United States Department of the Interior

GEOLOGICAL SURVEY
Reston, VA 22092

In Reply Refer To:
Mail Stop 439

WATER RESOURCES DIVISION MEMORANDUM NO. 92.04

Subject: PUBLICATIONS--Revised Annual Water-Data Report Format

Attached are guidelines for revising the format of the Water Resources Division annual State data reports. The changes in the format of the reports are described in Office of Surface Water Technical Memorandum No. 91.12. The changes include more surface-water statistics, ground-water hydrographs, and lists of discontinued stations.

The new format was tested by four districts in a pilot effort. The resulting reports were widely distributed to districts and cooperators. Response was overwhelmingly positive. It has been agreed that the new format is strongly recommended for use in the 1991 water-year reports and will be mandatory for 1992.

Also attached are instructions for using the automated data processing system (ADAPS) to prepare the revised tables for the surface-water pages of the report. Please ensure that these instructions are provided to the appropriate persons in each district.

The new format allows the option of including or excluding peaks above base on the surface-water pages. Because these pages are going to be fuller now that the tables of statistics appear at the bottom, many districts may decide to exclude the peaks above base. Peaks above base should continue to be computed and added to the peak flow file, along with the annual peak for each station.

Questions regarding the revised guidelines may be directed to Charles E. Novak (CENOVAK) FTS 959-5635. Questions regarding the processing of data using ADAPS should be directed to Scott D. Bartholoma (SBARTHOLOMA) FTS 588 4117.

James F. Daniel
Assistant Chief Hydrologist
Scientific Information Management

Attachments

This memorandum does not supersede any other WRD Numbered Memorandum.

WRD Distribution: A, B, S, FO, PO

REVISED GUIDELINES FOR THE STATE DATA REPORT

Basic changes in the presentation of surface-water and ground-water data in annual State data reports require major revisions of the guidelines presented in the "WRD Data Reports Preparation Guide," 1985 edition. Streamflow statistics will now appear in tabular summaries following the water-year data table for water-discharge records and less information will be provided in the text or station manuscript above the table. For ground-water data, hydrographs will be published for selected wells that are representative of ground-water conditions in the State or that otherwise are needed by the District to satisfy user needs.

In addition to the inclusion of statistical tables for water-discharge records and the addition of ground-water hydrographs, other changes to the current format will be:

- Station numbers will be included in the list of surface-water stations.
- A list of all discontinued stations for which continuous records of surface-water, water-quality, or sediment data have been published will be added to the report.
- A description of the availability of data from WATSTORE in machine-readable format will be added to the introductory text.
- The peak of record for the peak-flow partial-records will be included in the report.

Guidelines for making these revisions to the annual data report are given in the following pages. The revisions to the preliminary pages and the introductory text of the report are given first, followed by revisions to the current version of the surface-water discharge format and the introduction of graphics to the ground-water-level records.

REVISIONS TO PRELIMINARY PAGES OF DATA REPORTS

Each of the preliminary pages of the 1991 data report that will require revision is listed below and followed by text explaining the changes required to conform to the new format. If the changes are extensive or significant, an example of the new page format is provided as an attachment, and the examples being revised (previous format) in the "WRD Data Reports Preparation Guide," 1985 edition, are cited.

Contents

Attachment 1 is an example of the revised table of contents. It will replace the example in the 1985 WRD Data Report Preparation Guide (Preparation Guide) on page A-5 of Appendix A. It has been modified to include:

- Modified heading entries for the list of surface-water stations and the list of ground-water wells. (See next two sections, respectively, and Attachment 1.)

- Two new entries (Rank 1), as follows:

  -- List of discontinued surface-water discharge or stage-only stations
  -- List of discontinued surface-water-quality stations

- Four new subheadings (Rank 4) to the "Data Presentation" section:

  -- Station manuscript
  -- Data table of daily mean values
  -- Statistics of monthly mean data
  -- Summary statistics.

List of Surface-Water Stations

- The heading will now include the phrase "IN THIS VOLUME." The revised heading will read "SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME."

- The entry for the table of contents (Attachment 1) should reflect the above change.

- The list of stations will now include station identification numbers aligned under the column heading "Station number." (See Attachment 2.--List of surface-water stations.)

- The column of station numbers will be placed after the station names. Leaders will be used to guide the user's eye across the table from the station name to the station number, as shown in the example.

- The last digits of the station numbers will be aligned. Thus, a 9-digit number should have its last digit aligned with the last digit of an 8-digit number.

- The sample list of surface-water stations (Attachment 2) replaces the example published in the 1985 WRD Data Report Preparation Guide. (See Appendix A, example 6.)

- A general reference to the sections of the data report pertaining to partial-record stations (both surface-water discharge and quality) should still be made at the end of the list, as shown on page 5 of the Preparation Guide. (Also, see Appendix A of the Preparation Guide, page A-8.)

List of Ground-Water Wells

- The heading will now include the phrase "IN THIS VOLUME." The revised heading will read 'GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME.
- The entry for the table of contents should reflect the above change.
- The heading for the sample list of ground-water wells in the 1985 Preparation Guide (Appendix A, example 7) should be modified to include 'IN THIS VOLUME."

List of Discontinued Surface-Water Discharge or Stage-Only Stations

A list of discontinued surface-water discharge or stage-only stations will now be included in annual State data reports. The following guidelines should be followed in the preparation and publication of this list.

- Two separate lists are recommended, one for surface-water discharge or stage-only stations and one for surface-water-quality stations. Providing two lists will allow users to go directly to the type of station record they are interest in, and will make it easier for Districts to update the listings by adding or deleting stations to the appropriate list. Several Districts are currently publishing discontinued surface-water stations as separate lists.
- The heading for the first list should be DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS. (See Attachment 3.)
- The first and second columns of the table will be the station name and station number, respectively. Use the same letters after the station names to designate type of data collected as were used in the list of active stations, usually the letters (d) and (e) for discharge and elevation (stage only), respectively.
- The third and fourth columns of the table will be drainage area, in square miles, and the period of record, in water years, respectively.
- The example in Attachment 3 replaces the optional list of discontinued gaging stations in the 1985 Preparation Guide (Example 4 in Appendix B).
- Use an asterisk (*) after station numbers to indicate those stations currently operated as crest-stage partial-record stations. Because the use of the asterisk has been explained in the introductory paragraph above the table, there is no need for footnotes.
- The introductory paragraph preceding the table may inform users, if appropriate, that discontinued short-term project stations have not been included in the list and the data for those stations are available from the District Office.

- Edit the table heading to meet District needs. For example, if there are no discontinued stage-only stations, then delete the reference to them in the table heading. Although the term "gaging station" is used in the introductory paragraph to the table, it is not as explicit to users as "SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS" used in the example and should not be used in the heading.

- The list of discontinued surface-water discharge stations should follow the list of ground-water wells, as shown in the CONTENTS (Attachment 1).

List of Discontinued Surface-Water-Quality Stations

A list of discontinued surface-water-quality stations will follow the list of discontinued surface-water discharge or stage-only stations in State data reports. The following guidelines should be followed in the preparation and publication of this list:

- The heading for the list will be DISCONTINUED SURFACE-WATER-QUALITY STATIONS. (See example, Attachment 4.)

- The first and second columns of the table will be the station name and station number, respectively, with the third column indicating the drainage area, in square miles.

- Each type of continuous record for water-quality or sediment collected at a discontinued surface-water-quality station during its period of record will be listed in column 4, using letter codes for the type of record. It is a District option to include a second table of discontinued stations for which periodic records of water-quality (collection frequency not less than quarterly) were published.

- Each type of record listed in column 4 will have its corresponding period of record, expressed in water years, listed in column 5.

- Letter codes for the type of record should usually be the same as those used in the list of active surface-water-quality stations. However, changes that help the user by providing more specific information on the type of record available are encouraged. (See Attachment 4.)

- Use an asterisk (*) after station numbers to indicate those stations currently operated as water-quality partial-record stations (sampling frequency less than quarterly).

- The introductory paragraph preceding the table may inform users, if appropriate, that discontinued short-term project stations have not been included in the list and the data for those stations are available from the District Office.

REVISIONS TO THE INTRODUCTORY TEXT OF DATA REPORTS

The following sections of the introductory text have been revised to provide additional information to users with regard to the various types of data available from WATSTORE and to the availability of data in machine-readable formats, including CD-ROM discs. Also, revisions are included to update the explanation of records for surface-water discharge and ground-water levels to agree with the new formats for data presentation that include statistical tables and ground-water-level hydrographs, respectively.

Introduction

The "Introduction" section of the introductory text has been modified to include information on the availability of data reports on Compact Disc-Read Only Memory (CD-ROM), beginning with 1990 water year. (See example, Attachment 5.) Users are informed that all data reports published for the 1991 water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc, and that a limited number of the discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado, 80225.

Access to WATSTORE Data

This section of the introductory text has been expanded to provide more specific information on the related files and data bases within the WATSTORE system, and to describe the availability of data in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disc, and on CD-ROM discs. The expanded version (example, Attachment 6) will replace the example in the Preparation Guide (Appendix A, page A-23).

Definition of Terms

The following definition for annual 7-day minimum flow will be added to the list of definitions:

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

Place the definition as the last term listed under the Discharge definition. (See Preparation Guide, example 8 in appendix A, page A-25.)

Data Presentation (records of stage and water discharge)

The "Data Presentation" section for records of water discharge has been revised to reflect the addition of two statistical tables following the data table for each continuous-record surface-water discharge station. The data presentation has been divided into four subsections to facilitate the explanation of data presentation to users: (See attachment 7.) The four subsections are station manuscript; data table of daily mean values; statistics of monthly mean data; and summary statistics.

- Station Manuscript.--The text and headings for three manuscript paragraphs, AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR CURRENT YEAR may be deleted. The information contained in these paragraphs, except for the listing of secondary instantaneous peak discharges in the EXTREME FOR CURRENT YEAR paragraph, is now presented in the tabular summaries following the discharge table or in footnotes or the REMARKS paragraph, as appropriate. Deleting the EXTREMES FOR CURRENT YEAR paragraph is a District option. Regardless of the option taken, peaks above base should be entered in the national data base Peak Flow File as is currently required by the Office of Surface Water.

- Data Table of daily mean values.--The principal change to the data table is the deletion of the two line headings CAL YR and WTR YR in the table summary. Also, the heading above the table has been changed to DAILY MEAN VALUES from MEAN VALUES.

- Statistics of monthly mean data.--A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period will now be provided below the daily mean values table. (See example, Attachment 8.) The water years of the first occurrence of the maximum and minimum monthly flows are given immediately below those figures. The designated period, expressed as "FOR WATER YEARS __ - __, BY WATER YEAR (WY)," will list the first and last water years of the range selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the station period of record. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

- Summary statistics.--A table titled "SUMMARY STATISTICS" will follow the statistics of monthly mean data tabulation. (See example, Attachment 8.) It will consist of four columns, with the first column containing the line headings of the statistics being presented. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The information concerning the description of the designated period previously presented for statistics of monthly mean data also applies for the summary statistics table. However, data for partial water years, if any, will only be used in the statistical calculations, if appropriate. For example, all of the calculations for the statistical characteristics designated "ANNUAL," except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years, even though a partial water year may be included in the designated period. (See line headings in the Attachment 8 example.) The other statistical characteristics may be calculated using data from partial water years if they are within the designated period.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the column heading. When this occurs, it should be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

Data Presentation (Records of ground-water levels)

The "Data Presentation" section in the explanation of records for ground-water levels in the introductory text of the data report should be revised to reflect the inclusion of hydrographs following the water-level tables. (See the attached example for the Virginia District, Attachment 9.)

PREPARATION OF SURFACE-WATER DISCHARGE RECORDS

The new guidelines present Districts with a number of new options with regard to publishing surface-water discharge records. The following sections review these options, provide additional examples and further discussion of the new publication formats, and discuss the problem of station-record length when preparing camera copy for the printer.

