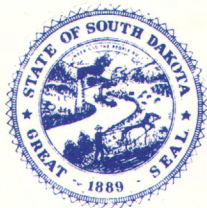
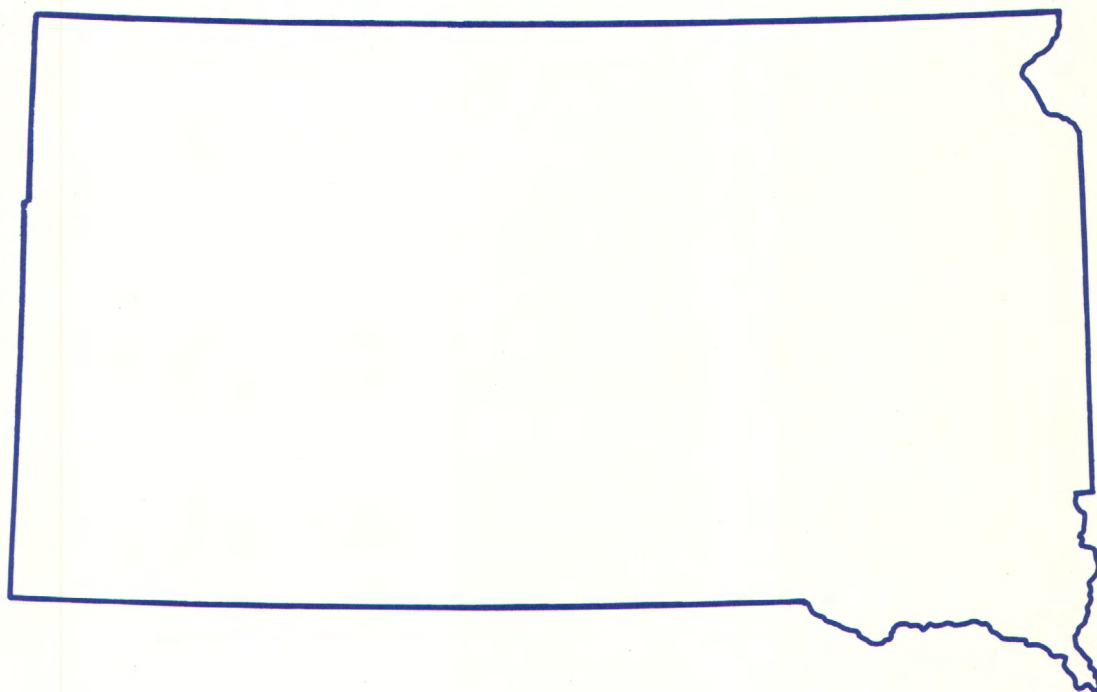
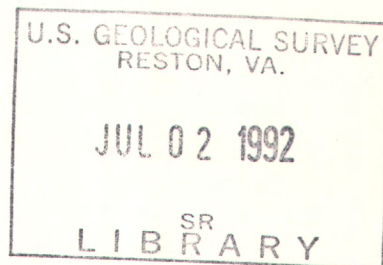


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Water Resources Data South Dakota Water Year 1991



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-91-1
Prepared in cooperation with the State of South Dakota
and with other agencies

CALENDAR FOR WATER YEAR 1991

1990

OCTOBER							NOVEMBER							DECEMBER						
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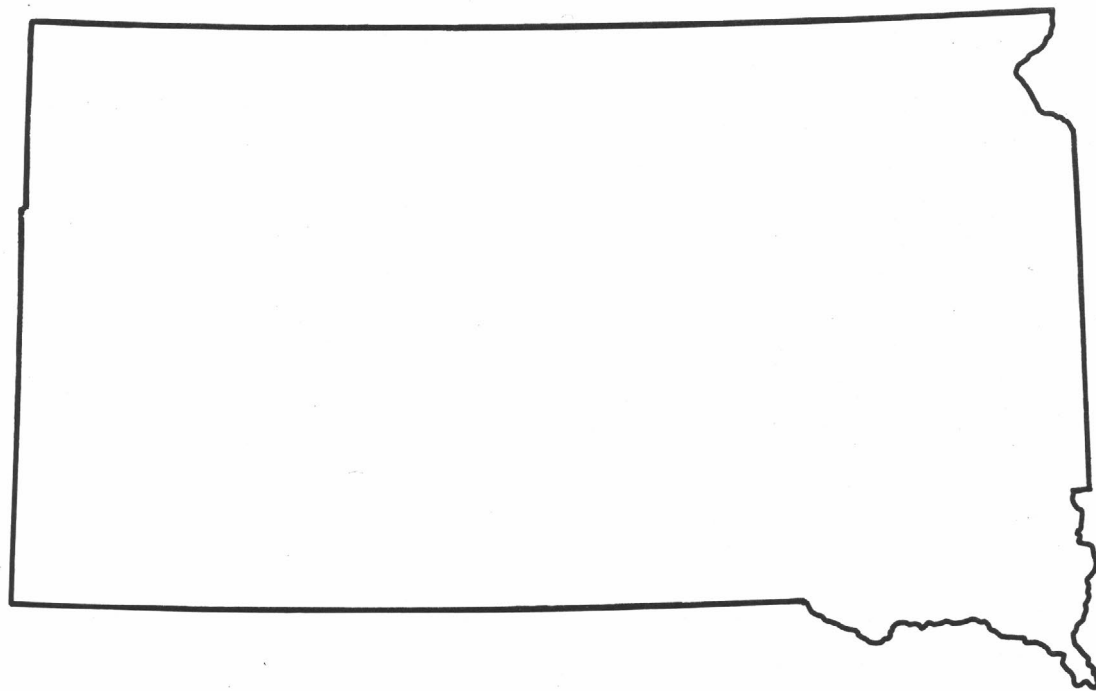
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Water Resources Data South Dakota Water Year 1991

by M.J. Burr, R.D. Benson, and S.K. Sando



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-91-1
Prepared in cooperation with the State of South Dakota
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in South Dakota write to
District Chief, Water Resources Division
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200 4th St. SW
Huron, South Dakota 57350

PREFACE

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

General direction for the series is by Phillip Cohen, Chief Hydrologist, U.S. Geological Survey, James F. Daniel, Assistant Chief Hydrologist for Scientific Information Management, and James F. Blakey, Regional Hydrologist, Central Region, and William J. Herb, Assistant Area Regional Hydrologist, North Central Region. This report was prepared by personnel of the South Dakota District of the Water Resources Division of the U.S. Geological Survey under the supervision of John R. Little, Acting District, and Chief, Hydrologic Data Collection and Analysis Section. Other South Dakota personnel who contributed significantly to the collecting, processing, and tabulating the data, and typing the manuscript were:

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16. Abstract (Limit: 200 words) Water Resources Data for the 1991 water year for South Dakota consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; precipitation; and water levels in wells. This report contains discharge records for 145 streamflow-gaging stations; stage and contents records for 10 lakes and reservoirs, stage for 7 streams and 4 lakes; water-quality records for 18 streamflow-gaging stations, 7 daily-sediment stations, 3 wells, 9 ungaged stream sites, 7 lakes, 1 sewage lagoon, and 1 precipitation site; water levels for 7 wells; daily precipitation records at 45 sites; and 21 partial-record crest-stage gage sites. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in South Dakota.				
17. Document Analysis a. Descriptors *South Dakota, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water analyses. b. Identifiers/Open-Ended Terms c. COSATI Field/Group				
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[Letters after station name designate type of data: (d) discharge, (e) gage height, elevation, or contents, (c) chemical, (b) biological, (m) microbiological, (p) pesticide, (r) precipitation, (t) daily water temperature, (s) sediment]

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Well 435039098263403 Local number 104N63W 6BCCC3.....	387
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BEADLE COUNTY

Well 442112098174001 Local number 110N62W 9BCCC.....	388
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CODINGTON COUNTY

Well 450905097072202 Local number 120N52W25BBB.....	389
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LINCOLN COUNTY

Well 431619096460202 Local number 98N50W32AAAA2.....	390
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MARSHALL COUNTY

Well 454745097450401 Local number 127N58W23DAD.....	391
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SHANNON COUNTY

Well 430027102311801 Local number 35N44W17CBD.....	392
Well 430027102311806 Local number 35N44W17CBD.....	393

WATER RESOURCES DATA - SOUTH DAKOTA, 1991

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of South Dakota 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 - South Dakota."

This report includes records on both surface and ground water in the State. Specifically, it contains: (1) Discharge records for 145 streamflow-gaging stations; (2) stage and contents records for 10 lakes and reservoirs, stage for 7 stream sites and 4 lakes; (3) water-quality records for 18 streamflow-gaging stations, 7 daily sediment stations, 3 wells, 9 ungaged stream sites, 7 lakes, 1 sewage lagoon, and 1 precipitation site; (4) water levels for 7 wells; (5) precipitation records at 45 sites; and (6) 21 partial-record crest-stage gage stations.

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

Prior to introduction of this series and for several water years concurrent with it, water-resources data for South Dakota were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 6A and 6B." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA 22304.

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 SD-91-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on back of title page.

COOPERATION

The U.S. Geological Survey and agencies of the State of South Dakota have had cooperative agreements for the collection of surface-water records since 1914, for ground-water levels since 1935, and for water-quality since 1947. Organizations that assisted in collecting the data in this report through cooperative agreements with the Survey are: South Dakota Department of Environment and Natural Resources; South Dakota Department of Transportation; South Dakota Department of Game, Fish and Parks; East Dakota Water Development District; West Dakota Water Development District; City of Rapid City; City of Watertown; Lawrence County; North Central RC&D; West River Water Development District; State of Wyoming; and Minnesota Area II Department of Natural Resources.

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers; U.S. Department of Interior, Bureau of Indian Affairs; U.S. Department of Interior, Bureau of Reclamation; and U.S. Department of Interior, U.S. Geological Survey, EROS Data Center.

Organizations that supplied data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

By Rick D. Benson

Precipitation was less than normal throughout all of South Dakota at the end of the first half of water year 1991, ranging from 0.26 inch less than normal in the central part of the State to 1.31 inches less than normal in the east-central part (table 1). During the third quarter of the water year, precipitation was greater than normal in all parts of the State and was substantially greater than normal in most parts: northeast (7.31 inches); east central (6.60 inches); central (6.09 inches); southwest (5.09 inches); south central (4.46 inches); and north central (3.82 inches). During the last quarter of the water year, precipitation was less than normal in all parts of the State except the northeast where precipitation was 1.45 inches greater than normal. The northeast part of the State received the most precipitation (27.47 inches), which was 7.87 inches greater than normal (table 1). The northwest part of the State received the least amount of precipitation (14.26 inches), which was 1.02 inches less than normal. This was the fifth consecutive year for the southeast part and the fourth consecutive year for the northwest part of the State that precipitation was less than normal during the water year.

Precipitation data from published reports of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, for the nine divisions in South Dakota are shown in table 1. The cumulative precipitation and departures from normal are shown for the end of each quarter.

Table 1.--Cumulative precipitation and departures from normal¹, in inches

National Weather Service Division ²	October-December		October-March		October-June		October-September	
	Precipitation	Departure from normal	Precipitation	Departure from normal	Precipitation	Departure from normal	Precipitation	Departure from normal
Northwest	0.92	-0.76	2.64	-0.51	11.14	0.52	14.26	-1.02
North Central	1.16	-0.84	2.45	-1.24	14.36	2.58	17.22	-0.11
Northeast	1.53	-0.95	3.56	-0.89	19.49	6.42	27.47	7.87
Black Hills	2.36	-0.31	4.73	-0.71	18.87	3.59	23.26	1.96
Southwest	1.44	-0.32	3.14	-0.44	16.29	4.65	19.93	3.31
Central	1.13	-0.85	3.49	-0.26	17.31	5.83	20.85	3.95
East Central	2.17	-0.61	3.73	-1.31	19.17	5.29	26.13	5.23
South Central	1.79	-0.54	4.19	-0.41	17.79	4.05	21.72	1.57
Southeast	3.41	0.46	4.88	-0.68	15.76	0.83	21.85	-1.22

¹ Based on data from 1951 to 1980.² Shown in figure 1.

Surface Water

Dry antecedent conditions and less than normal precipitation across much of South Dakota during water year 1991 caused total streamflow for the water year to be substantially less than normal at three of the five representative streamflow-gaging stations. Castle Creek, which derives most of its water from the Madison aquifer, had near normal discharge throughout the year (fig. 1) and ended the water year with total discharge at 103 percent of normal. The Moreau, James, Big Sioux, and White Rivers derive most of their flow from surface runoff. The Moreau River, located in the northwest and north-central parts of the State where precipitation was less than normal, had less than normal discharge during all months (fig. 1); total discharge during the water year was only 20 percent of normal. The James River, located in the eastern part of the State, had less than normal discharge during all months except June (fig. 1); total discharge during the water year was only 51 percent of normal. The Big Sioux River, also located in the eastern part of the State, had less than normal discharge during all months; total discharge during the water year was 45 percent of normal. Precipitation data (table 1) show that deficits occurred during the second and fourth quarters of the water year for the southeast part of the State, where the Scotland and Akron streamflow-gaging stations are located. Even though the White River near Oacoma had less than normal discharge during all months except May through July, total discharge was 138 percent of normal during the water year. Precipitation within the south-central part of South Dakota, which contains much of the White River basin, ended the water year at 1.57 inches greater than normal.

Peak discharges at the representative streamflow-gaging stations indicate the effects of greater than normal precipitation throughout all of South Dakota during the third quarter of the water year--the peak discharges for all five of the stations occurred between May 23 and June 20 (table 2). The peak on Castle Creek had a recurrence interval of 5 years and the peak on the White River had a recurrence interval of 17 years. The peaks at the other three stations had recurrence intervals of two years or less.

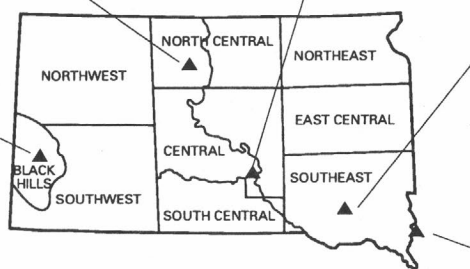
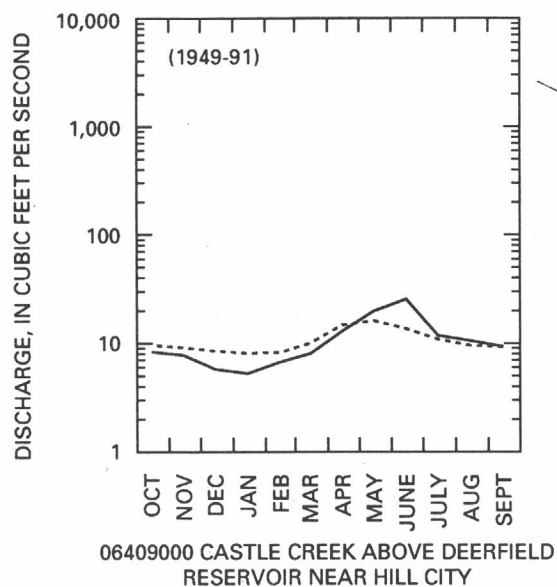
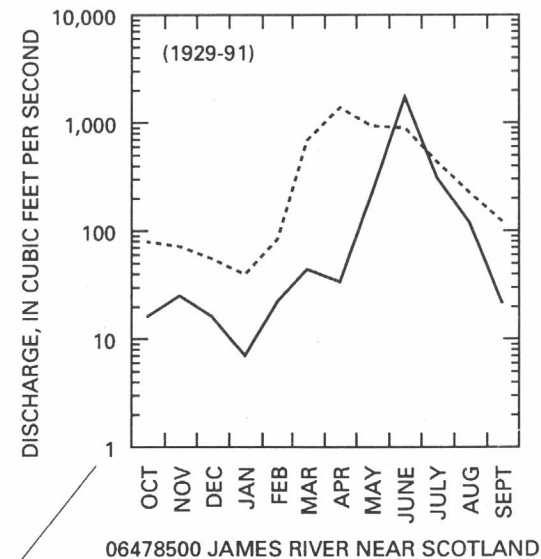
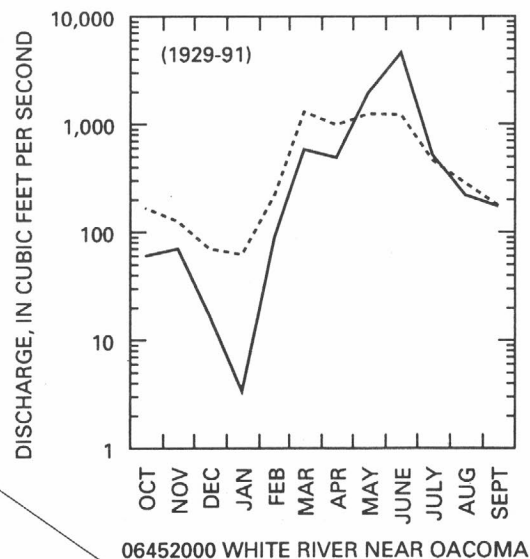
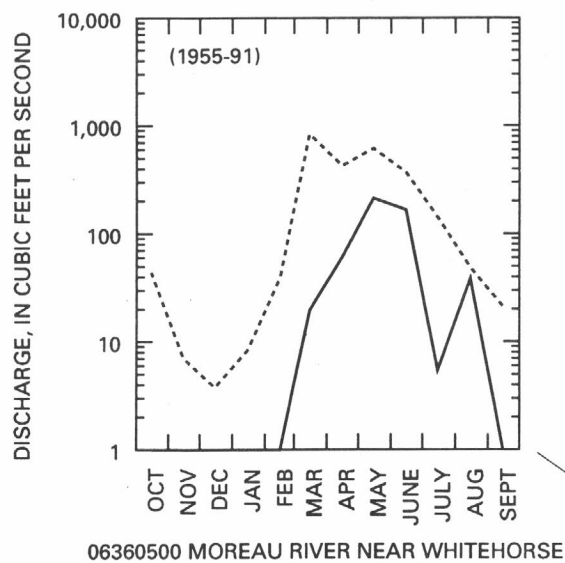
Because low-flow analyses are done for the period from April 1 through March 31, the analysis for 1991 consisted of the period from April 1, 1990, through March 31, 1991. The minimum 1-day and 7-day discharges that occurred during 1991 are compared with those from the long-term period for the representative gaging stations in table 3. The minimum daily mean discharge for the James River near Scotland during the 1991 low-flow year was 5.5 cubic feet per second on January 26, 1991, whereas minimum daily mean discharges of zero have occurred on many days during the long-term period of record. The lowest 7-day mean discharge during 1991 for the James River near Scotland was 6.1 cubic feet per second (the recurrence interval of a 7-day minimum daily mean discharge of 6.1 cubic feet per second is between 2 and 5 years). There is only a 10-percent chance in a given year that the mean discharge for 7 consecutive days will be equal to or less than 1.7 cubic feet per second for the James River near Scotland. Similar interpretations of the data for the other stations can be made.

Combined storage in the four Missouri River reservoirs (Lakes Oahe, Sharpe, Francis Case, and Lewis and Clark) was 18,462,000 acre-feet on September 30, 1991, an increase of 647,000 acre-feet during water year 1991.

Water Quality

The dissolved-solids concentrations of surface-water samples collected during water year 1991 are compared to concentrations measured in previous years using boxplots (fig. 2). Of the 10 stations shown in figure 2, all are National Stream-Quality Accounting Network (NASQAN) stations except for the Grand River at Little Eagle, Castle Creek above Deerfield Reservoir, near Hill City (which is a hydrologic bench-mark station), and the Little Vermillion River near Salem. The boxplots for the Grand River at Little Eagle and the Little Vermillion River near Salem station are for specific conductance.

Boxplots are a useful graphical technique because they display the central tendency, variation, and skewness of a data set, as well as the presence or absence of unusual values. A boxplot consists of a centerline (the median) dividing a rectangle defined by the 75th and 25th percentiles. Whiskers are drawn from the ends of the box (75th and 25th percentiles) to the most extreme observation within 1.5 times the interquartile range (the distance from the 25th to the 75th percentile values) beyond the ends of the box. Values more than 1.5 interquartile ranges from the box ends are unusual and may indicate extreme hydrologic and chemical conditions or sampling and analytical errors. Observations from 1.5 to 3 interquartile ranges from the box in either direction are plotted individually with an asterisk. Observations greater than three interquartile ranges from the ends of the box are plotted with an open circle. Water year 1991 values are plotted with a closed circle to show where these data lie with respect to the historic distribution of data.



EXPLANATION

— WATER YEAR 1991

- - - LONG TERM

(1929-91) PERIOD OF LONG-TERM RECORD (WATER YEARS)

▲ STREAMFLOW-GAGING STATION

▲ NORTHWEST NATIONAL WEATHER SERVICE DIVISION

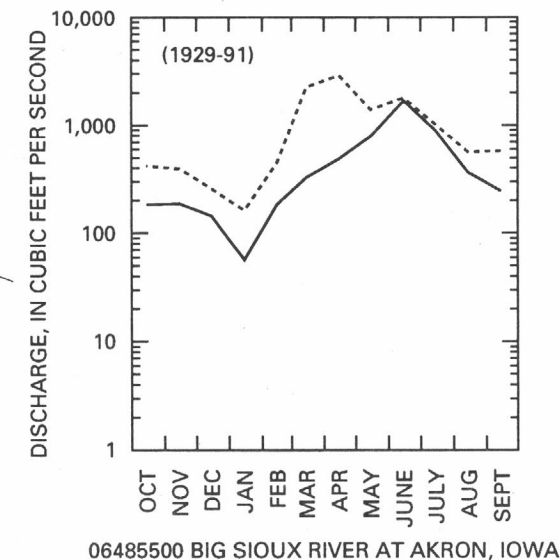


Figure 1.--Comparison of 1991 monthly mean to long-term monthly mean discharges.

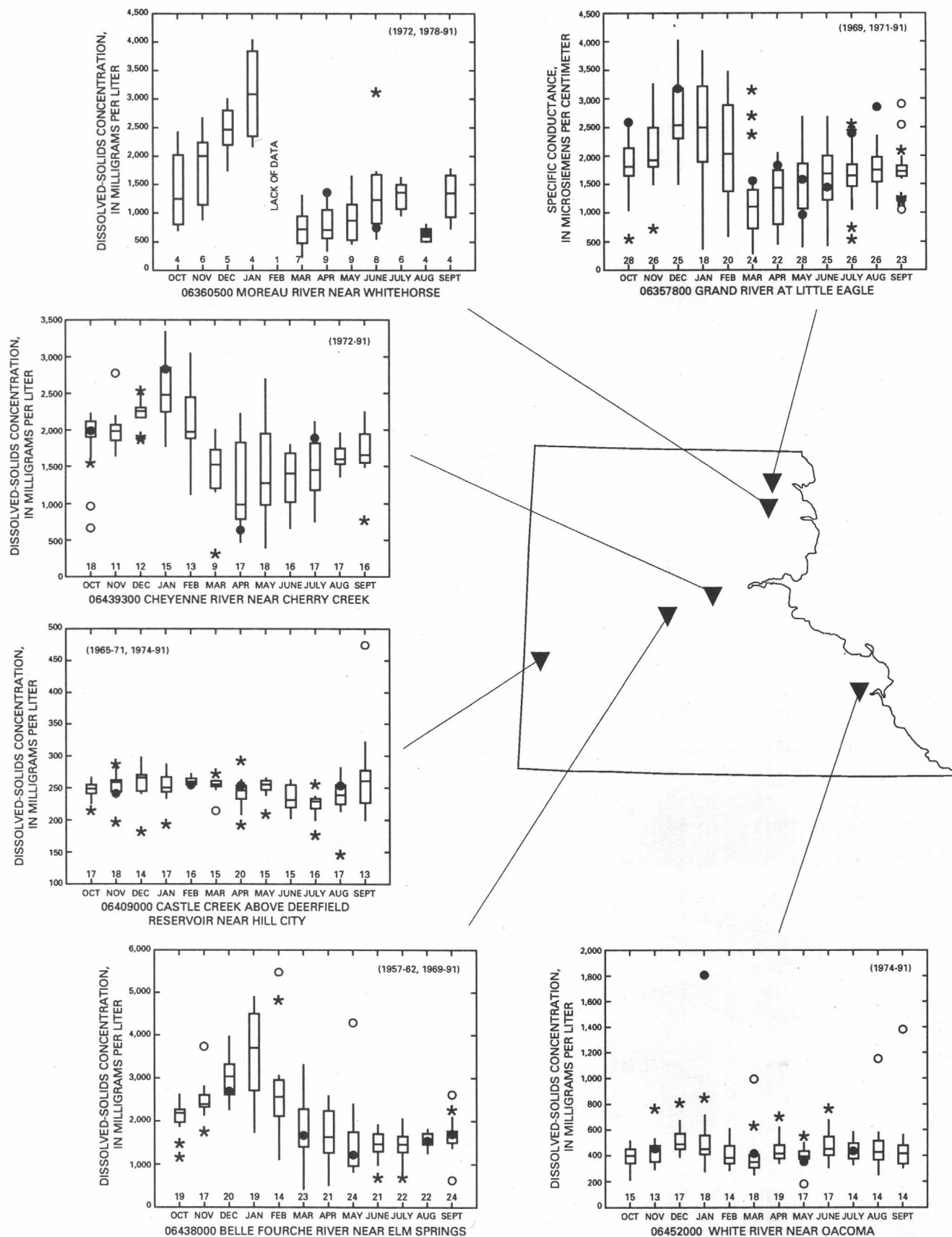


Figure 2.--Comparison of 1991 monthly dissolved-solids concentrations or specific conductance to the distributions of long-term monthly values.

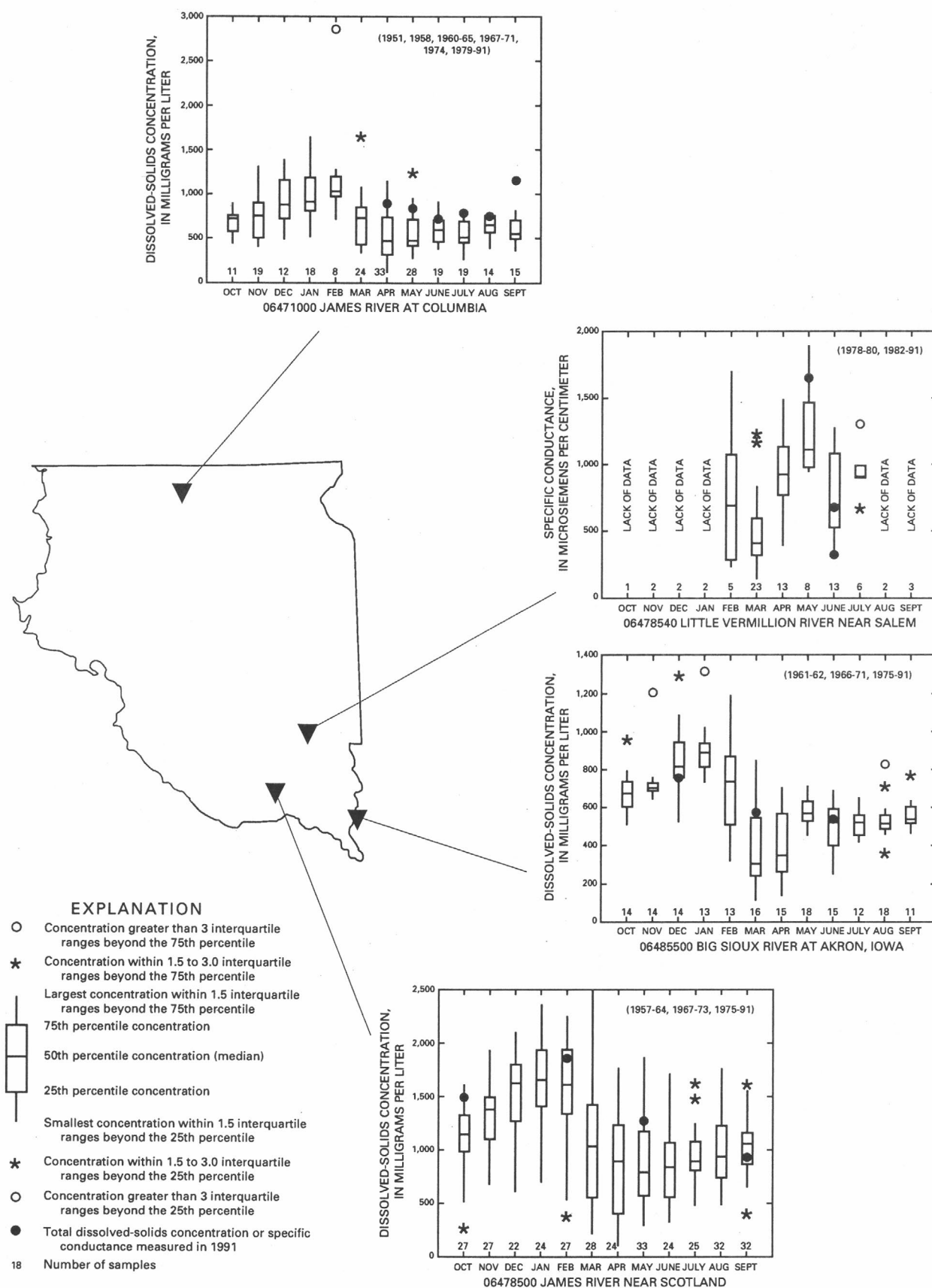


Figure 2.--Comparison of 1991 monthly dissolved-solids concentrations or specific conductance to the distributions of long-term monthly values.--Continued

Table 2.--Comparison of current-year maximum discharge to maximum for long-term periods
[ft³/s, cubic feet per second]

Gaging-station number and name	Long-term period used (water years)	Peak discharges					
		1991 Water year			Long-term period		
		Peak (ft ³ /s)	Date	Return interval (years)	Peak (ft ³ /s)	Date	Return interval (years)
06360500 Moreau River near Whitehorse	1955-91	4,050	5-23-91	<2	27,700	5-24-82	28
06409000 Castle Creek above Deerfield Reservoir, near Hill City	1948-91	106	6- 3-91	5	1,120	5-22-52	>100
06452000 White River near Oacoma	1929-91	30,200	6- 5-91	17	51,900	3-30-52	>100
06478500 James River near Scotland	1929-91	2,310	6-20-91	2	29,400	6-23-84	>100
06485500 Big Sioux River at Akron, Iowa	1929-91	2,270	6-15-91	<2	80,800	4- 9-69	>100

Table 3.--Comparison of current-year minimum discharge to minimum for long-term periods
[ft³/s, cubic feet per second]

Gaging-station number and name	Long-term period used (water years)	Minimum discharges						
		1991 Water year ¹			Long-term period			
		1-day		7-day	1-day		7-day, 10-year	
		(ft ³ /s)	Date	(ft ³ /s)	(ft ³ /s)	Date	(ft ³ /s) ¹	
06360500 Moreau River near Whitehorse	1955-91	0	(199 days)	0	0.0	many days	0.09	
06409000 Castle Creek above Deerfield Reservoir, near Hill City	1948-91	4.0	12-22,23-1990, 1-29-1991	4.3	2.0	several days	4.1	
06452000 White River near Oacoma	1929-91	.04	1- 8-1991	.05	.0	many days	2.6	
06478500 James River near Scotland	1929-91	5.5	1-26-1991	6.1	.0	many days	1.7	
06485500 Big Sioux River at Akron, Iowa	1929-91	50	(8 days)	51	4.0	1-17-77	19.6	

¹Low-flow water year was April 1, 1990, to March 31, 1991.

The boxplots of dissolved-solids concentrations for selected South Dakota stations (fig. 2) generally illustrate an inverse relation with discharge (fig. 1). Smaller median dissolved-solids concentrations generally occur during months that have larger mean discharges. Larger median dissolved-solids concentrations generally occur during months that have smaller mean discharges. Some of the sites show seasonal differences in the variability of dissolved-solids concentrations. At some sites during some years, the discharge remains at base flow during the winter and into the spring. During other years, the base flow during this period may be diluted by the melting of ice and snow and by seasonal precipitation. This may explain the large variability of dissolved-solids concentrations at some sites during the winter and spring months. Small variability in dissolved-solids concentrations often occurs during the months of August through November when base-flow conditions may occur.

Dissolved-solids concentrations ranged from as little as 241 milligrams per liter in the November sample at the Castle Creek above Deerfield Reservoir station to as much as 2,840 milligrams per liter in the January sample at the Cheyenne River near Cherry Creek station. All water samples collected during water year 1991 from the James River at Columbia had dissolved-solids concentrations greater than or equal to the long-term 75th percentiles for that station. Also, dissolved-solids concentrations for the James River near Scotland and specific conductance measurements for the Grand River at Little Eagle generally exceeded the long-term medians (50th percentile). These elevated concentrations and specific conductances are associated with the low-flow conditions that existed at these stations during water year 1991. The dissolved-solids concentration of the January sample for the White River near Oacoma was the greatest ever recorded in any month for that site. The dissolved-solids concentration of the September sample for the James River at Columbia exceeded the previous maximum concentration for any September sample for that station, and the specific conductances of the October and August samples for the Grand River at Little Eagle exceeded the historic maximum concentrations that had been recorded during the same respective months at that station. The specific conductance of the June sample for the Little Vermillion River near Salem was less than the previous minimum specific conductance of any June sample for that station.

