown depth; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 720 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of sanitary seal in casing, 0.3 ft above land-surface datum.
REMARKS.--Water level was deeper than 40 ft below land-surface datum on Nov. 19, 1969, and Feb. 12, 1970, when well was being pumped. Water levels may be affected by nearby pumping.
PERIOD OF RECORD.--December 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.80 ft below land-surface datum, May 18, 1978; lowest measured 19.75 ft below land-surface datum, July 17, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	4.76	JAN 18	3.68	APR 10	4.34	JUL 6	4.03
DEC 5	4.84	FEB 28	4.36	MAY 23	4.02	AUG 16	4.95

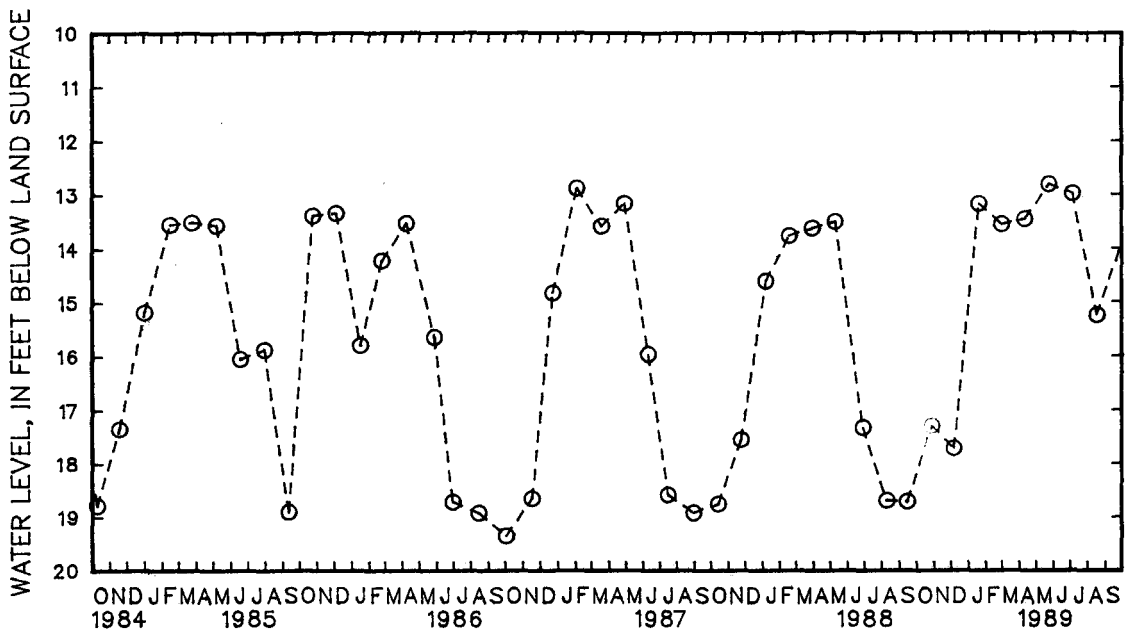


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--AL Bd 2. SITE ID.--393930078460901.
LOCATION.--Lat 39°39'30", long 78°46'09", Hydrologic Unit 02070002, at Henderson Ave. and Valley St., Cumberland.
Owner: formerly Cumberland Brewing Company.
AQUIFER.--Tonoloway Limestone of Upper Silurian age. Aquifer code: 351TNLY.
WELL CHARACTERISTICS.--Drilled, unused, artesian well, depth 100 ft; casing diameter 6 in. to unknown depth; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing at land-surface datum.
PERIOD OF RECORD.--October 1946 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.24 ft below land-surface datum, Feb. 8, 1973; lowest measured, 32.55 ft below land-surface datum, Sept. 7, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	17.30	JAN 19	13.17	APR 11	13.45	JUL 5	12.98
DEC 6	17.72	MAR 1	13.55	MAY 24	12.81	AUG 17	15.25

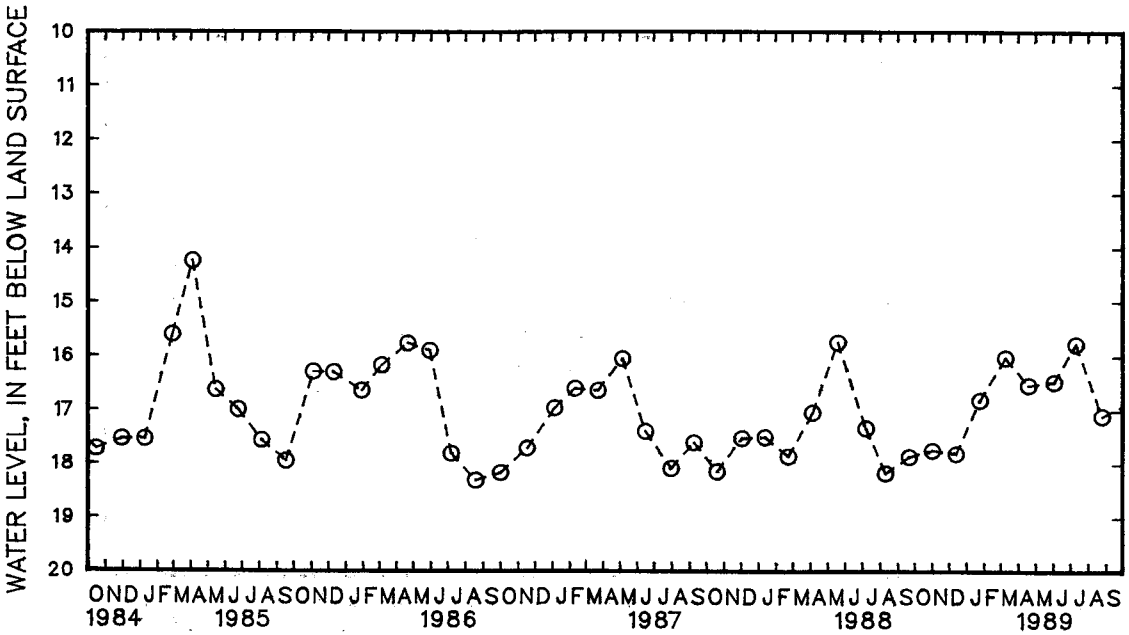


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--AL Ca 19. SITE ID.--393009079025201. PERMIT NUMBER.--AL-05-0057.
LOCATION.--Lat 39°30'09", long 79°02'52", Hydrologic Unit 02070002, north end of Franklin.
Owner: Carl Arthur.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, reported depth 93 ft, measured depth 84.5 ft; casing diameter 6 in., to 46 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 1,035 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--July 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.88 ft below land-surface datum, Mar. 19, 1984; lowest measured, 19.30 ft below land-surface datum, Nov. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1	17.75	JAN 24	16.81	APR 18	16.53	JUL 10	15.77
DEC 13	17.81	MAR 9	16.02	JUN 2	16.47	AUG 25	17.10



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

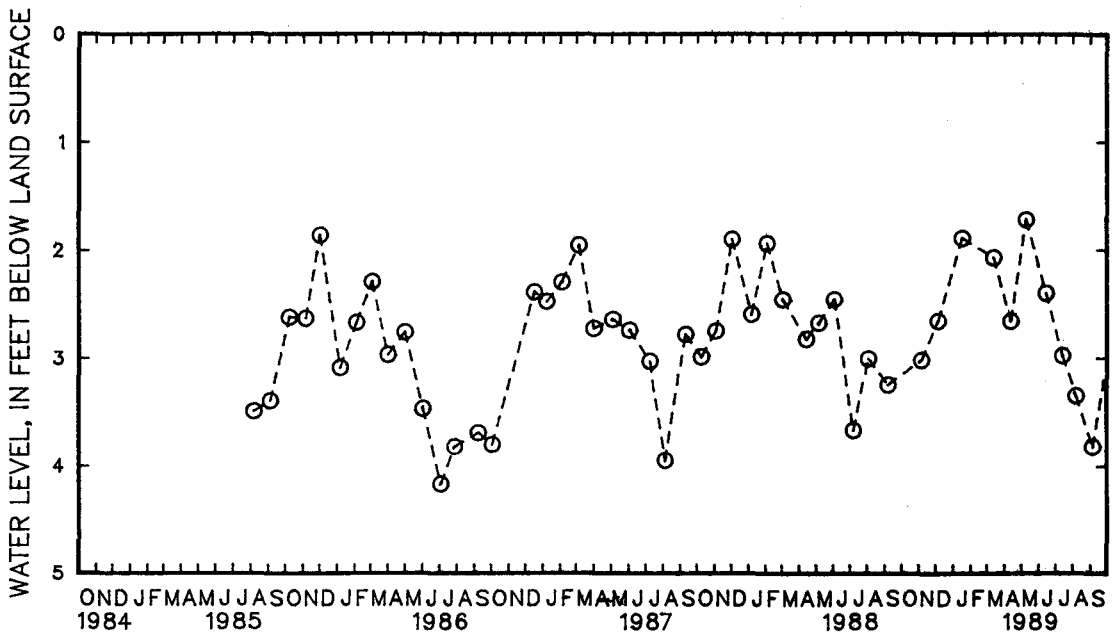
MARYLAND--Continued

CARROLL COUNTY

WELL NUMBER.--CL Ad 47. SITE ID.--394008077005601. PERMIT NUMBER.--CL-73-3178.
LOCATION.--Lat 39°40'08", long 77°00'56", Hydrologic Unit 02070009, at Union Mills Homestead Park.
Owner: U.S. Geological Survey.
AQUIFER.--Marburg Formation of Paleozoic age. Aquifer code: 300MRBG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 310 ft; casing diameter 6 in., to 35 ft.; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 540 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing 2.9 ft above land-surface datum.
PERIOD OF RECORD.--August 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.72 ft below land-surface datum, May 10, 1989; lowest measured, 4.17 ft below land-surface datum, July 3, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 5	3.02	JAN 17	1.89	APR 12	2.66	JUN 14	2.40	AUG 7	3.35
DEC 5	2.66	MAR 13	2.07	MAY 10	1.72	JUL 13	2.98	SEP 5	3.82



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

CHARLES COUNTY

WELL NUMBER.--CH Bb 17. SITE ID.--383524077111802.
LOCATION.--Lat 38°35'24" long 77°11'18", Hydrologic Unit 02070011, at Farnum Rd.; U.S. Naval Ordnance Station, about 2.5 miles southwest of Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 294 ft; casing diameter 16 in., to 230 ft; casing diameter 10 in. to 240 ft; screen diameter 10 in. from 240 to 294 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval, May 29, 1988 to current year.
DATUM.--Elevation of land surface is 52 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of recorder shelf, 3.0 ft above land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--May 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 114.41 ft below land-surface datum, June 4, 1988; lowest measured, 121.11 ft below land-surface datum, Jan. 21, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	119.62	118.81	118.48	118.23	117.91	117.58	119.60	119.25	119.05	118.55	117.15	116.75
2	118.99	118.28	118.88	118.19	117.70	117.41	119.52	119.08	119.29	118.89	117.33	117.01
3	118.49	118.20	119.16	118.72	117.68	117.36	119.35	118.97	119.29	118.78	117.31	116.91
4	118.30	118.06	119.13	118.80	118.26	117.59	120.33	119.30	119.51	119.14	117.15	116.65
5	---	---	118.86	117.98	118.21	117.74	120.33	119.41	119.54	119.09	116.96	116.35
6	118.72	118.12	118.34	117.98	118.16	117.71	119.58	119.14	119.54	119.07	116.79	116.32
7	118.98	118.51	118.39	118.00	118.19	117.72	119.67	119.20	119.58	119.17	116.78	116.41
8	119.15	118.74	118.24	117.79	118.32	117.99	119.59	119.03	119.71	119.15	116.97	116.47
9	118.89	118.14	118.44	118.07	118.35	117.90	119.79	119.34	119.91	119.30	117.20	116.70
10	118.50	118.13	118.34	117.40	118.64	118.13	120.06	119.71	119.83	119.36	117.37	116.94
11	118.95	118.42	118.38	117.74	118.82	118.40	120.28	119.86	119.54	118.95	117.38	116.89
12	119.33	118.93	118.64	117.79	118.96	118.37	120.29	119.68	119.26	118.88	117.50	116.94
13	119.61	119.23	117.97	117.15	118.66	118.18	120.48	119.68	119.17	118.59	117.68	117.22
14	119.59	118.88	117.59	117.20	118.66	118.14	120.59	120.16	118.65	118.18	117.49	117.08
15	119.14	118.81	117.66	117.26	118.61	118.13	120.29	119.88	118.65	118.25	117.50	117.13
16	119.20	118.69	117.52	116.94	119.10	118.56	120.35	119.94	118.70	118.30	117.94	117.42
17	118.77	117.99	117.47	116.86	118.92	118.48	120.27	119.84	118.72	118.17	117.87	117.50
18	118.19	117.88	117.92	117.38	119.10	118.71	120.35	119.97	118.43	117.87	118.02	117.53
19	118.27	117.80	117.80	117.27	118.91	118.45	120.35	119.86	118.19	117.56	118.53	118.01
20	118.31	117.94	117.47	117.00	119.11	118.69	120.36	119.87	117.90	117.45	118.25	116.99
21	118.22	117.71	118.06	117.27	119.41	119.01	121.11	120.46	117.80	117.10	117.21	116.67
22	118.45	117.85	118.14	117.66	119.72	119.29	120.83	120.20	117.56	117.15	117.32	116.89
23	118.51	118.00	118.10	117.57	119.59	118.94	120.59	120.22	117.72	117.40	117.13	116.47
24	118.38	117.92	118.04	117.67	119.33	118.77	120.53	119.96	117.97	117.53	116.68	116.15
25	118.55	118.02	118.13	117.33	119.37	118.94	120.29	119.93	118.13	117.09	116.59	116.22
26	118.51	118.05	117.65	117.16	119.75	119.25	120.21	119.60	117.14	116.59	116.49	116.07
27	118.65	118.11	117.50	116.97	119.81	119.33	119.86	119.36	117.21	116.85	116.69	116.33
28	118.53	118.17	117.42	116.97	119.52	119.04	119.87	119.23	117.32	116.90	116.64	116.24
29	118.85	118.29	118.02	117.42	120.03	119.39	119.25	118.89	---	---	116.75	116.34
30	118.80	118.42	117.97	117.67	119.90	119.39	119.40	119.02	---	---	116.80	116.37
31	118.76	118.33	---	---	119.56	119.21	119.52	119.01	---	---	116.88	116.14
MONTH	---	---	119.16	116.86	120.03	117.36	121.11	118.89	119.91	116.59	118.53	116.07

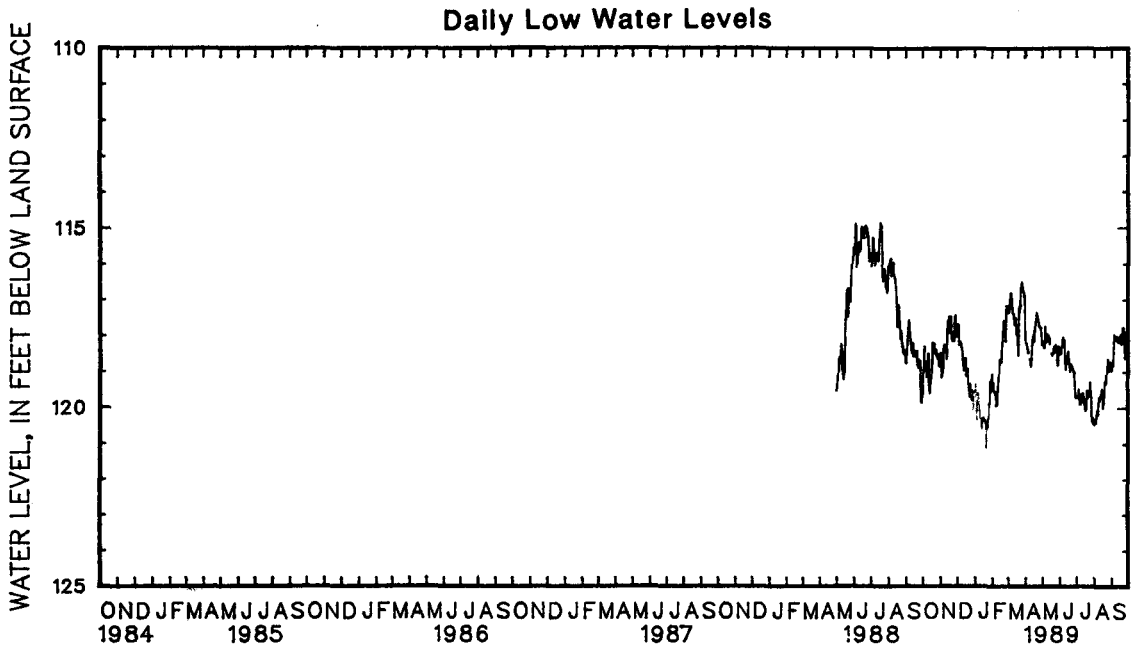
GROUND-WATER LEVELS

MARYLAND--Continued

CHARLES COUNTY--Continued

CH Bb 17--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	118.10	116.88	118.17	117.56	118.49	117.98	119.71	119.22	120.46	120.00	118.85	118.36
2	118.19	117.78	---	---	118.48	118.03	119.68	119.20	---	---	118.82	118.49
3	118.19	117.63	---	---	118.48	117.97	119.69	119.18	120.42	119.95	118.82	118.30
4	118.34	117.84	118.31	117.81	118.29	117.74	119.72	119.18	120.42	119.95	118.46	117.64
5	118.37	117.87	118.17	117.57	118.29	117.78	119.48	118.98	120.29	119.90	117.96	117.64
6	118.45	117.90	117.73	117.26	118.09	117.56	119.74	119.15	120.16	119.66	118.04	117.64
7	---	---	118.12	117.62	118.03	117.46	119.79	119.39	120.06	119.66	118.03	117.71
8	118.63	118.15	118.15	117.68	118.21	117.75	119.89	119.45	120.19	119.74	118.11	117.76
9	118.63	118.07	118.03	117.57	118.12	117.70	119.84	119.40	119.87	119.64	118.07	117.72
10	118.84	118.35	117.85	117.42	118.71	117.93	119.62	119.29	119.72	119.42	118.02	117.70
11	118.80	118.26	118.09	117.70	118.93	118.42	119.81	119.33	119.79	119.48	118.14	117.68
12	118.45	118.01	117.98	117.66	118.69	118.25	119.63	119.37	119.72	119.44	118.17	117.72
13	118.17	117.74	118.05	117.69	118.64	117.93	119.60	119.17	119.63	119.24	118.17	117.64
14	118.02	117.77	118.20	117.77	118.76	118.36	119.70	119.23	119.62	119.16	118.04	117.54
15	117.95	117.58	---	---	118.46	118.00	119.89	119.29	119.48	119.01	118.16	117.64
16	118.15	117.77	---	---	118.43	118.05	119.89	119.33	119.70	119.21	118.19	117.53
17	117.88	117.36	118.48	118.01	118.68	118.12	120.07	119.47	120.01	119.50	117.97	117.52
18	117.75	117.36	118.53	118.11	118.81	118.39	120.04	119.43	119.87	119.13	118.23	117.73
19	117.65	117.23	118.48	118.04	118.99	118.48	119.76	119.24	119.65	119.04	118.22	117.41
20	117.55	117.10	118.43	118.00	118.79	118.32	119.52	119.06	119.36	118.80	117.79	117.35
21	117.34	116.97	118.30	117.86	118.79	118.32	119.71	119.21	119.26	118.80	117.96	117.32
22	117.43	117.02	118.45	118.03	118.82	118.32	119.67	119.20	119.32	118.81	117.78	117.17
23	117.46	116.96	118.34	117.78	118.88	118.45	119.64	119.19	119.09	118.72	118.17	117.08
24	117.55	117.14	118.24	117.77	118.92	118.51	119.60	118.91	118.88	118.53	118.64	118.13
25	117.69	117.30	118.27	117.85	118.98	118.51	119.28	118.77	118.64	118.23	118.21	117.79
26	117.73	117.34	118.35	117.86	119.01	118.56	119.52	118.96	118.95	118.28	118.06	117.51
27	117.76	117.39	118.67	118.20	119.08	118.51	119.71	119.15	118.97	118.57	118.03	117.70
28	117.75	117.38	118.81	118.47	119.27	118.63	120.24	119.36	118.93	118.42	117.90	117.45
29	117.94	117.38	118.58	118.17	119.62	118.90	120.39	119.98	118.73	118.25	117.86	117.44
30	118.23	117.66	118.29	117.93	119.71	119.20	120.39	119.85	118.76	118.25	118.16	117.73
31	---	---	118.49	117.86	---	---	120.29	119.72	118.97	118.55	---	---
MONTH	---	---	---	---	119.71	117.46	120.39	118.77	---	---	118.85	117.08



5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bc 5. SITE ID.--383524077094401.
LOCATION.--Lat 38°35'24", long 77°09'44", Hydrologic Unit 02070011, at Benson Rd.;
U.S. Naval Ordnance Station, about 2.5 miles southwest of Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patuxent Formation of Lower Cretaceous age. Aquifer code: 217PTXN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 430 ft; casing diameter 8 in. to unknown depth; screen diameter 8 in, depth unknown.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval, Apr. 28, 1988 to current year.
DATUM.--Elevation of land surface is 38.2 ft above National Geodetic Vertical Datum of 1929.
Measuring Point: Top of recorder shelf, 2.5 ft above land-surface datum.
REMARKS.--Indian Head Project observation well. Recorder data missing because of malfunctioning float/counter-weight system. Water levels affected by nearby pumping.
PERIOD OF RECORD.--April 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 119.12 ft below land-surface datum, Nov. 13, 1988; lowest measured, 126.78 ft below land-surface datum, Jan. 11, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	123.62	NOV 3	120.39	NOV 13	119.12	FEB 15	124.64

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	---	---	126.13	126.09	---	---	---	---
2	---	---	---	---	122.24	122.10	126.21	126.13	---	---	---	---
3	---	---	---	---	122.23	122.15	126.27	126.20	---	---	---	---
4	---	---	---	---	122.52	122.23	126.58	126.27	---	---	---	---
5	---	---	---	---	122.56	122.52	---	---	---	---	---	---
6	123.86	123.57	---	---	122.59	122.56	---	---	---	---	---	---
7	---	---	---	---	122.67	122.59	---	---	---	---	---	---
8	---	---	---	---	122.81	122.68	---	---	---	---	---	---
9	---	---	---	---	122.83	122.81	---	---	---	---	---	---
10	---	---	---	---	122.91	122.86	126.71	126.65	---	---	---	---
11	---	---	---	---	123.15	122.90	126.78	126.70	---	---	---	---
12	---	---	---	---	123.28	123.19	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	123.59	123.44	---	---	---	---	---	---
16	---	---	---	---	123.87	123.59	---	---	---	---	---	---
17	---	---	---	---	123.96	123.87	---	---	---	---	---	---
18	---	---	---	---	124.09	123.19	---	---	---	---	---	---
19	---	---	---	---	124.33	100.33	---	---	---	---	---	---
20	---	---	---	---	124.59	124.37	---	---	---	---	---	---
21	---	---	---	---	124.80	124.49	---	---	---	---	---	---
22	---	---	---	---	124.96	124.90	---	---	---	---	---	---
23	---	---	---	---	125.03	125.01	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	125.53	125.25	---	---	---	---	---	---
27	---	---	---	---	125.64	125.51	---	---	---	---	---	---
28	---	---	---	---	125.64	125.22	---	---	---	---	---	---
29	---	---	122.18	122.01	125.90	125.65	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

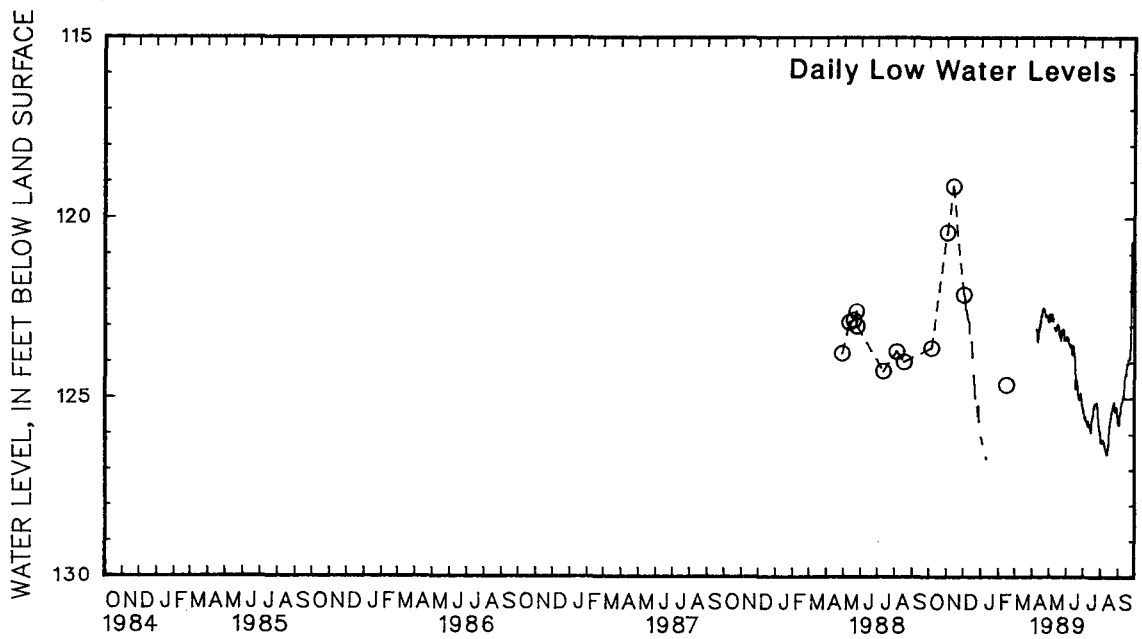
GROUND-WATER LEVELS

MARYLAND--Continued

CHARLES COUNTY--Continued

CH Bc 5--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	123.07	122.76	123.43	123.38	125.53	125.27	126.31	126.23	125.76	125.69
2	---	---	122.93	122.66	123.42	123.29	125.54	125.40	126.24	126.17	125.89	125.74
3	---	---	123.11	122.85	123.45	123.31	125.68	125.45	126.38	126.23	125.94	125.73
4	---	---	123.10	122.81	123.47	123.32	125.68	125.58	126.31	126.16	125.73	125.46
5	---	---	122.96	122.80	123.63	123.47	125.65	125.51	126.30	126.16	125.46	125.46
6	---	---	122.80	122.66	123.63	123.48	125.69	125.61	126.30	126.22	125.46	125.34
7	---	---	123.03	122.79	123.63	123.50	125.64	125.64	126.36	126.22	125.34	125.19
8	123.32	123.08	123.00	122.86	123.65	123.57	125.76	125.64	126.58	126.36	125.18	125.11
9	123.55	123.12	122.95	122.78	123.63	123.52	125.76	125.76	126.50	126.41	125.11	125.07
10	123.59	123.43	---	---	123.78	123.52	125.77	125.63	126.51	126.45	125.07	124.98
11	123.56	123.33	123.26	123.03	123.79	123.78	125.79	125.77	126.58	126.51	125.01	124.94
12	123.33	123.16	123.26	123.08	123.79	123.79	125.79	125.79	126.60	126.58	124.97	124.80
13	123.16	123.04	123.27	123.12	123.70	123.55	125.90	125.73	126.60	126.53	124.86	124.44
14	123.08	123.04	123.19	123.06	123.88	123.70	125.97	125.87	126.56	126.35	124.64	124.31
15	123.04	122.83	123.17	123.00	124.10	123.83	126.01	125.95	126.35	126.14	124.49	124.36
16	122.98	122.89	123.00	122.94	124.37	124.10	126.01	125.62	126.14	125.92	124.41	124.04
17	122.93	122.68	123.03	122.98	124.77	124.44	125.86	125.62	126.03	125.79	124.25	124.04
18	122.83	122.71	123.35	123.00	124.76	124.74	125.86	125.49	125.89	125.65	124.27	124.06
19	122.71	122.56	123.41	123.19	124.76	124.57	125.64	125.43	125.79	125.58	124.21	123.93
20	122.60	122.51	123.39	123.27	124.63	124.49	125.43	125.20	125.64	125.44	124.07	123.91
21	122.55	122.48	123.40	123.24	124.82	124.62	125.37	125.27	125.59	125.37	124.06	123.92
22	122.62	122.51	123.40	123.38	125.04	124.73	125.28	125.15	125.47	125.32	123.95	123.65
23	122.67	122.53	123.38	123.12	125.12	125.00	125.24	125.15	125.31	125.24	123.87	123.65
24	122.77	122.67	123.33	123.13	125.11	125.03	125.25	125.17	125.27	125.18	123.86	122.29
25	122.76	122.73	123.33	123.16	125.15	125.04	125.28	125.12	125.43	125.11	122.19	121.33
26	122.79	122.69	123.25	123.08	125.09	125.01	125.43	125.20	125.52	125.33	121.32	120.65
27	122.77	122.71	123.39	123.09	125.05	124.86	125.59	125.42	125.52	125.38	121.72	121.00
28	122.82	122.74	123.41	123.39	125.19	125.00	125.77	125.58	125.51	125.30	122.21	121.77
29	122.87	122.73	123.41	123.38	125.40	125.17	125.96	125.77	125.33	125.24	122.50	122.33
30	123.07	122.87	123.38	123.31	125.40	125.29	125.99	125.89	125.52	125.34	122.81	122.62
31	---	---	123.43	123.31	---	---	126.23	125.93	125.71	125.60	---	---
MONTH	---	---	---	---	125.40	123.29	126.23	125.12	126.60	125.11	125.94	120.65



5 YEAR HYDROGRAPH

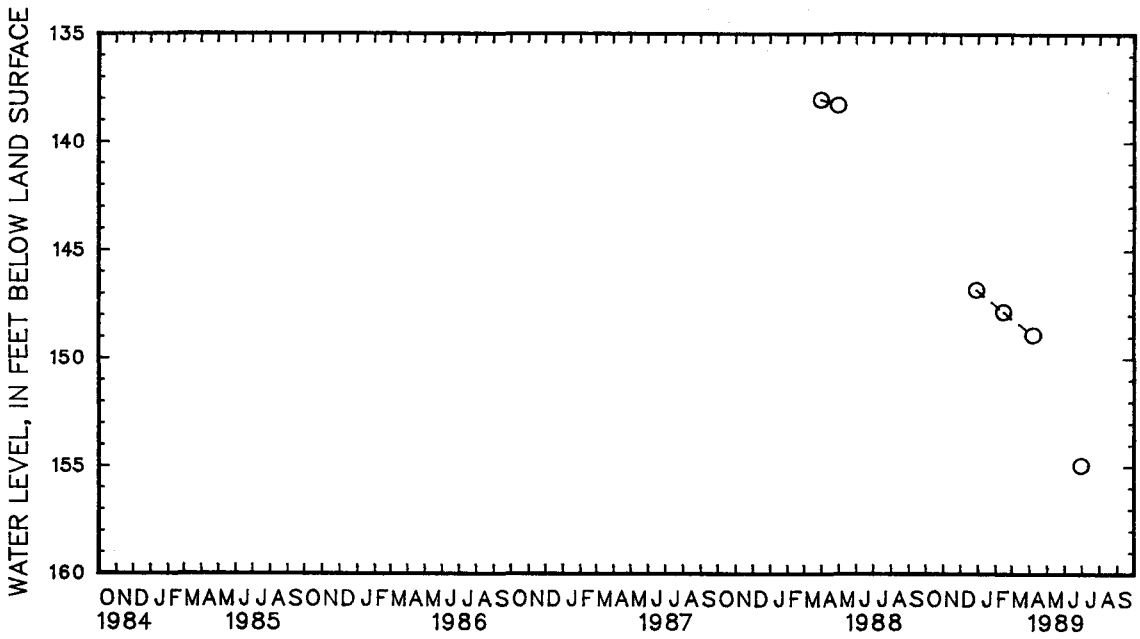
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

CHARLES COUNTY--Continued

WELL NUMBER.--CH Bc 6. SITE ID.--383631077083501.
LOCATION.--Lat 38°36'31", long 77°08'35", Hydrologic Unit 02070011, Cedar Lane, Potomac Heights.
Owner: Potomac Heights Mutual Home Owners Association.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, production, artesian well, depth 417 ft; casing diameter 18 in., to 350 ft; casing diameter 8 in. from 322 to 362 ft; screen diameter 8 in. from 362 to 412 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 65 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--March 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 138.05 ft below land-surface datum, Mar. 31, 1988; lowest measured, 154.96 ft below land-surface datum, June 29, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 29	146.83	FEB 15	147.86	APR 7	148.92	JUN 29	154.96



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bc 24. SITE ID.--383633077083001. PERMIT NUMBER.--CH-02-0874.
LOCATION.--Lat 38°36'33" long 77°08'30", Hydrologic Unit 0207001, at Cedar Lane, Potomac Heights.
Owner: Potomac Heights Mutual Home Owners Association.
AQUIFER.--Patuxent Formation of Lower Cretaceous age. Aquifer code: 217PTXN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 435 ft; casing diameter 10 in., to 383.5 ft; and 398.5 to 415 ft; screen diameter 10 in. from 383.5 to 398.5 ft and 415 to 435 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval, Apr. 30, 1988 to current year.
DATUM.--Elevation of land surface is 72 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of recorder shelf, 1.6 ft above land-surface datum.
REMARKS.--Indian Head Project observation well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--May 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 142.26 ft below land-surface datum, Apr. 30, 1988; lowest measured, 172.86 ft below land-surface datum, June 17, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	150.45	149.97	150.28	149.84	151.14	150.56	150.91	150.52	152.08	151.58	152.43	152.05
2	150.39	149.99	151.13	149.86	151.17	150.79	150.78	150.32	152.16	151.77	152.66	152.33
3	150.67	150.03	151.06	150.74	150.96	150.54	150.70	150.27	152.14	151.55	152.70	152.30
4	150.77	150.42	150.85	150.41	151.19	150.68	151.36	150.56	152.19	151.80	152.61	152.17
5	150.95	150.42	150.47	149.62	151.15	150.58	151.33	150.50	152.16	151.62	152.56	152.04
6	151.22	150.74	150.10	149.67	150.97	150.48	150.89	150.40	152.06	151.57	152.64	152.20
7	151.23	150.83	150.42	149.88	150.86	150.47	150.93	150.42	152.08	151.67	152.73	152.32
8	151.20	150.65	150.46	149.97	151.03	150.63	150.85	150.27	152.23	151.77	152.74	152.28
9	150.87	150.11	150.55	150.14	151.03	150.46	151.03	150.57	152.60	151.99	152.78	152.29
10	150.53	150.11	150.48	149.78	150.93	150.39	151.22	150.84	152.58	152.07	152.76	152.30
11	150.85	150.44	150.43	149.89	151.05	150.39	151.32	150.93	152.42	151.96	152.71	152.20
12	151.05	150.67	150.59	150.02	151.22	150.65	151.30	150.67	152.49	151.97	152.91	152.30
13	151.20	150.84	150.39	149.87	150.98	150.50	151.42	150.69	152.51	152.03	153.04	152.60
14	151.12	150.41	150.41	149.91	150.99	150.41	151.51	151.06	152.29	151.00	152.92	152.50
15	150.76	150.43	150.45	150.01	151.02	150.43	151.31	150.87	152.35	151.95	152.84	152.45
16	150.87	150.38	150.50	149.97	151.27	150.74	151.54	151.02	152.53	152.06	153.15	152.69
17	150.66	150.25	150.43	149.88	151.02	150.55	151.62	151.15	152.53	152.05	153.11	152.71
18	150.60	150.18	150.69	150.25	151.18	150.67	151.77	151.34	152.40	151.93	153.05	152.67
19	150.79	150.21	150.67	150.18	151.13	150.63	151.77	151.32	152.31	151.82	153.62	153.11
20	150.76	150.35	150.44	149.87	151.20	150.74	152.00	151.35	152.30	151.93	153.53	152.71
21	150.58	149.99	151.09	150.23	151.36	150.86	152.53	152.03	152.39	151.81	153.12	152.59
22	150.52	150.02	151.13	150.62	151.43	150.97	152.28	151.73	152.36	151.93	153.37	153.01
23	150.54	149.97	151.08	150.46	151.28	150.60	152.17	151.80	152.52	152.20	153.33	152.79
24	150.44	149.85	150.92	150.50	151.02	150.41	152.16	151.65	152.75	152.36	153.03	152.52
25	150.70	150.08	150.97	150.38	151.02	150.62	152.04	151.67	152.87	152.03	153.00	152.68
26	150.60	150.14	150.86	150.41	151.23	150.87	152.03	151.46	152.19	151.73	153.11	152.64
27	150.63	150.06	150.80	150.20	151.28	150.71	151.99	151.54	152.48	152.04	153.30	152.97
28	150.47	150.00	150.83	150.26	150.99	150.47	152.20	151.82	152.59	152.14	153.32	152.96
29	150.53	150.08	151.14	150.77	151.26	150.81	152.11	151.73	---	---	153.45	153.06
30	150.45	150.12	151.01	150.60	151.16	150.66	152.20	151.00	---	---	153.49	153.07
31	150.43	149.96	---	---	150.85	150.48	152.24	151.74	---	---	153.05	152.48
MONTH	151.23	149.96	151.14	149.62	151.43	150.39	152.53	150.27	152.87	151.00	153.62	152.04

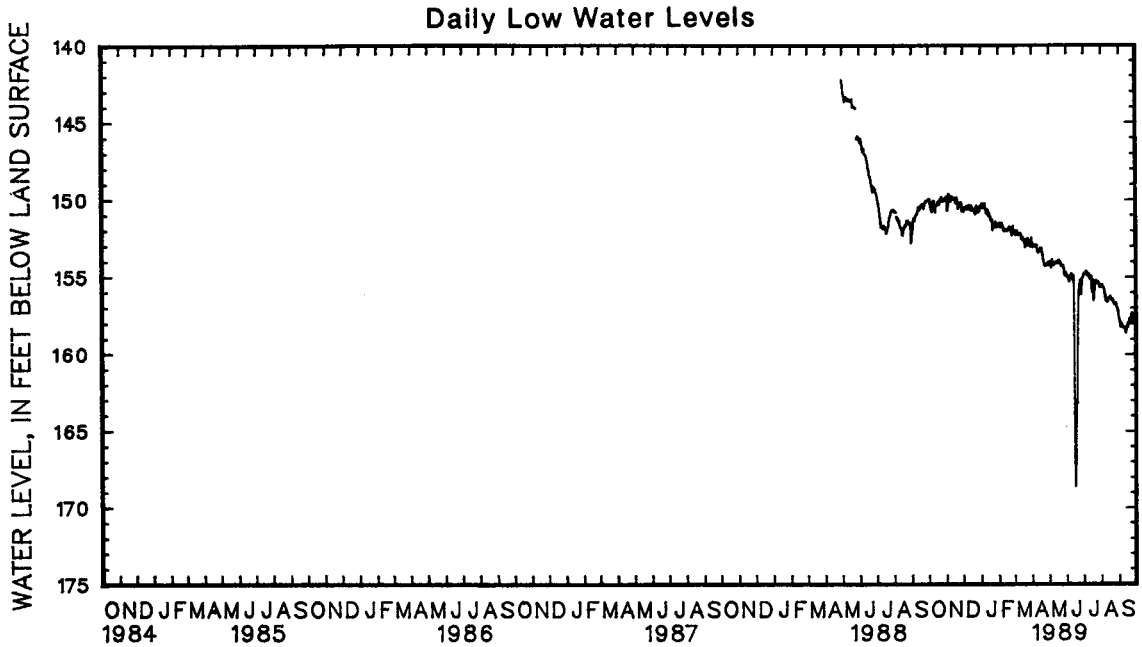
GROUND-WATER LEVELS

MARYLAND--Continued

CHARLES COUNTY--Continued

CH Bc 24--Continued

DAY	APRIL MAX	APRIL MIN	MAY MAX	MAY MIN	JUNE MAX	JUNE MIN	JULY MAX	JULY MIN	AUGUST MAX	AUGUST MIN	SEPTEMBER MAX	SEPTEMBER MIN
1	153.63	153.02	154.69	154.17	155.50	155.03	155.29	154.76	156.17	155.64	158.16	157.78
2	153.62	153.10	154.58	154.03	155.49	154.97	155.29	154.79	155.98	155.50	158.38	157.94
3	153.38	152.92	154.81	154.24	155.57	155.07	155.32	154.78	---	---	158.64	158.22
4	153.39	152.95	154.91	154.42	155.66	155.12	155.39	154.79	156.15	155.65	158.45	157.99
5	153.51	152.97	154.77	154.17	155.78	155.33	155.12	154.60	156.19	155.73	158.49	158.01
6	153.55	153.05	154.32	153.90	155.64	155.13	155.77	154.66	156.42	155.93	158.57	158.17
7	153.51	152.99	154.59	154.16	155.48	154.95	155.41	154.86	156.72	156.06	158.56	158.24
8	153.47	152.99	154.68	154.27	155.34	154.93	155.29	154.85	156.97	156.48	158.60	158.23
9	153.57	152.97	154.66	154.28	155.25	154.83	155.23	154.86	156.92	156.51	158.58	158.24
10	153.87	153.36	---	---	155.42	154.86	155.34	154.80	156.83	156.55	158.73	158.27
11	153.89	153.48	154.62	154.20	155.63	155.15	155.51	155.03	156.92	156.63	159.04	158.43
12	153.73	153.36	154.40	154.08	155.58	155.27	155.42	155.11	156.80	156.52	159.06	158.62
13	153.68	153.28	154.39	154.07	165.29	154.98	155.35	154.94	156.75	156.34	159.08	158.43
14	153.69	153.37	154.48	154.07	170.11	163.76	158.43	154.94	156.76	156.38	158.83	158.22
15	153.60	153.17	154.46	154.12	171.46	167.03	156.90	155.92	156.76	156.35	158.74	158.24
16	153.73	153.35	154.53	154.02	172.75	168.63	156.15	155.20	156.73	156.24	158.71	157.98
17	153.61	153.19	154.54	154.15	172.86	167.05	158.96	155.17	156.91	156.37	158.44	157.94
18	153.79	153.39	154.35	153.93	166.71	163.07	160.37	156.51	157.03	156.45	158.52	158.03
19	154.00	153.50	154.43	153.98	167.98	163.14	158.25	156.22	156.99	156.45	158.40	157.71
20	154.24	153.80	154.51	154.12	162.99	159.33	156.37	155.55	156.93	156.43	158.11	157.63
21	154.51	154.08	154.60	154.11	159.31	157.55	155.94	155.35	157.15	156.52	158.17	157.61
22	154.68	154.28	154.78	154.33	157.69	156.00	155.73	155.22	157.23	156.69	158.01	157.39
23	154.71	154.25	154.73	154.25	156.64	155.77	155.82	155.27	157.17	156.77	158.22	157.31
24	154.69	154.31	154.81	154.27	156.08	155.25	155.87	155.39	157.14	156.72	158.42	158.00
25	154.74	154.34	154.83	154.41	160.17	155.17	155.75	155.31	157.09	156.66	158.12	157.74
26	154.63	154.24	154.82	154.32	157.80	156.11	155.81	155.27	157.22	156.71	158.03	157.48
27	154.56	154.16	155.12	154.64	156.04	155.52	155.86	155.43	157.39	156.89	158.01	157.64
28	154.55	154.17	155.33	154.95	155.56	155.14	156.07	155.45	157.41	157.02	157.91	157.44
29	154.53	154.09	155.19	154.78	155.48	155.03	156.08	155.65	157.52	157.09	157.82	157.32
30	154.75	154.26	155.20	154.75	155.34	154.86	156.07	155.59	157.76	157.27	157.91	157.46
31	---	---	155.48	154.81	---	---	156.01	155.52	158.12	157.68	---	---
MONTH	154.75	152.92	---	---	172.86	154.83	160.37	154.60	---	---	159.08	157.31



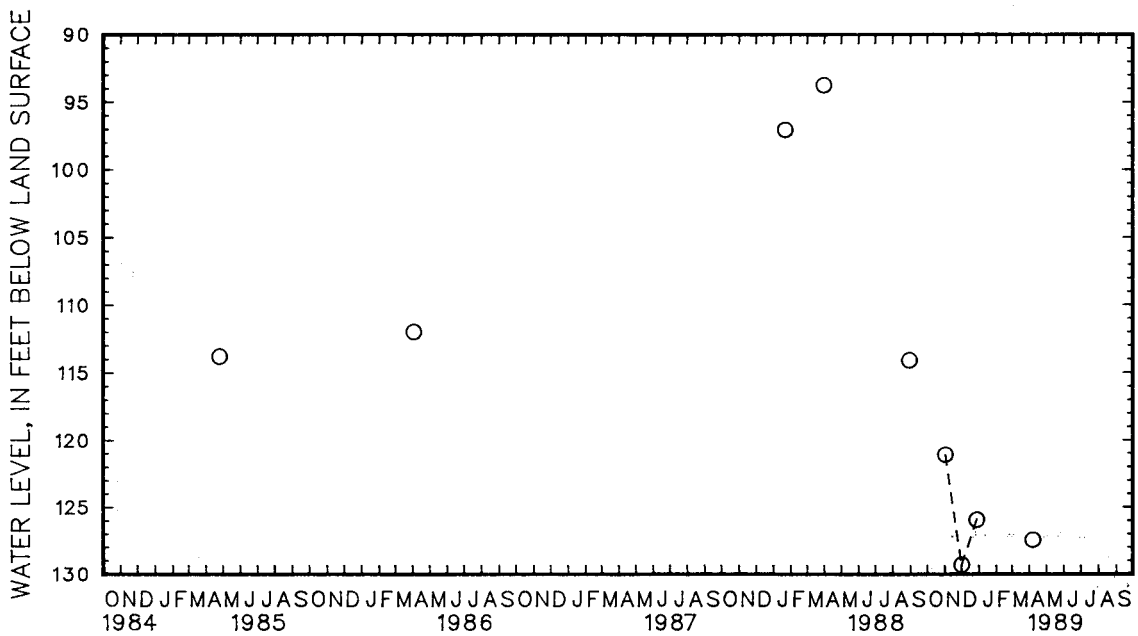
5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bc 71. SITE ID.--383554077085601. PERMIT NUMBER.--CH-73-2415.
LOCATION.--Lat 38°35'54", long 77°08'56", Hydrologic Unit 02070011, Woodlawn Dr. in Indian Head.
Owner: Town of Indian Head.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 440 ft; casing diameter 2 in., to 440 ft; screen diameter 2 in. from 400 to 410 ft.
INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 30 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.4 ft above land-surface datum.
REMARKS.--Indian Head Project observation well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--September 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 81.58 ft below land-surface datum, Sept. 23, 1981; lowest measured, 129.31 ft below land-surface datum, Dec. 1, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 2	121.14	DEC 1	129.31	DEC 28	125.93	APR 7	127.44

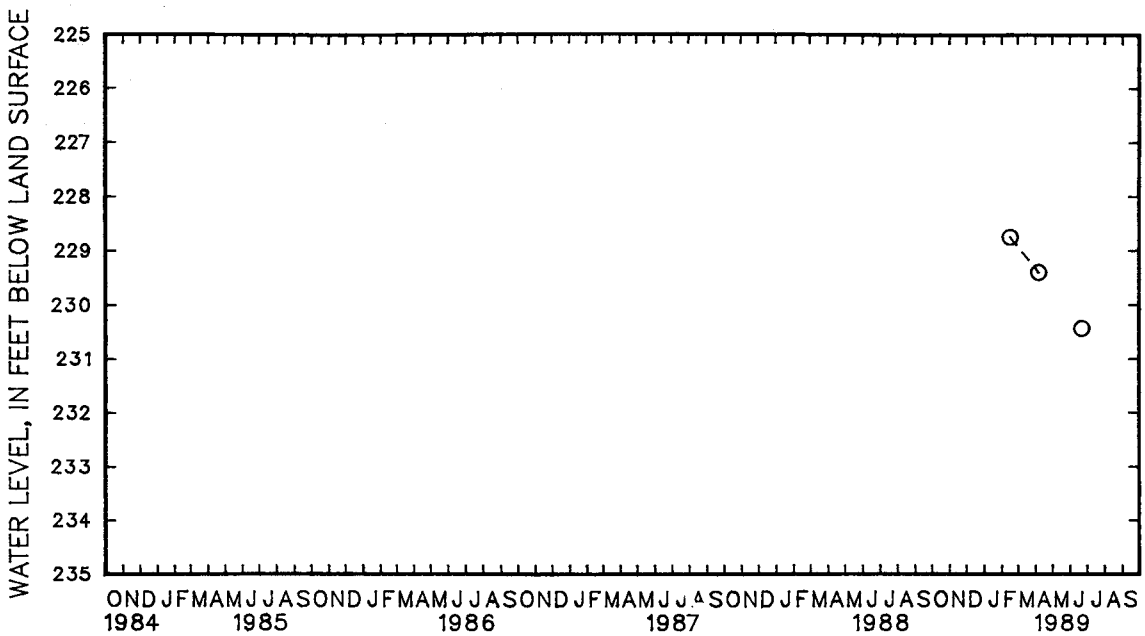


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bc 74. SITE ID.--383709077061001. PERMIT NUMBER.--CH-81-2919.
LOCATION.--Lat 38°37'09", long 77°06'10", Hydrologic Unit 02070011, Chapman's Landing Rd., near Indian Head.
Owner: Montrose Heights Subdivision.
AQUIFER.--Patuxent Formation of Lower Cretaceous age. Aquifier code: 217PTXN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 748 ft; casing diameter 4 in., to 435 ft; casing diameter 2 in. from 435 to 550 ft, 566 to 574 ft, and 589 to 637 ft; screen diameter 2 in. from 550 to 566 ft, 574 to 589 ft, and 637 to 642 ft.
INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 165 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--February 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 228.77 ft below land-surface datum, Feb. 16, 1989; lowest measured, 230.45 ft below land-surface datum, June 22, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 16	228.77	APR 7	229.42	JUN 22	230.45



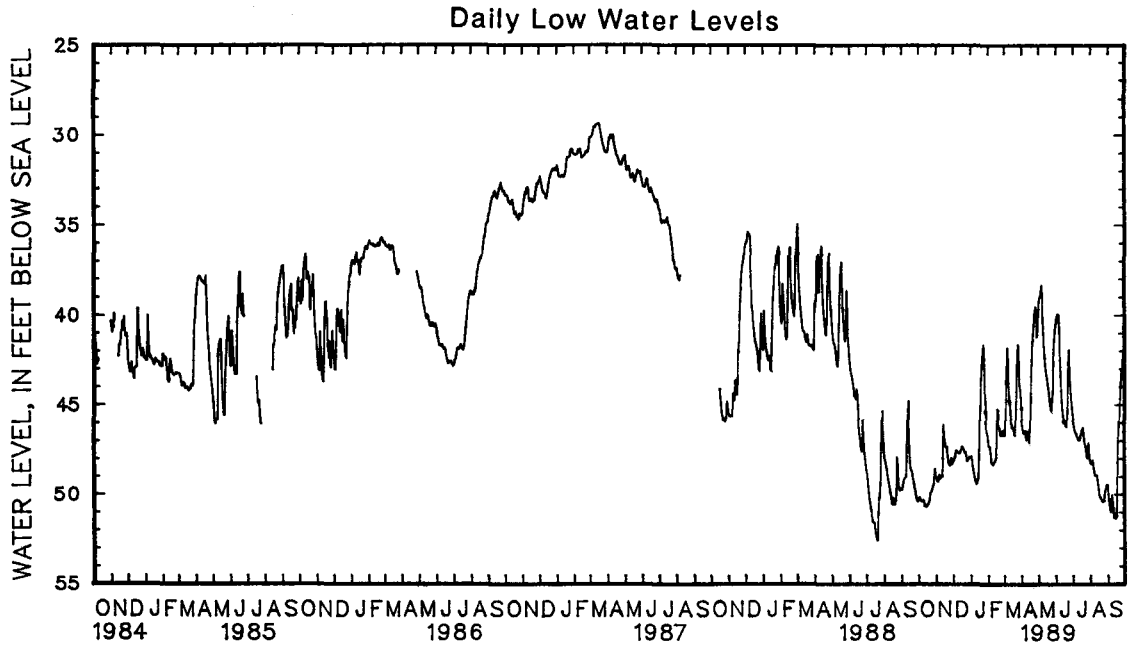
5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Be 43. SITE ID.--383819076555501. PERMIT NUMBER.--CH-71-0066.
LOCATION.--Lat 38°38'19", long 76°55'55", Hydrologic Unit 02070011, at Sun Valley housing developement, 1.5 mi. northwest of Waldorf.
Owner: Lennart Larson.
AQUIFER.--Magothy Formation of Lower Cretaceous age. Aquifer code: 211MGTY.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 459 ft; casing diameter 6 in., to 428 ft; screen diameter 5 in. from 433 to 459 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder from Feb. 10, 1977 to Jan. 27, 1978. Equipped with digital water-level recorder--60-minute recorder interval from Feb. 27, 1978 to current year.
DATUM.--Elevation of land-surface is 216.79 ft above National Geodetic Vertical Datum of 1929.
Measuring Point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Southern Maryland Observation Well Network. Water levels are affected by nearby pumping.
PERIOD OF RECORD.--February 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.05 ft above sea level, Feb. 22, 1977; lowest measured, 52.58 ft below sea level, July 20, 1988.