Crest-Stage Partial-Record Stations

The peak of record for crest-stage partial-record stations will now be included in the station records. Attachment 10 is an example of the new table format to be used. The station number and drainage area data have been combined under the station name and location columns, respectively, and a new column titled "Period of Record Maximum" has been added. The data presented under the new column will be the period-of-record maximum discharge with corresponding gage height and the date of occurrence.

Surface-Water Discharge Records

The following guidelines apply to the preparation of continuous-record surface-water discharge records using the new station format.

- Designated period.--The selection of the designated period is a District option. Usually no problem will exist in the results of the statistical calculations if the streamflow record consists of only one type, either unregulated or regulated. The station record for a regulated stream, SHEYENNE RIVER NEAR KINDRED, ND, is given in Attachment 8. If the streamflow station record includes both unregulated and regulated periods, the District may choose to select the more recent, regulated period for the designated period. (See example, Attachment 11, PEE DEE RIVER NEAR ROCKINGHAM, NC.) If this is done, statistics that describe data collected under other conditions may also be published, if desired, as a separate "Summary Statistics" table.

- Peaks above base.--If the District option is to delete "Peaks above base" from the station manuscript, then the new format (example, Attachment 8) will have three fewer manuscript paragraphs than the old format (example, Attachment 12). The deleted paragraphs (and their replacements) would be:

  -- AVERAGE DISCHARGE (Replaced by "Summary Statistics.")

  -- EXTREMES FOR PERIOD OF RECORD (Replaced by "Summary Statistics.")

  -- EXTREMES FOR CURRENT YEAR (Optional Deletion)

  Peaks above base will continue to be entered in the national data base Peak Flow File as is currently required by the Office of Surface Water.

- Annual 7-day Minimum.--This statistic should be published for all stations.

- Publication of values for either instantaneous or daily low flow remains optional. (No change from current policy.)

- Qualifying statements for maximum and minimum discharges previously reported in the EXTREMES paragraphs being deleted from the station manuscript, will be described in footnotes or in the REMARKS paragraph.

- Multiple minimum flows may be reported as "many days" or "many years" in the appropriate column in the Summary Statistics table.

- Do not publish Summary Statistics tables for any site for which the District feels the data would be misleading or for which the data are incomplete (for example, furnished-record sites).

- If the dates listed for the instantaneous peak flow, peak stage, or low flow lie outside of the designated period, explanatory footnotes should be used.

- Footnotes are generally preferable to placement of qualifying statements in the REMARKS paragraph.

- Both North Carolina and North Dakota have reduced the print size so that the longer station record (greater than 96 lines) required for the new format can generally be placed on one page. The data table figures that were reduced in size (using font size of 6.5 for the reduction) for the North Carolina 1990 water-year State data report were readable in microfiche format.

- NOTE TO DISTRICTS: If the PRIME computer system is used to produce the 1991 water-year data report and if a PostScript-compatible printer is available, then a software program, PSSPOOL, written by Todd Siskin (TSISKIN), Albany, New York, may be useful for reducing long station record (i.e., greater than 96 lines) to one-page camera copy.

RECOMMENDATIONS FOR THE PREPARATION OF GROUND-WATER HYDROGRAPHS

The following guidelines and examples are presented to help Districts in the preparation of ground-water hydrographs. The examples presented are photocopies of previously published District well-record hydrographs and have been edited to reflect the guidelines that follow:

- Hydrographs should be published for selected wells that are representative of the ground-water conditions in the State or that otherwise are needed by the District to satisfy user needs.

- Hydrographs should be published for 1, 5, 10 years, or the period of record. The length of the record published should be determined by the District to satisfy user requirements and to best represent the objectives of the data collection at the well. For example, a selected 5-year record may be adequate to show the seasonal range of water levels, whereas the entire period of record may be needed to show long-term trends in an area where water levels have declined over the years because of pumping of ground water. Data for both continuous-record and periodically measured wells may be included in the hydrographs.

- For continuous records, mean water level for the day is preferred for publication unless specific hydrologic conditions (or cooperator preference) require the use of maximum, minimum, noon value, and so forth.

- Recommendations for hydrograph content fall into three types: continuous records, periodic measurements, and mixed continuous-record and periodic measurements.

  -- Continuous records.--Continuous records should be shown by a solid line. Gaps in the record should be identified on the hydrograph. (See Attachments 13, 14, and 15.) The phrase "missing record" may identify the gaps (attachment 13) or the statement "Gap indicates missing record" may be placed above the graph. (See Attachments 14 and 15.)

  -- Periodic measurements.--The data point for each measurement should be shown on the hydrograph. Trend lines can be used between the data points. (See the attached example from the Virginia District, Attachment 16.) Trend lines should not be overextended. For example, the Maryland District does not use trend lines for gaps between measurements of more than 60 days. Trend lines may not be appropriate to use between widely spaced measurements where the water levels are either known or are suspected to have had considerable fluctuation between measurements.

  -- Mixed continuous record and periodic measurements.--The instrumentation paragraph in the well manuscript must provide a history of the method and frequency of measurements for the period of record shown.

- Suggestions to Authors, 7th edition (1991, p. 203) should be followed for publication format of hydrographs.
- The "Data Presentation" section in the explanation of records for ground-water levels in the introductory text of the data report should be revised to reflect the inclusion of hydrographs following the water-level tables. (See example, Attachment 9.)

Attachment 1.--Contents

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NOTE.--The format of this example shows the "sink" and position of page number for the first page of the contents. The first page must be a right-hand (odd-numbered) page using Roman numerals. The page number must be alined with the right end of leaders and two lines below the last listing on the page. Use a 5-space indention for 2d-order headings, a 10-space indention for 3d-order headings, and so forth.

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

NOTE.--Data for partial-record stations and miscellaneous sites for both surface-water discharge and quality are published in separate sections of the data report. See references at the end of this list for page numbers for these sections.

[Letters after station name designate type of data collected: (d) discharge, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (e) elevation, gage heights, or contents]

	Station number	Page
NORTH ATLANTIC SLOPE BASINS		
NASSAWADOX CREEK BASIN		
Nassawadox Creek:		
Guy Creek (head of Holly Grove Cove) near Nassawadox (d)	01484800	42
POTOMAC RIVER BASIN		
Potomac River:		
Back Creek:		
Opequon Creek near Berryville (d)	01615000	43
Abrams Creek near Winchester (d)	01616000	44
North River (head of Shenandoah River) near Stokesville (d)	01620500	45
North River near Burketown (d)	01622000	46
Middle River:		
Christians Creek near Fishersville (d)	01624800	47
Middle River near Grottoes (d)	01625000	48
South River near Waynesboro (d)	01626000	49
South River near Dooms (d)	01626850	50
South River at Harriston (d)	01627500	51
South Fork Shenandoah River:		
Madison Run:		
White Oak Run near Grottoes (d)	01628060	52
South Fork Shenandoah River (continuation of North River) near Lynnwood (d)	01628500	53
South Fork Shenandoah River near Luray (d)	01629500	54
South Fork Shenandoah River at Front Royal (d)	01631000	55
North Fork Shenandoah River at Cootes Store (d)	01632000	56
Linville Creek at Broadway (d)	01632082	57
Smith Creek near New Market (d)	01632900	58
North Fork Shenandoah River at Mount Jackson (d)	01633000	59
North Fork Shenandoah River near Strasburg (d)	01634000	60
Cedar Creek near Winchester (d)	01634500	61
Passage Creek near Buckton (d)	01635500	62
Shenandoah River at Millville, WV (d,c,m,s)	01636500	63
Catoctin Creek at Taylorstown (d)	01638480	66
Potomac River at Point of Rocks, MD (d,t,s)	01638500	67
Goose Creek near Middleburg (d)	01643700	70
Goose Creek near Leesburg (d)	01644000	71
Difficult Run near Great Falls (d)	01646000	72
Potomac River near Washington, DC (d,c,t)	01646500	73
Potomac River at Chain Bridge at Washington, DC (c,m,s)	01646580	78
Cameron Run at Alexandria (d)	01653000	81
Accotink Creek near Annandale (d)	01654000	82
Occoquan River:		
Cedar Run near Catlett (d)	01656000	83
South Fork Quantico Creek near Independent Hill (d)	01658500	84
Aquia Creek near Garrisonville (d)	01660400	85
RAPPAHANNOCK RIVER BASIN		
Hazel River:		
Thornton River:		
Battle Run near Laurel Mills (d)	01662800	86
Hazel River at Rixeyville (d)	01663500	87
Rappahannock River at Remington (d,s)	01664000	88
Mountain Run near Culpeper (d)	01665000	91
Rapidan River near Ruckersville (d)	01665500	92
Robinson River near Locust Dale (d)	01666500	93
Rapidan River near Culpeper (d)	01667500	94
Mountain Run near Burr Hill (d,c)	01667870	95
Rappahannock River near Fredericksburg (d,c,m,s)	01668000	97
Cat Point Creek near Montross (d)	01668500	104
Piscataway Creek near Tappahannock (d)	01669000	105
PIANKATANK RIVER BASIN		
Dragon Swamp (head of Piankatank River) at Mascot (d)	01669520	106
YORK RIVER BASIN		
North Anna River (head of York River):		
Pamunkey Creek at Lahore (d,c)	01670180	107
North Anna River near Partlow (d)	01670400	110
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Attachment 3.--List of discontinued surface-water discharge or stage-only stations

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Virginia have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only)]

Discontinued surface-water discharge or stage-only stations

Station name	Station number	Drainage area (mi^2)	Period of record
POTOMAC RIVER BASIN			
Hogue Creek near Hayfield, Va. (d)	01613900*	15.0	1960-86
Abrams Creek at Winchester, Va. (d)	01615500	5.6	1946-49
Dry River at Rawley Springs, Va. (d)	01621000	72.6	1946-48
Cooks Creek at Mt. Crawford, Va. (e)	01621500	42	1905-06
Castle Spring near Churchville, Va. (d)	01622500	-	1949-56
Bell Creek at St. Pauls Chapel, near Staunton, Va. (d)	01623000	.61	1948-55
Bell Creek near Staunton, Va. (d)	01623500	3.8	1948-55
Bell Creek at Franks Mill, near Staunton, Va. (d)	01624000	9.6	1948-56
Middle River near Verona, Va. (d)	01624300	178	1967-86
Lewis Creek near Staunton, Va. (e)	01624500	18	1905-06
North River at Port Republic, Va. (d)	01625500	804	1895-99
Back Creek near Lyndhurst, Va. (d)	01625900	40.9	1974-77
South River at Waynesboro, Va. (d)	01626500	133	1905-06, 1928-52
South River at Port Republic, Va. (d)	01628000	248	1895-99
Elk Run at Elkton, Va. (e)	01629000	17	1901-06
Hawksbill Creek near Luray, Va. (d)	01630000	52	1905-06
Yagers Spring near Luray, Va. (d)	01630500	-	1949-56
Plains Mill Spring near New Market, Va. (d)	01632500	-	1949-56
Stony Creek at Columbia Furnace, Va. (d)	01633500	79.4	1947-56
Marlboro Spring at Marlboro, Va. (d)	01635000	-	1949-56
North Fork Shenandoah River near Riverton, Va. (d)	01636000	1,040	1899-1906
Happy Creek at Front Royal, Va. (d)	01636210	14.0	1948-77
Big Spring near Leesburg, Va. (d)	01643610	.03	1968-69
Stave Run at Reston, Va. (d)	01624290	.05	1966-71, 1973
Stave Run near Reston, Va. (d)	01624291	.08	1971-82
Smilax Branch at Reston, Va. (d)	01644295	.32	1967-78
Snakeden Branch at Reston, Va. (d)	01645784*	.79	1973-78
Fourmile Run at Alexandria, Va. (d)	01652500*	14.4	1951-69, 1974-75, 1979-82

Attachment 4.--List of discontinued surface-water-quality stations
(From WDR-NJ-90-1; edited to reflect new guidelines)

WATER RESOURCES DATA - NEW JERSEY, 1991

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following stations were discontinued as continous-record surface-water-quality stations prior to the 1987 water year. Daily records of temperature, specific conductance, pH, dissolved oxygen or sediment were collected and published for the record shown for each station.