Ground Water

Water levels in wells and the quality of water from wells are key measurements in monitoring ground-water trends. During 1991, the U.S. Geological Survey regularly monitored several observation wells in South Dakota. The hydrographs in figure 3 are from six of the wells in the observation-well network. Water-level changes during 1991 in the six wells generally correlate with precipitation (table 1) in the areas where the wells are located. The water level in the Aurora County well (southeast part of the State where precipitation was 1.22 inches less than normal) declined 1.85 feet. The water level in the Beadle County well (east-central part where precipitation was 5.23 inches greater than normal) rose 5.34 feet. The water level in the Lincoln County well (southeast where precipitation was 1.22 inches less than normal) rose only 0.33 feet. The water level in the Codington County well rose a net of 8.59 feet; precipitation in the northeast area was 7.87 inches greater than normal. Water-level fluctuations in the Marshall and Shannon County wells do not appear to react directly to precipitation; the water level in each well remained relatively constant during water year 1991, even though the northeast part of the State ended the year with precipitation being 7.87 inches greater than normal and the southwest part ended the year with precipitation being 3.31 inches greater than normal. Water levels recorded during 1991 for the seven wells shown on the map in figure 3 are presented in the Ground-Water Levels section of this report.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of about 60 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

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

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

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

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

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1991 water year that began October 1, 1990, and ended September 30, 1991. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, precipitation, stage and content data for lakes and reservoirs, water-quality data for precipitation, surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 3, 4, 5, and 6. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

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

Downstream Order System

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

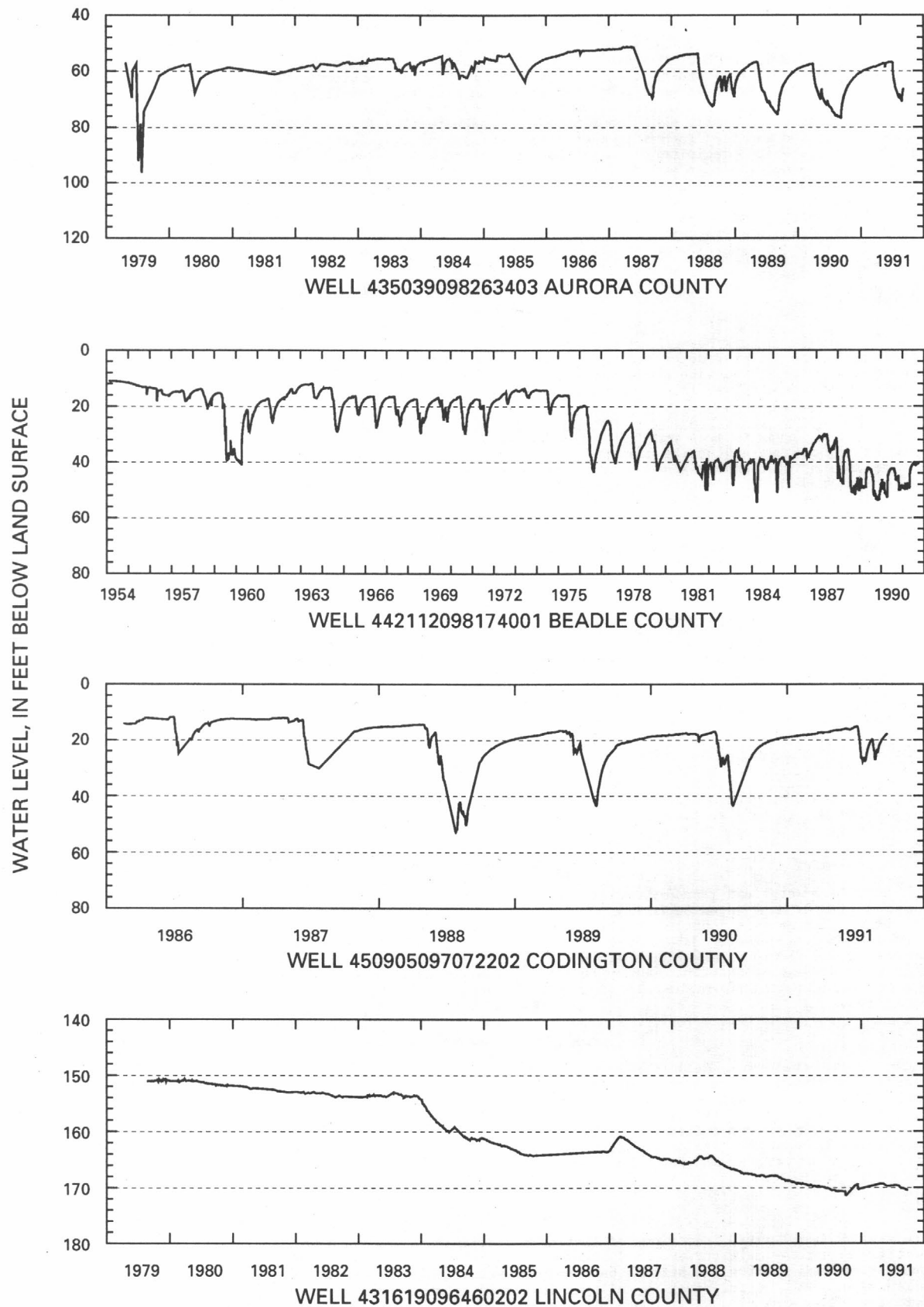


Figure 3.--Water levels from selected observation wells.

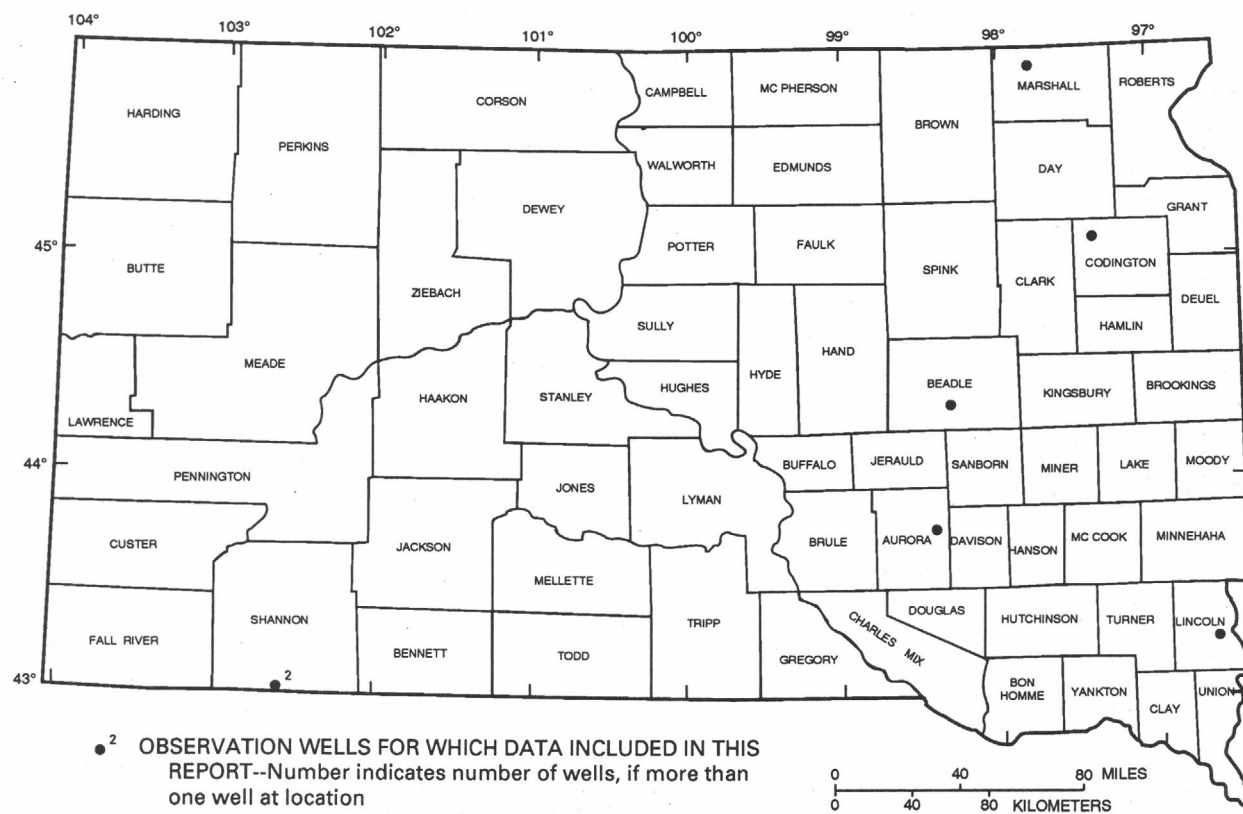
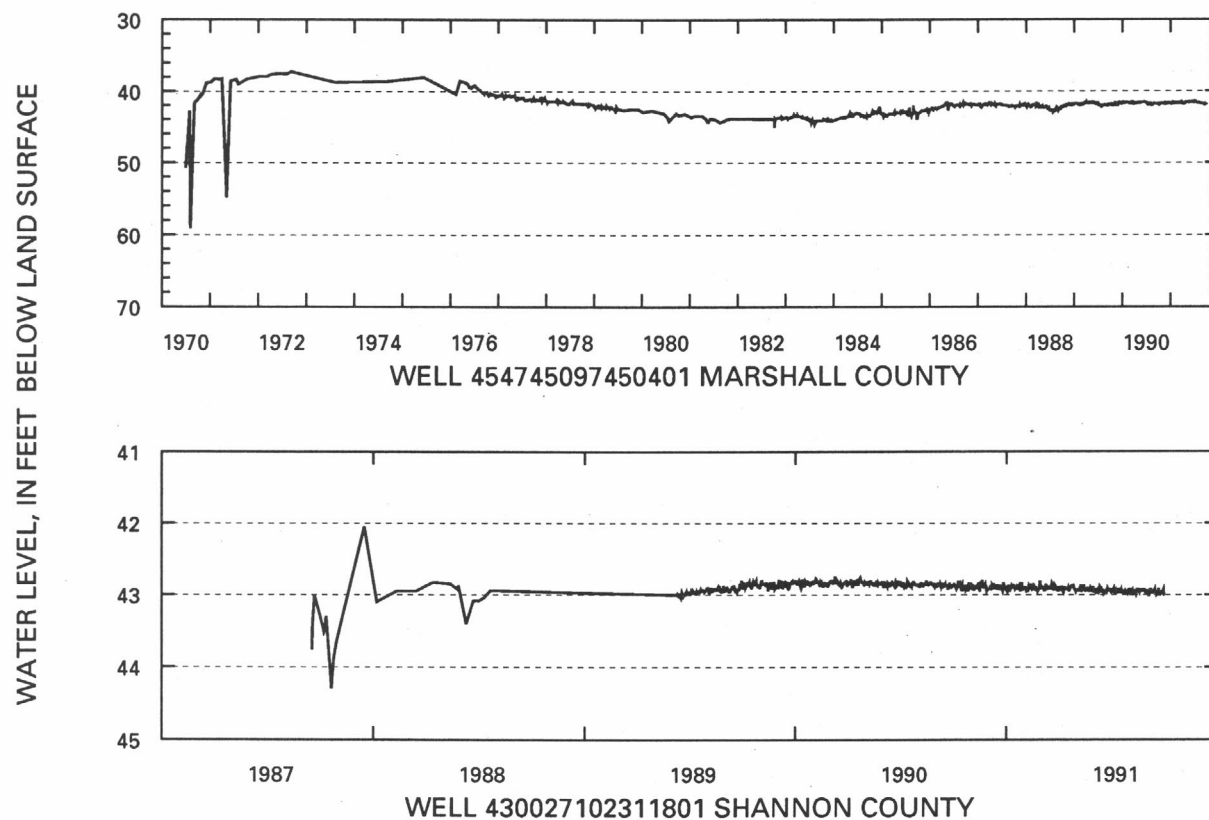
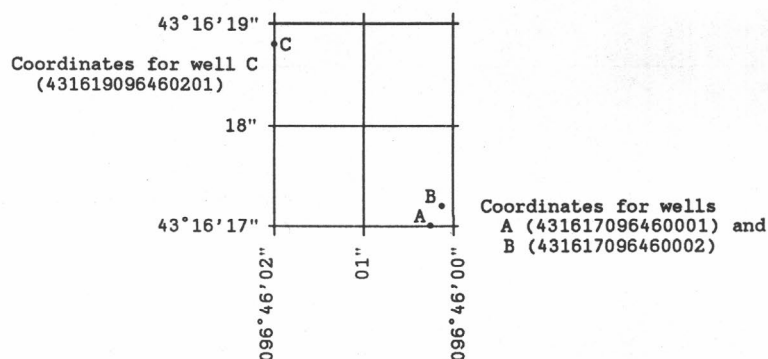


Figure 3.--Water levels from selected observation wells.--Continued

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 06442500, which appears just to the left of the station name, includes the two-digit Part number "06" plus the six-digit downstream-order number "442500." The Part number designates the major river basin; for example, part "06" is the Missouri River basin.

Latitude-Longitude System

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



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

Records of Stage and Water Discharge

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

Data Collection and Computation

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

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

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

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

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

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

Data Presentation

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

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

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

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

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

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

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

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

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

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

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

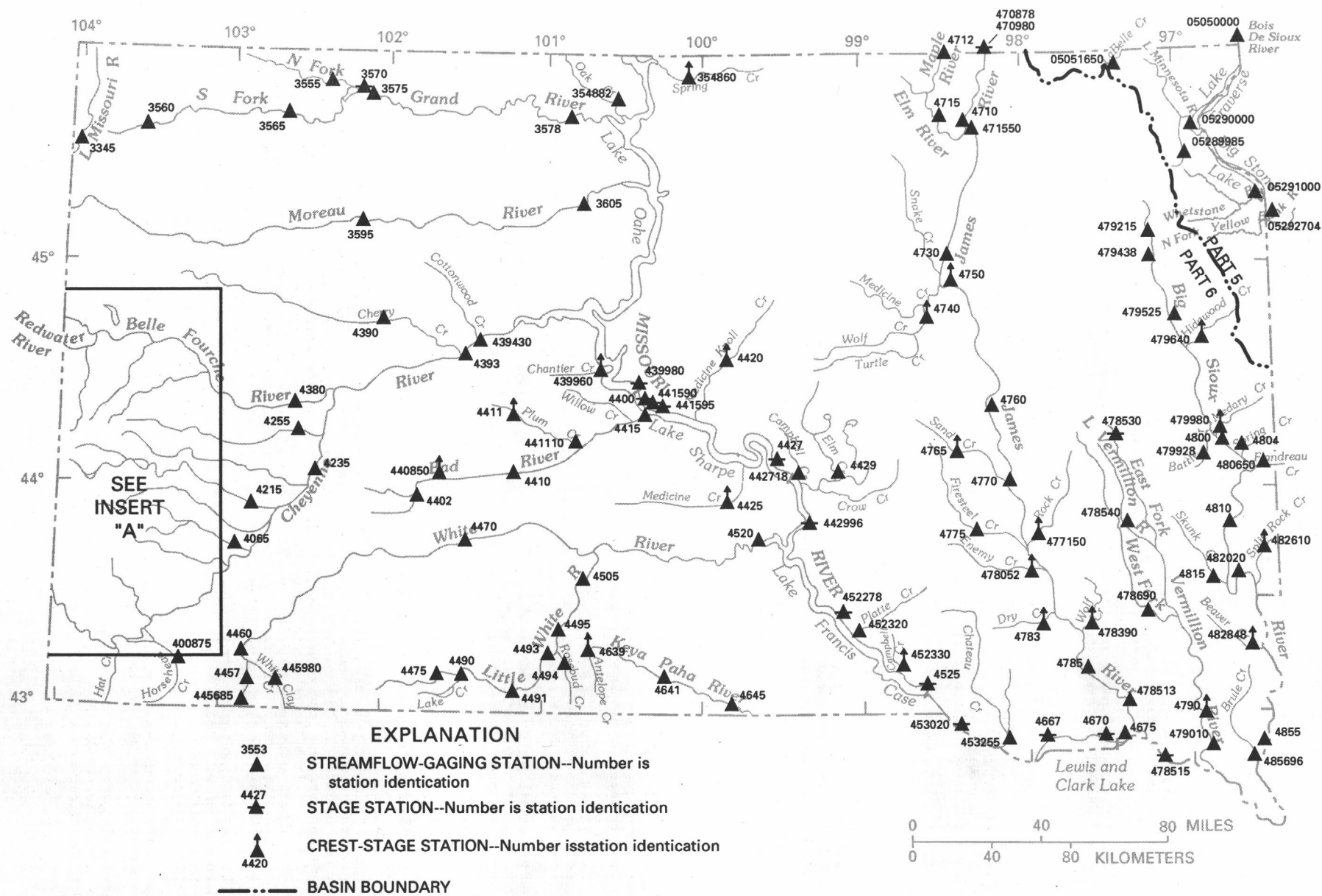


Figure 4.--Location of surface-water gaging stations.

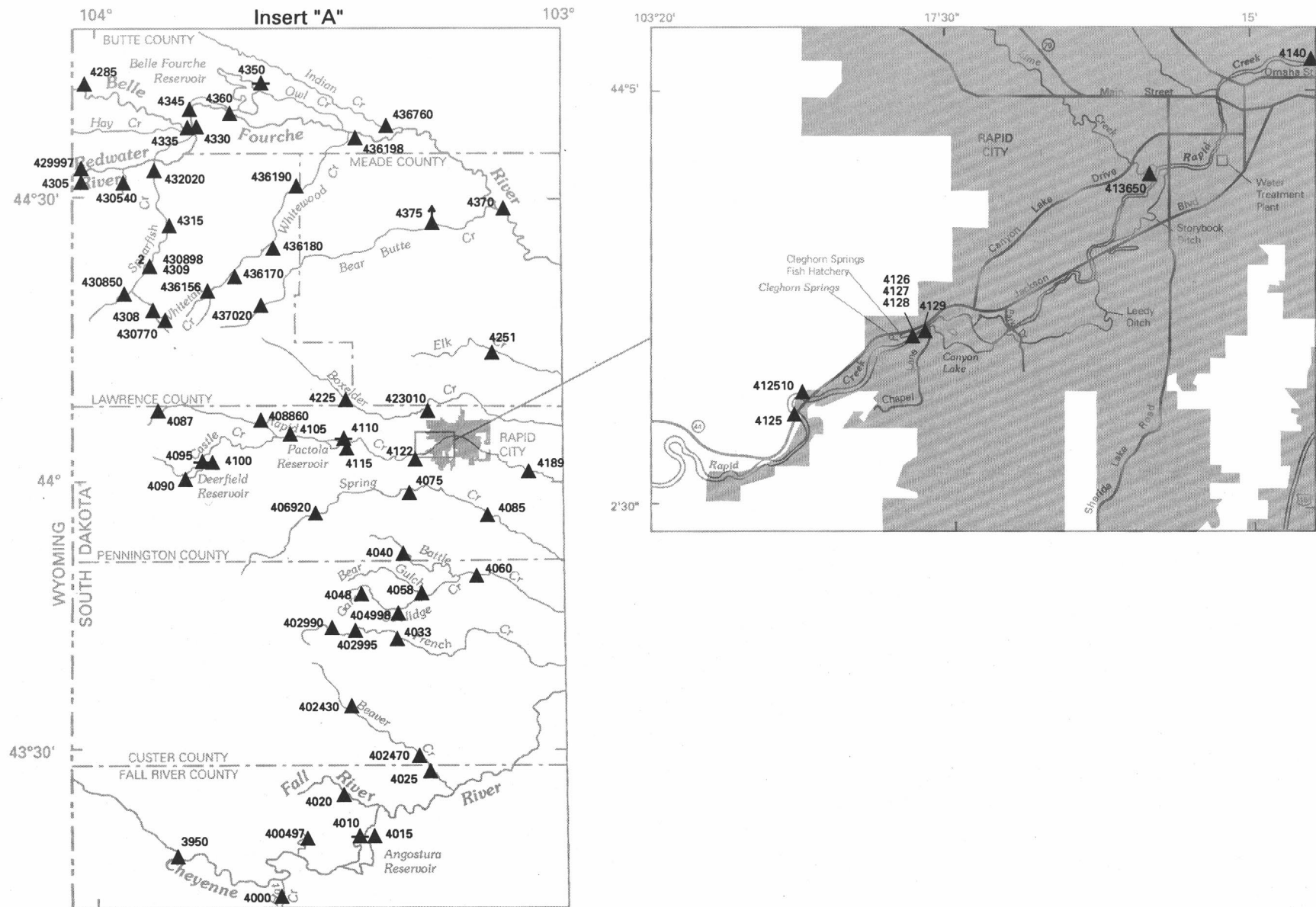


Figure 4.--Location of surface-water gaging stations.--Continued

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

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

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

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

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is expressed in acre-feet (line headed "AC-FT"). In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations daily observed discharges are adjusted for diversions. These stations are identified by a statement in the "Remarks" paragraph.

Accuracy of the Records

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

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

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

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

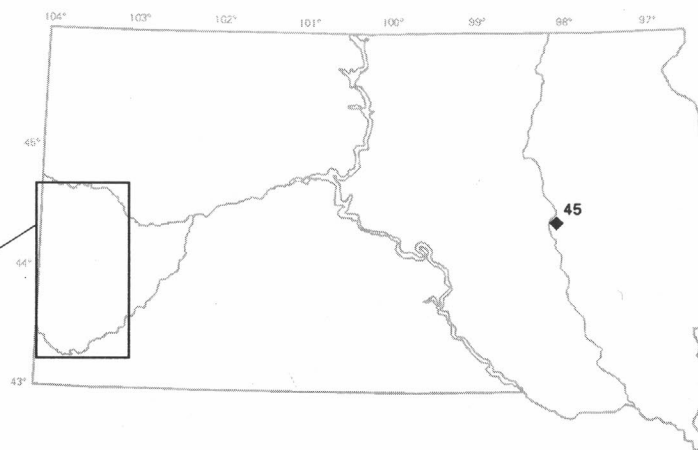
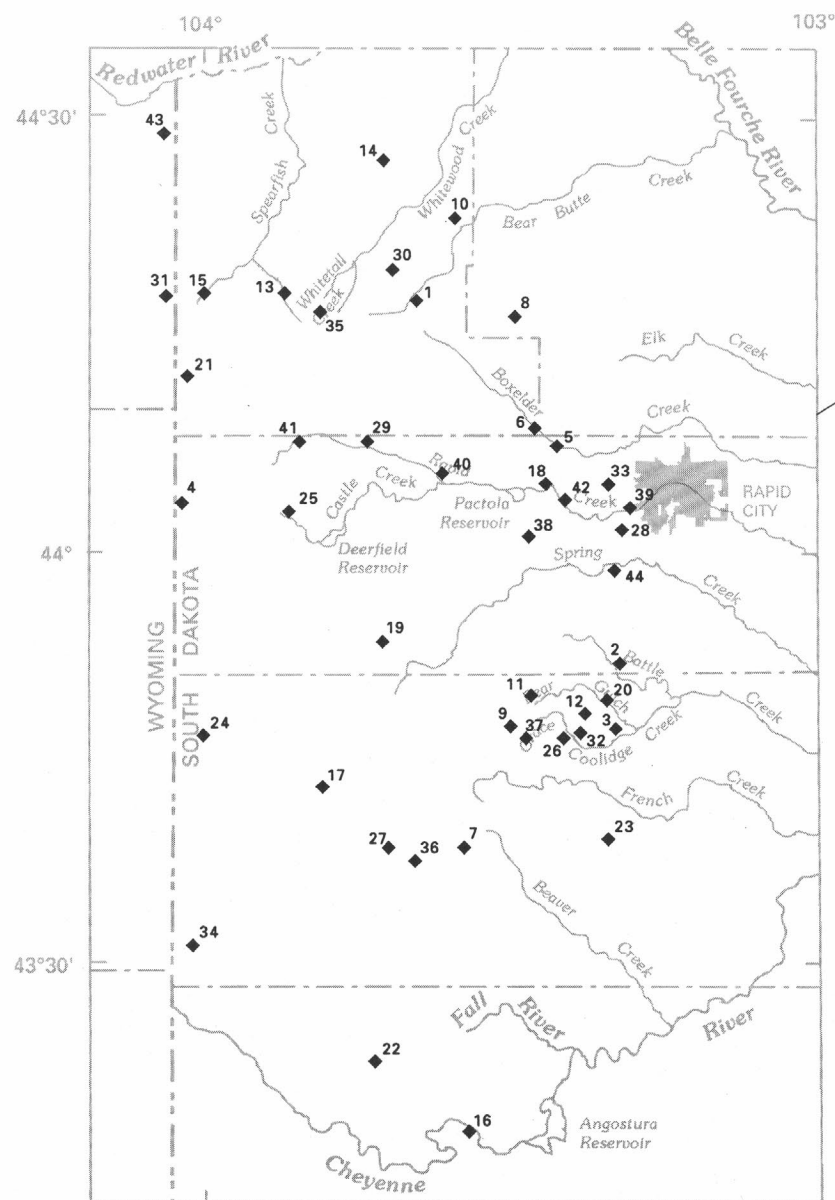
Records of Surface-Water Quality

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

Classification of Records

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

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records of the quality of surface water are shown in figure 6.



EXPLANATION

◆²

PRECIPITATION GAGING SITE--Number indicates site identification	
1	441859103385600
2	06404000
3	06405800
4	06392900
5	06422600
6	06422500
7	433758103353300
8	441716103300800
9	434732103305500
10	442343103363900
11	434939103272800
12	434807103235400
13	441832103523200
14	442745103434500
15	441852103594800
16	431806103351800
17	434358103494800
18	440501103262300
19	435355103432800
20	434928103214800
21	441207104012700
22	432343103421500
23	434002103214500
24	434751104005100
25	440242103520600
26	434638103253500
27	433848103443200
28	440022103195200
29	440756103450300
30	442104103414400
31	441810104062300
32	434645103240700
33	440444103215900
34	433212104010300
35	441632103482400
36	433702103411200
37	434534103290500
38	440001103300200
39	06412500
40	06408860
41	06408700
42	440424103254000
43	06429900
44	06407500
45	00430061

Figure 5.--Location of precipitation stations.

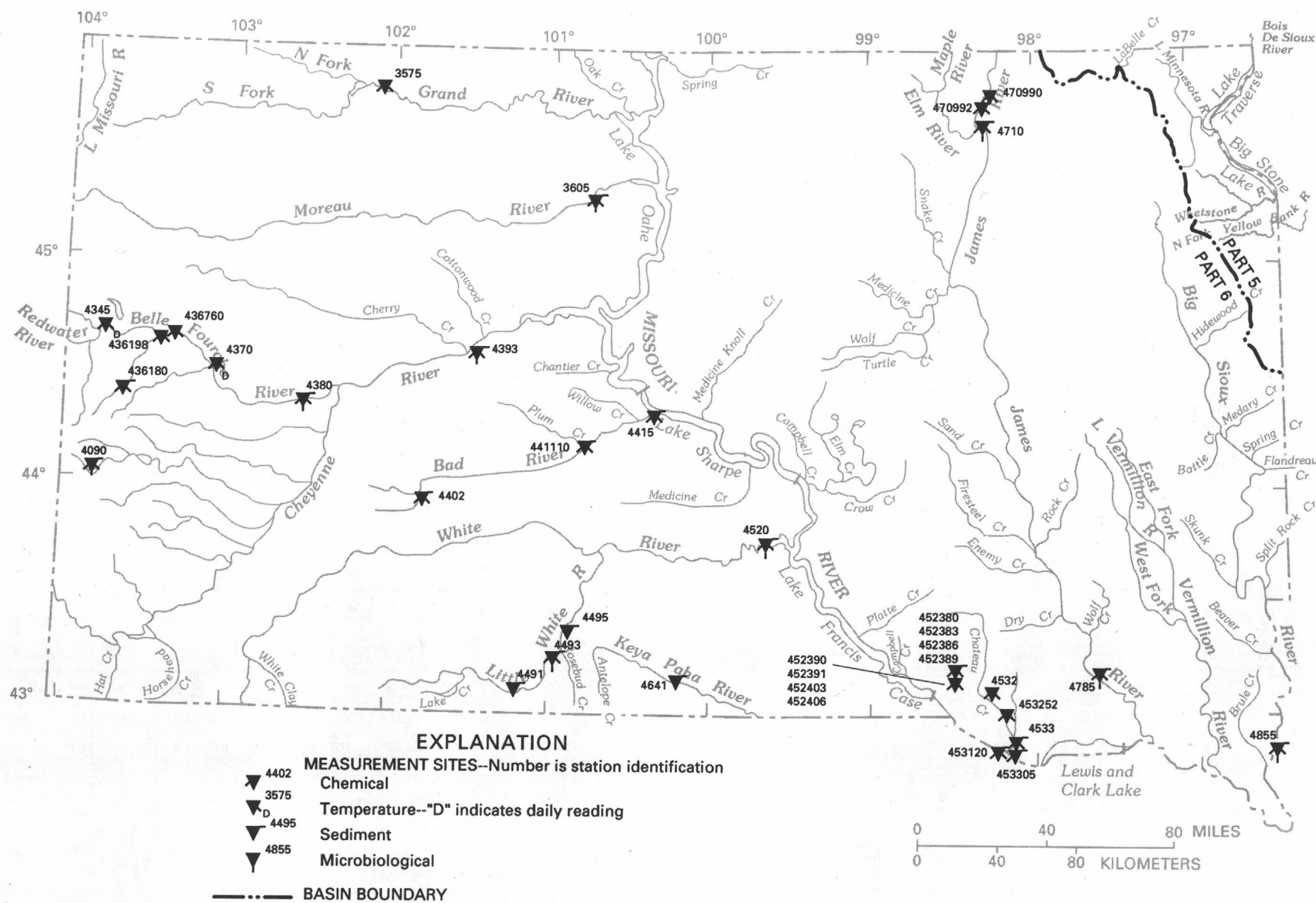


Figure 6.--Location of surface-water quality stations.

Arrangement of Records

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

Onsite Measurements and Sample Collection

In obtaining water-quality data, a major objective is assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed in the PUBLICATIONS OF TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS section. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey District office.

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

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis.

Historical and current (1991) dissolved trace-element concentrations are reported herein for water that was collected, processed, and analyzed by using either ultraclean or other than ultraclean techniques. If ultraclean techniques were used, then those concentrations are reported in nanograms per liter. If other than ultraclean techniques were used, then those concentrations are reported in micrograms per liter and could reflect contamination introduced during some phase of the procedure.

Water Temperature

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

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

Sediment

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

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

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

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

Laboratory Measurements

Samples for biochemical oxygen demand, indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratories in Arvada, Colo. or Iowa City, Ia. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratories are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

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

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

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

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

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

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

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

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

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

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

Remark Codes

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

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

Records of Ground-Water Levels

Records of water levels are presented for 7 wells. Records are obtained through cooperative efforts of many Federal, State, and local agencies for several thousand observation wells throughout South Dakota and are placed in computer storage. Information about the availability of the data in the water-level file may be obtained from the District Chief, South Dakota District. (See address on back of front page.)

Data Collection and Computation

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

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

Water-level records are obtained from direct measurements with a steel tape, from an analog chart or punched paper tape of a water-stage recorder, or from the memory of an electronic data logger. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Maximum depth to water level in wells equipped with recording gages is reported for each day.

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

Data Presentation

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

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, etc.), 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 dependant on the method of determination.

PERIOD OF RECORD.--This entry indicates the period for which there are records for the well. It reports the month and year of the start 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.

A table of water levels follows the station description for each well. Water levels are reported in feet above or below land-surface datum. Taped measurements of water level are listed for sites with no recording device. For wells equipped with recorders, generally, only daily water-level lows are listed for each day. Missing records are indicated by dashes in place of the water level.

Records of Ground-Water Quality

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

Data Collection and Computation

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

Historical and current (1991) dissolved trace-element concentrations are reported herein for water that was collected, processed, and analyzed by using either ultraclean or other than ultraclean techniques. If ultraclean techniques were used, then those concentrations are reported in nanograms per liter. If other than ultraclean techniques were used, then those concentrations are reported in micrograms per liter and could reflect contamination introduced during some phase of the procedure.

Data Presentation

Data for quality of ground water are identified by well number. The prime identification number for wells sampled is the 15-digit number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the well number, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water.

ACCESS TO WATSTORE DATA

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

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

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

DEFINITION OF TERMS

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

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

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

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

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

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

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

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

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

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

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

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

Bottom material: See Bed material.

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

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Micrograms per gram (UG/G, $\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

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

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

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

Organism is any living entity.

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

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

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

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

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

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

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

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

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

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

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

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

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Solute is any substance that is dissolved in water.

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

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

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

required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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

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

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

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

Kingdom.....	Animal
Phylum.....	Arthropoda
Class.....	Insecta
Order.....	Ephemeroptera
Family.....	Ephemeridae
Genus.....	<u>Hexagenia</u>
Species.....	<u>Hexagenia limbata</u>

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

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

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

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

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

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

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

Turbidity (NTU) is based on the comparison of the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension of Formazin polymer under the same conditions.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1986, is called the "1986 water year."

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

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

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

PUBLICATIONS OF TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Applications of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Applications of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W. Scott Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 pages.
- 2-F1. *Applications of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and Warren E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurements of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedures for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.

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- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
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- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
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- 3-A19. *Levels of streamflow gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 27 pages.
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- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by Richard L. Cooley and Richard L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 Pages.
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- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
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- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
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- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R. L. Wershaw, M. J. Fishman, R. R. Grabbe, and L. E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L. J. Britton and P. E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 pages.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

RED RIVER OF THE NORTH BASIN

05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, SD

LOCATION.--Lat 45°51'45", long 96°34'25", in SW¼SW¼ sec.27, T.128 N., R.47 W., Roberts County, Hydrologic Unit 09020101, on Sisseton Indian Reservation, on left bank just downstream from Big Slough Outlet, 300 ft downstream from White Rock Dam, 4 mi south of White Rock, and 5 mi northwest of Wheaton, MN.

DRAINAGE AREA.--1,160 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 960.00 ft, adjustment of 1912 (levels by U.S. Army Corps of Engineers). Prior to Jan. 14, 1943, nonrecording gage at same site at datum 0.11 ft lower. Jan. 15, 1943, to Sept. 30, 1963, water-stage recorder at same site at datum 0.11 ft lower.

REMARKS.--Records fair. Flow regulated by Lake Traverse-Boise de Sioux Flood Control and Water Conservation project (available capacity for flood control, 137,000 acre-ft).