WATER LEVEL, IN FEET BELOW SEA LEVEL, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	50.25	50.34	48.94	49.02	48.10	48.12	47.90	47.93	27.53	27.76	26.34	26.38
2	50.15	50.25	49.02	49.14	48.07	48.13	47.87	47.92	27.78	28.04	25.55	26.34
3	50.14	50.17	49.14	49.24	47.86	48.06	47.82	47.88	27.75	28.04	23.55	25.45
4	50.17	50.24	49.06	49.24	47.85	47.89	47.85	48.28	27.78	28.01	22.32	23.48
5	50.24	50.29	48.86	49.05	47.57	47.88	30.21	30.42	28.02	28.28	21.31	22.27
6	50.29	50.37	48.90	48.91	47.52	47.57	30.27	30.46	28.29	28.56	20.76	21.29
7	50.38	50.40	48.91	49.07	47.42	47.52	30.29	30.57	28.57	28.80	21.25	21.83
8	50.18	50.39	49.06	49.09	47.43	47.58	30.56	30.75	28.79	28.81	21.88	23.64
9	50.21	50.32	48.97	49.09	47.59	47.65	30.76	30.92	28.78	28.82	23.68	24.33
10	50.28	50.32	48.68	48.96	47.59	47.66	30.93	30.96	28.66	28.78	24.36	24.82
11	50.29	50.47	48.73	48.96	47.59	47.68	30.97	31.02	28.51	28.66	24.84	25.03
12	50.47	50.63	48.15	48.97	47.69	47.70	30.71	31.02	28.46	28.51	25.03	25.55
13	50.63	50.66	46.15	48.04	47.61	47.69	30.69	30.74	28.35	28.50	25.57	25.85
14	50.66	50.68	45.22	46.09	47.51	47.64	30.38	30.73	28.22	28.33	25.86	26.05
15	50.63	50.68	45.47	46.47	47.42	47.50	29.34	30.36	27.41	28.21	26.05	26.21
16	50.56	50.63	46.50	46.90	47.34	47.43	27.38	29.24	25.54	27.33	26.22	26.29
17	50.54	50.56	46.91	47.11	47.24	47.32	26.06	27.29	24.52	25.46	26.18	26.27
18	50.45	50.54	47.12	47.34	47.29	47.33	24.98	26.00	24.76	25.65	26.19	26.35
19	50.40	50.47	47.34	47.38	47.32	47.40	24.25	24.93	25.68	26.18	26.37	26.64
20	50.29	50.40	47.22	47.33	47.40	47.50	23.73	24.21	26.18	26.30	26.14	26.68
21	49.93	50.29	47.34	47.72	47.50	47.57	23.32	23.70	26.17	26.30	24.37	26.03
22	49.86	49.93	47.73	48.05	47.57	47.67	22.84	23.30	26.27	26.46	23.18	24.31
23	49.83	49.89	48.06	48.22	47.59	47.67	22.57	22.83	26.47	26.59	22.26	23.14
24	49.72	49.83	48.22	48.33	47.56	47.64	22.52	23.06	26.51	26.58	21.64	22.23
25	49.57	49.72	48.33	48.35	47.63	47.94	23.17	24.90	26.28	26.50	21.26	21.63
26	49.46	49.57	48.34	48.35	47.95	48.12	24.94	25.59	26.11	26.27	21.09	21.74
27	49.40	49.46	47.71	48.35	48.02	48.13	25.63	26.38	26.13	26.28	21.84	23.18
28	48.66	49.40	47.58	47.94	47.86	48.02	26.42	26.98	26.29	26.38	23.22	23.95
29	47.51	48.65	47.97	48.28	47.91	47.96	27.00	27.40	---	---	23.95	24.14
30	47.78	48.57	48.11	48.29	47.85	47.90	27.40	27.45	---	---	24.02	24.57
31	48.57	48.94	---	---	47.85	47.93	27.46	27.53	---	---	24.59	25.21
MONTH	47.51	50.68	45.22	49.24	47.24	48.13	22.52	48.28	24.52	28.82	20.76	26.68

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	25.25	25.88	19.22	19.72	20.21	20.49	25.56	25.82	28.05	28.20	29.38	29.56
2	25.89	26.16	19.03	19.20	20.02	20.21	25.83	25.99	28.21	28.28	29.57	30.03
3	26.16	26.31	18.95	19.03	19.95	20.02	26.00	26.22	28.25	28.29	30.05	30.33
4	26.32	26.48	18.87	18.95	19.90	19.95	26.23	26.43	28.10	28.25	30.35	30.66
5	26.48	26.58	18.52	18.86	19.95	19.99	26.44	26.51	28.07	28.10	30.66	30.85
6	26.45	26.56	18.34	18.47	19.94	19.98	26.52	26.58	28.10	28.26	30.70	30.99
7	26.32	26.45	18.08	18.33	19.95	20.84	26.58	26.61	28.27	28.53	29.17	30.62
8	26.32	26.43	17.98	18.82	20.92	22.50	26.61	26.72	28.55	28.73	29.33	30.06
9	26.43	26.72	18.91	20.46	22.55	23.40	26.72	26.79	28.74	28.90	30.08	30.40
10	26.74	26.93	20.50	21.02	23.45	24.25	26.79	26.89	28.90	28.95	30.41	30.66
11	---	---	21.06	21.79	24.28	24.86	26.89	26.92	28.95	28.96	30.67	31.01
12	26.38	26.48	21.82	22.37	24.88	25.29	26.92	26.97	28.91	28.96	31.03	31.25
13	26.48	26.71	22.39	22.81	25.31	25.64	26.83	26.97	28.90	28.96	31.25	31.32
14	26.72	27.01	22.82	23.12	25.66	25.95	26.74	26.83	28.98	29.23	31.21	31.32
15	26.38	27.08	23.12	23.34	25.93	26.02	26.66	26.74	29.24	29.50	31.01	31.21
16	24.73	26.30	23.34	23.51	25.83	25.90	26.43	26.65	29.51	29.74	30.49	31.00
17	23.47	24.67	23.52	23.79	25.90	26.03	26.37	26.43	29.76	30.02	28.37	30.40
18	22.59	23.43	23.80	24.02	26.03	26.08	26.29	26.37	30.04	30.15	27.12	28.29
19	21.91	22.55	24.02	24.30	26.08	26.19	26.28	26.31	30.17	30.18	26.24	27.08
20	21.41	21.89	24.32	24.61	25.53	26.23	26.31	26.54	30.18	30.24	25.42	26.21
21	20.93	21.40	24.62	24.96	23.86	25.45	26.55	26.85	30.25	30.36	24.70	25.40
22	20.40	20.91	24.99	25.26	22.72	23.81	26.86	27.09	30.37	30.41	23.97	24.66
23	20.02	20.38	25.17	25.34	21.96	22.69	27.10	27.29	30.31	30.41	23.59	23.94
24	19.76	20.01	23.90	25.11	21.44	21.93	27.30	27.49	30.31	30.35	23.09	23.56
25	19.55	19.76	24.06	24.66	21.51	22.93	27.50	27.70	30.14	30.34	22.87	23.11
26	19.42	19.54	22.75	24.30	22.96	23.90	27.71	27.93	29.90	30.13	22.54	23.04
27	19.29	19.72	21.93	22.69	23.92	24.40	27.45	27.98	29.72	29.89	22.32	22.52
28	19.78	21.20	21.50	21.91	24.42	24.84	25.98	27.35	29.61	29.72	21.82	22.30
29	20.19	21.08	21.02	21.48	24.86	25.22	26.12	27.15	29.50	29.61	21.53	21.81
30	19.75	20.15	20.69	21.00	25.23	25.55	27.18	27.74	29.39	29.50	21.26	21.52
31	---	---	20.50	20.67	---	---	27.75	28.03	29.39	29.45	---	---
MONTH	---	---	17.98	25.34	19.90	26.23	25.56	28.03	28.05	30.41	21.26	31.32



5 YEAR HYDROGRAPH

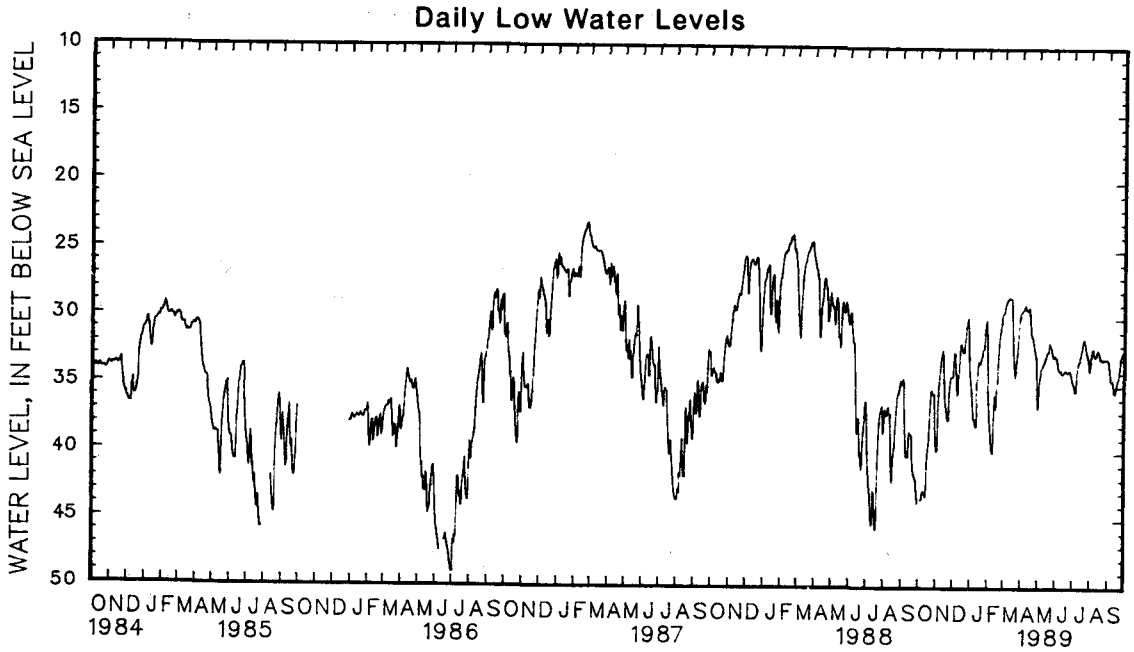
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bf 101. SITE ID.--383853076532601. PERMIT NUMBER.--CH-01-1882.
LOCATION.--Lat 38°38′53″, long 76°53′26″, Hydrologic Unit 02070011, at Martha Washington Motel, 1.7 mi. northwest of Waldorf.
Owner: Martha Washington Motel.
AQUIFER.--Magothy Formation of Lower Cretaceous age. Aquifer code: 211MGTY.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 465 ft; casing diameter 6 in., to 423 ft, and from 438 to 449 ft; screen diameter 6 in. from 423 to 438 ft, and 449 to 465 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder from Nov. 20, 1976 to Feb. 6, 1978. Equipped with digital water-level recorder--60-minute recorder interval from Feb. 26, 1978 to current year.
DATUM.--Elevation of land surface is 216.45 ft above National Geodetic Vertical Datum of 1929.
Measuring Point: Top of casing, 3.0 ft above land-surface datum.
REMARKS.--Southern Maryland Observation Well Network. Water levels are affected by nearby pumping.
PERIOD OF RECORD.--November 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.60 ft above sea level, Jan. 16, 1977; lowest measured, 49.05 ft below sea level, July 1, 1986.

WATER LEVEL, IN FEET BELOW SEA LEVEL, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	43.08	---	38.34	39.32	34.22	34.27	34.02	34.65	31.30	33.64	29.43	29.52
2	41.44	---	39.32	39.69	33.56	34.19	34.67	35.09	33.72	35.38	29.18	29.43
3	40.83	---	38.99	39.81	32.81	33.54	35.11	35.40	35.42	36.23	28.93	29.16
4	41.35	---	36.98	38.99	32.50	32.79	35.41	36.13	36.27	37.18	28.84	28.91
5	42.70	---	35.70	36.98	32.11	32.46	36.16	37.01	37.20	37.87	28.69	28.83
6	43.40	43.47	34.93	35.65	31.91	32.57	37.04	37.35	37.90	38.53	28.51	28.69
7	43.10	43.39	34.43	34.90	32.65	34.01	37.36	37.42	38.55	39.15	28.52	28.53
8	42.85	43.09	33.95	34.40	33.42	34.00	37.35	37.49	39.18	39.57	28.46	28.53
9	42.80	42.85	33.51	33.94	34.05	35.20	37.50	37.76	39.60	39.89	28.36	28.46
10	42.66	42.80	33.07	33.48	35.23	35.62	37.78	37.91	39.30	39.96	28.36	28.38
11	42.67	42.89	32.93	33.07	33.92	35.28	37.26	38.00	37.41	39.20	28.21	28.38
12	42.89	43.00	32.60	32.93	32.88	33.88	35.17	37.17	36.43	37.35	28.18	28.35
13	42.99	43.06	32.33	32.58	32.16	32.85	34.16	35.12	35.64	36.40	28.36	28.39
14	42.61	43.23	32.19	32.32	31.71	32.15	33.18	34.11	35.25	35.67	28.39	28.40
15	41.11	42.58	32.10	32.80	31.69	31.84	33.02	33.15	35.75	36.65	28.38	28.47
16	40.35	41.09	32.90	34.54	31.85	31.99	33.05	33.17	35.51	36.39	28.47	29.39
17	39.85	40.34	34.59	35.59	31.99	32.12	33.17	33.31	34.66	35.47	29.49	31.14
18	39.41	39.84	35.63	36.33	32.12	32.28	33.20	33.31	33.44	34.61	31.19	32.36
19	39.00	39.41	36.34	36.66	32.28	32.40	33.03	33.19	32.58	33.40	32.40	33.28
20	38.09	38.99	36.65	36.83	32.40	32.44	32.77	33.01	31.88	32.55	33.32	33.77
21	36.85	38.08	36.87	37.29	32.11	32.44	32.67	32.80	31.30	31.83	33.79	34.31
22	36.15	36.84	37.30	37.51	31.64	32.08	32.35	32.65	30.96	31.29	33.26	33.96
23	35.49	36.14	36.88	37.54	31.11	31.62	32.19	32.33	30.72	30.95	32.92	33.25
24	35.11	35.48	35.60	36.80	30.61	31.10	32.18	32.20	30.38	30.71	32.61	32.91
25	35.11	35.26	35.04	35.57	30.44	30.61	31.93	32.20	29.93	30.36	31.93	32.59
26	35.26	35.47	34.70	35.02	30.27	30.43	31.11	31.91	29.60	29.92	31.32	31.90
27	35.47	35.54	34.33	34.68	29.91	30.26	30.72	31.09	29.57	29.60	30.74	31.30
28	35.49	35.54	34.19	34.31	29.72	29.90	30.37	30.71	29.52	29.57	30.26	30.72
29	35.52	35.56	34.25	34.32	29.90	30.90	30.11	30.36	---	---	29.92	30.24
30	35.44	36.30	34.26	34.32	30.99	32.77	29.89	30.10	---	---	29.52	29.89
31	36.31	38.34	---	---	32.83	33.97	29.91	31.18	---	---	29.34	29.50
MONTH	35.11	---	32.10	39.81	29.72	35.62	29.89	38.00	29.52	39.96	28.18	34.31

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	29.40	29.47	35.25	36.31	32.73	32.78	34.64	34.76	32.87	33.34	32.94	33.06
2	29.38	29.47	34.67	35.20	32.77	32.85	34.77	34.90	32.54	32.85	33.07	33.45
3	29.27	29.36	34.33	34.65	32.86	33.02	34.91	35.07	32.31	32.53	33.47	33.80
4	29.26	29.30	34.13	34.32	33.03	33.38	35.08	35.32	32.16	32.30	33.82	34.13
5	29.23	29.27	33.74	34.12	33.39	33.58	35.32	35.38	32.16	32.17	34.14	34.38
6	29.07	29.21	33.51	33.70	33.58	33.76	34.73	35.34	32.17	32.19	34.40	34.55
7	28.86	29.07	33.49	33.51	33.70	33.81	34.08	34.70	32.19	32.63	34.55	34.57
8	28.86	28.93	33.47	33.49	33.81	33.84	33.71	34.05	32.63	32.72	34.53	34.55
9	28.93	29.12	33.36	33.48	33.64	33.80	33.42	33.70	32.72	32.73	34.53	34.54
10	29.13	29.25	33.23	33.34	33.63	33.79	33.26	33.42	32.64	32.72	34.53	34.67
11	29.25	29.29	33.11	33.22	33.80	33.98	33.10	33.24	32.43	32.63	34.68	35.04
12	29.29	29.33	32.97	33.10	33.98	34.05	33.09	33.10	32.28	32.43	35.05	35.37
13	29.20	29.30	32.87	32.96	33.98	34.03	32.78	33.08	32.21	32.27	35.35	35.45
14	29.14	29.21	32.72	32.86	33.91	33.99	32.60	32.78	32.21	32.28	35.34	35.46
15	28.99	29.14	32.54	32.71	33.83	33.91	32.36	32.58	32.28	32.42	35.12	35.32
16	28.99	29.55	32.40	32.54	33.80	33.86	32.10	32.35	32.42	32.53	34.81	35.10
17	29.58	30.17	32.40	32.43	33.75	33.81	31.85	32.09	32.53	32.76	34.61	34.81
18	30.18	30.64	32.38	32.44	33.76	33.80	31.62	31.84	32.78	32.94	34.48	34.61
19	30.65	31.06	31.80	32.37	33.80	33.84	31.43	31.61	32.94	32.95	34.09	34.48
20	31.07	31.23	31.63	31.78	33.84	33.90	31.39	31.43	32.93	32.94	33.73	34.09
21	31.24	31.34	31.63	31.71	33.90	33.94	31.43	31.52	32.94	32.99	33.34	33.73
22	31.35	31.52	31.73	31.93	33.89	33.92	31.53	31.76	32.98	33.02	32.90	33.32
23	31.54	31.81	31.94	32.04	33.83	33.89	31.76	32.00	32.92	32.97	32.74	32.89
24	31.83	32.09	32.01	32.16	33.81	33.83	32.01	32.27	32.92	32.94	32.71	32.74
25	32.11	32.31	32.17	32.42	33.82	33.83	32.29	32.50	32.94	32.98	32.56	32.69
26	32.32	32.59	32.42	32.60	33.82	33.87	32.51	32.65	32.90	32.94	32.41	32.54
27	32.60	32.77	32.60	32.74	33.87	34.01	32.65	32.87	32.89	32.92	32.41	32.43
28	32.78	33.58	32.74	32.82	34.03	34.26	32.64	32.85	32.90	32.93	32.37	32.43
29	33.69	35.81	32.70	32.82	34.26	34.48	32.64	33.22	32.90	32.92	---	---
30	35.88	36.69	32.68	32.69	34.48	34.64	33.30	33.80	32.91	33.00	---	---
31	---	---	32.68	32.74	---	---	33.36	33.83	32.94	33.01	---	---
MONTH	28.86	36.69	31.63	36.31	32.73	34.64	31.39	35.38	32.16	33.34	---	---

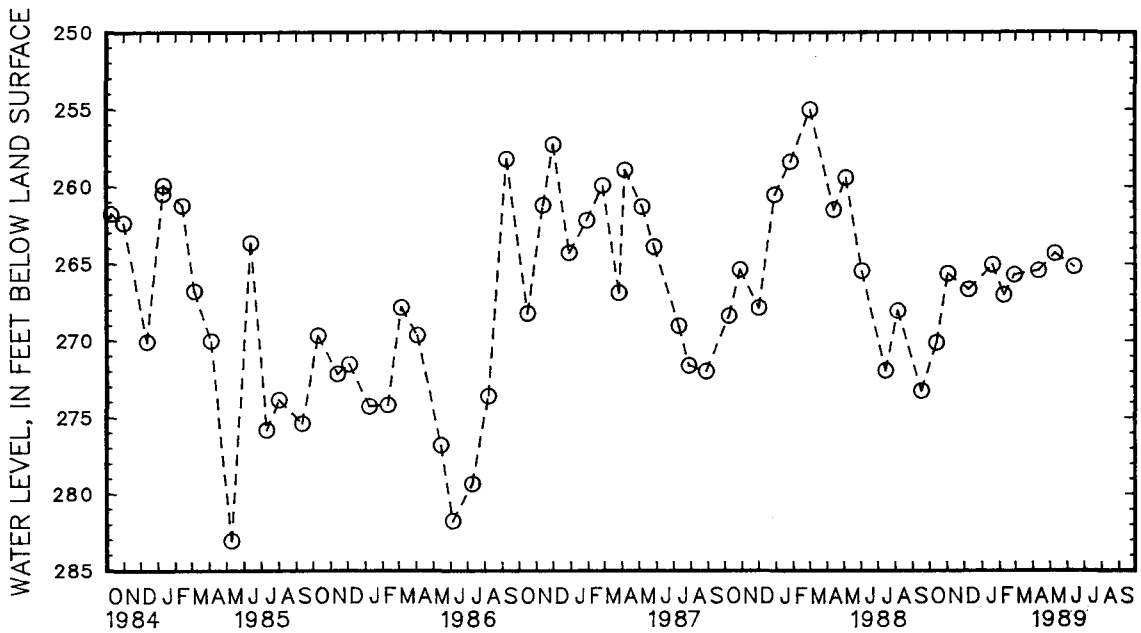


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bf 128. SITE ID.--383722076544001. PERMIT NUMBER.--CH-03-1306.
LOCATION.--Lat 38°37'22", long 76°54'40", Hydrologic Unit 02070011, 0.3 mi south of MD Rts. 5 & 925 near Washington Ave., Waldorf.
Owner: Southern Maryland Novelty Co.
AQUIFER.--Magothy Formation of Upper Cretaceous age. Aquifer code: 211MGTY.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 430 ft; casing diameter 4 in., to 420 ft; screen diameter 2.5 in. from 420 to 430 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 210 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.3 ft above land-surface datum.
REMARKS.--Water levels affected by nearby pumping. Surface casing damaged in July 1989, casing was replaced with a locking cap. Well maybe partially plugged.
PERIOD OF RECORD.--September 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 170.31 ft below land-surface datum, Mar. 6, 1963; lowest measured, 283.05 ft below land-surface datum, May 10, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	270.18	DEC 8	266.69	FEB 8	267.05	APR 11	265.45	JUN 13	265.18
NOV 2	265.67	JAN 19	265.09	FEB 27	265.74	MAY 10	264.33		

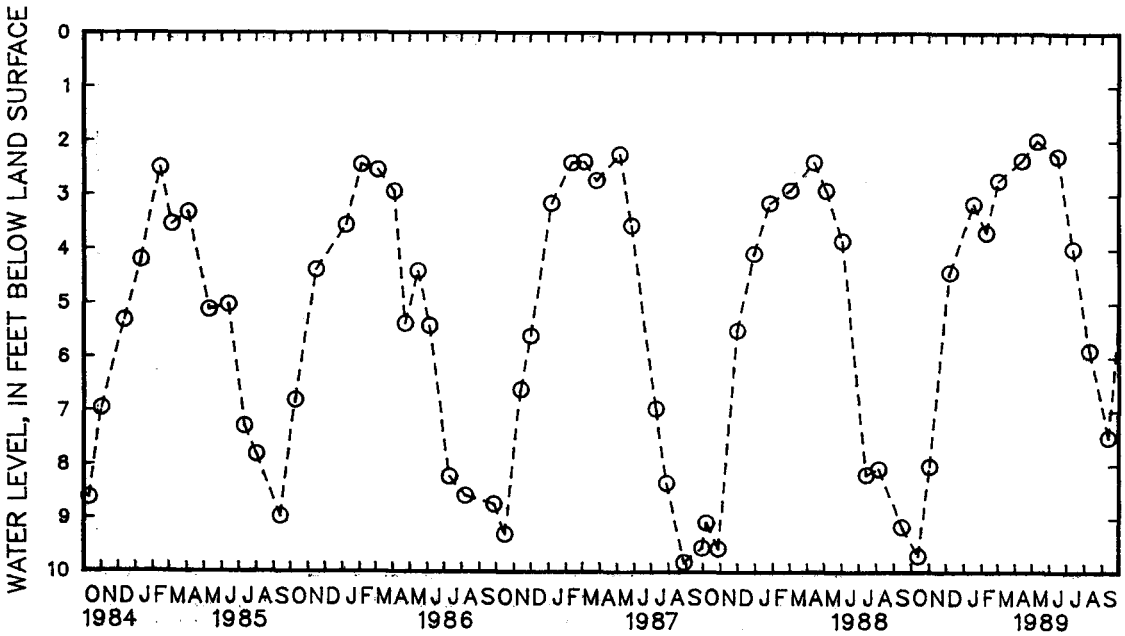


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bg 12. SITE ID.--383746076482901. PERMIT NUMBER.--CH-81-0600.
LOCATION.--Lat 38°37'46", long 76°48'29", Hydrologic Unit 02070011, Cedarville State Forest, near Forest Rd.
Owner: U.S. Geological Survey.
AQUIFER.--Calvert Formation of Miocene age. Aquifer code: 122CLVR.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 24.5 ft; casing diameter 4 in., to 13.5 ft; perforated casing diameter 2 in. from 13.5 to 18.5 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 150 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing, 2.3 ft above land-surface datum.
PERIOD OF RECORD.--April 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.25 ft below land-surface datum, May 6, 1987; lowest measured, 9.82 ft below land-surface datum, Aug. 28, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	9.70	DEC 7	4.42	FEB 9	3.69	APR 13	2.35	JUN 15	2.27	AUG 10	5.88
NOV 2	8.03	JAN 18	3.16	MAR 2	2.73	MAY 10	1.99	JUL 12	3.99	SEP 12	7.49

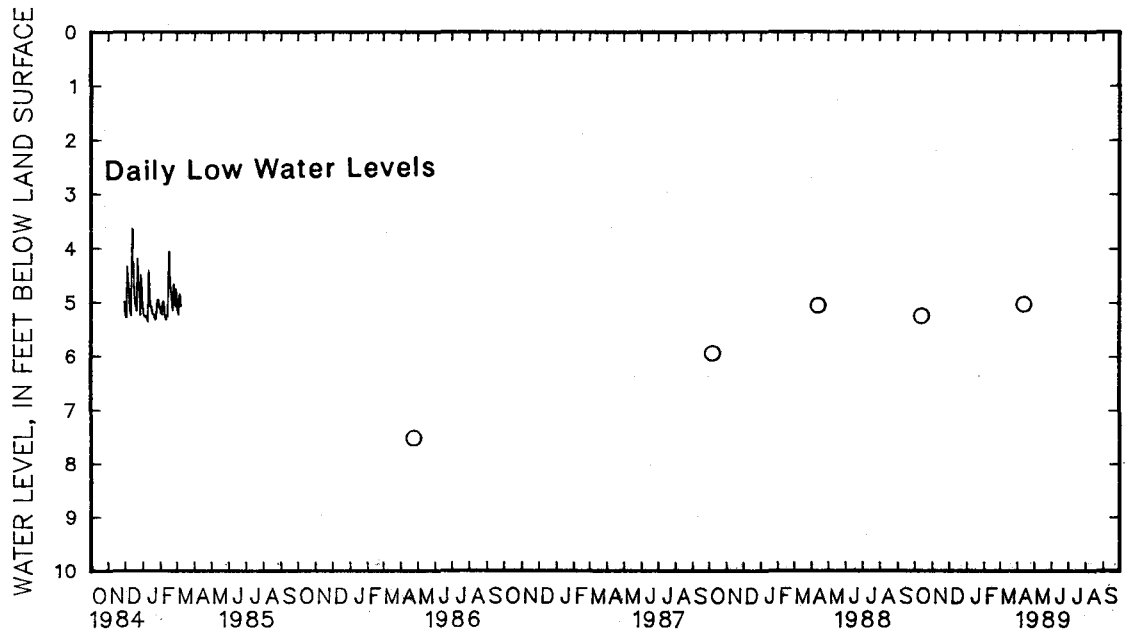


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Bg 13. SITE ID.--383652076495701. PERMIT NUMBER.--CH-81-0601.
LOCATION.--Lat 38°36'52", long 76°49'57", Hydrologic Unit 02070011, southside of MD Rt. 382, 4.1 mi east of Waldorf at Zekiah Swamp.
Owner: U.S. Geological Survey.
AQUIFER.--Calvert Formation of Miocene age. Aquifer code: 122CLVR.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 22.6 ft; casing diameter 4 in., to 13.5 ft; casing diameter 2 in. from 17.6 to 22.6 ft; screen diameter 2 in. from 12.6 to 17.6.
INSTRUMENTATION.--Measured twice yearly with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 126 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 2.17 ft above land-surface datum.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.64 ft below land-surface datum, Dec. 13, 1984; lowest measured, 7.53 ft below land-surface datum, Apr. 23, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	5.24	APR 13	5.02



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 7. SITE ID.--383422077114601. PERMIT NUMBER.--CH-01-1908.
LOCATION.--Lat 38°34′22″, long 77°11′46″, Hydrologic Unit 02070011, at Caffee and Greenslade Rds., U.S. Naval Ordnance Station, about 2.5 mi southwest of Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 400 ft; casing diameter 8 in., to 400 ft; screen diameter 6 in. from 154.1 to 167 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder Sept. 21, 1953 to July 8, 1965 and digital water-level recorder--60-minute recorder interval, Apr. 28, 1988 to current year.
DATUM.--Elevation of land surface is 36 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 1.1 ft above land-surface datum.
REMARKS.--Indian Head Project observation well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--March and April 1952, August 1953 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 57.35 ft below land-surface datum, Apr. 18, 1952; lowest measured, 89.33 ft below land-surface datum, Aug. 12 and 14, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	86.87	86.71	86.56	86.43	85.42	85.32	86.57	86.48	85.92	85.64	86.18	86.05
2	86.69	86.36	86.60	86.39	85.29	85.01	86.50	86.35	85.73	85.62	86.24	86.13
3	86.32	86.10	86.82	86.60	85.21	84.96	86.36	86.19	85.74	85.61	86.28	86.17
4	86.08	85.91	86.88	86.79	85.46	85.24	86.81	86.28	85.94	85.75	86.23	86.07
5	86.00	85.87	86.81	86.48	85.48	85.35	86.82	86.57	85.99	85.91	86.12	85.92
6	86.23	85.97	86.58	86.49	85.49	85.37	86.57	86.35	86.01	85.93	85.99	85.80
7	86.39	86.21	86.67	86.57	85.63	85.41	86.49	86.37	86.12	85.98	85.95	85.86
8	86.54	86.41	86.63	86.50	85.71	85.61	86.42	86.25	86.21	86.14	85.93	85.78
9	86.45	86.15	86.76	86.60	85.67	85.56	86.49	86.30	86.61	86.22	85.86	85.73
10	86.18	86.10	86.79	86.51	85.74	85.56	86.66	86.51	86.72	86.59	85.81	85.70
11	86.46	86.14	86.73	86.52	85.94	85.77	86.81	86.63	86.70	86.56	85.75	85.54
12	86.75	86.50	86.81	86.59	85.94	85.76	86.81	86.64	86.73	86.55	85.64	85.51
13	87.00	86.77	86.58	86.15	85.86	85.73	86.92	86.64	86.75	86.58	85.71	85.56
14	87.05	86.88	86.17	86.06	85.85	85.70	87.01	86.92	86.57	86.43	85.57	85.42
15	86.93	86.85	86.14	86.04	86.06	85.76	86.90	86.77	86.60	86.49	85.42	85.33
16	86.97	86.83	86.03	85.74	86.10	85.94	86.92	86.78	86.73	86.55	85.60	85.40
17	86.80	86.48	85.78	85.61	86.16	85.99	86.91	86.76	86.76	86.63	85.59	85.46
18	86.42	86.26	86.01	85.77	86.13	85.97	86.89	86.78	86.70	86.53	85.52	85.37
19	86.29	86.20	85.98	85.77	86.14	86.00	86.91	86.78	86.57	86.40	85.82	85.52
20	86.33	86.21	85.74	85.50	86.29	86.10	86.89	86.74	86.44	86.33	85.82	85.37
21	86.27	86.00	85.86	85.58	86.54	86.26	87.30	86.93	86.38	86.11	85.39	85.21
22	86.27	86.02	85.93	85.82	86.53	86.32	87.28	87.08	86.21	86.11	85.50	85.41
23	86.34	86.20	85.91	85.78	86.38	86.15	87.15	87.06	86.32	86.21	85.50	85.27
24	86.28	86.18	85.86	85.78	86.34	86.15	87.13	86.95	86.54	86.30	85.29	85.08
25	86.38	86.25	85.88	85.61	86.56	86.33	87.01	86.93	86.62	86.33	85.24	85.16
26	86.42	86.30	85.63	85.36	86.61	86.44	86.97	86.73	86.30	85.97	85.24	85.13
27	86.52	86.40	85.40	85.12	---	---	86.76	86.58	86.17	86.01	85.35	85.26
28	86.46	86.39	85.19	85.04	---	---	86.61	86.21	86.22	86.13	85.39	85.30
29	86.67	86.43	85.43	85.20	86.76	86.44	86.18	85.92	---	---	85.47	85.32
30	86.72	86.60	85.41	85.34	86.75	86.57	85.99	85.88	---	---	85.53	85.39
31	86.73	86.59	---	---	86.58	86.49	86.08	85.94	---	---	85.36	85.05
MONTH	87.05	85.87	86.88	85.04	---	---	87.30	85.88	86.76	85.61	86.28	85.05

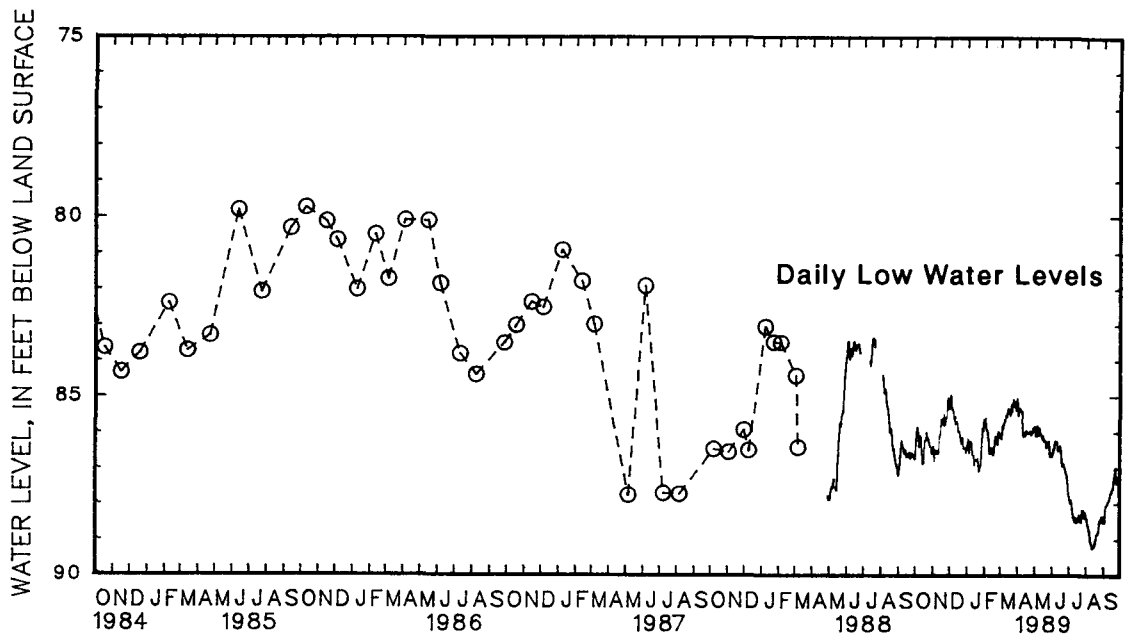
GROUND-WATER LEVELS

MARYLAND--Continued

CHARLES COUNTY--Continued

CH Cb 7--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	85.63	85.20	86.13	85.94	86.78	86.67	87.91	87.77	88.51	88.39	88.55	88.47
2	85.64	85.53	86.02	85.83	86.78	86.60	87.97	87.86	88.51	88.39	88.59	88.48
3	85.53	85.33	86.20	85.97	86.67	86.57	88.03	87.92	88.60	88.44	88.62	88.51
4	85.41	85.32	86.22	86.10	86.61	86.46	88.10	87.98	88.70	88.59	88.51	88.20
5	85.44	85.33	86.22	85.92	86.63	86.47	88.01	87.90	88.78	88.60	88.19	88.06
6	85.58	85.40	85.94	85.82	86.52	86.28	88.17	87.97	88.87	88.74	88.12	88.04
7	---	---	86.06	85.88	86.37	86.24	88.29	88.13	88.92	88.76	88.10	88.03
8	85.74	85.40	86.18	86.08	86.38	86.26	88.42	88.23	89.16	88.92	88.09	88.01
9	85.88	85.64	86.17	86.03	86.34	86.25	88.44	88.38	89.17	89.06	88.02	87.97
10	86.10	85.89	86.02	85.88	86.51	86.28	88.51	88.35	89.16	89.08	88.00	87.93
11	86.20	86.11	86.12	86.02	86.71	86.49	88.59	88.42	89.29	89.13	88.00	87.91
12	86.20	86.09	86.16	86.04	86.68	86.51	88.57	88.50	89.33	89.23	87.97	87.84
13	86.15	86.07	86.20	86.06	86.52	86.42	88.51	88.39	89.32	89.23	87.94	87.76
14	86.17	86.10	86.27	86.13	86.58	86.46	88.59	88.41	89.33	89.23	87.80	87.68
15	86.10	85.97	86.27	86.18	86.49	86.38	88.65	88.52	89.30	89.19	87.79	87.69
16	86.18	86.04	86.26	86.10	86.51	86.42	88.69	88.42	89.28	89.15	87.81	87.62
17	86.12	85.96	86.33	86.24	86.69	86.50	88.64	88.46	89.23	89.08	87.70	87.58
18	86.10	86.00	86.33	86.20	86.93	86.72	88.68	88.49	89.16	89.00	87.74	87.58
19	86.13	86.01	86.32	86.22	87.04	86.93	88.55	88.39	89.09	88.97	87.72	87.42
20	86.14	86.03	86.37	86.26	86.99	86.87	88.41	88.32	89.02	88.85	87.41	87.26
21	86.10	86.02	86.41	86.27	86.98	86.87	88.56	88.39	88.94	88.85	87.39	87.23
22	86.08	86.01	86.53	86.42	87.03	86.90	88.59	88.50	88.97	88.84	87.32	87.04
23	86.11	85.97	86.48	86.29	87.09	86.96	88.59	88.51	88.90	88.78	87.38	86.98
24	86.10	85.96	86.44	86.28	87.16	87.02	88.56	88.39	88.75	88.69	87.69	87.39
25	86.17	86.07	86.48	86.39	87.23	87.08	88.35	88.24	88.70	88.52	87.63	87.42
26	86.12	86.02	86.39	86.25	87.32	87.15	88.32	88.17	88.57	88.46	87.49	87.28
27	86.11	86.00	86.65	86.38	87.39	87.20	88.32	88.19	88.58	88.49	87.44	87.37
28	86.10	86.00	86.80	86.62	87.56	87.31	88.43	88.22	88.58	88.40	87.41	87.32
29	85.99	85.87	86.79	86.68	87.78	87.51	88.50	88.37	88.46	88.34	87.40	87.35
30	86.14	85.95	86.75	86.58	87.86	87.71	88.51	88.35	88.50	88.34	87.60	87.39
31	---	---	86.75	86.58	---	---	88.39	88.23	88.59	88.51	---	---
MONTH	---	---	86.80	85.82	87.86	86.24	88.69	87.77	89.33	88.34	88.62	86.98

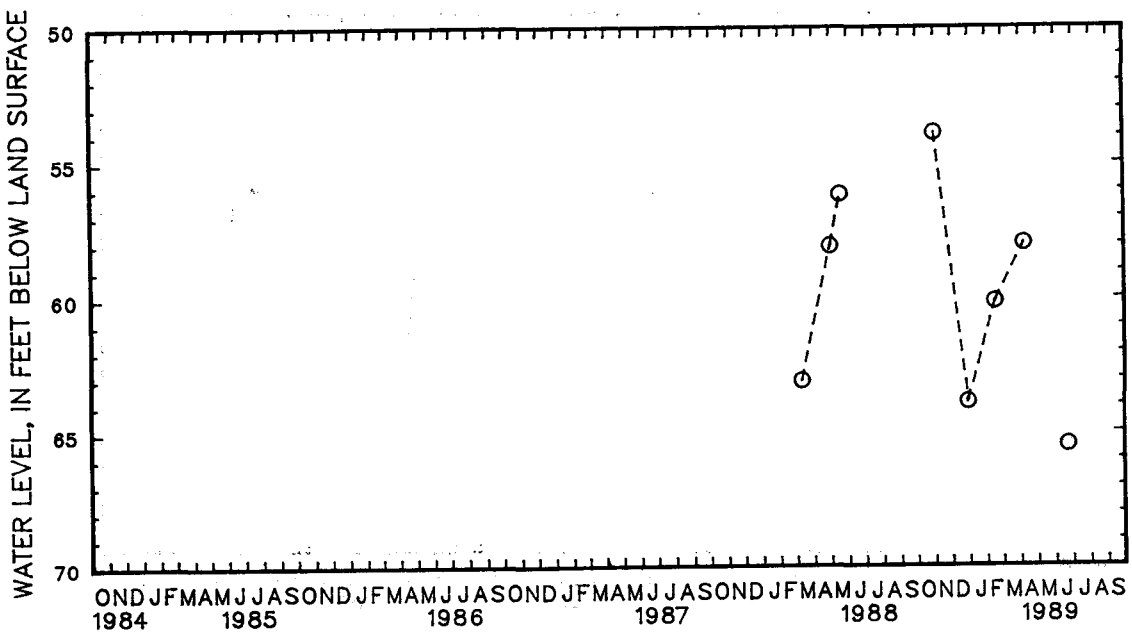


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 11. SITE ID.--383313077125401.
LOCATION.--Lat 38°33'13", long 77°12'54", Hydrologic Unit 02070011, Naval Ordnance Station, Indian Head.
Owner: U.S. Navy.
AQUIFER.--Potomac Group of Lower Cretaceous age. Aquifer code: 217PTMC.
WELL CHARACTERISTICS.--Drilled, production, artesian well, depth 454 ft; casing and screen diameters and intervals unknown.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--March 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 53.90 ft below land-surface datum, Nov. 1, 1988; lowest measured, 65.51 ft below land-surface datum, June 22, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1	53.90	DEC 29	63.90	FEB 15	60.15	APR 7	57.99	JUN 22	65.51

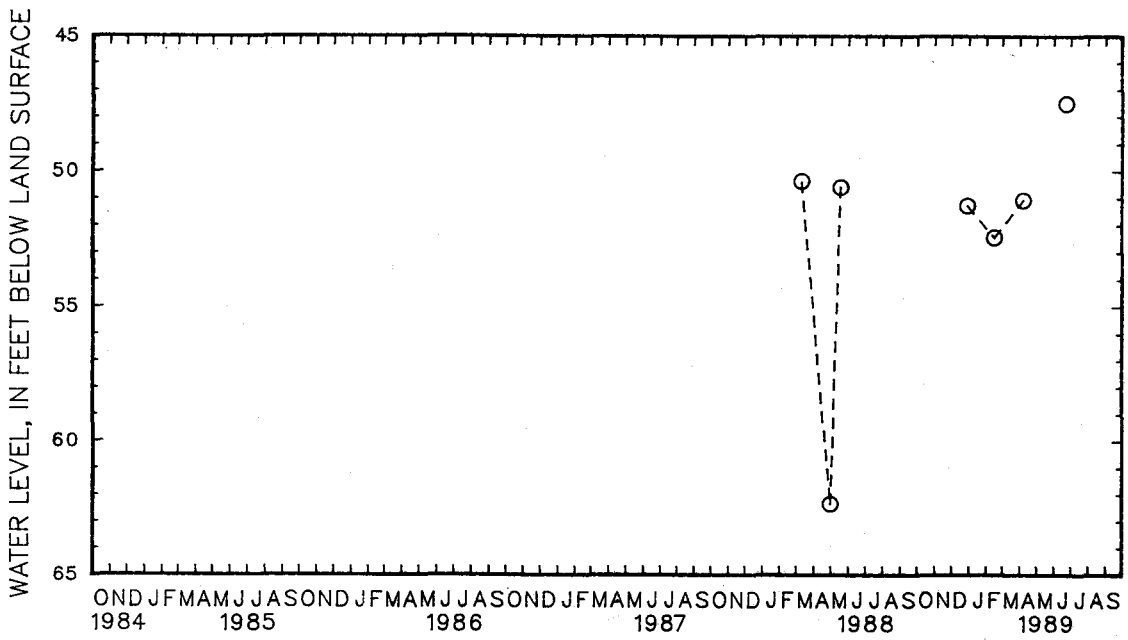


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 28. SITE ID.--383315077131401. PERMIT NUMBER.--CH-04-1102
LOCATION.--Lat 38°33'15", long 77°13'14", Hydrologic Unit 02070011, Naval Ordnance Station, Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, production, artesian well, depth 331 ft; casing diameter 24 in., to 152 ft; casing diameter 10 in., to 190 ft, 200 to 230 ft, and 240 to 280 ft; screen diameter 10 in. from 190 to 200 ft, 230 to 240 ft and 280 to 290 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--March 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.49 ft below land-surface datum, June 22, 1989; lowest measured, 62.35 ft below land-surface datum, Apr. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 29	51.25	FEB 15	52.42	APR 7	51.05	JUN 22	47.49