Discontinued continous-record suface-water-quality stations

Station name	Station number	Drainage area (sq mi)	Type of record	Period of record (water years)
Passaic River near Chatham, NJ	01379500	100	Sed.	1964-68
Green Pond Brook at Picatinny Arsenal, NJ	01379773		Temp., S.C., pH, D.O.	1984-86
Passaic River at Two Bridges, NJ	01382000	361	Temp., S.C., pH, D.O.	1969-74
Ramapo River near Manwan, NJ	01387500	118	Sed.	1964-65
Pompton River near Two Bridges, NJ	01389000	372	Temp., S.C., pH, D.O.	1969-74
Passaic River at Little Falls, NJ	01389500	762	Sed.	1964-65
			Temp., S.C.	1981-86
South Branch Raritan River near High Bridge, NJ	01396500	65.3	Temp.	1961-79
			S.C.	1969-79
South Branch Raritan River at Stanton, NJ	01397000	147	Temp., S.C.	1969-79
			Sed.	1960-63
South Branch Rockaway Creek at Whitehouse, NJ	01399690	13.2	Temp., S.C.	1977-78
			Sed.	1977
Rockaway Creek at Whitehouse, NJ	01399700	37.1	Temp., S.C.	1977-78
Raritan River near Manville, NJ	01400510	497	Temp., S.C., pH, D.O.	1968-74
Baldwin Creek at Baldwin Lake, near Pennington, NJ	01400932	2.52	Temp.	1963-66
			Sed.	1963-69
Stony Brook at Princeton, NJ	01401000	44.5	Sed.	1959-70
Millstone River near Manville, NJ	01402900	287	Temp., S.C., pH, D.O.	1968-74
Raritan River near South Bound Brook, NJ	01404100	862	Temp., S.C., pH, D.O.	1969-77
Manasquan River at Squankum, NJ	01408000	44	Temp., S.C., pH, D.O.	1969-74
Toms River near Toms River, NJ	01408500	123	Temp., S.C.	1964-66, 1975-81
			S.C.	1975-81
Oyster Creek near Brookville, NJ	01409095	7.43	Temp., D.O.	1975-76
			S.C., pH	1975-77
West Branch Wading River near Jenkins, NJ	01409810	84.1	Temp., S.C.	1978-81
Great Egg Harbor River trib. at Sicklerville, NJ	01410787	1.66	Sed.	1974-78
Fourmile Branch at New Brooklyn, NJ	01410810	7.74	Sed.	1974-78
Great Egg Harbor River at Folsom, NJ	01411000	57.1	Temp.	1961-80
Maurice River at Norma, NJ	01411500	112	Temp., S.C.	1980-86
Delaware River near Delaware Water Gap, Pa.	01440200	3850	Sed.	1964-65, 1972
Delaware River at Dunnfield, NJ	01442750	4150	Sed.	1966-76
Delaware River at Trenton, NJ	01463500	6780	Sed.	1949-82
Delaware River at Marine Terminal, at Trenton, NJ	01464040	6870	Temp., S.C.	1973-76
Crosswicks Creek near Extonville, NJ	01464500	81.5	Sed.	1965-70
Rancocas Creek at Willingboro, NJ	01467016	315	Temp., S.C., pH	1969-74
			D.O.	1970-72
			pH	1970-74
Cooper River at Haddonfield, NJ	01467150	17.0	Sed.	1968-69
Raccoon Creek near Swedesboro, NJ	01477120	26.9	Temp.	1966-73
			Sed.	1966-69

Type of record: Temp. (temperature), S.C. (specific conductance), pH (pH), D.O. (dissolved oxygen), Sed. (sediment).

NOTE TO DISTRICT: For discontinued stations with periodic water-quality data collection (collection frequency not less than quarterly), District may create new table here (optional), using same format as above.

WATER RESOURCES DATA - VIRGINIA, 1991

VOLUME 1. SURFACE-WATER DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

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

This report series includes records of stage, discharge, and water quality of streams and stage, contents, and water quality of lakes and reservoirs. This volume contains records for water discharge at 171 gaging stations; stage only at 1 gaging station; stage and contents at 10 lakes and reservoirs; and water quality at 51 gaging stations. Also included are data for 100 crest-stage partial-record stations. Locations of these sites are shown on figures 6 and 7. Miscellaneous hydrologic data were collected at 70 measuring sites and 25 water-quality sampling sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Virginia.

This series of annual reports for Virginia began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1990 water year, the report format was changed to two volumes. Volume 1 contains surface water and surface-water-quality data and Volume 2 contains ground water and ground-water-quality data.

Prior to the introduction of this series and for several water years concurrent with it, water-resources data for Virginia were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 6A and 6B." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from the Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 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 VA-91-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc.

Additional information, including current prices, for ordering specific reports may be obtained from the District Office at the address given on the back of the title page or by telephone (804) 771-2427. A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

COOPERATION

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

VIRGINIA WATER CONTROL BOARD, Richard N. Burton, executive director.

VIRGINIA DEPARTMENT OF TRANSPORTATION, Ray O. Pethtel, commissioner.

JAMES CITY COUNTY, David B. Norman, County Administrator.

CITY OF ALEXANDRIA, Vola Lawson, city manager.

CITY OF NEWPORT NEWS, C. C. Crowder, director, Department of Public Utilities.

CITY OF ROANOKE, Kit B. Kiser, director, Utilities and Operations.

NORTHERN VIRGINIA PLANNING DISTRICT COMMISSION, G. Mark Gibb, executive director.

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Attachment 6.--Access to WATSTORE data

ACCESS TO WATSTORE DATA

The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National Water Data Storage and Retrieval System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia, and consists of related files and data bases.

* Station Header File - Contains descriptive information on more than 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.

* Daily Values File - Contains more than 220 million daily values of stream flows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.

* Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.

* Water Quality File - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radio-chemical characteristics of both surface and ground water.

* Ground-Water Site Inventory Data Base - Contains inventory data for more than 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requestor will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey
National Water Data Exchange
421 USGS National Center
Reston, Virginia 22092

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk; and, as noted in the introduction, on CD-ROM discs. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division's District offices. (See address on the back of the title page.) A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; 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 gaging station 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 records have been published 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 flow at it can reasonably be considered equivalent to flow at the present station.

REVISED RECORDS.--Because of new information, published records 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 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 paragraph 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, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; 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 U.S. Geological Survey by a cooperating organization are identified here.

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.

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

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address 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 for a discontinued station 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.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR CURRENT YEAR have been deleted and the information contained in these paragraphs, except for the listing of secondary instantaneous peak discharges in the EXTREMES FOR CURRENT YEAR paragraph, is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. No changes have been made to the data presentations of lake contents.

Data table of daily mean values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for each 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 or in acre-feet may be omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEARS _____-_____,BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS _____-_____," will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below.), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes. At least 5 complete years of record must be available before this statistic is published for the designated period.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

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

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF (AC-FT).--Indicates the depth, in acre-feet, to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

ANNUAL RUNOFF (CFSM).--Indicates 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 for the year.

ANNUAL RUNOFF (INCHES).--Indicates the depth to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded by 10 percent of the flow for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded by 50 percent of the flow for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded by 90 percent of the flow for the designated period.

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.

Attachment 8.--Water-discharge station (new format)
(Modified from WDR-ND-90-1)

05059000 SHEYENNE RIVER NEAR KINDRED, ND
(National stream-quality accounting network station)

LOCATION.--Lat 46°37'35", long 97°00'05", in NE$^1/_4$NW$^1/_4$ sec.5, T.136 N., R.50 W., Richland County, Hydrologic Unit 09020204, on right bank 25 ft downstream from Burlington Northern Railway bridge, 1.5 mi southeast of Kindred, and at mile 68.1.
DRAINAGE AREA.--8,800 mi^2, approximately, of which about 5,780 mi^2 is probably noncontributing, including 3,800 mi^2 in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1949 to current year.
REVISED RECORDS.--WSP 1728: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 925.55 ft above National Geodetic Vertical Datum of 1929. July 1949 to Sept. 30, 1962, nonrecording gage at same site and datum.
REMARKS.--Estimated daily discharges: Nov. 23 to Feb. 6 and Feb. 14-28. Records fair except those for periods of estimated daily discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 202 mi upstream and several small reservoirs.
EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft from floodmarks, discharge about 3,600 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	68	e52	e18	e23	43	135	81	35	78	25	49
2	45	49	e52	e19	e25	43	148	78	38	71	23	46
3	44	29	e50	e19	e28	44	135	74	51	72	21	44
4	45	49	e50	e20	e32	45	149	72	68	63	20	42
5	44	65	e48	e20	e38	45	195	69	68	60	20	47
6	45	70	e46	e21	e42	48	171	69	71	61	20	50
7	44	67	e46	e22	46	50	144	71	238	62	17	52
8	44	67	e44	e23	44	52	167	75	265	61	20	51
9	45	66	e42	e24	40	54	170	69	201	55	19	50
10	46	66	e40	e24	30	53	178	65	155	52	16	49
11	47	67	e38	e25	39	59	154	62	124	50	14	48
12	47	67	e36	e25	41	77	117	59	109	42	14	49
13	47	66	e34	e26	32	104	96	55	98	37	14	47
14	47	63	e33	e27	e30	103	90	51	83	38	13	44
15	46	58	e32	e27	e29	134	85	46	59	40	11	42
16	46	27	e31	e28	e28	164	81	49	49	37	9.2	40
17	47	40	e30	e28	e28	129	76	45	98	35	17	43
18	52	43	e29	e28	e30	129	74	41	120	33	29	49
19	53	44	e29	e28	e34	172	71	40	98	29	28	50
20	55	51	e28	e28	e36	144	70	39	78	29	23	49
21	55	53	e27	e28	e34	122	70	43	71	24	28	47
22	57	54	e26	e28	e32	115	70	44	69	23	30	54
23	57	e54	e25	e28	e30	113	71	41	67	26	28	74
24	57	e54	e24	e28	e28	108	70	42	60	25	25	77
25	63	e54	e23	e28	e26	107	68	42	70	24	25	79
26	67	e54	e22	e27	e24	97	67	40	72	25	61	83
27	65	e54	e21	e26	e30	90	61	41	70	23	62	81
28	63	e54	e20	e26	e38	90	71	41	87	20	41	78
29	72	e54	e19	e25	---	94	74	42	103	20	48	76
30	99	e52	e18	e25	---	102	81	40	84	19	52	75
31	93	---	e18	e24	---	115	---	36	---	25	52	---
TOTAL	1680	1659	1033	773	917	2845	3209	1662	2859	1259	825.2	1665
MEAN	54.2	55.3	33.3	24.9	32.7	91.8	107	53.6	95.3	40.6	26.6	55.5
MAX	99	70	52	28	46	172	195	81	265	78	62	83
MIN	43	27	18	18	23	43	61	36	35	19	9.2	40
AC-FT	3330	3290	2050	1530	1820	5640	6370	3300	5670	2500	1640	3300
CFSM	.01	.01	.01	.01	.01	.02	.03	.01	.03	.01	.01	.01
IN.	.02	.02	.01	.01	.01	.03	.03	.02	.03	.01	.01	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1990, BY WATER YEAR (WY)

MEAN	69.4	83.1	74.1	68.4	75.4	268	687	430	258	196	83.8	64.8
MAX	186	231	205	170	221	1256	2464	3053	1938	1466	314	325
(WY)	1966	1980	1987	1987	1976	1987	1969	1950	1950	1975	1987	1957
MIN	24.6	22.7	17.6	19.7	21.7	35.1	78.9	53.6	48.4	26.7	17.5	25.1
(WY)	1957	1956	1956	1956	1956	1956	1961	1990	1961	1988	1988	1959

SUMMARY STATISTICS	FOR 1989 CALENDAR YEAR		FOR 1990 WATER YEAR		WATER YEARS 1949 - 1990	
ANNUAL TOTAL	42308		20386.2			
ANNUAL MEAN	116		55.9		197a	
HIGHEST ANNUAL MEAN					633	1950
LOWEST ANNUAL MEAN					49.3	1959
HIGHEST DAILY MEAN	1400	Apr 3	265	Jun 8	4600	Apr 15 1969
LOWEST DAILY MEAN	15	Aug 20	9.2	Aug 16	9.2	Aug 16 1990
SEVEN-DAY MINIMUM	20	Dec 25	13	Aug 10	13	Aug 10 1990
INSTANTANEOUS PEAK FLOW	1430	Apr 3	286	Jun 7	4690	Apr 15 1969
INSTANTANEOUS PEAK STAGE	15.01	Apr 3	3.42	Jun 7	21.66	Jul 6 1975
INSTANTANEOUS LOW FLOW	15.0	Aug 20	9.2	Aug 16	9.2	Aug 16 1990
ANNUAL RUNOFF (AC-FT)	83920		40440		142400	
ANNUAL RUNOFF (CFSM)	.03		.01		.05	
ANNUAL RUNOFF (INCHES)	.41		.20		.70	
10 PERCENT EXCEEDS	140		98.4		408	
50 PERCENT EXCEEDS	52.0		47.0		76.0	
90 PERCENT EXCEEDS	31.0		23.0		33.0	

e Estimated
a Median of annual mean discharges is 154 ft^3/s.