AVERAGE DISCHARGE.--50 years, 80.1 ft³/s, 58,010 acre-ft/yr; median of yearly mean discharges, 54 ft³/s, 39,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,770 ft³/s, occurred during period Apr. 19-21, 1969, gage height, 15.07 ft, from floodmark; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 685 ft³/s, July 7, gage height, 11.14 ft; minimum daily discharge, 0.40 ft³/s, Jan. 16-31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	2.3	e.94	e.44	e.42	e.48	7.6	31	22	569	175	6.3
2	.83	2.7	e.88	e.44	e.45	e.48	6.3	32	28	581	169	6.1
3	.88	2.6	e.84	e.44	e.47	e.48	5.6	29	34	588	170	6.1
4	.83	2.2	e.80	e.44	e.48	e.48	5.4	30	35	585	166	5.9
5	.81	2.0	e.76	e.44	e.48	e.48	5.0	33	36	600	164	5.8
6	.89	1.9	e.72	e.44	e.48	e.48	4.8	32	34	656	160	5.6
7	.81	1.9	e.70	e.42	e.48	e.49	5.3	28	31	679	157	5.5
8	.78	1.8	e.68	e.42	e.48	e.50	5.6	24	27	676	127	6.2
9	.74	1.7	e.66	e.42	e.48	e.52	5.4	21	23	656	93	11
10	.71	1.6	e.62	e.42	e.48	e.54	4.8	18	19	632	91	29
11	.75	1.5	e.60	e.42	e.48	e.62	4.4	17	16	630	89	20
12	.73	1.4	e.60	e.42	e.48	e.70	4.9	14	13	641	88	9.7
13	.69	1.4	e.58	e.42	e.48	e.82	7.3	13	9.7	624	86	8.0
14	.74	1.4	e.56	e.42	e.48	e1.0	13	11	10	605	84	8.4
15	.72	1.6	e.56	e.42	e.48	e1.2	19	10	9.4	594	73	8.6
16	.76	1.6	e.54	e.40	e.48	e1.4	22	9.2	8.1	578	66	8.2
17	2.1	1.5	e.54	e.40	e.48	e1.7	22	8.0	6.3	560	67	7.8
18	1.1	1.5	e.52	e.40	e.48	e2.2	21	6.7	5.1	544	67	7.8
19	.91	1.6	e.52	e.40	e.48	e2.9	19	5.6	4.6	502	45	28
20	1.7	1.5	e.52	e.40	e.48	e3.4	15	5.2	40	448	9.0	51
21	2.1	2.0	e.50	e.40	e.48	e4.1	13	5.0	106	437	7.6	50
22	2.5	1.7	e.50	e.40	e.48	e5.0	12	4.6	116	432	7.6	53
23	3.3	e1.6	e.50	e.40	e.48	e6.5	11	4.8	91	423	7.4	79
24	3.3	e1.5	e.48	e.40	e.48	e8.4	9.2	5.1	69	416	7.1	107
25	3.2	e1.4	e.48	e.40	e.48	e11	7.9	4.0	235	374	7.2	107
26	3.5	e1.3	e.48	e.40	e.48	19	6.8	3.1	429	314	7.2	104
27	4.0	e1.2	e.48	e.40	e.48	24	8.0	2.7	422	279	6.8	103
28	2.7	e1.1	e.46	e.40	e.48	22	9.4	2.8	435	278	6.5	102
29	2.7	e1.1	e.46	e.40	---	16	11	6.6	455	274	7.3	101
30	2.6	e1.0	e.46	e.40	---	12	20	17	481	269	7.0	101
31	2.3	---	e.46	e.40	---	9.5	---	15	---	222	6.6	---
TOTAL	50.58	49.6	18.40	12.82	13.34	158.37	311.7	448.4	3250.2	15666	2224.3	1152.0
MEAN	1.63	1.65	.59	.41	.48	5.11	10.4	14.5	108	505	71.8	38.4
MAX	4.0	2.7	.94	.44	.48	24	22	33	481	679	175	107
MIN	.69	1.0	.46	.40	.42	.48	4.4	2.7	4.6	222	6.5	5.5
AC-FT	100	98	36	25	26	314	618	889	6450	31070	4410	2280

CAL YR 1990 TOTAL 1695.77 MEAN 4.65 MAX 77 MIN .00 AC-FT 3360
WTR YR 1991 TOTAL 23355.71 MEAN 64.0 MAX 679 MIN .40 AC-FT 46330

e Estimated

RED RIVER OF THE NORTH BASIN

29

05051650 LA BELLE CREEK NEAR VEBLEN, SD

LOCATION.--Lat 45°53'33", long 97°21'40", in SW¼SW¼SW¼SE¼ sec.1, T.128 N., R.54 W., Marshall County, Hydrologic Unit 09020105, on right bank 5 ft downstream from highway bridge, 3.0 mi west of Veblen on State Highway 25, 2.0 mi north, and 0.5 mi west.

DRAINAGE AREA.--8.74 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,330 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges and July 7-27, which are poor. Satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77 ft³/s, June 20, 1991, gage height, 5.04 ft; maximum gage height, 8.58 ft, Mar. 26, 1989, backwater from ice; no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 20	0500	*77	*5.04	June 30	2145	50	4.82
June 28	0945	20	4.41	July 27	0745	33	4.63

No flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.17	.48	1.1	.41	12	1.7	e.14
2	.00	.00	.00	.00	.00	e.15	.56	.65	.34	7.6	1.4	e.13
3	.00	.00	.00	.00	.00	e.15	.61	2.1	.32	6.1	1.5	e.13
4	.00	.00	.00	.00	.00	e.17	.58	2.2	.92	5.1	.75	e.12
5	.00	.00	.00	.00	.00	e.19	.55	.82	.48	4.2	.63	e.11
6	.00	.00	.00	.00	.00	e.28	.55	.62	.37	3.5	.57	e.11
7	.00	.00	.00	.00	.00	e.29	.53	.53	.31	3.3	.51	e.13
8	.00	.00	.00	.00	.00	e.20	.50	.48	.25	3.1	.46	e.15
9	.00	.00	.00	.00	.00	e.20	.48	.46	.25	2.8	.39	e.16
10	.00	.00	.00	.00	.00	e.29	.48	.42	.33	2.5	e.34	e.16
11	.00	.00	.00	.00	.00	e.34	.51	.40	.25	3.4	e.30	e.15
12	.00	.00	.00	.00	.00	e.35	.59	.42	.17	3.2	e.28	e.15
13	.00	.00	.00	.00	.00	e.25	.68	.48	.10	2.7	e.24	e.15
14	.00	.00	.00	.00	.00	e.20	.78	.43	.97	1.4	e.20	e.17
15	.00	.00	.00	.00	.00	e.20	1.1	.47	.51	1.6	e.18	e.16
16	.00	.00	.00	.00	.00	e.24	.97	.41	.44	1.6	e.17	e.15
17	.00	.00	.00	.00	.00	e.40	.77	.35	.32	1.4	e.16	e.14
18	.00	.00	.00	.00	.00	.52	.65	.27	.25	1.3	e.16	e.13
19	.00	.00	.00	.00	.00	.73	.57	.25	.41	1.1	e.16	e.10
20	.00	.00	.00	.00	e.20	.78	.52	.21	29	1.1	e.16	e.09
21	.00	.00	.00	.00	e.26	.66	.52	.15	8.6	1.4	e.17	e.08
22	.00	.00	.00	.00	e.32	.47	.49	.10	7.7	1.3	e.18	e.07
23	.00	.00	.00	.00	e.34	.43	.46	.16	7.0	1.2	e.18	e.06
24	.00	.00	.00	.00	e.26	.45	.44	.13	5.9	.94	e.17	e.05
25	.00	.00	.00	.00	e.20	.54	.45	.08	4.9	.72	e.16	e.04
26	.00	.00	.00	.00	e.20	.55	.45	.08	4.0	.72	e.16	e.04
27	.00	.00	.00	.00	e.20	.43	.54	.07	3.6	8.2	e.16	e.03
28	.00	.00	.00	.00	e.19	.37	.47	.06	8.6	3.6	e.15	e.02
29	.00	.00	.00	.00	---	.35	.58	.29	5.3	3.3	e.16	e.02
30	.00	.00	.00	.00	---	.40	3.2	.30	11	2.9	e.15	e.01
31	.00	---	.00	.00	---	.45	---	.84	---	1.8	e.15	---
TOTAL	0.00	0.00	0.00	0.00	2.17	11.20	20.06	15.33	103.00	95.08	12.05	3.15
MEAN	.000	.000	.000	.000	.077	.36	.67	.49	3.43	3.07	.39	.10
MAX	.00	.00	.00	.00	.34	.78	3.2	2.2	.29	12	1.7	.17
MIN	.00	.00	.00	.00	.00	.15	.44	.06	.10	.72	.15	.01
AC-FT	.00	.00	.00	.00	4.3	22	40	30	204	189	24	6.2

CAL YR 1990 TOTAL 20.54 MEAN .056 MAX .77 MIN .00 AC-FT 41
WTR YR 1991 TOTAL 262.04 MEAN .72 MAX 29 MIN .00 AC-FT 520

e Estimated

MINNESOTA RIVER BASIN

05289985 BIG COULEE CREEK NEAR PEEVER, SD

LOCATION.--Lat 45°29'14", long 96°57'26", in SW¼SW¼SW¼ sec.29, T.124 N., R.50 W., Roberts County, Hydrologic Unit 07020001, on right downstream side of county highway bridge, 3.9 mi south of Peever.

DRAINAGE AREA.--12.1 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,240 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 456 ft³/s, June 21, 1991, gage height, 8.21 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 4	1530	139	5.96	Aug. 2	1045	134	5.90
June 21	0200	*456	*8.21	Sept. 9	--	50	(a)
July 22	0300	398	7.89				

a Backwater from beaver dam.
No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.02	e.01	e.00	e.00	e.00	2.5	5.5	7.5	11	4.3	e.30
2	.00	e.02	e.01	e.00	e.00	e.00	2.7	3.9	5.7	4.0	48	e.20
3	.00	e.02	e.00	e.00	e.00	e.01	3.0	5.1	4.7	2.8	8.7	e.20
4	.00	e.02	e.00	e.00	e.00	e.02	3.2	15	58	2.3	5.4	e.15
5	.00	e.02	e.02	e.00	e.00	e.04	3.3	6.9	29	2.0	4.7	e.10
6	.00	e.02	e.03	e.00	e.00	e.02	3.4	5.3	12	1.7	2.9	e.07
7	.00	e.02	e.04	e.00	e.00	e.02	3.4	4.4	6.5	1.5	.86	e.05
8	.00	e.02	e.06	e.00	e.00	e.03	3.0	3.8	4.3	1.2	3.2	e.20
9	.00	e.02	e.07	e.00	e.00	e.05	2.9	3.7	3.6	1.1	1.2	e20
10	.00	e.02	e.10	e.00	e.00	e.10	2.9	3.5	2.9	1.2	.84	e6.0
11	.00	e.02	e.08	e.00	e.00	e.15	2.8	3.3	2.1	1.3	.40	e5.0
12	.00	e.02	e.06	e.00	e.00	e.10	3.6	3.0	1.9	2.1	.99	e4.0
13	.00	e.02	e.06	e.00	e.00	e.08	4.8	2.8	1.2	2.2	.66	e3.7
14	.00	e.02	e.04	e.00	e.00	e.07	5.6	2.8	1.4	1.4	.34	e3.5
15	.00	e.02	e.04	e.00	e.00	e.10	6.5	2.9	2.4	.83	.57	e3.3
16	.00	e.02	e.03	e.00	e.00	e.15	5.7	2.9	1.3	.27	.78	e3.0
17	.00	e.02	e.02	e.00	e.00	e.20	5.3	2.7	.60	.10	1.2	e3.0
18	e.01	e.02	e.02	e.00	e.00	e.30	4.4	2.6	.22	.06	1.2	e2.8
19	.00	e.02	e.02	e.00	e.00	e.60	3.9	2.5	.11	.11	.87	e2.6
20	.00	e.02	e.01	e.00	e.00	e1.5	3.5	2.3	32	.09	1.2	e2.5
21	.00	e.02	e.00	e.00	e.00	e2.0	3.1	2.2	118	9.7	1.4	e2.0
22	.00	e.02	e.00	e.00	e.00	e3.0	3.0	2.0	10	110	e2.0	e2.0
23	.00	e.02	e.00	e.00	e.00	e4.0	2.9	2.7	5.4	6.4	e3.0	e2.0
24	.00	e.02	e.00	e.00	e.00	5.0	2.8	2.6	4.1	3.6	e5.0	e1.5
25	.00	e.01	e.00	e.00	e.00	5.9	2.7	2.3	3.2	2.9	e4.0	e1.5
26	.00	e.01	e.00	e.00	e.00	4.9	2.6	1.9	2.6	2.3	e3.0	e1.4
27	.00	e.01	e.00	e.00	e.00	4.0	3.1	1.8	2.5	37	e2.0	e1.3
28	.00	e.01	e.00	e.00	e.00	3.2	2.3	2.1	2.5	19	e1.0	e1.2
29	e.01	e.01	e.00	e.00	---	3.1	2.9	6.8	2.4	6.4	e.60	e1.1
30	e.01	e.01	e.00	e.00	---	2.6	6.5	6.6	4.2	5.0	e.40	e1.0
31	e.02	---	e.00	e.00	---	2.8	---	7.7	---	3.9	e.30	---
TOTAL	0.05	0.54	0.72	0.00	0.00	44.04	108.3	123.6	332.33	243.46	111.01	75.67
MEAN	.002	.018	.023	.000	.000	1.42	3.61	3.99	11.1	7.85	3.58	2.52
MAX	.02	.02	.10	.00	.00	5.9	6.5	15	118	110	48	20
MIN	.00	.01	.00	.00	.00	.00	2.3	1.8	.11	.06	.30	.05
AC-FT	.1	1.1	1.4	.00	.00	87	215	245	659	483	220	150

CAL YR 1990 TOTAL 218.69 MEAN .60 MAX 20 MIN .00 AC-FT 434
WTR YR 1991 TOTAL 1039.72 MEAN 2.85 MAX 118 MIN .00 AC-FT 2060

e Estimated

MINNESOTA RIVER BASIN

31

05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, SD

LOCATION.--Lat 45°36'05", long 96°52'18", in SW¼ sec.13, T.125 N., R.50 W., Roberts County, Hydrologic Unit 07020001, on Sisseton Indian Reservation, on right bank 2 mi northwest of town of Browns Valley, MN, 5.3 mi northeast of Peever, 7.2 mi downstream from Jorgenson River, and 8 mi upstream from Big Stone Lake.

DRAINAGE AREA.--447 mi².

PERIOD OF RECORD.--October 1939 to September 1981, October 1989 to current year.

REVISED RECORDS.--WSP 1308: 1943(M).

GAGE.--Water-stage recorder. Datum of gage is 1,002.20 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1939, to Mar. 20, 1940, nonrecording gage at site 4.5 mi downstream at different datum. Mar. 21 to Apr. 12, 1940, nonrecording gage at site 100 ft downstream at present datum. April 13 to Aug. 27, 1940, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--44 years, 43.0 ft³/s, 31,150 acre-ft/yr; median of yearly mean discharges, 32 ft³/s, 23,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,730 ft³/s, Apr. 8, 1952, gage height, 12.16 ft; maximum gage height, 13.35 ft, Mar. 25, 1943, from floodmark (backwater from ice); no flow at times in 1940, 1942, 1950, 1954, 1957, 1959, 1963, 1968, 1976, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 22	0930	*891	*5.77	July 23	1130	548	4.87
July 4	1300	513	4.78	July 28	2400	639	5.09

Minimum daily discharge, 0.19 ft³/s, Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	.58	.62	.49	e.74	.59	12	35	56	431	247	17
2	.22	.58	.60	.42	.75	.55	11	50	56	486	222	16
3	.31	.57	.59	.42	1.0	.55	10	43	56	436	304	14
4	.28	.58	.63	e.45	.99	1.5	10	63	75	500	230	13
5	.23	.57	.67	.49	.84	1.8	10	128	204	485	175	12
6	.34	.68	.67	.51	.83	1.9	11	113	356	437	149	11
7	.37	.66	.72	e.50	.72	3.9	11	96	263	388	134	10
8	.35	.94	.71	.39	.72	4.0	10	87	235	332	127	11
9	.35	.82	.71	.43	.68	33	9.7	71	186	281	127	21
10	.35	.62	.77	e.60	.65	38	9.2	60	155	238	112	109
11	.38	.61	.74	e.60	.61	25	8.8	51	128	210	96	85
12	.38	.63	.74	.65	.63	18	11	45	101	196	83	52
13	.38	.56	.70	.67	.64	13	15	39	82	184	73	44
14	.39	.57	.68	.71	.69	15	23	34	69	167	66	43
15	.42	.56	.76	.76	.75	14	35	32	63	147	60	55
16	.44	.51	.69	.76	.58	16	41	27	58	126	56	57
17	.70	.48	.69	.77	.55	15	41	24	53	111	52	45
18	.62	.49	.67	.71	.59	14	33	22	46	135	49	39
19	.58	.51	.73	.83	.58	17	27	20	40	136	44	34
20	.54	.59	.78	.91	.60	46	22	16	49	121	42	30
21	.52	.59	.72	.84	.85	83	18	13	204	114	41	27
22	.55	.59	.66	.84	.74	99	16	11	712	207	39	25
23	.58	.59	.61	.83	.65	69	14	9.9	399	485	37	22
24	.55	.60	.86	.77	.67	42	13	8.4	295	230	34	20
25	.58	.54	.79	.76	.70	35	11	6.7	258	169	35	18
26	.75	.61	.60	.57	.60	36	10	5.7	231	145	31	17
27	.56	.62	.62	.46	.58	36	10	5.3	233	206	27	17
28	.49	.59	.78	.56	.60	27	9.7	5.1	259	536	23	16
29	.51	.59	.63	.58	---	22	12	8.8	299	532	21	15
30	.53	.59	.41	.58	---	19	18	8.9	310	375	19	14
31	.53	---	.32	e.72	---	15	---	25	---	303	18	---
TOTAL	13.97	18.02	20.87	19.58	19.53	761.79	492.4	1163.8	5531	8849	2773	909
MEAN	.45	.60	.67	.63	.70	24.6	16.4	37.5	184	285	89.5	30.3
MAX	.75	.94	.86	.91	1.0	99	41	128	712	536	304	109
MIN	.19	.48	.32	.39	.55	.55	8.8	5.1	40	111	18	10
AC-FT	28	36	41	39	39	1510	977	2310	10970	17550	5500	1800

CAL YR 1990 TOTAL 2218.14 MEAN 6.08 MAX 173 MIN .16 AC-FT 4400
WTR YR 1991 TOTAL 20571.96 MEAN 56.4 MAX 712 MIN .19 AC-FT 40800

e Estimated

MINNESOTA RIVER BASIN

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD

LOCATION.--Lat 45°17'32", long 96°29'14", in SE¼NW¼ sec.18, T.121 N., R.46 W., Grant County, Hydrologic Unit 07020001, on right bank 20 ft downstream from former highway bridge site, 1.5 mi west of Big Stone City, and 4.5 mi upstream from Big Stone Lake.

DRAINAGE AREA.--389 mi².

PERIOD OF RECORD.--March 1910 to November 1912 (no winter records), and March 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 895: Drainage area. WSP 1308: 1932(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 996.96 ft, adjustment of 1912. Mar. 8, 1910, to Nov. 30, 1912, nonrecording gage 2 mi downstream at different datum. Mar. 18, 1931, to May 3, 1939, nonrecording gage, at site 20 ft upstream at present datum. May 4, 1939, to Nov. 8, 1952, water-stage recorder at site 80 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--60 years (water years 1932-91), 49.7 ft³/s, 35,970 acre-ft/yr; median of yearly mean discharges, 35 ft³/s, 25,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,870 ft³/s, Apr. 8, 1969, gage height, 14.32 ft from floodmark; no flow at times in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 26 ft in June 1919, present site and datum, from information by local resident, discharge 29,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 5	2130	937	6.57	Aug. 3	1100	*3,270	*10.40
June 22	1215	633	5.54	Aug. 9	0430	633	5.36
July 2	0215	2,070	8.68	Sept. 11	0930	270	3.91
July 23	0600	777	5.84				

Minimum daily discharge, 2.1 ft³/s, Oct. 1.

MINNESOTA RIVER BASIN

33

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.6	3.7	e3.8	e3.8	e5.8	15	24	95	810	307	47
2	2.3	2.4	3.8	e3.8	e3.8	e6.0	14	34	126	1510	927	39
3	3.3	2.5	3.8	e3.8	e3.8	e6.4	13	35	96	659	2720	34
4	3.4	2.4	3.8	e3.8	e3.8	e6.7	13	36	170	369	1420	31
5	5.5	2.5	3.9	e3.8	e3.8	e7.0	13	41	734	e250	627	26
6	3.3	2.5	4.2	e3.8	e3.9	e7.4	13	55	812	e200	365	24
7	4.5	2.5	4.5	e3.8	e3.9	e7.7	13	52	572	e160	307	25
8	3.5	2.5	4.6	e3.8	e3.9	e8.1	13	41	367	e125	440	35
9	2.5	3.2	4.4	e3.8	e3.9	e8.6	14	36	e233	e100	580	38
10	2.4	3.2	4.3	e3.8	e3.9	e9.3	13	31	e180	e80	371	146
11	2.4	3.3	4.3	e3.8	e4.0	e9.8	12	28	e140	e62	e290	256
12	2.4	3.3	4.2	e3.8	e4.0	e10	15	24	e115	e54	e220	148
13	2.4	3.9	e4.2	e3.8	e4.0	e11	20	21	e95	e47	e180	84
14	2.4	3.9	e4.2	e3.8	e4.1	e12	32	18	e84	e38	e150	69
15	2.5	5.2	e4.2	e3.8	e4.1	e13	49	17	e81	e34	e130	67
16	2.8	4.7	e4.2	e3.8	e4.2	e14	48	44	e75	e29	e110	70
17	4.0	4.8	e4.2	e3.8	e4.2	e15	48	38	e63	e25	e98	59
18	4.7	4.3	e4.2	e3.8	e4.3	e16	40	33	e53	e22	e80	50
19	3.9	3.9	e4.2	e3.8	e4.4	e22	33	33	e49	21	72	45
20	4.1	4.2	e4.2	e3.8	e4.5	e30	26	24	e56	19	70	40
21	4.4	4.1	4.2	e3.8	e4.6	e46	22	18	e260	27	67	36
22	3.6	3.9	e4.2	e3.8	e4.7	e55	19	15	569	539	65	32
23	3.0	3.4	e4.2	e3.8	e4.8	e64	17	13	486	734	60	30
24	2.7	3.5	e4.2	e3.8	e4.9	e51	16	11	314	662	57	30
25	2.5	3.2	e4.1	e3.8	e5.0	e34	14	9.2	275	400	55	27
26	2.5	3.1	e4.1	e3.8	e5.2	e29	13	7.7	277	300	54	25
27	2.6	3.4	e4.0	e3.8	e5.4	e24	15	7.3	279	307	47	24
28	2.5	3.2	e3.9	e3.8	e5.6	e21	14	9.9	281	429	40	23
29	2.7	3.2	e3.9	e3.8	---	e20	15	22	284	456	80	22
30	3.3	3.5	e3.9	e3.8	---	17	20	33	312	363	98	21
31	2.7	---	e3.9	e3.8	---	16	---	81	---	302	64	---
TOTAL	96.9	102.3	127.7	117.8	120.5	602.8	622	892.1	7533	9133	10151	1603
MEAN	3.13	3.41	4.12	3.80	4.30	19.4	20.7	28.8	251	295	327	53.4
MAX	5.5	5.2	4.6	3.8	5.6	64	49	81	812	1510	2720	256
MIN	2.1	2.4	3.7	3.8	3.8	5.8	12	7.3	49	19	40	21
AC-FT	192	203	253	234	239	1200	1230	1770	14940	18120	20130	3180

CAL YR 1990 TOTAL 3009.09 MEAN 8.24 MAX 217 MIN .29 AC-FT 5970
WTR YR 1991 TOTAL 31102.1 MEAN 85.2 MAX 2720 MIN 2.1 AC-FT 61690

e Estimated

MINNESOTA RIVER BASIN

05292704 NORTH FORK YELLOW BANK RIVER NEAR ODESSA, MN

LOCATION.--Lat 45°11'21", long 96°24'54", in NW¼NW¼SW¼ sec.22, T.120 N., R.46 W., Lac qui Parle County, Hydrologic Unit 07020001, on left bank at upstream side of County Highway #7 bridge, 11.0 mi east-southeast of Milbank, 6.4 mi southwest of Odessa, and 2.9 mi upstream from mouth.

DRAINAGE AREA.--Undetermined.

PERIOD OF RECORD.--May to September 1991.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,020 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period May to September, 1,240 ft³/s at 0700 hours, June 22, gage height, 12.32 ft; minimum daily discharge, 6.0 ft³/s, Sept. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	13	147	390	59	20
2	---	---	---	---	---	---	---	12	193	575	191	19
3	---	---	---	---	---	---	---	15	130	275	877	18
4	---	---	---	---	---	---	---	17	461	166	622	18
5	---	---	---	---	---	---	---	15	474	121	279	18
6	---	---	---	---	---	---	---	16	484	96	189	16
7	---	---	---	---	---	---	---	17	329	76	161	16
8	---	---	---	---	---	---	---	15	175	63	189	17
9	---	---	---	---	---	---	---	13	112	54	312	17
10	---	---	---	---	---	---	---	12	80	46	198	17
11	---	---	---	---	---	---	---	11	59	41	143	19
12	---	---	---	---	---	---	---	10	48	38	112	19
13	---	---	---	---	---	---	---	9.0	38	35	91	18
14	---	---	---	---	---	---	---	7.9	30	30	76	19
15	---	---	---	---	---	---	---	8.0	29	27	66	20
16	---	---	---	---	---	---	---	8.4	24	24	59	17
17	---	---	---	---	---	---	---	104	20	22	55	17
18	---	---	---	---	---	---	---	59	17	20	51	17
19	---	---	---	---	---	---	---	30	15	19	46	16
20	---	---	---	---	---	---	---	21	23	18	44	16
21	---	---	---	---	---	---	---	15	216	30	42	17
22	---	---	---	---	---	---	---	13	1080	292	39	14
23	---	---	---	---	---	---	---	11	476	232	36	13
24	---	---	---	---	---	---	---	9.7	239	161	33	15
25	---	---	---	---	---	---	---	8.7	168	83	31	e14
26	---	---	---	---	---	---	---	8.2	126	56	29	e12
27	---	---	---	---	---	---	---	8.0	133	64	26	e11
28	---	---	---	---	---	---	---	10	251	84	24	e9.0
29	---	---	---	---	---	---	---	84	328	118	23	e7.0
30	---	---	---	---	---	---	---	150	254	104	21	e6.0
31	---	---	---	---	---	---	---	136	---	75	21	---
TOTAL	---	---	---	---	---	---	---	866.9	6159	3435	4145	472.0
MEAN	---	---	---	---	---	---	---	28.0	205	111	134	15.7
MAX	---	---	---	---	---	---	---	150	1080	575	877	20
MIN	---	---	---	---	---	---	---	7.9	15	18	21	6.0
AC-FT	---	---	---	---	---	---	---	1720	12220	6810	8220	936

e Estimated

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, SD

LOCATION.--Lat 45°32'49", long 103°58'23", in SW $\frac{1}{4}$ sec.2, T.18 N., R.1 E., Harding County, Hydrologic Unit 10110201, on left bank 15 ft upstream from bridge on State Highway 20 at east edge of Camp Crook.

DRAINAGE AREA.--1,970 mi², approximately.

PERIOD OF RECORD.--September 1903 to November 1906, May 1956 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1904. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,108.98 ft above National Geodetic Vertical Datum of 1929. Sept. 2, 1903, to Nov. 30, 1906, nonrecording gage at site 0.5 mi upstream at different datum. May 1956 to Oct. 8, 1957, nonrecording gage at site 15 ft downstream, and Oct. 9, 1957, to Sept. 30, 1976, water-stage recorder at present site both at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Small diversions upstream from station for irrigation. National Weather Service gage-height telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--38 years, 123 ft³/s, 89,110 acre-ft/yr; median of yearly mean discharges, 103 ft³/s, 74,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s, Mar. 24, 1978, gage height, 16.90 ft, present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1952 reached a stage of about 18 ft, present datum, from local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0730	*307	*4.37				

Minimum daily discharge, 0.13 ft³/s, Aug. 26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	e2.1	e2.5	e1.4	e3.0	e2.4	5.7	185	168	6.7	.47	.27
2	1.1	e2.0	e2.4	e1.2	e5.5	e2.2	5.4	149	134	5.2	2.6	.26
3	1.0	e2.0	e2.4	e1.0	5.9	3.1	5.6	103	121	4.3	6.7	.30
4	1.2	e1.9	e2.5	e1.0	5.7	3.6	5.6	73	91	3.1	3.6	.31
5	1.3	e2.0	e2.6	e1.0	5.3	4.1	5.7	58	66	1.8	2.1	.31
6	1.3	e2.0	e2.6	e1.0	5.1	4.1	5.8	44	49	1.7	8.8	.32
7	1.1	e1.9	e2.9	e1.0	5.1	3.8	5.9	33	40	.80	13	.34
8	1.3	e2.0	e3.2	e1.0	4.9	3.4	6.4	27	33	.90	8.5	.29
9	1.3	e2.0	e3.0	e1.0	4.8	3.6	7.2	22	27	.84	3.1	.35
10	1.4	e2.1	e2.8	e1.1	4.8	4.7	8.3	19	24	.67	1.6	2.3
11	1.3	e2.2	2.7	e1.3	4.9	4.8	9.1	17	20	.81	1.3	2.6
12	1.3	e2.2	2.5	e1.6	5.2	5.1	8.9	36	60	.73	.84	1.2
13	1.4	e2.2	2.6	e1.9	5.1	5.0	9.3	32	84	.64	.65	.66
14	1.4	e2.3	2.6	e1.8	5.2	5.2	7.9	21	50	.67	.53	.59
15	1.5	e2.4	2.6	e1.7	4.9	5.2	8.5	109	38	.53	.34	.47
16	1.5	e2.3	2.6	e1.6	4.9	5.5	20	197	31	.58	.35	18
17	1.5	e2.2	2.6	e1.8	4.5	5.8	9.2	199	27	.65	.34	8.3
18	1.4	e2.0	2.6	e2.0	4.3	5.6	15	276	23	.57	.29	4.9
19	1.6	e2.0	e2.2	e2.0	e4.0	5.8	36	199	17	.57	.24	3.8
20	1.6	e2.1	e1.6	e1.8	3.7	5.7	45	139	13	.61	.19	2.1
21	1.8	e2.0	e1.0	e1.9	4.0	6.2	23	102	9.9	.65	.19	1.0
22	1.7	e2.0	e1.0	e2.0	3.7	6.4	7.4	96	9.3	.64	.18	.83
23	1.7	e2.1	e1.1	e1.9	e3.6	6.4	7.5	73	8.3	.57	.15	.83
24	1.8	e2.1	e1.2	e1.8	e3.6	6.8	5.6	49	5.8	.51	.16	1.0
25	2.5	e1.8	e1.2	e1.8	3.5	6.6	5.0	38	5.1	.47	.18	.66
26	2.1	e1.6	e1.1	e1.9	3.7	6.5	4.1	34	4.2	.55	.13	.59
27	2.1	e1.5	e1.3	e2.0	2.6	6.5	15	47	13	.71	.17	.59
28	3.0	e1.6	e1.3	e1.9	2.6	6.4	64	54	16	.62	.30	.53
29	2.1	e1.8	e1.1	e1.8	---	6.3	117	51	15	.48	.22	.47
30	2.2	e2.6	e1.2	e1.9	---	6.1	230	121	9.4	.41	.25	.42
31	2.2	---	e1.3	e2.2	---	5.9	---	211	---	.42	.23	---
TOTAL	50.2	61.0	64.3	49.3	124.1	158.8	709.1	2814	1212.0	38.40	57.70	54.59
MEAN	1.62	2.03	2.07	1.59	4.43	5.12	23.6	90.8	40.4	1.24	1.86	1.82
MAX	3.0	2.6	3.2	2.2	5.9	6.8	230	276	168	6.7	13	18
MIN	1.0	1.5	1.0	1.0	2.6	2.2	4.1	17	4.2	.41	.13	.26
AC-FT	100	121	128	98	246	315	1410	5580	2400	76	114	108

CAL YR 1990 TOTAL 23536.38 MEAN 64.5 MAX 1620 MIN .37 AC-FT 46680
WTR YR 1991 TOTAL 5393.49 MEAN 14.8 MAX 276 MIN .13 AC-FT 10700

e Estimated

MISSOURI-OAHE RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE¼NW¼SE¼ sec.31, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on left bank 40 ft upstream from Bismarck City waterplant, 2,100 ft downstream from Burlington Northern Railway bridge, 1.6 mi northwest of Bismarck Post Office, 3.5 mi upstream from Heart River, and at mile 1,314.5.

DRAINAGE AREA.--186,400 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October to November 1927, April 1928 to current year. See WSP 1729 or 1917 for history of data prior to April 1928.

GAGE.--Water-stage recorder. Datum of gage is 1,618.28 ft, revised, above National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good except those for periods of estimated daily discharges, which are fair. Flow regulated by Lake Sakakawea (station 06338000) 75.4 mi upstream since November 1953.