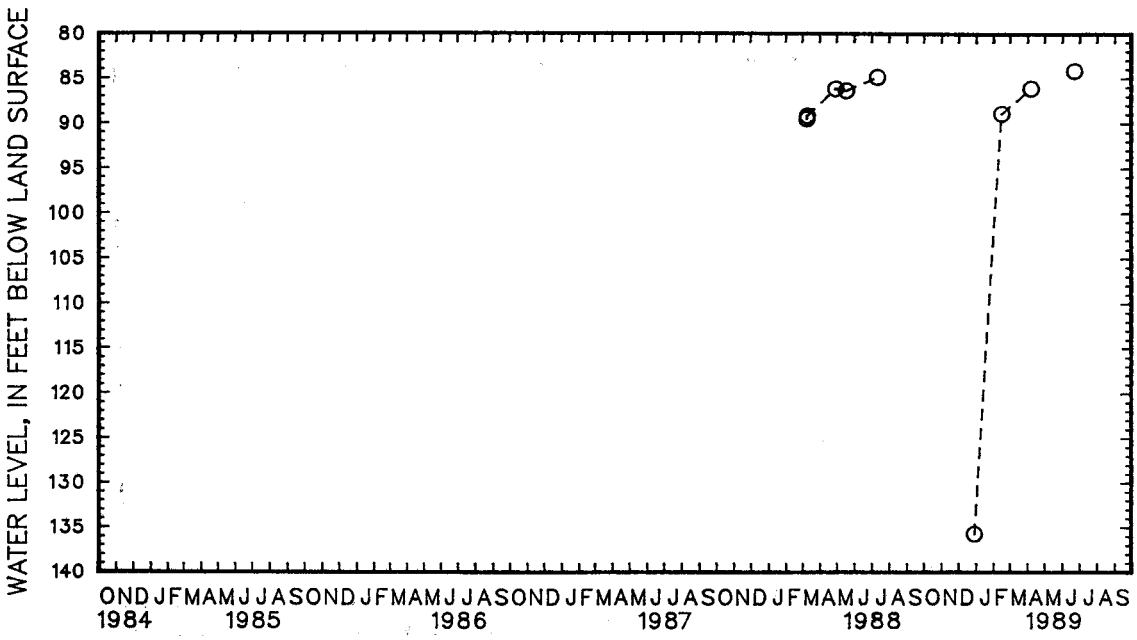


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 35. SITE ID.--383407077120501. PERMIT NUMBER.--CH-81-0572.
LOCATION.--Lat 38°34'07", long 77°12'05", Hydrologic Unit 02070011, Naval Ordnance Station, Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patuxent Formation of Lower Cretaceous age. Aquifer code: 217PTXN.
WELL CHARACTERISTICS.--Drilled, production, artesian well, depth 503 ft; casing diameter 6 in., to 433 ft; casing diameter 4 in. from 461 to 467 ft and 486 to 488 ft; screen diameter 4 in. from 433 to 461 ft and 467 to 486 ft.
INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 3.5 ft above land-surface datum.
REMARKS.--Indian Head Project observation well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--March 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 84.15 ft below land-surface datum, June 22, 1989; lowest measured, 135.72 ft below land-surface datum, Dec. 29, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 29	135.72	FEB 15	88.91	APR 7	86.10	JUN 22	84.15

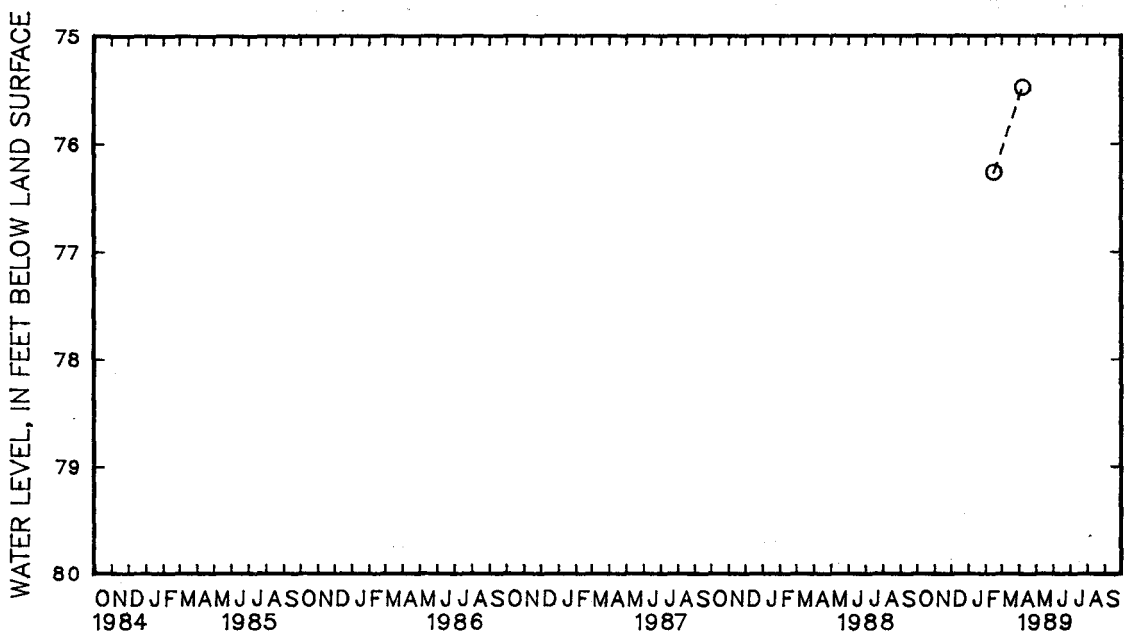


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 38. SITE ID.--383328077114201.
LOCATION.--Lat 38°33'28", long 77°11'42", Hydrologic Unit 02070011, Naval Ordnance Station, Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, domestic, artesian well, depth 250 ft; casing diameter 4 in., to 210 ft; casing diameter 2 in. from 210 to 231 ft; screen diameter 4 in. from 231 to 246 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--February 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 75.48 ft below land-surface datum, Apr. 7, 1989; lowest measured, 76.27 ft below land-surface datum, Feb. 15, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 15	76.27	APR 7	75.48

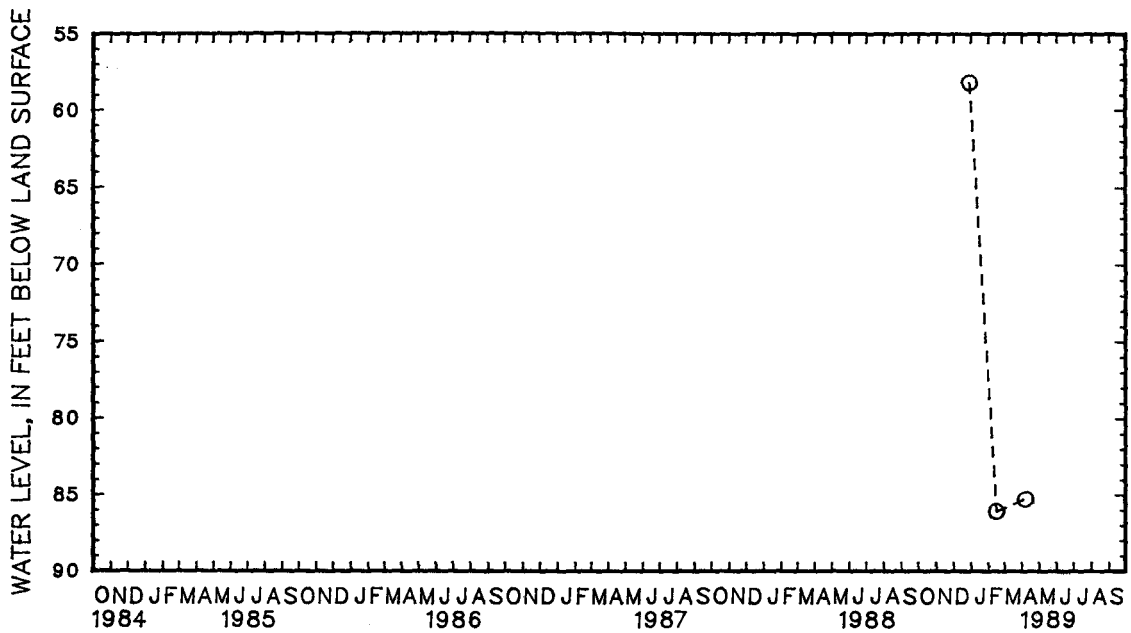


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 39. SITE ID.--383332077111501. PERMIT NUMBER.--CH-73-2804.
LOCATION.--Lat 38°33'32", long 77°11'15", Hydrologic Unit 02070011, Smallwood State Park.
Owner: Smallwood State Park, Sweden Point Marina.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, production, artesian well, depth 426 ft; casing diameter 6 in., to 300 ft; casing diameter 4 in. from 290 to 300 ft and 310 to 373 ft; screen diameter 4 in. from 300 to 310 ft and 373 to 383 ft.
INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing at land-surface datum.
REMARKS.--Indian Head Project observation well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--December 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 58.19 ft below land-surface datum, Dec. 29, 1988; lowest measured, 86.08 ft below land-surface datum, Feb. 15, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 29	58.19	FEB 15	86.08	APR 7	85.28

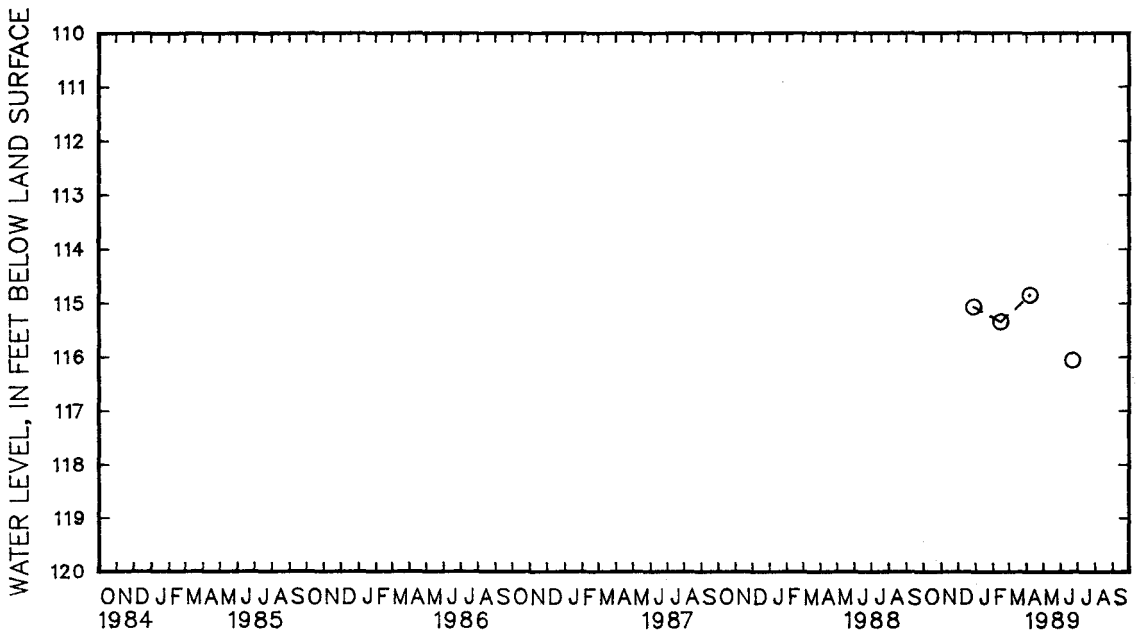


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cb 40. SITE ID.--383308077110301. PERMIT NUMBER.--CH-73-0357.
LOCATION.--Lat 38°33'08", long 77°11'03", Hydrologic Unit 02070011, Smallwood State Park.
Owner: Smallwood State Park.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, production, artesian well, depth 301 ft; casing diameter 6 in., to 227 ft; casing diameter 4 in. from 227 to 287 ft; screen diameter 4 in. from 287 to 301 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 80 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing at land-surface datum.
REMARKS.--Indian Head Project observation well.
PERIOD OF RECORD.--December 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 114.85 ft below land-surface datum, Apr. 7, 1989; lowest measured, 116.07 ft below land-surface datum, June 23, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 29	115.07	FEB 15	115.35	APR 7	114.85	JUN 23	116.07



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Ce 37. SITE ID.--383236076563901. PERMIT NUMBER.--CH-73-0219.
LOCATION.--Lat 38°32'36", long 76°56'39", Hydrologic Unit 02070011, at LaPlata Water Treatment Plant, 2.0 mi. northeast of La Plata.
Owner: Town of La Plata.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 1340 ft; casing diameter 6 in., to 300 ft; casing diameter 4 in. from 300 to 1174 ft, 1184 to 1250 ft, and 1260 to 1330 ft; screen diameter 4 in. from 1174 to 1184 ft, 1250 to 1260 ft, and 1330 to 1340 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder from Nov. 23, 1973 to Dec. 10, 1975. Equipped with digital water-level recorder--15-minute recorder interval from July 12, 1976 to current year.
DATUM.--Elevation of land surface is 185.37 ft above National Geodetic Vertical Datum of 1929.
Measuring Point: Top of casing, 3.20 ft above land-surface datum.
REMARKS.--Southern Maryland Observation Well Network. Water levels affected by nearby pumping.
PERIOD OF RECORD.--November 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.44 ft below sea level, Sept. 8, 1976; lowest measured, 75.47 ft below sea level, Sept. 11, 1989.

WATER LEVEL, IN FEET BELOW SEA LEVEL, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	52.92	53.01	52.28	52.41	51.56	51.59	51.12	51.76	50.49	50.55	51.27	51.64
2	52.84	52.92	52.25	52.28	51.55	51.60	51.03	51.12	50.49	50.49	51.01	51.27
3	52.79	52.84	52.25	52.25	51.43	51.55	50.90	51.03	50.49	60.65	50.92	51.01
4	52.79	62.13	52.25	52.25	51.43	51.54	50.90	66.03	50.76	50.98	50.84	50.92
5	52.91	53.64	52.06	52.25	51.42	51.52	52.14	68.51	50.68	50.76	50.70	50.84
6	52.92	62.08	52.06	52.06	51.33	51.45	52.10	54.15	50.55	50.68	50.59	50.70
7	52.95	61.71	52.06	52.06	51.26	51.32	51.61	52.09	50.53	50.55	50.59	50.59
8	52.85	53.04	52.06	52.06	51.29	68.19	51.27	51.61	50.45	50.53	50.59	50.78
9	52.74	52.85	52.06	52.06	53.04	67.05	51.23	51.27	50.45	50.45	50.78	50.78
10	52.56	52.74	52.00	52.06	52.23	53.16	51.14	51.23	50.35	50.45	50.78	50.78
11	52.52	64.27	52.06	52.18	---	---	51.11	51.14	50.22	50.35	50.70	50.78
12	52.97	64.13	52.15	52.19	---	---	50.96	61.81	50.18	50.22	50.64	50.70
13	52.99	53.25	52.02	52.15	51.62	51.84	51.13	51.35	50.18	50.18	50.64	50.64
14	52.84	52.99	52.03	52.05	51.53	51.62	50.95	51.13	50.18	50.18	50.64	50.64
15	52.75	52.84	52.04	58.53	51.53	51.53	50.81	50.95	50.17	50.18	50.64	50.64
16	52.71	52.75	51.97	52.17	51.51	51.53	50.80	50.81	50.17	61.25	50.64	50.76
17	52.71	66.76	51.88	51.96	51.39	51.51	50.79	50.80	50.46	50.77	50.76	68.70
18	53.03	53.71	51.96	52.01	51.39	51.39	50.75	50.79	50.22	50.46	52.23	55.96
19	52.90	53.03	51.89	52.00	51.39	51.39	50.75	50.75	50.13	50.22	51.81	52.21
20	52.90	52.90	51.63	51.88	51.39	51.39	50.71	53.78	50.08	50.13	51.38	51.81
21	52.59	52.90	51.70	51.90	51.36	51.39	50.78	50.78	49.87	50.08	51.26	66.22
22	52.51	52.59	51.90	51.92	51.36	51.36	50.78	50.78	49.87	49.87	51.86	52.72
23	52.51	52.51	51.83	51.92	51.29	51.36	50.77	50.78	49.87	49.87	51.53	51.86
24	52.41	52.51	51.82	51.85	51.13	51.29	50.76	50.77	49.87	49.87	51.24	51.53
25	52.41	52.41	51.82	51.86	51.13	51.13	50.76	50.76	49.87	49.87	51.18	51.24
26	52.41	52.41	51.75	51.82	51.13	51.13	50.69	50.76	49.83	65.77	51.18	63.53
27	52.41	52.41	51.57	51.75	51.11	51.13	50.69	50.69	51.79	68.00	51.29	51.66
28	52.41	52.41	51.50	51.61	50.93	51.11	50.69	50.69	51.68	53.28	51.16	51.29
29	52.41	52.41	51.61	51.71	50.93	50.93	50.66	50.69	---	---	51.13	62.99
30	52.41	52.41	51.56	51.69	50.93	50.93	50.55	50.64	---	---	51.16	51.66
31	52.41	52.41	---	---	50.93	64.80	50.55	50.55	---	---	51.00	51.16
MONTH	52.41	66.76	51.50	58.53	---	---	50.55	68.51	49.83	68.00	50.59	68.70

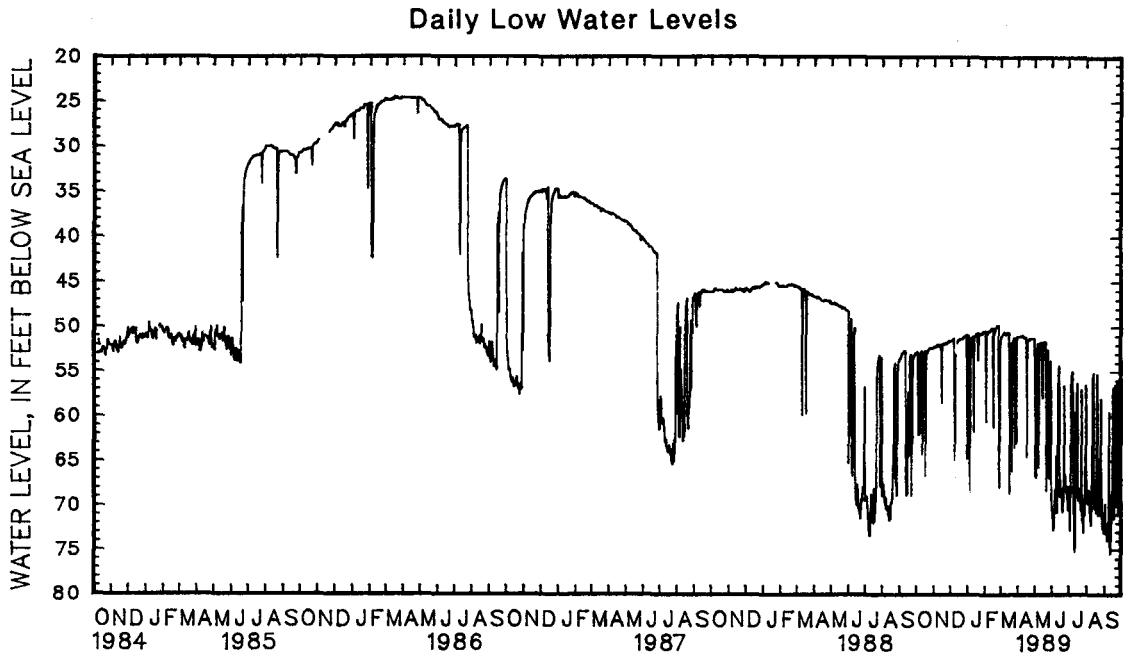
GROUND-WATER LEVELS

MARYLAND--Continued

CHARLES COUNTY--Continued

CH Ce 37--Continued

DAY	APRIL MAX	APRIL MIN	MAY MAX	MAY MIN	JUNE MAX	JUNE MIN	JULY MAX	JULY MIN	AUGUST MAX	AUGUST MIN	SEPTEMBER MAX	SEPTEMBER MIN
1	51.00	51.07	51.31	51.31	54.43	70.53	55.88	67.95	55.84	68.05	57.43	73.12
2	51.07	51.09	51.20	66.79	55.50	71.05	55.52	68.49	55.85	69.80	57.56	69.84
3	51.09	51.09	52.15	53.83	56.26	72.80	55.49	72.86	55.92	69.65	57.12	72.77
4	51.07	51.09	52.01	66.94	56.95	72.38	56.63	68.07	56.15	69.44	57.76	72.17
5	51.06	51.07	52.15	53.46	56.21	71.32	55.76	56.62	56.22	68.42	57.45	73.95
6	51.02	51.06	51.90	52.10	56.10	69.68	55.30	55.76	55.93	70.33	58.02	72.28
7	50.99	51.02	51.83	51.90	55.89	68.28	55.01	55.30	56.03	71.20	57.75	72.71
8	50.99	50.99	51.81	65.79	55.36	69.65	54.86	55.01	56.78	72.20	57.79	72.92
9	50.99	50.99	52.09	52.89	55.36	64.52	54.73	68.32	56.49	70.52	57.36	59.53
10	50.99	51.05	51.84	52.09	54.98	70.81	55.12	71.24	56.21	68.71	57.13	74.26
11	51.05	51.07	51.79	51.84	55.57	65.65	61.51	75.23	55.69	57.08	58.72	75.47
12	51.07	51.21	51.79	51.79	54.74	57.46	58.91	74.10	55.23	55.69	59.07	73.67
13	51.17	51.21	51.79	51.79	54.37	54.74	57.22	59.59	54.97	55.23	58.49	71.80
14	51.20	51.22	51.79	51.79	54.11	54.37	56.57	69.05	54.90	70.29	57.82	68.71
15	51.08	51.20	51.79	58.02	54.03	69.01	56.36	58.38	55.31	67.98	57.34	69.11
16	51.08	51.17	51.70	51.84	54.64	67.14	55.80	56.36	55.30	68.77	56.82	57.70
17	51.17	64.63	51.69	51.70	54.78	68.34	55.69	68.72	55.56	70.79	56.45	56.82
18	51.59	52.26	51.69	51.69	54.85	68.26	55.91	69.42	55.89	68.66	56.34	71.49
19	51.50	51.59	51.69	51.69	54.71	69.25	55.86	68.17	55.30	56.42	56.56	57.72
20	51.44	51.50	51.69	51.69	55.11	70.76	55.82	68.52	54.88	55.29	56.13	56.56
21	51.32	51.44	51.69	51.69	55.57	68.43	56.03	69.80	54.81	71.12	56.03	70.06
22	51.32	51.32	51.69	68.43	55.22	69.53	56.21	70.60	55.66	69.00	56.26	69.10
23	51.32	51.32	52.76	54.42	54.98	56.65	56.05	57.05	55.42	64.84	56.12	56.73
24	51.32	51.32	52.57	52.76	54.80	66.86	55.95	71.92	55.17	70.38	55.92	56.11
25	51.31	51.32	52.43	52.57	54.77	66.78	56.59	71.01	55.64	71.10	55.82	70.75
26	51.31	51.31	52.43	66.96	54.55	68.46	57.21	73.06	55.69	58.11	56.02	57.13
27	51.31	51.31	53.24	63.88	54.93	67.98	57.25	70.83	55.46	69.37	55.84	56.02
28	51.31	51.31	53.13	65.44	54.99	68.88	56.84	71.16	55.64	72.58	55.56	55.84
29	51.31	51.31	53.24	67.04	55.24	69.33	57.14	69.46	56.61	70.90	55.44	69.43
30	51.31	51.31	53.16	53.82	55.37	70.52	56.57	67.01	56.56	73.07	55.79	56.64
31	---	---	53.09	69.27	---	---	55.96	56.57	57.42	72.71	---	---
MONTH	50.99	64.63	51.20	69.27	54.03	72.80	54.73	75.23	54.81	73.07	55.44	75.47



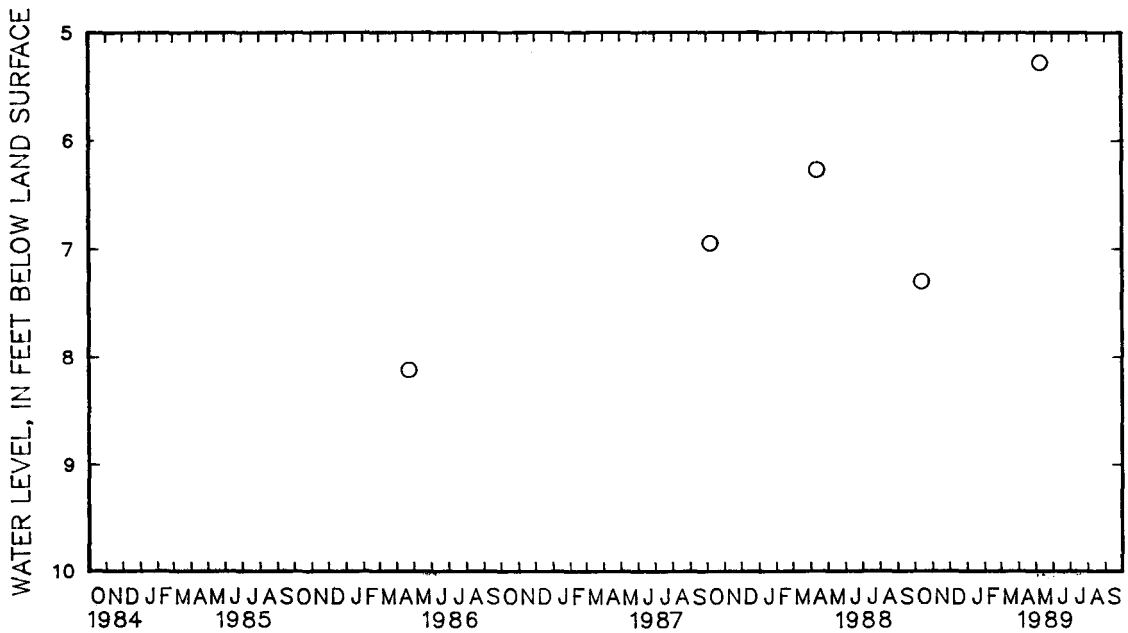
5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Cf 33. SITE ID.--383340076511601. PERMIT NUMBER.--CH-81-0602.
LOCATION.--Lat 38°33'40", long 76°51'16", Hydrologic Unit 02070011, north side of MD Rt. 5, 5.5 mi southeast of Waldorf at Zekiah Swamp.
Owner: U.S. Geological Survey.
AQUIFER.--Calvert Formation of Miocene age. Aquifer code: 122CLVR.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 22.2 ft; casing diameter 4 in., to 14.7 ft; casing diameter 2 in. from 19.7 to 22.2 ft; screen diameter 2 in. from 14.7 to 19.7 ft.
INSTRUMENTATION.--Measured twice yearly with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.41 ft above land-surface datum.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.00 ft below land-surface datum, Dec. 29, 1983; lowest measured, 8.13 ft below land-surface datum, Apr. 23, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	7.30	MAY 10	5.28

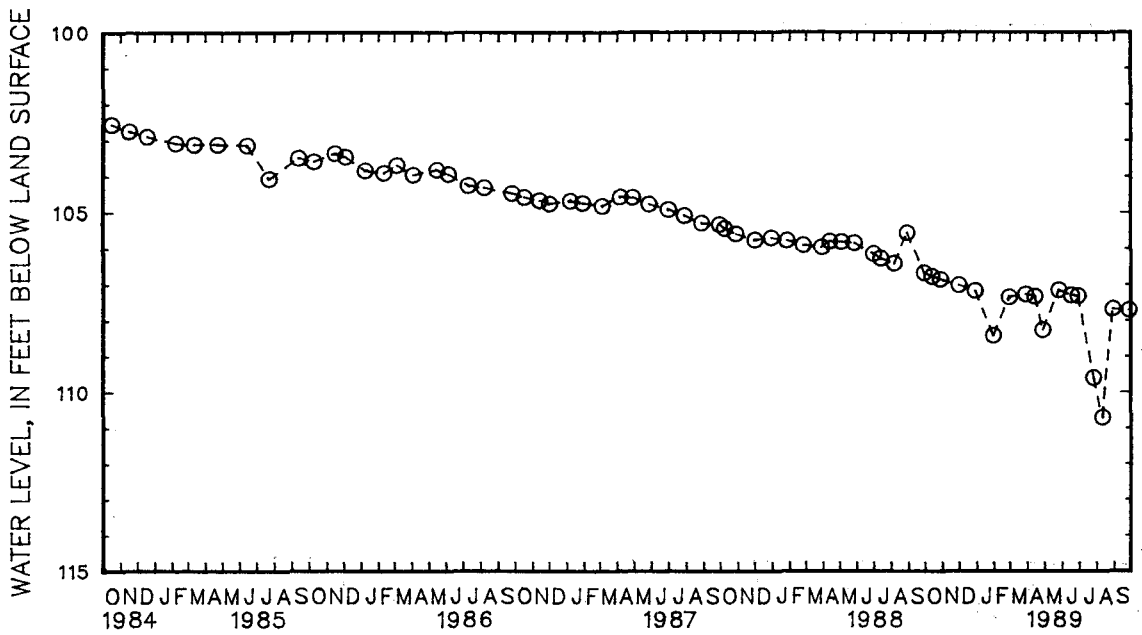


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Dd 33. SITE ID.--382607077002601. PERMIT NUMBER.--CH-02-6769.
LOCATION.--Lat 38°26'07", long 77°00'26", Hydrologic Unit 02070011, 1.8 mi southwest of Faulkner off Popes Creek Rd.
Owner: Jesuit Order (Loyola Retreat House).
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, unused, artesian well, depth 694 ft; casing diameter 6 in., to 564 ft; casing diameter 4 in. from 532 to 688 ft; screen diameter 4 in. from 687 to 694 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 99.8 ft above National Geodetic Vertical Datum of 1929.
Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Water level reported 104 ft below land-surface datum, June 27, 1957.
PERIOD OF RECORD.--March 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 88.28 ft below land-surface datum, Mar. 14, 1962; lowest measured, 110.72 ft below land-surface datum, Aug. 10, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	106.82	DEC 28	107.20	MAR 28	107.29	MAY 25	107.17	JUL 26	109.62	SEP 27	107.71
OCT 27	106.90	JAN 30	108.45	APR 13	107.35	JUN 16	107.31	AUG 10	110.72		
NOV 29	107.04	FEB 27	107.37	APR 27	108.29	JUN 28	107.33	AUG 29	107.68		

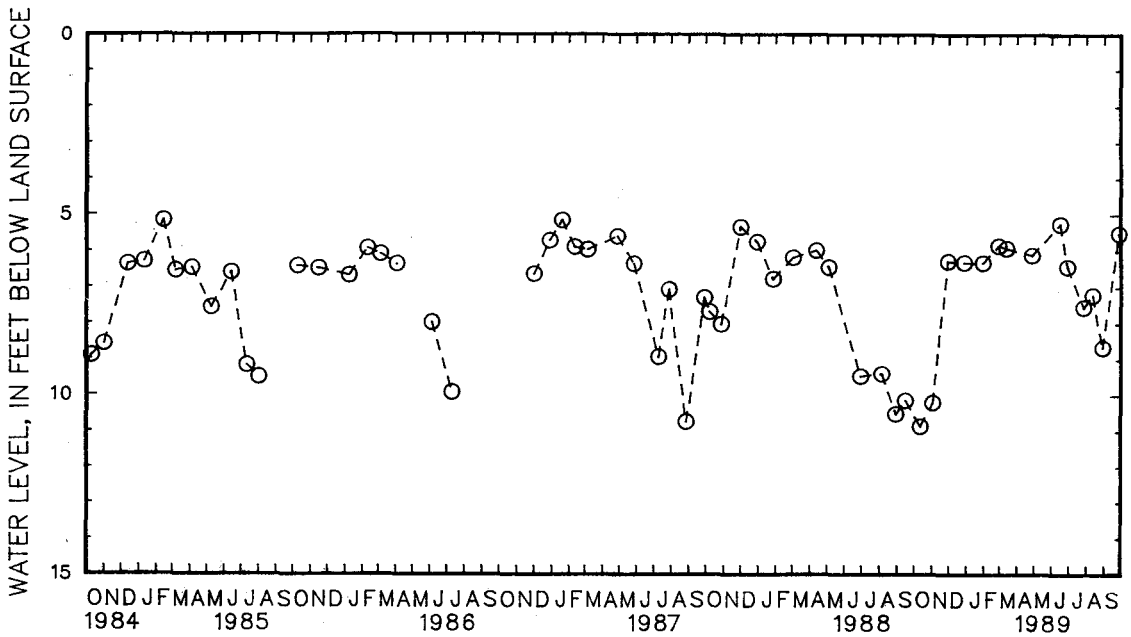


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH De 45. SITE ID.--382927076552301. PERMIT NUMBER.--CH-81-0604.
LOCATION.--Lat 38°29'27", long 76°55'23", Hydrologic Unit 02070011, north side of MD Rt. 6, 4.1 mi southeast of La Plata.
Owner: U.S. Geological Survey.
AQUIFER.--Alluvium of Pleistocene age and Nanjemoy Formation of Eocene age. Aquifer codes: 112ALVM, 124NNJM.
WELL CHARACTERISTICS.--Drilled, observation, water-table well; depth 25.5 ft; casing diameter 4 in., to 15.5 ft, screen diameter 2 in. from 15.5 to 20.5 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.66 ft above land-surface datum.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.17 ft below land-surface datum, Jan. 20, 1987; lowest measured, 10.87 ft below land-surface datum, Oct. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	10.87	DEC 28	6.30	MAR 13	5.91	JUN 28	6.42	AUG 29	8.67
NOV 2	10.21	JAN 30	6.31	APR 27	6.10	JUL 26	7.54	SEP 27	5.51
NOV 29	6.27	FEB 27	5.84	JUN 16	5.24	AUG 11	7.21		

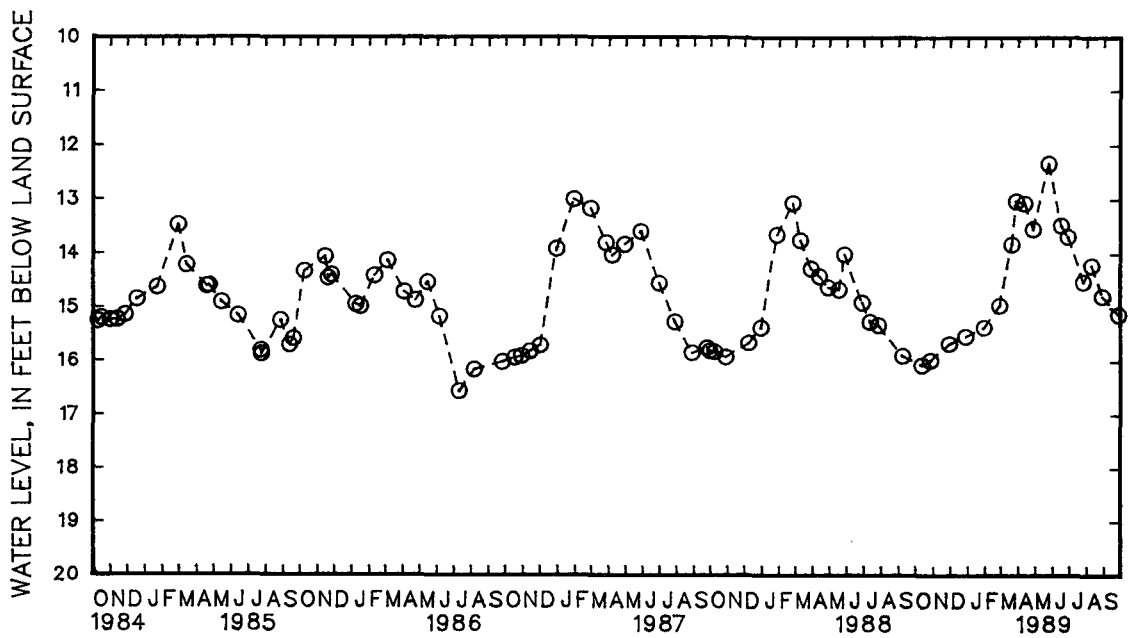


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--CH Ee 16. SITE ID.--382103076560201.
LOCATION.--Lat 38°21'03", long 76°56'02", Hydrologic Unit 02070010, near Wayside.
Owner: Harry Ferris.
AQUIFER.--Talbot Formation of Pleistocene age. Aquifer code: 112TLBT.
WELL CHARACTERISTICS.--Dug, unused, water-table well, depth 23 ft; casing diameter 42 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with water-level recorder from Mar. 29, 1966 to Oct. 11, 1967.
DATUM.--Elevation of land surface is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.8 ft above land-surface datum.
PERIOD OF RECORD.--May 1946, 1947, March 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.60 ft below land-surface datum, Mar. 30, 1984; lowest measured, 20.65 ft below land-surface datum, Dec. 20, 1949.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	16.09	DEC 28	15.54	MAR 20	13.82	APR 27	13.54	JUN 28	13.68	AUG 29	14.79
OCT 27	16.00	JAN 30	15.37	MAR 28	13.02	MAY 25	12.33	JUL 26	14.52	SEP 27	15.13
NOV 29	15.68	FEB 27	14.96	APR 12	13.06	JUN 16	13.47	AUG 10	14.22		



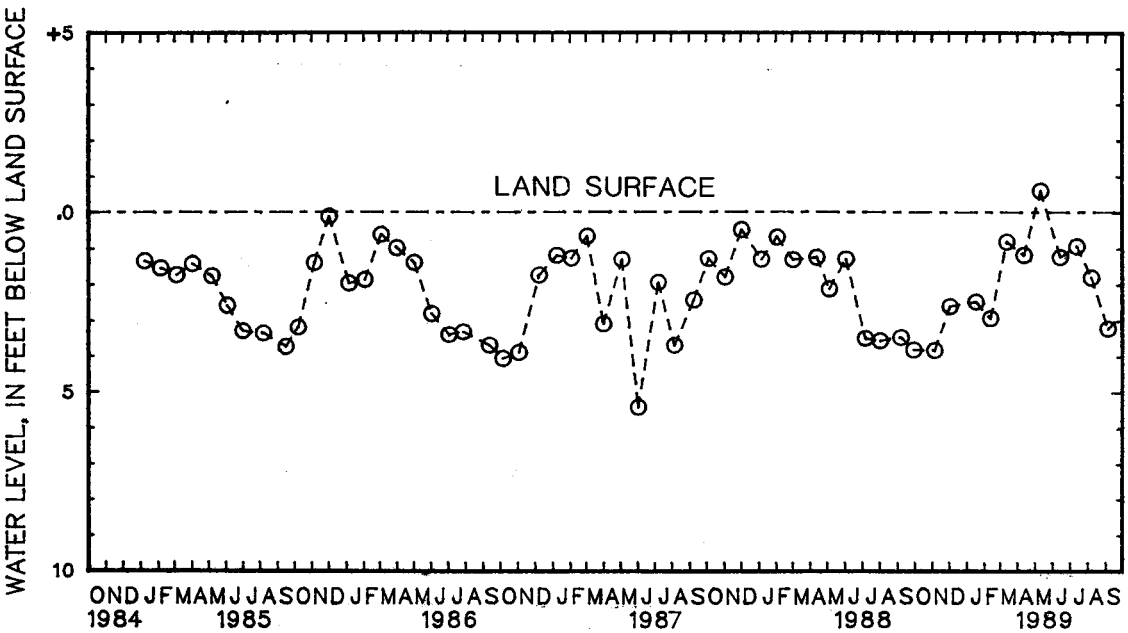
5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

FREDERICK COUNTY

WELL NUMBER.--FR Af 27. SITE ID.--394200077190701. PERMIT NUMBER.--FR-73-7155.
LOCATION.--Lat 39°42'00", long 77°19'07", Hydrologic Unit 02070009, 0.3 mi southwest of U.S. Rt. 15 and MD Rt. 140, Emmitsburg.
Owner: City of Emmitsburg.
AQUIFER.--Gettysburg Shale of Upper Triassic age. Aquifer code: 231GBRG.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 365 ft; casing diameter 6 in., to 39 ft; open hole.
DATUM.--Elevation of land surface is 390 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--April 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, .62 ft above land-surface datum, May 23, 1983; lowest measured, 5.43 ft below land-surface datum, June 2, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
(READINGS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 5	3.83	JAN 17	2.47	MAR 13	.80	MAY 11	+.61	JUL 13	.93	SEP 5	3.22
DEC 2	2.60	FEB 12	2.93	APR 12	1.17	JUN 14	1.23	AUG 7	1.80		

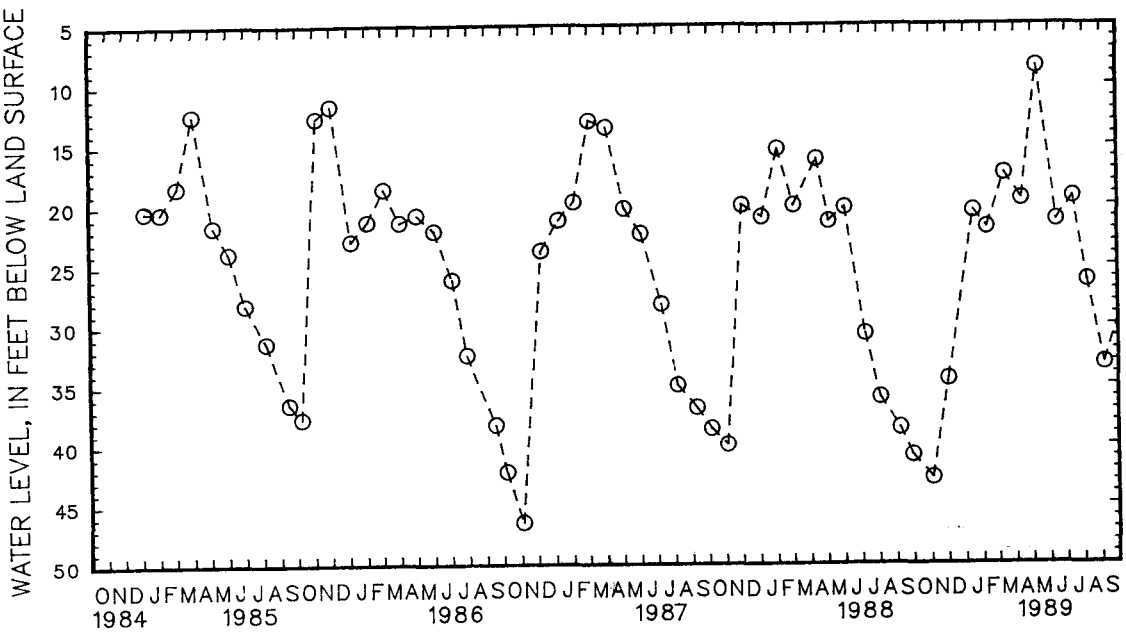


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--FR Bd 96. SITE ID.--393733077274801.
LOCATION.--Lat 39°37'33", long 77°27'48", Hydrologic Unit 02070009, 0.4 mi west of Hunting Creek Lake, Cunningham Falls State Park.
Owner: Cunningham Falls State Park.
AQUIFER.--Catoctin Metabasalt Formation of Precambrian age. Aquifer code: 400CTCN.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, depth 189 ft; casing diameter 6 in.; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with water level recorder. Apr. 5, 1982 to Feb. 21, 1984.
DATUM--Elevation of land surface is 1150 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing at land-surface datum.
PERIOD OF RECORD.--April 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.80 ft below land-surface datum, Apr. 10, 1983; lowest measured, 46.46 ft below land-surface datum, Nov. 3, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 3	42.84	JAN 17	20.49	MAR 13	17.41	MAY 11	8.54	JUL 13	19.37	SEP 5	33.28
DEC 2	34.53	FEB 10	21.88	APR 12	19.53	JUN 14	21.34	AUG 7	26.35		

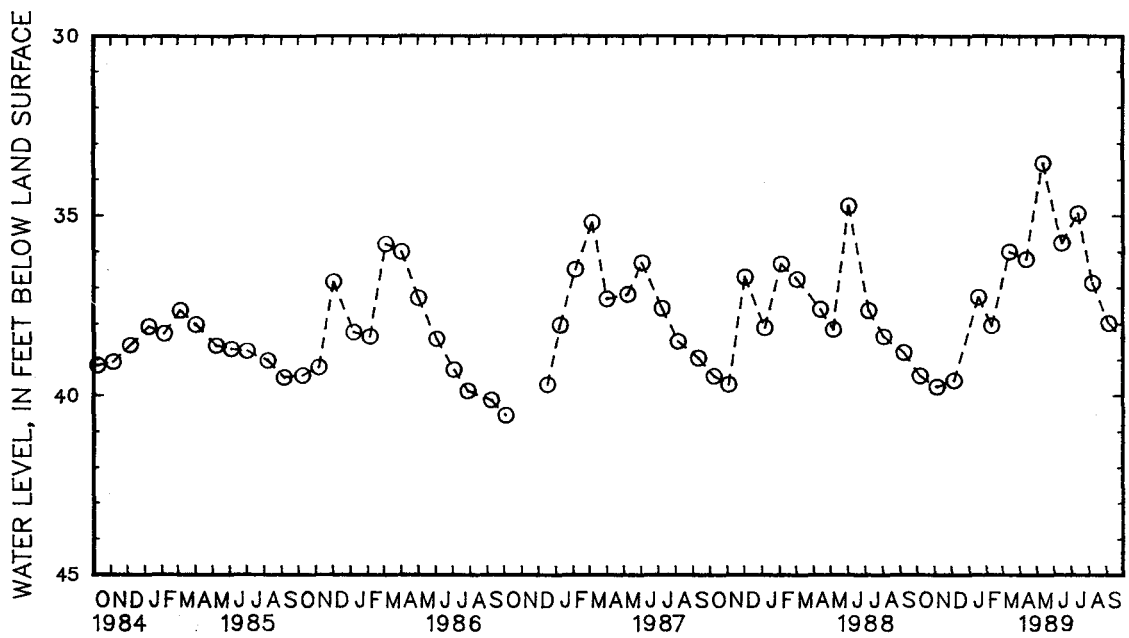


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--FR Cg 1. SITE ID.--393156077135701.
LOCATION.--Lat 39°31'56", long 77°13'57", Hydrologic Unit 02070009, at Johnsville.
Owner: Michael Hutchison.
AQUIFER.--Ijamsville Formation of Paleozoic age. Aquifer code: 300IJMV.
WELL CHARACTERISTICS.--Dug, stone-lined, domestic, water-table well, depth 43 ft; diameter 36 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of wooden well cover, 0.6 ft above land-surface datum.
PERIOD OF RECORD.--July 1946 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.63 ft below land-surface datum, Sept. 29, 1975; lowest measured, 42.02 ft below land-surface datum, Oct. 5, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	39.45	DEC 5	39.58	FEB 10	38.04	APR 12	36.20	JUN 14	35.76	AUG 7	36.87
NOV 5	39.76	JAN 17	37.25	MAR 13	35.99	MAY 12	33.53	JUL 13	34.94	SEP 5	37.99



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

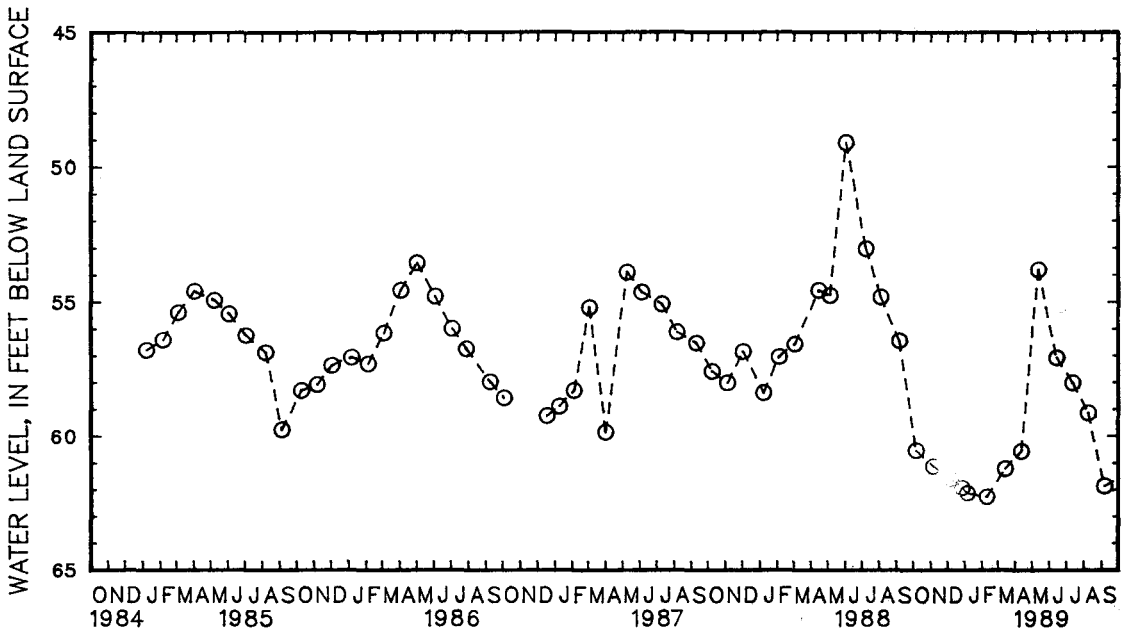
MARYLAND--Continued

FREDERICK COUNTY--Continued

WELL NUMBER.--FR Df 35. SITE ID.--392517077190401. PERMIT NUMBER.--FR-73-0852.
LOCATION.--Lat 39°25'17", long 77°19'04", Hydrologic Unit 02070009, north of Eaglehead Drive near Lake Linganore.
Owner: Lake Linganore Association.
AQUIFER.--Sams Creek Metabasalt of Paleozoic age. Aquifer code: 300SMCK.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, depth 302 ft, casing diameter 6 in., to 26 ft, open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 570 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 44.20 ft below land-surface datum, Apr. 2, 1984; lowest measured, 62.27 ft below land-surface datum, Feb. 9, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	60.55	DEC 27	61.94	MAR 14	61.22	JUN 14	57.09	SEP 6	61.87
NOV 5	61.14	JAN 5	62.14	APR 12	60.56	JUL 12	58.03		
DEC 6	61.60	FEB 9	62.27	MAY 12	53.80	AUG 8	59.15		