Attachment 9.--Data Presentation
(Ground water)

Data Presentation

Each well record consists of three parts, the station description, the data table of water levels observed during the current water year, and a graph of the water levels for the current water year or other selected period. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings of the well description.

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

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

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

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

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

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

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

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

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

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Attachment 10.--Crest-stage partial-record stations

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at low-flow partial-record sites and at miscellaneous sites and for special studies are given in separate tables.

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device that will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area	Period of record	Water year 1990 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
			POTOMAC RIVER BASIN					
Hogue Creek near Hayfield, Va. (01613900)	Lat 39°12'52", long 78°17'18", Frederick County, Hydrologic Unit 02070004, on right bank 15 ft upstream from bridge on State Highway 614, 0.8 mi upstream from Gap Run, 1.3 mi south-southeast of Hayfield, and opposite mouth of small unnamed branch from southwest. Datum of gage is 668.60 ft above National Geodetic Vertical Datum of 1929. Drainage area is 15.0 mi^2.	1961-86≠, 1987-90	7-13-90	2.57	172	6-22-72	8.85	2,760
Buffalo Branch tributary near Christian, Va. (01622400)	Lat 38°11'55", long 79°13'10", Augusta County, Hydrologic Unit 02070005, on left upstream wingwall of culvert on State Highway 42, 0.8 mi upstream from mouth, and 1.3 mi north of Christian. Datum of gage is 1,622.53 ft above National Geodetic Vertical Datum of 1929. Drainage area is 0.49 mi^2.	1967-90	10-10-79	4.81	a104	11- 4-85	6.96	211
			2-20-81	3.18	a35			
			3-20-82	4.36	a81			
			3-19-83	2.92	a28			
			1985	<a2.78	<a23			
			11- 4-85	6.96	a211			
			5- 2-89	3.26	a38			
			10-19-89	3.57	50			
Chub Run near Stanley, Va. (01629945)	Lat 38°34'31", long 78°27'32", Page County, Hydrologic Unit 02070005, at culvert on State Highway 689, 2.2 mi east of Stanley, and 3.1 mi upstream from mouth. Datum of gage is 1,023.05 ft above National Geodetic Vertical Datum of 1929. Drainage area is 3.16 mi^2.	1959-69b, 1970-90	10-19-89	1.81	139	11- 4-85	9.66	(*)

* Discharge not determined.
< Less than.
≠ Operated as a continuous-record gaging station.
a Revised.
b Records provided by U.S. Department of Agriculture, Soil Conservation Service.

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Attachment 11.--Water-discharge station (new format)
(Modified from WDR-NC-90-1)

PEE DEE RIVER BASIN

02129000 PEE DEE RIVER NEAR ROCKINGHAM, NC

LOCATION.--Lat 34°56'46", long 79°52'11", Richmond County, Hydrologic Unit 03040201, on left bank at bridge on U.S. Highway 74, 2.5 mi upstream from Falling Creek, 3.3 mi downstream from Blewett Falls hydroelectric plant, 6 mi west of Rockingham, and 192 mi upstream from mouth in Winyah Bay.

DRAINAGE AREA.--6,863 mi^2.

PERIOD OF RECORD.--August 1906 to January 1912, October 1927 to current year. Published as Yadkin River near Pee Dee, N.C., August 1906 to January 1912.

REVISED RECORDS.--WSP 1203: 1928-37. WSP 1303: 1928-42 (monthly and yearly runoff), 1943-46 (adjusted monthly runoff). WSP 1503: 1906-12, 1928-32(m). WDR NC-80-1: Drainage area.

GAGE.--Water-stage recorder. Carolina Power and Light Co. Handar telemetry unit installed Nov. 1989. Datum of gage is 120.68 ft above National Geodetic Vertical Datum of 1929 (levels by U. S. Army Corps of Engineers). Aug. 1906 to Jan. 1912 nonrecording gage at site 3.3 mi upstream at different datum. Sept. 1927 to Sept. 30, 1931, water-stage recorder at present site at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1928 by Blewett Falls Lake and five other reservoirs upstream (see p.). Maximum discharge prior to regulation, 276,000 ft^3/s Aug. 27, 1908, gage height, 31.28 ft, present site and datum, from records of State Highway Commission; minimum discharge prior to regulation, 2,210 ft^3/s Sept. 3 1907; minimum discharge during regulation, 50 ft^3/s Dec. 2, 3, 1951; minimum daily, 58 ft^3/s Dec 2, 1951, result of abnormally low shutdown of Blewett Falls hydroelectric plant to produce steady flow for current-meter measurements at this gaging station; minimum discharge from normal regulations, 96 ft^3/s Oct. 25, 1943; minimum daily, 120 ft^3/s Oct. 8, 1961.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14200	8330	7280	3110	13200	12600	21600	7670	15100	1080	920	3670
2	77400	7600	7310	8370	11900	13300	23700	8470	14800	677	1270	1400
3	127000	8140	7230	9000	13200	18600	21700	10300	10600	2780	1200	478
4	95100	4500	7180	9390	14400	29100	16000	19600	10600	3560	5250	4670
5	37300	3890	7220	10200	12100	21800	12300	17600	11600	743	3010	5530
6	24000	2940	7980	13600	12900	15000	13800	17900	11000	582	997	3170
7	15900	6610	8650	13300	12900	13900	9880	14400	9420	504	2690	5730
8	10700	4830	7140	18100	11500	13400	9790	13200	7450	544	3180	2620
9	13500	8170	13300	22000	10900	12600	8400	10600	3070	2010	5070	326
10	10600	6070	19500	18300	22900	13400	7340	13500	1170	1380	4260	4910
11	10200	3070	16100	15500	41200	14300	8810	21400	2860	2740	787	2480
12	7490	4600	14400	11400	35200	12300	9910	17700	6560	4490	998	3240
13	7150	7770	24400	13500	29400	11300	9210	14900	7090	2600	2700	3850
14	9200	5360	34600	12300	16900	12500	8550	10400	4140	534	3370	5010
15	4600	6360	27000	11200	15000	10900	5330	11200	5490	3890	7290	1660
16	1920	8530	15400	10800	14000	14000	9140	10700	4300	4900	7230	3050
17	6930	7180	14400	10600	55100	16200	12700	10700	769	7000	1550	575
18	5760	7930	12600	9770	61400	12900	15100	10200	3500	6500	447	2010
19	7820	6240	12500	9540	41100	13900	11500	8570	6470	6890	325	6370
20	21400	8430	11000	9900	42100	21300	11800	5150	4500	8680	3180	6330
21	22400	5320	13000	9830	30400	14000	11200	2380	5170	3180	1760	5130
22	15600	7220	11000	18900	20800	12100	9380	4040	6480	782	5940	1990
23	10900	7570	10100	16400	27800	11500	7580	7000	4990	3220	6850	508
24	12100	9230	10400	12200	31200	13400	8060	6740	890	4060	2070	388
25	9780	9940	10100	13100	24100	11700	8270	8580	2180	5880	2590	1440
26	9590	8440	9370	20400	12900	10700	7680	7270	3910	6420	437	4080
27	9010	8630	10500	24200	12000	10700	7060	7940	3480	6880	2970	5930
28	5180	8090	9110	20100	12000	10400	578	8350	2460	3430	4070	3050
29	3690	7450	8990	14600	---	16500	2580	58500	2960	2380	7650	982
30	5780	7340	9030	13300	---	18300	6130	63200	3470	3110	7650	359
31	8630	---	6320	12500	---	19800	---	34200	---	2720	7830	---
TOTAL	620830	205780	383110	415410	658500	452400	315078	462360	176479	104146	105541	90936
MEAN	20030	6859	12360	13400	23520	14590	10500	14910	5883	3360	3405	3031
MAX	127000	9940	34600	24200	61400	29100	23700	63200	15100	8680	7830	6370
MIN	1920	2940	6320	3110	10900	10400	578	2380	769	504	325	326
†	-463	+55.4	-827	+1290	+390	-501	+344	+453	-977	+147	-4.7	-732

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1990, BY WATER YEAR (WY)

MEAN	5802	5480	7619	10730	12680	13200	10730	7319	5944	5382	5546	5588
MAX	23510	16120	20300	31270	36040	33010	31340	15630	15210	16790	19180	35690
(WY)	1930	1958	1933	1937	1960	1929	1936	1958	1972	1975	1928	1928
MIN	1293	1607	2640	2475	3704	4117	2692	2026	1853	1692	1456	1008
(WY)	1954	1954	1940	1956	1934	1981	1981	1986	1986	1986	1954	1954

SUMMARY STATISTICS	FOR 1989 CALENDAR YEAR		FOR 1990 WATER YEAR		WATER YEARS 1928 - 1990 *	
ANNUAL TOTAL	3964107		3990570			
ANNUAL MEAN	10860		10930 ‡		7979 (UNADJUSTED)	
HIGHEST ANNUAL MEAN					13000	1975
LOWEST ANNUAL MEAN					3944	1981
HIGHEST DAILY MEAN	127000	Oct 3	127000	Oct 3	242000	Sep 18 1945
LOWEST DAILY MEAN	275	Feb 12	325	Aug 19	58	Dec 2 1951
INSTANTANEOUS PEAK FLOW	132000	Oct 3	132000	Oct 3	270000	Sep 18 1945
INSTANTANEOUS PEAK STAGE	18.45	Oct 3	18.45	Oct 3	30.80	Sep 18 1945
INSTANTANEOUS LOW FLOW	144	Oct 16	144	Oct 16	50.0*	Dec 2 1951
ANNUAL SEVEN-DAY MINIMUM	1780	May 24	1210	Jul 5	185	Sep 28 1985
10 PERCENT EXCEEDS	18900		20200		14200	
50 PERCENT EXCEEDS	7910		8550		5630	
90 PERCENT EXCEEDS	3000		2000		1830	

† Change in contents, equivalent in cubic feet per second, in W. Kerr Scott Reservoir; provided by U.S. Army Corps of Engineers; High Rock Lake, Tuckertown Reservoir, and Badin Lake, provided by Yadkin, Inc.; and Lake Tillery and Blewett Falls Lake, provided by Carolina Power and Light Co.
‡ Adjusted for change in contents.
* Regulated period only (1928-1990). See REMARKS.

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Attachment 12.--Water-discharge station (old format)
(From WDR-ND-90-1)

05059000 SHEYENNE RIVER NEAR KINDRED, ND
(National stream-quality accounting network station)

LOCATION.--Lat 46°37'35", long 97°00'05", in NE$^1/_4$NW$^1/_4$ sec.5, T.136 N., R.50 W., Richland County, Hydrologic Unit 09020204, on right bank 25 ft downstream from Burlington Northern Railway bridge, 1.5 mi southeast of Kindred, and at mile 68.1.