EXTREMES SINCE COMPLETION OF GARRISON DAM.--Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft³/s, July 13, 1975, gage height, 14.24 ft; maximum gage height, 14.58 ft, Dec. 18, 1979, backwater from ice.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 500,000 ft³/s, Apr. 6, 1952, gage height, 27.90 ft. Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft³/s, July 13, 1975, gage height, 14.24 ft; maximum gage height, 14.58 ft, Dec. 18, 1979, backwater from ice; minimum discharge, about 1,800 ft³/s, Jan. 3, 1940; minimum gage height, 1.35 ft, Sept. 4, 1934, present site and datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 31.6 ft, Mar. 31, 1881, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 32,500 ft³/s, Apr. 19, gage height, 9.24 ft; maximum gage height, 11.29 ft, Jan. 10, backwater from ice; minimum daily discharge, 9,970 ft³/s, Sept. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10900	11300	18500	e19000	e23000	e21000	11400	20800	21900	21700	21900	21000
2	10900	11300	18700	e19000	e23000	e20000	11300	21200	21700	21600	22000	21200
3	10800	10500	19500	e19000	e23000	e18000	12200	23500	21700	21100	22000	21200
4	10900	10700	18900	e19000	e23000	e17000	11500	24200	22000	21300	21900	20200
5	11000	11000	18700	e20000	e23000	e16000	10600	23400	22100	21300	22000	20500
6	11100	13400	19100	e21000	e23000	e16500	10400	21400	21800	21600	22000	20500
7	11300	17200	18800	e22000	e22000	e17000	10500	21700	21800	21700	22100	20000
8	11300	14700	18600	e23000	e22000	e17500	10800	21500	21500	21300	22100	22200
9	11400	12500	18100	e23000	e22000	e17800	10800	19600	21800	21200	22300	21200
10	11500	11000	18300	e23000	e22000	e18000	10500	e20000	21800	21200	22200	20600
11	11800	11200	18600	e23000	e22000	e17000	11000	e20500	21600	22000	22000	19700
12	10800	11200	18400	e23000	e22000	e16000	11000	e21000	21600	21800	22100	17700
13	11100	11300	18200	e23000	e22000	e15800	14400	21100	21400	21600	22200	15800
14	10600	11300	18000	e23000	e22000	e15000	21700	20400	21000	21500	22000	14600
15	11100	11000	18500	e23000	e22000	e15000	29200	20100	21000	21600	22300	14600
16	11000	11700	18100	e23000	e22000	e14800	31800	21200	21100	21700	22200	14700
17	10800	11200	18300	e22000	e22000	14500	32300	e21300	21400	21500	22200	13700
18	10900	11600	19000	e22000	e22000	13800	32400	e21500	21200	22000	22200	14300
19	10900	11100	e18000	e22000	e22000	12700	32300	e21600	21600	21800	21400	13100
20	11100	11200	e18000	e22000	e22000	12400	28300	21700	22000	21700	22300	11800
21	10700	11700	e18000	e22000	e22000	12200	23700	21600	21900	21800	22200	10800
22	10600	11500	e18000	e22000	e22000	11300	21700	21700	21600	22000	22200	11100
23	10600	11500	e18000	e22000	e22000	11800	21200	21500	21400	21800	22100	10800
24	11000	10900	e19000	e22000	e22000	11300	21200	21400	21600	21400	21900	10800
25	11000	11200	e19000	e22000	e22000	11700	20000	21400	21500	21500	21400	10800
26	11200	11400	e19000	e22000	e22000	11400	17400	21700	21400	21700	21300	10000
27	11100	12000	e19000	e22000	e23000	11300	17700	21700	21200	21600	20600	11000
28	10600	13500	e19000	e22000	e23000	11300	17500	21800	21200	21700	20800	10700
29	10400	15300	e19000	e23000	---	11300	17400	21800	21400	21800	21300	10500
30	11400	16600	e19000	e23000	---	11100	18900	21400	21500	21500	20600	9970
31	11100	---	e19000	e23000	---	11100	---	22100	---	21900	21300	---
TOTAL	340900	362000	576300	679000	624000	451600	551100	665800	646700	669900	677100	465070
MEAN	11000	12070	18590	21900	22290	14570	18370	21480	21560	21610	21840	15500
MAX	11800	17200	19500	23000	23000	21000	32400	24200	22100	22000	22300	22200
MIN	10400	10500	18000	19000	22000	11100	10400	19600	21000	21100	20600	9970
AC-FT	676200	718000	1143000	1347000	1238000	895700	1093000	1321000	1283000	1329000	1343000	922500

CAL YR 1990 TOTAL 6788200 MEAN 18600 MAX 27700 MIN 10400 AC-FT 13460000
WTR YR 1991 TOTAL 6709470 MEAN 18380 MAX 32400 MIN 9970 AC-FT 13310000

e Estimated

MISSOURI-OAHE RIVER BASIN

37

06354882 OAK CREEK NEAR WAKPALA, SD

LOCATION.--Lat 45°42'43", long 100°33'32", in SW 1/4 sec. 9, T.20 N., R.29 E., Corson County, Hydrologic Unit 10130102, on right bank at upstream side of bridge on farm access road, 1.6 mi east of Rattlesnake Butte, and 4.0 mi northwest of Wakpala.

DRAINAGE AREA.--356 mi², approximately.

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

GAGE.--Water-stage recorder. Elevation of gage is 1,690 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--7 years, 22.3 ft³/s, 16,160 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,780 ft³/s, Mar. 4, 1986, gage height, 17.73 ft; maximum gage height, 18.35 ft, Mar. 23, 1987, backwater from ice; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 4	2100	*440	*7.93	June 6	1715	211	6.27
June 5	1215	313	7.06				

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.06	2.0	.73	1.0	4.6	.00	.00
2	.00	.00	.00	.00	.00	e.04	2.5	.51	10	2.6	.00	.00
3	.00	.00	.00	.00	.00	e.20	2.3	.56	35	1.6	.00	.00
4	.00	.00	.00	.00	.00	e6.0	2.3	4.6	107	1.3	.00	.00
5	.00	.00	.00	.00	.00	e3.4	1.8	2.6	186	1.2	.00	.00
6	.00	.00	.00	.00	.00	1.4	1.8	1.1	145	1.1	.00	.00
7	.00	.00	.00	.00	.00	1.3	1.5	1.0	112	.94	.00	.00
8	.00	.00	.00	.00	.00	1.6	.92	.96	75	.70	.00	.00
9	.00	.00	.00	.00	.00	1.7	.80	.73	53	.57	.00	.00
10	.00	.00	.00	.00	.00	1.4	.76	.45	38	.39	.00	.00
11	.00	.00	.00	.00	.00	1.5	.72	.26	30	.32	.00	.00
12	.00	.00	.00	.00	.00	1.7	1.5	.22	26	.19	.00	.00
13	.00	.00	.00	.00	.00	1.6	3.5	.32	21	.09	.00	.00
14	.00	.00	.00	.00	.00	1.7	e20	.23	26	.04	.00	.00
15	.00	.00	.00	.00	.00	1.8	6.3	11	78	.00	.00	.00
16	.00	.00	.00	.00	e.00	1.7	4.2	1.5	33	.00	.00	.00
17	.00	.00	.00	.00	e.00	1.5	1.9	.13	15	.00	.00	.00
18	.00	.00	.00	.00	e.00	1.4	1.4	.07	10	.00	.00	.00
19	.00	.00	.00	.00	e.00	1.8	1.3	.09	8.4	.00	.00	.00
20	.00	.00	.00	.00	e.05	2.6	.90	.10	17	.00	.00	.00
21	.00	.00	.00	.00	e.10	3.5	.76	.13	14	.00	.00	.00
22	.00	.00	.00	.00	e.06	8.2	.71	.08	12	.00	.00	.00
23	.00	.00	.00	.00	e.04	7.5	.65	.17	10	.00	.00	.00
24	.00	.00	.00	.00	e.02	7.6	.75	.21	7.6	.00	.00	.00
25	.00	.00	.00	.00	e.01	7.1	.73	.20	6.2	.00	.00	.00
26	.00	.00	.00	.00	e.02	7.1	.84	.34	4.6	.00	.00	.00
27	.00	.00	.00	.00	e.04	3.7	11	.42	5.3	.00	.00	.00
28	.00	.00	.00	.00	e.10	2.8	1.7	.45	5.7	.00	.00	.00
29	.00	.00	.00	.00	---	1.9	1.7	.35	5.1	.00	.00	.00
30	.00	.00	.00	.00	---	1.7	1.0	.44	6.2	.00	.00	.00
31	.00	---	.00	.00	---	1.7	---	.71	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.44	87.20	78.24	30.66	1103.1	15.64	0.00	0.00
MEAN	.000	.000	.000	.000	.016	2.81	2.61	.99	36.8	.50	.000	.000
MAX	.00	.00	.00	.00	.10	8.2	20	11	186	4.6	.00	.00
MIN	.00	.00	.00	.00	.00	.04	.65	.07	1.0	.00	.00	.00
AC-FT	.00	.00	.00	.00	.9	173	155	61	2190	31	.00	.00

CAL YR 1990 TOTAL 309.56 MEAN .85 MAX 36 MIN .00 AC-FT 614
WTR YR 1991 TOTAL 1315.28 MEAN 3.60 MAX 186 MIN .00 AC-FT 2610

e Estimated

GRAND-MOREAU RIVER BASIN

06355000 NORTH FORK GRAND RIVER AT HALEY, ND

LOCATION.--Lat 45°57'39", long 103°07'09", at southwest corner of sec.30, T.129 N., R.99 W., Bowman County, Hydrologic Unit 10130301, on left bank 10 ft downstream from county highway bridge at Haley, and 1 mi north of North Dakota-South Dakota State boundary.

DRAINAGE AREA.--509 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1908 to September 1917, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS (WATER YEARS).--WSP 1239: 1908-10, 1913-15(M), 1917(M).

GAGE.--Water-stage recorder. Datum of gage is 2,658.60 ft above National Geodetic Vertical Datum of 1929. Oct. 23, 1945, to June 18, 1951, nonrecording gage on downstream side of bridge near left abutment at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 23, 1945.

REMARKS.--Records poor. Flow regulated since August 1966 by Bowman-Haley Lake (station 06354988) 8 mi upstream. There are some small diversions for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft³/s, Apr. 7, 1952, gage height, 17.03 ft, from rating curve extended above 4,500 ft³/s on basis of discharge measurement at gage height, 15.09 ft, half of which was indirect measurement of flow over roadway outside of main channel; maximum gage height, 17.10 ft, Apr. 15, 1950; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16 ft³/s, May 30, gage height, 5.57 ft; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.15	e.80	1.1	.00	.00	1.1	1.7	2.1	1.1	.44	e.05	.02
2	e.16	e.80	1.1	.00	.00	.96	1.9	1.7	.80	.12	e.06	.01
3	e.20	e.80	1.1	.00	.00	1.0	2.3	1.7	.60	.10	e.08	.02
4	e.22	e.80	1.1	.00	.00	1.5	2.2	1.1	.40	.03	e.10	.01
5	e.24	e.80	1.3	.00	.00	2.0	2.3	.97	.20	.02	e.10	.02
6	e.26	e.80	1.3	.00	.00	1.9	2.6	.60	.20	.00	e.10	.02
7	e.30	e.80	1.4	.00	.64	1.6	3.0	.46	.24	.00	e.10	.01
8	e.30	e.80	1.5	.00	2.1	1.5	2.7	.60	.31	.00	e.10	.02
9	e.30	e.80	1.6	.00	2.2	1.5	2.9	.76	.46	.00	e.10	.01
10	e.34	e.80	e1.8	.00	1.3	1.7	3.1	e.60	.60	.05	e.10	.02
11	e.36	e.80	e1.5	.00	1.2	1.8	4.3	e.35	.39	1.7	e.12	.02
12	.39	e.78	e1.5	.00	1.2	1.8	8.2	e.25	.31	.36	e.12	.02
13	.52	e.76	e1.4	.00	1.5	1.6	8.8	e.20	.46	.02	e.12	.02
14	.85	e.76	e1.3	.00	1.2	1.5	8.0	e.15	.46	.00	e.12	.02
15	.77	e.75	e1.2	.00	.27	1.4	6.9	e.10	.46	.00	e.19	.04
16	.76	e.75	e1.0	.00	.73	1.4	6.2	e.03	.39	.00	.27	.04
17	.91	e.75	e.90	.00	.95	1.3	5.8	e.00	.31	.00	.11	.05
18	.97	e.75	e.80	.00	.94	1.3	5.4	e.00	.19	.00	.06	.05
19	1.0	e.75	.76	.00	.95	1.3	5.4	e.00	.31	.00	.07	.06
20	1.0	e.75	.31	.00	1.0	1.3	5.2	e.00	.60	.00	.07	.07
21	e.98	e.75	.05	.00	1.5	1.1	4.8	e.00	.96	e.01	.04	.08
22	e.98	e.75	.03	.00	2.3	1.1	3.9	e.00	1.0	e.02	.05	.07
23	e.96	e.75	.00	.00	2.3	1.5	3.8	e.00	1.1	e.02	.05	.08
24	e.96	e.75	.00	.00	2.0	1.5	3.5	e.00	2.8	e.03	.08	.09
25	e.94	e.70	.00	.00	1.3	1.2	3.7	e.00	2.8	e.04	.11	.08
26	e.92	e.68	.00	.00	1.2	1.1	5.6	e.00	2.1	e.04	.10	.08
27	e.90	e.64	.00	.00	1.1	.94	4.8	e.00	2.4	e.05	.07	.10
28	e.88	e.68	.00	.00	1.2	1.0	3.6	e.00	2.3	e.06	.05	.11
29	e.86	.76	.00	.00	---	1.2	3.0	e.00	2.2	e.02	.06	.11
30	e.84	.90	.00	.00	---	1.2	2.6	e9.0	.90	e.03	.04	.08
31	e.82	---	.00	.00	---	.99	---	4.9	---	e.04	.03	---
TOTAL	20.04	22.96	24.05	0.00	29.08	42.29	128.2	25.57	27.35	3.20	2.82	1.43
MEAN	.65	.77	.78	.000	1.04	1.36	4.27	.82	.91	.10	.091	.048
MAX	1.0	.90	1.8	.00	2.3	2.0	8.8	9.0	2.8	1.7	.27	.11
MIN	.15	.64	.00	.00	.00	.94	1.7	.00	.19	.00	.03	.01
AC-FT	40	46	48	.00	58	84	254	51	54	6.3	5.6	2.8

CAL YR 1990 TOTAL 597.60 MEAN 1.64 MAX 9.0 MIN .00 AC-FT 1190
WTR YR 1991 TOTAL 326.99 MEAN .90 MAX 9.0 MIN .00 AC-FT 649

e Estimated

GRAND-MOREAU RIVER BASIN

39

06355500 NORTH FORK GRAND RIVER NEAR WHITE BUTTE, SD

LOCATION (REVISED).--Lat 45°48'08", long 102°21'43", in SW¼NW¼NW¼ sec.11, T.21 N., R.14 E., Perkins County, Hydrologic Unit 10130301, on left bank on upstream side of highway bridge and 9.8 mi south of White Butte.

DRAINAGE AREA.--1,190 mi², approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1279: 1947, 1950.

GAGE.--Water-stage recorder. Elevation of gage is 2,296 ft, from topographic map. See WSP 1917 for history of changes prior to June 12, 1951. June 12, 1951, to Aug. 20, 1975, water-stage recorder, and Aug. 21 to Sept. 10, 1975, nonrecording gage at site 100 ft upstream; Sept. 11, 1975, to Mar. 22, 1976, nonrecording gage, and July 29, 1976, to Sept. 30, 1989, water-stage recorder at site 1,400 ft upstream, and Mar. 23 to July 28, 1976, nonrecording gage at present site, all at present datum.

REMARKS.--Records good. Flow regulated by Bowman-Haley Dam, capacity, 93,000 acre-ft, 71 mi upstream, beginning August 1966. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 50.0 ft³/s, 36,220 acre-ft/yr; median of yearly mean discharges, 30 ft³/s, 21,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,900 ft³/s, Apr. 16, 1950, gage height, 20.0 ft, from floodmarks, from rating curve extended above 19,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 165 ft³/s at 1600 hours, June 26, gage height, 2.76 ft; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	2.4	1.5	36	91	.00	.00
2	.00	.00	.00	.00	.00	.00	1.8	1.3	53	67	.00	.00
3	.00	.00	.00	.00	.00	.00	1.9	1.5	32	55	.00	.00
4	.00	.00	.00	.00	.00	.00	1.8	1.7	26	43	.00	.00
5	.00	.00	.00	.00	.00	.00	2.0	1.9	19	28	.00	.00
6	.00	.00	.00	.00	.00	.00	1.7	5.4	13	18	.00	.00
7	.00	.00	.00	.00	.00	.00	1.7	2.4	9.1	13	.00	.00
8	.00	.00	.00	.00	.00	.00	1.6	2.4	11	8.9	.00	.00
9	.00	.00	.00	.00	.00	.00	1.7	2.3	16	5.7	.00	.00
10	.00	.00	.00	.00	.00	.00	1.6	2.0	14	1.9	.00	.00
11	.00	.00	.00	.00	.00	.00	4.5	1.7	12	1.6	.00	.00
12	.00	.00	.00	.00	.00	6.6	11	1.7	9.2	2.3	.00	.00
13	.00	.00	.00	.00	.00	9.4	13	2.2	5.8	.66	.00	.00
14	.00	.00	.00	.00	.00	6.9	19	2.3	4.0	.33	.00	.00
15	.00	.00	.00	.00	.00	7.7	15	8.4	3.1	.51	.00	.00
16	.00	.00	.00	.00	.00	7.7	4.5	10	2.3	.53	.00	.00
17	.00	.00	.00	.00	.00	8.7	8.8	9.7	2.7	.41	.00	.00
18	.00	.00	.00	.00	.00	9.7	9.0	7.9	2.3	.33	.00	.00
19	.00	.00	.00	.00	.00	8.1	9.5	8.1	2.7	.22	.00	.00
20	.00	.00	.00	.00	.00	7.9	9.3	7.8	5.2	.17	.00	.00
21	.00	.00	.00	.00	.00	14	9.2	7.5	5.7	.37	.00	.00
22	.00	.00	.00	.00	.00	10	6.6	6.4	6.3	.28	1.2	.00
23	.00	.00	.00	.00	.00	8.8	1.9	6.8	9.8	.11	1.6	.00
24	.00	.00	.00	.00	.00	6.3	1.6	7.1	12	.00	.67	.00
25	.00	.00	.00	.00	.00	5.4	1.3	7.6	123	.00	.26	.00
26	.00	.00	.00	.00	.00	4.3	1.4	13	125	.00	.05	.00
27	.00	.00	.00	.00	.00	3.8	1.7	12	93	.00	.03	.00
28	.00	.00	.00	.00	.00	2.7	2.1	13	51	.00	.00	.00
29	.00	.00	.00	.00	---	2.5	1.9	12	31	.00	.00	.00
30	.00	.00	.00	.00	---	3.0	1.8	14	77	.00	.00	.00
31	.00	---	.00	.00	---	3.0	---	19	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	136.50	151.3	200.6	812.2	339.32	3.81	0.00
MEAN	.000	.000	.000	.000	.000	4.40	5.04	6.47	27.1	10.9	.12	.000
MAX	.00	.00	.00	.00	.00	14	19	19	125	91	1.6	.00
MIN	.00	.00	.00	.00	.00	.00	1.3	1.3	2.3	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	271	300	398	1610	673	7.6	.00

CAL YR 1990 TOTAL 1638.03 MEAN 4.49 MAX 48 MIN .00 AC-FT 3250
WTR YR 1991 TOTAL 1643.73 MEAN 4.50 MAX 125 MIN .00 AC-FT 3260

GRAND-MOREAU RIVER BASIN

06356000 SOUTH FORK GRAND RIVER AT BUFFALO, SD

LOCATION.--Lat 45°34'34", long 103°32'38", in SW¼ sec.29, T.19 N., R.5 E., Harding County, Hydrologic Unit 10130302, on right bank at downstream side of bridge on U.S. Highway 85, 0.3 mi south of Buffalo.

DRAINAGE AREA.--148 mi².

PERIOD OF RECORD.--August 1955 to current year.

REVISED RECORDS.--WSP 1917: 1956-57. WDR SD-76-1: 1974(M), 1975.

GAGE.--Water-stage recorder. Datum of gage is 2,839.60 ft above National Geodetic Vertical Datum of 1929. Prior to May 5, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--36 years, 8.29 ft³/s, 6,010 acre-ft/yr; median of yearly mean discharges, 7.0 ft³/s, 5,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,780 ft³/s, June 14, 1963, gage height, 9.01 ft, from rating curve extended above 550 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1956-58, 1960, 1962, 1965, 1972, 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1908 reached a stage of 15.4 ft, from information by South Dakota Department of Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 27	0100	300	6.49	May 30	2200	*1,460	*8.18

Minimum daily discharge, 0.25 ft³/s, Dec. 29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.8	2.0	e.50	e.50	e1.9	2.2	2.9	42	2.1	1.1	1.2
2	1.5	1.8	2.1	e.40	e.60	e1.8	2.2	2.5	9.4	1.7	2.9	1.2
3	1.4	1.8	2.2	e.35	e.80	e3.0	2.0	4.0	5.4	1.6	17	1.2
4	1.4	1.8	2.0	e.30	e1.0	e7.0	2.1	4.8	4.0	1.6	4.3	1.2
5	1.4	1.9	2.3	e.30	e1.5	e5.0	2.0	5.0	3.7	1.5	2.0	1.2
6	1.3	e1.8	2.2	e.30	e2.0	e3.8	2.0	3.1	3.2	1.5	1.7	1.2
7	1.4	1.9	2.4	e.30	e2.0	e3.0	3.1	2.7	3.0	1.5	1.6	1.2
8	1.5	1.9	2.5	e.30	e2.0	e2.8	6.2	2.5	3.1	1.5	5.9	1.2
9	1.7	e2.0	2.6	e.30	e2.0	e2.8	10	2.3	2.9	1.5	1.9	1.3
10	1.7	2.1	2.5	e.32	e2.0	e3.0	11	2.2	2.7	1.4	1.4	1.2
11	1.7	2.1	2.5	e.35	e1.9	e3.4	6.1	2.1	2.5	1.5	1.4	1.6
12	1.6	2.1	2.6	e.40	e1.8	e3.5	7.6	2.6	2.5	1.4	1.3	1.2
13	1.8	2.0	2.0	e.45	e1.8	e3.4	8.7	4.9	2.5	1.4	1.3	1.2
14	1.8	2.0	e1.9	e.50	e1.7	e3.0	13	4.0	2.4	1.3	1.3	1.4
15	1.8	2.1	e1.7	e.52	e1.5	e2.9	34	41	2.4	1.3	1.4	1.6
16	1.8	2.1	e1.5	e.50	e1.6	e3.0	70	38	2.3	1.3	1.4	1.9
17	2.0	e2.0	e1.2	e.50	e1.7	e3.2	20	4.1	2.3	1.2	1.4	1.9
18	2.1	2.1	e.80	e.54	e1.8	e3.5	12	2.2	2.6	1.2	1.3	1.6
19	2.1	e2.0	e.60	e.50	e1.8	e3.5	6.4	1.8	2.3	1.2	1.3	1.6
20	1.9	2.1	e.50	e.45	e1.8	e3.3	4.1	1.9	7.6	1.2	1.3	1.6
21	1.9	2.3	e.40	e.44	e1.9	3.1	3.3	2.0	4.5	1.2	1.3	1.8
22	2.0	e2.0	e.35	e.45	e2.0	4.8	2.5	2.7	4.2	1.2	1.3	1.9
23	1.9	2.1	e.38	e.46	e2.0	4.9	2.2	4.4	3.1	1.1	1.3	1.7
24	2.0	2.1	e.40	e.42	e1.9	4.0	1.9	4.1	2.8	1.1	1.3	2.0
25	2.0	e1.8	e.45	e.40	e1.8	3.0	1.8	1.7	4.0	1.1	1.3	1.8
26	2.0	e1.5	e.40	e.44	e1.8	2.7	43	3.6	2.2	1.1	1.3	1.6
27	1.9	e1.8	e.35	e.45	e1.9	e2.6	82	3.4	2.0	1.7	1.2	1.7
28	1.9	2.0	e.30	e.44	e2.0	2.4	12	30	3.6	1.4	1.2	1.7
29	1.9	2.0	e.25	e.40	---	2.3	14	15	2.3	1.2	1.2	1.6
30	1.8	2.2	e.35	e.42	---	2.3	4.1	193	2.6	1.2	1.2	1.6
31	1.8	---	e.50	e.45	---	2.2	---	509	---	1.1	1.2	---
TOTAL	54.4	59.2	42.23	12.85	47.10	101.1	391.5	903.5	140.1	42.3	67.0	45.1
MEAN	1.75	1.97	1.36	.41	1.68	3.26	13.0	29.1	4.67	1.36	2.16	1.50
MAX	2.1	2.3	2.6	.54	2.0	7.0	82	509	42	2.1	17	2.0
MIN	1.3	1.5	.25	.30	.50	1.8	1.8	1.7	2.0	1.1	1.1	1.2
AC-FT	108	117	84	25	93	201	777	1790	278	84	133	89

CAL YR 1990 TOTAL 811.82 MEAN 2.22 MAX 80 MIN .00 AC-FT 1610
WTR YR 1991 TOTAL 1906.38 MEAN 5.22 MAX 509 MIN .25 AC-FT 3780

e Estimated

GRAND-MOREAU RIVER BASIN

41

06356500 SOUTH FORK GRAND RIVER NEAR CASH, SD

LOCATION.--Lat 45°38'56", long 102°38'27", in SW¼SW¼ sec.33 , T.20 N., R.12 E., Perkins County, Hydrologic Unit 10130302, on left bank at downstream side of highway bridge, 1.0 mi upstream from Little Nasty Creek, 4.0 mi north of Cash, 10 mi south of Lodgepole, 12 mi northwest of Bison, and 16 mi downstream from Big Nasty Creek.

DRAINAGE AREA.--1,350 mi², approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,422.75 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 25, 1946, nonrecording gage, and Oct. 25, 1946, to May 16, 1966, water-stage recorder, at site 500 ft upstream. May 17, 1966, to May 2, 1968, nonrecording gage, at present site, all at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 50.8 ft³/s, 36,800 acre-ft/yr; median of yearly mean discharges, 36 ft³/s, 26,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s, Apr. 15, 1950, gage height, 15.40 ft, from rating curve extended above 14,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 1	0200	*1,560	6.20	No other peak greater than base discharge.			
No flow Jan. 3-31.							

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	9.3	6.8	e.02	e.02	e16	15	45	1190	18	4.0	2.2
2	6.8	9.3	7.1	e.01	e.06	e15	14	34	422	15	4.9	2.2
3	6.8	8.7	6.8	e.00	e.15	e16	14	28	367	12	4.7	2.3
4	6.9	7.4	5.8	e.00	e.40	e17	13	25	189	14	4.9	2.2
5	7.0	9.0	5.8	e.00	e.80	e16	13	23	100	13	5.3	2.4
6	6.5	8.4	6.8	e.00	e1.0	e16	12	e22	146	13	9.7	2.6
7	6.4	7.5	7.5	e.00	e1.1	e17	11	e24	58	11	14	2.8
8	6.9	8.9	7.8	e.00	e1.2	e18	11	e18	42	9.7	9.4	3.7
9	7.3	8.3	7.9	e.00	e1.3	e20	12	15	129	9.7	7.0	4.4
10	8.0	12	8.3	e.00	e1.6	e21	12	e14	46	8.9	5.6	4.4
11	8.1	12	8.4	e.00	e2.0	e23	17	e11	33	9.4	4.4	5.3
12	7.8	12	8.2	e.00	e3.0	e23	27	e10	26	8.9	6.0	5.3
13	7.9	11	8.2	e.00	e4.0	e20	34	e12	18	7.5	5.5	5.2
14	7.8	10	6.4	e.00	e3.5	e24	33	e22	15	7.3	4.7	5.4
15	7.5	11	5.3	e.00	e3.0	e26	39	e24	13	6.9	5.1	5.2
16	7.5	9.9	e5.0	e.00	e4.0	e27	52	22	12	5.5	5.8	5.3
17	8.3	9.1	e4.5	e.00	e6.0	e28	74	40	12	4.8	5.4	6.1
18	8.3	9.9	e3.7	e.00	e5.5	e28	118	70	13	5.1	4.5	5.5
19	8.5	10	e2.0	e.00	e5.0	28	71	34	12	4.0	4.3	5.3
20	8.3	12	e1.2	e.00	e6.2	25	53	28	13	4.1	4.0	5.8
21	7.8	13	e.40	e.00	e8.0	32	41	23	15	4.5	3.7	5.9
22	8.2	10	e.20	e.00	e9.0	28	32	20	26	4.5	3.6	6.1
23	7.8	12	e.24	e.00	e10	24	27	20	25	4.4	3.5	5.8
24	8.1	11	e.26	e.00	e11	21	23	16	19	4.3	3.6	6.1
25	8.1	e9.0	e.27	e.00	e13	22	19	13	31	4.1	3.8	6.5
26	8.3	e7.0	e.29	e.00	e17	21	20	20	25	3.8	3.8	6.3
27	8.1	5.4	e.24	e.00	e18	21	23	19	20	4.1	3.7	6.4
28	8.0	4.6	e.10	e.00	e19	21	146	29	19	5.3	3.3	5.9
29	8.0	4.6	e.03	e.00	---	19	94	63	18	7.2	2.8	5.9
30	8.1	6.7	e.03	e.00	---	18	59	91	18	5.7	2.8	5.7
31	9.1	---	e.02	e.00	---	16	---	193	---	4.2	2.6	---
TOTAL	238.8	279.0	125.58	0.03	154.83	667	1129	1028	3072	239.9	156.4	144.2
MEAN	7.70	9.30	4.05	.001	5.53	21.5	37.6	33.2	102	7.74	5.05	4.81
MAX	9.1	13	8.4	.02	19	32	146	193	1190	18	14	6.5
MIN	6.4	4.6	.02	.00	.02	15	11	10	12	3.8	2.6	2.2
AC-FT	474	553	249	.06	307	1320	2240	2040	6090	476	310	286

CAL YR 1990 TOTAL 6135.98 MEAN 16.8 MAX 150 MIN .02 AC-FT 12170
WTR YR 1991 TOTAL 7234.74 MEAN 19.8 MAX 1190 MIN .00 AC-FT 14350

e Estimated

GRAND-MOREAU RIVER BASIN

06357000 SHADEHILL RESERVOIR AT SHADEHILL, SD

LOCATION.--Lat 45°45'12", long 102°12'12", in E½ sec.25, T.21 N., R.15 E., Perkins County, Hydrologic Unit 10130302, at dam on Grand River, 1.3 mi southwest of Shadehill.

DRAINAGE AREA.--3,120 mi², approximately.

PERIOD OF RECORD.--June 1950 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Apr. 3, 1952, occasional elevations obtained by level circuits and Apr. 3, 1952, to Apr. 28, 1970, nonrecording gage at same site and datum.

REMARKS.--Reservoir formed by earthfill dam. Storage began July 1, 1950; dam completed August 1951. Conservation storage, 81,400 acre-ft between elevations 2,250.8 ft (invert of canal and river outlet) and elevation 2,272.0 ft (crest of morning-glory spillway). Dead storage, 58,231 acre-ft below elevation 2,250.8 ft. Flood control, 217,708 acre-ft between elevations 2,272.0 ft and 2,302.0 ft (crest of emergency spillway). Surcharge, 111,203 acre-ft at elevation 2,312.0 ft (maximum pool elevation). Total reservoir capacity is 468,585 acre-ft at elevation 2,312.0 ft. The reservoir provides flood control and water for irrigation purposes. Figures given herein represent usable contents above elevation 2,250.8 ft. Prior to Oct. 1, 1968, reservoir contents published as total contents and included dead storage.

COOPERATION.--Records of elevation and contents provided by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum usable contents observed, 259,900 acre-ft, Apr. 10, 1952, elevation, 2,297.86 ft; minimum usable observed since first filling to spillway level, 24,941 acre-ft, Nov. 17, 1981, elevation, 2,258.62 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 59,200 acre-ft, June 30, elevation, 2,266.70 ft; minimum, 50,500 acre-ft, Sept. 30, elevation, 2,265.18 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,266.70	57,000	-
Oct. 31	2,266.30	55,300	-1,700
Nov. 30	2,265.91	53,600	-1,700
Dec. 31	2,265.68	52,600	-1,000
CAL YR 1990	-	-	-1,800
Jan. 31	2,265.44	51,600	-1,000
Feb. 28	2,265.32	51,100	-500
Mar. 31	2,265.57	52,100	+1,000
Apr. 30	2,265.90	53,500	+1,400
May 31	2,266.28	55,200	+1,700
June 30	2,266.70	59,200	+4,000
July 31	2,266.69	57,000	-2,200
Aug. 31	2,265.95	53,800	-3,200
Sept. 30	2,265.18	50,500	-3,300
WTR YR 1991	-	-	-6,500

GRAND-MOREAU RIVER BASIN

43

06357500 GRAND RIVER AT SHADEHILL, SD

LOCATION.--Lat 45°45'23", long 102°11'44", in NW¼NW¼ sec.30, T.21 N., R.16 E., Perkins County, Hydrologic Unit 10130303, on left bank 0.2 mi downstream from Shadehill Dam, 1.1 mi southwest of Shadehill, and 12.0 mi southwest of Lemmon.

DRAINAGE AREA.--3,120 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1943 to September 1988, April to September 1991. Records for July 1904 to October 1906 collected at site 4 mi upstream and published as "at Seim" in WSP 130, 172, and 208 have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1279: 1943(M). See also Period of Record. WDR SD-85-1: Location.

GAGE.--Water-stage recorder. Datum of gage is 2,192.48 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 31, 1947, nonrecording gage, and Aug. 31, 1947, to Oct. 24, 1958, water-stage recorder at site 0.8 mi downstream at datum 6.02 ft lower. Oct. 25, 1958, to Sept. 30, 1988, water-stage recorder at same site and datum.

REMARKS.--Records good. Flow completely regulated by Shadehill Dam since July 1, 1950. (See station 06357000.)

AVERAGE DISCHARGE.--45 years, 111 ft³/s, 80,420 acre-ft/yr; median of yearly mean discharges, 66 ft³/s, 47,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,000 ft³/s, Apr. 16, 1950, gage height, 21.0 ft, from floodmarks upstream from bridge; 19.06 ft, from floodmark in gage well, unreliable, site and datum then in use; no flow for many days in some years.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge during period April to September, 36 ft³/s at 0100 hours, Sept. 18, gage height, 2.87 ft; minimum daily discharge, 14 ft³/s, May 11-13.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	15	15	16	16	23	23
2	---	---	---	---	---	---	15	16	16	16	24	23
3	---	---	---	---	---	---	16	16	15	16	23	23
4	---	---	---	---	---	---	15	15	15	17	23	23
5	---	---	---	---	---	---	15	15	15	17	23	23
6	---	---	---	---	---	---	15	15	15	18	23	23
7	---	---	---	---	---	---	15	16	16	18	23	26
8	---	---	---	---	---	---	16	16	16	18	23	25
9	---	---	---	---	---	---	16	15	16	18	23	24
10	---	---	---	---	---	---	16	15	16	18	22	23
11	---	---	---	---	---	---	16	14	16	17	22	25
12	---	---	---	---	---	---	16	14	16	16	23	23
13	---	---	---	---	---	---	16	14	16	16	25	24
14	---	---	---	---	---	---	15	16	16	17	27	25
15	---	---	---	---	---	---	15	16	15	18	28	21
16	---	---	---	---	---	---	15	16	15	18	25	19
17	---	---	---	---	---	---	15	16	15	21	22	20
18	---	---	---	---	---	---	15	15	15	23	22	20
19	---	---	---	---	---	---	16	15	16	23	23	22
20	---	---	---	---	---	---	16	15	15	24	25	22
21	---	---	---	---	---	---	16	15	15	25	23	23
22	---	---	---	---	---	---	16	15	15	25	22	25
23	---	---	---	---	---	---	16	16	15	24	22	24
24	---	---	---	---	---	---	16	16	16	23	22	20
25	---	---	---	---	---	---	16	16	16	23	22	19
26	---	---	---	---	---	---	15	15	16	23	22	19
27	---	---	---	---	---	---	15	15	16	24	22	24
28	---	---	---	---	---	---	15	16	17	25	23	22
29	---	---	---	---	---	---	15	16	16	25	23	23
30	---	---	---	---	---	---	15	16	16	27	23	19
31	---	---	---	---	---	---	---	15	---	23	23	---
TOTAL	---	---	---	---	---	---	464	476	469	632	719	675
MEAN	---	---	---	---	---	---	15.5	15.4	15.6	20.4	23.2	22.5
MAX	---	---	---	---	---	---	16	16	17	27	28	26
MIN	---	---	---	---	---	---	15	14	15	16	22	19
AC-FT	---	---	---	---	---	---	920	944	930	1250	1430	1340

GRAND-MOREAU RIVER BASIN

06357500 GRAND RIVER AT SHADEHILL, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July to September 1991.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED OF (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
JUL 11...	1042	16	1910	8.9	27.0	23.5	748	9.0	109	180	29
DATE		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	
JUL 11...	26	370	81	12	9.5	411	560	9.2	0.50	2.3	
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
JUL 11...	1290	1260	1.75	55.7	0.060	0.220	0.280	0.070	0.09	0.070	
DATE		ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
JUL 11...	2	440	9	<1	45	4	<0.1	7	<1	520	

GRAND-MOREAU RIVER BASIN

45

06357800 GRAND RIVER AT LITTLE EAGLE, SD

LOCATION.--Lat 45°39'28", long 100°49'04", in NE¼NE¼ sec.32, T.20 N., R.27 E., Corson County, Hydrologic Unit 10130303, on left bank at downstream side of bridge on State Highway 63, 1.3 mi southwest of Little Eagle, and 4.7 mi downstream from Little Oak Creek.