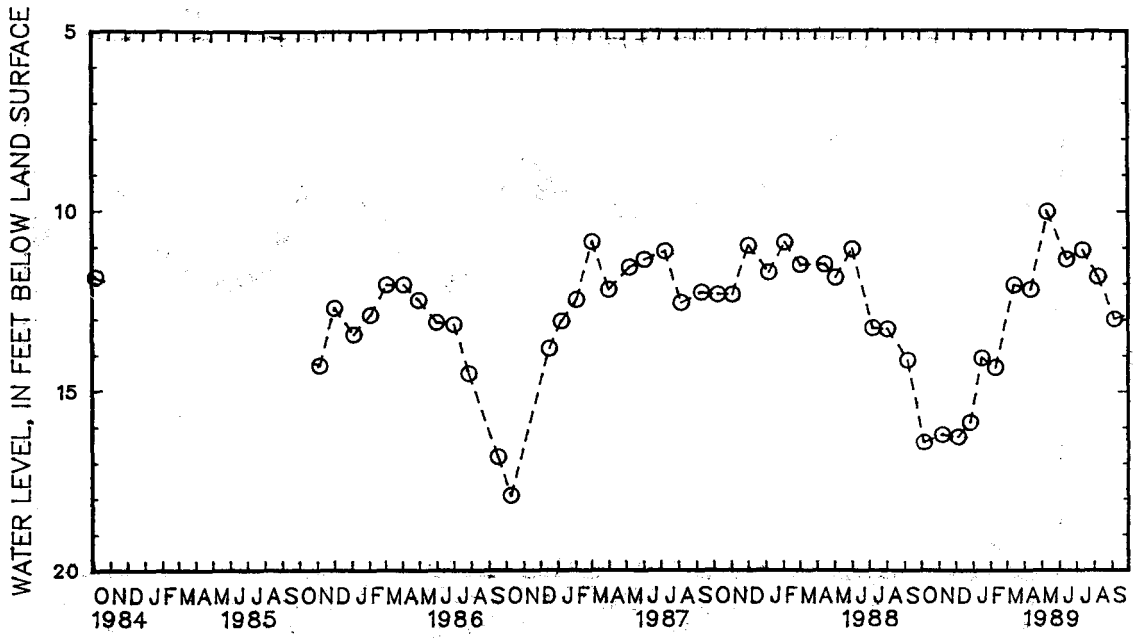


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--FR Eh 11. SITE ID.--392257077095601. PERMIT NUMBER.--FR-81-0088.
LOCATION.--Lat 39°22'57", long 77°09'56", Hydrologic Unit 02070009. 0.5 mi west of Mount Airy.
Owner: Town of Mount Airy.
AQUIFER.--Marburg Formation of Paleozoic age. Aquifer code: 300MRBG.
WELL CHARACTERISTICS.--Drilled, unused, water table well, depth 103 ft; casing diameter 6 in., to 24 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.-- Elevation of land surface is 650 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.-- November 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.35 ft below land-surface datum, Mar. 23, 1983; lowest measured, 17.91 ft below land-surface datum, Oct. 10, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	16.42	DEC 27	15.86	MAR 14	12.03	JUN 14	11.32	SEP 6	12.99
NOV 8	16.21	JAN 17	14.08	APR 12	12.15	JUL 12	11.06		
DEC 6	16.27	FEB 10	14.34	MAY 12	10.01	AUG 8	11.80		



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

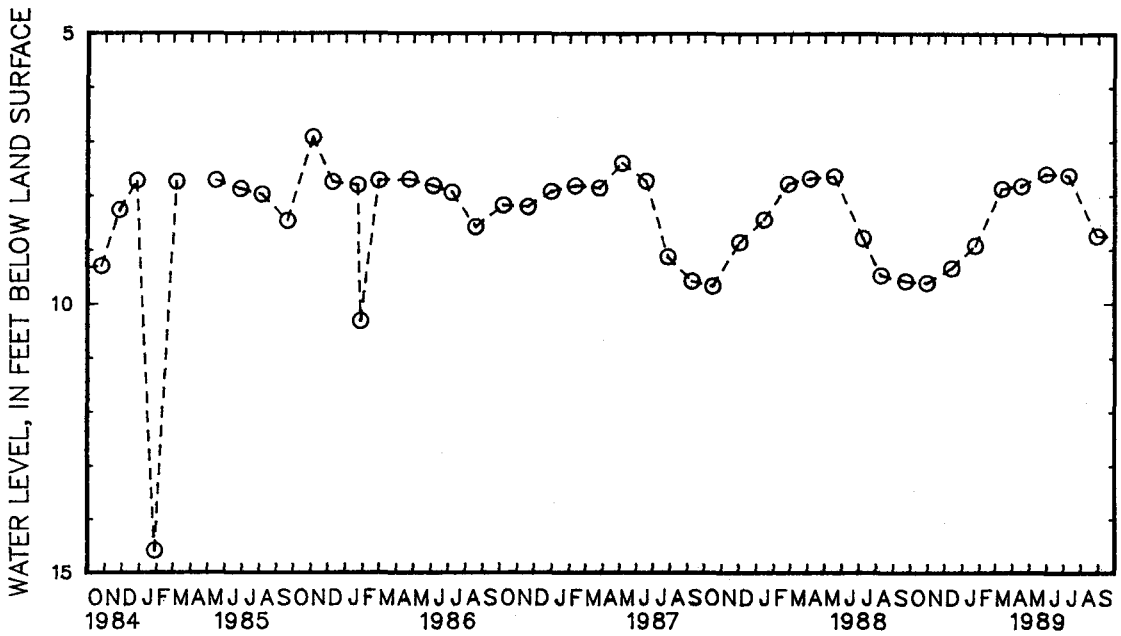
MARYLAND--Continued

GARRETT COUNTY

WELL NUMBER.--GA Ag 1. SITE ID.--394017078581701.
LOCATION.--Lat 39°40'17", long 78°58'17", Hydrologic Unit 02070002, in the Savage River Valley, 2.5 mi northwest of Frostburg.
Owner: Town of Frostburg.
AQUIFER.--Pocono Formation of Lower Mississippian age. Aquifer code: 337POCN.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, depth 30 ft; casing diameter 8 in., to unknown depth; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,530 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing at land-surface datum.
REMARKS.--Water level measured, 11.75 ft below land-surface datum, Mar. 26, 1984; water levels affected by nearby pumping.
PERIOD OF RECORD.--October 1946 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.71 ft below land-surface datum, Jan. 14, 1950; lowest measured, 14.59 ft below land-surface datum, Jan. 28, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 31	9.60	JAN 25	8.91	APR 17	7.81	JUL 10	7.61
DEC 14	9.33	MAR 13	7.86	MAY 31	7.58	AUG 29	8.74

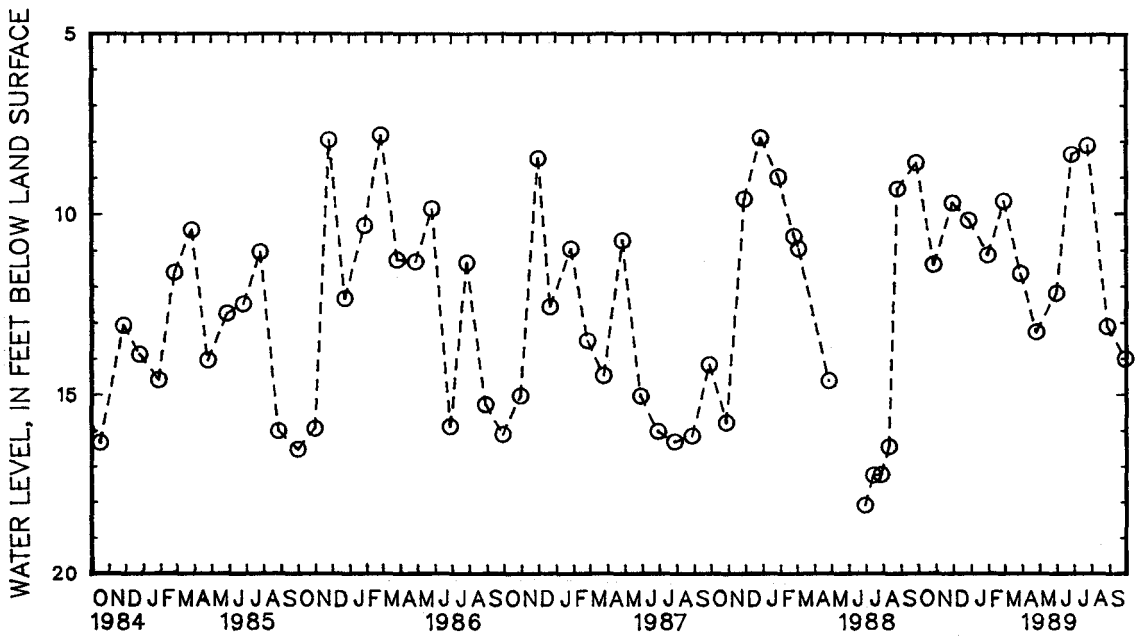


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Bc 1. SITE ID.--393749079190301.
LOCATION.--Lat 39°37'49", long 79°19'03", Hydrologic Unit 05020006, at Accident.
Owner: E. H. Ault.
AQUIFER.--Hampshire Formation of Upper Devonian age. Aquifer code: 341HMPR.
WELL CHARACTERISTICS.--Dug, stone-lined, domestic, water-table well, depth 20 ft; diameter 36 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,415 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of 1 in. board cover, 2.3 ft above land-surface datum.
PERIOD OF RECORD.--August 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.25 ft below land-surface datum, March 6, 1979; lowest measured, 19.65 ft below land-surface datum, Dec. 9, 1953.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	11.38	DEC 27	10.15	FEB 27	9.62	APR 25	13.26	JUN 27	8.33	AUG 28	13.11
NOV 29	9.67	JAN 30	11.12	MAR 28	11.63	MAY 30	12.18	JUL 25	8.09	SEP 28	14.02

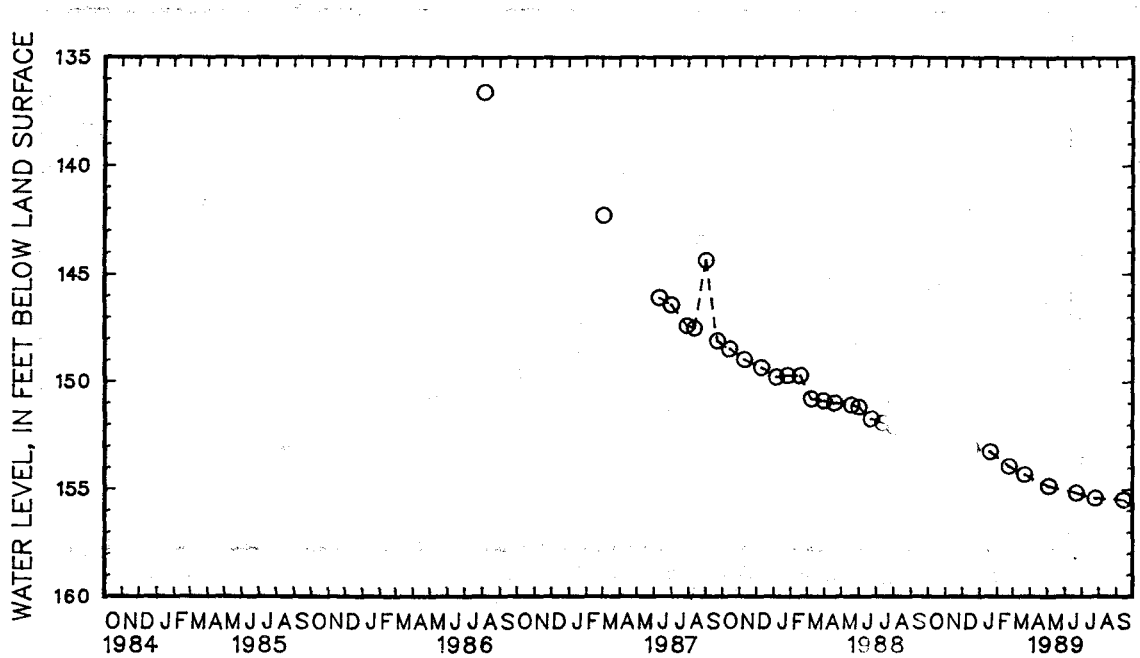


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 25. SITE ID.--391559079260901. PERMIT NUMBER.--GA-73-1696.
LOCATION.--Lat 39°15'59", long 79°26'09", Hydrologic Unit 02070002, on north side of coal conveyor belt, 0.3 mi west of Table Rock Rd., 2.2 mi northwest of Wilson.
Owner: Mettiki Coal Co.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquiifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 315 ft; casing diameter 6 in., to 304 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,670 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--June 1978 to August 1984, August 1986 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 136.61 ft below land-surface datum, Aug. 5, 1986; lowest measured, 301.00 ft below land-surface datum, June 23, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	152.85	NOV 29	153.21	JAN 20	153.25	MAR 22	154.29	JUN 22	155.17	SEP 14	155.49
NOV 3	153.06	DEC 16	153.05	FEB 22	153.92	MAY 4	154.87	JUL 26	155.41		

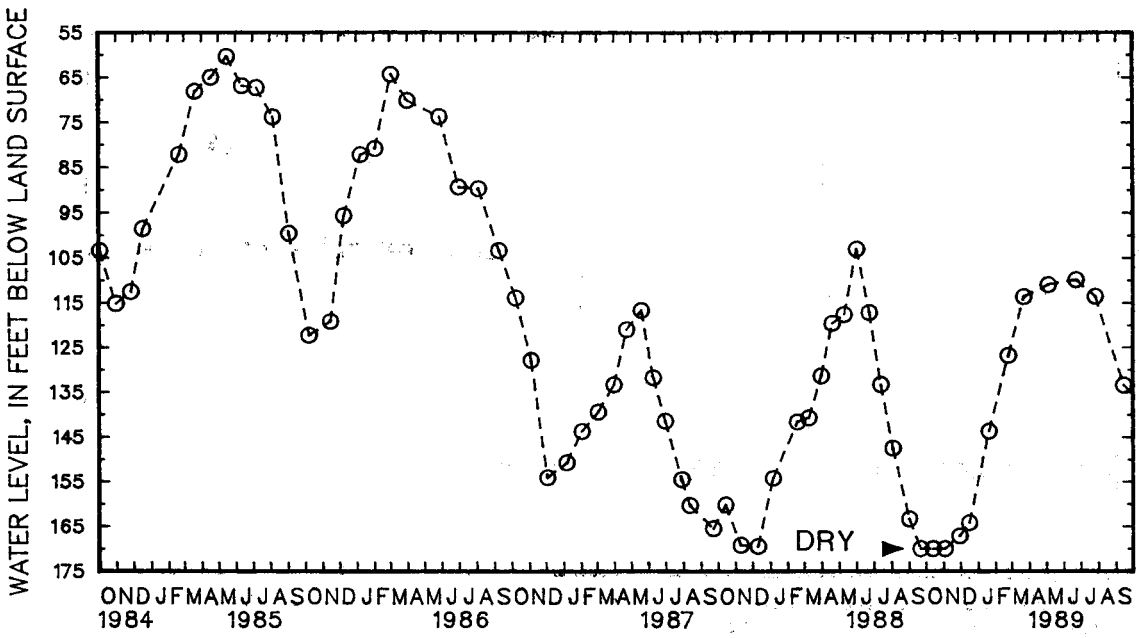


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 26. SITE ID.--391559079260902. PERMIT NUMBER.--GA-73-1695.
LOCATION.--Lat 39°15'59", long 79°26'09", Hydrologic Unit 02070002, on north side of conveyor belt, 0.3 mi west of Table Rock Road., 2.2 mi northwest of Wilson.
Owner: Mettiki Coal Co.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 170 ft; casing diameter 6 in., to 150 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,670 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--June 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.00 ft below land-surface datum, June 23, 1978; lowest measured, dry on Sept. 21, 1988, Oct. 13, 1988 and Nov. 3, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	DRY	NOV 29	167.12	JAN 20	143.55	MAR 22	113.55	JUN 22	109.81	SEP 14	133.44
NOV 3	DRY	DEC 16	164.15	FEB 23	126.67	MAY 4	110.87	JUL 26	113.51		

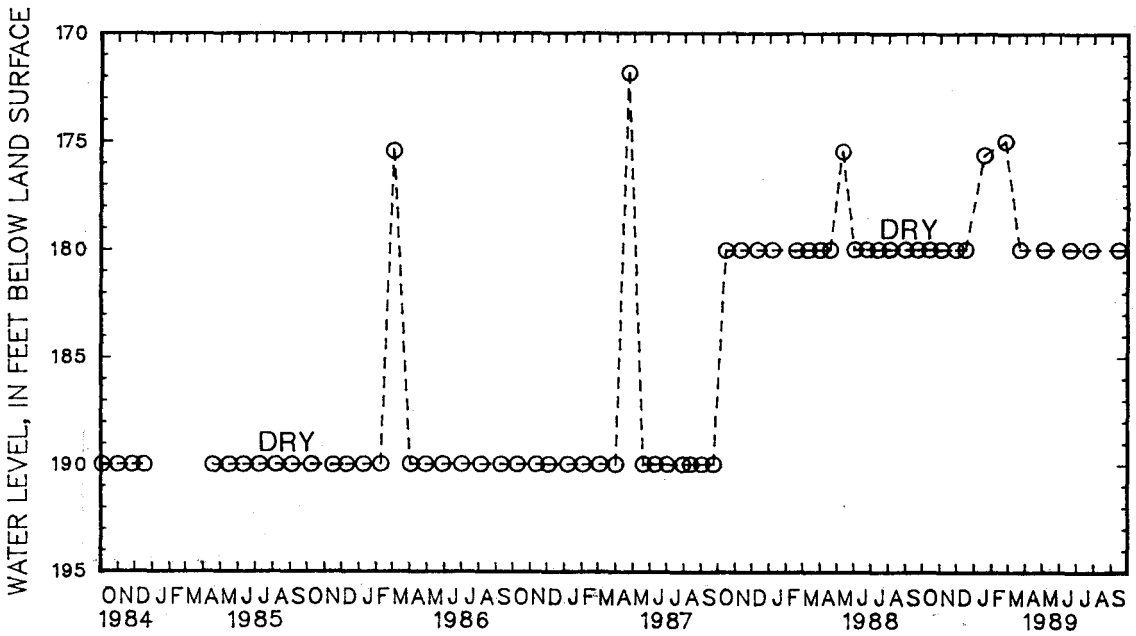


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 27. SITE ID.--391511079265001. PERMIT NUMBER.--GA-73-1710.
LOCATION.--Lat 39°15'11", long 79°26'50", Hydrologic Unit 02070002, on south side of Red Oak Rd., 0.6 mi west from intersection with Kempton Rd., 2.3 mi west of Wilson.
Owner: Mettiki Coal Co.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 215 ft; casing diameter 6 in., to 190 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,860 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by underground coal mining operations. Well depth changed by collapse of well. Prior to October 1987 well depth was approximately 190 ft; after October 1987 well depth was measured at 180 ft.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.93 ft below land-surface datum, Apr. 8, 1980; lowest measured, dry on numerous occasions--See Remarks.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	DRY	NOV 29	DRY	JAN 18	175.61	MAR 22	DRY	JUN 20	DRY	SEP 14	DRY
NOV 3	DRY	DEC 16	DRY	FEB 23	174.98	MAY 4	DRY	JUL 26	DRY		

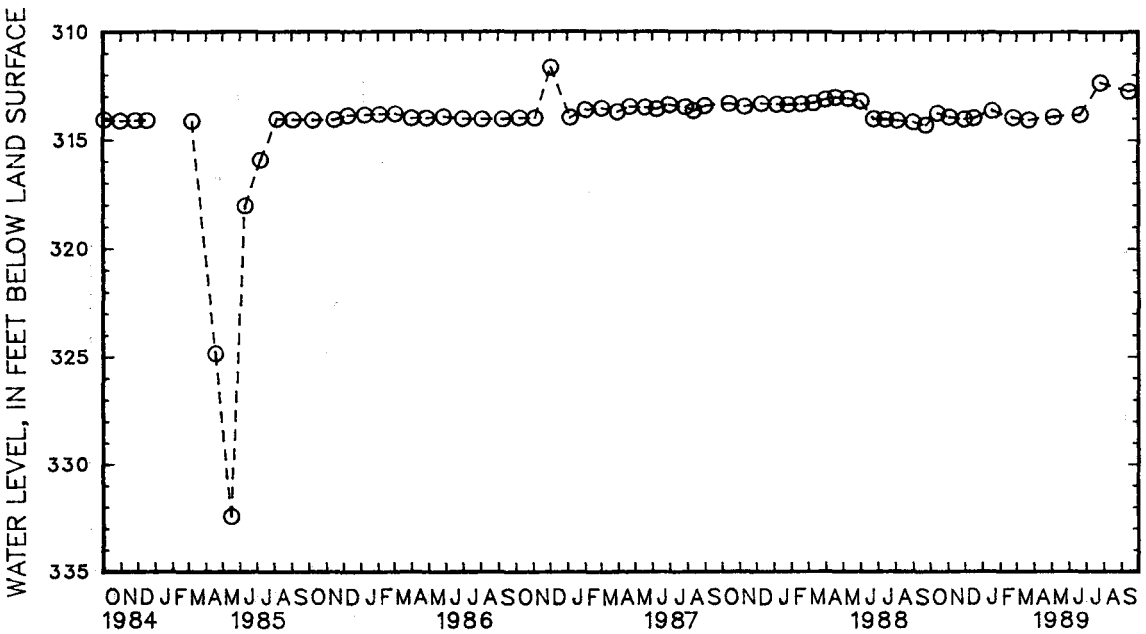


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 28. SITE ID.--391512079270901. PERMIT NUMBER.--GA-73-1697.
LOCATION.--Lat 39°15'12", long 79°27'09", Hydrologic Unit 02070002, on south side of Red Oak Rd., 0.6 mi west from intersection with Kempton Rd., 2.6 mi west of Wilson.
Owner: Mettiki Coal Co.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 341 ft; casing diameter 6 in., to 317 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--June 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.60 ft below land-surface datum, Dec. 14, 1978; lowest measured, 332.43 ft below land-surface datum, May 16, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	313.74	NOV 29	314.01	JAN 18	313.62	MAR 22	314.05	JUN 20	313.79	SEP 14	312.74
NOV 3	313.92	DEC 16	313.95	FEB 23	313.94	MAY 4	313.91	JUL 26	312.34		

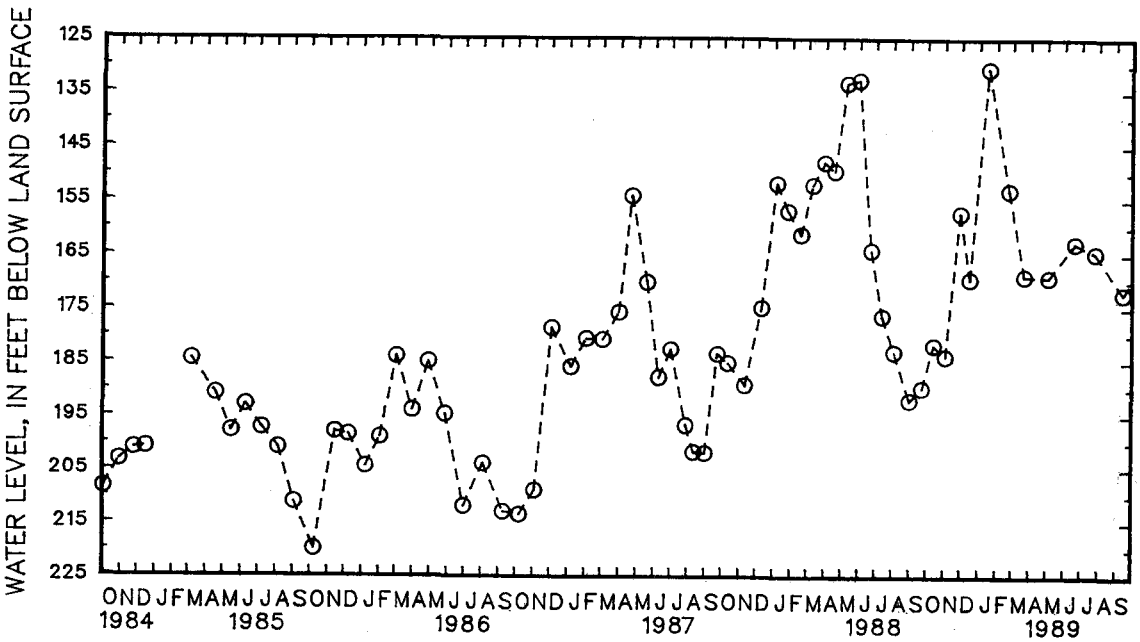


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 29. SITE ID.--391512079270902. PERMIT NUMBER.--GA-73-1698.
LOCATION.--Lat 39°15'12", long 79°27'09", Hydrologic Unit 02070002, on south side of Red Oak Rd., 0.9 mi west from intersection with Kempton Rd., 2.6 mi west of Wilson.
Owner: Mettiki Coal Co.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 226 ft; casing diameter 6 in., to 203 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 2,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--June 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 123.40 ft below land-surface datum, Dec. 14, 1978; lowest water level measured, 220.00 ft below land-surface datum, Oct. 8, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	181.91	NOV 29	157.34	JAN 18	130.47	MAR 22	169.12	JUN 20	162.95	SEP 14	172.31
NOV 3	184.01	DEC 16	169.61	FEB 23	153.18	MAY 4	169.34	JUL 26	164.82		



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 31. SITE ID.--391539079254601. PERMIT NUMBER.--GA-73-2142.
LOCATION.--Lat 39°15'37", long 79°25'45", Hydrologic Unit 02070002, on north side of coal conveyor belt, 450 ft west of Table Rock Rd., 1.7 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Allegheny Formation of Middle Pennsylvanian age. Aquifer code: 324ALGN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 606 ft; casing diameter 8 in., to 25.5 ft; casing diameter 4 in., to 470 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,620 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 2.6 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--August 1980 to to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.38 ft below land-surface datum, Aug. 29, 1980; lowest measured, 147.29 ft below land-surface datum, Sept. 30, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	142.98	NOV 29	143.31	JAN 20	143.58	MAR 22	144.51	MAY 24	144.44
NOV 1	142.95	DEC 15	143.21	FEB 17	144.12	MAY 4	144.54	JUN 22	145.35

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	142.69	142.69	---	---	---	---	---	---	---	---	---	---
2	142.70	142.69	142.95	142.95	---	---	---	---	---	---	---	---
3	142.70	142.70	142.98	142.95	---	---	---	---	---	---	---	---
4	142.71	142.70	142.98	142.98	---	---	---	---	---	---	---	---
5	142.71	142.71	142.99	142.98	---	---	---	---	---	---	---	---
6	142.84	142.71	142.99	142.99	---	---	---	---	---	---	---	---
7	142.84	142.84	143.08	142.99	---	---	---	---	---	---	---	---
8	142.85	142.84	143.16	143.08	---	---	---	---	---	---	---	---
9	142.85	142.85	143.18	143.18	---	---	---	---	---	---	---	---
10	142.86	142.85	143.18	143.18	---	---	---	---	---	---	---	---
11	142.86	142.86	143.25	143.18	---	---	---	---	---	---	---	---
12	142.87	142.86	143.30	143.28	---	---	---	---	---	---	---	---
13	---	---	143.30	143.30	---	---	---	---	---	---	---	---
14	---	---	143.30	143.30	---	---	---	---	---	---	---	---
15	---	---	143.30	143.30	---	---	---	---	---	---	---	---
16	---	---	143.30	143.30	---	---	---	---	---	---	---	---
17	---	---	143.30	143.30	---	---	---	---	---	---	---	---
18	---	---	143.30	143.30	---	---	---	---	---	---	---	---
19	---	---	143.30	143.30	---	---	---	---	---	---	---	---
20	---	---	143.30	143.30	---	---	---	---	---	---	---	---
21	---	---	143.30	143.30	---	---	---	---	---	---	---	---
22	---	---	143.31	143.30	---	---	---	---	---	---	---	---
23	---	---	143.31	143.31	---	---	---	---	---	---	---	---
24	---	---	143.31	143.31	---	---	---	---	---	---	---	---
25	---	---	143.31	143.31	---	---	---	---	---	---	---	---
26	---	---	143.31	143.31	---	---	---	---	---	---	---	---
27	---	---	143.31	143.31	---	---	---	---	---	---	---	---
28	---	---	143.31	143.31	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

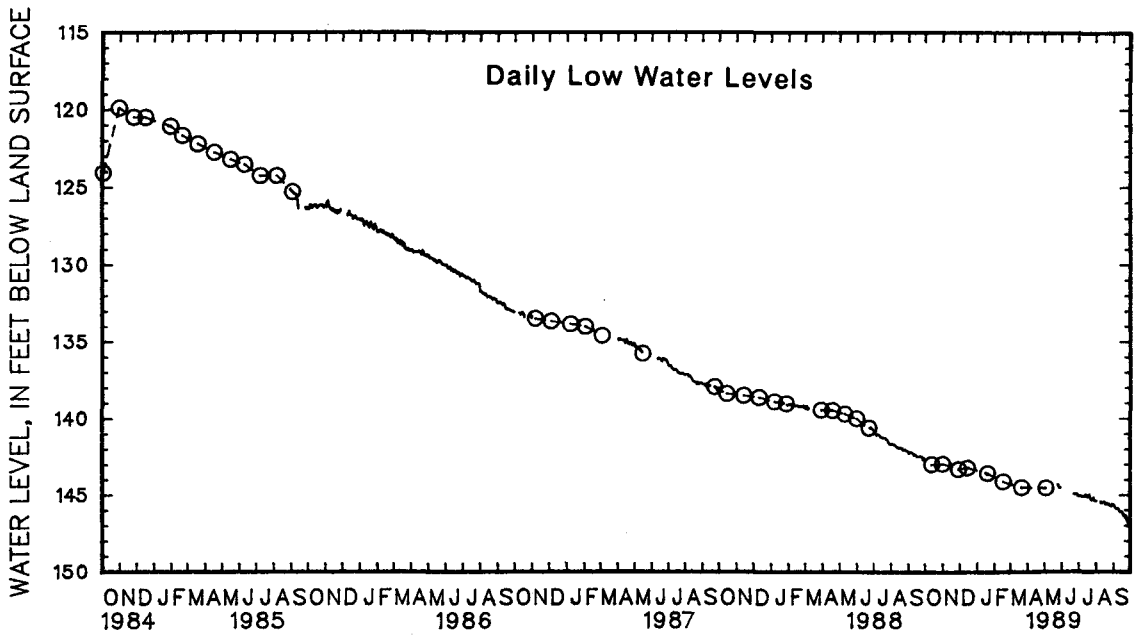
GROUND-WATER LEVELS

MARYLAND--Continued

GARRETT COUNTY--Continued

GA Fa 31--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	145.16	145.03	145.45	145.40	145.72	145.63
2	---	---	---	---	---	---	145.17	145.03	145.45	145.40	145.75	145.67
3	---	---	---	---	---	---	145.17	145.03	---	---	145.85	145.77
4	---	---	---	---	---	---	145.16	145.03	---	---	145.91	145.85
5	---	---	---	---	---	---	145.15	145.03	---	---	145.94	145.88
6	---	---	---	---	---	---	145.16	145.09	---	---	145.95	145.91
7	---	---	---	---	---	---	145.15	145.10	---	---	145.95	145.90
8	---	---	---	---	---	---	145.15	145.10	---	---	145.97	145.90
9	---	---	---	---	---	---	145.14	145.10	145.54	145.45	146.01	145.93
10	---	---	---	---	---	---	145.11	145.09	145.61	145.53	146.04	145.95
11	---	---	---	---	---	---	145.15	145.09	145.59	145.54	146.14	145.98
12	---	---	---	---	---	---	145.16	145.10	145.57	145.49	146.23	146.10
13	---	---	---	---	---	---	145.09	145.00	145.61	145.49	146.26	146.14
14	---	---	---	---	---	---	145.10	144.99	145.63	145.50	146.22	146.09
15	---	---	---	---	---	---	145.23	145.09	145.61	145.46	146.24	146.10
16	---	---	---	---	---	---	145.19	145.07	145.61	145.45	146.22	146.11
17	---	---	---	---	---	---	145.22	145.06	145.65	145.51	146.27	146.17
18	---	---	---	---	---	---	145.26	145.13	145.70	145.60	146.37	146.29
19	---	---	---	---	---	---	145.22	145.02	145.65	145.55	146.44	146.37
20	---	---	---	---	---	---	145.15	144.99	145.62	145.55	146.47	146.40
21	---	---	---	---	---	---	145.26	145.07	145.63	145.55	146.55	146.47
22	---	---	---	---	---	---	145.34	145.21	145.65	145.57	146.54	146.35
23	---	---	---	---	144.97	144.90	145.35	145.31	145.63	145.63	146.63	146.39
24	---	---	---	---	144.94	144.91	145.36	145.32	145.65	145.63	146.81	146.63
25	---	---	144.41	144.32	144.95	144.91	145.38	145.33	145.71	145.65	146.80	146.72
26	---	---	144.45	144.34	144.96	144.92	145.42	145.31	145.72	145.67	146.90	146.65
27	---	---	144.53	144.44	144.97	144.91	145.37	145.23	145.76	145.67	147.09	146.92
28	---	---	144.59	144.53	144.97	144.89	145.31	145.20	145.83	145.75	147.15	147.07
29	---	---	144.60	144.54	145.12	144.95	145.39	145.31	145.76	145.74	147.25	147.13
30	---	---	144.58	144.52	145.16	145.03	145.40	145.36	145.74	145.60	147.29	147.21
31	---	---	---	---	---	---	145.42	145.40	145.75	145.65	---	---
MONTH	---	---	---	---	---	---	145.42	144.99	---	---	147.29	145.63



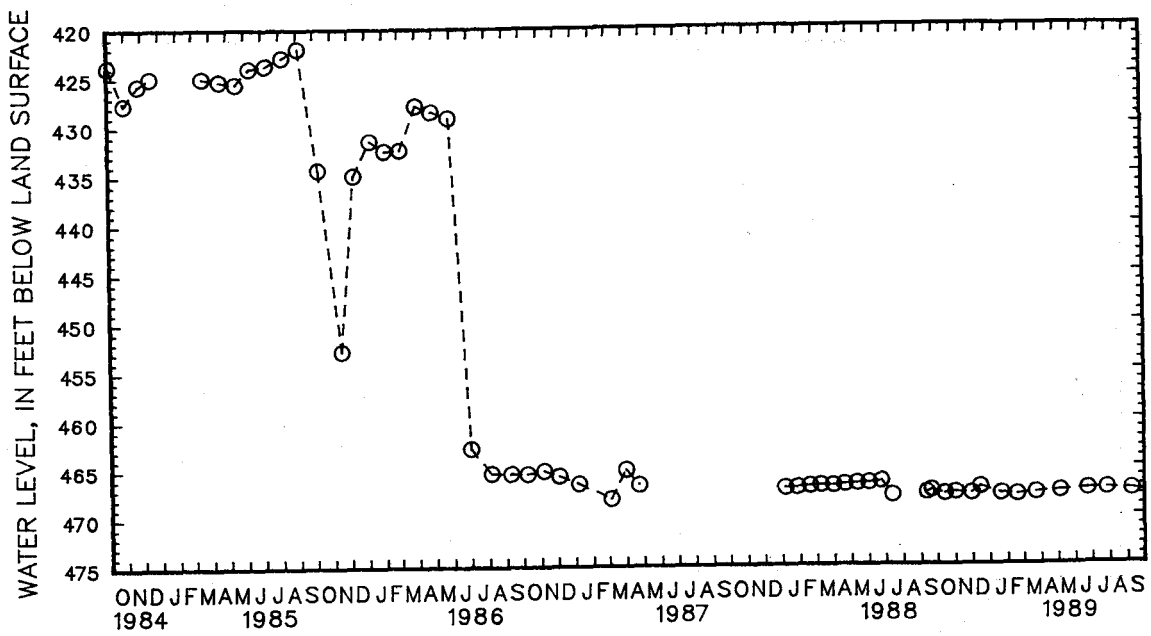
5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 32. SITE ID.--391539079254602. PERMIT NUMBER.--GA-73-2143.
LOCATION.--Lat 39°15'39", long 79°25'46", Hydrologic Unit 02070002, on north side of coal conveyor belt, 450 ft west of Table Rock Rd., 1.7 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 473 ft; casing diameter 4 in., to 430 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval from July 21, 1980 to Apr. 8, 1981.
DATUM.--Elevation of land surface is 2,890 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 3.15 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--February 1980 to to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.55 ft below land-surface datum, Feb. 27, 1980; lowest measured, 468.13 ft below land-surface datum, Mar. 4, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	467.79	NOV 29	467.78	JAN 20	467.80	MAR 22	467.73	JUN 22	467.44	SEP 8	467.51
NOV 1	467.63	DEC 15	467.10	FEB 17	467.93	MAY 4	467.61	JUL 26	467.35		

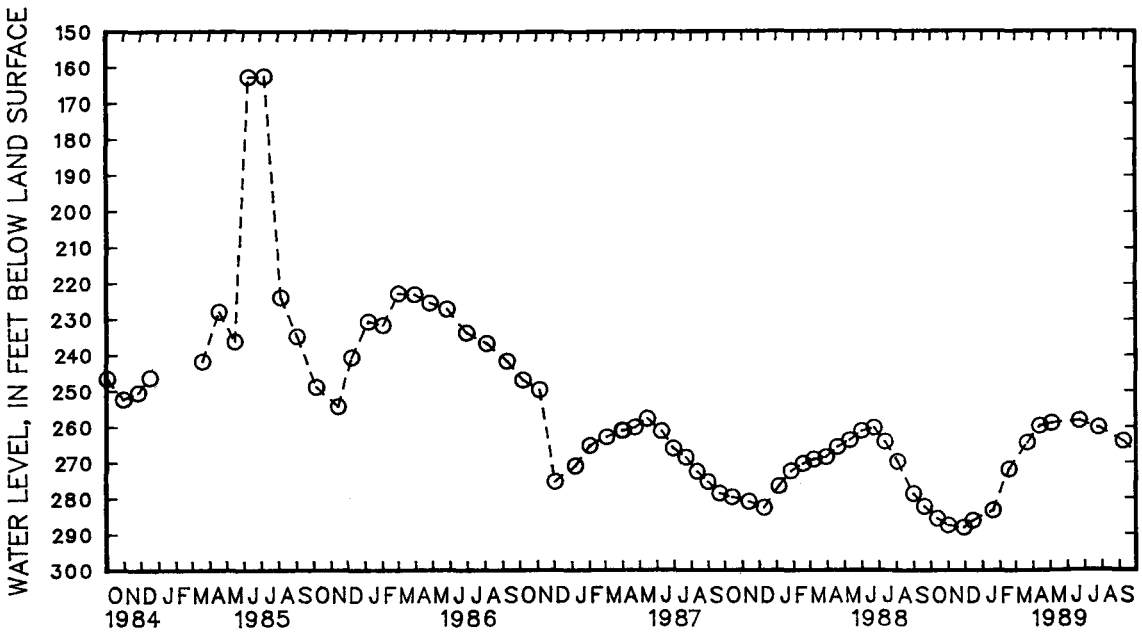


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 33. SITE ID.--391539079254603. PERMIT NUMBER.--GA-73-2144.
LOCATION.--Lat 39°15'39", long 79°25'46", Hydrologic Unit 02070002, on north side of coal conveyor belt, 450 ft west of Table Rock Rd., 1.7 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 391 ft; casing diameter 8 in., to 23 ft; casing diameter 4 in., to 318 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital recorder-60-minute recorder interval from July 21, 1980 to Oct. 14, 1982.
DATUM.--Elevation of land surface is 2,620 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of recorder shelf, 3.9 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--February 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.31 ft below land-surface datum, Feb. 27, 1978; lowest measured, 287.97 ft below land-surface datum, Nov. 29, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	285.48	DEC 15	286.08	FEB 17	271.75	MAY 4	258.79	SEP 8	264.03
NOV 1	287.34	JAN 20	283.27	MAR 22	264.30	JUN 22	258.12		
NOV 29	287.97	JAN 20	283.27	APR 13	259.55	JUL 26	260.08		



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fa 34. SITE ID.--391539079254604. PERMIT NUMBER.--GA-73-2145.
LOCATION.--Lat 39°15'39", long 79°25'46", Hydrologic Unit 02070002, on north side of coal conveyor belt, 450 ft west of Table Rock Rd., 1.7 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 115 ft; casing diameter 8 in., to 23.5 ft; casing diameter 4 in., to 96 ft; open hole.
INSTRUMENTATION.--Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,620 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of recorder shelf, 3.3 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well.
PERIOD OF RECORD.--July 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.19 ft below land-surface datum, Aug. 3, 1980; lowest measured, 93.67 ft below land surface datum, Nov. 11, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	93.02	92.84	---	---	93.06	93.00	91.12	90.98	87.53	87.45	86.74	86.60
2	92.82	92.78	93.58	93.39	93.07	93.04	90.97	90.81	87.65	87.53	86.75	86.62
3	92.89	92.81	93.67	93.59	93.04	92.66	90.81	90.28	87.78	87.56	86.62	86.57
4	92.99	92.89	93.62	93.38	92.94	92.71	90.70	90.39	87.80	87.71	86.63	86.60
5	93.21	92.99	93.36	93.06	92.83	92.58	90.70	90.52	87.68	87.50	86.60	86.41
6	93.31	93.22	93.52	93.25	92.59	92.38	90.43	90.29	87.49	87.44	86.47	86.41
7	93.30	93.20	---	---	92.37	92.31	90.46	90.27	87.54	87.47	86.81	86.48
8	93.20	93.11	---	---	92.49	92.37	90.24	90.09	87.54	87.47	86.87	86.82
9	93.11	93.04	---	---	92.47	92.24	90.28	90.22	87.61	87.45	86.86	86.77
10	93.04	92.79	---	---	92.24	92.04	90.28	90.15	87.42	87.32	86.77	86.62
11	93.08	92.79	---	---	92.24	92.08	90.19	90.03	87.31	87.14	86.62	86.29
12	93.36	93.09	---	---	92.26	92.00	89.95	89.52	87.42	87.12	86.42	86.25
13	93.47	93.36	---	---	91.93	91.69	89.82	89.55	87.42	87.28	86.42	86.18
14	93.43	93.29	---	---	91.96	91.78	89.81	89.26	87.44	87.27	86.18	85.90
15	93.32	93.27	---	---	92.09	91.79	89.24	89.12	87.46	87.32	86.21	85.85
16	93.27	93.17	---	---	92.09	91.75	89.12	89.07	87.76	87.47	86.37	86.22
17	93.25	93.15	---	---	91.74	91.64	89.06	88.86	87.76	87.61	86.37	86.16
18	93.16	93.03	---	---	91.84	91.71	88.86	88.49	87.58	87.24	86.19	86.00
19	93.22	93.15	---	---	91.91	91.71	88.51	88.37	87.22	87.14	86.34	86.21
20	93.31	93.22	---	---	91.91	91.83	88.32	88.17	87.14	86.85	86.31	85.77
21	93.29	92.94	---	---	92.02	91.83	88.49	88.33	86.82	86.54	86.08	85.74
22	93.09	92.85	---	---	92.09	91.87	88.43	88.33	86.83	86.71	86.22	86.09
23	93.14	92.99	---	---	91.82	91.67	88.33	88.24	86.97	86.83	86.22	86.11
24	93.10	92.96	---	---	91.70	91.34	88.24	88.18	86.99	86.96	86.11	85.87
25	93.20	93.10	---	---	91.74	91.46	88.25	88.18	86.95	86.60	85.92	85.86
26	93.40	93.19	---	---	91.88	91.74	88.17	87.79	86.58	86.27	85.98	85.92
27	93.49	93.39	---	---	91.79	91.35	87.96	87.82	86.50	86.40	85.96	85.85
28	93.47	93.35	---	---	91.47	91.04	88.03	87.89	86.60	86.50	85.85	85.63
29	---	---	---	---	91.53	91.42	87.89	87.65	---	---	85.63	85.56
30	---	---	93.20	93.00	91.41	91.17	87.63	87.42	---	---	85.56	85.31
31	---	---	---	---	91.18	91.14	87.54	87.46	---	---	85.37	85.11
MONTH	---	---	---	---	93.07	91.04	91.12	87.42	87.80	86.27	86.87	85.11

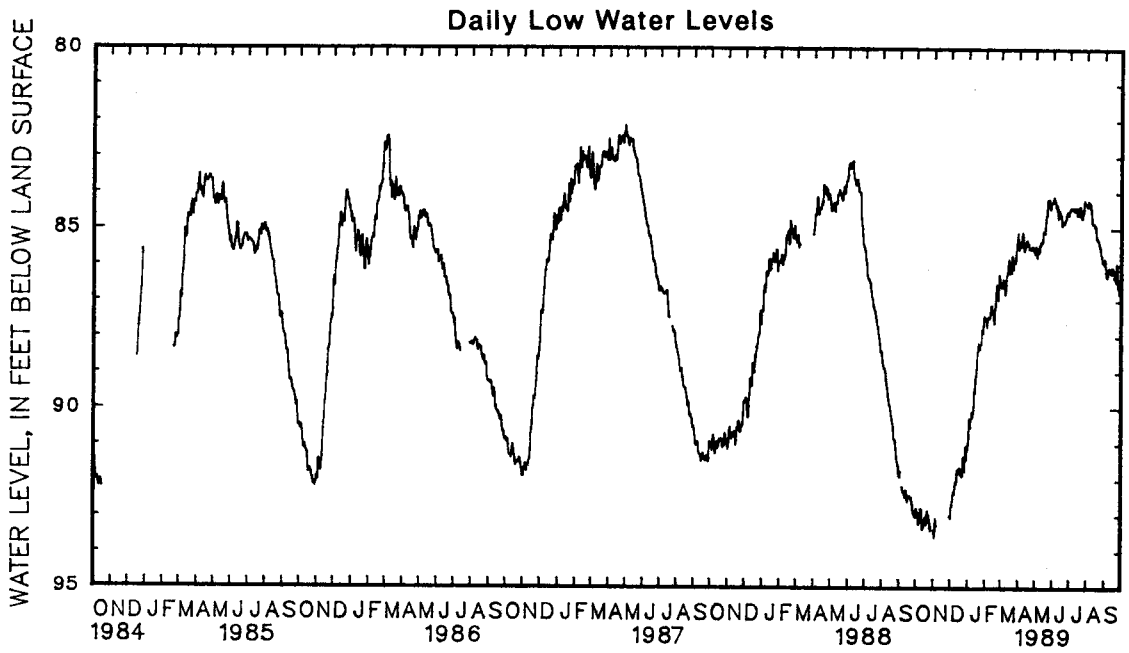
GROUND-WATER LEVELS

MARYLAND--Continued

GARRETT COUNTY--Continued

GA Fa 34--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	85.73	85.37	85.83	85.53	84.29	84.26	84.60	84.51	84.37	84.33	86.04	85.83
2	85.75	85.56	85.66	85.48	84.26	84.22	84.51	84.45	84.39	84.37	86.20	85.91
3	85.55	85.46	85.85	85.66	84.26	84.12	84.45	84.42	84.39	84.37	86.32	86.21
4	85.49	85.36	85.90	85.78	84.30	84.11	84.42	84.42	84.37	84.22	86.38	86.32
5	85.51	85.48	85.78	85.56	84.31	84.23	84.44	84.41	84.30	84.24	86.38	86.34
6	85.50	85.36	85.62	85.53	84.34	84.22	84.46	84.44	84.31	84.26	86.34	86.27
7	85.37	85.27	85.64	85.60	84.40	84.34	84.45	84.41	84.44	84.29	86.27	86.18
8	85.28	85.09	85.74	85.63	84.44	84.40	84.44	84.40	84.68	84.44	86.18	86.12
9	85.50	85.17	85.74	85.47	84.44	84.32	84.49	84.44	84.84	84.69	86.13	86.08
10	85.61	85.50	85.45	85.42	84.70	84.42	84.49	84.48	84.89	84.84	86.11	86.08
11	85.63	85.60	85.42	85.41	84.78	84.70	84.55	84.48	84.87	84.84	86.22	86.11
12	85.62	85.53	85.40	85.35	84.76	84.52	84.55	84.49	84.85	84.84	86.28	86.22
13	85.56	85.49	85.39	85.37	84.54	84.48	84.49	84.40	84.92	84.84	86.29	86.23
14	85.56	85.44	85.39	85.33	84.65	84.55	84.61	84.40	84.95	84.92	86.23	86.06
15	85.45	85.32	85.31	85.10	84.65	84.61	84.70	84.61	84.94	84.90	86.19	86.08
16	85.50	85.32	85.11	85.06	84.75	84.61	84.70	84.58	85.02	84.91	86.19	86.12
17	85.53	85.43	85.15	85.06	84.88	84.71	84.64	84.58	85.24	85.04	86.34	86.15
18	85.47	85.41	85.20	85.10	84.92	84.89	84.64	84.61	85.34	85.25	86.43	86.34
19	85.55	85.40	85.10	84.86	84.89	84.81	84.61	84.40	85.34	85.27	86.43	86.40
20	85.61	85.54	84.84	84.65	84.85	84.80	84.45	84.36	85.32	85.27	86.46	86.40
21	85.54	85.52	84.64	84.61	84.85	84.80	84.63	84.45	85.40	85.31	86.51	86.46
22	85.53	85.51	84.62	84.44	84.85	84.83	84.73	84.63	85.46	85.41	86.46	85.95
23	85.54	85.51	84.42	84.17	84.84	84.78	84.75	84.70	85.50	85.46	86.63	86.09
24	85.59	85.56	84.29	84.17	84.78	84.74	84.70	84.63	85.62	85.50	86.77	86.63
25	85.63	85.50	84.29	84.20	84.75	84.70	84.63	84.56	85.71	85.62	86.76	86.61
26	85.57	85.48	84.28	84.17	84.70	84.60	84.56	84.47	85.76	85.71	86.79	86.50
27	85.57	85.52	84.42	84.27	84.61	84.53	84.46	84.23	85.90	85.76	86.94	86.79
28	85.55	85.53	84.52	84.43	84.58	84.51	84.26	84.19	85.97	85.90	86.93	86.80
29	85.66	85.55	84.45	84.32	84.67	84.56	84.33	84.26	85.94	85.85	86.80	86.72
30	85.83	85.67	84.32	84.28	84.67	84.60	84.32	84.27	85.96	85.85	86.83	86.77
31	---	---	84.29	84.26	---	---	84.33	84.27	86.06	85.98	---	---
MONTH	85.83	85.09	85.90	84.17	84.92	84.11	84.75	84.19	86.06	84.22	86.94	85.83