DRAINAGE AREA.--8,800 mi^2, approximately, of which about 5,780 mi^2 is probably noncontributing, including 3,800 mi^2 in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 925.55 ft above National Geodetic Vertical Datum of 1929. July 1949 to Sept. 30, 1962, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 23 to Feb. 6 and Feb. 14-28. Records fair except those for periods of estimated daily discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 202 mi upstream and several small reservoirs.

*AVERAGE DISCHARGE.--41 years, 197 ft^3/s, 142,700 acre-ft/yr; median of yearly mean discharges, 154 ft^3/s, 112,000 acre-ft/yr.

*EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,690 ft^3/s, Apr. 15, 1969, gage height, 21.03 ft; maximum gage height, 21.66 ft, July 6, 1975; minimum daily discharge, 9.2 ft^3/s, Aug. 16, 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft from floodmarks, discharge about 3,600 ft^3/s.

**EXTREMES FOR CURRENT YEAR.--Maximum discharge, 286 ft^3/s, June 7, gage height, 3.42 ft; minimum daily discharge, 9.2 ft^3/s, Aug. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	68	e52	e18	e23	43	135	81	35	78	25	49
2	45	49	e52	e19	e25	43	148	78	38	71	23	46
3	44	29	e50	e19	e28	44	135	74	51	72	21	44
4	45	49	e50	e20	e32	45	149	72	68	63	20	42
5	44	65	e48	e20	e38	45	195	69	68	60	20	47
6	45	70	e46	e21	e42	48	171	69	71	61	20	50
7	44	67	e46	e22	46	50	144	71	238	62	17	52
8	44	67	e44	e23	44	52	167	75	265	61	20	51
9	45	66	e42	e24	40	54	170	69	201	55	19	50
10	46	66	e40	e24	30	53	178	65	155	52	16	49
11	47	67	e38	e25	39	59	154	62	124	50	14	48
12	47	67	e36	e25	41	77	117	59	109	42	14	49
13	47	66	e34	e26	32	104	96	55	98	37	14	47
14	47	63	e33	e27	e30	103	90	51	83	38	13	44
15	46	58	e32	e27	e29	134	85	46	59	40	11	42
16	46	27	e31	e28	e28	164	81	49	49	37	9.2	40
17	47	40	e30	e28	e28	129	76	45	98	35	17	43
18	52	43	e29	e28	e30	129	74	41	120	33	29	49
19	53	44	e29	e28	e34	172	71	40	98	29	28	50
20	55	51	e28	e28	e36	144	70	39	78	29	23	49
21	55	53	e27	e28	e34	122	70	43	71	24	28	47
22	57	54	e26	e28	e32	115	70	44	69	23	30	54
23	57	e54	e25	e28	e30	113	71	41	67	26	28	74
24	57	e54	e24	e28	e28	108	70	42	60	25	25	77
25	63	e54	e23	e28	e26	107	68	42	70	24	25	79
26	67	e54	e22	e27	e24	97	67	40	72	25	61	83
27	65	e54	e21	e26	e30	90	61	41	70	23	62	81
28	63	e54	e20	e26	e38	90	71	41	87	20	41	78
29	72	e54	e19	e25	---	94	74	42	103	20	48	76
30	99	e52	e18	e25	---	102	81	40	84	19	52	75
31	93	---	e18	e24	---	115	---	36	---	25	52	---
TOTAL	1680	1659	1033	773	917	2845	3209	1662	2859	1259	825.2	1665
MEAN	54.2	55.3	33.3	24.9	32.7	91.8	107	53.6	95.3	40.6	26.6	55.5
MAX	99	70	52	28	46	172	195	81	265	78	62	83
MIN	43	27	18	18	23	43	61	36	35	19	9.2	40
AC-FT	3330	3290	2050	1530	1820	5640	6370	3300	5670	2500	1640	3300

CAL YR 1989 TOTAL 42308 MEAN 116 MAX 1400 MIN 15 AC-FT 83920
WTR YR 1990 TOTAL 20386.2 MEAN 55.9 MAX 265 MIN 9.2 AC-FT 40440

e Estimated

*THESE PARAGRAPHS WILL BE DELETED.

**THIS PARAGRAPH MAY BE DELETED, IF DESIRED.

Attachment 13.--Ground-water-level record with 1-year hydrograph
(From WDR-NJ-90-2;edited to reflect new guidelines)

BERGEN COUNTY

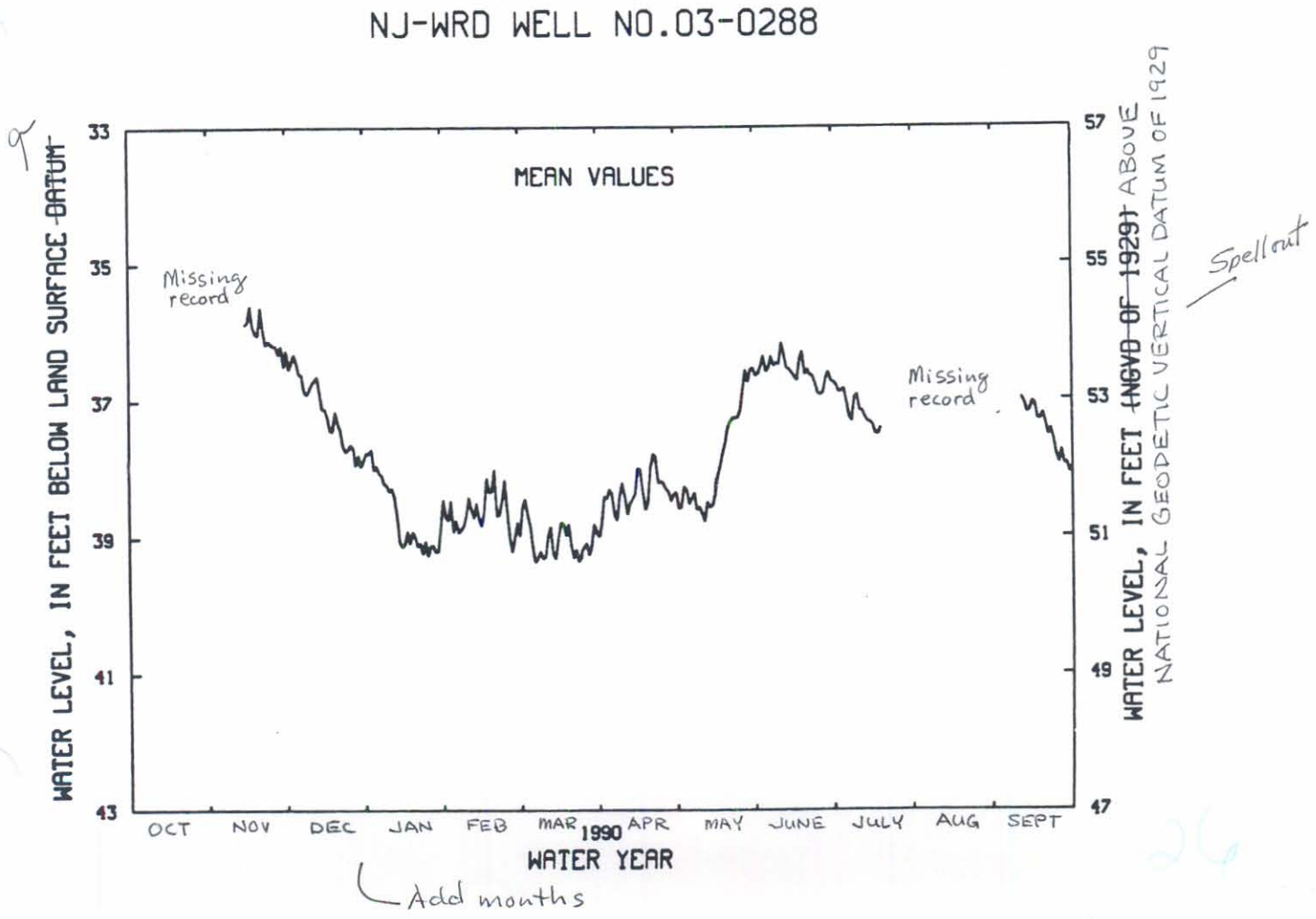
405107074060901. Local I.D., Wallington 3 Obs. NJ-WRD Well Number, 03-0288.
LOCATION.--Lat 40°51'07", long 74°06'09", Hydrologic Unit 02030103, at the Mount Pleasant Avenue Little League Baseball Field, Wallington Borough.
Owner: U.S. Geological Survey.
AQUIFER.--Passaic Formation of Jurassic-Triassic age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 3 in, depth 179 ft, open hole 55 to 179 ft.
INSTRUMENTATION.--Digital water-level recorder--60-minute punch.
DATUM.--Land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map.
Measuring point: Top edge of recorder shelf, 2.60 ft above land-surface datum.
PERIOD OF RECORD.--June 1989 to current year. Records for 1989 are unpublished and are available in files of the New Jersey District Office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.97 ft below land-surface datum, Sep. 8, 1989; lowest, 39.43 ft below land-surface datum, Jan. 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	36.60	38.05	38.92	38.82	38.30	38.30	36.58	36.83	---	---
10	---	---	36.74	38.28	38.58	39.30	38.20	38.52	36.47	36.92	---	---
15	---	35.84	37.12	39.09	38.62	39.30	38.36	38.54	36.60	37.33	---	37.04
20	---	35.63	37.32	39.12	38.68	38.80	38.49	37.63	36.62	---	---	37.36
25	---	36.19	37.64	39.12	38.98	39.28	38.18	37.25	36.90	---	---	37.94
EOM	---	36.26	37.76	38.69	38.78	38.93	38.37	36.53	36.72	---	---	38.00
MEAN	---	36.05	37.17	38.68	38.64	39.04	38.35	37.87	36.57	37.08	---	37.49

WTR YR 1990 MEAN 37.81 HIGH 35.43 NOV 20 LOW 39.43 JAN 27



Attachment 14.--Ground-water-level record with short-term hydrograph
(From WDR-NJ-90-2;edited to reflect new guidelines.)