DRAINAGE AREA.--5,370 mi², approximately.

PERIOD OF RECORD.--July 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,628.63 ft above National Geodetic Vertical Datum of 1929. Prior to May 12, 1959, nonrecording gage, and May 12, 1959, to Aug. 11, 1970, water-stage recorder at site 0.6 mi downstream at datum 2.00 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data-collection platform at station. Flow regulated by Shadehill Dam 144 mi upstream. (See station 06357000.) This site discontinued as a National stream-quality accounting network station in September 1990. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--33 years, 231 ft³/s, 167,400 acre-ft/yr; median of yearly mean discharges, 180 ft³/s, 130,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,000 ft³/s, Mar. 23, 1987, gage height, 19.16 ft; maximum gage height, 21.76 ft, Mar. 18, 1966, from floodmarks, ice jam, site and datum then in use; no flow at times in 1958-62, 1969, 1975, 1977-85, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,520 ft³/s at 1730 hours, May 24, gage height, 5.85 ft; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	9.9	e6.0	e.00	e.01	e7.0	42	33	e1800	27	8.9	2.5
2	5.3	9.7	e5.5	e.00	e.10	e7.0	42	31	e1400	23	6.7	2.1
3	4.9	9.3	e5.0	e.00	e.30	e16	37	32	e825	19	5.8	1.7
4	4.6	9.0	e4.5	e.00	e1.0	e28	34	45	323	18	5.1	1.6
5	4.9	9.8	e5.0	e.00	e3.0	e60	31	39	199	15	4.5	1.4
6	4.2	10	e5.5	e.00	e10	e50	28	34	122	13	5.1	1.6
7	4.2	9.8	e6.0	e.00	e15	e50	25	39	100	11	5.9	1.7
8	4.4	9.0	e7.0	e.00	e14	e55	24	48	100	9.5	6.3	1.7
9	4.8	9.6	e6.0	e.00	e12	e70	23	39	129	8.8	7.1	2.1
10	4.8	11	e5.0	e.00	e10	e100	23	32	84	7.9	7.6	2.1
11	5.4	11	e4.5	e.00	e9.0	e140	29	28	60	8.2	6.2	2.1
12	6.4	11	e4.0	e.00	e9.0	e180	47	25	45	6.5	5.3	4.5
13	6.6	12	e3.5	e.00	e10	e130	63	34	35	6.5	4.8	6.9
14	6.8	14	e3.0	e.00	e9.0	e110	92	34	29	6.4	4.3	9.9
15	8.4	15	e2.0	e.00	e7.0	e90	171	57	28	10	4.3	10
16	8.5	13	e1.4	e.00	e7.0	75	247	348	21	21	4.3	8.9
17	10	12	e.50	e.00	e7.5	84	345	698	19	14	3.7	9.0
18	11	11	e.30	e.00	e8.0	83	259	403	19	9.6	3.8	9.6
19	11	11	e.16	e.00	e8.0	70	155	212	18	6.9	3.7	9.4
20	11	11	e.08	e.00	e9.0	79	105	123	19	5.5	5.5	9.5
21	17	11	e.04	e.00	e9.0	75	74	78	18	4.9	7.8	9.2
22	20	11	e.02	e.00	e8.0	97	57	62	18	4.9	13	9.3
23	19	11	e.01	e.00	e7.5	92	47	61	16	4.8	13	9.0
24	14	11	e.00	e.00	e7.0	90	39	e2000	17	4.3	11	9.9
25	12	e9.5	e.00	e.00	e7.0	78	33	e1200	17	3.7	8.1	9.7
26	11	e7.5	e.00	e.00	e7.0	75	33	e1300	23	4.0	7.2	11
27	10	e6.0	e.00	e.00	e7.5	69	40	e1150	43	8.3	6.2	11
28	10	e5.0	e.00	e.00	e8.0	63	37	e1100	58	11	4.8	12
29	10	e6.0	e.00	e.00	---	56	42	e1100	44	9.4	3.8	11
30	9.9	e6.5	e.00	e.00	---	45	36	e900	36	18	3.2	11
31	9.9	---	e.00	e.00	---	41	---	e1300	---	14	2.8	---
TOTAL	275.9	302.6	75.01	0.00	209.91	2265.0	2260	12585	5665	334.1	189.8	201.4
MEAN	8.90	10.1	2.42	.000	7.50	73.1	75.3	406	189	10.8	6.12	6.71
MAX	20	15	7.0	.00	15	180	345	2000	1800	27	13	12
MIN	4.2	5.0	.00	.00	.01	7.0	23	25	16	3.7	2.8	1.4
AC-FT	547	600	149	.00	416	4490	4480	24960	11240	663	376	399

CAL YR 1990 TOTAL 16748.51 MEAN 45.9 MAX 519 MIN .00 AC-FT 33220
WTR YR 1991 TOTAL 24363.72 MEAN 66.7 MAX 2000 MIN .00 AC-FT 48330

e Estimated

GRAND-MOREAU RIVER BASIN

06359500 MOREAU RIVER NEAR FAITH, SD

LOCATION.--Lat 45°11'52", long 102°09'22", in NW¼NW¼ sec.10, T.14 N., R.16 E., Perkins County, Hydrologic Unit 10130306, on left bank 10 ft downstream from bridge on State Highway 73, 3.1 mi downstream from Rabbit Creek, and 13.5 mi northwest of Faith.

DRAINAGE AREA.--2,660 mi², approximately.

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

REVISED RECORDS.--WSP 1176: 1944. WSP 1279: 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 2,238.68 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 5, 1949, nonrecording gage 0.3 mi upstream and Oct. 5, 1949, to July 16, 1959, nonrecording gage and crest-stage gage at present site; both at datum 1.0 ft higher. July 17, 1959, to Sept. 1, 1971, recording gage at site 500 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--48 years, 131 ft³/s, 94,910 acre-ft/yr; median of yearly mean discharges, 91 ft³/s, 65,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s, Apr. 9, 1944, gage height, 20.9 ft, from floodmarks, site and datum then in use, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1944, 1946, 1948-51, 1955-66, 1968-71, 1974-75, 1978-81, 1985, 1988-91.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 1	1645	*1,340	*5.79				

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.2	e2.6	e.25	e.00	e.34	13	107	684	6.0	9.3	.00
2	.00	2.9	e2.4	e.23	e.00	e.28	11	78	451	4.7	56	.00
3	.00	2.5	e2.2	e.20	e.02	e.36	11	65	209	3.9	26	.00
4	.00	2.2	e2.5	e.10	e.04	e.47	9.5	58	442	3.0	9.6	.00
5	.00	2.4	e2.8	e.09	e.07	e.54	8.4	49	213	2.6	59	.00
6	.00	1.9	e3.7	e.03	e.08	e.50	8.1	43	194	1.8	50	.00
7	.00	2.6	e3.7	e.00	e.07	e.50	7.7	39	119	2.5	35	.00
8	.00	3.5	e4.0	e.00	e.08	e.60	7.8	38	100	2.1	26	.00
9	.00	3.0	e3.8	e.00	e.10	e.80	9.4	30	84	1.7	18	.00
10	.00	3.4	e3.6	e.00	e.09	e1.0	8.6	25	56	18	17	.00
11	.00	3.4	e3.4	e.00	e.09	e2.0	13	24	52	106	12	.00
12	.00	3.6	e3.2	e.00	e.09	e5.0	36	31	49	14	8.0	.00
13	.00	3.9	e2.8	e.00	e.15	e7.0	35	64	36	6.1	5.6	.00
14	.00	4.2	e2.8	e.00	e.12	e9.0	55	46	29	3.7	4.3	8.3
15	.00	4.2	e2.8	e.00	e.10	e12	63	204	29	1.7	5.3	33
16	.00	4.1	e2.7	e.00	e.15	e16	70	258	25	.96	5.0	17
17	.00	4.1	e1.8	e.00	e.20	e23	63	313	23	.95	4.1	8.2
18	.00	4.2	e1.0	e.00	e.18	e27	60	155	18	.89	3.2	4.4
19	.00	4.5	e.62	e.00	e.16	e28	56	147	16	.51	2.3	2.9
20	.00	4.5	e.42	e.00	e.18	e28	105	183	15	38	1.9	1.8
21	.00	4.8	e.42	e.00	e.25	e32	112	103	13	6.8	1.2	2.1
22	.45	4.9	e.38	e.00	e.28	38	83	80	15	58	.90	1.5
23	1.8	4.7	e.42	e.00	e.27	32	66	192	18	35	.69	1.0
24	2.3	4.9	e.45	e.00	e.26	31	46	116	17	24	.48	.82
25	2.5	e3.2	e.35	e.00	e.25	28	35	68	12	47	.38	.57
26	2.4	e1.6	e.37	e.00	e.28	25	32	44	11	46	.24	.43
27	2.1	e2.0	e.40	e.00	e.30	24	30	35	9.8	35	.12	.30
28	2.4	e2.2	e.22	e.00	e.34	20	27	63	11	28	.02	.19
29	2.7	e2.7	e.10	e.00	---	18	70	62	10	22	.00	.12
30	2.8	e2.8	e.15	e.00	---	16	133	60	8.2	16	.00	.07
31	2.7	---	e.20	e.00	---	14	---	500	---	12	.00	---
TOTAL	22.15	102.1	56.30	0.90	4.20	440.39	1284.5	3280	2969.0	548.91	361.63	82.70
MEAN	.71	3.40	1.82	.029	.15	14.2	42.8	106	99.0	17.7	11.7	2.76
MAX	2.8	4.9	4.0	.25	.34	38	133	500	684	106	59	33
MIN	.00	1.6	.10	.00	.00	.28	7.7	24	8.2	.51	.00	.00
AC-FT	44	203	112	1.8	8.3	874	2550	6510	5890	1090	717	164

CAL YR 1990 TOTAL 8421.87 MEAN 23.1 MAX 353 MIN .00 AC-FT 16700
WTR YR 1991 TOTAL 9152.78 MEAN 25.1 MAX 684 MIN .00 AC-FT 18150

e Estimated

GRAND-MOREAU RIVER BASIN

47

06360500 MOREAU RIVER NEAR WHITEHORSE, SD
(National stream-quality accounting network station)

LOCATION.--Lat 45°15'21", long 100°50'33", in SW¼SE¼ sec.17, T.15 N., R.27 E., Dewey County, Hydrologic Unit 10130306, on left bank 30 ft downstream from bridge, 2.4 mi southeast of Whitehorse, 8.8 mi downstream from Little Moreau River, and 16.3 mi southeast of town of Timber Lake.

DRAINAGE AREA.--4,880 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1954 to current year.

REVISED RECORDS.--WDR SD-78-1: 1977.

GAGE.--Water-stage recorder. Datum of gage is 1,661.48 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 24, 1954, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data-collection platform at station. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--37 years, 209 ft³/s, 151,400 acre-ft/yr; median of yearly mean discharges, 120 ft³/s, 86,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,700 ft³/s, May 24, 1982, gage height, 26.00 ft; maximum gage height, 26.20 ft, Mar. 14, 1972, backwater from ice; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a stage of about 26.2 ft. Flood in March 1947 was probably higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 23	0815	*4,050	*10.20	May 31	1920	1,920	6.69

No flow for many days.

GRAND-MOREAU RIVER BASIN

06360500 MOREAU RIVER NEAR WHITEHORSE, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	28	49	219	21	19	.01
2	.00	.00	.00	.00	.00	.00	22	43	313	19	22	.00
3	.00	.00	.00	.00	.00	.00	20	41	606	10	40	.00
4	.00	.00	.00	.00	.00	.00	17	133	764	5.8	59	.00
5	.00	.00	.00	.00	.00	e.00	15	168	590	3.4	70	.00
6	.00	.00	.00	.00	.00	e.01	13	110	367	2.1	51	.00
7	.00	.00	.00	.00	.00	e.02	11	88	447	1.8	51	.00
8	.00	.00	.00	.00	.00	e.02	9.9	75	312	1.3	43	.00
9	.00	.00	.00	.00	.00	e.02	9.5	65	268	.94	26	.00
10	.00	.00	.00	.00	.00	e.02	8.4	55	225	.43	15	.00
11	.00	.00	.00	.00	.00	e.03	9.5	47	154	.24	14	.00
12	.00	.00	.00	.00	.00	e.04	21	43	120	.15	24	.00
13	.00	.00	.00	.00	.00	e.09	38	67	104	.11	16	.00
14	.00	.00	.00	.00	.00	e.30	81	48	91	.06	11	.00
15	.00	.00	.00	.00	.00	e1.0	199	54	91	.02	7.7	.00
16	.00	.00	.00	.00	.00	e3.0	131	100	62	.00	5.1	.00
17	.00	.00	.00	.00	.00	e10	80	62	49	.00	3.4	.00
18	.00	.00	.00	.00	.00	33	82	61	44	.00	2.7	.00
19	.00	.00	.00	.00	.00	40	90	262	37	.00	2.0	.00
20	.00	.00	.00	.00	.00	48	83	377	29	.00	479	.00
21	.00	.00	.00	.00	.00	53	83	229	22	.00	143	.00
22	.00	.00	.00	.00	.00	54	77	170	20	24	42	.00
23	.00	.00	.00	.00	.00	46	71	1730	17	13	22	.00
24	.00	.00	.00	.00	.00	45	85	416	15	5.8	13	.00
25	.00	.00	.00	.00	.00	43	120	155	11	7.7	6.2	.00
26	.00	.00	.00	.00	.00	45	100	225	8.3	7.5	2.7	.00
27	.00	.00	.00	.00	.00	43	104	232	7.1	7.0	1.0	.00
28	.00	.00	.00	.00	.00	45	88	181	6.0	7.6	.70	.00
29	.00	.00	.00	.00	---	39	71	200	5.0	12	.27	.00
30	.00	.00	.00	.00	---	34	59	124	4.7	11	.15	.00
31	.00	---	.00	.00	---	32	---	967	---	7.2	.06	---
TOTAL	0.00	0.00	0.00	0.00	0.00	614.55	1826.3	6577	5008.1	169.15	1191.98	0.01
MEAN	.0000	.0000	.0000	.0000	.0000	19.8	60.9	212	167	5.46	38.5	.0000
MAX	.00	.00	.00	.00	.00	54	199	1730	764	24	479	.01
MIN	.00	.00	.00	.00	.00	.00	8.4	41	4.7	.00	.06	.00
AC-FT	.00	.00	.00	.00	.00	1220	3620	13050	9930	336	2360	.02

CAL YR 1990 TOTAL 20688.59 MEAN 56.7 MAX 1150 MIN .00 AC-FT 41040
WTR YR 1991 TOTAL 15387.09 MEAN 42.2 MAX 1730 MIN .00 AC-FT 30520

e Estimated

GRAND-MOREAU RIVER BASIN

49

06360500 MOREAU RIVER NEAR WHITEHORSE, SD--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1968 to September 1969, October 1971 to September 1976, October 1977 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1970 to September 1976.

REMARKS.--Sediment-discharge records prior to Oct. 1, 1971, on file in the District office, U.S. Army Corps of Engineers, Omaha, Nebraska.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 20,300 mg/L, May 9, 1972; minimum daily mean, 0 mg/L on many days most years.

SEDIMENT LOAD: Maximum daily, 420,000 tons, May 10, 1975; minimum daily, 0 ton on many days each year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (MG/L) (00300)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	
APR 09...	1215	9.6	2020	8.6	380	13.0	13.5	30	715	10.5	108	K12
JUN 17...	1330	48	1140	8.1	132	26.5	27.0	270	710	8.2	111	K800
AUG 26...	1305	2.7	963	8.5	98	36.5	30.0	29	713	11.3	161	--

DATE	STREP-TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
APR 09...	40	150	32	18	430	85	15	7.8	389	740	18
JUN 17...	K1300	200	45	21	180	65	6	8.8	140	430	6.8
AUG 26...	--	230	65	17	120	52	3	10	104	370	7.4

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
APR 09...	0.50	2.3	1360	1480	1.85	35.4	0.040	<0.010	--	--	<0.050
JUN 17...	0.40	7.8	754	781	1.03	97.3	0.320	0.010	0.190	0.500	0.510
AUG 26...	0.30	8.0	660	658	0.90	4.74	0.040	0.010	0.180	0.190	0.220

GRAND-MOREAU RIVER BASIN

06360500 MOREAU RIVER NEAR WHITEHORSE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
APR 09...	<0.050	0.080	0.050	0.06	0.80	--	0.090	0.010	0.040	<0.010	20
JUN 17...	0.510	0.240	0.050	0.06	1.6	9.3	0.180	0.150	0.170	0.030	--
AUG 26...	0.200	0.020	0.020	0.03	1.3	6.7	0.140	0.050	0.050	<0.010	20
DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
APR 09...	1	<100	<10	<1.0	2	<1	3	10	<1	130	<10
JUN 17...	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	2	34	<0.5	<1.0	<1	<3	5	4	<1	110	2
DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. Z FINER THAN .062 MM (70331)
APR 09...	<0.1	5	4	3	<1.0	550	3	<10	130	3.4	99
JUN 17...	--	--	--	--	--	--	--	--	431	56	99
AUG 26...	<0.1	<10	6	3	<1.0	480	<6	<3	59	0.42	98

CHEYENNE RIVER BASIN

51

06392900 BEAVER CREEK AT MALLO CAMP, NEAR FOUR CORNERS, WY

LOCATION.--Lat 44°05'06", long 104°03'36", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.4, T.47 N., R.60 W., Weston County, Hydrologic Unit 10120107, on right bank in Mallo Campgrounds, 250 ft upstream from mouth, 750 ft upstream from dam on Stockade Beaver Creek, and 3.8 mi east of Four Corners.

DRAINAGE AREA.--10.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to September 1982, April to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 6,030 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1974 to September 1982 at site 50 ft upstream and datum 3.11 ft lower.

REMARKS.--No estimated daily discharges. Records good. No diversions upstream from station.

AVERAGE DISCHARGE.--8 years (water years 1975-82), 1.94 ft³/s, 1,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21 ft³/s, Apr. 26, 1975, gage height, 5.40 ft, site and datum then in use; minimum daily discharge, 0.23 ft³/s, Oct. 14, 1977.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 10 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 8	2130	a*15	*1.42	No other peak greater than base discharge.			
a From rating curve extended above 3 ft ³ /s on basis of critical-depth discharge computations. Minimum daily discharge, 1.2 ft ³ /s, Apr. 30.							

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	1.2	2.3	1.5	1.5	1.5
2	---	---	---	---	---	---	---	1.2	2.0	1.4	1.5	1.6
3	---	---	---	---	---	---	---	1.2	2.2	1.5	1.4	1.6
4	---	---	---	---	---	---	---	1.1	2.2	1.4	1.4	1.6
5	---	---	---	---	---	---	---	1.1	2.1	1.4	1.5	1.6
6	---	---	---	---	---	---	---	1.2	2.1	1.5	1.4	1.6
7	---	---	---	---	---	---	---	1.3	2.1	1.4	1.4	1.6
8	---	---	---	---	---	---	---	3.2	1.9	1.5	1.4	1.7
9	---	---	---	---	---	---	---	3.0	1.9	1.4	1.4	1.6
10	---	---	---	---	---	---	---	2.2	1.8	1.5	1.4	1.7
11	---	---	---	---	---	---	---	2.1	1.8	1.4	1.5	1.7
12	---	---	---	---	---	---	---	3.5	1.7	1.4	1.5	1.7
13	---	---	---	---	---	---	---	2.1	1.7	1.4	1.4	1.7
14	---	---	---	---	---	---	---	1.8	1.9	1.4	1.4	1.7
15	---	---	---	---	---	---	---	2.1	1.7	1.4	1.4	1.7
16	---	---	---	---	---	---	---	1.8	1.6	1.4	1.5	1.6
17	---	---	---	---	---	---	---	1.7	1.6	1.4	1.5	1.6
18	---	---	---	---	---	---	---	1.6	1.6	1.4	1.5	1.6
19	---	---	---	---	---	---	---	1.6	1.6	1.4	1.5	1.6
20	---	---	---	---	---	---	---	1.5	1.5	1.4	1.5	1.6
21	---	---	---	---	---	---	---	1.5	1.5	1.4	1.5	1.6
22	---	---	---	---	---	---	---	1.7	1.6	1.4	1.5	1.6
23	---	---	---	---	---	---	---	1.7	1.5	1.4	1.5	1.7
24	---	---	---	---	---	---	---	1.5	1.5	1.6	1.5	1.7
25	---	---	---	---	---	---	2.1	1.5	1.5	1.4	1.5	1.6
26	---	---	---	---	---	---	2.0	1.6	1.5	1.5	1.5	1.6
27	---	---	---	---	---	---	1.7	1.8	1.5	1.5	1.5	1.6
28	---	---	---	---	---	---	1.5	2.1	1.5	1.5	1.5	1.6
29	---	---	---	---	---	---	1.3	2.0	1.4	1.4	1.5	1.6
30	---	---	---	---	---	---	1.2	1.8	1.5	1.5	1.5	1.7
31	---	---	---	---	---	---	---	1.7	---	1.4	1.5	---
TOTAL	---	---	---	---	---	---	---	55.4	52.3	44.5	45.5	48.9
MEAN	---	---	---	---	---	---	---	1.79	1.74	1.44	1.47	1.63
MAX	---	---	---	---	---	---	---	3.5	2.3	1.6	1.5	1.7
MIN	---	---	---	---	---	---	---	1.1	1.4	1.4	1.4	1.5
AC-FT	---	---	---	---	---	---	---	110	104	88	90	97

CHEYENNE RIVER BASIN

06392900 BEAVER CREEK AT MALLO CAMP, NEAR FOUR CORNERS, WY--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--May 1989 to current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 6,000 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated periods, which are poor. Precipitation gage is located 0.2 mi south of streamflow gaging station.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.21	.00	.00	.00	.09	.00	.00	.45	.00	.00	.00
2	.04	.19	.03	.00	.00	.00	.00	.29	.00	.00	.00	.00
3	.03	.00	.00	.00	.00	.00	.00	.02	.75	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.02	.02	.00	.00	.00
5	.00	.06	.00	.00	.00	.21	.00	.00	.18	.07	.39	.00
6	.28	.00	.00	.00	.00	.02	.00	.05	.11	.00	.06	.00
7	.20	.00	.00	.00	.00	.04	.29	.11	.04	.00	.09	.03
8	.00	.04	.00	.00	.00	.06	.40	.00	.00	.16	.00	.01
9	.02	.00	.00	.00	.00	.00	.19	.00	.00	.03	.01	.00
10	.03	.00	.00	.02	.00	.00	.12	.12	.00	.27	.00	.00
11	.05	.00	.00	.00	.00	.38	.31	.74	.00	.00	.05	.00
12	.00	.00	.03	.00	.02	.13	.15	.16	.00	.00	.00	.05
13	.15	.00	.00	.00	.27	.00	.06	.00	.47	.00	.00	.00
14	.00	.00	.50	.00	.12	.00	.05	.39	.46	.00	.00	.14
15	.00	.00	.04	.01	.00	.02	.02	.55	.02	.00	.03	.25
16	.18	.00	.00	.07	.01	.00	.00	.04	.00	.00	.08	.00
17	.32	.00	.01	.00	.59	.00	.00	.05	.02	.00	.00	.00
18	.00	.00	.37	.00	.22	.00	.12	.00	.00	.00	.00	.00
19	.11	.00	.06	.15	.03	.00	.48	.03	.00	.00	.03	.00
20	.00	.11	.05	.17	.00	.00	.00	.01	.12	.00	.00	.00
21	.00	.04	.00	.03	.00	.06	.04	.00	.00	.00	.00	.00
22	.01	.00	.00	.22	.00	.11	.00	.67	.18	.00	.05	.00
23	.10	.00	.09	.28	.00	.05	.00	.00	.00	.05	.03	.00
24	.00	.00	.15	.00	.13	.02	.00	.00	.00	.50	.00	.00
25	.00	.00	.04	.00	.35	.00	.14	.00	.00	.02	.00	.00
26	.02	.00	.00	.02	.00	.00	1.18	.56	.00	.04	.00	.00
27	.00	.00	.00	.12	.02	.01	.45	.70	.01	.00	.04	.00
28	.00	.00	.09	.20	.00	.00	.65	.00	.27	.00	.03	.00
29	.00	.00	.00	.01	---	.04	.17	.43	.05	.03	.00	.00
30	.00	.00	.03	.00	---	.00	.03	.04	.00	.00	.00	.00
31	.00	---	.00	.00	---	.02	---	.46	---	.00	.00	---
TOTAL	1.54	0.65	1.49	1.30	1.76	1.26	4.85	5.44	3.15	1.17	0.89	0.48

CAL YR 1990 TOTAL 19.12
WTR YR 1991 TOTAL 23.98

CHEYENNE RIVER BASIN

53

06392950 STOCKADE BEAVER CREEK NEAR NEWCASTLE, WY

LOCATION.--Lat 43°51'32", long 104°06'24", in SW¼SE¼ sec.19, T.45 N., R.60 W., Weston County, Hydrologic Unit 10120107, on right bank 20 ft upstream of culvert on county road, 0.6 mi upstream from South Draw, 2.5 mi upstream from LAK Reservoir Dam, and 4.7 mi east of Newcastle.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--October 1974 to September 1982, April to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 4,460 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1974 to September 1982, at same site and datum.

REMARKS.--No estimated daily discharges. Records good. A few small diversions upstream from station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 361 ft³/s, June 1, 1991, gage height, 9.35 ft, from rating curve extended above 18 ft³/s on basis of culvert computations; maximum gage height, 9.87 ft, Feb. 4, 1982 (backwater from ice); minimum daily discharge, 6.0 ft³/s, July 17, 1981, May 23, 24, 1982.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 1	0130	a*361	*9.35	No other peak greater than base discharge.			

a From rating curve extended above 18 ft³/s on basis of culvert computations.
Minimum daily discharge, 6.9 ft³/s, Sept. 11.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	10	58	10	7.6	7.9
2	---	---	---	---	---	---	---	9.7	17	10	7.4	8.1
3	---	---	---	---	---	---	---	10	18	9.8	7.2	8.2
4	---	---	---	---	---	---	---	9.7	14	9.8	7.4	8.3
5	---	---	---	---	---	---	---	9.3	12	9.7	7.8	8.4
6	---	---	---	---	---	---	---	9.1	13	9.8	7.9	8.3
7	---	---	---	---	---	---	---	9.3	12	9.7	7.8	8.8
8	---	---	---	---	---	---	---	9.1	11	9.4	7.5	9.3
9	---	---	---	---	---	---	---	9.0	11	9.6	8.2	9.2
10	---	---	---	---	---	---	---	9.2	11	9.9	7.9	8.4
11	---	---	---	---	---	---	---	9.6	10	10	7.6	6.9
12	---	---	---	---	---	---	---	20	10	9.3	7.5	8.2
13	---	---	---	---	---	---	---	10	10	8.3	8.0	8.9
14	---	---	---	---	---	---	---	10	11	8.1	7.4	8.4
15	---	---	---	---	---	---	---	11	10	8.6	7.5	8.4
16	---	---	---	---	---	---	11	11	10	9.5	10	8.5
17	---	---	---	---	---	---	11	11	9.9	8.6	8.0	8.4
18	---	---	---	---	---	---	11	10	9.8	8.5	7.6	9.0
19	---	---	---	---	---	---	12	10	9.9	8.5	8.3	8.9
20	---	---	---	---	---	---	11	10	9.9	8.4	8.4	8.3
21	---	---	---	---	---	---	11	10	10	8.6	8.8	8.3
22	---	---	---	---	---	---	11	11	10	8.7	8.8	8.4
23	---	---	---	---	---	---	11	11	10	8.4	8.9	9.0
24	---	---	---	---	---	---	11	10	9.8	8.9	9.0	9.8
25	---	---	---	---	---	---	9.8	10	9.7	9.2	8.9	9.8
26	---	---	---	---	---	---	11	10	9.8	8.9	8.6	9.7
27	---	---	---	---	---	---	11	11	9.8	8.8	8.6	10
28	---	---	---	---	---	---	11	12	9.9	8.7	8.7	11
29	---	---	---	---	---	---	11	11	10	8.6	8.6	11
30	---	---	---	---	---	---	10	10	10	8.6	8.6	11
31	---	---	---	---	---	---	---	11	---	8.3	8.4	---
TOTAL	---	---	---	---	---	---	---	324.0	376.5	281.2	252.9	266.8
MEAN	---	---	---	---	---	---	---	10.5	12.5	9.07	8.16	8.89
MAX	---	---	---	---	---	---	---	20	58	10	10	11
MIN	---	---	---	---	---	---	---	9.0	9.7	8.1	7.2	6.9
AC-FT	---	---	---	---	---	---	---	643	747	558	502	529

CHEYENNE RIVER BASIN

06395000 CHEYENNE RIVER AT EDMONT, SD

LOCATION.--Lat 43°18'20", long 103°49'14", in SW¼SE¼SE¼ sec.36, T.8 S., R.2 E., Fall River County, Hydrologic Unit 10120106, on right bank at downstream side of bridge on U.S. Highway 18, at Edgemont, 300 ft downstream from Burlington Northern Railroad bridge, and 600 ft upstream from Cottonwood Creek.

DRAINAGE AREA.--7,143 mi².

PERIOD OF RECORD.--June 1903 to November 1906 (no winter records), April 1928 to February 1933, October 1946 to current year.

REVISED RECORDS.--WSP 1086: Drainage area. WSP 1116: 1947. WDR SD-78-1: 1977.

GAGE.--Water-stage recorder. Datum of gage is 3,414.56 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 1, 1906, nonrecording gage 20 ft upstream at datum 0.7 ft lower. Apr. 11, 1928, to Feb. 28, 1933, Oct. 4, 1946, to Oct. 23, 1947, and Jan. 11, 1961, to Apr. 24, 1963, nonrecording gage, and Oct. 24, 1947, to Jan. 10, 1961, and Apr. 25, 1963, to Sept. 30, 1972, water-stage recorder all at present site at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Many small reservoirs above station used for stock and irrigation water, total capacity, about 45,000 acre-ft. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. U.S. Bureau of Reclamation satellite data-collection platform at station.

AVERAGE DISCHARGE.--49 years, 93.7 ft³/s, 67,880 acre-ft/yr; median of yearly mean discharges, 72 ft³/s, 52,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,000 ft³/s, May 20, 1978, gage height, 13.65 ft, present datum; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 12, 1920, reached a stage of 13.0 ft and May 1, 1922, 14.0 ft, present datum, from floodmarks at railroad bridge.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	0600	3,450	7.29	May 25	2000	2,470	6.34
May 18	0515	3,950	7.45	June 2	1045	*8,700	*9.60

No flow Jan. 21-31.