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 22. SITE ID.--391530079244401. PERMIT NUMBER.--GA-73-2146.
LOCATION.--Lat 39°15'30", long 79°24'44", Hydrologic Unit 02070002, south side of Wilson Rd., 500 ft west of intersection with Wilson-Coronna Rd., 0.4 mi northwest of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Allegheny Formation of Middle Pennsylvanian age. Aquifer code: 324ALGN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 640 ft; casing diameter 4 in., to 517 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,530 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 3.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--May 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 68.48 ft below land-surface datum, May 15, 1980; lowest measured, 203.79 ft below land surface datum, Sept. 27 and 28, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	202.03	201.96	202.21	202.03	202.12	202.03	202.06	201.98	201.85	201.73	202.33	202.21
2	201.96	201.93	202.11	202.03	202.19	202.12	202.03	201.94	201.95	201.85	202.33	202.27
3	---	---	202.20	202.11	202.19	202.04	202.02	201.73	202.06	201.86	202.36	202.25
4	---	---	202.15	202.05	202.27	202.08	202.10	201.87	202.06	201.99	202.39	202.27
5	---	---	202.04	201.85	202.25	202.07	202.09	201.89	202.05	201.91	202.39	202.15
6	202.11	202.00	202.04	201.90	202.22	202.06	202.02	201.83	201.99	201.90	202.32	202.13
7	202.11	202.10	202.26	202.04	202.23	202.03	202.00	201.92	202.03	201.98	202.49	202.25
8	202.11	202.07	202.35	202.23	202.33	202.14	201.97	201.84	202.07	202.05	202.54	202.42
9	202.07	202.02	202.35	202.31	202.33	202.07	202.06	201.97	202.16	202.07	202.55	202.45
10	202.02	201.90	202.31	202.17	202.26	202.02	202.10	202.04	202.15	202.09	202.54	202.44
11	201.97	201.90	202.42	202.29	202.28	202.16	202.13	202.09	202.09	202.02	202.44	202.33
12	202.13	202.00	202.44	202.34	202.34	202.12	202.10	201.92	202.20	202.02	202.48	202.32
13	202.20	202.12	202.34	202.29	202.14	201.96	202.08	201.92	202.20	202.18	202.45	202.36
14	202.25	202.08	202.33	202.30	202.17	202.02	202.07	201.97	202.23	202.18	202.36	202.31
15	202.19	202.11	202.35	202.33	202.21	202.03	201.96	201.93	202.23	202.17	202.45	202.24
16	202.16	202.11	---	---	202.23	202.08	202.04	201.94	202.44	202.23	202.56	202.44
17	202.15	202.13	---	---	202.12	201.99	202.04	201.96	202.44	202.30	202.56	202.43
18	202.13	202.05	---	---	202.14	202.06	202.04	201.89	202.44	202.19	202.51	202.35
19	202.07	202.05	202.39	202.32	202.28	202.06	---	---	202.29	202.15	202.57	202.49
20	202.17	202.07	202.32	202.00	202.28	202.11	202.00	201.83	202.25	202.11	202.57	202.28
21	202.15	202.00	202.40	202.17	202.39	202.13	202.04	202.00	202.14	201.93	202.49	202.28
22	202.00	201.87	202.40	202.31	202.39	202.23	202.03	201.92	202.15	202.01	202.58	202.48
23	202.00	201.95	202.38	202.27	202.34	202.09	201.96	201.89	202.23	202.15	202.61	202.49
24	202.00	201.87	202.29	202.28	202.26	201.90	201.90	201.87	202.29	202.25	202.52	202.38
25	202.06	202.00	202.31	202.28	202.27	202.08	201.88	201.88	202.25	202.15	202.51	202.41
26	202.17	202.07	202.28	202.27	202.31	202.26	201.88	201.75	202.15	201.98	202.59	202.47
27	202.21	202.17	202.27	202.07	202.30	202.06	201.79	201.75	202.11	201.99	202.57	202.54
28	202.17	202.15	202.07	202.05	202.13	201.90	---	---	202.21	202.11	202.54	202.46
29	---	---	---	---	202.20	202.15	---	---	---	---	202.52	202.44
30	---	---	202.14	202.00	202.15	202.04	---	---	---	---	202.48	202.38
31	202.22	202.21	---	---	202.09	202.03	201.73	201.72	---	---	202.46	202.25
MONTH	---	---	---	---	202.39	201.90	---	---	202.44	201.73	202.61	202.13

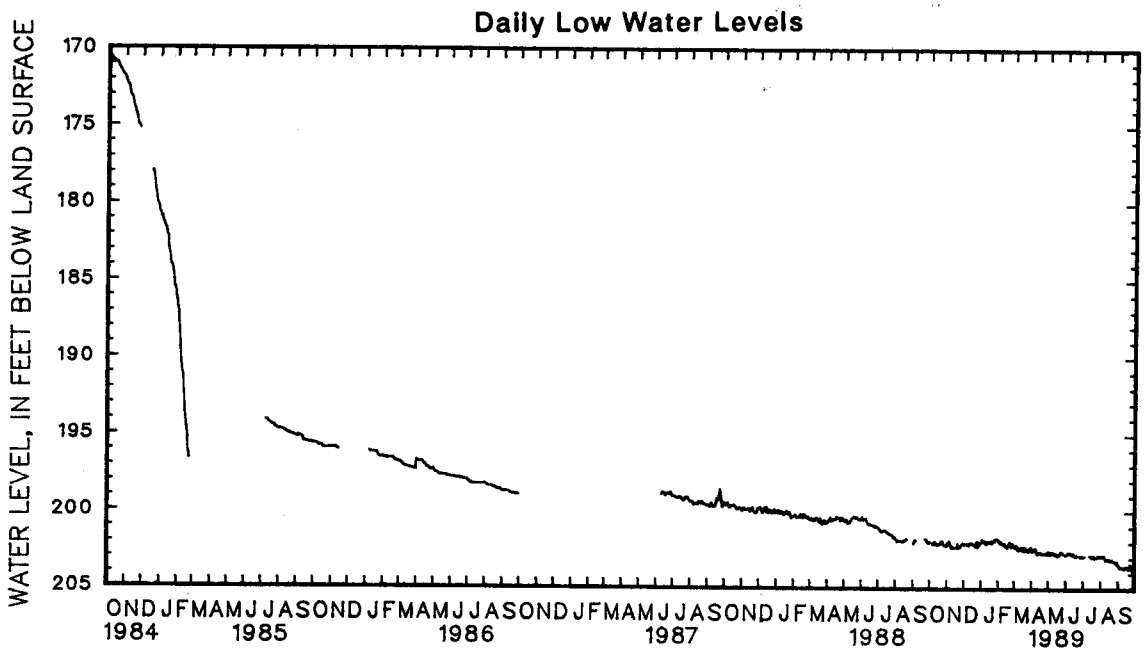
GROUND-WATER LEVELS

MARYLAND--Continued

GARRETT COUNTY--Continued

GA Fb 22--Continued

DAY	APRIL MAX	APRIL MIN	MAY MAX	MAY MIN	JUNE MAX	JUNE MIN	JULY MAX	JULY MIN	AUGUST MAX	AUGUST MIN	SEPTEMBER MAX	SEPTEMBER MIN
1	202.68	202.42	202.75	202.62	202.83	202.76	202.90	202.88	203.00	202.85	203.47	203.40
2	202.68	202.53	202.64	202.55	202.83	202.75	202.91	202.88	203.01	202.88	203.49	203.41
3	202.61	202.44	202.87	202.65	202.83	202.72	202.88	202.87	202.98	202.87	203.55	203.52
4	202.56	202.38	202.94	202.74	202.79	202.65	202.88	202.84	202.91	202.82	203.58	203.56
5	202.64	202.47	202.83	202.61	202.75	202.63	---	---	202.88	202.83	203.59	203.58
6	202.60	202.45	202.76	202.61	202.70	202.62	---	---	202.86	202.82	203.61	203.59
7	202.55	202.41	202.81	202.63	202.71	202.68	---	---	202.88	202.82	203.61	203.58
8	202.50	202.35	202.84	202.68	---	---	---	---	202.97	202.88	203.65	203.57
9	202.67	202.36	202.79	202.64	---	---	---	---	203.10	202.98	203.65	203.57
10	202.71	202.61	202.72	202.63	202.74	202.64	---	---	203.18	203.09	203.61	203.58
11	202.72	202.70	202.73	202.65	202.80	202.74	---	---	203.16	203.08	203.66	203.60
12	202.72	202.71	202.75	202.66	202.79	202.74	---	---	203.17	203.06	203.70	203.64
13	202.73	202.67	202.81	202.73	202.72	202.68	202.88	202.82	203.19	203.06	203.70	203.64
14	202.73	202.66	202.81	202.78	202.75	202.68	202.83	202.81	203.21	203.07	203.64	203.54
15	202.67	202.61	202.80	202.70	202.76	202.74	202.98	202.83	203.19	203.02	203.59	203.53
16	202.71	202.61	202.80	202.71	202.83	202.74	202.97	202.90	203.17	203.00	203.59	203.50
17	202.71	202.63	202.89	202.73	202.90	202.74	202.96	202.89	203.22	203.06	203.57	203.53
18	202.67	202.59	202.95	202.82	202.92	202.85	202.98	202.93	203.27	203.14	203.65	203.61
19	202.70	202.60	202.95	202.79	202.89	202.84	202.95	202.85	203.23	203.11	203.69	203.65
20	202.73	202.68	202.84	202.72	202.88	202.82	202.86	202.83	203.20	203.11	203.65	203.65
21	202.72	202.68	202.86	202.71	202.88	202.82	202.95	202.86	203.19	203.11	203.67	203.65
22	202.72	202.68	202.83	202.69	---	---	203.02	202.95	203.19	203.12	203.65	203.37
23	202.72	202.69	202.69	202.56	202.90	202.88	---	---	203.14	203.14	203.56	203.37
24	202.72	202.71	202.71	202.56	---	---	---	---	203.18	203.14	203.74	203.56
25	202.72	202.66	202.68	202.62	---	---	---	---	203.24	203.18	203.73	203.67
26	202.68	202.65	202.69	202.60	202.89	202.87	203.07	202.92	203.26	203.21	203.67	203.57
27	202.68	202.67	202.73	202.69	202.87	202.85	203.00	202.82	203.29	203.22	203.79	203.67
28	---	---	---	---	202.84	202.81	202.91	202.80	203.35	203.27	203.79	203.77
29	---	---	---	---	202.90	202.81	203.01	202.84	203.30	203.23	---	---
30	202.75	202.69	---	---	202.91	202.89	203.00	202.85	203.39	203.19	---	---
31	---	---	202.82	202.76	---	---	202.98	202.83	203.48	203.40	---	---
MONTH	---	---	---	---	---	---	---	---	203.48	202.82	---	---



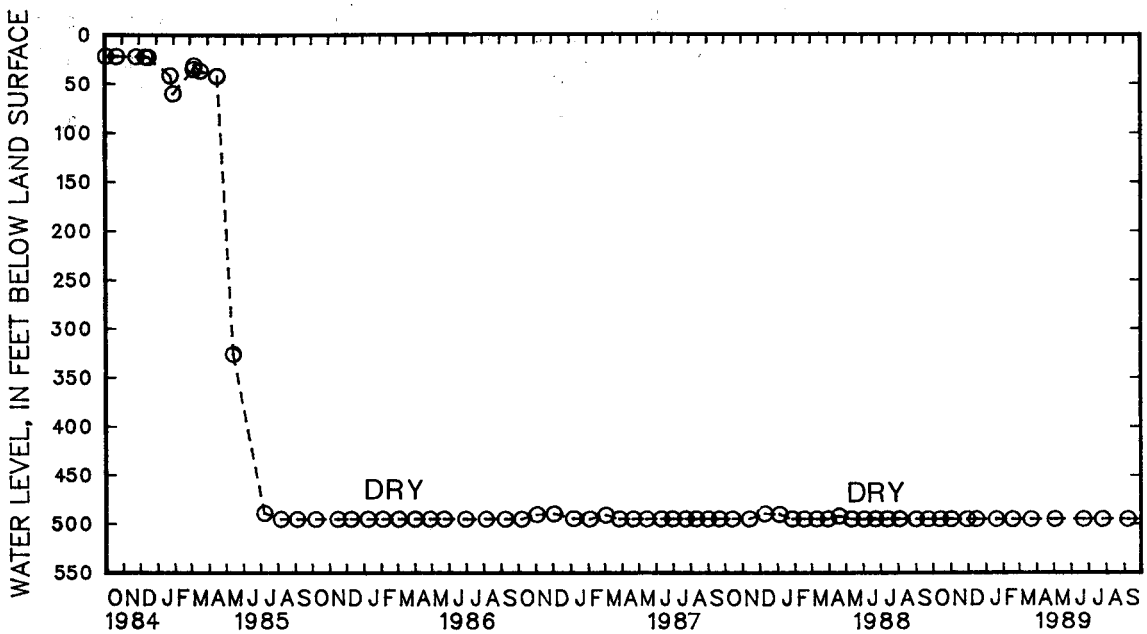
5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 23. SITE ID.--391530079244402 PERMIT NUMBER.--GA-73-2176
LOCATION.--Lat 39°15'30", long 79°24'44", Hydrologic Unit 02070002, south side of Wilson Rd., 500 ft west of intersection with Wilson-Coronna Rd., 0.4 mi northwest of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 495 ft; casing diameter 4 in., to 460 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval, May 1980 to Dec. 9, 1985.
DATUM.--Elevation of land surface is 2,530 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 3.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.89 ft below land-surface datum, May 25, 1980; lowest measured, dry on numerous occassions--See Remarks.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	DRY	NOV 29	DRY	JAN 19	DRY	FEB 17	DRY	MAY 3	DRY	JUL 25	DRY
NOV 1	DRY	DEC 15	DRY	19	DRY	MAR 22	DRY	JUN 22	DRY	SEP 7	DRY



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 24. SITE ID.--391530079244403. PERMIT NUMBER.--GA-73-2177.
LOCATION.--Lat 39°15'30", long 79°24'44", Hydrologic Unit 02070002, south side of Wilson Rd., 500 ft west of intersection with Wilson-Coronna Rd., 0.4 mi northwest of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 400 ft; casing diameter 4 in., to 340 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,530 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 3.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--May 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.09 ft below land-surface datum, Jan. 12, 1981; lowest measured, 54.85 ft below land surface datum, Mar. 2, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

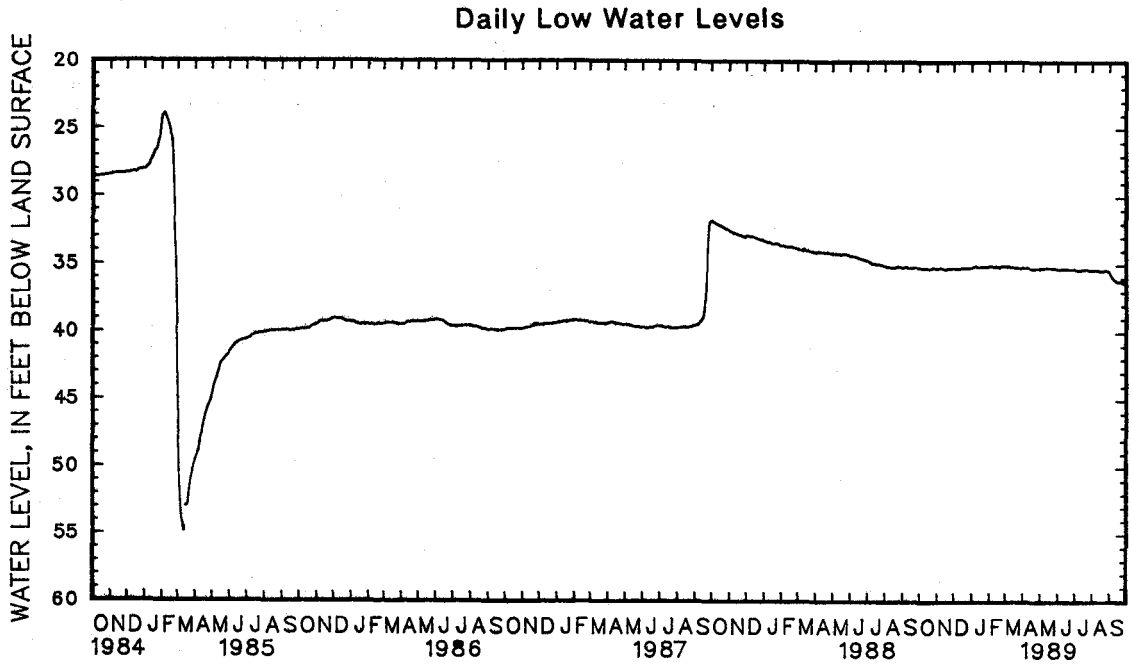
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	35.22	35.22	35.28	35.27	35.21	35.21	35.17	35.16	35.07	35.06	35.06	35.05
2	35.22	35.22	35.27	35.25	35.22	35.21	35.16	35.14	35.07	35.06	35.08	35.06
3	35.22	35.22	35.25	35.25	35.23	35.23	35.15	35.12	35.07	35.06	35.09	35.08
4	35.22	35.22	35.25	35.25	35.24	35.23	35.12	35.11	35.07	35.07	35.10	35.09
5	35.23	35.22	35.25	35.21	35.25	35.24	35.11	35.10	35.08	35.07	35.10	35.09
6	35.24	35.23	35.21	35.19	35.25	35.25	35.10	35.08	35.08	35.07	35.09	35.07
7	35.26	35.24	35.19	35.19	35.25	35.25	35.08	35.08	35.07	35.07	35.07	35.07
8	35.26	35.26	35.20	35.19	35.25	35.25	35.08	35.07	35.08	35.07	35.08	35.07
9	35.28	35.26	35.23	35.21	35.25	35.25	35.07	35.07	35.10	35.08	35.10	35.08
10	35.28	35.27	35.23	35.23	35.25	35.24	35.09	35.07	35.10	35.09	35.11	35.10
11	35.26	35.24	35.24	35.23	35.24	35.24	35.11	35.09	35.09	35.09	35.12	35.11
12	35.24	35.24	35.26	35.24	35.24	35.24	35.12	35.11	35.09	35.08	35.12	35.11
13	35.25	35.24	35.27	35.26	35.24	35.22	35.11	35.10	35.10	35.09	35.11	35.11
14	35.27	35.25	35.27	35.27	35.22	35.20	35.11	35.11	35.10	35.10	35.11	35.11
15	35.28	35.27	35.29	35.27	---	---	35.11	35.10	35.10	35.10	35.11	35.10
16	35.28	35.28	35.29	35.28	35.21	35.20	35.10	35.09	35.11	35.10	35.12	35.10
17	35.29	35.28	35.28	35.28	35.21	35.20	35.09	35.09	---	---	35.14	35.12
18	35.29	35.28	35.29	35.28	35.20	35.18	35.09	35.09	35.14	35.13	35.15	35.14
19	35.28	35.27	35.30	35.29	35.19	35.18	---	---	35.14	35.13	35.16	35.15
20	35.27	35.27	35.30	35.26	35.19	35.19	35.09	35.08	35.13	35.12	35.17	35.17
21	35.27	35.27	35.26	35.25	35.20	35.20	35.10	35.08	35.12	35.08	35.17	35.15
22	35.27	35.24	35.25	35.25	35.21	35.20	35.11	35.10	35.08	35.06	35.16	35.15
23	35.24	35.22	35.26	35.26	35.22	35.21	35.12	35.11	35.07	35.06	35.18	35.16
24	35.22	35.20	35.26	35.25	35.21	35.18	35.12	35.12	35.08	35.07	35.18	35.18
25	35.20	35.20	35.25	35.25	35.18	35.18	35.12	35.12	35.09	35.08	35.18	35.18
26	35.20	35.20	35.25	35.25	35.18	35.18	35.13	35.11	35.09	35.07	35.19	35.18
27	35.22	35.20	35.25	35.23	35.19	35.18	35.11	35.10	35.07	35.05	35.20	35.19
28	35.23	35.22	35.23	35.21	35.19	35.18	35.10	35.10	35.05	35.05	35.20	35.20
29	35.25	35.23	---	---	35.17	35.17	35.10	35.10	---	---	35.20	35.20
30	35.27	35.25	35.21	35.21	35.17	35.17	35.10	35.08	---	---	35.20	35.18
31	35.28	35.27	---	---	35.17	35.17	35.08	35.07	---	---	35.18	35.15
MONTH	35.29	35.20	---	---	---	---	---	---	---	---	35.20	35.05

MARYLAND--Continued

GARRETT COUNTY--Continued

GA Fb 24--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	35.15	35.15	35.24	35.24	35.28	35.27	35.31	35.30	35.36	35.35	35.63	35.56
2	35.17	35.15	35.24	35.22	35.29	35.28	35.33	35.31	35.36	35.35	35.72	35.64
3	35.17	35.17	35.22	35.22	35.30	35.29	35.33	35.33	35.36	35.36	35.80	35.72
4	35.17	35.16	35.23	35.22	35.30	35.29	35.34	35.33	35.36	35.36	35.86	35.80
5	35.17	35.16	35.23	35.23	35.29	35.29	35.34	35.34	35.36	35.36	35.92	35.87
6	35.17	35.17	35.22	35.21	35.29	35.27	35.34	35.34	35.36	35.35	35.98	35.92
7	35.17	35.17	35.20	35.19	35.27	35.26	35.34	35.34	35.35	35.35	36.01	35.98
8	35.17	35.16	35.19	35.19	35.26	35.26	35.35	35.34	35.35	35.35	36.05	36.02
9	35.16	35.15	35.19	35.19	35.26	35.25	35.36	35.35	35.37	35.35	36.09	36.05
10	35.18	35.16	35.19	35.18	35.25	35.25	35.36	35.35	35.39	35.37	36.12	36.09
11	35.20	35.18	35.18	35.16	35.26	35.25	35.35	35.35	35.40	35.39	36.15	36.12
12	35.22	35.20	35.16	35.15	35.27	35.26	35.35	35.35	35.40	35.40	36.18	36.15
13	35.23	35.22	35.16	35.15	35.27	35.27	35.35	35.32	35.40	35.40	36.21	36.18
14	35.23	35.23	35.16	35.16	35.27	35.27	35.32	35.31	35.40	35.40	36.22	36.21
15	35.23	35.23	35.17	35.16	35.27	35.27	35.31	35.31	35.40	35.40	36.22	36.22
16	35.23	35.23	35.17	35.16	35.26	35.26	35.32	35.31	35.40	35.39	36.22	36.21
17	35.24	35.23	35.16	35.16	35.26	35.25	35.32	35.31	35.40	35.40	36.21	36.20
18	35.24	35.23	35.18	35.16	35.27	35.26	35.31	35.31	35.41	35.40	36.21	36.20
19	35.23	35.23	35.20	35.18	35.28	35.27	35.31	35.31	35.41	35.41	36.23	36.21
20	35.23	35.23	35.20	35.20	35.28	35.28	35.31	35.29	35.41	35.40	36.25	36.23
21	35.23	35.23	35.21	35.20	35.28	35.27	35.29	35.28	35.40	35.39	36.27	36.25
22	35.23	35.23	35.21	35.21	35.28	35.27	35.30	35.28	35.39	35.39	36.28	36.27
23	35.24	35.23	35.21	35.21	35.28	35.28	35.32	35.30	35.39	35.37	36.27	36.27
24	35.24	35.24	35.21	35.19	35.28	35.27	35.34	35.32	35.37	35.36	36.28	36.27
25	35.24	35.24	35.20	35.20	35.27	35.27	35.36	35.34	35.37	35.36	36.31	36.28
26	35.24	35.23	35.20	35.20	35.27	35.27	35.37	35.36	35.38	35.37	36.31	36.31
27	35.23	35.23	35.21	35.20	35.27	35.27	35.37	35.37	35.39	35.38	36.35	36.31
28	35.23	35.23	35.24	35.21	35.27	35.27	35.37	35.35	35.41	35.39	36.40	36.36
29	35.23	35.23	35.26	35.24	35.28	35.27	35.35	35.35	35.43	35.41	36.42	36.40
30	35.24	35.23	35.26	35.26	35.30	35.28	35.36	35.35	35.47	35.43	36.43	36.42
31	---	---	35.27	35.26	---	---	35.36	35.36	35.55	35.47	---	---
MONTH	35.24	35.15	35.27	35.15	35.30	35.25	35.37	35.28	35.55	35.35	36.43	35.56



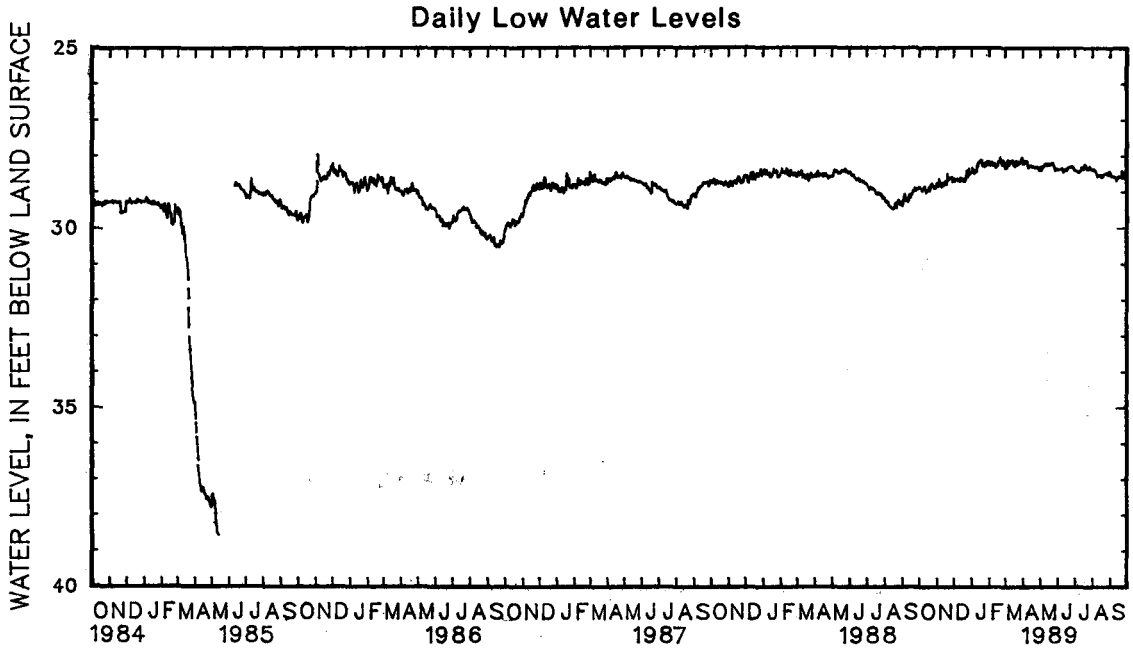
5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 25. SITE ID.--391530079244404. PERMIT NUMBER.--GA-73-2182.
LOCATION.--Lat 39°15'30", long 79°24'44", Hydrologic Unit 02070002, south side of Wilson Rd., 500 ft west of intersection with Wilson-Coronna Rd., 0.4 mi northwest of Wilson.
Owner: U.S. Geological Survey
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 180 ft; casing diameter 4 in., to 120 ft; open hole
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval from June 4, 1980 to current year.
DATUM.--Elevation of land surface is 2,530 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 3.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.97 ft below land-surface datum, Nov. 4, 1985; lowest measured, 38.56 ft below land surface datum, May 13, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	28.97	28.89	28.85	28.76	28.72	28.68	28.50	28.47	28.25	28.17	28.37	28.33
2	28.89	28.87	28.86	28.77	28.74	28.72	28.49	28.47	28.30	28.24	28.38	28.35
3	28.91	28.88	28.88	28.85	28.73	28.65	28.49	28.33	28.31	28.22	28.37	28.33
4	28.94	28.91	28.87	28.80	28.76	28.67	28.54	28.37	28.31	28.26	28.37	28.34
5	29.01	28.93	28.79	28.65	28.75	28.67	28.53	28.47	28.27	28.21	28.37	28.21
6	29.05	29.00	28.81	28.73	28.73	28.67	28.52	28.39	28.23	28.16	28.26	28.10
7	29.05	28.96	28.90	28.79	28.71	28.64	28.52	28.50	28.26	28.20	28.31	28.16
8	29.01	28.95	28.92	28.84	28.77	28.70	28.50	28.41	28.28	28.21	28.31	28.26
9	28.98	28.94	28.92	28.87	28.77	28.67	28.51	28.44	28.32	28.27	28.30	28.24
10	28.97	28.87	28.87	28.75	28.72	28.65	28.51	28.44	28.27	28.22	28.26	28.21
11	28.98	28.85	28.94	28.84	28.79	28.70	28.48	28.44	28.25	28.21	28.23	28.13
12	29.07	28.96	28.94	28.84	28.80	28.71	28.44	28.24	28.38	28.24	28.22	28.12
13	29.10	29.04	28.84	28.76	28.72	28.61	28.39	28.28	28.38	28.33	28.22	28.16
14	29.10	29.00	28.83	28.81	28.72	28.66	28.39	28.20	28.38	28.30	28.18	28.12
15	29.05	29.01	28.84	28.78	---	---	28.20	28.16	28.37	28.26	28.25	28.11
16	29.03	28.96	28.78	28.71	28.78	28.68	28.24	28.17	28.36	28.29	28.36	28.24
17	29.02	28.97	28.81	28.72	28.70	28.64	28.26	28.18	28.35	28.25	28.34	28.27
18	28.96	28.89	28.86	28.81	28.72	28.70	28.25	28.11	28.29	28.16	28.30	28.21
19	28.98	28.92	28.83	28.75	28.80	28.69	28.31	28.18	28.18	28.14	28.35	28.30
20	29.02	28.98	28.72	28.50	28.78	28.72	28.28	28.12	28.18	28.11	28.35	28.15
21	28.99	28.86	28.75	28.63	28.79	28.69	28.35	28.28	28.13	28.03	28.25	28.13
22	28.87	28.81	28.74	28.67	28.80	28.69	28.35	28.29	28.19	28.11	28.29	28.25
23	28.87	28.81	28.70	28.62	28.69	28.58	28.32	28.28	28.26	28.20	28.29	28.25
24	28.85	28.77	28.67	28.62	28.63	28.42	28.30	28.27	28.28	28.26	28.27	28.16
25	28.87	28.82	28.68	28.63	28.58	28.50	28.33	28.30	28.27	28.20	28.20	28.17
26	28.93	28.85	28.68	28.61	28.59	28.58	28.35	28.19	28.20	28.11	28.25	28.20
27	28.93	28.90	28.63	28.59	28.59	28.45	28.29	28.20	28.27	28.16	28.24	28.20
28	28.92	28.85	28.70	28.59	28.52	28.36	28.30	28.27	28.33	28.25	28.22	28.16
29	28.93	28.92	28.75	28.70	28.54	28.52	28.27	28.21	---	---	28.22	28.13
30	28.93	28.91	28.73	28.64	28.54	28.48	28.20	28.14	---	---	28.18	28.09
31	28.91	28.82	---	---	28.51	28.48	28.18	28.16	---	---	28.17	28.03
MONTH	29.10	28.77	28.94	28.50	---	---	28.54	28.11	28.38	28.03	28.38	28.03

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	28.28	28.15	28.45	28.33	28.43	28.39	28.43	28.38	28.43	28.39	28.51	28.46
2	28.28	28.23	28.38	28.30	28.43	28.39	28.44	28.40	28.43	28.39	28.54	28.46
3	28.22	28.15	28.47	28.34	28.46	28.38	28.45	28.41	28.43	28.39	28.57	28.55
4	28.22	28.13	28.48	28.40	28.46	28.38	28.46	28.42	28.40	28.36	28.59	28.57
5	28.23	28.20	28.44	28.30	28.45	28.37	28.46	28.42	28.41	28.38	28.59	28.56
6	28.24	28.19	28.32	28.28	28.42	28.36	28.47	28.43	28.42	28.41	28.59	28.56
7	28.21	28.17	28.34	28.30	28.41	28.36	28.47	28.44	28.46	28.42	28.59	28.56
8	28.19	28.13	28.35	28.30	28.42	28.37	28.49	28.47	28.53	28.47	28.60	28.58
9	28.31	28.16	28.35	28.25	28.39	28.34	28.50	28.45	28.57	28.54	28.61	28.58
10	28.34	28.29	28.25	28.22	28.45	28.37	28.46	28.43	28.59	28.57	28.62	28.59
11	28.34	28.34	28.25	28.22	28.49	28.45	28.46	28.43	28.57	28.54	28.68	28.62
12	28.34	28.31	28.29	28.21	28.47	28.40	28.45	28.41	28.56	28.53	28.70	28.67
13	28.34	28.28	28.30	28.26	28.41	28.38	28.40	28.32	28.58	28.54	28.72	28.65
14	28.34	28.28	28.30	28.27	28.46	28.40	28.37	28.32	28.59	28.55	28.68	28.58
15	28.30	28.26	28.29	28.21	28.46	28.38	28.42	28.37	28.58	28.53	28.65	28.60
16	28.36	28.28	28.24	28.21	28.45	28.35	28.39	28.32	28.58	28.52	28.64	28.56
17	28.37	28.31	28.28	28.22	28.45	28.40	28.36	28.33	28.62	28.57	28.62	28.57
18	28.33	28.28	28.31	28.26	28.44	28.39	28.39	28.35	28.62	28.59	28.63	28.60
19	28.35	28.28	28.30	28.24	28.40	28.35	28.36	28.22	28.61	28.56	28.63	28.60
20	28.38	28.31	28.24	28.20	28.38	28.32	28.27	28.23	28.58	28.56	28.62	28.58
21	28.35	28.29	28.28	28.21	28.35	28.32	28.33	28.27	28.58	28.52	28.62	28.60
22	28.34	28.31	28.29	28.24	28.36	28.31	28.38	28.33	28.57	28.51	28.59	28.42
23	28.35	28.32	28.24	28.19	28.36	28.30	28.39	28.37	28.51	28.48	28.61	28.48
24	28.36	28.33	28.29	28.19	28.33	28.29	28.39	28.37	28.50	28.47	28.66	28.61
25	28.35	28.31	28.30	28.28	28.33	28.31	28.40	28.37	28.52	28.47	28.63	28.57
26	28.35	28.29	28.34	28.29	28.33	28.29	28.42	28.36	28.53	28.48	28.60	28.51
27	28.35	28.33	28.39	28.34	28.33	28.28	28.37	28.29	28.54	28.50	28.66	28.61
28	28.38	28.33	28.43	28.40	28.33	28.29	28.35	28.29	28.58	28.54	28.66	28.57
29	28.40	28.36	28.42	28.39	28.40	28.33	28.40	28.35	28.54	28.48	28.59	28.52
30	28.45	28.40	28.40	28.37	28.43	28.37	28.41	28.37	28.52	28.42	28.60	28.57
31	---	---	28.43	28.36	---	---	28.40	28.36	28.54	28.51	---	---
MONTH	28.45	28.13	28.48	28.19	28.49	28.28	28.50	28.22	28.62	28.36	28.72	28.42



5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

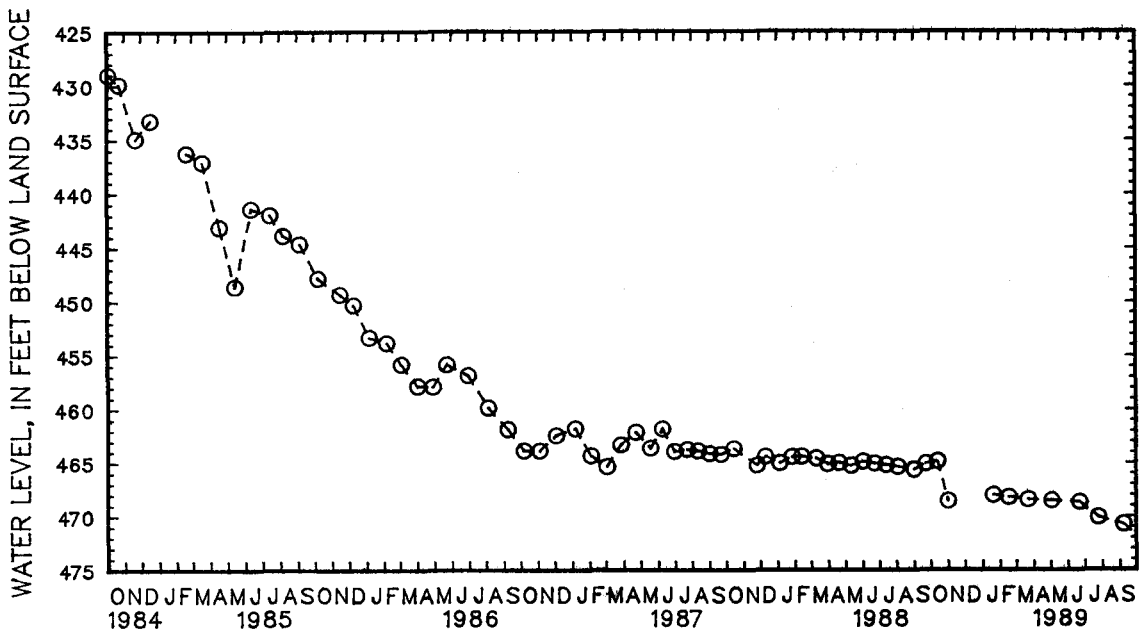
MARYLAND--Continued

GARRETT COUNTY--Continued

WELL NUMBER.--GA Fb 26. SITE ID.--391513079243601. PERMIT NUMBER.--GA-73-2179.
LOCATION.--Lat 39°15'13", long 79°24'36", Hydrologic Unit 02070002, 0.6 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Allegheny Formation of Middle Pennsylvanian age. Aquifer code: 324ALGN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 832 ft; steel casing diameter 4 in., to 218 ft; plastic casing diameter 4 in. from 218 to 687 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute interval; July 1980 to October 1984.
DATUM.--Elevation of land surface is 2,760 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 2.1 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--October 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 257.06 ft below land-surface datum, June 11, 1980; lowest measured, 470.75 ft below land-surface datum, Sept. 8, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	464.92	JAN 20	468.05	MAR 22	468.46	JUN 22	468.69	SEP 8	470.75
NOV 1	468.60	FEB 16	468.25	MAY 3	468.56	JUL 25	470.10		



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 27. SITE ID.--391530079244404. PERMIT NUMBER.--GA-73-2182.
LOCATION.--Lat 39°15'13"long 79°24'44", Hydrologic Unit 02070002, 0.6 mi west of Wilson.
Owner: U.S. Geological Survey
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 656 ft; casing diameter 4 in., to 117 ft; open hole
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,760 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring Point: Top of casing, 3.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, .32 ft below land-surface datum, Mar. 6, 1989; lowest measured, 15.63 ft below land surface datum, Nov. 20, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	11.46	11.37	---	---	---	---	2.28	2.17	3.21	3.12	2.77	2.66
2	11.56	11.47	14.39	14.31	---	---	2.38	2.28	3.32	3.22	2.87	2.77
3	11.65	11.56	14.46	14.39	---	---	2.48	2.39	3.42	3.32	2.96	2.87
4	11.74	11.66	14.53	14.47	---	---	2.59	2.48	3.48	1.51	3.07	2.97
5	11.83	11.74	14.61	14.54	---	---	2.69	2.59	1.65	1.55	3.11	.86
6	11.91	11.83	14.68	14.60	---	---	2.79	2.70	1.76	1.65	.69	.32
7	12.01	11.92	14.74	14.68	---	---	2.88	2.80	1.86	1.76	.89	.50
8	12.11	12.02	14.82	14.75	---	---	2.91	.66	1.96	1.86	1.46	.89
9	12.20	12.11	14.88	14.82	---	---	1.10	.68	2.05	1.96	1.66	1.49
10	12.29	12.21	14.95	14.89	3.44	3.35	1.63	1.11	2.16	2.05	1.76	1.66
11	12.39	12.29	15.03	14.96	3.55	3.44	1.73	1.63	2.26	2.16	1.86	1.77
12	12.48	12.40	15.10	15.03	---	---	1.79	1.07	2.36	2.27	1.96	1.87
13	---	---	15.18	15.11	---	---	1.08	.93	2.48	2.37	2.06	1.97
14	12.66	12.57	15.25	15.18	---	---	1.40	1.04	2.58	2.48	2.18	2.07
15	12.76	12.67	15.32	15.26	4.10	4.00	1.27	.93	2.61	.56	2.28	2.19
16	12.85	12.76	15.39	15.33	4.20	4.11	1.44	1.01	.85	.52	2.39	2.29
17	12.94	12.85	15.47	15.39	4.31	4.21	1.67	1.47	1.14	.86	2.49	2.39
18	13.04	12.94	15.53	15.47	4.41	4.31	1.77	1.68	1.58	1.16	2.60	2.49
19	13.13	13.04	15.62	15.54	4.51	4.41	1.87	1.77	1.69	1.58	2.70	2.61
20	13.22	13.13	15.63	1.05	4.60	4.51	1.97	1.88	1.80	1.69	2.80	2.71
21	13.32	13.22	1.25	1.05	4.70	4.61	2.08	1.98	1.90	1.81	2.87	1.24
22	13.41	13.32	1.68	1.27	4.80	4.70	2.19	2.08	2.01	1.91	1.50	1.23
23	13.50	13.41	1.77	1.68	4.88	4.80	2.29	2.19	2.11	2.01	1.65	1.50
24	13.60	13.50	1.86	1.78	4.90	.75	2.40	2.30	2.22	2.12	1.70	1.57
25	13.68	13.60	1.95	1.86	1.09	.77	2.51	2.41	2.33	2.23	1.66	1.53
26	13.77	13.68	2.04	1.96	1.66	1.10	2.62	2.52	2.44	2.33	1.68	1.58
27	13.86	13.77	2.13	2.05	1.76	1.67	2.71	2.62	2.54	2.44	1.78	1.68
28	13.95	13.87	2.22	2.13	1.86	1.76	2.81	2.72	2.65	2.55	1.88	1.78
29	14.04	13.95	2.26	2.23	1.97	1.87	2.91	2.82	---	---	1.97	1.88
30	14.14	14.04	2.35	2.26	2.07	1.97	3.01	2.91	---	---	2.07	1.97
31	14.23	14.14	---	---	2.16	2.07	3.11	3.02	---	---	2.18	2.07
MONTH	14.23	11.37	15.63	1.05	---	---	3.11	.66	3.48	.52	3.11	.32

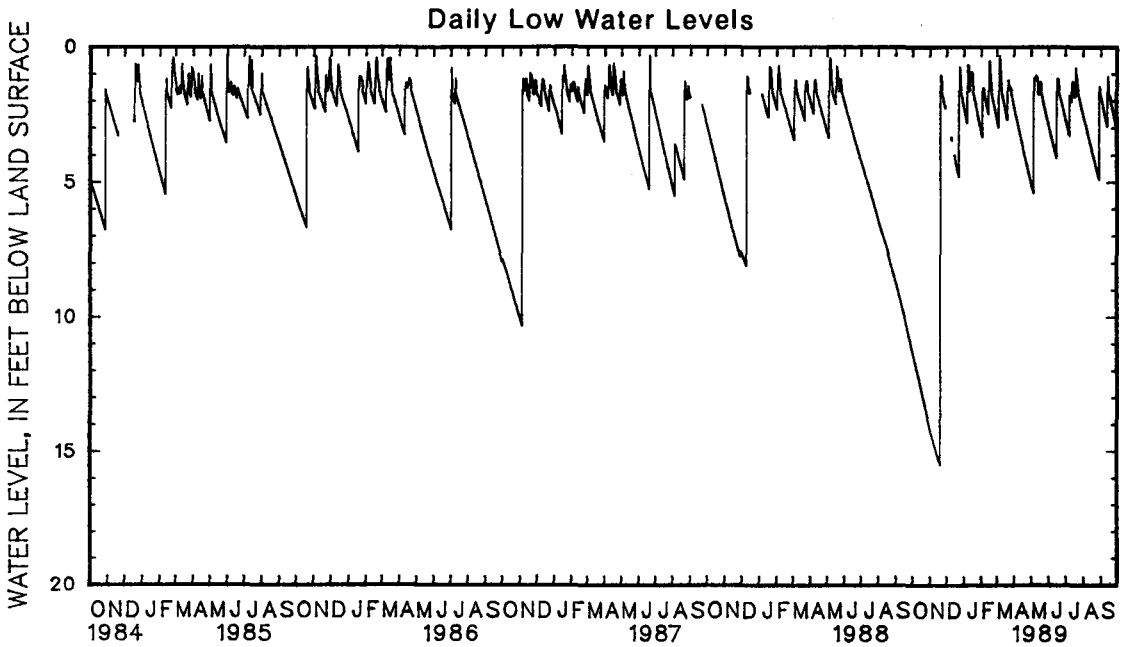
GROUND-WATER LEVELS

MARYLAND--Continued

GARRETT COUNTY--Continued

GA Fb 27--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	2.28	2.18	5.15	5.06	2.95	2.86	2.75	2.66	2.56	2.48	1.87	1.79
2	2.37	2.28	5.24	5.16	3.04	2.95	2.83	2.75	2.66	2.58	1.96	1.87
3	2.48	2.38	5.32	5.24	3.13	3.05	2.92	2.84	2.75	2.66	2.05	1.96
4	2.59	2.49	5.41	5.33	3.22	3.13	3.01	2.93	2.83	2.75	2.15	2.05
5	2.68	2.59	5.50	5.42	3.32	3.23	3.10	3.01	2.92	2.84	2.25	2.15
6	2.77	2.68	5.57	1.18	3.41	3.32	3.19	3.10	3.00	2.92	2.35	2.25
7	2.88	2.78	1.20	1.14	3.49	3.42	3.27	3.19	3.09	3.01	2.45	2.35
8	2.97	2.88	1.41	1.21	3.58	3.49	3.36	3.28	3.18	3.09	2.56	2.45
9	3.06	2.97	1.65	1.21	3.67	3.58	3.41	1.82	3.27	3.18	2.66	2.56
10	3.16	3.06	1.24	1.05	3.76	3.67	1.93	1.85	3.36	3.27	2.75	2.66
11	3.26	3.17	1.20	1.09	3.84	3.76	2.02	1.94	3.45	3.36	2.85	2.76
12	3.36	3.26	1.33	1.20	3.93	3.85	2.11	2.02	3.54	3.45	2.95	2.85
13	3.44	3.36	1.67	1.34	4.02	3.94	2.12	1.29	3.62	3.54	3.04	2.95
14	3.56	3.44	1.77	1.67	4.11	4.02	1.48	1.28	3.71	3.63	3.12	1.10
15	3.66	3.56	1.86	1.77	4.19	4.11	1.65	1.50	3.80	3.71	1.72	1.62
16	3.76	3.66	1.63	1.31	4.27	1.51	1.75	1.66	3.89	3.80	1.82	1.73
17	3.86	3.76	1.40	1.30	1.65	1.17	1.85	1.75	3.98	3.89	1.92	1.83
18	3.95	3.86	1.65	1.31	1.42	1.20	1.93	1.85	4.06	3.98	1.95	1.90
19	4.04	3.95	1.74	1.65	1.66	1.43	2.00	.77	4.15	4.06	2.06	1.96
20	4.12	4.04	1.84	1.75	1.74	1.66	1.30	1.10	4.24	4.15	2.16	2.06
21	4.23	4.12	1.93	1.84	1.83	1.74	1.51	1.20	4.32	4.24	2.26	2.16
22	4.32	4.23	2.03	1.93	1.91	1.84	1.66	1.53	4.41	4.32	2.36	2.26
23	4.41	4.32	2.12	2.03	2.00	1.91	1.76	1.67	4.50	4.41	2.48	2.37
24	4.52	4.42	2.21	2.12	2.09	2.00	1.85	1.77	4.58	4.50	2.58	2.48
25	4.61	4.52	2.31	2.22	2.18	2.09	1.93	1.85	4.66	4.58	2.69	2.59
26	4.70	4.61	2.41	2.31	2.27	2.18	2.02	1.93	4.75	4.66	2.79	2.69
27	4.79	4.70	2.50	2.41	2.37	2.28	2.10	2.02	4.83	4.75	2.89	2.79
28	4.88	4.80	2.59	2.51	2.46	2.37	2.20	2.11	4.91	4.83	2.99	2.89
29	4.97	4.89	2.68	2.59	2.56	2.47	2.29	2.20	4.99	4.91	3.09	2.99
30	5.05	4.97	2.77	2.68	2.66	2.56	2.38	2.29	5.00	1.46	3.19	3.09
31	---	---	2.86	2.77	---	---	2.47	2.38	1.79	1.68	---	---
MONTH	5.05	2.18	5.57	1.05	4.27	1.17	3.41	.77	5.00	1.46	3.19	1.10