MORRIS COUNTY

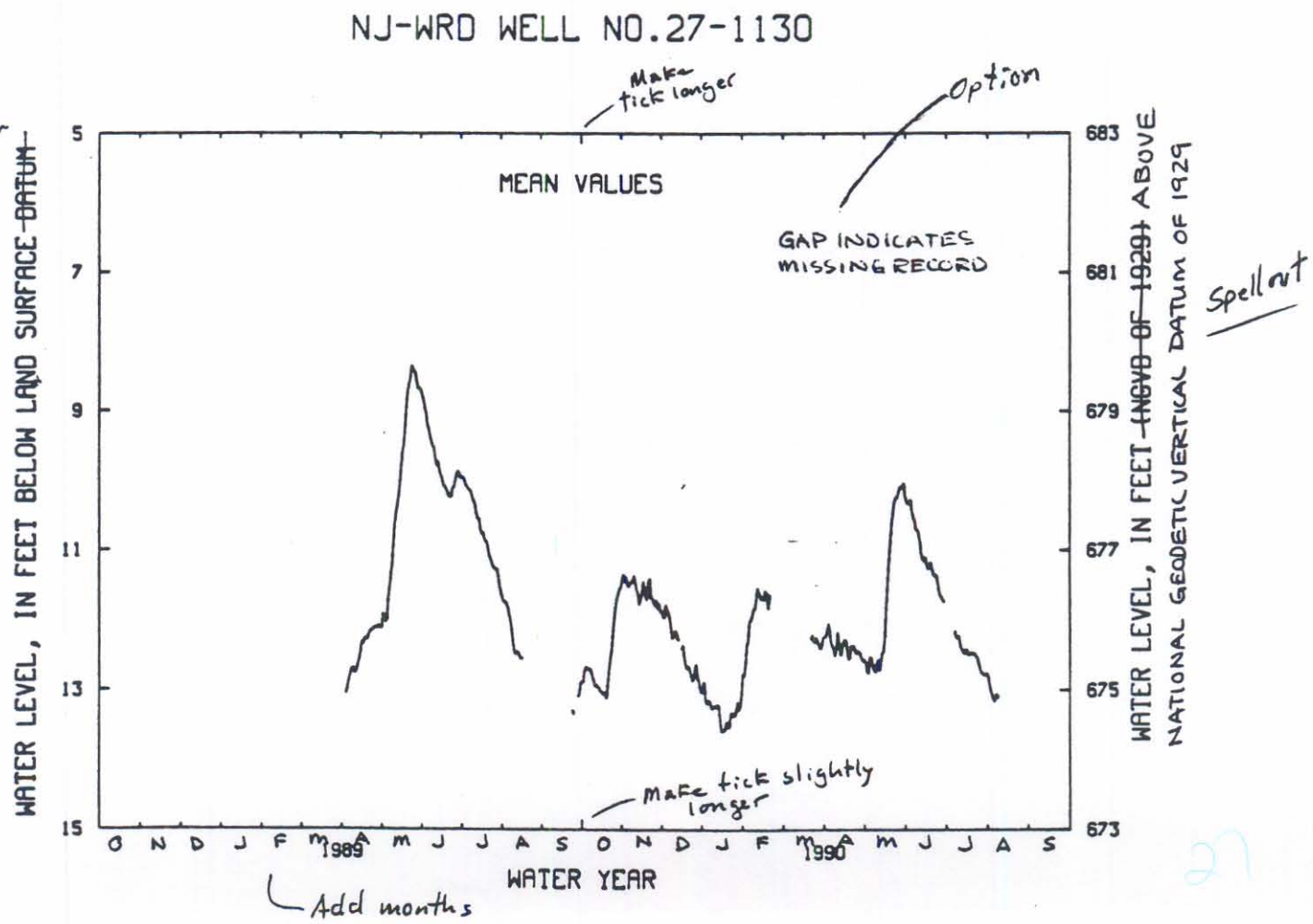
405509074350901. Local I.D., Picatinny SB2-1 Obs. NJ-WRD Well Number, 27-1130.
LOCATION.--Lat 40°55'09", long 74°35'09", Hydrologic Unit 02030103, Picatinny Arsenal, Rockaway Township.
Owner: US Army - Picatinny Arsenal.
AQUIFER.--Stratified drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 168 ft, screened 158 to 168 ft.
INSTRUMENTATION.--Digital water-level recorder--60-minute punch.
DATUM.--Land-surface datum is 688 ft above National Geodetic Vertical Datum of 1929.
Measuring point: Top edge of recorder shelf, 3.05 ft above land-surface datum.
PERIOD OF RECORD.--April 1989 to current year. Records for 1989 are unpublished and are available in files of the New Jersey District Office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.31 ft below land-surface datum, May 24, 1989; lowest, 13.62 ft below land-surface datum, Jan. 15, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	12.69	11.52	11.89	13.15	11.99	---	12.14	12.51	10.43	---	13.16	---
10	12.94	11.44	12.15	13.21	11.54	---	12.38	12.61	10.75	12.23	---	---
15	13.01	11.63	12.40	13.59	11.71	---	12.30	12.44	11.09	12.42	---	---
20	12.87	11.46	12.65	13.52	---	---	12.52	10.91	11.25	12.46	---	---
25	11.96	11.79	12.70	13.30	---	12.29	12.46	10.23	11.54	12.63	---	---
EOM	11.40	11.87	12.96	12.79	---	12.24	12.58	10.21	---	12.76	---	---
MEAN	12.55	11.59	12.44	13.27	11.85	---	12.36	11.59	11.03	12.49	---	---

WTR YR 1990 MEAN 12.17 HIGH 9.97 MAY 29,30 LOW 13.62 JAN 15



Attachment 15.--Ground-water-level record with 5-year hydrograph
(From WDR-VA-90-2;edited to reflect new guidelines.)

PRINCE WILLIAM COUNTY

383423077245901. Local number, 51S 7.

LOCATION.--Lat 38°34'23", long 77°24'59", Hydrologic Unit 02070011, in Prince William Forest Park, 700 ft north of State Highway 619, 0.7 mi southeast of Belfair Crossroads, and 4.6 mi south of Independent Hill. Owner: National Park Service.

AQUIFER.--Wissahickon Formation of Paleozoic age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 490 ft, cased to 50 ft, open hole 50 to 490 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch. Recorder installed Dec. 21, 1982. Prior to Dec. 21, 1982, manual measurements with chalked tape by USGS personnel. Manual readings only published prior to 1985 water year. Recorded readings for 1985 water year published in addition to manual readings.

DATUM.--Elevation of land-surface datum is 295 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.

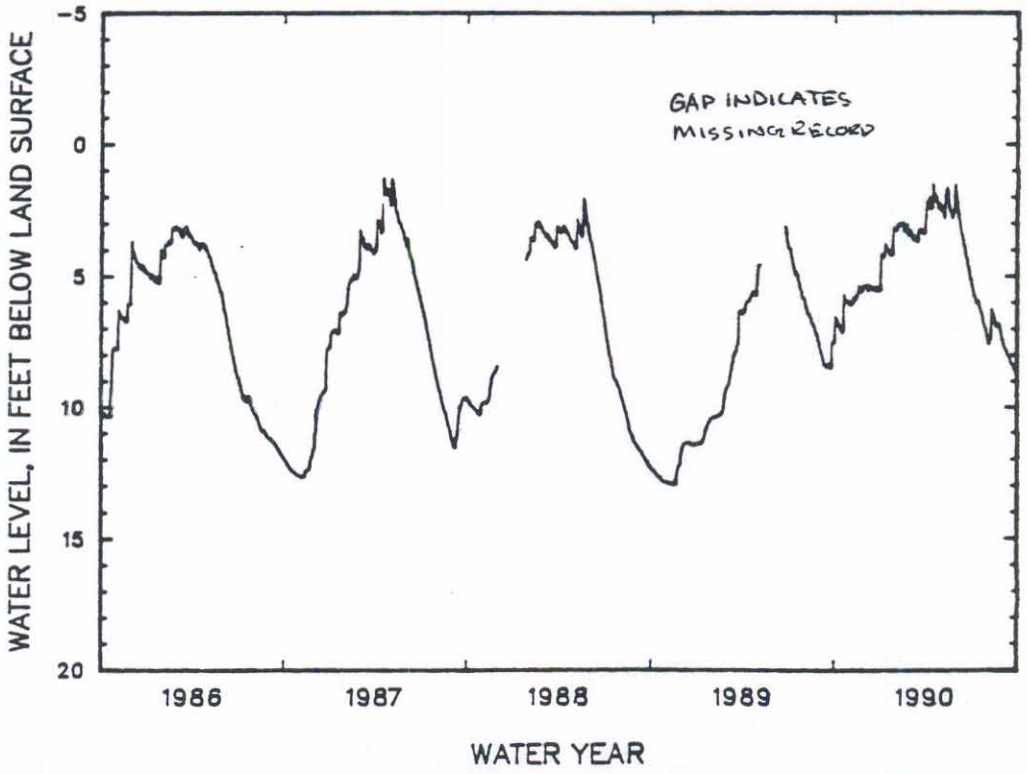
PERIOD OF RECORD.--September 1973 to November 1975, December 1977 to current year. Unpublished records available prior to December 1977 in files of the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.14 ft below land-surface datum, Apr. 20, 1983; lowest recorded, 12.95 ft below land-surface datum, Nov. 16, 17, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	6.61	6.04	5.31	4.25	3.05	3.49	2.31	2.37	2.56	5.54	7.59	7.65
10	6.85	5.81	5.37	3.79	2.98	3.55	2.05	2.76	3.14	5.95	7.15	7.91
15	7.07	5.76	5.45	3.97	3.03	3.69	2.40	1.76	3.61	5.93	6.55	8.09
20	6.08	5.39	5.43	4.10	3.30	3.20	1.91	2.46	4.10	6.32	6.91	8.37
25	5.92	5.55	5.42	4.16	3.44	3.29	2.17	2.78	4.63	6.72	6.82	8.57
EOM	5.97	5.36	5.51	3.14	3.31	3.23	2.34	1.78	5.13	7.14	7.36	8.82

WATER YEAR 1990 HIGHEST 1.00 MAY 29, 1990 LOWEST 8.82 SEP 30, 1990



Attachment 16.--Ground-water-level record with 5-year hydrograph
(From WDR-VA-90-2;edited to reflect new guidelines)

CITY OF FRANKLIN

364033076562604. Local number, 55B 67 SOW 145D.

LOCATION.--Lat 36°40'33", long 76°56'26", Hydrologic Unit 03010202, at F. D. Camp Community College in Franklin. Owner: Virginia Water Control Board.

AQUIFER.--Aquia aquifer of Paleocene age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 140 ft, screened 130 to 140 ft.

INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel. Dec. 1, 1988, to June 1, 1990, quarterly measurement with chalked tape. Prior to Dec. 1, 1988, bimonthly measurement with chalked tape.

DATUM.--Elevation of land-surface datum is 34 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.15 ft above land-surface datum.

REMARKS.--Water level affected by local pumpage.

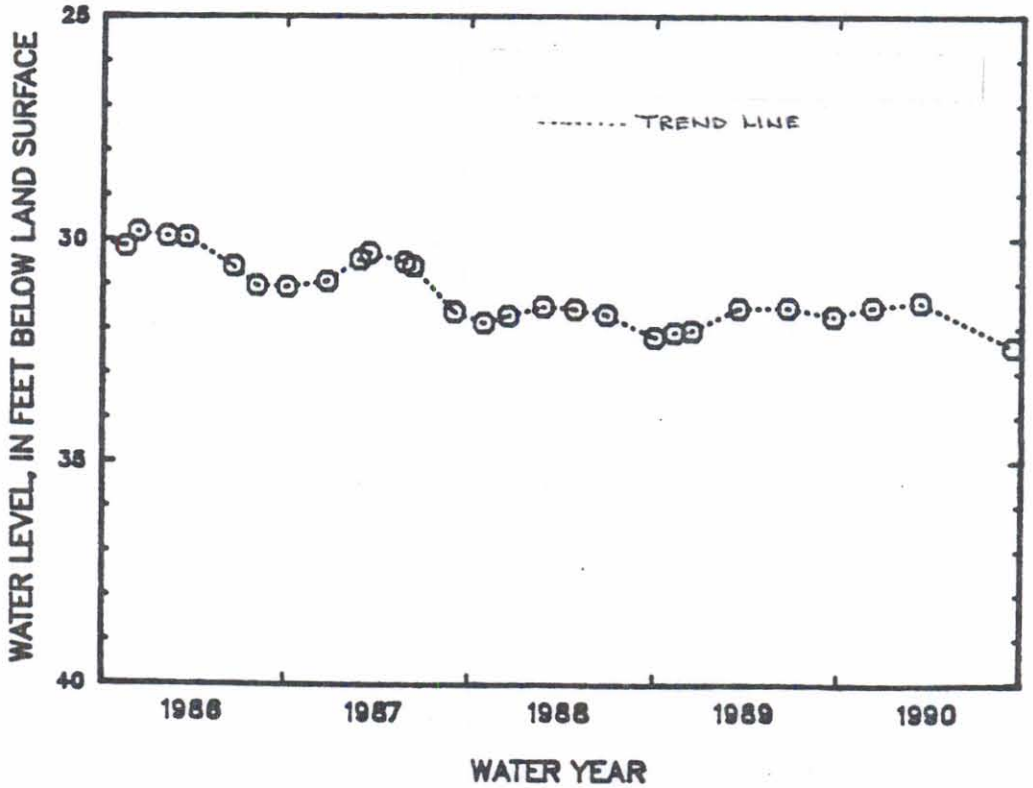
PERIOD OF RECORD.--November 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.51 ft below land-surface datum, Mar. 19, 1985; lowest measured, 32.42 ft below land-surface datum, Sept. 12, 1990.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
	DEC 07	31.52	MAR 12	31.41	SEP 12	32.42

WATER YEAR 1990 HIGHEST 31.41 MAR 12, 1990 LOWEST 32.42 SEP 12, 1990



4

DVTABLE/DVTABLE_EDIT NOTES

The following information is given to clarify various aspects of the new DVTABLE program. Included are instructions on producing daily-discharge tables with statistical summaries for the new format annual report.