CHEYENNE RIVER BASIN

55

06395000 CHEYENNE RIVER AT EDMONT, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	11	9.7	e.50	e.30	e2.0	3.1	17	3270	362	20	7.2
2	9.1	21	6.8	e.50	e.40	e2.0	4.0	43	6110	280	19	5.1
3	11	15	6.3	e.40	e.60	e2.0	3.6	68	5280	164	17	4.2
4	15	12	6.8	e.40	e.60	e6.0	5.4	58	4610	119	15	3.4
5	17	12	7.7	e.40	e.60	e10	11	49	2290	99	16	4.4
6	18	17	6.6	e.40	e.60	e8.0	16	40	1600	83	16	3.8
7	20	16	6.9	e.50	e.60	e7.0	26	37	1370	72	20	3.4
8	22	16	7.4	e.50	e.60	e7.0	33	36	898	64	18	2.8
9	20	11	9.7	e.50	e.60	e10	34	35	651	59	18	2.1
10	23	8.7	12	e.60	e.60	e30	27	34	520	57	15	1.5
11	25	11	12	e.80	e.60	e100	28	35	436	53	14	1.9
12	21	7.2	14	e.90	e.60	e60	29	1120	353	52	9.4	2.8
13	20	e7.0	7.4	e1.0	e.60	e50	30	1430	303	50	10	4.7
14	22	e7.0	8.8	e1.0	e.60	e30	37	1480	274	46	17	11
15	19	7.0	7.5	e1.0	e.50	e20	36	1350	272	42	59	9.5
16	19	6.7	e4.0	e1.0	e.70	e20	22	845	318	51	40	7.4
17	19	6.4	e3.5	e1.0	e.70	e20	14	1430	291	58	27	7.1
18	17	6.6	e3.5	e.70	e.60	e25	15	3050	372	67	22	6.5
19	19	6.7	e3.0	e.40	e.70	e25	22	1370	278	49	18	6.4
20	17	7.0	e1.0	e.20	e1.2	e35	16	715	210	41	16	6.3
21	16	7.7	e.40	e.00	e2.5	36	20	614	177	37	12	6.7
22	15	7.1	e.30	e.00	e2.0	35	39	1100	157	34	9.7	6.3
23	14	7.0	e.40	e.00	e1.5	27	35	811	157	34	8.7	6.4
24	15	7.1	e.60	e.00	e1.5	24	59	1000	144	32	7.6	6.4
25	16	7.3	e.60	e.00	e1.0	17	43	1620	143	30	6.4	6.5
26	19	6.8	e.60	e.00	e1.0	14	32	1420	152	29	5.6	6.7
27	13	5.6	e.60	e.00	e1.0	11	16	906	159	27	6.4	6.7
28	11	6.4	e.50	e.00	e1.5	8.6	14	2700	129	26	6.7	7.6
29	9.5	7.2	e.40	e.00	---	7.3	15	3570	108	25	9.5	8.2
30	7.2	10	e.40	e.00	---	6.8	14	2220	97	30	9.7	8.3
31	7.7	---	e.50	e.00	---	5.4	---	1520	---	24	9.2	---
TOTAL	502.5	284.5	149.90	12.70	24.30	661.1	699.1	30723	31129	2196	497.9	171.3
MEAN	16.2	9.48	4.84	.41	.87	21.3	23.3	991	1038	70.8	16.1	5.71
MAX	25	21	14	1.0	2.5	100	59	3570	6110	362	59	11
MIN	6.0	5.6	.30	.00	.30	2.0	3.1	17	97	24	5.6	1.5
AC-FT	997	564	297	25	48	1310	1390	60940	61740	4360	988	340

CAL YR 1990 TOTAL 11749.09 MEAN 32.2 MAX 665 MIN .00 AC-FT 23300
WTR YR 1991 TOTAL 67051.30 MEAN 184 MAX 6110 MIN .00 AC-FT 133000

e Estimated

CHEYENNE RIVER BASIN

06400000 HAT CREEK NEAR EDMONT, SD

LOCATION.--Lat 43°14'24", long 103°35'16", in SW¼SE¼NE¼ sec.25, T.9 S., R.4 E., Fall River County, Hydrologic Unit 10120108, on right bank at upstream side of bridge on State Highway 71, 2.4 mi upstream from mouth, 2.0 mi west of Heppner, and 12.5 mi southeast of Edgemont.

DRAINAGE AREA.--1,044 mi².

PERIOD OF RECORD.--April 1905 to September 1906, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,295.71 ft above National Geodetic Vertical Datum of 1929. Non-recording gage Apr. 8, 1905, to May 2, 1906, at site 0.6 mi downstream and May 3 to July 7, 1906, at site 0.4 mi upstream at different datum. Nov. 6, 1950, to May 1, 1951, and July 18 to Sept. 7, 1975, nonrecording gage and May 2, 1951, to July 17, 1975, recording gage, at site 0.4 mi downstream at present datum.

REMARKS.--Records poor. A few small diversions upstream from station for irrigation. Lander ditch diverts water from Hat Creek 0.4 mi upstream from gaging station for irrigating hay meadows downstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. Results of discharge measurements, in cubic feet per second, of Lander ditch during water year 1991 are given herewith:

Oct. 31	0	Apr. 17	0	July 31	0
Dec. 10	0	May 13	4.49	Sept. 9	0
Jan. 24	0	June 20	0	Sept. 17	0
Mar. 20	1.14				

AVERAGE DISCHARGE.--42 years, 18.1 ft³/s, 13,100 acre-ft/yr; median of yearly mean discharges, 12 ft³/s, 8,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft³/s, June 16, 1967, gage height, 13.35 ft, from rating curve extended above 2,600 ft³/s on basis of slope-area measurement at 11.98 ft; maximum gage height, 17.28 ft, May 17, 1991; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	2115	*7,870	*17.28	May 30	1030	1,210	12.50

No flow for many days.

CHEYENNE RIVER BASIN

57

06400000 HAT CREEK NEAR EDMONT, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.16	.85	7.2	391	18	2.1	.00
2	.00	.00	.00	.00	.00	e.18	1.2	7.5	283	15	2.0	.00
3	.00	.00	.00	.00	.00	e.20	1.4	10	477	13	1.9	.00
4	.00	.00	.00	.00	.00	e.20	2.1	9.8	612	11	2.3	.00
5	.00	.00	.00	.00	.00	e.20	1.9	7.6	436	9.5	2.8	.00
6	.00	.00	.00	.00	.00	e.20	1.8	7.7	319	9.7	2.9	.00
7	.00	.00	.00	.00	.00	e.20	1.3	5.8	289	7.1	2.9	.00
8	.00	.00	.00	.00	.00	e.25	.94	8.9	221	5.3	2.9	.00
9	.00	.00	.00	.00	.00	e.25	.40	15	173	4.3	2.5	.00
10	.00	.00	.00	.00	.00	e.25	.96	21	148	3.2	2.4	.00
11	.00	.00	.00	.00	.00	e.25	1.2	23	123	2.1	1.6	.00
12	.00	.00	.00	.00	.00	e.25	1.4	498	73	1.5	.96	.00
13	.00	.00	.00	.00	.00	e.25	1.1	433	60	9.5	.74	.00
14	.00	.00	.00	.00	.00	e.25	1.0	175	54	3.7	27	.00
15	.00	.00	.00	.00	.00	e.25	.59	72	52	1.1	10	.00
16	.00	.00	.01	.00	.00	e.25	.11	64	82	.12	5.4	.00
17	.00	.00	.00	.00	.00	e.30	.16	1780	61	.00	3.6	.00
18	.00	.00	.00	.00	.00	e.30	.40	2890	51	.00	4.0	.00
19	.00	.00	.00	.00	e.31	e.30	2.0	915	46	.00	3.2	.00
20	.00	.00	.00	.00	e.35	e.30	1.3	504	36	.00	2.1	.00
21	.00	.00	.00	.00	e.35	.23	1.5	320	30	.00	1.0	.00
22	.00	.00	.00	.00	e.35	.09	3.7	191	28	.00	.21	.00
23	.00	.00	.00	.00	e.35	.12	3.8	163	26	.00	.00	.00
24	.00	.00	.00	.00	e.35	.19	4.5	111	24	.00	.00	.00
25	.00	.00	.00	.00	e.35	.16	42	95	22	.05	.00	.00
26	.00	.00	.00	.00	e.35	.31	74	67	28	.08	.00	.00
27	.00	.00	.00	.00	e.16	.32	18	89	22	.31	.00	.00
28	.00	.00	.00	.00	e.16	.46	4.6	247	36	.26	.00	.00
29	.00	.00	.00	.00	---	.36	4.6	653	20	.46	.00	.00
30	.00	.00	.00	.00	---	.34	9.2	1080	18	1.1	.00	.00
31	.00	---	.00	.00	---	.56	---	633	---	1.2	.00	---
TOTAL	0.00	0.00	0.01	0.00	3.08	7.93	188.01	11103.5	4241	117.58	84.51	0.00
MEAN	.000	.000	.000	.000	.11	.26	6.27	358	141	3.79	2.73	.000
MAX	.00	.00	.01	.00	.35	.56	74	2890	612	18	27	.00
MIN	.00	.00	.00	.00	.00	.09	.11	5.8	18	.00	.00	.00
AC-FT	.00	.00	.02	.00	6.1	16	373	22020	8410	233	168	.00

CAL YR 1990 TOTAL 104.00 MEAN .28 MAX 11 MIN .00 AC-FT 206
WTR YR 1991 TOTAL 15745.62 MEAN 43.1 MAX 2890 MIN .00 AC-FT 31230

e Estimated

CHEYENNE RIVER BASIN

59

06400875 HORSEHEAD CREEK AT OELRICHS, SD

LOCATION.--Lat 43°11'17", long 103°13'34", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.7, T.10 S., R.8 E., Fall River County, Hydrologic Unit 10120106, on left bank on downstream side of bridge on Highway 18, 1.5 mi upstream (corrected) from Lone Well Creek, and 0.6 mi northeast of Oelrichs.

DRAINAGE AREA.--187 mi².

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

REVISED RECORDS.--WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,320 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Diversions for irrigation of 624 acres upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--8 years, 8.49 ft³/s, 6,150 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,270 ft³/s, May 11, 1991, gage height, 18.57 ft; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,270 ft³/s at 0730 hours, May 11, gage height, 18.57 ft; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	84	3.0	.00	.00
2	.00	.48	.00	.00	.00	.00	.00	.00	164	2.6	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	113	29	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	656	27	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	260	19	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	177	13	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	85	3.4	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	69	2.1	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	22	1.7	1.9	.00
10	.00	.00	.00	.00	.00	.00	.00	225	42	1.6	2.0	.00
11	.00	.00	.00	.00	.00	.00	.59	4080	37	1.6	1.3	.00
12	.00	.00	.00	.00	.00	.00	.39	945	31	1.5	.88	.00
13	.00	.00	.00	.00	.00	.00	.00	199	10	1.3	.63	.00
14	.00	.00	.00	.00	.00	.00	.00	88	8.4	1.1	.42	.00
15	.00	.00	.00	.00	.00	.00	.00	53	8.0	.84	.22	.00
16	.00	.00	.00	.00	.00	.00	.00	49	7.5	.60	.02	.00
17	.00	.00	.00	.00	.00	.00	.00	211	7.2	.37	.00	.00
18	.00	.00	.00	.00	.00	.00	.67	593	7.0	.17	.00	.00
19	.00	.00	.00	.00	.00	.00	1.2	162	6.9	.01	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	88	7.0	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	68	6.8	.00	.00	.00
22	.00	.00	.00	.00	.00	.27	.00	56	5.1	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	29	3.5	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	40	2.8	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	53	2.3	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	42	9.3	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	39	14	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	63	14	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	322	6.0	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	145	3.0	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	78	---	.00	.00	---
TOTAL	0.00	0.48	0.00	0.00	0.00	0.27	2.85	7628.00	1868.8	109.89	7.37	0.00
MEAN	.000	.016	.000	.000	.000	.009	.095	246	62.3	3.54	.24	.000
MAX	.00	.48	.00	.00	.00	.27	1.2	4080	656	29	2.0	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	2.3	.00	.00	.00
AC-FT	.00	1.0	.00	.00	.00	.5	5.7	15130	3710	218	15	.00

CAL YR 1990 TOTAL 0.48 MEAN .001 MAX .48 MIN .00 AC-FT 1.0
WTR YR 1991 TOTAL 9617.66 MEAN 26.3 MAX 4080 MIN .00 AC-FT 19080

CHEYENNE RIVER BASIN

06401000 ANGOSTURA RESERVOIR NEAR HOT SPRINGS, SD

LOCATION.--Lat 43°20'35", long 103°26'16", in SW¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, Hydrologic Unit 10120106, at dam on Cheyenne River, 6.5 mi southeast of Hot Springs.

DRAINAGE AREA.--9,100 mi², approximately.

PERIOD OF RECORD.--October 1949 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Aug. 26, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir formed by concrete gravity dam with earth embankment with gated concrete gravity spillway section. Storage began Oct. 3, 1949; dam completed December 1949. Conservation capacity, 82,400 acre-ft between elevations 3,163.0 ft and 3,187.2 ft (top of spillway gates). Inactive storage, 39,700 acre-ft between elevations 3,139.75 ft (invert of lowest outlet) and 3,163.0 ft. Dead storage below elevation 3,139.75 ft, 8,600 acre-ft. Surcharge capacity, 56,400 acre-ft between elevations 3,187.2 ft and 3,198.1 ft (maximum water surface). Figures given herein represent contents above elevation 3,139.75 ft. Water stored for irrigation.

COOPERATION.--Records of elevation, contents, and diversions to Angostura project provided by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 145,200 acre-ft, June 18, 1962, elevation, 3,189.00 ft; minimum observed since normal operating level reached, 45,350 acre-ft, Sept. 28, 1960, elevation, 3,162.90 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 122,000 acre-ft, May 31, elevation, 3,187.16 ft; minimum, 53,200 acre-ft, Oct. 31, elevation, 3,168.19 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	3,167.89	52,400	-
Oct. 31	3,168.19	53,200	+800
Nov. 30	3,168.64	54,500	+1,300
Dec. 31	3,169.10	55,800	+1,300
CAL YR 1990	-	-	0
Jan. 31	3,169.56	57,100	+1,300
Feb. 28	3,170.30	59,200	+2,100
Mar. 31	3,171.24	62,000	+2,800
Apr. 30	3,171.76	63,600	+1,600
May 31	3,187.16	122,000	+58,400
June 30	3,186.94	121,000	-1,000
July 31	3,184.78	111,300	-9,700
Aug. 31	3,181.74	98,700	-12,600
Sept. 30	3,179.99	91,800	-6,900
WTR YR 1991	-	-	+39,400

CHEYENNE RIVER BASIN

61

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, SD

LOCATION.--Lat 43°20'42", long 103°26'12", in NE¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, Hydrologic Unit 10120109, on right bank 800 ft downstream from Angostura Dam, 4.8 mi upstream from Fall River, and 6.5 mi southeast of Hot Springs.

DRAINAGE AREA.--9,100 mi², approximately.

PERIOD OF RECORD.--October 1945 to current year, seasonal records only beginning October 1978. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1946(M). WDR SD-78-1: 1962(M), 1967(M), 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 3,058.02 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Oct. 17, 1946, nonrecording gage and Oct. 17, 1946, to July 7, 1953, water-stage recorder at site 4.8 mi downstream at different datum.

REMARKS.--Records good. Flow regulated by Angostura Dam 800 ft upstream since October 1949. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. U.S. Bureau of Reclamation satellite data-collection platform at station.

AVERAGE DISCHARGE.--33 years (water years 1945-78), 78.5 ft³/s, 56,870 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,300 ft³/s, May 20, 1978, gage height, 15.97 ft, from rating curve extended above 12,000 ft³/s; no flow Oct. 9, 1949, to Feb. 5, 1950, Apr. 28, Aug. 26, 30, 1951.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 8,650 ft³/s at 0030 hours, June 3, gage height, 10.67 ft; minimum daily discharge, 0.67 ft³/s, Mar. 18-20.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	.68	1.1	.81	1.5	1960	13	---	---
2	---	---	---	---	.74	1.1	.77	1.6	5010	4.0	---	---
3	---	---	---	---	.74	1.1	.77	2.0	5750	4.1	---	---
4	---	---	---	---	.74	1.1	.80	1.7	7190	4.3	---	---
5	---	---	---	---	.74	1.1	.79	1.5	5860	4.1	---	---
6	---	---	---	---	.74	1.1	.81	1.6	2540	4.4	---	---
7	---	---	---	---	.74	1.1	.87	1.9	2330	4.5	---	---
8	---	---	---	---	.92	1.1	.94	1.7	1760	5.9	---	---
9	---	---	---	---	.74	1.1	.97	1.8	1190	4.4	---	---
10	---	---	---	---	.83	1.0	1.1	1.9	842	4.6	---	---
11	---	---	---	---	.74	1.2	1.2	2.0	722	5.1	---	---
12	---	---	---	---	.76	1.3	1.2	1.9	537	5.3	---	---
13	---	---	---	---	.80	1.1	1.1	1.9	463	5.3	---	---
14	---	---	---	---	.72	.80	1.2	1.9	370	5.5	---	---
15	---	---	---	---	.72	.74	1.1	2.0	284	5.2	---	---
16	---	---	---	---	.73	.74	1.2	2.4	326	5.2	---	---
17	---	---	---	---	.86	.70	1.2	5.8	324	5.1	---	---
18	---	---	---	---	.74	.67	1.3	2.6	181	5.4	---	---
19	---	---	---	---	.76	.67	1.4	3.6	441	5.1	---	---
20	---	---	---	---	.83	.67	1.3	3.5	126	5.0	---	---
21	---	---	---	---	.86	.77	1.3	3.4	139	4.5	---	---
22	---	---	---	---	.99	.83	1.3	4.6	197	4.5	---	---
23	---	---	---	---	1.0	.86	1.3	40	142	4.4	---	---
24	---	---	---	---	.98	.78	1.3	645	82	4.1	---	---
25	---	---	---	---	.98	.80	1.3	1180	73	3.9	---	---
26	---	---	---	---	.98	.82	1.6	2010	58	3.8	---	---
27	---	---	---	---	.98	.89	1.6	1370	52	3.3	---	---
28	---	---	---	---	.98	.86	1.5	1400	212	3.3	---	---
29	---	---	---	---	---	.83	1.5	3850	92	3.1	---	---
30	---	---	---	---	---	.81	1.5	5020	111	2.9	---	---
31	---	---	---	---	---	.83	---	2870	---	2.9	---	---
TOTAL	---	---	---	---	23.02	28.57	35.03	18437.8	39364	146.2	---	---
MEAN	---	---	---	---	.82	.92	1.17	595	1312	4.72	---	---
MAX	---	---	---	---	1.0	1.3	1.6	5020	7190	13	---	---
MIN	---	---	---	---	.68	.67	.77	1.5	52	2.9	---	---
AC-FT	---	---	---	---	46	57	69	36570	78080	290	---	---

CHEYENNE RIVER BASIN

06402000 FALL RIVER AT HOT SPRINGS, SD

LOCATION.--Lat 43°25'50", long 103°28'33", in NW¼ sec.24, T.7 S., R.5 E., Fall River County, Hydrologic Unit 10120109, on left bank at intersection of River Street and University Avenue in Hot Springs, and 6.0 mi upstream from mouth.

DRAINAGE AREA.--137 mi².

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for October 1937, published in WSP 1309.

REVISED RECORDS.--WSP 1279: 1938, 1941(M), 1947(M). WSP 1729: 1959(M).

GAGE.--Water-stage recorder. Datum of gage is 3,413.20 ft above National Geodetic Vertical Datum of 1929. Prior to June 2, 1939, nonrecording gage at site 300 ft upstream at datum 3.00 ft higher.

REMARKS.--Records good. Flow regulated by dam forming Coldbrook Reservoir, capacity, 7,200 acre-ft, since September 1952, and dam forming Cottonwood Springs Lake, capacity, 8,385 acre-ft since June 1969. Some diversion above station for municipal supply of Hot Springs. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--54 years, 21.2 ft³/s, 17,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s, Sept. 4, 1938, gage height, 18.4 ft, site and datum then in use, from rating curve extended above 51 ft³/s on basis of weir formula and slope-area measurement of peak flow; minimum, 4.0 ft³/s, Sept. 23, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 303 ft³/s at 1915 hours, July 10, gage height, 4.21 ft; minimum daily discharge, 18 ft³/s, June 2, 4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	21	19	20	22	23	22	22	21	21	20	21
2	20	22	19	20	22	22	22	22	18	21	20	21
3	20	21	19	20	22	23	22	23	20	21	21	20
4	20	20	19	20	22	23	22	22	18	21	21	20
5	20	21	19	20	22	23	23	23	21	20	21	20
6	20	20	19	20	22	23	22	23	21	21	21	20
7	20	20	19	20	22	23	22	23	21	21	22	20
8	20	21	20	20	22	23	22	23	22	20	21	20
9	20	20	19	20	22	23	22	23	22	20	21	20
10	20	20	19	20	22	23	24	24	22	31	21	23
11	20	20	19	20	22	23	24	22	22	21	21	21
12	20	20	19	20	22	23	23	23	22	20	20	21
13	20	20	19	20	22	23	23	22	24	20	21	21
14	19	20	19	20	22	23	22	23	22	21	20	21
15	19	20	19	20	22	23	23	23	22	20	20	21
16	20	20	19	20	22	23	22	26	23	20	23	22
17	20	20	19	21	22	22	22	25	22	20	21	22
18	19	20	20	21	22	22	24	25	22	20	21	22
19	20	20	20	21	22	23	23	25	23	20	21	22
20	19	20	19	21	22	22	22	25	23	21	21	22
21	20	19	20	21	22	23	22	25	22	21	21	22
22	20	20	19	21	22	22	22	27	26	20	20	21
23	20	19	20	21	22	22	22	27	22	21	20	22
24	20	20	20	21	22	22	22	22	22	21	21	21
25	20	19	19	21	22	22	22	23	21	21	21	21
26	20	20	20	21	23	22	23	23	21	21	21	21
27	20	19	19	21	23	22	23	29	21	21	20	21
28	20	19	20	21	23	22	22	22	23	21	20	22
29	20	19	19	22	---	22	22	22	23	21	20	22
30	20	20	20	22	---	22	22	21	22	21	20	21
31	21	---	19	22	---	22	---	19	---	21	21	---
TOTAL	617	600	598	638	619	699	673	727	654	650	643	634
MEAN	19.9	20.0	19.3	20.6	22.1	22.5	22.4	23.5	21.8	21.0	20.7	21.1
MAX	21	22	20	22	23	23	24	29	26	31	23	23
MIN	19	19	19	20	22	22	22	19	18	20	20	20
AC-FT	1220	1190	1190	1270	1230	1390	1330	1440	1300	1290	1280	1260

CAL YR 1990 TOTAL 7871 MEAN 21.6 MAX 45 MIN 17 AC-FT 15610
WTR YR 1991 TOTAL 7752 MEAN 21.2 MAX 31 MIN 18 AC-FT 15380

CHEYENNE RIVER BASIN

63

06402430 BEAVER CREEK NEAR PRINGLE, SD

LOCATION.--Lat 43°34'53", long 103°28'34", in NE¼SW¼SW¼ sec.25, T.5 S., R.5 E., Custer County, Hydrologic Unit 10120109, on right bank 2.0 mi north of Wind Cave National Park Headquarters.

DRAINAGE AREA.--45.8 mi².

PERIOD OF RECORD.--October 1990 to September 1991.

GAGE.--Water-stage recorder. Datum of gage is 4,140 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Minor diversions for irrigation of hay meadows and domestic use may occur upstream of the gage. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6.0 ft³/s at 2345 hours, May 27, gage height, 8.11 ft; minimum daily, 0.01 ft³/s, Jan. 28-29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	.18	.12	.06	.02	.14	.29	.22	.89	.40	.22	.03
2	---	.19	.12	.07	.02	.14	.31	.22	.80	.36	.19	.02
3	---	.18	.12	.06	.02	.16	.28	.25	1.0	.38	.17	.02
4	---	.18	.12	.06	.02	.20	.29	.27	1.3	.38	.16	.02
5	---	.18	.10	.06	.02	.35	.29	.27	1.1	.36	.16	.02
6	---	.18	.09	.06	.02	.32	.26	.26	1.0	.36	.16	.02
7	---	.18	.10	.05	.02	.25	.24	.25	.97	.31	.15	.02
8	---	.18	.10	.04	.03	.25	.25	.27	.87	.28	.52	.03
9	---	.18	.10	.04	.03	.23	.22	.25	.76	.27	.47	.02
10	---	.19	.09	.04	.03	.24	.23	.23	.69	.31	.35	.02
11	---	.22	.08	.04	.04	.26	.37	.24	.60	.40	.24	.03
12	---	.21	.08	.04	.05	.29	.34	.27	.56	.29	.20	.03
13	---	.20	.09	.04	.06	.28	.29	.24	.53	.28	.17	.03
14	---	.18	.09	.04	.07	.29	.29	.22	.54	.29	.15	.03
15	---	.18	.09	.03	.08	.31	.30	.18	.55	.28	.14	.03
16	---	.17	.10	.04	.08	.29	.27	.27	.50	.27	.35	.03
17	---	.17	.10	.04	.08	.30	.26	.38	.46	.27	.26	.03
18	---	.17	.11	.04	.08	.33	.28	.40	.44	.27	.17	.03
19	---	.17	.09	.03	.08	.33	.43	.41	.44	.27	.14	.03
20	---	.17	.10	.03	.10	.36	.42	.39	.44	.23	.12	.03
21	---	.18	.10	.03	.10	.37	.38	.35	.44	.22	.10	.03
22	---	.18	.10	.03	.10	.38	.33	.31	.49	.21	.10	.03
23	---	.18	.10	.03	.10	.38	.29	.40	.64	.20	.10	.04
24	.18	.18	.09	.03	.10	.40	.27	.40	.54	.22	.09	.04
25	.18	.18	.09	.02	.11	.40	.25	.37	.46	.24	.07	.04
26	.18	.18	.08	.02	.12	.38	.31	.40	.41	.23	.06	.05
27	.19	.17	.07	.02	.12	.38	.29	.78	.38	.23	.05	.05
28	.20	.14	.07	.01	.13	.32	.25	2.9	.46	.23	.04	.05
29	.20	.13	.07	.01	---	.28	.23	1.2	.45	.23	.04	.06
30	.18	.12	.07	.02	---	.27	.22	.90	.45	.22	.03	.06
31	.18	---	.07	.02	---	.27	---	.72	---	.23	.03	---
TOTAL	---	5.30	2.90	1.15	1.83	9.15	8.73	14.22	19.16	8.72	5.20	0.97
MEAN	---	.18	.094	.037	.065	.30	.29	.46	.64	.28	.17	.032
MAX	---	.22	.12	.07	.13	.40	.43	2.9	1.3	.40	.52	.06
MIN	---	.12	.07	.01	.02	.14	.22	.18	.38	.20	.03	.02
AC-FT	---	11	5.8	2.3	3.6	18	17	28	38	17	10	1.9

CHEYENNE RIVER BASIN

06402470 BEAVER CREEK ABOVE BUFFALO GAP, SD

LOCATION.--Lat 43°31'20", long 103°21'23", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.13, T.6 S., R.6 E., Custer County, Hydrologic Unit 10120109, on right side of flume approximately 1 mi downstream from commercial fish hatchery and approximately 4 mi northeast of Buffalo Gap.

DRAINAGE AREA.--111 mi².

PERIOD OF RECORD.--October 1990 to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 3,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Regulation of flow by ponds and gates at commercial fish hatchery approximately 1 mi above gage. Minor diversions for irrigation of hay meadows and domestic use may occur upstream of the gage. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21 ft³/s at 1730 hours, Oct. 7, gage height, 11.61 ft; minimum daily discharge, 7.1 ft³/s, Aug. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	8.5	8.6	8.2	8.4	8.0	8.2	8.0	8.7	8.1	8.2	7.6
2	8.1	8.5	8.6	8.1	8.4	8.0	8.1	8.0	8.4	8.0	8.1	7.7
3	8.1	8.5	8.6	8.2	8.5	8.0	8.2	8.3	9.9	8.0	8.0	7.7
4	8.1	8.5	8.6	8.2	8.5	8.0	8.2	8.1	9.4	8.1	7.9	8.0
5	8.1	8.5	8.6	8.1	8.4	8.0	8.2	8.2	9.4	8.0	7.7	7.7
6	7.8	8.6	8.6	8.1	8.4	8.0	8.2	8.2	9.0	8.1	7.7	7.7
7	8.0	8.6	8.6	8.2	8.3	7.9	8.2	8.2	8.8	8.0	7.9	8.7
8	8.1	8.6	8.6	8.2	8.4	7.9	8.2	8.2	8.6	8.3	8.2	8.2
9	8.1	8.6	8.6	8.2	8.5	8.0	8.1	8.3	8.6	8.1	7.8	8.0
10	8.1	8.6	8.6	8.2	8.4	8.0	8.2	8.2	8.5	8.2	7.9	8.2
11	8.1	8.6	8.7	8.2	8.3	8.1	8.5	8.3	8.4	8.2	7.8	8.1
12	8.1	8.6	8.5	8.2	8.3	8.1	8.4	8.1	8.3	8.1	7.7	7.9
13	8.3	8.6	8.5	8.3	8.3	8.0	8.3	8.3	8.3	8.1	7.7	8.0
14	8.2	8.6	7.9	8.3	8.2	8.1	8.3	8.2	8.5	8.0	8.0	7.9
15	8.3	8.6	8.0	8.3	8.2	8.1	8.2	8.3	8.4	8.2	8.0	7.8
16	8.3	8.6	7.9	8.3	8.2	8.1	8.1	8.4	8.4	8.2	8.0	7.7
17	8.3	8.6	7.9	8.2	8.5	8.1	8.1	8.3	8.4	8.1	7.8	7.7
18	8.3	8.6	8.1	8.3	8.3	8.1	8.2	8.1	8.3	8.1	7.8	7.6
19	8.3	8.6	8.1	8.3	8.2	8.2	8.2	8.2	8.2	8.3	7.8	7.7
20	8.3	8.6	8.0	8.2	7.9	8.3	8.0	8.1	8.3	8.2	7.7	7.7
21	8.3	8.5	8.0	8.2	8.0	8.2	8.0	8.1	8.2	8.2	8.2	7.7
22	8.3	8.5	8.0	8.3	7.9	8.3	8.0	8.0	8.4	8.2	8.0	7.7
23	8.3	8.5	8.1	8.4	7.8	8.2	8.0	8.2	8.3	8.2	7.9	7.6
24	8.4	8.5	8.1	8.3	8.0	8.2	7.8	8.3	8.0	8.2	7.8	7.6
25	8.4	8.5	8.1	8.3	8.0	8.3	7.8	8.2	7.9	8.2	7.8	7.6
26	7.9	8.5	8.3	8.3	7.9	8.3	8.3	8.2	8.1	8.2	7.7	7.6
27	8.0	8.5	8.2	8.3	8.0	8.4	7.9	8.8	8.0	8.2	7.8	7.6
28	8.1	8.5	8.0	8.3	8.1	8.3	7.9	9.3	8.6	8.1	7.7	7.6
29	8.2	8.5	8.2	8.4	---	8.2	7.9	8.5	8.2	8.3	7.5	7.6
30	8.2	8.6	8.1	8.3	---	8.1	7.9	8.4	8.1	8.2	7.1	7.6
31	8.4	---	8.3	8.3	---	8.1	---	8.3	---	8.3	7.8	---
TOTAL	253.6	256.6	257.0	255.7	230.3	251.6	243.6	256.3	254.6	252.7	243.0	233.8
MEAN	8.18	8.55	8.29	8.25	8.22	8.12	8.12	8.27	8.49	8.15	7.84	7.79
MAX	8.4	8.6	8.7	8.4	8.5	8.4	8.5	9.3	9.9	8.3	8.2	8.7
MIN	7.8	8.5	7.9	8.1	7.8	7.9	7.8	8.0	7.9	8.0	7.1	7.6
AC-FT	503	509	510	507	457	499	483	508	505	501	482	464

WTR YR 1991 TOTAL 2988.8 MEAN 8.19 MAX 9.9 MIN 7.1 AC-FT 5930

06402500 BEAVER CREEK NEAR BUFFALO GAP, SD

LOCATION.--Lat 43°28'00", long 103°18'20", in NE¼SE¼ sec.5, T.7 S., R.7 E., Fall River County, Hydrologic Unit 10120109, on left bank 1.5 mi south of Buffalo Gap and 4.5 mi upstream from mouth.

DRAINAGE AREA.--130 mi², approximately.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for October, November, 1957, published in WSP 1309.

REVISED RECORDS.--WSP 956: 1941. WSP 1309: 1939-40(M), 1947(M).

GAGE.--Water-stage recorder. Elevation of gage is 3,150 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 20, 1939, nonrecording gage at site 0.8 mi downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Nearly all flow is diverted above station during irrigation season. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--54 years, 7.05 ft³/s, 5,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft³/s, Sept. 4, 1938, gage height, 16.46 ft, site and datum then in use, from rating curve extended above 11 ft³/s on basis of slope-area measurement of peak flow; no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1927 reached a stage of 18.0 ft, former site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 24 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 28	1100	30	5.05	June 3	2400	*97	*5.78

Minimum daily discharge, 0.08 ft³/s, July 31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	7.5	6.6	e6.0	e10	9.8	7.9	8.0	6.1	7.7	.15	.49
2	6.6	9.3	6.6	e5.5	10	10	7.9	5.8	6.0	7.9	.30	.55
3	6.7	9.8	6.6	e5.5	10	10	7.9	6.6	27	8.0	.81	2.7
4	6.7	9.7	6.7	e5.5	10	9.6	8.1	6.3	25	9.1	.93	2.7
5	6.5	9.7	6.8	e5.5	10	9.3	8.4	6.1	11	10	.99	1.4
6	3.7	10	6.8	e5.0	10	8.9	8.2	6.2	14	10	.89	.48
7	.97	9.8	6.9	e5.0	10	8.9	8.2	4.5	10	10	.37	2.5
8	.94	9.8	7.1	e6.0	9.9	8.8	8.5	1.6	9.8	10	.16	4.7
9	.93	9.8	7.2	e6.0	9.8	8.8	8.1	1.5	9.5	11	.14	2.5
10	.89	9.8	7.2	e6.5	9.9	8.8	8.0	1.7	9.6	11	.15	.56
11	.86	7.4	7.2	e7.0	10	8.6	9.2	5.2	9.4	11	.14	.55
12	.86	7.1	7.2	e8.0	10	8.6	9.3	8.2	9.3	8.5	2.8	1.0
13	1.1	7.0	7.2	e9.0	10	8.4	9.0	6.4	9.5	8.3	4.9	1.1
14	1.5	6.9	7.3	e10	10	8.7	8.6	2.6	9.9	8.1	4.8	1.1
15	2.6	6.8	7.5	11	10	8.8	8.4	4.6	9.9	8.0	5.3	1.1
16	4.4	6.8	7.5	11	10	9.1	8.2	6.1	9.8	8.3	5.5	1.0
17	4.5	6.9	e7.0	11	10	9.0	8.2	8.1	9.9	8.4	5.7	3.6
18	4.5	6.9	e7.0	11	e10	8.9	8.5	8.4	9.8	8.3	6.6	5.6
19	3.9	6.9	e6.0	11	e10	8.9	10	8.2	8.4	8.4	7.3	4.6
20	3.8	6.9	e5.0	11	e10	8.7	9.0	6.2	8.0	8.6	7.1	3.7
21	4.3	6.8	e4.5	11	9.8	8.9	8.8	4.4	7.8	9.4	6.5	5.3
22	4.6	6.9	e4.0	10	10	8.9	8.8	4.3	7.9	6.0	5.6	8.3
23	4.6	6.8	e4.0	10	10	8.9	8.7	4.3	8.6	5.3	5.5	8.5
24	4.6	6.5	e4.0	10	10	8.8	8.6	4.2	7.1	5.6	5.6	8.5
25	4.6	6.5	e4.0	e10	10	7.7	8.6	4.7	6.3	5.6	5.7	8.5
26	4.6	6.5	e4.0	e10	9.8	7.6	12	7.1	6.5	5.4	3.4	8.7
27	5.5	6.5	e4.0	e10	9.8	7.6	9.5	7.3	7.1	5.3	.55	9.4
28	6.5	6.3	e5.0	e10	9.8	7.8	9.1	14	8.9	5.2	.46	9.2
29	6.7	13	e4.5	e9.0	---	7.8	9.1	6.4	8.3	3.7	.48	9.3
30	6.8	12	e4.5	e8.5	---	8.2	9.0	4.7	8.3	.32	.50	9.5
31	6.9	---	e5.0	e9.0	---	7.9	---	4.9	---	.08	.44	---
TOTAL	128.05	242.6	184.9	264.0	278.8	270.7	261.8	178.6	298.7	232.50	89.76	127.13
MEAN	4.13	8.09	5.96	8.52	9.96	8.73	8.73	5.76	9.96	7.50	2.90	4.24
MAX	6.9	13	7.5	11	10	10	12	14	27	11	7.3	9.5
MIN	.86	6.3	4.0	5.0	9.8	7.6	7.9	1.5	6.0	.08	.14	.48
AC-FT	254	481	367	524	553	537	519	354	592	461	178	252

CAL YR 1990 TOTAL 2100.80 MEAN 5.76 MAX 13 MIN .31 AC-FT 4170
WTR YR 1991 TOTAL 2557.54 MEAN 7.01 MAX 27 MIN .08 AC-FT 5070

e Estimated

CHEYENNE RIVER BASIN

06402990 FRENCH CREEK BELOW CUSTER, SD

LOCATION.--Lat 43°46'14", long 103°33'04", in NE¼NW¼SE¼SW¼ sec.18, T.3 S., R.5 E., Custer County, Hydrologic Unit 10120109, on right bank 0.4 mi above confluence with Willow Creek, 1.1 mi above Stockade Lake, and 1.8 mi east of Custer on Highway 16A.