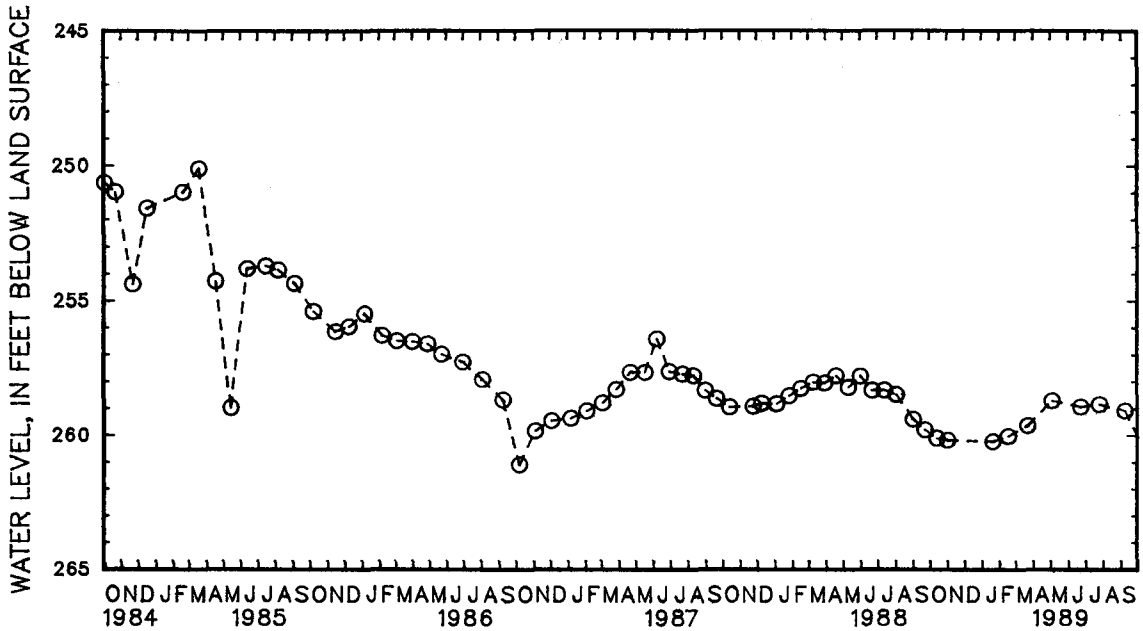
5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 28. SITE ID.--391513079243603. PERMIT NUMBER.--GA-73-2183.
LOCATION.--Lat 39°15'13", long 79°24'36", Hydrologic Unit 02070002, .6 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 556 ft; steel casing diameter 4 in. to 57.5 ft; plastic casing diameter 4 in. from 57.5 to 516.5 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval from July 21, 1980 to February 1984.
DATUM.--Elevation of land surface is 2,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 2.95 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 214.20 ft below land-surface datum, July 21, 1980; lowest measured, 320.20 ft below land-surface datum, Apr. 23, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	260.11	JAN 20	260.23	MAR 22	259.64	JUN 22	258.94	SEP 8	259.08
NOV 1	260.18	FEB 16	260.03	MAY 3	258.71	JUL 25	258.85		



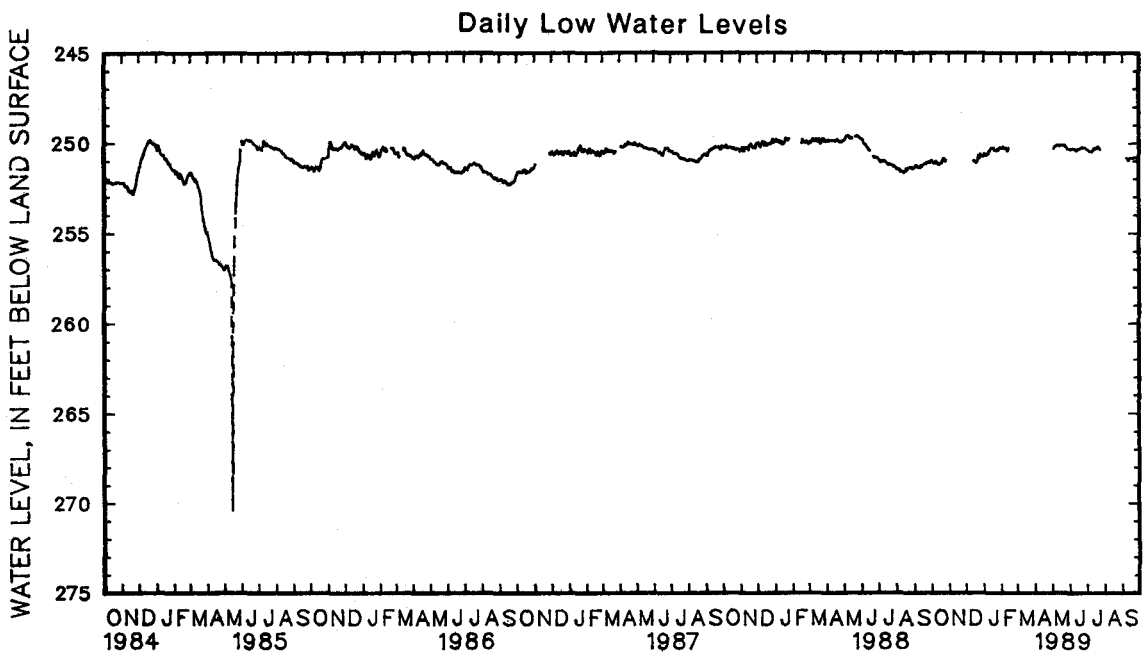
5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 29 SITE ID.--391513079243604. PERMIT NUMBER.--GA-73-2184.
LOCATION.--Lat 39°15'13", long 79°24'36", Hydrologic Unit 02070002, 0.6 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 360 ft; casing diameter 4 in., to 316 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of shelter floor, 2.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well.
PERIOD OF RECORD.--July 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 249.73 ft below land-surface datum, Mar. 27, 1988; lowest measured, 270.41 ft below land surface datum, May 26, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	251.08	251.00	---	---	---	---	250.73	250.69	250.39	250.25	---	---
2	251.00	250.94	---	---	---	---	250.73	250.69	250.45	250.30	---	---
3	251.04	250.94	---	---	---	---	250.72	250.55	250.46	250.29	---	---
4	251.10	251.04	---	---	---	---	250.80	250.59	250.45	250.30	---	---
5	251.13	251.08	---	---	---	---	250.79	250.67	250.41	250.24	---	---
6	251.19	251.13	---	---	---	---	250.80	250.57	250.35	250.19	---	---
7	251.16	251.11	---	---	---	---	250.80	250.68	250.36	250.28	---	---
8	251.12	251.09	---	---	---	---	250.78	250.60	250.37	250.27	---	---
9	251.12	251.10	---	---	---	---	250.78	250.62	250.40	250.30	---	---
10	251.13	251.04	---	---	---	---	250.73	250.60	250.37	250.28	---	---
11	251.12	250.99	---	---	---	---	250.71	250.60	250.34	250.27	---	---
12	251.21	251.09	---	---	---	---	250.60	250.42	250.47	250.28	---	---
13	251.23	251.17	---	---	---	---	250.51	250.42	250.46	250.43	---	---
14	251.26	251.21	---	---	---	---	250.48	250.33	250.47	250.37	---	---
15	251.22	251.21	---	---	251.06	250.94	250.34	250.29	250.46	250.31	---	---
16	251.22	251.16	---	---	251.06	250.98	250.39	250.26	250.41	250.28	---	---
17	251.20	251.16	---	---	251.02	250.93	250.40	250.27	---	---	---	---
18	251.19	251.12	---	---	251.08	250.99	250.37	250.26	---	---	---	---
19	251.14	251.12	---	---	251.19	251.01	250.41	250.28	---	---	---	---
20	251.20	251.12	---	---	251.17	251.06	250.47	250.23	---	---	---	---
21	251.16	251.02	---	---	251.16	251.00	250.53	250.39	---	---	---	---
22	251.04	250.91	---	---	251.16	250.98	250.54	250.40	---	---	---	---
23	251.04	250.90	---	---	251.03	250.82	250.51	250.40	---	---	---	---
24	250.99	250.84	---	---	250.93	250.65	250.48	250.40	---	---	---	---
25	251.02	250.88	---	---	250.80	250.69	250.49	250.43	---	---	---	---
26	251.08	250.92	---	---	250.82	250.78	250.47	250.34	---	---	---	---
27	251.11	251.02	---	---	250.80	250.67	250.38	250.33	---	---	---	---
28	251.05	250.94	---	---	250.69	250.55	250.40	250.38	---	---	---	---
29	---	---	---	---	250.73	250.71	250.39	250.36	---	---	---	---
30	---	---	---	---	250.73	250.70	250.32	250.25	---	---	---	---
31	---	---	---	---	250.73	250.69	250.32	250.27	---	---	---	---
MONTH	---	---	---	---	---	---	250.80	250.23	---	---	---	---

DAY	APRIL MAX	APRIL MIN	MAY MAX	MAY MIN	JUNE MAX	JUNE MIN	JULY MAX	JULY MIN	AUGUST MAX	AUGUST MIN	SEPTEMBER MAX	SEPTEMBER MIN
1	---	---	---	---	250.48	250.31	250.48	250.33	---	---	---	---
2	---	---	---	---	250.50	250.35	250.52	250.36	---	---	---	---
3	---	---	---	---	250.52	250.32	250.54	250.39	---	---	---	---
4	---	---	250.49	250.27	250.52	250.34	250.54	250.41	---	---	---	---
5	---	---	250.40	250.17	250.50	250.31	250.53	250.42	---	---	---	---
6	---	---	250.30	250.14	250.43	250.30	250.52	250.44	---	---	---	---
7	---	---	250.29	250.14	250.39	250.30	250.52	250.45	---	---	---	---
8	---	---	250.29	250.14	250.38	250.31	250.55	250.49	---	---	---	---
9	---	---	250.24	250.09	250.32	250.31	250.54	250.49	---	---	250.81	250.81
10	---	---	250.14	250.09	250.41	250.32	250.50	250.43	---	---	250.84	250.81
11	---	---	250.12	250.08	250.46	250.41	250.48	250.43	---	---	250.96	250.84
12	---	---	250.12	250.06	250.45	250.38	250.47	250.40	---	---	251.01	250.96
13	---	---	250.16	250.09	250.41	250.35	250.40	250.27	---	---	251.01	250.97
14	---	---	250.16	250.12	250.47	250.38	250.36	250.27	---	---	250.98	250.85
15	---	---	250.15	250.06	250.47	250.36	250.44	250.30	---	---	250.85	250.85
16	---	---	250.13	250.05	250.49	250.32	250.41	250.25	---	---	250.85	250.81
17	---	---	250.18	250.07	250.48	250.32	250.42	250.27	---	---	250.81	250.81
18	---	---	250.23	250.09	250.46	250.30	250.44	250.28	---	---	250.82	250.82
19	---	---	250.24	250.07	250.43	250.28	250.40	250.18	---	---	250.85	250.82
20	---	---	250.16	250.05	250.40	250.24	250.28	250.16	---	---	250.85	250.84
21	---	---	250.22	250.06	250.36	250.24	250.31	250.19	---	---	250.85	250.84
22	---	---	250.24	250.10	250.32	250.22	250.35	250.24	---	---	250.85	250.77
23	---	---	250.16	250.05	250.30	250.20	250.36	250.29	---	---	250.77	250.77
24	---	---	250.23	250.05	250.25	250.20	250.38	250.32	---	---	250.80	250.77
25	---	---	250.24	250.15	250.25	250.22	---	---	---	---	250.81	250.80
26	---	---	250.28	250.18	250.27	250.22	---	---	---	---	250.81	250.81
27	---	---	250.32	250.24	250.29	250.22	---	---	---	---	250.85	250.81
28	---	---	250.35	250.30	250.31	250.22	---	---	---	---	250.85	250.83
29	---	---	250.37	250.31	250.41	250.25	---	---	---	---	250.84	250.83
30	---	---	250.40	250.31	250.45	250.30	---	---	---	---	250.84	250.84
31	---	---	250.45	250.31	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	250.52	250.20	---	---	---	---	---	---



5 YEAR HYDROGRAPH

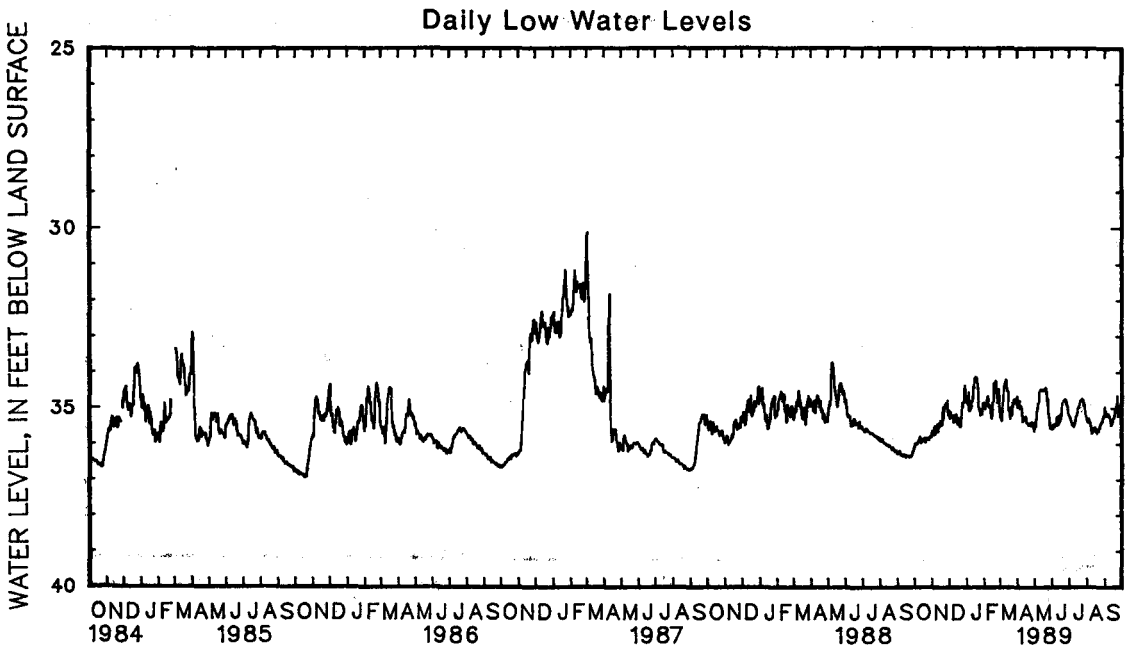
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--GA Fb 30. SITE ID.--391513079243605. PERMIT NUMBER.--GA-73-2185.
LOCATION.--Lat 39°15'13", long 79°24'36", Hydrologic Unit 02070002, 0.6 mi west of Wilson.
Owner: U.S. Geological Survey.
AQUIFER.--Conemaugh Formation of Upper Pennsylvanian age. Aquifer code: 321CNMG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 85 ft; casing diameter 4 in., to 82 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval.
DATUM.--Elevation of land surface is 2,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of shelter floor, 2.0 ft above land-surface datum.
REMARKS.--Hydrologic Effects of Mining, Phase III Project observation well. Water levels affected by coal mining operations.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.58 ft below land-surface datum, Apr. 16, 1981; lowest measured, 36.43 ft below land surface datum, Oct. 16 and 17, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	36.10	36.02	35.69	35.62	35.32	35.14	34.94	34.79	35.01	34.89	35.36	35.18
2	36.05	35.99	35.81	35.67	35.35	35.29	34.94	34.87	35.11	35.02	35.36	35.26
3	36.06	36.01	35.82	35.74	35.32	35.10	34.93	34.56	35.16	34.98	35.37	35.26
4	36.03	35.98	35.75	35.64	35.48	35.23	35.19	34.81	35.14	34.91	35.42	35.35
5	36.05	36.00	35.73	35.50	35.36	35.22	35.16	35.08	34.90	34.70	35.34	35.12
6	36.04	35.97	35.77	35.72	35.33	35.20	35.19	34.94	34.81	34.67	35.15	34.78
7	35.97	35.92	35.81	35.71	35.38	35.20	35.26	35.05	34.93	34.76	34.75	34.49
8	35.94	35.89	35.76	35.63	35.51	35.39	35.10	34.92	34.98	34.88	34.48	34.36
9	35.93	35.88	35.74	35.54	35.45	35.31	35.06	34.99	35.13	34.98	34.38	34.32
10	35.90	35.80	35.65	35.45	35.36	35.24	34.97	34.78	35.06	34.92	34.39	34.34
11	35.97	35.86	35.70	35.65	35.56	35.36	34.88	34.70	35.04	34.95	34.35	34.21
12	36.03	35.97	35.67	35.47	35.57	35.30	34.67	34.39	35.42	35.03	34.60	34.24
13	36.03	35.95	35.61	35.43	35.45	35.16	34.64	34.44	35.42	35.27	34.59	34.49
14	35.96	35.89	35.59	35.51	---	---	34.58	34.17	35.46	35.29	34.63	34.54
15	35.97	35.91	35.55	35.44	35.68	35.44	34.21	34.16	35.40	35.20	35.05	34.57
16	35.97	35.87	35.44	35.35	35.66	35.35	34.26	34.13	---	---	35.22	35.05
17	35.98	35.86	35.58	35.44	35.50	35.28	34.31	34.20	35.03	34.61	35.22	35.07
18	35.99	35.84	35.61	35.47	35.58	35.44	34.32	34.16	34.58	34.32	35.28	35.01
19	35.99	35.94	35.45	35.34	35.67	35.48	34.54	34.31	34.42	34.30	35.43	35.30
20	36.03	35.96	35.35	34.97	35.63	35.52	---	---	34.49	34.41	35.37	35.01
21	35.96	35.83	35.37	35.27	35.63	35.49	35.05	34.82	34.53	34.25	35.26	34.99
22	36.01	35.83	35.26	35.03	35.59	35.28	35.03	34.99	34.69	34.52	35.30	35.20
23	36.01	35.83	35.02	34.91	35.25	35.16	35.08	35.03	34.84	34.69	35.21	35.01
24	35.95	35.84	34.98	34.90	35.19	34.87	35.18	35.08	34.87	34.83	35.01	34.81
25	35.95	35.88	35.00	34.94	35.01	34.95	35.30	35.19	34.84	34.68	34.86	34.77
26	35.94	35.89	34.97	34.85	34.99	34.84	35.25	35.04	34.74	34.48	34.92	34.85
27	35.94	35.81	34.95	34.79	34.82	34.48	35.29	35.11	34.99	34.77	34.91	34.81
28	35.89	35.78	35.24	34.90	34.88	34.37	35.34	35.16	35.18	34.98	34.87	34.75
29	35.89	35.81	---	---	34.94	34.82	35.18	35.00	---	---	34.90	34.75
30	35.84	35.79	35.16	35.05	34.82	34.70	35.00	34.84	---	---	34.86	34.77
31	35.79	35.69	---	---	34.91	34.73	35.01	34.90	---	---	34.98	34.67
MONTH	36.10	35.69	---	---	---	---	---	---	---	---	35.43	34.21

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	35.23	34.98	35.72	35.41	35.64	35.58	35.25	35.21	35.40	35.35	35.15	34.97
2	35.23	34.95	35.56	35.39	35.60	35.56	35.31	35.25	35.43	35.39	35.24	35.09
3	34.97	34.86	35.59	35.52	35.63	35.47	35.36	35.29	35.45	35.39	35.28	35.22
4	35.02	34.80	35.56	35.32	35.68	35.48	35.43	35.36	35.40	35.30	35.29	35.23
5	35.07	35.00	35.31	35.11	35.67	35.52	35.50	35.41	35.46	35.38	35.24	35.19
6	35.04	34.96	35.15	35.04	35.56	35.49	35.54	35.47	35.46	35.38	35.22	35.17
7	35.06	34.96	35.09	34.91	35.52	35.47	35.53	35.46	35.59	35.45	35.22	35.17
8	35.06	34.94	34.91	34.86	35.47	35.41	35.55	35.46	35.72	35.58	35.27	35.20
9	35.41	35.07	34.85	34.55	35.40	35.27	35.60	35.52	35.76	35.71	35.31	35.26
10	35.46	35.38	34.54	34.51	35.54	35.40	35.54	35.44	35.73	35.65	35.39	35.29
11	35.44	35.35	34.51	34.48	35.57	35.46	35.50	35.43	35.63	35.58	35.50	35.39
12	35.41	35.28	34.49	34.48	35.45	35.24	35.47	35.37	35.60	35.56	35.54	35.48
13	35.41	35.27	34.54	34.48	35.39	35.22	35.35	35.23	35.63	35.58	35.55	35.46
14	35.41	35.28	34.54	34.51	35.46	35.39	35.29	35.21	35.64	35.59	35.47	35.34
15	35.33	35.23	34.53	34.49	35.44	35.35	35.29	35.16	35.60	35.55	35.49	35.38
16	35.52	35.30	34.52	34.49	35.44	35.31	35.15	35.00	35.66	35.58	35.42	35.26
17	35.54	35.41	34.60	34.51	35.39	35.24	35.06	34.99	35.75	35.67	35.29	35.26
18	35.50	35.41	34.62	34.51	35.24	35.03	35.06	34.99	35.77	35.70	35.27	35.20
19	35.59	35.42	34.57	34.47	35.02	34.88	35.00	34.87	35.69	35.60	35.19	35.07
20	35.62	35.48	34.54	34.44	34.91	34.82	34.85	34.78	35.67	35.62	35.11	35.06
21	35.50	35.44	34.80	34.54	34.86	34.78	34.83	34.78	35.69	35.64	35.13	35.03
22	35.49	35.43	34.85	34.80	34.81	34.76	34.83	34.77	35.66	35.59	35.01	34.66
23	35.51	35.45	34.85	34.73	34.81	34.75	34.82	34.75	35.58	35.51	35.29	34.92
24	35.54	35.49	35.17	34.86	34.84	34.76	34.85	34.79	35.54	35.47	35.33	35.23
25	35.55	35.41	35.25	35.14	34.87	34.83	34.92	34.80	35.53	35.44	35.21	35.01
26	35.56	35.40	35.42	35.21	34.92	34.87	34.97	34.92	35.45	35.39	35.19	34.93
27	35.55	35.46	35.59	35.38	35.02	34.90	34.96	34.89	35.45	35.39	35.27	35.17
28	35.56	35.49	35.67	35.56	35.12	34.95	35.11	34.92	35.45	35.36	35.16	34.98
29	35.65	35.53	35.59	35.51	35.27	35.12	35.25	35.12	35.36	35.25	35.03	34.94
30	35.73	35.64	35.56	35.50	35.27	35.20	35.26	35.22	35.29	35.22	35.10	35.03
31	---	---	35.63	35.55	---	---	35.36	35.26	35.28	35.16	---	---
MONTH	35.73	34.80	35.72	34.44	35.68	34.75	35.60	34.75	35.77	35.16	35.55	34.66



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

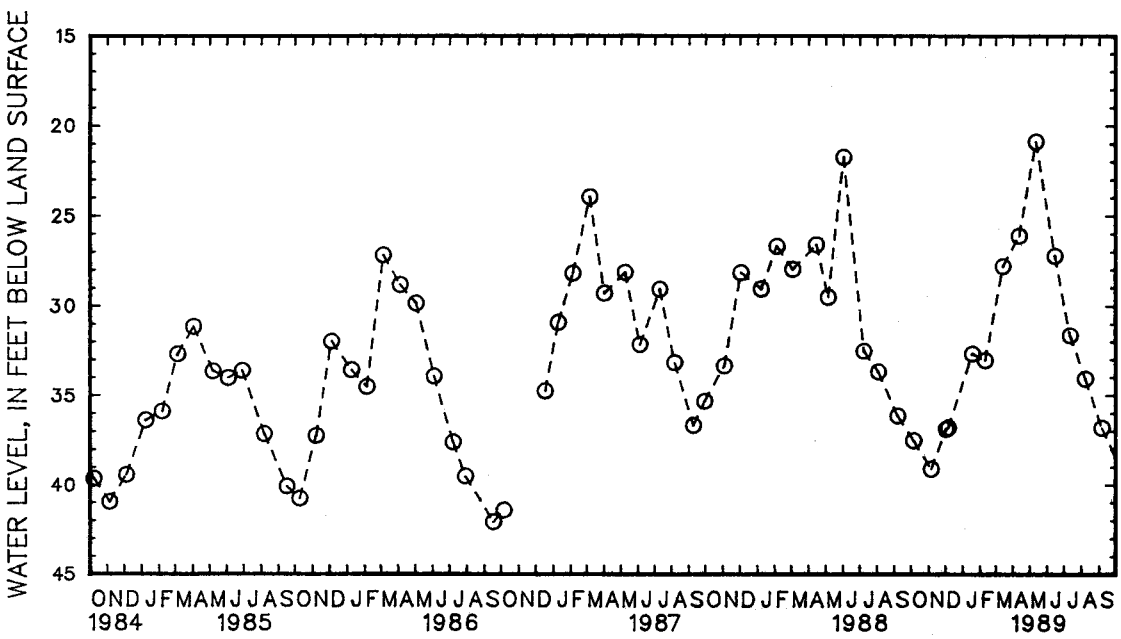
MARYLAND--Continued

MONTGOMERY COUNTY

WELL NUMBER.--MO Cc 14. SITE ID.--391314077224201.
LOCATION.--Lat 39°13'14", long 77°22'42", Hydrologic Unit 02070008, at Barnesville.
Owner: Shirley Hayes.
AQUIFER.--Ijamsville Formation of Paleozoic age. Aquifer code: 300IJMV.
WELL CHARACTERISTICS.--Dug, stone-lined, unused, water-table well, depth 46 ft; casing diameter 60 to 24 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 560 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of wooden well cover, 3.0 ft above land-surface datum.
PERIOD OF RECORD.--November 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.92 ft below land-surface datum, Apr. 2, 1984; lowest measured, dry, on Dec. 2, 1957, Dec. 7, 1964, Dec. 6, 1965, Jan. 3, 1966, Feb. 2, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	37.54	DEC 6	36.81	MAR 14	27.78	JUN 15	27.24	SEP 6	36.84
NOV 5	39.12	JAN 18	32.68	APR 12	26.10	JUL 12	31.67		
DEC 2	36.89	FEB 10	33.05	MAY 12	20.87	AUG 8	34.10		

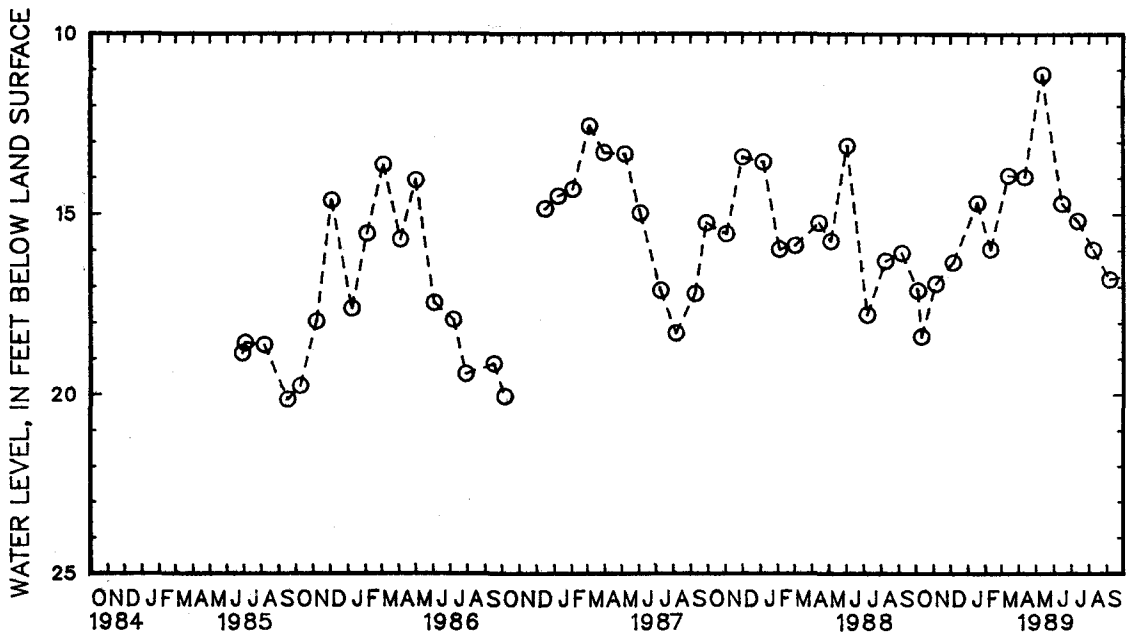


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--MO Db 68. SITE ID.--390802077283801. PERMIT NUMBER.--MO-73-1869.
LOCATION.--Lat 39°08'02", long 77°28'38", Hydrologic Unit 02070008, south of Club Hollow Rd at National Institutes of Health Animal Center.
Owner: U.S. Geological Survey.
AQUIFER.--New Oxford Formation of Upper Triassic age. Aquifer code: 231NOXF.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 250 ft; casing diameter 6 in., to 40 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 260 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
PERIOD OF RECORD.--May 1978 to August 1980, June 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.12 ft below land-surface datum, May 12, 1989; lowest measured, 20.15 ft below land-surface datum, Sept. 16, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	17.12	DEC 6	16.34	MAR 14	13.92	JUN 15	14.71	SEP 6	16.81
OCT 11	18.40	JAN 18	14.69	APR 12	13.96	JUL 12	15.19		
NOV 5	16.93	FEB 10	15.97	MAY 12	11.12	AUG 8	15.99		

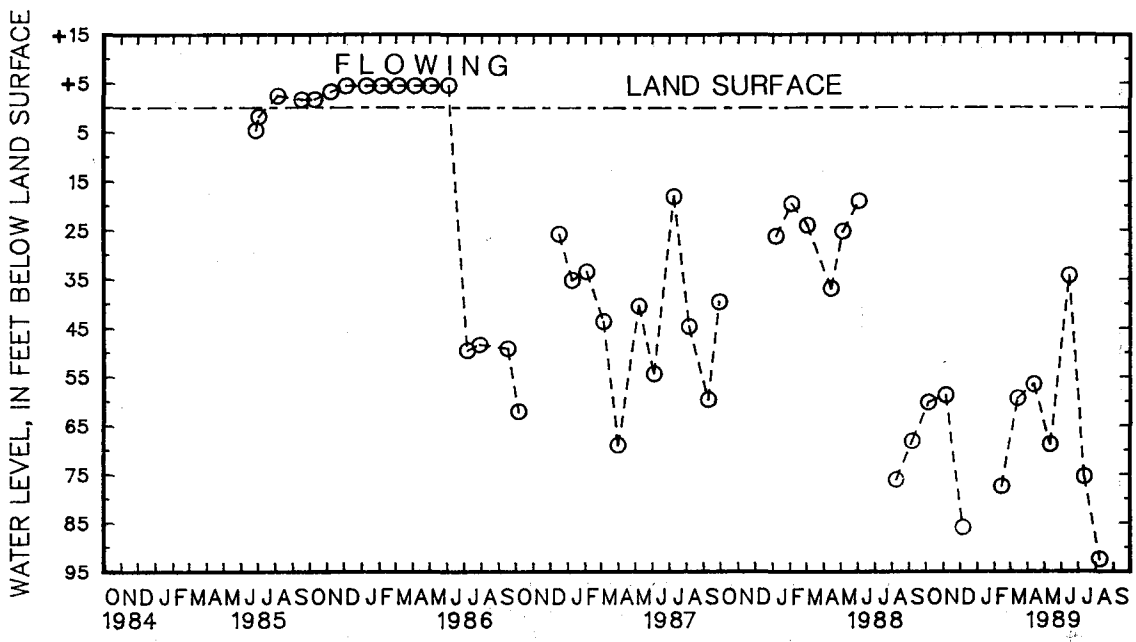


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--MO Dc 72. SITE ID.--390752077243101. PERMIT NUMBER.--MO-73-2284.
LOCATION.--Lat 39°07'52", long 77°24'31", Hydrologic Unit 02070008, 0.1 mi west of Hughes Rd., Poolesville.
Owner: U.S. Geological Survey.
AQUIFER.--New Oxford Formation of Upper Triassic age. Aquifer code: 231NOXF.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 275 ft; casing diameter 6 in., to 41 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 330 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 4.42 ft above land-surface datum.
REMARKS.--Well flowing Dec. 4, 1985 through June 3, 1986. Water level affected by nearby pumping. Well destroyed September 1989.
PERIOD OF RECORD.--June 1985 to September 1989.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.21 ft above land-surface datum, Nov. 7, 1985; lowest measured, 92.46 ft below land-surface datum, Aug. 8, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	60.22	DEC 6	85.88	MAR 14	59.38	MAY 12	68.85	JUL 12	75.50
NOV 5	58.73	FEB 14	77.45	APR 12	56.55	JUN 15	34.28	AUG 8	92.46

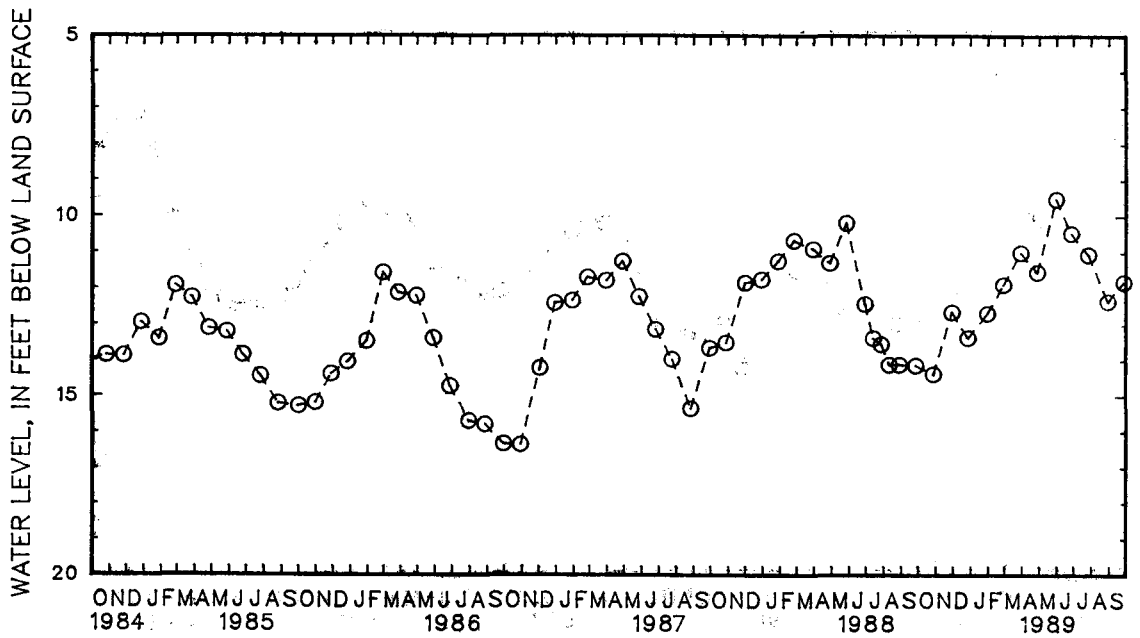


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--MO Eh 20. SITE ID.--390434076573002.
LOCATION.--Lat 39°04'34", long 76°57'30", Hydrologic Unit 02070010, at MD Rt. 196 and Fairland Rd., Fairland.
Owner: Cities Service Oil Co.
AQUIFER.--Wissahickon Formation (lower pelitic schist) of Paleozoic age. Aquifer code: 300WSCK.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, depth 102.9 ft; casing diameter 6 in., to 50 ft; open hole.
DATUM.--Elevation of land surface is 410 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing at land-surface datum.
PERIOD OF RECORD.--March 1955 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.39 ft below land-surface datum, June 25, 1972; lowest measured, 16.36 ft below land-surface datum, Oct. 29, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	14.40	DEC 27	13.38	FEB 27	11.89	APR 27	11.54	JUN 26	10.46	AUG 29	12.35
NOV 29	12.66	JAN 30	12.69	MAR 29	11.00	MAY 30	9.51	JUL 26	11.05	SEP 26	11.82



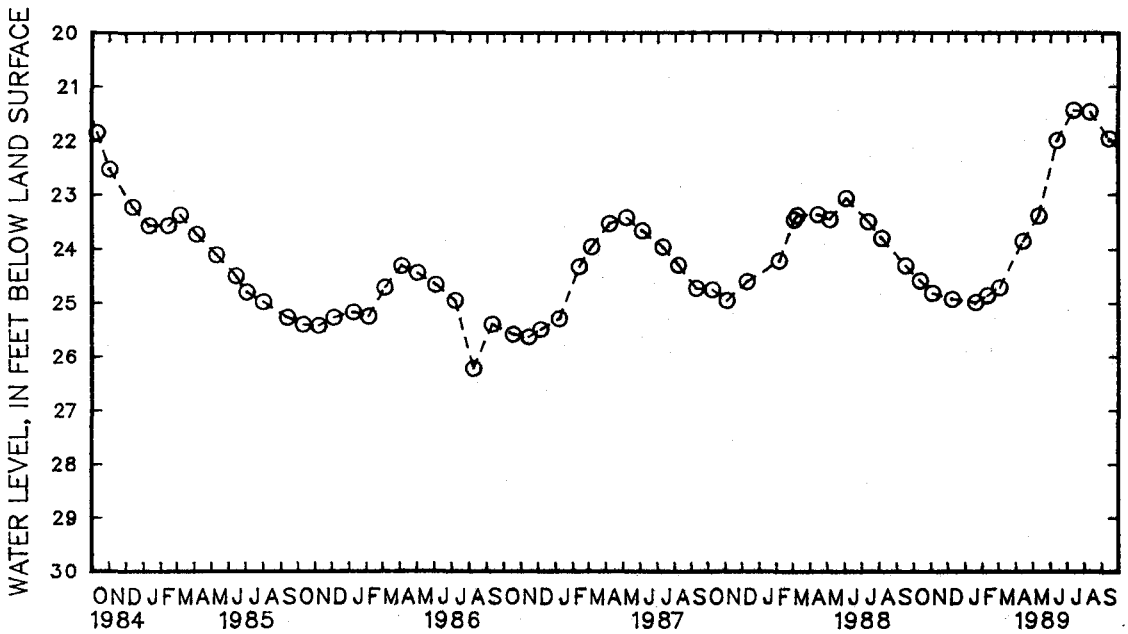
5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

PRINCE GEORGES COUNTY

WELL NUMBER.--PG Bc 16. SITE ID.--390151076561501.
LOCATION.--Lat 39°01'51", long 76°56'15", Hydrologic Unit 02070010, at National Agricultural Research Center, Beltsville.
Owner: U.S. Department of Agriculture.
AQUIFER.--Patuxent Formation of Lower Cretaceous age. Aquifer code: 217PTXN.
WELL CHARACTERISTICS.--Dug brick-lined, unused, water-table well, measured depth 27.4 ft; casing diameter 40 in.
INSTRUMENTATION.-- Monthly measurements with chalked steel tape by USGS personnel. Equipped with water-level recorder from Oct. 31, 1962 to Feb. 9, 1965.
DATUM.--Elevation of land surface is 190 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of steel cover, 0.1 ft above land-surface datum.
PERIOD OF RECORD.--September 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.26 ft below land-surface datum, July 6, 1972; lowest measured, 26.46 ft below land-surface datum, July 8, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	24.60	DEC 8	24.94	FEB 9	24.87	APR 13	23.86	JUN 13	21.99	AUG 11	21.46
NOV 3	24.83	JAN 19	25.00	MAR 3	24.72	MAY 11	23.39	JUL 13	21.43	SEP 14	21.95

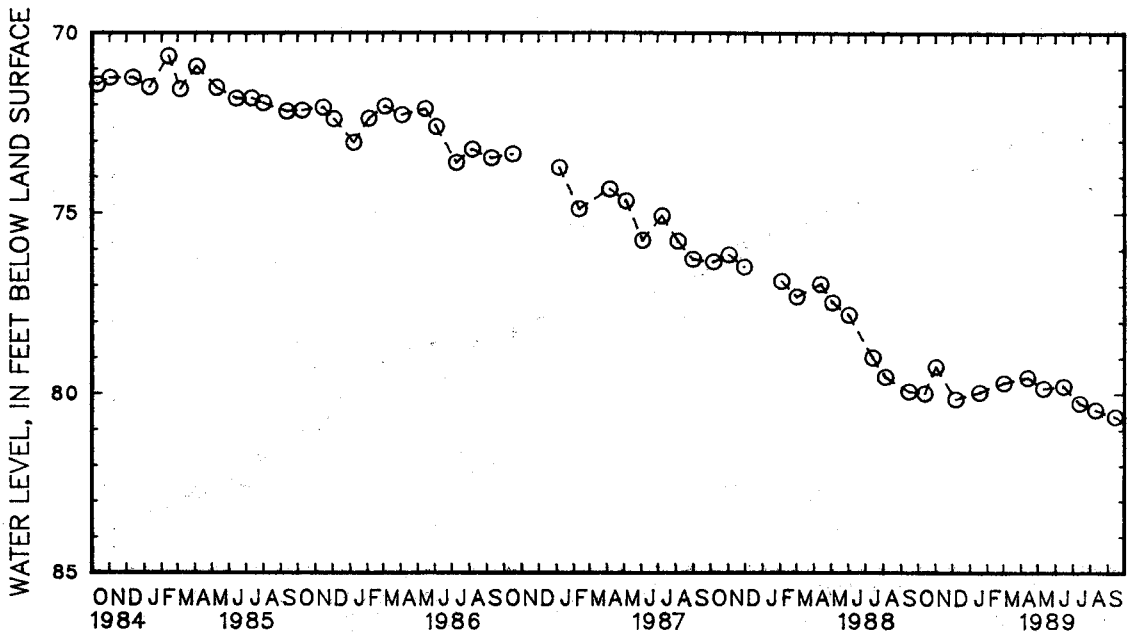


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--PG Fb 36. SITE ID.--384423077004501. PERMIT NUMBER.--PG-02-4834.
LOCATION.--Lat 38°44'23", long 77°00'45", Hydrologic Unit 02070010, at Broadwater Estates.
Owner: Broadwater Citizens Association.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, unused, artesian well, depth 284 ft; casing diameter 8 in., to 271.5 ft; screen diameter 8 in. from 267.5 to 284 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 78 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.5 ft above land-surface datum.
REMARKS.--Water level reported 62 ft below land-surface datum, May 29, 1957; measured 84 ft below land-surface datum, July 7, 1961.
PERIOD OF RECORD.--March 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level reported, 62 ft below land-surface datum, May 29, 1957; highest measured, 68.99 ft below land-surface datum, Oct. 3, 1979; lowest measured, 84.84 ft below land-surface datum, Feb. 14, 1963.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	80.01	DEC 7	80.17	MAR 2	79.71	MAY 11	79.86	JUL 13	80.27	SEP 14	80.64
NOV 2	79.27	JAN 18	79.98	APR 13	79.56	JUN 15	79.80	AUG 10	80.45		

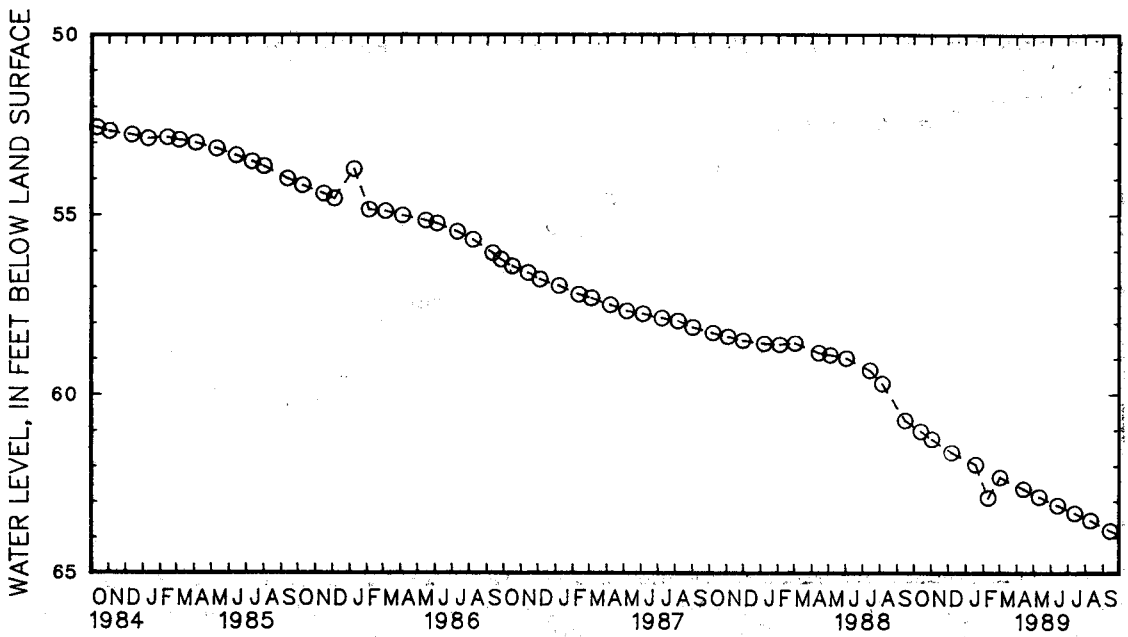


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--PG Fc 17. SITE ID.--384230076555601.
LOCATION.--Lat 38°42'30", long 76°55'56", Hydrologic Unit 02070010, south of Floral Park Rd. and west of MD Rt. 5, Piscataway.
Owner: Potomac Edison Power Company, formerly Washington Gas Light Co.
AQUIFER.--Patapsco Formation of Lower Cretaceous age. Aquifer code: 217PPSC.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 750 ft; casing diameter 6 in.; casing perforated from 712 to 716 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with water-level recorder from Oct. 27, 1955 to Sept. 4, 1956.
DATUM.--Elevation of land surface is 58.6 ft above National Geodetic Vertical Datum of 1929.
Measuring point: Top of casing, 0.5 ft above land-surface datum.
PERIOD OF RECORD.--October 1955 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.62 ft below land-surface datum, Oct. 27, 1955; lowest measured, 63.82 ft below land-surface datum, Sept. 14, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	61.05	DEC 7	61.64	FEB 9	62.90	APR 13	62.65	JUN 13	63.11	AUG 10	63.53
NOV 2	61.27	JAN 18	61.97	MAR 2	62.32	MAY 11	62.87	JUL 13	63.33	SEP 14	63.82

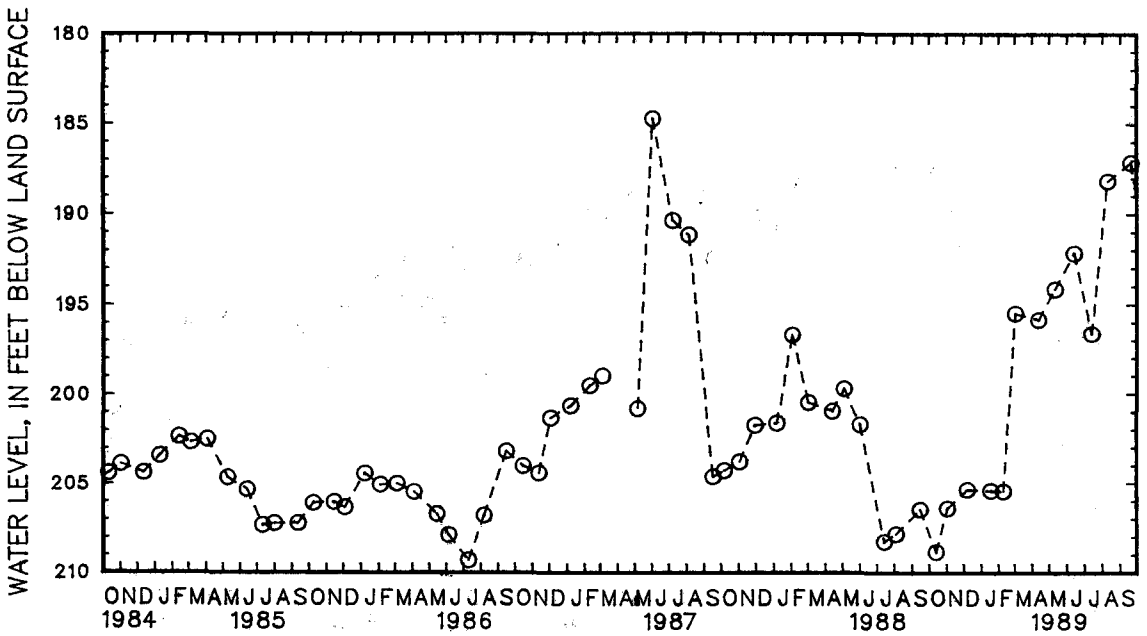


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--PG Fd 41. SITE ID.--384131076533301. PERMIT NUMBER.--PG-01-8058.
LOCATION.--Lat 38°41'31", long. 76°53'33", Hydrologic Unit 02070010, south side of MD Rt. 373, 1.14 mi west of intersection with MD Rt. 5, near T.B.
Owner: Colonial Investment Corp.
AQUIFER.--Magothy Formation of Upper Cretaceous age. Aquifer code: 211MGTY.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 362 ft; casing diameter 4 in., to 352 ft; screen diameter 2.5 in. from 352 to 362 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 198 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.8 ft above land-surface datum.
REMARKS.--Water level reported 146 ft below land-surface datum, Mar. 11, 1955.
PERIOD OF RECORD.--May 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 157.24 ft below land-surface datum, Mar. 4, 1968; lowest measured, 209.31 ft below land-surface datum, July 10, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	208.84	DEC 7	205.33	FEB 9	205.43	APR 12	195.84	JUN 13	192.16	AUG 10	188.15
NOV 2	206.39	JAN 18	205.40	MAR 2	195.48	MAY 11	194.15	JUL 13	196.64	SEP 20	187.12