Daily-values tables of the new format are computed and printed by the DVTABLE program. It is functionaly the same as the old program, and will still produce the old table format if the statistical summary is turned off and the old summary is turned on. Once the statistical summary is computed and stored, the instantaneous values can be added, and the period-of-record statistics can be edited using the DVTABLE_EDIT program. The new format is available only for daily-mean discharge.

The statistics are stored in direct access files, one file for each station/water-year combination. The files are stored in a directory specified by the GPATH system and are subdivided into sub-directories according to water-year. Only one file for each station/water-year combination is stored, and once computed the file can be modified only by using the DVTABLE_EDIT program.

To create a table of the new format, select the Daily-Values Tables option (Option 1) from the ADAPS display menu. The ADAPS display menu appears as below:

```
+-------------------------------------------------------------------------------+
| ***************************************************************************** |
| |     US. GEOLOGICAL SURVEY AUTOMATED DATA PROCESSING SYSTEM (ADAPS)       | |
| | REVISION 91.1A                                 30 Sep 91 09:47:56 Monday | |
| |           (DI) SUB-MENU : DISPLAY UNIT- AND DAILY-VALUES DATA            | |
| ***************************************************************************** |
|                                                                               |
|  1 -- Daily-Values Tables                 8 -- Display Rating Table Dates     |
|  2 -- Print/Display Unit-Values Tables    9 -- Display Rating(s)              |
|  3 -- Preprinted Form Hydrographs        10 -- Plot Rating(s)                 |
|  4 -- PLOTWAT - Plot Time-Series Data    11 -- Display Exp. Shifts and Datum  |
|  5 -- Display Instrument(s)              12 -- Daily-Values Inventory         |
|  6 -- Display Data Descriptor(s)         13 -- Edit Daily-Values Statis. Summ.|
|  7 -- Display Measurements                                                    |
|                                                                               |
|  FROM THE PREVIOUS MENU -- IN, PR, DI, RT, SU, SA, MA, AP, LA, PD, UT, HT,    |
|                                                                               |
|      DOC menu_opt -- Display documentation      PGM -- Display program_names  |
|      QU -- Exit to previous menu                EX -- Exit to Primos          |
|                                                                               |
| Select desired option or program_name ( <CR> for menu ): 1                    |
+-------------------------------------------------------------------------------+
```


29

The following menu of tabling options will be displayed.

```
-----------------------------------------------------------------------------+
   DV_TABLE - DAILY VALUES TABLES                                            |
|                                                                            |
|CURRENTLY SELECTED TABLING OPTIONS:                                         |
|  TY - TABLE TYPE 1 - SINGLE STATION/DD/STAT/YEAR                           |
|  SU - USE SUMMARY OPTIONS FROM DD FILE                                     |
|  DA - CONTRIBUTING DRAINAGE AREA HAS PRECEDENCE                            |
|  RM - DO NOT SUPPRESS REMARK CODES                                         |
|  RN - DO NOT SUPPRESS ROUNDING OF VALUES                                   |
|  BD - DO NOT SUPPRESS THE BODY OF THE TABLE                                |
|  MO - DO NOT SUPPRESS THE MONTHLY SUMMARIES                                |
|  AN - SUPPRESS THE ANNUAL SUMMARIES                                        |
|  ST - DO NOT SUPPRESS THE STATISTICAL SUMMARIES                            |
|  SS - SUPPRESS SUMMARIES IF DATA IS MISSING                                |
|  SD - DO NOT SUPPRESS THE MONTHLY MAX/MIN DATES                            |
|  SP - PERIOD FOR STATISTICAL SUMMARY COMPUTATION 0000 - 0000               |
|  PR - ALL STATIONS/DDS USE SAME PERIOD                                     |
|  SC - STATISTIC CODE(S), 00003                                             |
|  DS - ALL STATIONS/DDS USE SAME STATISTIC CODES                            |
|  FM - FIRST MONTH FOR NARROW (80 COL) TABLES IS 10                         |
|  CU - DO NOT CONVERT VALUES TO OTHER UNITS                                 |
|                                                                            |
|  QU - END PROGRAM (EXIT TO MENUS)        EX - END PROGRAM (EXIT TO PRIMOS) |
|                                                                            |
|ENTER CODE FOR OPTION TO CHANGE OR [CR]:                                    |
-----------------------------------------------------------------------------+
```

The table type must be 1 (Option TY), and the statistical summary suppression must be off (Option ST) to produce a table in the new format. The other table types are still available and function as before, but no statistical summary will be produced. The annual summary (Option AN) and the statistical summary (Option ST) are mutually exclusive, that is only one of them can be produced on the same table. If suppression of either one is turned off, then the program will turn suppression of the other one on.

The period of computation must be specified (Option SP), and this period is stored with the statistics data. The start and end water-years are required. A value of 0000 specifies the default water-year, and the default depends on whether statistics have previously been computed for the station. If no statistics table has previously been computed for a station, the defaults are the beginning of record and the water-year of the table. If a previous (or later) table has been computed for a station, the defaults are set to the water-years specified in the previously computed table. If the ending water-year of the previously computed table corresponds to the water-year of the table, the ending water-year of the new table defaults to the water-year of the new table. A value other than 0000 specifies a specific year, and overrides the default. The default specifier of 0000 can be used in combination with a specific year. For example, 0000 - 1987 specifies the beginning of record to 1987, and, 1970 - 0000 specifies 1970 to the water-year of the table.

If a station/water-year table is specified that has already been computed and stored, a different period of computation will cause the statistics to be re-computed for the new period, but the new period will not be stored over the previously computed statistics. If the period of computation is to be permanently changed on a table, it must be changed in the DVTABLE_EDIT program.

The following table gives an example of what various periods would convert to under certain conditions. Assuming that a station has a period-of-record from 1960 to the present, the table shows the periods of computation that would appear on a 1990 table - if there were no previous table, if there were a 1989 table with a computational period of 1970 to 1989, or if there were a 1989 table with a computational period of 1970 to 1980.

Specified Period	No Prev Table	1989 (1970 - 1989)	1989 (1970 - 1980)
Period 0000 - 0000	1960 - 1990	1970 - 1990	1970 - 1980
Period 0000 - 1990	1960 - 1990	1970 - 1990	1970 - 1990
Period 0000 - 1980	1960 - 1980	1970 - 1980	1970 - 1980
Period 1960 - 0000	1960 - 1990	1960 - 1990	1960 - 1980
Period 1960 - 1990	1960 - 1990	1960 - 1990	1960 - 1990
Period 1960 - 1980	1960 - 1980	1960 - 1980	1960 - 1980
Period 1970 - 0000	1970 - 1990	1970 - 1990	1970 - 1980
Period 1970 - 1990	1970 - 1990	1970 - 1990	1970 - 1990
Period 1970 - 1980	1970 - 1980	1970 - 1980	1970 - 1980

If a station group is to be processed, the computational period should always be specified as 0000 - 0000 unless the same restrictive period is desired on all stations in the group. Any station which uses a period of computation different from the entire period-of-record, must be computed separatly before the group is proccessed. Once the station has been computed separatly, the proper computational period will be used whenever 0000 - 0000 is specified. After the first year of tables has been proccessed, the proper computational period will be carried over and used for successive years whenever 0000 - 0000 is specified. When a station group is used to create the tables, the specified computational period will be used for each station in the group.

```
***** NOTE ************************************************************
*    If several stations are tabled separately but in succession, the user    *
* should make sure that the computational period is correct for each station  *
* before proceeding with the creation of the table.                            *
*******************************************************************************
```

After the table options have been set, exit the option menu and select the desired station and water-year for the table. The rest is the same as before.

The instantaneous values are added using the DVTABLE_EDIT program. The period-of-record statistics can also be edited using the DVTABLE_EDIT program. To edit the statistical summary values of a table, select the Edit Daily-Values Statistical Summary Table option (Option 2) from the ADAPS display menu. Select the proper site, data descriptor, and statistic code. If the table has not previously been computed the program will ask if it is ok to create the

file. If the file already exists, or if the prompt to create a new file is swered in the affirmative, the following menu will be displayed:

```
-----------------------------------------------------------------------------+
|DV_TABLE_EDIT - EDIT DAILY VALUES TABLES                                     |
|                                                                             |
|                                WATER YEAR: 1991                             |
|                                                                             |
|                  AGENCY: USGS     STATION ID: 05054000                      |
|                                                                             |
|                  DD:    2    BEGIN YEAR FOR COMPUTATION: 1901              |
|                              END YEAR FOR COMPUTATION:   1991              |
|                                                                             |
|                    DATA NOT MODIFIED SINCE LAST COMPUTATION                 |
|                                                                             |
|                    RECOMPUTE FLAG IS OFF                                    |
|                                                                             |
|                                                                             |
|                          OPTION: 1 = NEW STATISTICS FILE                    |
|                                                                             |
|                                  2 = EDIT STATISTICS                        |
|                                  3 = CHANGE STATISTICAL PERIOD              |
|                                  4 = RECOMPUTE STATISTICS                   |
|                                  5 = SAVE CHANGES                           |
|                                                                             |
|                                  6 = EXIT                                   |
|                                                                             |
 LECT (1-6):                                                                  |
-----------------------------------------------------------------------------+
```

Option 1 is used to select a new station or water-year. Use this option to change stations when an incorrect station is displayed, or when you are finished editing a station and you want to edit another station.

Option 2 is used to edit the statistical summary values. When this option is selected, access is gained to the 3 editing menus. Examples of these menus are shown below.

Option 3 is used to change the period of statistics computation.

Option 4 is used to recompute the statistical summary. It should be noted that any edited values (except the instantaneous values) will be recomputed.

Option 5 is used to store the edited and recomputed values. The values are not automatically stored after computation. This option allows the saving of the edited values, and should be used before changing stations or exiting the DVTABLE_EDIT program. If the user attempts to exit the program or change stations before the data has been saved, the program will remind the user that changes have not been saved, and will give the user the chance to save the data before proceeding.

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Option 6 is used to exit the DVTABLE_EDIT program. The standard ADAPS codes QU and EX may also be used.

The recompute flag is used to tell the DVTABLE program to recompute the statistical summary. If this flag is on, the DVTABLE program will recompute the statistics the next time it is run on the table. If the flag is off, the DVTABLE program will not recompute or store the statistical summary. This is an alternate way to recompute the statistics. It is equivalent to option 4 with the exception that the table is produced at the same time. The status of the recompute flag can be modified in the editing sub-menus.

The 3 editing sub-menus follow. The second and third sub-menus are accessed from the first sub-menu. The first sub-menu is used to edit the instantaneous values.

```
+-------------------------------------------------------------------------+
|DV_TABLE_EDIT - EDIT DAILY VALUES TABLES                                 |
|                                                                         |
|PERIOD OF RECORD STATISTICS FOR 1991 WATER YEAR                          |
|                                                                         |
|  CV - COMPUTED VALUES INITIALIZED                                       |
|                                                                         |
|  IN - INSTANTANEOUS VALUES INITIALIZED                                  |
|                                                                         |
|  CP - RECOMPUTE FLAG IS OFF                                             |
|                                                                         |
|  PW - PEAK FLOW (WATER YEAR)          -        0.00     DATE - 0000    |
|  PR - PEAK FLOW (PERIOD OF RECORD)    -        0.00     DATE - 00000000|
|  SW - PEAK STAGE (WATER YEAR)         -        0.00     DATE - 0000    |
|  SR - PEAK STAGE (PERIOD OF RECORD)   -        0.00     DATE - 00000000|
|  LW - LOW FLOW (WATER YEAR)           -        0.00     DATE - 0000    |
|  LR - LOW FLOW (PERIOD OF RECORD)     -        0.00     DATE - 00000000|
|                                                                         |
|  MO - EDIT PERIOD OF RECORD MONTHLY STATISTICS                          |
|  SU - EDIT PERIOD OF RECORD SUMMARY STATISTICS                          |
|                                                                         |
|ENTER CODE FOR OPTION TO CHANGE OR [CR]:                                 |
|                                                                         |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
```

The CV and IN options are status flags, and show the status of the computed and instantaneous values. The "initialized" status is what the program sets each table to when it is created. The status is then changed when the user modifies any of the values. The status can also be set by the user to indicate that the table values are final.

```
***** NOTE ***********************************************************************
      Any of the computed values which are to be modified, must be modified   *
  after any re-computation.  Whenever a table is re-computed, all of the      *
  previously computed values (inluding any that have been modified) are       *
* are replaced with the newly computed values.  The recompute flag (Option CP)*
* shows if the table will be re-computed the next time the DVTABLE program is *
* run.  Make sure that this flag is set to off if you do not want the         *
* statistical summary to be re-computed, and your edited values replaced.     *
*******************************************************************************
```

The instantaneous values are modified only in the menu above. If the table is re-computed, the instantaneous values are not affected. The instantaneous values are considered undefined whenever the date is 0, and are not printed on the summary. If neither the water-year or the period-of-record values are defined, the line will not be printed on the summary. A blank data line is never printed in the summary table.