DRAINAGE AREA.--53.4 mi².

PERIOD OF RECORD.--August 1990 to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 5,235 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and Aug. 6 to Sept. 30, which are fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 850 ft³/s at 2230 hours, from rating curve extended above 80 ft³/s, Aug. 6, gage height, 17.48 ft; minimum daily discharge, 0.14 ft³/s, Jan. 13-14.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	.24	.36	e.16	.20	.47	3.2	4.1	35	6.8	3.5	.89
2	.21	.82	.36	e.16	.21	e.43	4.7	3.6	25	5.4	3.1	.89
3	.21	.42	.44	e.17	.21	.38	6.4	4.8	62	4.2	2.7	1.1
4	.20	.35	.31	e.17	.22	.60	7.1	4.3	100	4.0	2.6	.97
5	.17	.59	.31	e.18	.24	e1.1	1.4	4.1	44	3.9	2.8	.89
6	.17	.84	.31	e.19	.24	e.80	1.2	5.0	43	3.6	e25	.82
7	.22	.57	.26	e.18	.24	e.90	1.1	7.0	48	3.4	e68	.75
8	.31	.55	.24	e.18	.24	e1.3	2.1	6.6	34	3.4	53	1.2
9	.33	.55	.24	e.18	.25	2.1	3.5	6.0	27	3.4	23	.85
10	.27	.60	.24	e.19	.29	2.1	3.7	3.0	23	4.5	12	1.1
11	.27	.67	.24	e.19	.31	2.6	4.4	11	21	6.0	9.5	1.6
12	.30	.74	.24	.19	.31	2.1	3.3	24	19	5.9	7.9	1.3
13	.35	.86	e.23	.14	.31	1.9	3.3	18	17	4.3	6.7	1.4
14	.53	.98	e.22	.14	.31	2.2	3.0	13	18	3.5	5.7	1.6
15	.37	1.2	e.21	.18	e.31	2.1	3.4	8.6	17	3.6	4.6	1.7
16	.35	1.3	e.19	.17	.31	1.9	3.7	8.8	15	5.2	8.3	1.5
17	.33	1.1	e.18	.17	.31	2.2	3.4	7.9	14	4.8	6.7	1.3
18	.27	1.1	e.17	.19	.33	3.0	4.3	16	12	3.6	5.2	1.3
19	.27	1.1	e.16	.18	e.34	4.1	8.2	15	12	2.9	4.1	1.2
20	.29	1.1	e.16	e.18	.36	4.3	7.6	5.3	11	2.3	3.4	1.2
21	.28	1.0	e.16	e.18	e.36	5.1	7.1	7.8	11	2.1	2.9	1.2
22	.27	.88	e.16	e.18	e.36	5.4	6.2	12	12	1.8	2.7	1.1
23	.27	.78	e.17	e.18	e.36	5.0	5.7	17	13	1.6	2.5	1.0
24	.34	.74	e.17	e.18	e.36	4.8	5.5	18	11	2.6	2.4	.94
25	.30	.69	e.18	e.18	e.36	4.0	5.3	14	9.5	3.2	2.3	.97
26	.27	.67	e.18	e.19	e.36	1.3	6.5	27	7.8	3.3	1.7	.94
27	.27	.57	e.18	e.19	.36	1.1	5.1	45	6.9	2.8	1.3	.96
28	.25	.44	e.17	e.19	.38	.86	4.6	52	12	2.4	1.2	.92
29	.24	.41	e.16	e.19	---	1.1	4.4	27	9.4	2.6	1.1	.86
30	.24	.39	e.15	e.19	---	2.0	4.2	22	8.2	3.2	.96	.92
31	.24	---	e.15	e.19	---	1.8	---	19	---	3.8	.90	---
TOTAL	8.60	22.25	6.90	5.53	8.44	69.04	133.6	436.9	697.8	114.1	277.76	33.37
MEAN	.28	.74	.22	.18	.30	2.23	4.45	14.1	23.3	3.68	8.96	1.11
MAX	.53	1.3	.44	.19	.38	5.4	8.2	52	100	6.8	68	1.7
MIN	.17	.24	.15	.14	.20	.38	1.1	3.0	6.9	1.6	.90	.75
AC-FT	17	44	14	11	17	137	265	867	1380	226	551	66

WTR YR 1991 TOTAL 1814.29 MEAN 4.97 MAX 100 MIN .14 AC-FT 3600

e Estimated

CHEYENNE RIVER BASIN

67

06402995 FRENCH CREEK ABOVE STOCKADE LAKE, NEAR CUSTER, SD

LOCATION.--Lat 43°46'10", long 103°32'10", in SE¼NW¼SW¼ sec.21, T.3 S., R.5 E., Custer County, Hydrologic Unit 10120109, on right bank, 0.3 mi above Stockade Lake, 0.4 mi below confluence with Willow Creek, and 2.5 mi east of Custer on Highway 16A.

DRAINAGE AREA.--68.7 mi².

PERIOD OF RECORD.--August 1990 to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 5,190 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 320 ft³/s at 2245 hours, Aug. 6, gage height, 7.31 ft; minimum daily discharge, 0.15 ft³/s, Jan. 14.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	.53	.56	e.18	e.22	e.50	2.9	6.0	73	11	5.1	1.1
2	.39	1.2	.52	e.18	e.22	e.44	5.2	5.2	53	9.0	4.0	1.1
3	.39	.92	.42	e.19	e.22	e.39	7.0	6.7	90	7.5	3.4	1.3
4	.38	.73	.41	e.19	e.24	e.70	8.6	7.5	129	7.0	3.1	1.2
5	.36	.85	.47	e.20	e.26	e1.2	2.1	6.9	82	6.7	3.6	1.1
6	.36	1.3	.45	e.21	e.26	e.90	1.9	7.0	83	6.2	31	1.0
7	.38	1.1	.40	e.20	e.26	e1.0	1.6	9.3	84	5.7	72	.89
8	.50	.92	.38	e.19	e.26	e1.4	2.0	9.4	67	5.6	59	2.1
9	.61	.90	.36	e.19	e.28	e3.0	4.0	8.6	54	5.8	27	1.3
10	.62	.96	.36	e.20	e.31	e3.0	4.0	5.0	46	8.4	17	1.3
11	.62	1.1	.36	e.20	e.32	e4.1	5.6	22	41	13	13	2.7
12	.62	1.3	.37	e.21	e.32	e3.6	4.2	56	35	10	11	1.8
13	.61	1.3	.38	e.16	e.32	e3.4	3.8	29	31	7.2	8.4	1.9
14	1.1	1.4	.36	e.15	e.32	e3.7	3.4	21	33	5.6	6.2	2.1
15	.83	1.4	e.31	e.16	e.32	e3.6	4.2	16	31	5.5	4.7	2.2
16	.67	1.6	e.28	e.19	e.32	e3.4	5.9	22	26	9.7	7.9	1.9
17	.62	1.3	e.26	e.19	e.32	e3.7	5.1	34	23	8.1	6.5	1.6
18	.57	1.4	e.24	e.20	e.36	e4.5	5.8	45	20	5.8	5.1	1.7
19	.57	1.3	e.21	e.19	e.45	e5.6	11	40	19	4.3	4.3	1.6
20	.57	1.2	e.19	e.19	e.38	e5.8	11	24	19	3.3	3.6	1.8
21	.57	1.2	e.19	e.19	e.56	e6.6	12	23	18	2.9	3.1	1.6
22	.54	1.1	e.19	e.19	e.60	e6.9	10	30	20	2.6	2.8	1.4
23	.52	1.1	e.20	e.19	e.52	e6.5	8.9	41	23	2.3	2.6	1.3
24	.57	1.0	e.20	e.19	e.48	e6.3	7.9	37	18	4.2	2.5	1.2
25	.62	1.0	e.21	e.19	e.42	e4.2	7.0	30	15	5.0	2.4	1.2
26	.62	.98	e.21	e.20	e.46	1.9	10	54	13	4.9	2.0	1.2
27	.62	.84	e.20	e.20	e.38	1.5	8.4	99	12	4.0	1.7	1.2
28	.57	.67	e.19	e.20	e.40	1.3	7.1	118	22	3.2	1.5	1.2
29	.57	.55	e.18	e.20	---	1.2	6.5	70	15	3.2	1.3	1.1
30	.57	.52	e.18	e.20	---	1.7	6.4	55	14	5.0	1.2	1.1
31	.57	---	e.17	e.20	---	1.8	---	45	---	5.5	1.1	---
TOTAL	17.50	31.67	9.41	5.92	9.78	93.83	183.5	982.6	1209	188.2	318.1	44.19
MEAN	.56	1.06	.30	.19	.35	3.03	6.12	31.7	40.3	6.07	10.3	1.47
MAX	1.1	1.6	.56	.21	.60	6.9	12	118	129	13	72	2.7
MIN	.36	.52	.17	.15	.22	.39	1.6	5.0	12	2.3	1.1	.89
AC-FT	35	63	19	12	19	186	364	1950	2400	373	631	88

WTR YR 1991 TOTAL 3093.70 MEAN 8.48 MAX 129 MIN .15 AC-FT 6140

e Estimated

CHEYENNE RIVER BASIN

06403300 FRENCH CREEK ABOVE FAIRBURN, SD

LOCATION.--Lat 43°43'02", long 103°22'03", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.11, T.4 S., R.6 E., Custer County, Hydrologic Unit 10120109, on right bank 500 ft upstream from concrete diversion dam, 1.0 mi southwest of landing strip in Custer State Park, 1.5 mi west of east boundary of Custer State Park, 2.6 mi southwest of abandoned Fairview School, and 3.5 mi southeast of Custer State Park Headquarters.

DRAINAGE AREA.--105 mi², approximately.

PERIOD OF RECORD.--April 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,850 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Stockade Reservoir, capacity, 1,820 acre-ft, 21 mi upstream. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--9 years, 6.10 ft³/s, 4,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 329 ft³/s, Mar. 7, 1987, gage height, 2.73 ft; minimum daily discharge, 0.02 ft³/s, Feb. 3-5, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 304 ft³/s at 0500 hours, June 4, gage height, 2.71 ft; minimum daily discharge, 0.28 ft³/s, Dec. 30-31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.67	1.6	1.4	e.30	e.70	1.7	3.6	8.6	108	20	7.0	2.5
2	.68	2.8	1.4	e.30	e.65	1.7	3.7	7.0	113	15	8.4	2.5
3	.68	2.3	1.3	e.30	e.60	2.1	4.6	7.3	95	12	7.0	2.5
4	.69	2.2	1.5	e.30	e.65	2.7	8.0	9.1	252	11	6.0	2.5
5	.72	2.4	1.5	e.30	e.65	3.6	14	9.6	168	9.7	5.4	2.5
6	.74	2.6	1.4	e.30	e.65	e3.0	8.7	9.4	126	9.4	5.4	2.3
7	.74	2.1	1.5	e.30	e.65	e2.2	5.7	8.2	123	8.9	85	2.4
8	.72	1.8	1.5	e.30	e.70	e2.2	4.7	9.4	115	8.2	50	2.4
9	.82	1.8	1.5	e.30	e.70	e3.0	4.4	10	91	7.6	34	2.4
10	1.0	1.8	1.6	e.30	e.70	e3.0	4.4	9.0	77	8.5	21	2.8
11	1.0	1.6	1.6	e.32	.99	e4.0	11	8.7	63	18	14	4.6
12	1.1	1.6	1.7	e.34	1.2	e4.0	17	52	56	22	11	4.0
13	1.2	1.6	1.6	e.36	1.4	e4.0	12	75	50	17	9.2	2.9
14	1.1	1.6	1.6	e.38	1.2	e4.0	7.7	40	47	12	7.8	3.3
15	.95	1.5	1.5	e.40	1.1	e4.0	6.4	29	51	9.3	7.1	3.0
16	.95	1.5	e1.4	e.42	1.4	4.1	6.0	24	41	11	6.9	2.7
17	.95	1.5	e1.2	e.45	1.9	4.1	7.5	40	35	15	8.8	2.7
18	.99	1.4	e1.0	e.47	1.5	3.9	8.2	66	31	12	8.0	2.7
19	1.0	1.5	e.80	e.50	1.5	4.5	12	76	28	9.3	6.8	2.7
20	.98	1.5	e.65	e.50	1.4	6.7	17	62	26	7.8	5.7	2.8
21	.91	1.4	e.55	e.50	1.6	8.4	17	40	28	7.9	5.1	2.9
22	.92	1.4	e.40	e.50	1.7	9.1	18	42	29	6.9	4.6	2.9
23	.95	1.5	e.40	e.50	1.7	10	16	74	32	6.4	4.2	2.7
24	.95	1.6	e.40	e.50	1.5	9.8	14	96	30	6.7	4.0	2.5
25	.98	1.6	e.40	e.50	1.7	8.3	12	68	24	7.0	3.7	2.5
26	1.0	1.6	e.40	e.50	1.6	8.1	14	53	21	5.9	3.5	2.5
27	1.1	1.4	e.35	e.50	1.6	6.8	19	188	17	5.7	3.3	2.5
28	1.3	1.4	e.30	e.50	1.7	5.1	17	232	18	5.7	3.1	2.5
29	1.5	1.5	e.30	e.52	---	4.2	12	165	27	5.7	2.5	2.7
30	1.6	1.4	e.28	e.55	---	3.7	10	103	23	6.0	2.5	2.9
31	1.6	---	e.28	e.60	---	3.5	---	79	---	6.6	2.5	---
TOTAL	30.49	51.5	31.71	12.81	33.34	145.5	315.6	1700.3	1945	314.2	353.5	82.8
MEAN	.98	1.72	1.02	.41	1.19	4.69	10.5	54.8	64.8	10.1	11.4	2.76
MAX	1.6	2.8	1.7	.60	1.9	10	19	232	252	22	85	4.6
MIN	.67	1.4	.28	.30	.60	1.7	3.6	7.0	17	5.7	2.5	2.3
AC-FT	60	102	63	25	66	289	626	3370	3860	623	701	164

CAL YR 1990 TOTAL 1802.98 MEAN 4.94 MAX 110 MIN .28 AC-FT 3580
WTR YR 1991 TOTAL 5016.75 MEAN 13.7 MAX 252 MIN .28 AC-FT 9950

e Estimated

CHEYENNE RIVER BASIN

69

06404000 BATTLE CREEK NEAR KEYSTONE, SD

LOCATION.--Lat 43°52'21", long 103°20'10", in SW¼SW¼ sec.18, T.2 S., R.7 E., Pennington County, Hydrologic Unit 10120109, at right downstream end county highway bridge, 0.6 mi downstream from Iron Creek, and 4.5 mi south-east of Keystone.

DRAINAGE AREA.--66 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1945 to July 1947, October 1961 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,800 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Nov. 13, 1961, nonrecording gage at site 250 ft downstream at different datum and Nov. 13 to Dec. 5, 1961, at same site at present datum. Dec. 6, 1961, to June 9, 1972, water-stage recorder at site 210 ft downstream at present datum (destroyed by flood); June 10 to Nov. 20, 1972, nonrecording gage 180 ft downstream at present datum; Nov. 21, 1972, to Nov. 27, 1973, water-stage recorder at present site and datum; Nov. 28, 1973, to Nov. 7, 1974, nonrecording gage 180 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--30 years (water years 1962-91), 8.38 ft³/s, 6,070 acre-ft/yr; median of yearly mean discharges, 6.6 ft³/s, 4,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,200 ft³/s, June 9, 1972, gage height, 14.5 ft, from floodmarks, site then in use, from rating curve extended above 550 ft³/s on basis of slope-area measurement of peak flow; no flow for some days in 1961, 1962, 1970, 1974, 1976, 1980-89.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 11	2230	302	5.22	June 3	2330	530	5.81
May 17	1515	224	4.96	June 5	2145	*620	*6.00
May 28	0745	247	5.04				

Minimum daily discharge, 0.83 ft³/s, Sept. 1.

CHEYENNE RIVER BASIN

06404000 BATTLE CREEK NEAR KEYSTONE, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.37	1.0	e1.6	e.40	.72	e1.5	2.1	12	137	15	5.6	.83
2	.36	1.7	e1.5	e.35	.65	e1.2	2.0	11	110	13	5.2	.92
3	.31	1.9	1.9	e.35	.81	e1.6	2.1	12	152	13	4.8	1.2
4	.29	1.6	1.4	e.35	1.1	e2.0	2.4	13	303	13	4.5	1.1
5	.26	1.7	1.5	e.35	1.3	e2.0	2.5	13	266	12	6.6	1.0
6	.23	2.2	1.8	e.30	1.3	e2.5	2.5	12	348	11	8.4	.95
7	.25	1.9	1.5	e.35	1.3	e2.5	2.4	11	210	10	7.0	.90
8	.45	1.7	1.5	e.35	1.3	e2.6	2.8	11	157	9.4	6.8	.90
9	.82	1.9	1.5	e.35	1.3	2.6	2.8	10	125	12	5.4	.90
10	.90	1.8	1.5	e.40	1.6	2.4	2.7	9.5	100	16	5.1	2.2
11	1.0	1.8	e1.4	e.50	1.5	2.5	11	34	81	35	4.3	3.9
12	1.2	1.8	e1.3	e.70	e1.4	2.5	9.4	144	65	16	4.4	3.0
13	1.4	1.8	e1.3	e.80	e1.3	2.5	7.5	63	94	12	3.8	2.8
14	1.9	1.8	e1.2	e.78	e1.1	2.4	6.4	44	96	9.8	3.6	2.8
15	1.8	1.7	e1.0	e.76	e1.4	2.3	5.8	39	68	8.2	3.4	2.7
16	2.1	1.5	e1.0	e.80	e1.5	2.3	6.1	53	55	8.9	4.7	1.9
17	1.8	1.5	e.90	e.81	e1.6	2.7	6.3	162	47	9.8	4.2	1.7
18	1.5	1.5	e.90	e.88	e1.5	2.7	6.7	190	41	8.0	4.0	2.5
19	1.8	1.8	e.70	e.90	e1.4	3.6	12	150	37	6.7	3.4	2.5
20	1.4	1.8	e.60	e.95	e2.0	3.8	13	116	33	6.4	4.1	1.8
21	1.1	1.8	e.50	e1.0	3.7	3.7	17	89	39	5.9	3.7	1.4
22	1.1	1.6	e.40	e1.0	2.4	3.6	16	79	36	5.1	3.0	1.2
23	1.2	1.8	e.40	e.90	e2.0	3.6	15	106	35	5.0	2.7	1.2
24	1.2	1.8	e.40	e.80	e1.8	3.5	13	79	27	5.7	2.4	1.1
25	1.2	1.6	e.40	e.76	e1.8	3.2	11	67	23	7.0	2.0	1.1
26	1.2	1.6	e.40	.60	e1.8	3.2	20	61	20	8.2	1.8	1.1
27	1.1	1.4	e.40	.55	e2.0	3.0	27	108	18	10	1.7	1.1
28	1.0	1.3	e.40	.50	e1.8	2.8	19	190	23	7.3	1.4	1.1
29	1.0	e1.4	e.30	.54	---	2.6	16	170	19	5.9	1.3	1.1
30	1.1	e1.7	e.30	.57	---	2.4	14	124	18	6.5	1.1	1.1
31	.96	---	e.40	.51	---	2.2	---	100	---	6.3	1.0	---
TOTAL	32.30	50.4	30.30	19.16	43.38	82.0	276.5	2282.5	2783	318.1	121.4	48.00
MEAN	1.04	1.68	.98	.62	1.55	2.65	9.22	73.6	92.8	10.3	3.92	1.60
MAX	2.1	2.2	1.9	1.0	3.7	3.8	27	190	348	35	8.4	3.9
MIN	.23	1.0	.30	.30	.65	1.2	2.0	9.5	18	5.0	1.0	.83
AC-FT	64	100	60	38	86	163	548	4530	5520	631	241	95

CAL YR 1990 TOTAL 2979.62 MEAN 8.16 MAX 313 MIN .23 AC-FT 5910
WTR YR 1991 TOTAL 6087.04 MEAN 16.7 MAX 348 MIN .23 AC-FT 12070

e Estimated

CHEYENNE RIVER BASIN

71

06404000 BATTLE CREEK NEAR KEYSTONE, SD--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--October 1988 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 3,815 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Gage is located 0.1 mi east of streamflow gaging station. Precipitation gage is read daily by observer at approximately 0730 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.42	---	---	---	---	---	.00	.23	.00	.00	.00
2	.00	.00	---	---	---	---	---	.00	.00	.00	.00	.31
3	.00	.00	---	---	---	---	---	.47	.82	.00	.07	.00
4	.00	.00	---	---	---	---	---	.00	.22	.00	.90	.00
5	.00	.00	---	---	---	---	---	.00	.24	.05	.00	.00
6	.00	.30	---	---	---	---	---	.08	.74	.00	.30	.00
7	.00	.00	---	---	---	---	---	.00	.00	.00	.00	.00
8	.00	.00	---	---	---	---	---	.00	.00	.35	.00	.00
9	.20	.00	---	---	---	---	---	.00	.00	.00	.00	.00
10	.00	.00	---	---	---	---	---	.00	.00	1.00	.00	.80
11	.18	.00	---	---	---	---	---	1.28	.00	.00	.00	.00
12	.00	.00	---	---	---	---	---	.04	.00	.00	.00	.00
13	.28	.00	---	---	---	---	---	.00	.67	.00	.13	.00
14	.00	.00	---	---	---	---	---	.23	.00	.00	.00	.00
15	.00	.00	---	---	---	---	---	.18	.00	.21	.00	.20
16	.00	.00	---	---	---	---	---	.53	.00	.00	.30	.00
17	.30	.00	---	---	---	---	---	.20	.00	.00	.00	.00
18	.00	.00	---	---	---	---	---	.20	.00	.00	.00	.00
19	.00	.00	---	---	---	---	---	.46	.06	.00	.00	.00
20	.00	.00	---	---	---	---	---	.02	.00	.00	.00	.00
21	.00	.00	---	---	---	---	---	.00	.10	.00	.00	.00
22	.00	.00	---	---	---	---	---	.62	.00	.04	.00	.00
23	.00	.00	---	---	---	---	---	.60	.55	.24	.00	.00
24	.00	.00	---	---	---	---	---	.00	.00	.00	.00	.00
25	.00	.00	---	---	---	---	---	.00	.00	.58	.00	.00
26	.00	.00	---	---	---	---	---	.52	.00	.00	.00	.00
27	.00	.00	---	---	---	---	---	.64	.00	.15	.00	.00
28	.00	.00	---	---	---	---	---	.32	.47	.00	.00	.00
29	.00	.00	---	---	---	---	---	.00	.26	.00	.00	.00
30	.00	.00	---	---	---	---	---	.03	.00	.00	.00	.00
31	.00	---	---	---	---	---	---	.03	---	.00	.00	---
TOTAL	0.96	0.72	---	---	---	---	---	6.45	4.36	2.62	1.70	1.31

CHEYENNE RIVER BASIN

06404800 GRACE COOLIDGE CREEK NEAR HAYWARD, SD

LOCATION.--Lat 43°48'07", long 103°26'03", in NE¼NW¼SW¼ sec.8, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, in Custer State Park, at right downstream side of bridge, near intersection of State Highway 87 and CSP 753, approximately 1 mi upstream from Center Lake, and 7.0 mi southwest of Hayward.

DRAINAGE AREA.--7.48 mi².

PERIOD OF RECORD.--January 1989 to current year.

GAGE.--Water-stage recorder and compound V-notch weir. Elevation of gage is 4,780 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 210 ft³/s, June 3, 1991, gage height, 7.23 ft; minimum daily discharge, 0.02 ft³/s, Dec. 22, 29, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	0345	26	6.23	July 11	0045	25	5.41
June 3	1945	*210	*7.23				

Minimum daily discharge, 0.02 ft³/s, Dec. 22, 29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.27	.21	.15	.05	.15	.28	2.3	54	3.9	1.1	.59
2	.14	.51	.20	.14	.11	.11	.30	2.3	35	3.1	1.1	.61
3	.13	.39	.18	.08	.13	.14	.50	2.5	63	2.8	1.1	.55
4	.12	.39	.18	.13	.13	.24	.48	e2.5	76	2.4	1.1	.52
5	.10	.50	.22	.11	.18	.41	.40	e2.5	49	2.2	1.2	.53
6	.16	.43	.20	.05	.20	.31	.39	e2.5	41	2.0	1.2	.55
7	.25	.20	.20	.08	.22	.23	.38	e2.5	31	1.9	2.0	.51
8	.27	.16	.20	.10	.22	.21	.40	e2.3	25	1.5	1.1	.48
9	.30	.16	.21	.10	.22	.19	.39	e2.0	20	e1.5	1.1	.48
10	.28	.18	.22	.10	.22	.21	.50	e2.3	17	e4.0	1.0	.54
11	.27	.20	.22	.12	.22	.24	1.5	e4.0	14	8.2	1.1	.69
12	.27	.20	.24	.11	.22	.25	.81	19	12	2.2	1.0	.52
13	.31	.18	.21	.14	.22	.20	.75	12	10	1.7	.96	.48
14	.39	.20	.22	.16	.19	.20	.83	8.5	10	1.6	.88	.48
15	.27	.20	.23	.18	.16	.19	1.0	5.7	8.9	1.7	.83	.46
16	.26	.18	.24	.20	.19	.20	1.5	9.4	7.8	2.2	1.0	.46
17	.25	.19	.22	.21	.21	.29	1.3	24	7.2	1.5	.87	.44
18	.25	.20	.24	.20	.20	.29	1.6	35	6.4	1.4	.86	.44
19	.24	.19	.17	.20	.18	.29	2.1	30	5.7	1.4	.81	.44
20	.24	.19	.05	.19	.21	.33	2.8	23	6.4	1.3	.75	.44
21	.24	.20	.04	.16	.23	.33	4.1	17	7.4	1.3	.72	.43
22	.26	.19	.02	.18	.25	.32	3.5	21	6.2	1.3	.72	.41
23	.27	.19	.10	.17	.23	.31	3.0	37	6.0	1.3	.71	.40
24	.27	.20	.17	.11	.20	.31	2.5	36	5.1	1.4	.70	.41
25	.28	.19	.16	.04	.18	.30	2.3	24	4.7	1.4	.72	.40
26	.26	.20	.16	.07	.14	.30	4.2	26	4.3	1.3	.66	.39
27	.25	.19	.18	.05	.15	.28	4.0	49	4.0	1.2	.62	.37
28	.25	.18	.18	.04	.15	.22	3.2	66	5.1	1.2	.60	.38
29	.25	.18	.02	.03	---	.22	2.8	39	4.1	1.2	.62	.38
30	.25	.23	.09	.03	---	.20	2.4	28	4.3	1.3	.65	.39
31	.24	---	.13	.03	---	.24	---	22	---	1.2	.62	---
TOTAL	7.46	7.07	5.31	3.66	5.21	7.71	50.21	559.3	550.6	62.6	28.40	14.17
MEAN	.24	.24	.17	.12	.19	.25	1.67	18.0	18.4	2.02	.92	.47
MAX	.39	.51	.24	.21	.25	.41	4.2	66	76	8.2	2.0	.69
MIN	.10	.16	.02	.03	.05	.11	.28	2.0	4.0	1.2	.60	.37
AC-FT	15	14	11	7.3	10	15	100	1110	1090	124	56	28

CAL YR 1990 TOTAL 687.14 MEAN 1.88 MAX 102 MIN .02 AC-FT 1360
WTR YR 1991 TOTAL 1301.70 MEAN 3.57 MAX 76 MIN .02 AC-FT 2580

e Estimated

06404998 GRACE COOLIDGE CREEK NEAR GAME LODGE, NEAR CUSTER, SD

LOCATION.--Lat 43°45'40" long 103°21'49", in SW¼NE¼ sec.26, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, on right bank 0.3 mi downstream from bridge on U.S. Highway 16A, 0.9 mi east of Game Lodge, 1.5 mi southwest of junction of State Highway 36 and U.S. Highway 16A, and 11.5 mi east of Custer.

DRAINAGE AREA.--25.2 mi².

PERIOD OF RECORD.--October 1976 to current year.

REVISED RECORDS.--WDR SD-88-1: 1988(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,100 ft above National Geodetic Vertical Datum of 1929, from topographic map. From July 17, 1945, to July 31, 1947, nonrecording gage at site 1,800 ft upstream and different datum. June 1967 to June 13, 1976, at site 500 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Considerable loss occurs to sinkholes downstream from gage. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--15 years, 3.26 ft³/s, 2,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,030 ft³/s, Sept. 7, 1989, gage height, 10.84 ft, from floodmarks, from rating curve extended above 709 ft³/s based on slope-area measurement of peak flow; maximum gage height, 12.76 ft, Feb. 9, 1979, backwater from ice; no flow June 5-9, July 6, 8, 11, 19, 1977, for part of June 14, 1979, July 8, 28, 1985, July 6, 7, Sept. 1-7, 1988, Feb. 2 to Mar. 3, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1972, reached a stage of 10.35 ft, from floodmarks, discharge, 709 ft³/s from slope-area measurement of peak flow.

Flood of June 15, 1976, reached a stage of 10.90 ft, from floodmarks, discharge, 980 ft³/s on basis of slope-area measurement of 10.35 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 23	2230	120	8.50	June 1	1030	144	8.62
May 28	0830	160	8.70	June 3	2330	*254	*9.08

Minimum daily discharge, 0.20 ft³/s, Dec. 21.

CHEYENNE RIVER BASIN

06404998 GRACE COOLIDGE CREEK NEAR GAME LODGE, NEAR CUSTER, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.85	1.2	1.2	e.60	e.70	e.80	1.0	6.5	96	11	6.2	1.7
2	.80	1.9	1.2	e.60	e.90	e.80	1.0	6.3	73	11	4.9	1.7
3	.84	1.7	e1.0	e.60	e1.0	e.80	1.2	7.6	89	9.8	4.5	1.8
4	.89	1.5	e1.0	e.60	e1.0	e1.0	1.8	7.4	148	9.2	4.6	1.8
5	.80	1.6	1.2	e.60	e1.0	e.90	1.5	7.4	121	8.7	5.1	1.8
6	.78	2.0	1.6	e.60	e1.0	e.80	1.3	6.7	104	8.7	6.2	1.7
7	.91	1.6	1.2	e.70	e1.0	e.80	1.3	6.6	72	8.2	8.9	1.6
8	1.1	1.7	1.1	e.70	e1.0	e.90	1.3	6.3	61	8.0	6.5	1.7
9	1.1	1.6	1.1	e.70	e1.0	e1.0	1.3	5.4	52	8.0	5.2	1.7
10	1.1	1.5	1.2	e.70	e1.0	e1.0	1.3	5.1	46	11	4.8	2.3
11	1.1	1.5	1.1	e.80	e1.0	e1.0	5.6	7.3	41	16	4.6	6.0
12	1.2	1.5	1.1	e.80	e1.0	e.90	3.9	30	38	10	4.5	3.3
13	1.2	1.4	e.80	e.80	e.90	e.80	2.7	23	35	8.2	4.0	2.6
14	1.3	1.5	e.70	e.70	e.80	e.85	2.5	18	34	7.5	3.8	2.7
15	1.3	1.3	e.70	e.70	e.80	e.90	2.4	16	30	7.2	3.7	2.5
16	1.2	1.2	e.70	e.70	e1.0	e1.0	2.8	19	26	9.0	5.2	2.4
17	1.4	1.3	e.70	e.70	e.90	e1.0	2.8	38	23	7.0	4.3	2.1
18	1.4	1.3	e.60	e.90	e.85	e1.0	3.1	55	21	6.1	3.6	2.2
19	1.2	1.3	e.40	e.70	e.85	e1.0	5.7	57	20	5.8	3.4	2.1
20	1.2	1.4	e.30	e.55	e1.0	e1.0	5.2	49	18	5.5	3.3	2.2
21	1.2	1.4	e.20	e.65	e1.0	e.90	6.7	41	22	5.4	3.1	2.2
22	1.1	1.4	e.30	e.60	e.90	e1.0	7.3	50	23	5.0	3.2	2.2
23	1.1	1.4	e.35	e.50	e.80	e1.0	6.6	75	21	4.8	2.9	2.2
24	1.2	1.3	e.35	e.50	e.80	e1.2	5.8	83	17	5.8	2.7	2.4
25	1.2	1.2	e.40	e.50	e.80	e1.2	5.4	62	15	6.0	2.5	2.2
26	1.2	1.3	e.40	e.55	e.90	e1.2	11	55	14	5.4	2.4	2.2
27	1.1	1.3	e.30	e.55	e.90	1.2	11	92	13	5.6	2.3	2.1
28	1.2	e1.0	e.25	e.50	e.90	1.1	9.0	142	16	5.0	2.1	2.2
29	1.2	e1.2	e.25	e.50	---	1.2	8.0	98	14	4.8	1.9	2.1
30	1.1	1.3	e.30	e.50	---	1.1	7.1	70	14	5.8	1.8	2.1
31	1.1	---	e.40	e.60	---	1.1	---	54	---	5.0	1.8	---
TOTAL	34.37	42.8	22.40	19.70	25.70	30.45	127.6	1199.6	1317	234.5	124.0	67.8
MEAN	1.11	1.43	.72	.64	.92	.98	4.25	38.7	43.9	7.56	4.00	2.26
MAX	1.4	2.0	1.6	.90	1.0	1.2	11	142	148	16	8.9	6.0
MIN	.78	1.0	.20	.50	.70	.80	1.0	5.1	13	4.8	1.8	1.6
AC-FT	68	85	44	39	51	60	253	2380	2610	465	246	134

CAL YR 1990 TOTAL 1744.31 MEAN 4.78 MAX 254 MIN .20 AC-FT 3460
WTR YR 1991 TOTAL 3245.92 MEAN 8.89 MAX 148 MIN .20 AC-FT 6440

e Estimated

CHEYENNE RIVER BASIN

75

06405800 BEAR GULCH NEAR HAYWARD, SD

LOCATION.--Lat 43°47'31", long 103°20'49", in NW1/4SW1/4NE1/4 sec.13, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, in Custer State Park, on right bank 3.5 mi upstream from mouth, 2.1 mi north on Alt. 16 from intersection of Alt. 16 and Highway 36, and 5.5 mi south of Hayward.