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

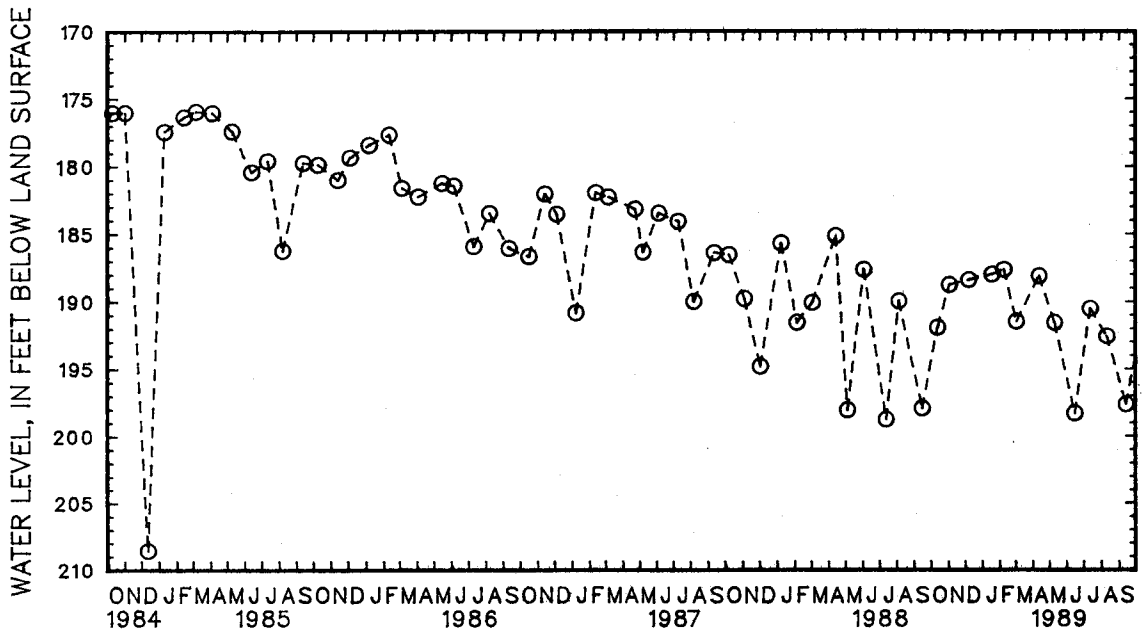
MARYLAND--Continued

ST. MARYS COUNTY

WELL NUMBER.--SM Bb 15. SITE ID.--382838076470101. PERMIT NUMBER.--SM-72-3430.
LOCATION.--Lat 38°28'38", long 76°47'01", Hydrologic Unit 02070011, at Charlotte Hall.
Owner: U.S. Geological Survey.
AQUIFER.--Aquia Formation of Paleocene age. Aquifer code: 125AQUI.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 460 ft; casing diameter 4 in., to 441 ft; casing diameter 2 in. from 441 to 450 ft; screen diameter 2 in. from 450 to 460 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 170 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Water levels may be affected by nearby pumping.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 160.76 ft below land-surface datum, Aug. 10, 1979, and Aug. 31, 1979; lowest measured, 208.55 ft below land-surface datum, Dec. 12, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	191.93	DEC 7	188.39	FEB 8	187.64	APR 12	188.10	JUN 15	198.33	AUG 10	192.59
NOV 2	188.76	JAN 18	187.99	MAR 2	191.48	MAY 10	191.56	JUL 12	190.53	SEP 13	197.67

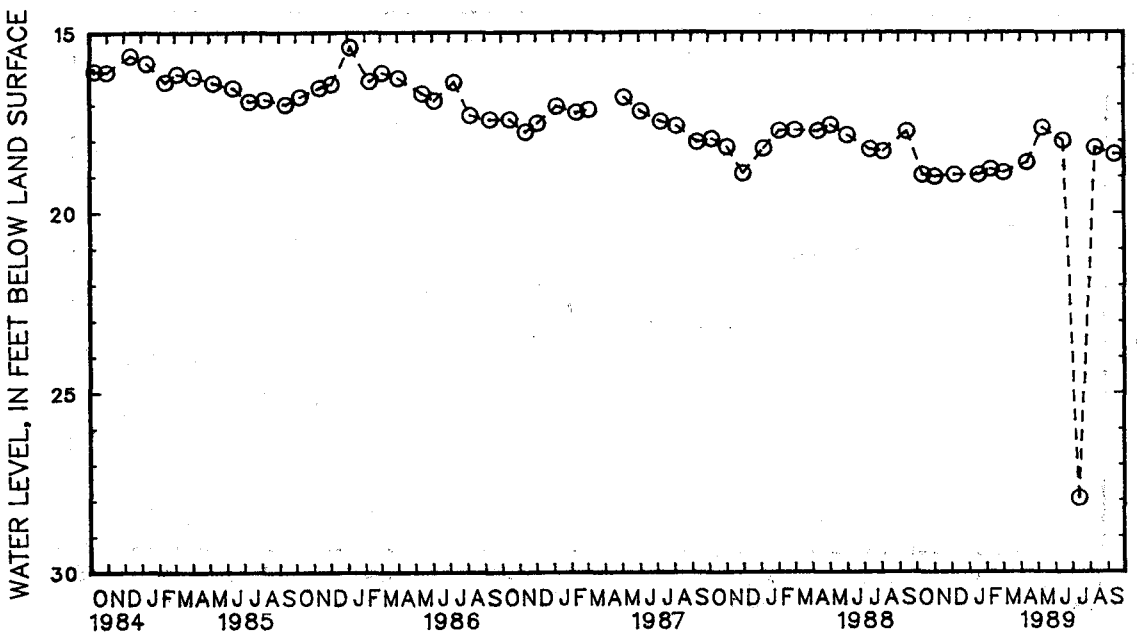


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Bb 22. SITE ID.--382838076470102. PERMIT NUMBER.--SM-73-3787.
LOCATION.--Lat 38°28'38", long 76°47'01", Hydrologic Unit 02070011, at Charlotte Hall Veterans Home.
Owner: U.S. Geological Survey.
AQUIFER.--Piney Point Formation of Middle Eocene age. Aquifer code: 124PNPN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 218 ft; casing diameter 4 in., to 210 ft; screen diameter 2 in. from 210 to 218 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 170 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.7 ft above land-surface datum.
REMARKS.--Water levels may be affected by nearby pumping. The July 12, 1989 water-level decline due to nearby pump test.
PERIOD OF RECORD.--July 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.27 ft below land-surface datum, July 9, 1980; lowest measured, 27.95 ft below land-surface datum, July 12, 1989--See Remarks.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	18.96	DEC 7	18.96	FEB 8	18.80	APR 12	18.62	JUN 15	18.01	AUG 10	18.19
NOV 2	19.02	JAN 18	18.96	MAR 2	18.90	MAY 10	17.65	JUL 12	27.95	SEP 13	18.37

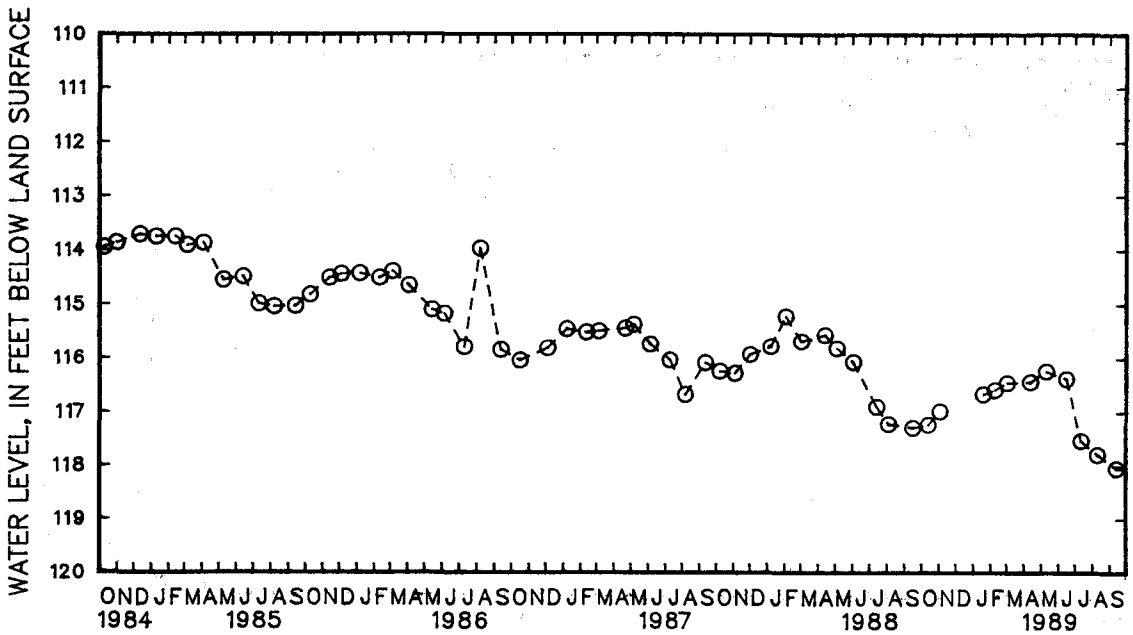


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Dd 46. SITE ID.--381616076364701.
LOCATION.--Lat 38°16'16", long 76°36'47", Hydrologic Unit 02070011, at Leonardtown Senior High School, Redgate.
Owner: U.S. Geological Survey.
AQUIFER.--Piney Point Formation of Middle Eocene age. Aquifer code: 124PNPN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 296 ft; casing diameter 6 in., to 150 ft; casing diameter 2 in. from 150 to 286 ft; screen diameter 2 in. from 286 to 296 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 115 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.5 ft above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 110.01 ft below land-surface datum, Jan. 4, 1977; lowest measured, 118.05 ft below land-surface datum, Sept. 13, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	117.25	JAN 18	116.68	MAR 2	116.47	MAY 10	116.25	JUL 12	117.54	SEP 13	118.05
NOV 2	117.00	FEB 8	116.60	APR 12	116.45	JUN 15	116.39	AUG 10	117.80		

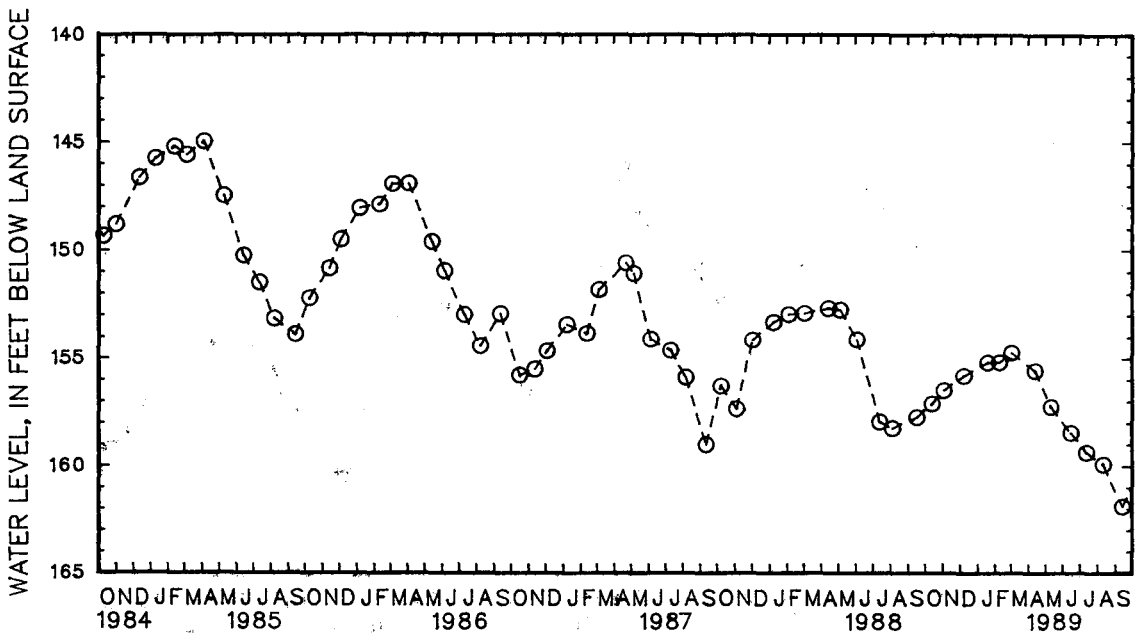


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Dd 49. SITE ID.--381616076364702. PERMIT NUMBER.--SM-73-3081.
LOCATION.--Lat 38°16'16", long 76°36'47", Hydrologic Unit 02070011, at Leonardtown Senior High School, Redgate.
Owner: U.S. Geological Survey.
AQUIFER.--Aquia Formation of Paleocene age. Aquifer code: 125AQUI.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 619 ft; casing diameter 4 in., to 279 ft; casing diameter 1.5 in. from 279 to 534 ft and 544 to 619 ft; screen diameter 3 in. from 534 to 544 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 115 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 138.95 ft below land-surface datum, Apr. 5, 1979; lowest measured, 161.89 ft below land-surface datum, Sept. 13, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	157.10	DEC 7	155.80	FEB 8	155.17	APR 12	155.56	JUN 15	158.45	AUG 10	159.92
NOV 2	156.48	JAN 18	155.18	MAR 2	154.72	MAY 10	157.24	JUL 12	159.36	SEP 13	161.89

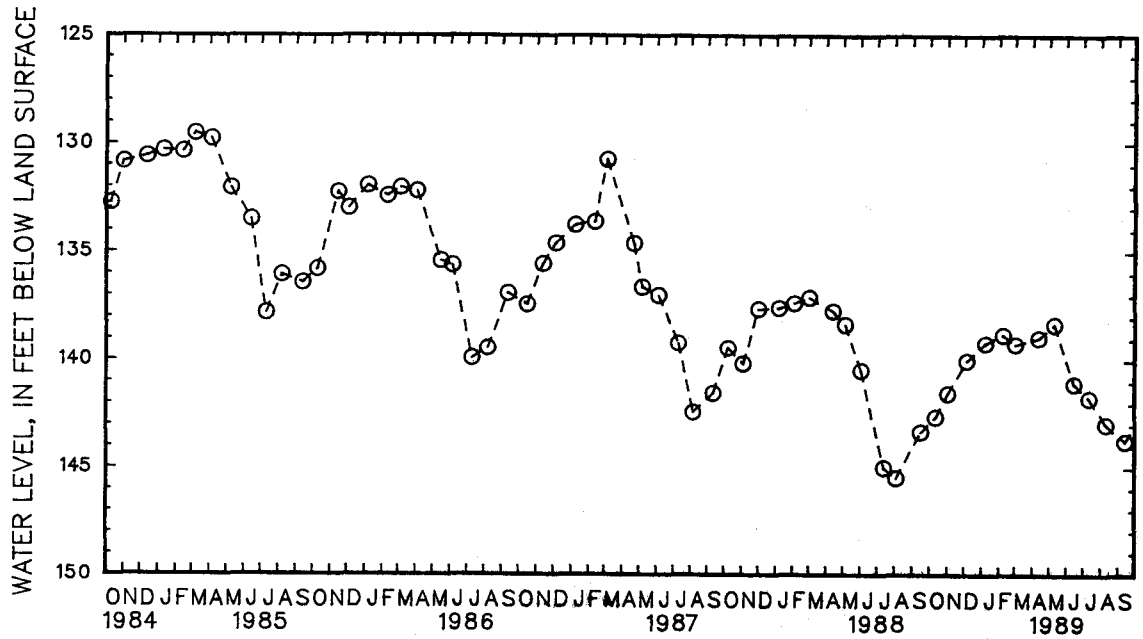


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Dd 50. SITE ID.--381807076380001. PERMIT NUMBER.--SM-73-3082.
LOCATION.--Lat 38°18'07", long 76°38'00", Hydrologic Unit 02070011, at Leonard Hall Junior Naval Academy, Leonardtown.
Owner: U.S. Geological Survey.
AQUIFER.--Aquia Formation of Paleocene age. Aquifer code: 125AQUI.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 579 ft; casing diameter 4 in., to 270 ft; casing diameter 2 in. from 270 to 505 ft; screen diameter 3 in. from 505 to 515 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 119.05 ft below land-surface datum, Feb. 2, 1979; lowest measured, 145.49 ft below land-surface datum, Aug. 4, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	142.65	DEC 6	140.02	FEB 8	138.80	APR 12	138.93	JUN 15	141.06	AUG 10	142.94
NOV 2	141.55	JAN 8	139.22	MAR 2	139.24	MAY 10	138.30	JUL 12	141.73	SEP 13	143.74

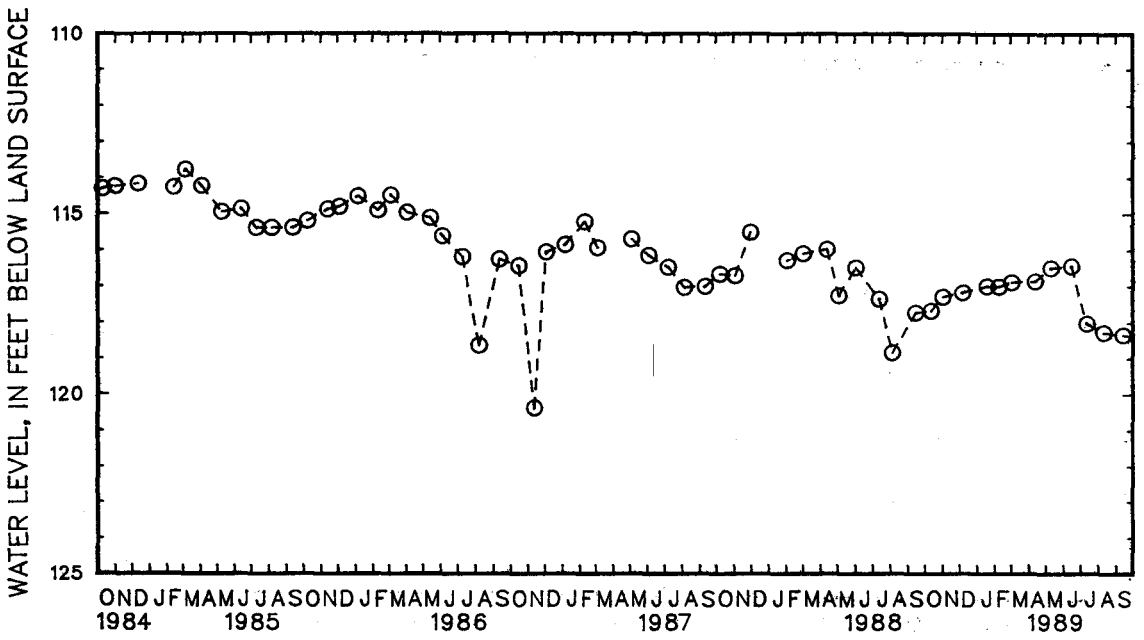


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Dd 62. SITE ID.--381616076364703. PERMIT NUMBER.--SM-73-3786.
LOCATION.--Lat 38°16'16", 76°36'47", Hydrologic Unit 02070011, at Leonardtown Senior High School, Redgate.
Owner: U.S. Geological Survey.
AQUIFER.--Piney Point Formation of Middle Eocene age. Aquifer code: 124PNPN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 358 ft; casing diameter 4 in., to 210 ft; casing diameter 2 in. from 210 to 348 ft; screen diameter 2 in. from 348 to 358 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 115 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing, 0.95 ft above land-surface datum.
PERIOD OF RECORD.--July 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.06 ft below land-surface datum, Oct. 30, 1980; lowest measured, 120.39 ft below land-surface datum, Nov. 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	117.69	DEC 7	117.18	FEB 8	117.01	APR 12	116.85	JUN 15	116.44	AUG 10	118.28
NOV 2	117.30	JAN 18	117.00	MAR 2	116.89	MAY 10	116.49	JUL 12	118.03	SEP 13	118.35

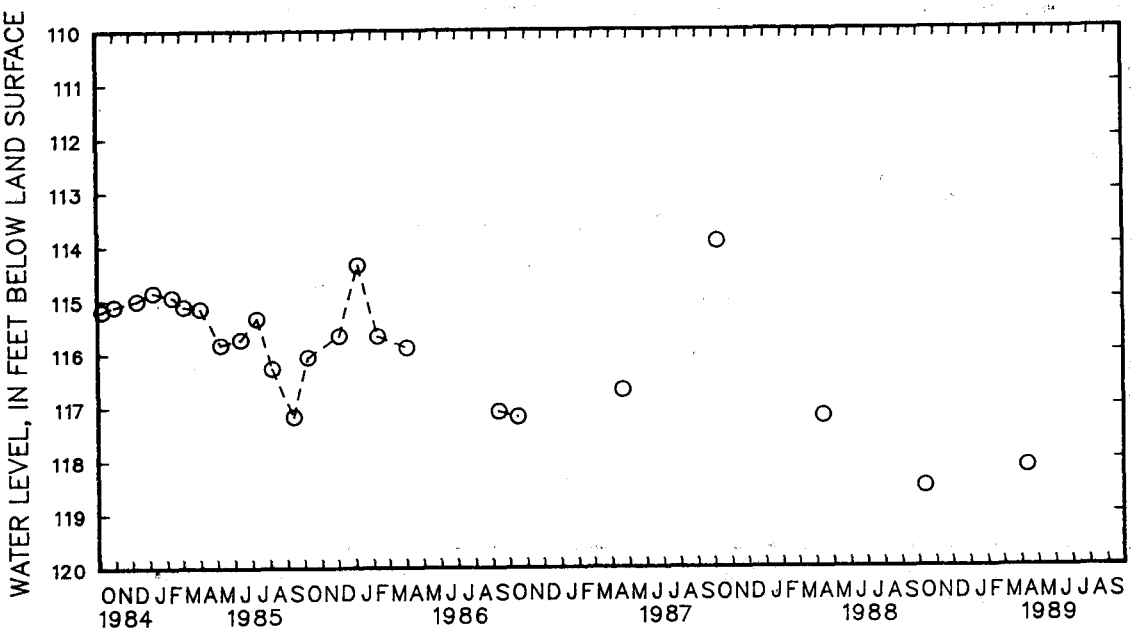


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Dd 63. SITE ID.--381615076364701. PERMIT NUMBER.--SM-73-3785.
LOCATION.--Lat 38°16'15", long 76°36'47", Hydrologic Unit 02070011, at Leonardtown Senior High School, Redgate.
Owner: U.S. Geological Survey.
AQUIFER.--Piney Point Formation of Middle Eocene age. Aquifer code: 124PNPN.
WELL CHARACTERISTICS.--Drilled, unused, artesian well, depth 356 ft; casing diameter 4 in., to 327 ft; casing diameter 2 in. from 327 to 346 ft; screen diameter 2 in. from 346 to 356 ft.
INSTRUMENTATION.--Twice yearly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 115 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.55 ft above land-surface datum.
REMARKS.--Measured monthly from October 1977 to October 1986. Measured twice yearly from April 1987 to current year.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 112.57 ft below land-surface datum, Apr. 5, 1979; lowest measured, 118.51 ft below land-surface datum, Oct. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	118.51	APR 12	118.14

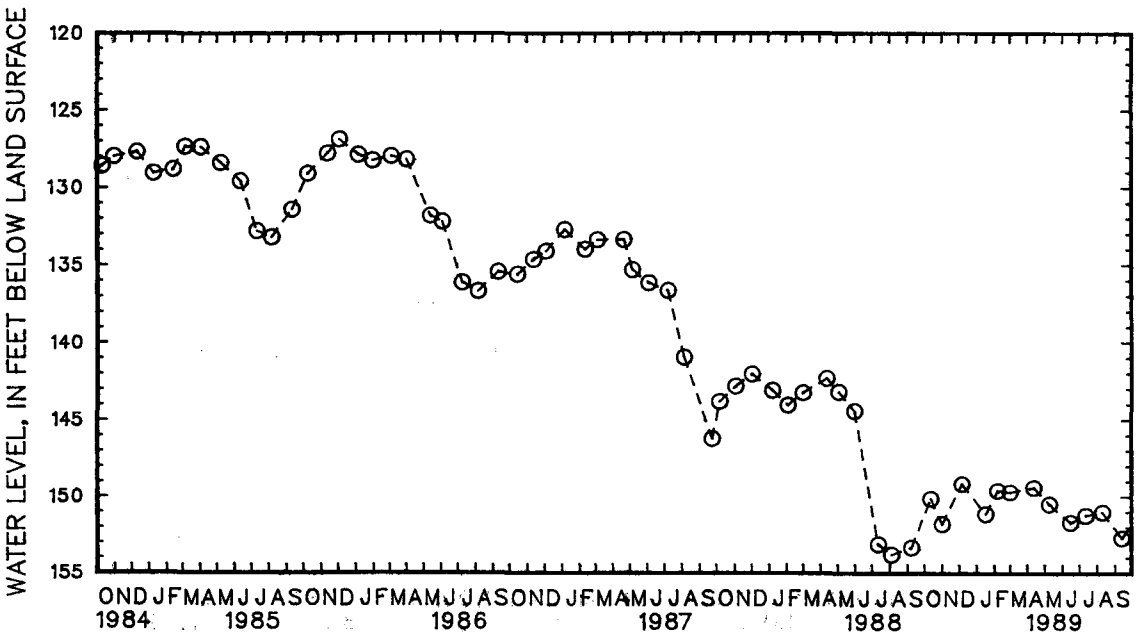


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Df 71. SITE ID.--381527076283101. PERMIT NUMBER.--SM-73-3431.
LOCATION.--Lat 38°15'27", long 76°28'31", Hydrologic Unit 02070011, at Great Mills Rd., Lexington Park.
Owner: U.S. Geological Survey.
AQUIFER.--Aquia Formation of Paleocene age. Aquifer code: 125AQUI.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 560 ft; casing diameter 4 in., to 420 ft; casing diameter 2 in. from 420 to 550 ft; screen diameter 2 in. from 550 to 560 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 65 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing, 1.3 ft above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 119.19 ft below land-surface datum, May 1, 1980; lowest measured, 153.79 ft below land-surface datum, Aug. 4, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	150.13	DEC 6	149.16	FEB 7	149.60	APR 12	149.40	JUN 15	151.68	AUG 10	151.01
NOV 1	151.79	JAN 17	151.13	MAR 1	149.70	MAY 9	150.49	JUL 12	151.22	SEP 13	152.70



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

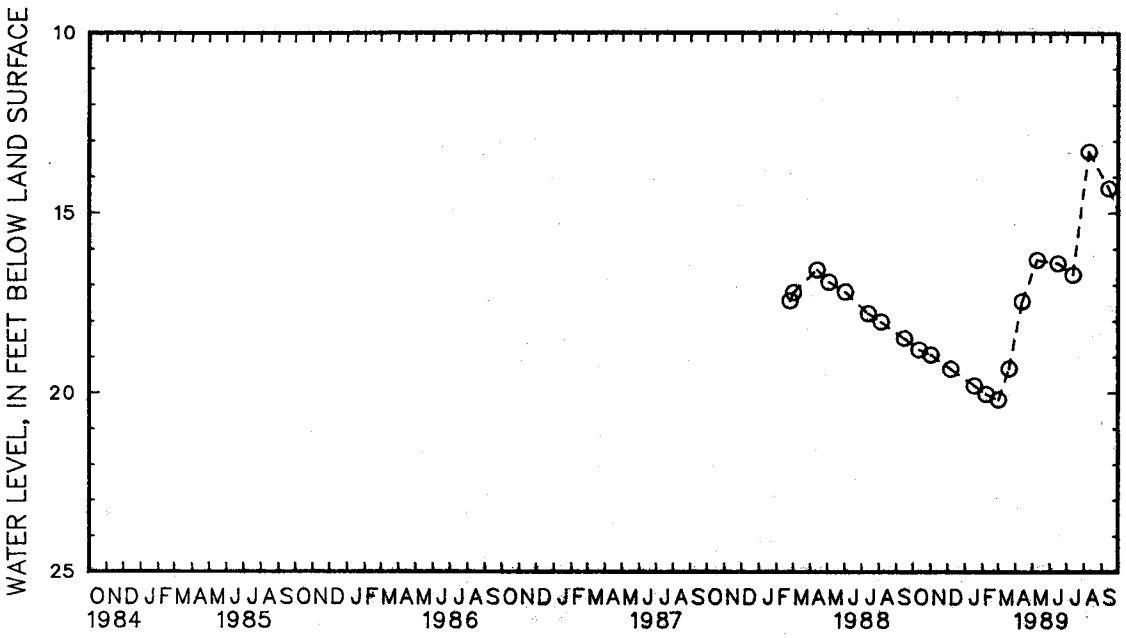
MARYLAND--Continued

ST. MARYS COUNTY--Continued

WELL NUMBER.--SM Ef 80. SITE ID.--381052076253001.
LOCATION.--Lat 38°10'52", long 76°25'30", Hydrologic Unit 02070011, 0.1 mi south of intersection of MD Rt 5 and Rosecroft Rd.
Owner: St. Mary's College of Maryland.
AQUIFER.--Omar Formation of Pleistocene age. Aquifer code: 112OMAR.
WELL CHARACTERISTICS.--Dug, unused, water-table well, depth 20.7 ft; casing diameter 42 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring Point: Top of casing, 1.5 ft above land-surface datum.
PERIOD OF RECORD.--February 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.29 ft below land-surface datum, Aug. 9, 1989; lowest measured, 20.20 ft below land-surface datum, March 1, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	18.82	JAN 17	19.81	MAR 20	19.34	JUN 15	16.40	SEP 13	14.32
NOV 1	18.96	FEB 7	20.05	APR 12	17.46	JUL 12	16.72		
DEC 6	19.35	MAR 1	20.20	MAY 9	16.31	AUG 9	13.29		



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Fe 30. SITE ID.--380834076303401. PERMIT NUMBER.--SM-73-1917.
LOCATION.--Lat 38°08'34", long 76°30'34", Hydrologic Unit 02070011, at water tower, Piney Point.
Owner: U.S. Geological Survey.
AQUIFER.--Piney Point Formation of Eocene age. Aquifer code: 124PNPN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 270 ft; casing diameter 6 in., to 67 ft; casing diameter 2 in. from 67 to 260 ft; screen diameter 2 in. from 260 to 270 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder from Oct. 12, 1988 to current year.
DATUM.--Elevation of land surface is 9 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 4 ft above land-surface datum.
PERIOD OF RECORD.--August 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.24 ft below land-surface datum, Oct. 6, 1976; lowest measured, 23.16 ft below land-surface datum, Oct. 13, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	22.36	21.88	---	---	22.35	22.06	22.21	21.46	---	---
2	---	---	---	---	---	---	22.31	21.95	22.41	21.80	---	---
3	---	---	---	---	---	---	22.41	21.79	22.12	21.37	22.35	21.97
4	---	---	---	---	---	---	22.88	22.34	22.51	21.84	22.12	21.73
5	---	---	22.76	22.41	---	---	22.84	22.12	22.28	21.59	22.02	21.54
6	---	---	22.68	22.14	---	---	22.39	21.93	22.21	21.42	22.05	21.50
7	---	---	22.19	21.66	---	---	22.35	21.82	22.35	21.63	---	---
8	---	---	22.11	21.68	22.58	22.08	---	---	22.40	21.91	---	---
9	---	---	22.30	21.82	22.47	21.97	---	---	22.97	21.95	---	---
10	---	---	22.62	22.27	22.40	21.92	---	---	22.86	22.37	22.09	21.37
11	---	---	22.71	22.23	22.74	21.99	---	---	22.77	22.29	22.06	21.39
12	---	---	22.43	22.11	22.65	22.27	---	---	22.75	22.16	22.26	21.50
13	23.16	22.73	---	---	22.38	21.95	---	---	22.74	22.21	22.09	21.46
14	23.01	22.47	---	---	22.49	22.03	---	---	22.37	21.95	21.89	21.49
15	22.94	22.37	---	---	22.53	21.75	---	---	22.41	22.12	22.01	21.51
16	23.06	22.56	22.55	22.09	22.72	22.34	---	---	22.73	22.29	22.33	21.91
17	22.59	22.18	22.64	22.08	22.55	22.03	---	---	22.64	22.43	22.27	21.92
18	22.40	22.09	22.50	22.09	22.59	22.17	---	---	---	---	22.63	21.97
19	22.57	22.25	22.55	22.07	22.49	22.02	22.44	21.86	---	---	---	---
20	22.55	22.12	---	---	22.71	22.15	22.40	21.55	---	---	---	---
21	22.33	21.80	---	---	22.87	22.30	23.38	22.39	---	---	---	---
22	22.31	21.91	---	---	22.95	22.44	23.05	22.43	22.29	21.52	---	---
23	22.69	22.09	---	---	22.64	22.15	22.87	22.15	22.17	21.79	---	---
24	22.46	21.96	---	---	22.47	22.00	22.52	21.95	---	---	---	---
25	22.52	21.94	---	---	22.70	22.09	22.49	21.71	---	---	---	---
26	22.62	21.92	---	---	23.01	22.37	22.10	21.58	22.02	21.50	---	---
27	22.60	22.11	---	---	22.92	22.15	22.59	21.37	22.42	21.83	---	---
28	22.53	22.04	---	---	22.65	22.12	22.74	21.99	22.39	22.03	---	---
29	22.76	22.24	---	---	23.04	22.53	22.51	21.69	---	---	---	---
30	22.68	22.26	---	---	22.75	22.13	22.29	21.95	---	---	---	---
31	22.64	22.18	---	---	22.58	22.08	22.10	21.74	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

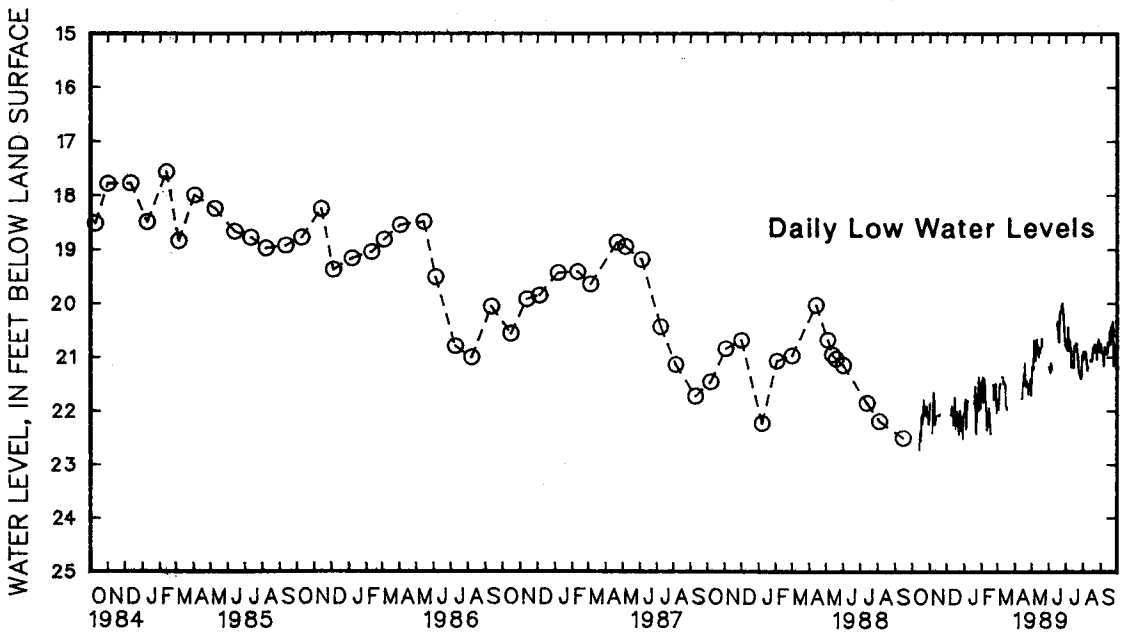
GROUND-WATER LEVELS

MARYLAND--Continued

ST. MARYS COUNTY--Continued

SM Fe 30--Continued

DAY	APRIL MAX	APRIL MIN	MAY MAX	MAY MIN	JUNE MAX	JUNE MIN	JULY MAX	JULY MIN	AUGUST MAX	AUGUST MIN	SEPTEMBER MAX	SEPTEMBER MIN
1	---	---	22.09	21.49	---	---	21.87	20.79	21.53	20.95	21.30	20.75
2	---	---	21.63	21.18	21.77	21.19	21.87	20.82	21.54	20.89	21.49	20.90
3	---	---	21.79	21.25	21.83	21.24	22.03	20.68	21.67	20.96	21.53	20.91
4	---	---	21.81	21.23	21.78	21.29	21.69	20.88	21.48	20.99	21.39	20.94
5	---	---	21.59	20.67	21.75	21.11	21.31	20.43	21.60	20.90	21.76	20.93
6	---	---	21.47	20.76	21.51	21.23	21.44	20.68	21.54	21.03	21.74	21.17
7	---	---	21.67	20.90	---	---	21.45	20.66	21.67	21.11	21.39	20.94
8	---	---	21.59	21.07	---	---	21.53	20.69	21.75	21.25	21.31	20.81
9	---	---	21.48	20.77	---	---	21.52	20.87	21.58	21.20	21.28	20.91
10	---	---	21.17	20.67	---	---	21.65	20.83	---	---	21.28	20.93
11	---	---	21.22	20.82	---	---	21.78	21.19	---	---	21.31	20.93
12	---	---	21.19	20.80	---	---	21.60	21.13	---	---	21.42	20.95
13	22.18	21.78	21.25	20.87	---	---	21.51	21.17	---	---	21.34	20.87
14	22.12	21.76	21.34	21.00	---	---	21.51	21.17	21.45	21.08	21.31	20.72
15	21.93	21.54	21.23	20.86	---	---	21.75	21.20	21.41	21.05	21.44	20.79
16	21.96	21.48	21.37	20.92	21.07	20.40	21.45	20.79	21.53	21.08	21.33	20.77
17	21.88	21.34	21.36	20.83	21.32	20.33	21.66	20.81	21.38	20.96	21.28	20.52
18	22.02	21.52	21.26	20.82	21.79	20.62	21.42	20.88	21.41	20.82	21.31	20.77
19	21.94	21.11	21.31	20.81	21.39	20.71	21.41	20.73	21.55	20.87	21.13	20.45
20	22.06	21.43	21.28	20.66	21.11	20.38	21.47	20.74	21.56	20.91	20.93	20.42
21	22.05	21.55	---	---	21.19	20.17	21.58	20.90	21.37	20.76	21.18	20.67
22	22.08	21.48	---	---	21.09	20.14	21.65	20.99	21.44	20.87	21.07	20.33
23	22.05	21.46	---	---	21.04	20.16	21.83	21.16	21.40	20.80	21.37	20.48
24	22.17	21.50	---	---	20.94	20.06	21.86	21.30	21.48	20.86	21.72	21.17
25	22.08	21.69	---	---	20.94	19.99	21.69	21.28	21.50	21.05	21.37	20.80
26	22.01	21.56	---	---	20.89	20.11	21.85	21.36	21.33	20.86	21.31	20.79
27	21.99	21.57	---	---	20.90	20.21	21.90	21.40	21.31	20.75	21.33	20.94
28	21.88	21.53	---	---	21.21	20.42	21.86	21.41	21.10	20.66	21.35	20.85
29	21.86	21.41	---	---	21.53	20.63	21.90	21.35	21.24	20.78	21.32	20.81
30	22.23	21.71	---	---	21.66	20.78	21.79	20.98	21.42	20.91	21.62	21.04
31	---	---	---	---	---	---	21.61	21.06	21.26	20.74	---	---
MONTH	---	---	---	---	---	---	22.03	20.43	---	---	21.76	20.33



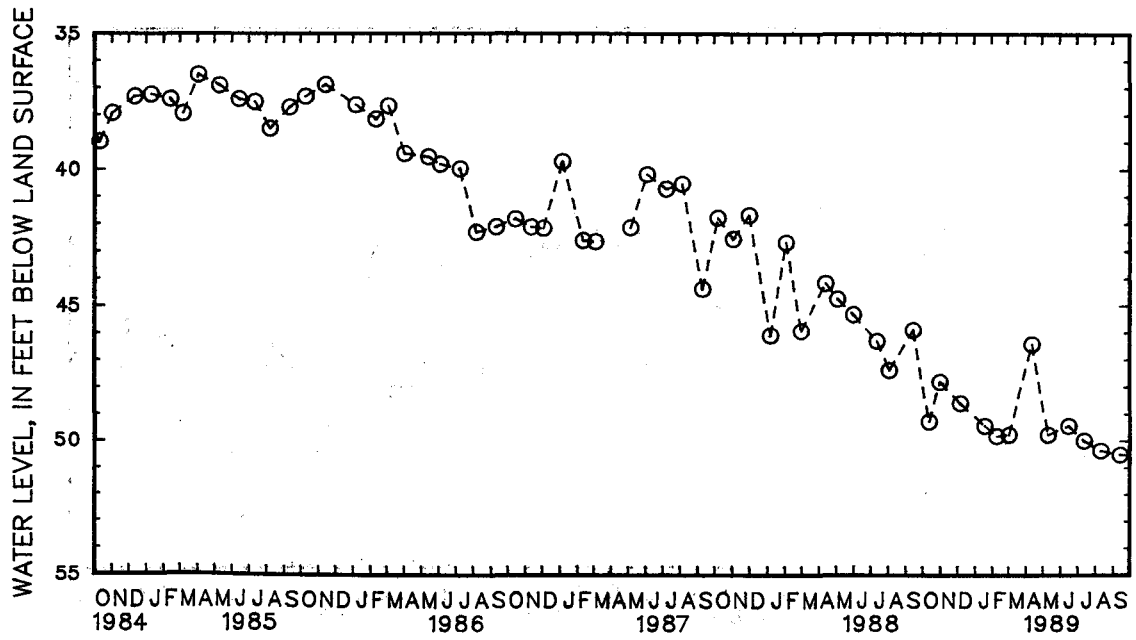
5 YEAR HYDROGRAPH

OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Fe 31. SITE ID.--380834076303402. PERMIT NUMBER.--SM-73-3088.
LOCATION.--Lat 38°08'34", long 76°30'34", Hydrologic Unit 02070011, at water tower, Piney Point.
Owner: U.S. Geological Survey.
AQUIFER.--Aquia Formation of Paleocene age. Aquifer code: 125AQUI.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 639 ft; casing diameter 4 in., to 171 ft; casing diameter 2 in. from 171 to 451 ft; screen diameter 3 in. from 451 to 461 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 8 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of casing, 1.7 ft above land-surface datum.
REMARKS.--Water levels affected by nearby pumping.
PERIOD OF RECORD.--October 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.77 ft below land-surface datum, Dec. 5, 1978; lowest measured, 50.53 ft below land-surface datum, Sept. 13, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	49.31	DEC 7	48.63	FEB 8	49.84	APR 12	46.43	JUN 15	49.46	AUG 10	50.38
NOV 1	47.84	JAN 18	49.46	MAR 2	49.79	MAY 10	49.79	JUL 12	50.01	SEP 13	50.53

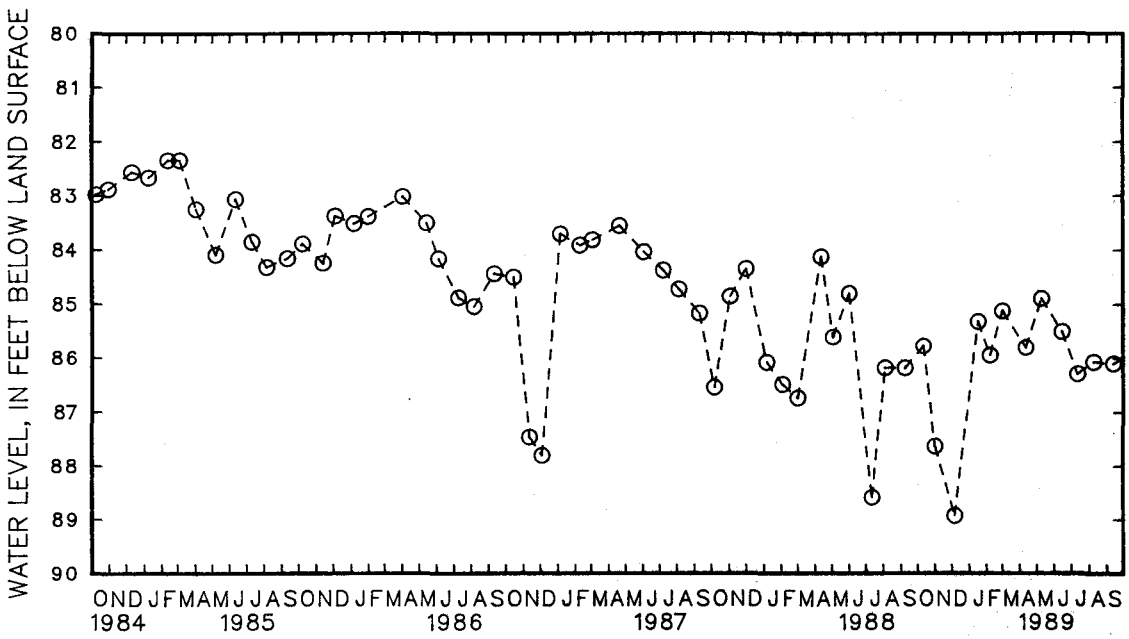


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--SM Fg 45. SITE ID.--380711076222201. PERMIT NUMBER.--SM-04-5190.
LOCATION.--Lat 38°07'11", long 76°22'22", Hydrologic Unit 02070011, in fire pumphouse at Ridge.
Owner: Ridge Volunteer Fire Department.
AQUIFER.--Piney Point Formation of Middle Eocene age. Aquifer code: 124PNPN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 436 ft; casing diameter 6 in., to 386 ft; casing diameter 4 in. from 415 to 436 ft; screen diameter 5 in. from 386 to 415 ft.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 65 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Hole in sanitary seal, 0.55 ft above land-surface datum.
PERIOD OF RECORD.--May 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 74.83 ft below land-surface datum, May 16, 1967; lowest measured, 88.93 ft below land-surface datum, Dec. 6, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	85.78	DEC 6	88.93	FEB 7	85.95	APR 12	85.80	JUN 15	85.50	AUG 9	86.07
NOV 1	87.64	JAN 17	85.32	MAR 1	85.12	MAY 10	84.89	JUL 12	86.29	SEP 13	86.10



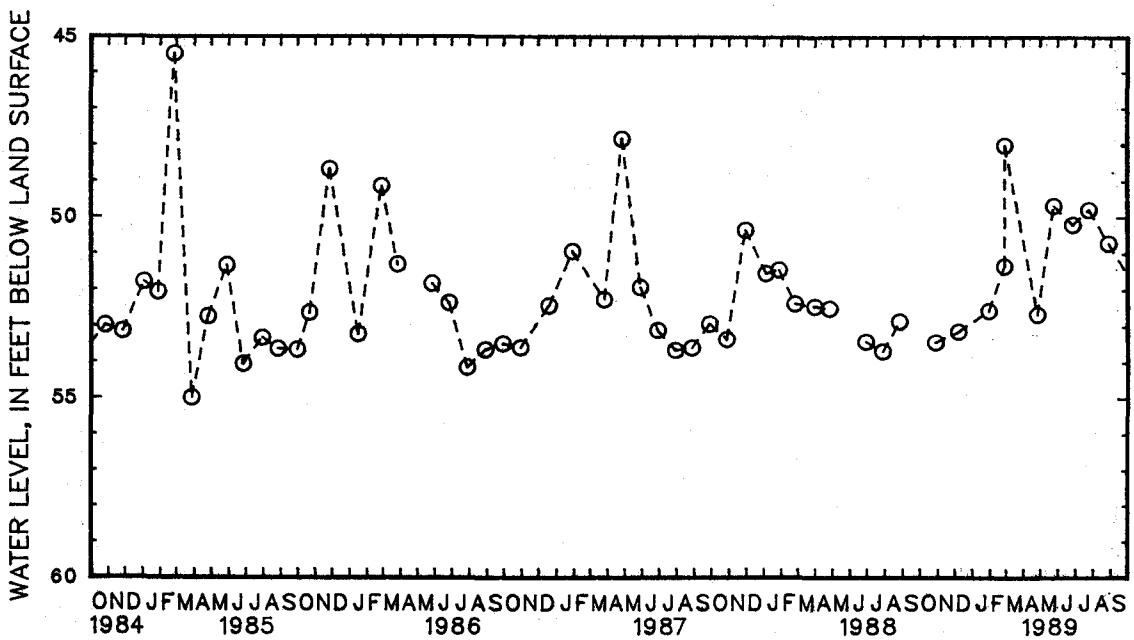
5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WASHINGTON COUNTY

WELL NUMBER.--WA Ac 1. SITE ID.--394154078103501.
LOCATION.--Lat 39°41'54", long 78°10'35", Hydrologic Unit 02070004, at Hancock.
Owner: Susan Creager.
AQUIFER.--Romney Formation of Middle Devonian age. Aquifer code: 344RMNY.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, depth 86.2 ft; casing diameter 4 in., to unknown depth; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land-surface is 440 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of tile pipe, 0.25 ft above land-surface datum.
PERIOD OF RECORD.--October 1946 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 35.65 ft below land surface datum, Jan. 2, 1976; lowest measured, 55.83 ft below land-surface datum, Nov. 19, 1953.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	53.45	JAN 30	52.58	FEB 28	48.00	MAY 25	49.68	JUL 25	49.79
DEC 7	53.15	FEB 27	51.35	APR 26	52.69	JUN 27	50.20	AUG 28	50.72

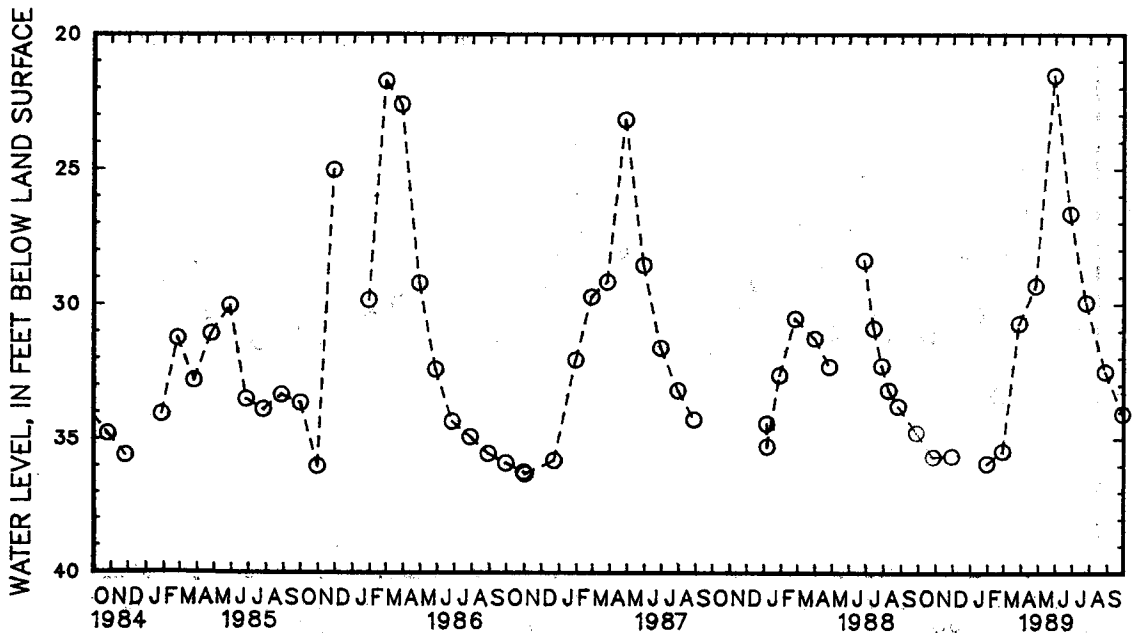


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--WA Be 2. SITE ID.--393638078001301.
LOCATION.--Lat 39°36'38", long 78°00'13", Hydrologic Unit 02070004, about 1.2 mi southeast of Big Pool.
Owner: Fort Frederick State Park.
AQUIFER.--Romney Formation of Middle Devonian age. Aquifer code: 344RMNY.
WELL CHARACTERISTICS.--Dug, stone-lined, unused, water-table well, depth 42.7 ft; casing diameter 42 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 470 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of stone sill, 0.8 ft above land-surface datum.
PERIOD OF RECORD.--December 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.75 ft below land-surface datum, Apr. 26, 1984; lowest measured, 36.92 ft below land-surface datum, Jan. 11, 1965.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	35.68	NOV 29	35.65	FEB 27	35.46	APR 26	29.31	JUN 27	26.67	AUG 28	32.52
OCT 27	35.68	JAN 30	35.92	MAR 28	30.70	MAY 30	21.53	JUL 25	29.96	SEP 28	34.08