The second sub-menu is used to modify the period-of-record monthly statistics.

```
+-----------------------------------------------------------------------------+
|DV_TABLE_EDIT - EDIT DAILY VALUES TABLES                                     |
|                                                                             |
|PERIOD OF RECORD MONTHLY STATISTICS FOR 1991 WATER YEAR                      |
|                                                                             |
| ME[mm] - MONTH'S MEAN:                                                      |
|          01          02          03          04          05          06|
|        0.00        0.00        0.00        0.00        0.00        0.00|
|          07          08          09          10          11          12|
|        0.00        0.00        0.00        0.00        0.00        0.00|
| MA[mm] - MONTH'S MAXIMUM:                                                   |
|          01          02          03          04          05          06|
|*****************************************************************************|
|        0000        0000        0000        0000        0000        0000|
|          07          08          09          10          11          12|
|*****************************************************************************|
|        0000        0000        0000        0000        0000        0000|
| MI[mm] - MONTH'S MINIMUM:                                                   |
|          01          02          03          04          05          06|
|*****************************************************************************|
|        0000        0000        0000        0000        0000        0000|
|          07          08          09          10          11          12|
|*****************************************************************************|
|        0000        0000        0000        0000        0000        0000|
|                                                                             |
|ENTER CODE FOR OPTION TO CHANGE OR [CR]:                                     |
+-----------------------------------------------------------------------------+
```

The third sub-menu is used to edit the period-of-record summary statistics.

```
DV_TABLE_EDIT - EDIT DAILY VALUES TABLES

PERIOD OF RECORD SUMMARY STATISTICS FOR 1991 WATER YEAR

  ME - ANNUAL MEAN                    -          0.00
  HA - HIGHEST ANNUAL MEAN            - *************     DATE - 0000
  LA - LOWEST ANNUAL MEAN             - *************     DATE - 0000
  HD - HIGHEST DAILY MEAN             - *************     DATE - 00000000
  LD - LOWEST DAILY MEAN              - *************     DATE - 00000000
  7D - SEVEN-DAY MINIMUM              - *************     DATE - 00000000
  AC - ANNUAL RUNOFF (ACRE-FEET)      -          0.00
  CF - ANNUAL RUNOFF (CFSM)           -          0.00
  IN - ANNUAL RUNOFF (INCHES)         -          0.00
  10 - 10 PERCENT EXCEEDS             -          0.00
  50 - 50 PERCENT EXCEEDS             -          0.00
  90 - 90 PERCENT EXCEEDS             -          0.00

ENTER CODE FOR OPTION TO CHANGE OR [CR]:
```

An example of the new table format follows page 9. The example shows all of the summary options, and is a sample only. Some of the items (i.e. all 3 runoff values) may not be used by your District, and this example is not meant to dictate what should or should not be published by a District.

Following is a suggested step by step procedure for producing daily-scharge tables with statistical summaries for the new format annual report. w-format statistical summary tables are available only for discharge stationb. Other parameters that are published in the annual report should be proccessed as before.

1) Work up the record in your own way until you think that all daily and unit values are correct.

2) Scan the proper water-year's record and determine the annual peak flow, peak stage, minimum flow, event dates, etc.

3) Scan the extremes and period-of-record paragraphs of the station manuscript and other records to determine what period should be used for computing the statistical summary. Also determine the peak flow, peak stage, minimum flow, and event dates for the period-of-record.

4) Repeat steps 1 to 3 for as many additional stations as neccessary.

5) Run the ADAPS DI-2 DVTABLE_EDIT program at the computer terminal.

   For each station:

   a. Check the statistical summary period and revise it if necessary.

   b. Recompute the statistics.

   c. Add or update the water-year and period-of-record peak flows, peak stages, minimum flows, and their corresponding dates.

   d. Check all of the computed statistics for the water year and statistical summary period. Revise them if necessary.

   e. Save the recomputed and edited values.

   f. Repeat steps 5-a to 5-e for any additional stations.

6) Run ADAPS DI-1 DVTABLES program at the computer terminal.

   For each station or group:

   a. Ensure that the PERIOD FOR STATISTICAL SUMMARY COMPUTATION (Option SP) on the main DVTABLES options menu is equal to 0000 - 0000.

   b. On the second menu, set the proper station number. The water-year should have been carried over automatically from the previous step. If not, set it to the proper water-year.

   c. Let the program run and produce the DV table. The statistical summary will be retrieved from what was saved in step 5-e above.

d. Repeat steps 6-a to 6-c for any additional stations. Note that it's very important to RESET the SP line to 0000 - 0000 for each table to be produced; otherwise the wrong statistical summary period will be used. If a station group is being proccessed and the SP line is set to 0000 - 0000, the program will automatically reset the period to 0000 - 0000 between each station.

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - NORTH DAKOTA 07/19/91

STATION NUMBER 05120000 SOURIS RIVER NR VERENDRYE, ND STREAM SOURCE AGENCY USGS
LATITUDE 480935 LONGITUDE 1004345 DRAINAGE AREA 4400.00 DATUM 1464.87 STATE 38 COUNTY 049

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	25	6.5	e1.6	e1.6	1.6	15	188	72	121	24	4.9
2	14	21	5.8	e1.7	e1.5	1.6	17	196	82	102	23	4.4
3	18	14	5.3	e1.6	e1.4	2.0	19	193	79	86	22	5.7
4	19	11	4.9	e1.6	e1.4	2.4	23	194	86	335	17	7.6
5	19	9.9	4.7	e1.6	e1.5	3.0	20	193	114	892	15	7.3
6	15	9.9	4.7	e1.6	e1.6	3.0	18	192	116	711	13	6.4
7	12	9.1	4.7	e1.6	1.8	3.3	18	196	98	493	12	6.9
8	11	8.5	5.0	e1.6	1.8	3.5	18	194	91	504	11	5.8
9	11	7.0	5.1	e1.6	1.8	4.5	17	191	135	421	10	5.1
10	9.4	7.4	5.1	e1.6	1.6	6.2	16	187	177	289	9.4	4.8
11	8.3	8.6	5.1	e1.7	1.5	7.7	11	186	134	187	9.2	4.0
12	7.6	6.2	5.2	e1.6	1.7	10	8.8	188	96	135	9.2	3.5
13	7.3	6.5	e4.5	e1.5	1.7	12	9.8	190	76	117	9.2	3.3
14	7.8	4.0	e4.0	e1.5	1.6	11	10	188	69	104	9.2	3.1
15	7.0	4.0	e3.0	e1.5	1.6	7.3	9.9	172	63	91	8.6	3.0
16	6.4	4.2	e2.6	e1.4	1.6	5.1	10	137	59	84	7.0	2.7
17	5.8	4.2	e2.2	e1.4	e1.5	4.7	9.2	101	53	65	6.5	2.6
18	5.2	3.9	e2.0	e1.3	e1.4	7.8	8.2	86	56	59	6.2	2.7
19	4.4	3.7	e1.8	e1.3	e1.3	8.8	7.5	85	67	58	5.4	2.4
20	3.9	3.5	e1.4	e1.3	e1.4	8.1	7.8	73	81	57	5.1	3.3
21	4.5	3.7	e1.2	e1.3	e1.5	7.2	7.2	70	89	52	5.6	3.3
22	5.5	4.3	e1.0	e1.3	1.6	6.0	7.3	70	83	44	6.7	2.8
23	7.1	4.7	e1.1	e1.4	1.6	5.3	8.0	72	78	36	8.6	2.5
24	6.9	6.5	e1.2	e1.4	1.8	4.9	8.0	71	74	33	11	1.9
25	6.5	20	e1.3	e1.5	1.6	5.3	9.8	64	71	30	22	1.6
26	16	26	e1.4	e1.5	1.6	5.9	9.9	69	71	31	28	1.6
27	24	21	e1.5	1.8	1.7	6.7	8.8	82	100	34	25	1.8
28	26	14	e1.5	1.6	1.6	7.2	53	79	83	32	16	2.2
29	26	9.9	e1.6	1.6	---	7.9	167	92	63	32	10	2.3
30	26	7.6	e1.6	1.8	---	8.8	180	99	82	30	7.5	2.5
31	25	---	e1.6	1.8	---	11	---	83	---	27	5.8	---
TOTAL	370.2	289.3	98.6	47.6	44.3	189.8	732.2	4181	2598	5292	378.2	112.0
MEAN	11.9	9.64	3.18	1.54	1.58	6.12	24.4	135	86.6	171	12.2	3.73
MAX	26	26	6.5	1.8	1.8	12	180	196	177	892	28	7.6
MIN	3.9	3.5	1.0	1.3	1.3	1.6	7.2	64	53	27	5.1	1.6
MED	8.3	7.5	2.6	1.6	1.6	6.0	10	137	81	84	9.4	3.2
AC-FT	734	574	196	94	88	376	1450	8290	5150	10500	750	222
CFSM	.00	.00	.00	.00	.00	.00	.01	.03	.02	.04	.00	.00
IN.	.00	.00	.00	.00	.00	.00	.01	.04	.02	.04	.00	.00

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1990, BY WATER YEAR (WY)

MEAN	49.2	46.2	35.7	32.6	47.0	187	665	710	279	169	85.8	55.3
MAX	199	169	160	171	277	1209	6280	4918	2122	1599	512	208
(WY)	1976	1976	1976	1976	1976	1976	1976	1975	1975	1953	1976	1955
MIN	1.50	1.00	1.00	.50	.50	2.25	11.7	6.80	2.33	.67	.42	.10
(WY)	1938	1938	1938	1938	1938	1940	1937	1938	1938	1937	1937	1937

SUMMARY STATISTICS	FOR 1989 CALENDAR YEAR		FOR 1990 WATER YEAR		WATER YEARS 1937 - 1990	
ANNUAL TOTAL	10225.4		14333.2			
ANNUAL MEAN	28.0		39.3		200	
HIGHEST ANNUAL MEAN					1185	1976
LOWEST ANNUAL MEAN					19.9	1988
HIGHEST DAILY MEAN	400	Apr 3	892	Jul 5	9700	Apr 20 1976
LOWEST DAILY MEAN	1.00	Dec 22	1.00	Dec 22	.10	Sep 1 1937
ANNUAL SEVEN-DAY MINIMUM	1.2	Dec 20	1.2	Dec 20	.10	Sep 1 1937
INSTANTANEOUS PEAK FLOW			922	Jul 5	9900	Apr 19 1976
INSTANTANEOUS PEAK STAGE			9.65	Jul 5	17.84	Apr 19 1976
INSTANTANEOUS LOW FLOW			1.0	Dec 22		
ANNUAL RUNOFF (AC-FT)	20280		28430		145100	
ANNUAL RUNOFF (CFSM)	.006		.009		.046	
ANNUAL RUNOFF (INCHES)	.09		.12		.62	
10 PERCENT EXCEEDS	58		101		408	
50 PERCENT EXCEEDS	6.9		7.6		40	
90 PERCENT EXCEEDS	3.0		1.6		3.7	

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