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--WA Bk 25. SITE ID.--393851077343001. PERMIT NUMBER.--WA-70-0235.
LOCATION.--Lat 39°38'51", long 77°34'30", Hydrologic Unit 02070004, 0.5 mi south of Smithsburg at Hagerstown Water Supply Plant.
Owner: U.S. Geological Survey.
AQUIFER.--Tomstown Dolomite of Lower Cambrian age. Aquifer code: 377TMSN.
WELL CHARACTERISTICS.--Drilled, unused, water-table well, depth 200 ft; casing diameter 6 in., to 128 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder from Apr. 27, 1970 to current year.
DATUM.--Elevation of land surface is 790 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of shelter shelf, 1.7 ft above land-surface datum.
PERIOD OF RECORD.--April 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.68 ft below land-surface datum, Apr. 6, 1984; lowest measured, 51.37 ft below land-surface datum Jan. 31, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	47.34	47.08	48.43	48.32	48.29	48.17	48.74	48.65	48.18	48.01	47.59	47.47
2	47.51	47.34	48.44	48.32	48.33	48.24	48.72	48.70	48.29	48.17	47.64	47.53
3	47.63	47.32	48.55	48.45	48.29	48.14	48.71	48.50	48.38	48.24	47.67	47.59
4	47.76	47.62	48.49	48.43	48.49	48.25	48.89	48.51	48.38	48.23	47.65	47.52
5	47.95	47.76	48.44	48.23	48.46	48.36	49.08	48.88	48.24	48.19	47.58	47.42
6	47.94	47.88	48.49	48.37	48.44	48.37	49.00	48.81	48.14	47.98	47.59	47.42
7	47.93	47.90	48.65	48.49	48.53	48.37	49.00	48.93	48.15	48.07	47.51	47.41
8	47.95	47.87	48.67	48.54	48.64	48.53	48.91	48.79	48.16	48.03	47.42	47.26
9	47.94	47.90	48.68	48.49	48.64	48.55	48.88	48.81	48.28	48.15	47.27	47.20
10	47.92	47.82	48.53	48.30	48.59	48.51	48.83	48.62	48.18	48.08	47.20	47.02
11	48.09	47.83	48.69	48.53	48.75	48.54	48.72	48.62	48.11	48.06	47.02	46.65
12	48.23	48.09	48.70	48.55	48.80	48.71	48.62	48.27	48.37	48.08	46.64	46.44
13	48.25	48.21	48.54	48.46	48.71	48.53	48.42	48.28	48.36	48.17	46.44	45.92
14	48.26	48.18	48.54	48.47	48.70	48.56	48.40	47.97	48.29	48.16	45.91	45.53
15	48.34	48.18	48.56	48.50	48.85	48.57	47.96	47.85	48.25	48.21	45.62	45.39
16	48.39	48.33	48.52	48.40	48.86	48.81	47.85	47.76	48.29	48.23	45.71	45.62
17	48.40	48.31	48.59	48.41	48.81	48.63	47.82	47.60	48.29	48.22	45.65	45.47
18	48.33	48.23	48.67	48.59	48.82	48.76	47.71	47.48	48.23	48.20	45.58	45.37
19	48.36	48.30	48.65	48.52	48.89	48.80	47.66	47.58	48.20	47.98	45.59	45.45
20	48.45	48.35	48.53	47.97	48.90	48.79	47.80	47.54	47.99	47.85	45.46	44.98
21	48.46	48.28	48.20	48.12	49.00	48.82	47.93	47.81	47.84	47.61	45.15	44.90
22	48.29	48.21	48.20	48.08	49.03	48.96	47.89	47.82	47.84	47.81	45.21	45.12
23	48.28	48.21	48.10	48.06	48.96	48.78	47.85	47.82	47.80	47.67	45.22	45.09
24	48.26	48.19	48.08	48.04	48.81	48.55	47.89	47.82	47.67	47.59	45.09	44.41
25	48.30	48.24	48.08	48.05	48.79	48.66	48.02	47.89	47.60	47.35	44.38	44.07
26	48.37	48.27	48.08	48.00	48.86	48.79	48.00	47.72	47.34	47.16	44.42	44.22
27	48.46	48.38	48.01	47.96	48.83	48.56	48.05	47.82	47.44	47.31	44.42	44.41
28	48.40	48.28	48.18	47.97	48.78	48.33	48.09	47.98	47.48	47.42	44.41	44.40
29	48.47	48.41	48.34	48.19	48.83	48.78	48.03	47.97	---	---	44.40	44.40
30	48.51	48.45	48.24	48.08	48.80	48.74	48.03	47.86	---	---	44.40	44.40
31	48.52	48.44	---	---	48.74	48.73	48.06	47.98	---	---	44.40	44.40
MONTH	48.52	47.08	48.70	47.96	49.03	48.14	49.08	47.48	48.38	47.16	47.67	44.07

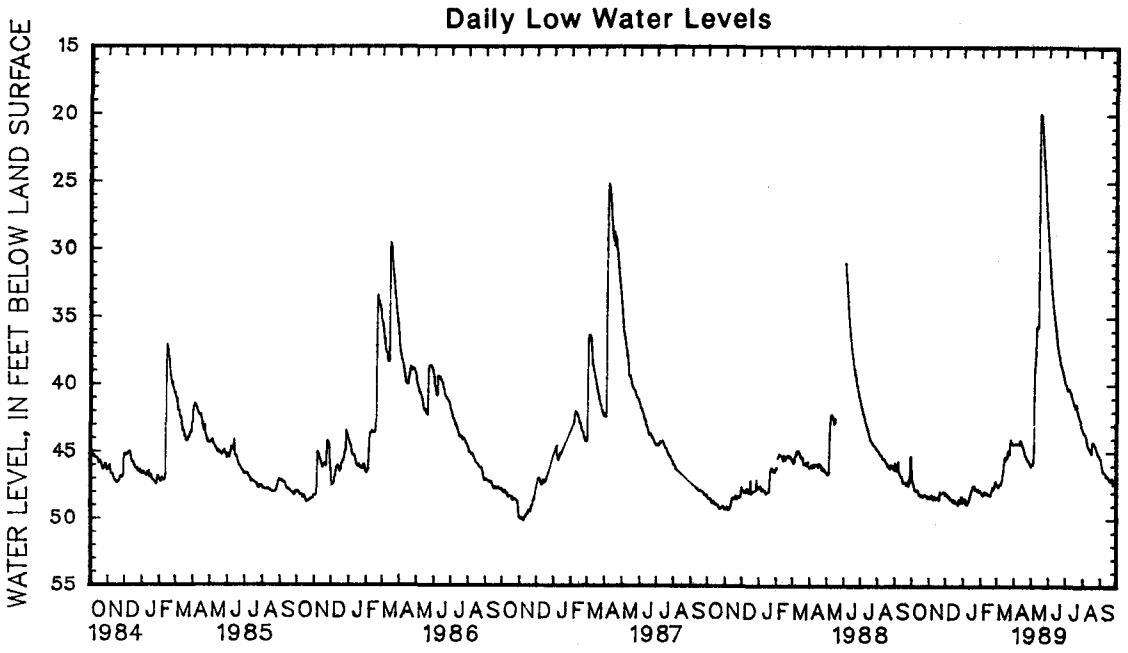
GROUND-WATER LEVELS

MARYLAND--Continued

WASHINGTON COUNTY--Continued

WA Bk 25--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	44.40	44.40	46.17	45.92	29.96	29.28	40.09	39.97	43.53	43.40	45.61	45.45
2	44.40	44.39	45.97	45.91	30.67	29.98	40.21	40.04	43.60	43.50	45.86	45.49
3	44.41	44.40	45.99	45.89	31.29	30.68	40.45	40.21	43.65	43.57	46.10	45.87
4	44.42	44.41	46.01	45.81	32.03	31.31	40.64	40.45	43.70	43.62	46.29	46.06
5	44.41	44.41	45.86	44.98	32.53	32.05	40.66	40.41	43.83	43.66	46.49	46.24
6	44.42	44.41	44.91	41.00	33.18	32.54	40.41	40.35	43.91	43.82	46.51	46.46
7	44.42	44.42	40.90	38.88	33.68	33.19	40.42	40.33	44.16	43.82	46.54	46.49
8	44.42	44.42	38.86	38.48	34.12	33.68	40.50	40.37	44.40	44.17	46.56	46.52
9	44.43	44.42	38.48	37.94	34.47	34.14	40.63	40.49	44.59	44.40	46.61	46.55
10	44.44	44.43	37.89	36.50	34.90	34.48	40.72	40.63	44.69	44.58	46.65	46.58
11	44.44	44.13	36.72	35.70	35.33	34.90	40.94	40.73	44.75	44.67	46.79	46.65
12	44.27	44.18	36.23	35.78	35.54	35.33	41.05	40.92	44.84	44.73	46.88	46.79
13	44.52	44.27	35.77	35.73	35.96	35.54	41.18	41.04	44.93	44.79	46.91	46.85
14	44.54	44.46	35.73	35.53	36.37	35.97	41.33	41.18	45.02	44.88	46.89	46.79
15	44.63	44.53	35.47	32.36	36.78	36.38	41.50	41.33	45.06	44.96	47.01	46.83
16	44.93	44.67	32.20	23.22	37.06	36.77	41.57	41.47	45.12	44.98	47.00	46.91
17	44.96	44.84	23.03	20.03	37.39	37.06	41.72	41.53	45.32	45.08	47.11	47.00
18	45.12	44.96	20.02	19.93	37.62	37.39	41.87	41.73	45.33	44.25	47.17	47.11
19	45.30	45.13	20.39	20.00	37.90	37.62	41.80	41.48	44.35	44.27	47.19	47.12
20	45.39	45.26	20.98	20.40	38.15	37.91	41.69	41.48	44.39	44.27	47.20	47.14
21	45.44	45.31	21.86	21.00	38.43	38.15	42.01	41.71	44.47	44.30	47.25	47.18
22	45.55	45.42	22.67	21.87	38.62	38.43	42.21	42.02	44.59	44.45	47.19	46.94
23	45.62	45.53	23.39	22.68	38.71	38.61	42.33	42.22	44.62	44.53	47.39	47.02
24	45.69	45.60	23.99	23.40	38.89	38.71	42.47	42.34	44.84	44.61	47.51	47.39
25	45.72	45.64	24.67	24.00	39.02	38.89	42.60	42.47	45.02	44.78	47.47	47.30
26	45.83	45.70	25.55	24.68	39.25	39.02	42.74	42.60	45.05	44.92	47.35	47.19
27	45.91	45.78	26.40	25.57	39.48	39.26	42.79	42.71	45.21	45.00	47.44	47.35
28	45.99	45.93	27.15	26.42	39.60	39.43	42.93	42.73	45.32	45.19	47.41	47.27
29	46.10	46.00	27.85	27.16	39.84	39.60	43.16	42.95	45.37	45.24	47.31	47.22
30	46.22	46.08	28.51	27.86	39.99	39.85	43.29	43.15	45.42	45.26	47.40	47.31
31	---	---	29.26	28.54	---	---	43.43	43.27	45.65	45.40	---	---
MONTH	46.22	44.13	46.17	19.93	39.99	29.28	43.43	39.97	45.65	43.40	47.51	45.45



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--WA Ch 106. SITE ID.--393414077461801. PERMIT NUMBER.--WA-73-2095.
LOCATION.--Lat 39°34'14", long 77°46'18", Hydrologic Unit 02070004, at Fountain Rock School.
Owner: U.S. Geological Survey.
AQUIFER.--Conococheague Limestone of Upper Cambrian age. Aquifer code: 371CCCG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 69 ft; casing diameter 6 in., to 41 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with graphic water-level recorder from Mar. 29, 1978 to June 19, 1981, Nov. 6, 1985 to May 3, 1987, and July 1, 1987 to current year
DATUM.--Elevation of land surface is 520 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.45 ft above land-surface datum.
PERIOD OF RECORD.--February 1978 to June 1981, April 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.41 ft below land-surface datum, Apr. 23, 1984 and Apr. 23, 1987; lowest measured, 36.59 ft below land-surface datum, Jan. 11, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	35.56	35.54	36.13	36.12	36.34	36.33	36.55	36.54	36.31	36.31	35.95	35.92
2	35.58	35.56	36.14	36.13	36.35	36.34	36.56	36.55	36.31	36.31	35.92	35.90
3	35.60	35.58	36.15	36.14	36.35	36.34	36.57	36.56	36.31	36.29	35.90	35.88
4	35.62	35.60	36.15	36.15	36.36	36.35	36.57	36.57	36.29	36.29	35.88	35.86
5	35.64	35.62	36.16	36.15	36.36	36.36	36.58	36.57	36.29	36.29	35.85	35.66
6	35.65	35.64	36.17	36.16	36.37	36.36	36.58	36.58	36.29	36.29	35.70	35.69
7	35.67	35.65	36.18	36.17	36.38	36.37	36.58	36.58	36.29	36.29	35.69	35.63
8	35.69	35.67	36.20	36.18	36.39	36.38	36.58	36.58	36.29	36.29	35.63	35.60
9	35.73	35.69	36.21	36.20	36.39	36.39	36.58	36.58	36.29	36.29	35.60	35.56
10	35.75	35.73	36.23	36.21	36.40	36.39	36.58	36.58	36.29	36.29	35.55	35.48
11	35.76	35.75	36.24	36.23	36.41	36.40	36.59	36.58	36.29	36.28	35.47	35.35
12	35.78	35.76	36.26	36.24	36.42	36.41	36.58	36.53	36.28	36.28	35.35	35.26
13	35.80	35.78	36.27	36.26	36.42	36.42	36.53	36.53	36.28	36.28	35.26	35.18
14	35.82	35.80	36.28	36.27	36.43	36.42	36.53	36.53	36.28	36.27	35.20	35.08
15	35.84	35.82	36.29	36.28	36.44	36.43	36.46	36.44	36.27	36.25	35.08	34.95
16	35.86	35.84	36.30	36.29	36.45	36.44	36.44	36.42	36.25	36.24	34.95	34.86
17	35.88	35.86	36.31	36.30	36.45	36.45	36.42	36.39	36.24	36.24	34.85	34.78
18	35.89	35.88	36.32	36.31	36.45	36.45	36.39	36.36	36.24	36.23	34.78	34.68
19	35.91	35.89	36.32	36.32	36.47	36.45	36.36	36.34	36.23	36.22	34.68	34.66
20	35.93	35.91	36.32	36.05	36.47	36.46	36.34	36.33	36.22	36.20	34.66	34.60
21	35.95	35.93	36.22	36.15	36.48	36.47	36.33	36.32	36.20	36.18	34.60	34.57
22	35.97	35.95	36.23	36.22	36.49	36.48	36.32	36.31	36.18	36.12	34.57	34.53
23	35.99	35.97	36.24	36.23	36.50	36.49	36.32	36.31	36.13	36.11	34.53	34.50
24	36.01	35.99	36.26	36.24	36.51	36.50	36.31	36.31	36.11	36.08	34.50	34.25
25	36.02	36.01	36.27	36.26	36.51	36.51	36.31	36.31	36.08	36.05	34.25	34.18
26	36.03	36.02	36.28	36.27	36.51	36.51	36.31	36.31	36.05	36.01	34.18	34.07
27	36.05	36.04	36.30	36.28	36.52	36.51	36.31	36.30	36.01	35.98	34.07	33.95
28	36.07	36.05	36.31	36.30	36.52	36.52	36.31	36.31	35.98	35.96	33.95	33.86
29	36.09	36.07	36.32	36.31	36.54	36.52	36.31	36.31	---	---	33.86	33.79
30	36.10	36.09	36.33	36.32	36.54	36.54	36.31	36.31	---	---	33.79	33.72
31	36.12	36.11	---	---	36.54	36.54	36.31	36.31	---	---	33.72	33.66
MONTH	36.12	35.54	36.33	36.05	36.54	36.33	36.59	36.30	36.31	35.96	35.95	33.66

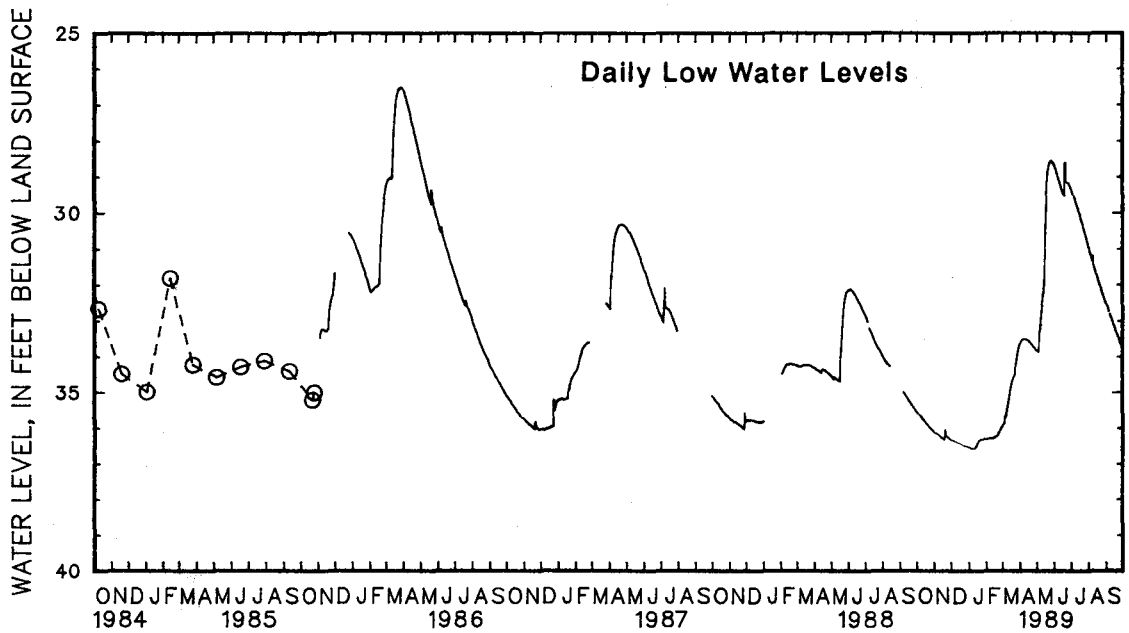
GROUND-WATER LEVELS

MARYLAND--Continued

WASHINGTON COUNTY--Continued

WA Ch 106--Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	33.66	33.63	33.87	33.83	28.71	28.67	29.39	29.35	31.04	30.98	32.59	32.54
2	33.63	33.60	33.84	33.83	28.75	28.71	29.44	29.39	31.10	31.05	32.63	32.59
3	33.60	33.57	33.87	33.84	28.79	28.75	29.49	29.44	31.15	31.10	32.69	32.63
4	33.57	33.54	33.88	33.87	28.86	28.79	29.53	29.49	31.20	31.15	32.74	32.69
5	33.54	33.52	33.88	33.54	28.91	28.86	29.57	29.54	31.26	31.20	32.77	32.74
6	33.52	33.52	33.57	33.27	28.97	28.91	29.62	29.57	31.32	31.26	---	---
7	33.52	33.50	33.27	33.11	29.02	28.97	29.67	29.62	31.38	31.32	32.86	32.82
8	33.50	33.50	33.11	32.93	29.08	29.03	29.72	29.67	31.44	31.21	32.90	32.86
9	33.50	33.50	32.93	32.74	29.11	29.08	29.77	29.72	31.49	31.44	32.94	32.90
10	33.52	33.51	32.74	32.59	29.18	29.11	29.82	29.77	31.55	31.49	32.98	32.94
11	33.52	33.51	32.59	32.47	29.23	29.18	29.87	29.82	31.59	31.55	33.03	32.98
12	33.53	33.52	32.46	32.33	29.28	29.23	29.93	29.87	31.64	31.60	33.08	33.03
13	33.54	33.53	32.33	32.22	29.34	29.28	29.98	29.93	31.69	31.64	33.14	33.08
14	33.54	33.54	32.22	32.03	29.39	29.34	30.02	29.98	31.73	31.69	33.16	33.14
15	33.55	33.54	32.03	31.75	29.43	29.39	30.08	30.02	31.77	31.73	33.21	33.16
16	33.57	33.55	31.74	30.58	29.49	29.43	30.14	30.08	31.82	31.77	33.26	33.21
17	33.59	33.58	30.57	29.92	29.49	29.47	30.19	30.14	31.88	31.82	33.30	33.26
18	33.61	33.59	29.90	29.42	29.52	29.48	30.25	30.19	31.92	31.88	33.36	33.30
19	33.63	33.61	29.42	29.14	29.56	29.52	30.29	30.25	31.97	31.93	33.39	33.36
20	33.65	33.63	29.13	28.92	29.59	28.60	30.35	30.29	32.02	31.97	33.42	33.39
21	33.66	33.65	28.92	28.80	29.15	28.60	30.42	30.36	32.06	32.02	33.46	33.42
22	33.69	33.66	28.79	28.69	29.15	29.15	30.47	30.42	32.11	32.06	33.49	33.46
23	33.71	33.69	28.68	28.62	29.15	29.15	30.54	30.47	32.16	32.11	33.54	33.49
24	33.73	33.71	28.61	28.59	29.15	29.15	30.59	30.54	32.21	32.16	33.60	33.54
25	33.75	33.73	28.59	28.56	29.16	29.15	30.65	30.59	32.26	32.22	33.64	33.60
26	33.77	33.75	28.56	28.55	29.19	29.16	30.69	30.65	32.31	32.26	33.68	33.64
27	33.79	33.77	28.57	28.55	29.22	29.19	30.75	30.70	32.36	32.31	33.72	33.68
28	33.82	33.79	28.59	28.57	29.25	29.22	30.80	30.75	32.41	32.36	33.76	33.72
29	33.84	33.82	28.60	28.59	29.30	29.25	30.87	30.80	32.45	32.41	33.80	33.76
30	33.86	33.84	28.63	28.60	29.35	29.30	30.94	30.87	32.50	32.45	33.87	33.80
31	---	---	28.67	28.63	---	---	30.98	30.94	32.54	32.50	---	---
MONTH	33.86	33.50	33.88	28.55	29.59	28.60	30.98	29.35	32.54	30.98	---	---

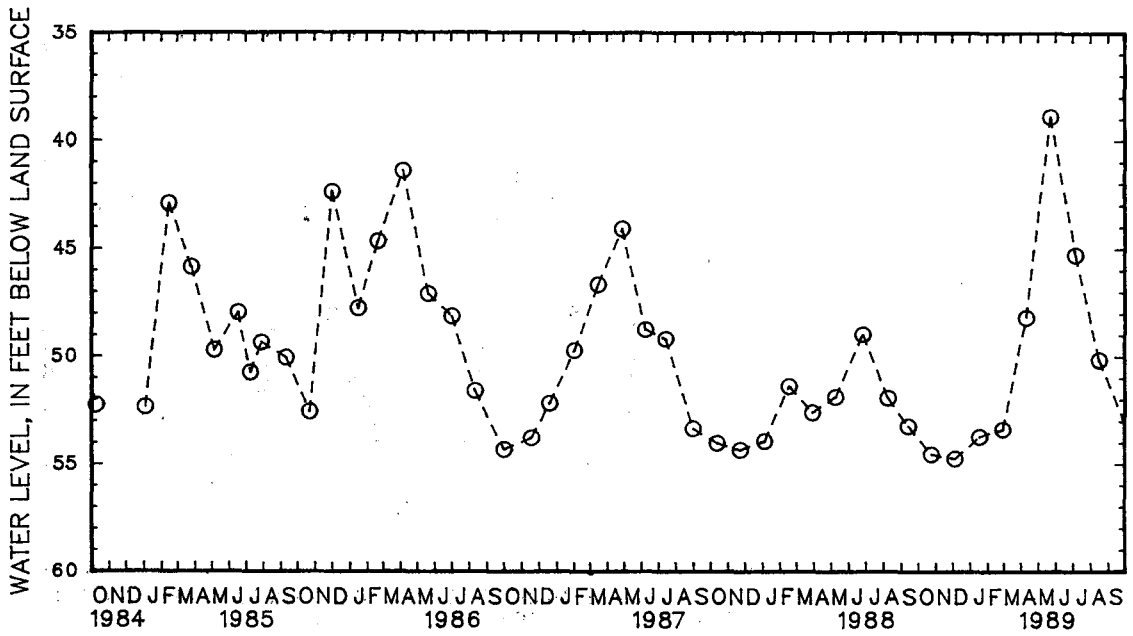


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--WA Ci 82. SITE ID.--393402077434201. PERMIT NUMBER.--WA-73-2101.
LOCATION.--Lat 39°34'02", long 77°43'42", Hydrologic Unit 02070004, at Maryland Correction Institution, Hagerstown.
Owner: U.S. Geological Survey.
AQUIFER.--Conococheague Limestone of Upper Cambrian age. Aquifer code: 371CCCG.
WELL CHARACTERISTICS.--Drilled, observation, water-table well, depth 84 ft; casing diameter 6 in., to 32 ft; open hole.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval from Apr. 25, 1978 to June 19, 1981.
DATUM.--Elevation of land surface is 500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing 2.3 ft above land-surface datum.
PERIOD OF RECORD.--February 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.56 ft below land-surface datum, Feb. 28, 1979; lowest measured, 59.28 ft below land-surface datum, Feb. 1, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	54.55	JAN 18	53.74	APR 10	48.17	JUL 6	45.29
DEC 5	54.75	FEB 28	53.38	MAY 23	38.88	AUG 16	50.17

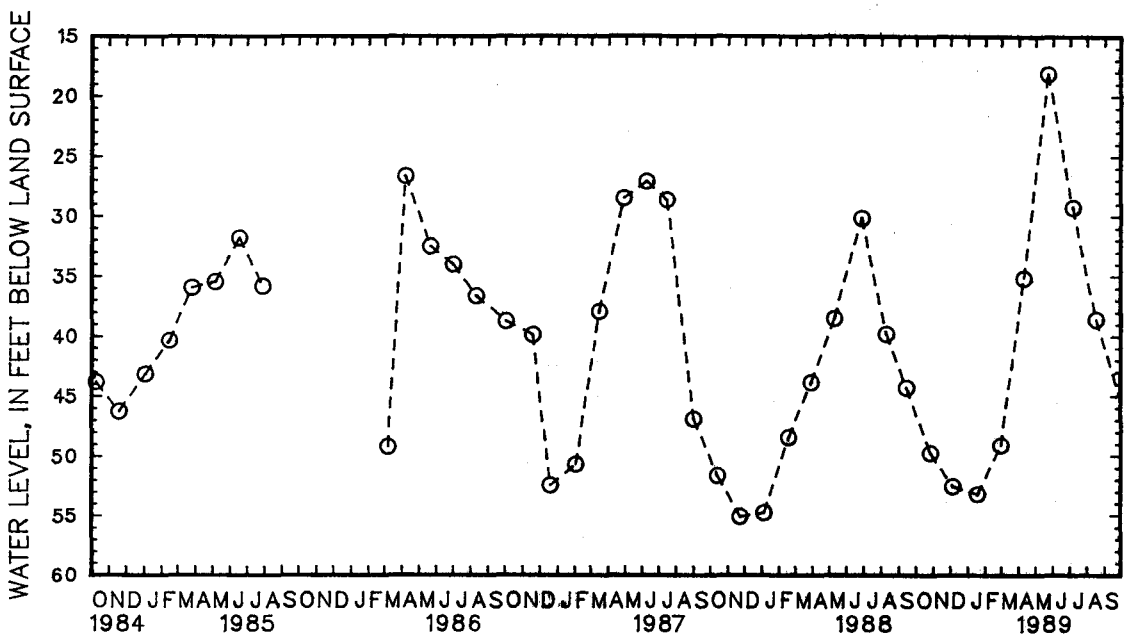


5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

WELL NUMBER.--WA Dj 2. SITE ID.--392904077371501.
LOCATION.--Lat 39°29'04", long 77°37'15", Hydrologic Unit 02070004, at Turner's Gap on Alt. U.S. 40.
Owner: Russell Schwartz.
AQUIFER.--Weverton Formation of Lower Cambrian age. Aquifer code: 377WVRN.
WELL CHARACTERISTICS.--Dug, stone-lined, observation, water-table well, depth 61.3 ft; casing diameter 48 in.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel.
DATUM.--Elevation of land surface is 1,070 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top of concrete cover, 0.25 ft above land-surface datum.
PERIOD OF RECORD.--December 1956 to current year.
EXTREMES FOR PERIOD FOR RECORD.--Highest water level measured, 16.35 ft below land-surface datum, Apr. 23, 1984; lowest measured, 58.88 ft below land-surface datum, Oct. 5, 1961.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	49.77	JAN 18	53.20	APR 10	35.13	JUL 6	29.30
DEC 5	52.54	FEB 28	49.10	MAY 23	18.14	AUG 16	38.62



5 YEAR HYDROGRAPH
OCTOBER 1, 1984 THROUGH SEPTEMBER 30, 1989

GROUND-WATER QUALITY RECORDS

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

PRINTED OUTPUT	REMARK
E	Estimated
>	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 egual to or greater than 15 percent (dominant).
&	Biological organism estimated as dominant.

NOTE: 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.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

FREDERICK COUNTY, MARYLAND

LOCAL IDENTIFIER	DATE	TIME	STATION NUMBER	GEOLOGIC UNIT	SITE TYPE	SAMPLING METHOD, CODES	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET)	DEPTH OF WELL, TOTAL (FEET)	DEPTH TO TOP OF SAMPLE INTERVAL (FT)	DEPTH TO BOTTOM OF SAMPLE INTERVAL (FT)
FR Af 27	05-03-89	1415	394200077190701	231GBRG	GW	4040	1.35	365.00	39	365
FR Cd 38	03-03-89	1120	393218077271001	377WVRN	SP	4010	--	--	--	--
FR Dd 178	02-28-89	1635	392552077262201	377FDCK	SP	4010	--	--	--	--
	04-27-89	1300		377FDCK	SP	4010	--	--	--	--
	05-04-89	1150		377FDCK	SP	4010	--	--	--	--
	06-16-89	1340		377FDCK	SP	4010	--	--	--	--
	09-27-89	1300		377FDCK	SP	4010	--	--	--	--
FR Df 35	03-28-89	1215	392517077190401	300SMCK	GW	4040	58.83	302.00	26	302
FR Fb 12	04-27-89	1015	391846077370501	400PCMB	SP	4010	--	--	--	--

LOCAL IDENTIFIER	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (G/M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
FR Af 27	385	180	12	497	7.2	14.0	1.6	55	20	21
FR Cd 38	820	--	17	21	5.5	10.5	--	0.78	0.65	1.1
FR Dd 178	315	--	300	585	6.9	12.0	--	83	11	18
	315	--	--	585	7.0	13.0	--	--	--	--
	315	--	--	587	7.1	13.0	--	81	11	20
	315	--	--	578	7.2	13.0	--	85	11	19
	315	--	119	545	6.7	13.5	--	81	10	17
FR Df 35	570	105	5.5	128	6.6	15.0	9.7	15	6.1	1.7
FR Fb 12	300	--	4.0	258	6.6	12.5	--	31	12	17

LOCAL IDENTIFIER	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY WAT WH TOT IT FIELD MG/L AS CACO3	BICARBONATE WATER WH IT FIELD MG/L AS HCO3	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	PHOSPHORUS TOTAL (MG/L AS P)
FR Af 27	0.40	180	220	73	7.0	0.20	27	312	1.70	<0.010
FR Cd 38	1.2	4	5	2.4	1.0	0.10	6.3	16	0.300	<0.010
FR Dd 178	2.1	203	247	21	39	0.10	9.2	305	5.60	0.020
	--	196	--	--	--	--	--	--	--	--
	2.1	198	--	20	42	0.10	8.8	303	5.10	0.020
	2.0	198	242	21	41	0.10	9.1	307	5.30	0.030
	2.1	196	239	20	36	0.10	9.2	293	5.30	0.020
FR Df 35	0.60	64	78	0.20	1.4	0.10	11	74	0.300	0.010
FR Fb 12	1.4	43	--	47	40	0.10	20	194	3.90	0.090

LOCAL IDENTIFIER	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	BORON, TOTAL RECOVERABLE (UG/L AS B)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)
FR Af 27	70	--	--	--	--	230	--	--	--
FR Cd 38	30	--	--	--	--	<10	--	--	--
FR Dd 178	<10	<10	<1	54	<0.5	<10	<1	<1	<1
	--	--	--	--	--	--	--	--	--
	--	10	<1	53	<0.5	130	3	2	1
	20	<10	<1	52	<0.5	<10	<1	2	1
	<10	<10	<1	52	<0.5	<10	<1	1	<1
FR Df 35	10	--	--	--	--	<10	--	--	--
FR Fb 12	--	<10	<1	29	<0.5		<1	<1	<1

Geologic unit (aquifer): 231GBRG - Gettysburg Shale
300SMCK - Sams Creek Metabasalt
377FDCK - Frederick Limestone
377WVRN - Weverton Formation
400PCMB - Precambrian Erathem

Sampling method: 4010 - Thief sampler
4040 - Submersible pump

Site type: GW - Groundwater
SP - Spring

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

FREDERICK COUNTY, MARYLAND--Continued

LOCAL IDENTIFIER	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)
FR Af 27	--	1000	11	--	--	<10	<1	--	--
FR Cd 38	--	<10	<3	--	--	<10	3	--	--
FR Dd 178	3	1000	13	<5	7	10	1	0.3	4
	--	--	--	--	--	--	--	--	--
	14	20	<3	<1	<4	<10	<1	<0.1	1
	1	60	5	<1	5	10	1	<0.1	<1
	13	80	4	<1	6	40	<1	<0.1	<1
FR Df 35	--	110	26	--	--	<10	3	--	--
FR Fb 12	7	<10	4	<5	<4	<10	<1	<0.1	<1

LOCAL IDENTIFIER	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	BROMOFORM TOTAL (UG/L)	BENZENE TOTAL (UG/L)	CARBON-TETRACHLORIDE TOTAL (UG/L)
FR Af 27	--	--	--	<10	--	0.4	--	--	--
FR Cd 38	--	--	--	<10	--	--	--	--	--
FR Dd 178	<1	<1	<1	10	<3	0.5	<3.0	<3.0	<3.0
	--	--	--	--	--	--	--	--	--
	2	<1	<1	<10	5	0.5	<3.0	<3.0	<3.0
	2	<1	<1	<10	4	0.4	<3.0	<3.0	<3.0
	2	<1	<1	<10	7	0.4	<3.0	<3.0	<3.0
FR Df 35	--	--	--	30	--	0.3	--	--	--
FR Fb 12	2	<1	<1	30	12	1.3	<3.0	<3.0	<3.0

LOCAL IDENTIFIER	CHLOROBENZENE TOTAL (UG/L)	CHLORODIBROMOMETHANE TOTAL (UG/L)	CHLOROFORM TOTAL (UG/L)	CHLOROETHANE TOTAL (UG/L)	CIS 1,3-DICHLOROPROPENE TOTAL (UG/L)	DICHLOROBROMOMETHANE TOTAL (UG/L)	DICHLORODIFLUOROMETHANE TOTAL (UG/L)	ETHYLBENZENE TOTAL (UG/L)	METHYLBROMIDE TOTAL (UG/L)
FR Af 27	--	--	--	--	--	--	--	--	--
FR Cd 38	--	--	--	--	--	--	--	--	--
FR Dd 178	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	16	<3.0	<3.0
	--	--	--	--	--	--	--	--	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	11	<3.0	<3.0
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	16	<3.0	<3.0
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	6.4	<3.0	<3.0
FR Df 35	--	--	--	--	--	--	--	--	--
FR Fb 12	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

LOCAL IDENTIFIER	METHYLCHLORIDE TOTAL (UG/L)	METHYLENE CHLORIDE TOTAL (UG/L)	STYRENE TOTAL (UG/L)	TETRACHLOROETHYLENE TOTAL (UG/L)	TRICHLOROFLUOROMETHANE TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	TRANS-1,3-DICHLOROPROPENE TOTAL (UG/L)	TRICHLOROETHYLENE TOTAL (UG/L)	TRIFLURALIN TOTAL RECOVER (UG/L)
FR Af 27	--	--	--	--	--	--	--	--	<0.10
FR Cd 38	--	--	--	--	--	--	--	--	--
FR Dd 178	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--
	--	--	--	--	--	--	--	--	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--
FR Df 35	--	--	--	--	--	--	--	--	--
FR Fb 12	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

FREDERICK COUNTY, MARYLAND--Continued

LOCAL IDENTIFIER	VINYL CHLORIDE TOTAL (UG/L)	XYLENE TOTAL WATER WHOLE TOT REC (UG/L)	1,1-DICHLOROETHANE TOTAL (UG/L)	1,1-DICHLOROETHYLENE TOTAL (UG/L)	1,1,1-TRICHLOROETHANE TOTAL (UG/L)	1,1,2-TRICHLOROETHANE TOTAL (UG/L)	1,1,2,2 TETRACHLOROETHANE TOTAL (UG/L)	1,2-DIBROMO ETHANE WATER WHOLE TOTAL (UG/L)	1,2-DICHLOROBENZENE TOTAL (UG/L)
FR Af 27	--	--	--	--	--	--	--	--	--
FR Cd 38	--	--	--	--	--	--	--	--	--
FR Dd 178	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	--	--	--	--	--	--	--	--	--
	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
FR Df 35	--	--	--	--	--	--	--	--	--
FR Fb 12	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

LOCAL IDENTIFIER	1,2-DICHLOROETHANE TOTAL (UG/L)	1,2-DICHLOROPROPANE TOTAL (UG/L)	1,2-TRANSDICHLOROETHENE TOTAL (UG/L)	1,3-DICHLOROPROPENE TOTAL (UG/L)	1,3-DICHLOROBENZENE TOTAL (UG/L)	1,4-DICHLOROBENZENE TOTAL (UG/L)	2-CHLOROETHYLVINYLETHER TOTAL (UG/L)	ALACHLOR TOTAL RECOVER (UG/L)	AMETRYNE TOTAL
FR Af 27	--	--	--	--	--	--	--	<0.10	<0.10
FR Cd 38	--	--	--	--	--	--	--	--	--
FR Dd 178	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--	--
	--	--	--	--	--	--	--	--	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--	--
	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--	--
FR Df 35	--	--	--	--	--	--	--	--	--
FR Fb 12	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	--	--

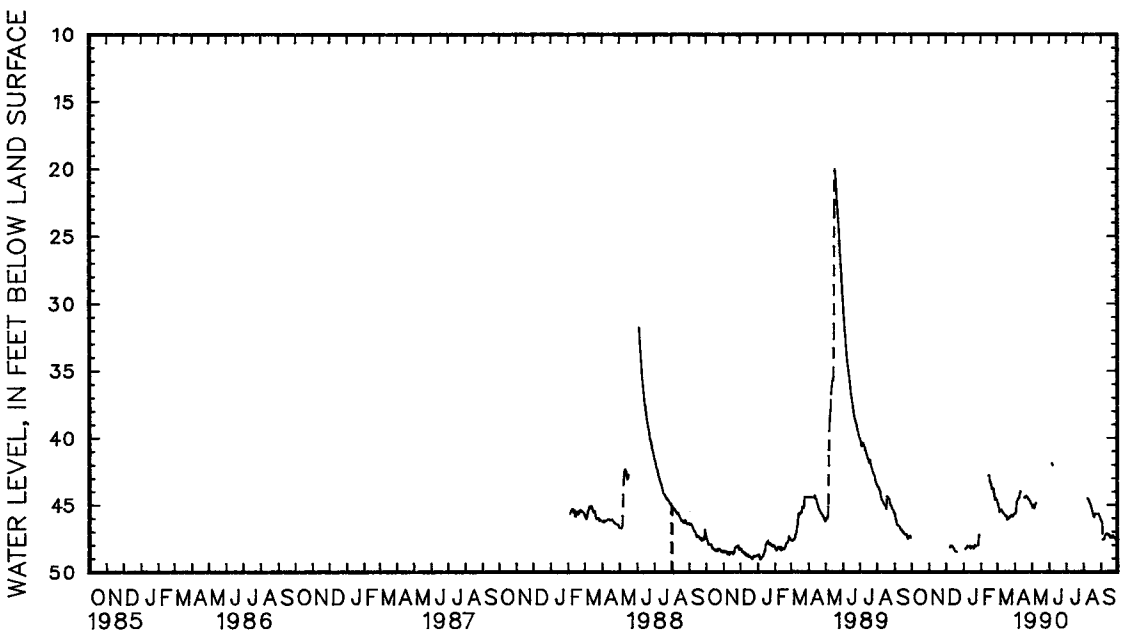
LOCAL IDENTIFIER	ATRAZINE, TOTAL (UG/L)	CYANAZINE TOTAL (UG/L)	METOLACHLOR WATER WHOLE TOT.REC (UG/L)	METRIBUZIN WATER WHOLE TOT.REC (UG/L)	PROMETRYNE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROPAZINE TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)
FR Af 27	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1
FR Cd 38	--	--	--	--	--	--	--	--	--
FR Dd 178	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
FR Df 35	--	--	--	--	--	--	--	--	--
FR Fb 12	--	--	--	--	--	--	--	--	--

INDEX

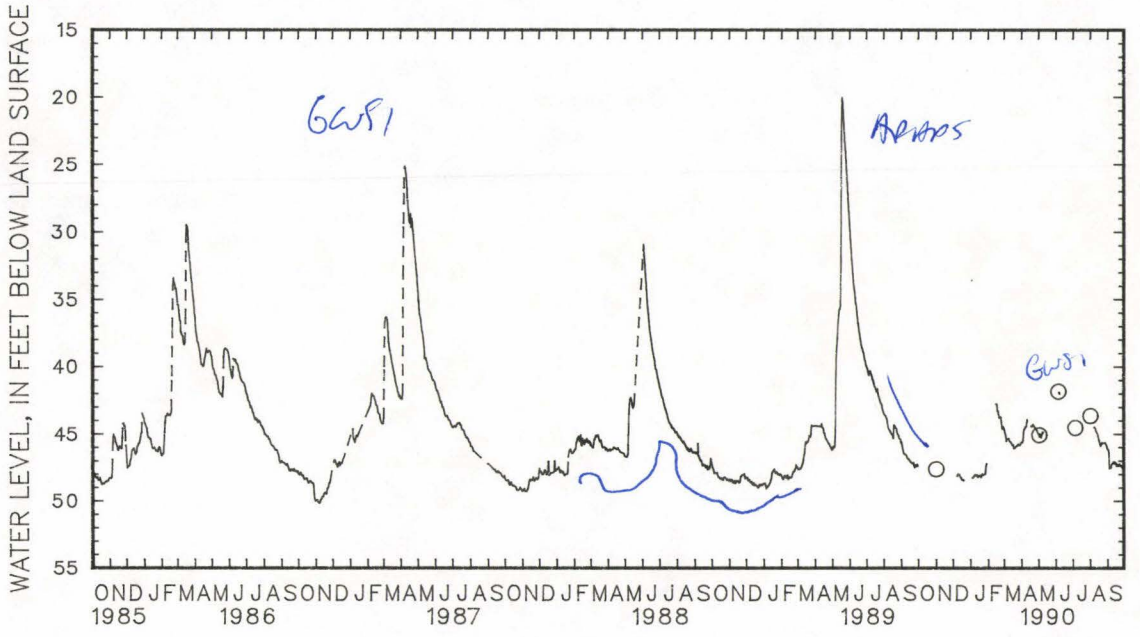
WELL NUMBER.--CH Bc 5. SITE ID.--383524077094401.
LOCATION.--Lat 38°35'24", long 77°09'44", Hydrologic Unit 02070011, at Benson Rd.;
U.S. Naval Ordnance Station, about 2.5 miles southwest of Indian Head.
Owner: U.S. Navy.
AQUIFER.--Patuxent Formation of Lower Cretaceous age. Aquifer code: 217PTXN.
WELL CHARACTERISTICS.--Drilled, observation, artesian well, depth 430 ft; casing diameter 8 in. to unknown depth; screen diameter 8 in, depth unknown.
INSTRUMENTATION.--Monthly measurements with chalked steel tape by USGS personnel. Equipped with digital water-level recorder--60-minute recorder interval, April 28, 1988 to current year.
DATUM.--Elevation of land surface is 38.2 ft above National Geodetic Vertical Datum of 1929.
Measuring Point: Top of recorder shelf, 2.5 ft above land surface.
REMARKS.--Indian Head Project observation well. Recorder data missing because of malfunctioning float/counter-weight system. Water levels affected by nearby pumping.
PERIOD OF RECORD.--April 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 119.12 ft below land surface, Nov. 13, 1988; lowest measured, 126.78 ft below land surface, Jan. 11, 1989.

WATER LEVEL,IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	122.90	122.56	123.80	123.45	122.33	122.13	122.79	122.26	121.92	121.51	121.32	120.98
2	122.66	122.51	123.91	123.56	122.29	121.83	122.93	122.76	121.72	121.34	121.15	120.79
3	122.99	122.57	123.75	123.47	122.35	121.88	122.98	122.78	121.79	121.45	121.07	120.79
4	123.09	122.82	123.75	123.29	122.35	121.97	122.95	122.62	121.54	121.07	121.10	120.88
5	123.01	122.80	123.56	123.24	122.10	121.87	---	---	121.75	121.44	120.94	120.60
6	122.93	122.77	123.38	123.08	122.15	121.94	122.70	122.34	121.58	121.17	120.95	120.68
7	122.98	122.60	123.33	123.01	122.48	121.99	122.65	122.23	121.63	121.35	120.96	120.71
8	122.61	122.50	123.10	122.68	122.39	122.14	122.55	122.09	121.68	121.22	120.86	120.50
9	122.95	122.61	122.87	122.49	122.39	122.09	122.51	121.97	121.55	121.13	120.75	120.34
10	122.90	122.64	122.97	122.53	122.29	121.96	122.38	121.99	121.50	121.13	120.67	120.30
11	123.09	122.72	122.91	122.53	122.31	121.95	122.43	121.85	121.60	121.15	120.59	120.19
12	123.19	122.73	122.91	122.56	122.36	121.97	122.26	121.96	121.64	121.16	120.53	120.21
13	123.28	122.84	122.96	122.46	122.24	121.86	122.38	122.20	121.55	121.10	120.47	120.16
14	123.28	122.79	122.85	122.45	122.22	121.89	122.34	121.99	121.51	121.15	120.36	120.09
15	123.18	122.74	122.81	122.37	122.34	121.94	122.28	122.01	121.51	121.08	120.32	120.01
16	---	---	122.62	122.06	122.56	122.17	122.26	122.00	121.17	120.90	120.27	119.88
17	---	---	122.70	122.43	122.63	122.39	122.20	121.94	121.55	121.06	120.22	119.92
18	123.21	122.73	122.66	122.43	122.62	122.40	122.06	121.79	121.55	121.18	120.55	120.17
19	122.92	122.29	122.66	122.33	122.59	122.29	122.24	122.01	121.21	120.92	120.62	120.32
20	122.80	122.29	122.35	122.13	122.69	122.27	122.09	121.76	121.47	121.21	120.88	120.58
21	123.00	122.48	122.56	122.17	123.02	122.51	121.95	121.66	121.42	121.09	120.92	120.79
22	123.14	122.62	122.56	122.26	123.19	123.02	121.95	121.57	121.32	120.88	120.88	120.58
23	123.07	122.79	122.35	122.16	123.15	122.92	121.94	121.66	121.06	120.71	121.15	120.70
24	122.97	122.62	122.35	122.05	122.96	122.75	121.96	121.61	121.14	120.87	121.15	120.84
25	123.04	122.71	122.24	121.99	122.79	122.25	121.93	121.41	121.42	121.19	121.09	120.75
26	123.18	122.80	122.25	122.14	122.71	122.21	121.89	121.52	121.42	121.12	121.14	120.82
27	123.29	123.00	122.31	121.84	122.74	122.49	121.98	121.67	121.30	120.95	121.13	120.81
28	123.36	123.07	122.01	121.75	122.70	122.48	122.00	121.80	121.31	120.95	121.11	120.76
29	123.57	123.30	122.15	122.06	122.75	122.46	122.00	121.37	---	---	121.07	120.75
30	123.63	123.28	122.14	121.98	122.71	122.38	121.87	121.51	---	---	121.03	120.66
31	123.57	123.21	---	---	122.68	122.09	121.93	121.62	---	---	120.97	120.58
MONTH	123.63	122.29	123.91	121.75	123.19	121.83	122.98	121.37	121.92	120.71	121.32	119.88



5 YEAR HYDROGRAPH
OCTOBER 1, 1985 THROUGH SEPTEMBER 30, 1990



5 YEAR HYDROGRAPH
OCTOBER 1, 1985 THROUGH SEPTEMBER 30, 1990

October 1, 1978

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
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

This publication was printed at the UNICOR Print Plant,
Federal Correctional Institution, Ray Brook, NY

POSTAGE AND FEES PAID
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INT 413

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
208 Carroll Building, 8600 LaSalle Road
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