DRAINAGE AREA.--4.23 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1989 to current year.

GAGE.--Water-stage recorder and rectangular weir. Elevation of gage is 4,110 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Considerable loss occurs to sinkholes in reach 0.5 mi upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,250 ft³/s, Sept. 7, 1989, gage height, 10.68 ft, from floodmarks, based on slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 26	0930	38	6.82	July 10	2135	*48	*6.99

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	e.00	.00	.00	.00	3.5	11	1.4	.73	.03
2	.00	.00	.00	e.00	.00	.00	.00	3.2	9.0	1.3	.73	.03
3	.00	.00	.00	e.00	e.00	.00	.00	3.2	10	1.2	.73	.04
4	.00	.00	.00	.00	.00	.00	.00	3.2	12	1.1	.69	.04
5	.00	.00	.00	.00	.00	.00	.00	2.9	11	1.0	.68	.03
6	.00	.00	.00	.00	.00	.00	.00	2.6	13	.96	.77	.03
7	.00	.00	.00	.00	.00	.00	.00	2.5	12	.93	.76	.02
8	.00	.00	.00	.00	.00	.00	.00	2.4	10	.91	.48	.02
9	.00	.00	.00	.00	.00	.00	.00	2.2	8.9	.89	.37	.02
10	.00	.00	.00	.00	.00	.00	.00	2.0	7.6	4.8	.34	.13
11	.00	.00	.00	.00	.00	.00	.00	3.0	6.5	4.6	.32	.47
12	.00	.00	.00	.00	.00	.00	.00	8.2	5.7	2.8	.31	.20
13	.00	.00	.00	.00	.00	.00	.00	6.6	5.6	2.4	.31	.17
14	.00	.00	.00	.00	.00	.00	.00	.07	5.7	5.4	.29	.19
15	.00	.00	.00	.00	.00	.00	.38	5.1	4.5	1.8	.26	.18
16	.00	.00	.00	.00	.00	.00	.73	6.1	3.8	1.9	.34	.15
17	.00	.00	.00	.00	.00	.00	.78	9.2	3.4	1.7	.26	.13
18	.00	.00	.00	.00	.00	.00	1.0	11	3.1	1.5	.26	.14
19	.00	.00	.00	.00	.00	.00	2.4	12	2.8	1.4	.26	.14
20	.00	.00	.00	.00	.00	.00	3.9	11	2.5	1.3	.26	.13
21	.00	.00	.00	.00	.00	.00	4.7	9.0	2.5	1.2	.22	.11
22	.00	.00	.00	.00	.00	.00	e4.1	9.6	3.4	1.1	.20	.10
23	.00	.00	.00	.00	.00	.00	e3.0	10	3.6	1.0	.15	.11
24	.00	.00	.00	.00	.00	.00	e2.0	9.1	2.7	.98	.13	.11
25	.00	.00	.00	.00	.00	.00	e4.5	7.9	2.3	.95	.11	.10
26	.00	.00	.00	.00	.00	.00	e6.7	7.2	2.0	.94	.12	.09
27	.00	.00	.00	.00	.00	.00	5.6	8.0	1.9	.95	.11	.08
28	.00	.00	.00	.00	.00	.00	5.1	12	2.1	.87	.09	.08
29	.00	.00	.00	.00	---	.00	4.7	11	1.7	.79	.08	.07
30	.00	.00	.00	.00	---	.00	4.0	9.4	1.7	.83	.06	.06
31	.00	---	e.00	.00	---	.00	---	8.2	---	.76	.04	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	53.66	207.0	171.7	46.26	10.46	3.20
MEAN	.000	.000	.000	.000	.000	.000	1.79	6.68	5.72	1.49	.34	.11
MAX	.00	.00	.00	.00	.00	.00	6.7	12	13	4.8	.77	.47
MIN	.00	.00	.00	.00	.00	.00	.00	2.0	1.7	.76	.04	.02
AC-FT	.00	.00	.00	.00	.00	.00	106	411	341	92	21	6.3

CAL YR 1990 TOTAL 289.35 MEAN .79 MAX 56 MIN .00 AC-FT 574
WTR YR 1991 TOTAL 492.28 MEAN 1.35 MAX 13 MIN .00 AC-FT 976

e Estimated

CHEYENNE RIVER BASIN

06405800 BEAR GULCH NEAR HAYWARD, SD--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--April 1989 to current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

[illegible]

CHEYENNE RIVER BASIN

77

06406000 BATTLE CREEK AT HERMOSA, SD

LOCATION.--Lat 43°49'41", long 103°11'44", in NE¼SW¼SW¼ sec.32, T.2 S., R.8 E., Custer County, Hydrologic Unit 10120109, on right bank 50 ft downstream from Chicago and North Western Transportation Company bridge, 0.8 mi south of Hermosa, and 2.9 mi downstream from Grace Coolidge Creek.

DRAINAGE AREA.--178 mi².

PERIOD OF RECORD.--August to December 1903 (gage heights only), July 1949 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,290 ft above National Geodetic Vertical Datum of 1929, from topographic map. Nonrecording gage, August to December 1903, at site 50 ft upstream, July 7, 1949, to Nov. 2, 1950, at site 0.5 mi upstream, Nov. 3, 1950, to Dec. 6, 1961, at site 170 ft downstream, all at different datum. Dec. 7, 1961, to June 10, 1972, water-stage recorder (destroyed by flood), and June 11, 1972, to Aug. 28, 1972, nonrecording gage at site 80 ft downstream at present datum.

REMARKS.--Records good. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--42 years, 8.88 ft³/s, 6,430 acre-ft/yr; median of yearly mean discharges, 6.2 ft³/s, 4,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,400 ft³/s, June 10, 1972, gage height, 17.72 ft, from floodmarks, from rating curve extended above 2,800 ft³/s on basis of contracted-opening and flow-over-railroad embankment measurement of peak flow; no flow at times in 1954-57, 1959, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	1400	199	4.89	June 4	0615	714	8.54
May 18	1400	247	5.22	June 6	0315	*995	*9.94
May 28	1330	398	6.56				

Minimum daily discharge, 1.0 ft³/s, Dec. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.7	2.8	1.5	2.4	2.4	2.7	3.5	151	35	7.6	4.3
2	2.4	2.8	2.7	1.6	2.4	2.2	2.5	3.2	140	30	7.1	4.1
3	2.4	2.8	2.8	1.5	2.5	2.3	2.7	3.2	141	27	6.4	4.2
4	2.4	2.7	2.9	1.4	2.5	2.3	3.5	2.5	478	25	6.4	4.3
5	2.3	2.7	3.3	1.4	2.2	2.4	3.5	3.2	366	24	6.9	4.3
6	2.4	2.7	3.1	1.4	2.2	2.5	3.1	3.3	607	22	8.2	4.5
7	2.5	2.7	2.9	1.4	2.2	2.4	3.1	3.3	360	21	9.1	4.2
8	2.8	2.9	2.9	1.4	2.4	2.4	3.2	3.3	253	21	8.2	4.0
9	2.7	2.9	2.9	1.4	2.4	2.4	3.6	3.2	190	21	8.1	4.3
10	2.5	2.9	2.9	1.4	2.4	2.4	3.5	3.1	156	19	7.9	5.1
11	2.5	2.9	2.9	1.4	2.4	2.3	5.9	3.0	140	48	7.0	7.0
12	2.5	2.8	2.9	1.5	2.2	2.4	5.3	108	126	30	7.1	6.3
13	2.6	2.7	2.9	2.2	2.2	2.4	1.9	64	121	22	8.0	6.9
14	2.7	2.7	3.0	2.6	2.2	2.4	1.8	36	196	20	7.8	7.0
15	2.7	2.7	3.1	2.9	2.1	2.4	1.5	26	127	18	5.7	7.3
16	2.7	2.7	2.9	2.9	2.3	2.4	1.8	23	105	17	6.4	7.7
17	2.7	2.7	2.9	2.8	2.5	2.4	1.8	121	92	17	6.9	7.4
18	2.9	2.7	2.9	2.7	2.5	2.4	2.4	214	80	15	7.9	7.3
19	3.1	2.7	2.4	2.7	2.4	2.4	3.3	182	72	15	7.3	7.5
20	3.1	2.7	2.4	2.7	2.4	2.4	3.2	121	66	14	7.3	7.5
21	3.1	2.7	2.2	2.5	2.4	2.4	2.9	78	64	13	7.3	7.1
22	3.1	2.8	1.2	2.6	2.4	2.4	2.9	58	64	12	6.4	6.4
23	3.1	2.9	1.4	2.7	2.4	2.7	2.8	117	72	12	5.0	6.3
24	2.9	2.9	1.8	2.4	2.4	2.7	2.7	120	58	11	4.8	6.6
25	2.9	2.9	2.0	2.5	2.3	2.7	2.5	97	52	9.2	4.7	6.2
26	2.9	2.9	2.0	2.5	2.2	2.7	6.0	66	45	9.0	4.5	6.3
27	2.8	2.9	2.0	2.5	2.2	2.7	3.1	126	41	10	4.3	6.0
28	2.9	2.8	2.0	2.6	2.4	2.7	2.9	262	41	9.2	4.4	5.6
29	2.9	2.7	1.4	2.3	---	2.7	3.4	273	41	9.7	4.6	5.6
30	2.9	2.9	1.0	2.4	---	2.7	3.6	168	39	8.8	4.6	5.1
31	2.8	---	1.4	2.4	---	2.7	---	109	---	8.3	4.5	---
TOTAL	84.7	83.5	75.9	66.2	65.5	76.7	93.1	2403.8	4484	573.2	202.4	176.4
MEAN	2.73	2.78	2.45	2.14	2.34	2.47	3.10	77.5	149	18.5	6.53	5.88
MAX	3.1	2.9	3.3	2.9	2.5	2.7	6.0	273	607	48	9.1	7.7
MIN	2.3	2.7	1.0	1.4	2.1	2.2	1.5	2.5	39	8.3	4.3	4.0
AC-FT	168	166	151	131	130	152	185	4770	8890	1140	401	350

CAL YR 1990 TOTAL 2607.11 MEAN 7.14 MAX 438 MIN .68 AC-FT 5170
WTR YR 1991 TOTAL 8385.4 MEAN 23.0 MAX 607 MIN 1.0 AC-FT 16630

CHEYENNE RIVER BASIN

06406500 BATTLE CREEK BELOW HERMOSA, SD

LOCATION.--Lat 43°43'30", long 102°54'15", in NE¼SW¼SE¼ sec.3, T.4 S., R.10 E., Pennington County, Hydrologic Unit 10120109, at left downstream side of bridge on State Highway 40, approximately 9 mi upstream from mouth, and 18.0 mi southeast of Hermosa.

DRAINAGE AREA.--285 mi².

PERIOD OF RECORD.--October 1950 to September 1953, October 1988 to current year.

GAGE.--Water-stage recorder and rectangular weir. Elevation of gage is 2,810 ft above National Geodetic Vertical Datum of 1929, from topographic map. Oct. 1, 1950, to Sept. 30, 1953, nonrecording gage at same site and different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Most of the flow is diverted, except after large storm events, for irrigation of about 1,000 acres upstream from station during irrigation season. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--6 years, 9.36 ft³/s, 6,780 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,060 ft³/s, May 23, 1952, gage height, 8.13 ft, from rating curve extended above 110 ft³/s, site and datum then in use; no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of about 4 ft (present datum) higher than that of May 23, 1952, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	2300	*948	*9.04	June 7	0300	693	8.20

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	e1.5	e.90	e3.0	e2.8	2.2	3.1	149	34	9.2	4.2
2	.00	.00	e1.6	e.90	e3.0	e2.5	2.2	2.8	167	30	11	4.0
3	.00	.00	e1.6	e.80	e3.5	e2.2	2.2	3.9	175	27	9.7	3.9
4	.00	.00	e1.6	e.70	e3.5	e2.5	2.3	4.0	238	24	9.7	3.9
5	.00	.00	e1.6	e.60	e3.2	e2.7	2.5	3.6	417	23	10	4.0
6	.00	.48	e2.0	e.50	e3.2	e3.0	2.5	3.5	401	22	11	3.9
7	.00	.93	e1.8	e.40	e3.0	e3.0	2.4	3.3	533	20	12	3.6
8	.00	.87	e1.7	e.25	e3.0	e3.0	2.5	2.9	326	19	11	3.6
9	.00	.86	e1.7	e.27	e3.0	e3.6	2.2	2.8	235	19	10	4.1
10	.00	.99	e1.7	e.30	e3.0	e3.6	2.2	39	190	19	9.8	4.7
11	.00	.99	e1.7	e.40	e3.0	e3.9	3.2	102	164	18	9.3	5.0
12	.00	.99	e1.8	e.50	e3.0	e3.5	4.4	12	148	29	9.2	4.7
13	.00	1.0	e1.8	e.60	e3.0	e3.2	4.0	7.1	124	31	8.7	5.0
14	.00	1.1	e2.0	e.70	e2.8	e3.0	3.9	51	119	24	8.4	4.9
15	.00	1.1	e2.0	e.70	e2.5	e2.8	3.6	34	136	19	8.6	4.7
16	.00	1.1	e1.8	e.70	e2.9	e2.7	3.2	29	116	16	9.3	5.0
17	.00	1.2	e1.7	e.70	e3.2	e2.6	2.8	28	105	15	8.1	4.9
18	.00	1.2	e1.4	e.70	e2.7	e2.5	2.8	54	98	14	7.5	4.9
19	.00	1.2	e1.3	e.70	e2.7	2.7	4.1	121	90	13	7.0	5.0
20	.00	1.3	e1.2	e.70	e2.6	2.8	3.6	118	83	13	7.4	4.9
21	.00	1.3	e1.0	e.80	e2.6	3.0	3.4	108	72	12	7.5	5.1
22	.00	1.3	e.61	e.77	e2.5	3.1	3.5	92	67	11	7.2	5.3
23	.00	1.3	e.70	e.80	e2.5	2.9	3.4	79	69	11	7.3	5.4
24	.00	1.3	e.80	e.90	e2.3	2.7	3.0	96	74	11	7.0	5.6
25	.00	1.4	e.80	e1.0	e2.5	2.6	2.8	106	63	10	6.3	5.4
26	.00	e1.4	e1.1	e1.0	e2.5	2.6	3.4	105	52	10	5.6	5.3
27	.00	e1.4	e.97	e1.4	e2.5	2.6	3.4	99	44	10	5.1	5.3
28	.00	e1.4	e1.2	e1.8	e2.7	2.5	3.2	132	40	10	4.9	5.3
29	.00	e1.4	e1.2	e2.0	---	2.4	4.0	190	38	10	4.7	5.2
30	.00	e1.5	e.81	e2.5	---	2.4	3.6	209	41	9.9	4.5	4.6
31	.00	---	e1.0	e3.0	---	2.3	---	170	---	9.4	4.4	---
TOTAL	0.00	29.01	43.69	27.99	79.9	87.7	92.5	2011.0	4574	543.3	251.4	141.4
MEAN	.000	.97	1.41	.90	2.85	2.83	3.08	64.9	152	17.5	8.11	4.71
MAX	.00	1.5	2.0	3.0	3.5	3.9	4.4	209	533	34	12	5.6
MIN	.00	.00	.61	.25	2.3	2.2	2.2	2.8	38	9.4	4.4	3.6
AC-FT	.00	58	87	56	158	174	183	3990	9070	1080	499	280

CAL YR 1990 TOTAL 1524.55 MEAN 4.18 MAX 231 MIN .00 AC-FT 3020
WTR YR 1991 TOTAL 7881.89 MEAN 21.6 MAX 533 MIN .00 AC-FT 15630

e Estimated

CHEYENNE RIVER BASIN

79

06406920 SPRING CREEK ABOVE SHERIDAN LAKE, NEAR KEYSTONE, SD

LOCATION.--Lat 43°57'39", long 103°29'18", in SE¼NE¼SW¼ sec.14, T.1 S., R.5 E., Pennington County, Hydrologic Unit 10120109, on left bank 0.25 mi upstream from Sheridan Lake and 1.5 mi northeast of the junction of State Highways 16 and 385.

DRAINAGE AREA.--355 mi².

PERIOD OF RECORD.--August 1990 to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 4,650 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 455 ft³/s at 0515 hours, June 4, gage height, 10.77 ft; minimum daily discharge, 1.5 ft³/s, Oct. 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	2.5	1.7	e3.0	e1.8	e3.3	4.9	13	123	43	15	4.5
2	1.8	3.2	1.9	e2.9	e1.8	e3.4	5.6	12	107	40	15	5.2
3	1.7	3.3	1.9	e2.9	e1.8	e3.6	5.7	13	154	37	14	8.8
4	1.7	2.9	2.4	e2.8	e1.8	e3.7	5.8	15	292	36	13	8.3
5	1.6	3.3	2.7	e2.8	e1.7	e4.0	6.1	16	228	34	15	6.0
6	1.5	3.6	e2.3	e2.8	e1.7	e4.4	6.6	14	264	33	21	6.2
7	1.7	5.2	e2.3	e2.8	e1.7	e4.7	6.8	14	311	31	19	4.8
8	2.0	3.6	e2.3	e2.7	e1.8	e5.0	7.0	15	241	30	28	6.9
9	2.3	3.2	e2.2	e2.7	e1.8	e5.1	6.4	15	194	32	18	8.0
10	2.4	3.7	e2.2	e2.7	e1.8	e5.2	6.5	15	163	34	19	6.9
11	2.7	3.5	e2.2	e2.6	e1.8	e5.4	11	32	142	47	17	8.1
12	3.1	3.6	e2.1	e2.6	e1.8	e5.6	8.3	104	123	32	15	7.0
13	3.5	4.0	e2.1	e2.6	e1.8	5.8	6.5	54	112	28	14	7.4
14	3.9	4.6	e2.1	e2.5	e1.8	5.0	5.8	42	117	26	13	8.0
15	3.4	4.5	e2.1	e2.5	e1.9	4.3	6.6	40	107	24	12	8.6
16	3.1	3.8	e2.1	e2.4	e2.0	4.3	8.1	54	93	35	16	7.5
17	3.0	3.8	e2.1	e2.4	e2.1	4.2	7.9	151	85	30	16	4.8
18	2.8	3.6	e2.1	e2.3	e2.2	5.2	8.7	159	78	23	13	4.4
19	2.9	3.2	e2.2	e2.3	e2.2	6.2	12	131	75	21	12	4.5
20	2.9	3.2	e2.2	e2.3	e2.3	9.8	11	108	70	20	11	5.9
21	2.7	3.2	e2.2	e2.2	e2.4	12	14	90	67	19	9.8	5.9
22	2.6	3.1	e2.2	e2.2	e2.6	8.9	17	92	66	17	9.1	5.3
23	2.9	2.9	e2.4	e2.2	e2.7	6.2	16	121	64	17	9.4	5.3
24	2.9	2.9	e2.4	e2.1	e2.8	6.1	14	105	58	19	9.2	5.3
25	3.2	2.8	e2.5	e2.1	e2.9	7.1	14	94	54	20	8.5	5.3
26	3.3	2.7	e2.5	e2.1	e3.1	7.8	20	85	50	18	8.2	5.1
27	2.9	e2.6	e2.5	e2.0	e3.2	7.0	23	128	48	18	7.2	5.1
28	2.8	e2.5	e2.6	e2.0	e3.3	5.3	17	171	54	16	6.8	5.0
29	2.6	e2.4	e2.7	e1.9	---	5.2	15	142	49	16	7.2	4.9
30	2.6	2.3	e2.5	e1.9	---	4.0	14	125	47	21	7.5	4.6
31	2.5	---	e3.0	e1.8	---	4.5	---	115	---	17	4.9	---
TOTAL	80.9	99.7	70.7	75.1	60.6	172.3	311.3	2285	3636	834	403.8	183.6
MEAN	2.61	3.32	2.28	2.42	2.16	5.56	10.4	73.7	121	26.9	13.0	6.12
MAX	3.9	5.2	3.0	3.0	3.3	12	23	171	311	47	28	8.8
MIN	1.5	2.3	1.7	1.8	1.7	3.3	4.9	12	47	16	4.9	4.4
AC-FT	160	198	140	149	120	342	617	4530	7210	1650	801	364

WTR YR 1991 TOTAL 8213.0 MEAN 22.5 MAX 311 MIN 1.5 AC-FT 16290

e Estimated

CHEYENNE RIVER BASIN

06407500 SPRING CREEK NEAR KEYSTONE, SD
(Formerly published as Spring Creek near Rockerville)

LOCATION.--Lat 43°58'45", long 103°20'25", in SW¼NE¼ sec.12, T.1 S., R.6 E., Pennington County, Hydrologic Unit 10120109, on right bank 0.5 mi upstream from Deadman Creek tributary at bottom of Stratosphere Bowl.

DRAINAGE AREA.--163 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1945 to July 1947, October 1986 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,885 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1986, nonrecording gage 0.2 miles downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Sheridan Lake, capacity, 12,657 acre-ft, 11.2 mi upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. Recording precipitation gage at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 865 ft³/s, June 23, 1947, gage height, 5.22 ft, datum then in use; no flow for many days in 1988-89.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1972, reached a stage of about 14 ft, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 291 ft³/s at 1345 hours, June 7, gage height, 6.78 ft; minimum daily discharge, 0.51 ft³/s, Oct. 10.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	3.0	2.0	1.6	1.8	e3.5	6.4	19	160	80	29	7.4
2	1.4	3.5	1.8	1.6	1.8	e3.5	6.3	17	157	73	27	6.5
3	1.3	3.7	1.7	1.6	1.9	e4.0	6.2	18	154	64	25	6.0
4	1.1	3.8	1.7	1.6	1.8	e4.5	6.3	19	194	62	24	5.7
5	1.3	3.8	2.0	1.5	1.8	e5.0	6.7	18	202	56	25	5.0
6	1.1	4.2	1.8	1.3	1.8	e6.0	7.5	18	199	18	27	4.1
7	1.1	3.7	1.7	1.1	1.9	e6.0	7.8	24	244	26	29	4.4
8	.89	4.2	1.5	1.1	2.0	e6.0	9.0	22	245	34	30	4.7
9	.64	3.5	1.5	1.1	1.9	e6.0	9.5	20	218	41	31	5.6
10	.51	3.4	1.6	1.1	2.1	e5.5	9.8	19	202	45	29	6.0
11	.59	3.2	1.6	1.1	2.4	e5.0	17	35	184	59	28	7.7
12	.95	3.2	1.7	1.2	2.7	e5.5	19	98	172	63	26	8.6
13	1.6	3.2	1.8	1.4	2.5	e6.0	18	91	164	56	24	11
14	2.3	3.7	1.8	1.7	3.3	e6.0	15	77	162	50	22	10
15	2.9	3.5	1.9	1.7	e3.3	e6.0	13	71	159	45	21	9.7
16	2.3	3.3	1.9	1.6	3.3	e6.0	13	71	151	45	22	9.0
17	2.5	3.3	2.2	1.6	3.4	e6.0	12	103	141	58	21	8.0
18	2.5	3.5	2.7	1.6	3.9	5.9	13	137	130	52	20	6.7
19	2.4	3.5	2.4	1.6	e4.5	6.2	17	139	111	45	19	5.7
20	2.5	3.5	2.0	1.6	5.9	6.6	19	130	107	40	18	5.3
21	2.3	3.9	2.0	1.6	5.8	7.9	18	120	107	37	18	5.3
22	2.2	3.3	e2.0	1.7	5.2	9.3	18	114	106	34	16	5.6
23	2.3	3.7	2.2	1.7	5.0	10	19	120	105	31	15	4.9
24	2.2	2.9	2.0	1.8	e5.5	9.7	19	121	102	27	14	4.9
25	2.4	2.6	2.1	1.9	e5.0	9.0	18	116	98	28	13	4.7
26	2.5	2.6	2.6	2.0	e4.5	8.4	25	111	90	31	12	4.8
27	2.6	2.2	2.4	2.1	e4.5	8.3	31	116	82	38	11	4.8
28	2.5	2.0	2.2	2.1	e4.0	8.2	29	141	84	34	10	4.9
29	2.5	2.2	2.0	1.8	---	7.8	24	166	86	31	9.6	5.1
30	2.6	2.4	1.6	1.8	---	7.4	21	181	84	30	8.9	5.4
31	2.7	---	1.6	1.8	---	7.1	---	163	---	30	8.4	---
TOTAL	58.08	98.5	60.0	49.0	93.5	202.3	453.5	2615	4400	1363	632.9	187.5
MEAN	1.87	3.28	1.94	1.58	3.34	6.53	15.1	84.4	147	44.0	20.4	6.25
MAX	2.9	4.2	2.7	2.1	5.9	10	31	181	245	80	31	11
MIN	.51	2.0	1.5	1.1	1.8	3.5	6.2	17	82	18	8.4	4.1
AC-FT	115	195	119	97	185	401	900	5190	8730	2700	1260	372

CAL YR 1990 TOTAL 3309.51 MEAN 9.07 MAX 86 MIN .40 AC-FT 6560
WTR YR 1991 TOTAL 10213.28 MEAN 28.0 MAX 245 MIN .51 AC-FT 20260

e Estimated

CHEYENNE RIVER BASIN

81

06407500 SPRING CREEK NEAR KEYSTONE, SD--Continued

PRECIPITATION RECORDS

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

INSTRUMENTATION.--Precipitation recorder.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.09	.00	.00	.00	.00	.00	.00	1.10	.00	.00	.00
2	.00	.20	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.35	.71	.00	.00	.07
4	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.09	.00
5	.00	.17	.00	.00	.00	.02	.00	.00	.33	.00	.50	.00
6	.02	.01	.00	.00	.00	.00	.00	.00	.27	.02	.17	.00
7	.03	.00	.00	.00	.00	.00	.21	.02	.00	.00	.01	.05
8	.00	.00	.00	.00	.00	.00	.04	.00	.27	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.02	.00	.00	.02	.00	.00
10	.00	.00	.00	.00	.00	.00	.52	.22	.00	.22	.00	.48
11	.14	.00	.00	.00	.00	.04	.71	1.58	.00	.00	.00	.04
12	.00	.00	.00	.00	.00	.10	.32	.29	.00	.00	.00	.13
13	.18	.00	.00	.00	.04	.00	.00	.00	.40	.00	.00	.02
14	.00	.00	.20	.00	.01	.00	.00	.17	.03	.00	.00	.15
15	.00	.00	.00	.00	.00	.00	.00	.33	.02	.07	.05	.00
16	.00	.00	.00	.00	.00	.00	.00	.60	.00	.18	.17	.00
17	.00	.00	.00	.00	.43	.01	.00	.53	.01	.00	.00	.00
18	.00	.00	.00	.00	.13	.00	.41	.09	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.43	.06	.03	.00	.00	.00
20	.00	.00	.00	.01	.00	.09	.00	.00	.01	.00	.62	.00
21	.00	.00	.00	.00	.00	.02	.03	.00	.02	.03	.00	.00
22	.00	.00	.00	.00	.00	.11	.00	.82	.33	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.18	.00	.00
25	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	1.27	.48	.00	.57	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.57	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.15	.41	.00	.00	.00
29	.00	.00	.00	.01	---	.00	.00	.08	.07	.09	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.02	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.37	0.47	0.20	0.02	0.61	0.39	4.06	6.48	4.11	1.38	1.61	0.94

CAL YR 1990 TOTAL 14.46

WTR YR 1991 TOTAL 20.64

CHEYENNE RIVER BASIN

06408500 SPRING CREEK NEAR HERMOSA, SD

LOCATION.--Lat 43°56'31", long 103°09'32", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.21, T.1 S., R.8 E., Pennington County, Hydrologic Unit 10120109, at left upstream end of county highway bridge, 0.3 mi upstream from Chicago and North Western Transportation Company bridge, and 7.5 mi north of Hermosa.

DRAINAGE AREA.--199 mi².

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

REVISED RECORDS.--WSP 1729: 1950.

GAGE.--Water-stage recorder. Datum of gage is 3,265.30 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 30, 1973, nonrecording gage and crest-stage gage 210 ft upstream, and Mar. 30 to Sept. 30, 1973, water-stage recorder at present site, both at datum 2.00 ft higher.

REMARKS.--Records good. Considerable loss occurs to sinkholes in reach 10 to 15 mi upstream from station. Flow slightly regulated by Sheridan Lake, capacity, 12,657 acre-ft, 24 mi upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--42 years, 4.68 ft³/s, 3,390 acre-ft/yr; median of yearly mean discharges, 1.5 ft³/s, 1,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s, June 10, 1972, gage height, 13.12 ft, site and datum then in use, from floodmarks, from rating curve extended above 350 ft³/s on basis of contracted-opening measurement of peak flow; no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 373 ft³/s at 0430 hours, June 8, gage height, 5.21 ft; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	151	51	3.7	1.5
2	.00	.00	.00	.00	.00	.00	.00	.00	139	49	3.6	1.6
3	.00	.00	.00	.00	.00	.00	.00	.00	133	44	3.3	1.7
4	.00	.00	.00	.00	.00	.00	.00	.00	190	37	3.4	1.9
5	.00	.00	.00	.00	.00	.00	.00	.00	246	e14	4.0	2.0
6	.00	.00	.00	.00	.00	.00	.00	.00	195	e13	3.9	1.8
7	.00	.00	.00	.00	.00	.00	.00	.00	286	e13	3.6	1.8
8	.00	.00	.00	.00	.00	.00	.00	.00	357	e12	3.6	2.1
9	.00	.00	.00	.00	.00	.00	.00	.00	291	e12	3.3	2.0
10	.00	.00	.00	.00	.00	.00	.00	.00	236	e11	3.6	1.8
11	.00	.00	.00	.00	.00	.00	.00	.00	201	e11	3.3	2.2
12	.00	.00	.00	.00	.00	.00	.00	.00	173	e10	2.9	2.0
13	.00	.00	.00	.00	.00	.00	.00	.00	154	e10	2.6	2.0
14	.00	.00	.00	.00	.00	.00	.00	.00	135	e8.9	2.8	2.0
15	.00	.00	.00	.00	.00	.00	.00	.00	124	e8.4	2.8	1.8
16	.00	.00	.00	.00	.00	.00	.00	.00	114	e7.7	3.2	1.6
17	.00	.00	.00	.00	.00	.00	.00	.00	103	e7.2	2.8	1.6
18	.00	.00	.00	.00	.00	.00	.00	.00	93	e6.7	2.6	1.7
19	.00	.00	.00	.00	.00	.00	.00	.01	80	e6.1	2.3	1.9
20	.00	.00	.00	.00	.00	.00	.00	3.1	74	e5.5	2.4	2.1
21	.00	.00	.00	.00	.00	.00	.00	11	71	e5.0	2.4	2.4
22	.00	.00	.00	.00	.00	.00	.00	25	71	e4.4	2.2	2.0
23	.00	.00	.00	.00	.00	.00	.00	49	70	e3.8	2.1	2.0
24	.00	.00	.00	.00	.00	.00	.00	71	66	e3.3	2.3	1.9
25	.00	.00	.00	.00	.00	.00	.00	72	64	e2.7	2.1	2.0
26	.00	.00	.00	.00	.00	.00	.00	70	61	e2.5	1.8	2.0
27	.00	.00	.00	.00	.00	.00	.00	76	56	2.4	1.7	2.0
28	.00	.00	.00	.00	.00	.00	.00	102	54	2.7	1.6	2.2
29	.00	.00	.00	.00	---	.00	.00	138	54	3.0	1.6	2.4
30	.00	.00	.00	.00	---	.00	.00	184	54	3.1	1.6	2.0
31	.00	---	.00	.00	---	.00	---	158	---	3.4	1.6	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	959.11	4096	373.8	84.7	58.0
MEAN	.000	.000	.000	.000	.000	.000	.000	30.9	137	12.1	2.73	1.93
MAX	.00	.00	.00	.00	.00	.00	.00	184	357	51	4.0	2.4
MIN	.00	.00	.00	.00	.00	.00	.00	.00	54	2.4	1.6	1.5
AC-FT	.00	.00	.00	.00	.00	.00	.00	1900	8120	741	168	115

CAL YR 1990 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 AC-FT .00
WTR YR 1991 TOTAL 5571.61 MEAN 15.3 MAX 357 MIN .00 AC-FT 11050

e Estimated

CHEYENNE RIVER BASIN

83

06408700 RHOADS FORK NEAR ROCHEFORD, SD

LOCATION.--Lat 44°08'12", long 103°51'29", in NW¼SE¼NE¼ sec.15, T.2 N., R.2 E., Pennington County, Hydrologic Unit 10120110, on left bank 1.1 mi upstream from South Fork Rapid Creek and 8.7 mi west of Rochford.

DRAINAGE AREA.--7.95 mi², approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 5,965 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--9 years, 5.23 ft³/s, 3,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9.7 ft³/s, Mar. 16, 1985, gage height, 2.00 ft; maximum gage height, 2.19 ft, July 23, 1982, backwater from vegetation; minimum daily discharge, 3.1 ft³/s, Jan. 19-22, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 4.3 ft³/s, Apr. 8, 9, 26, 27; minimum daily discharge, 3.1 ft³/s, Jan. 19-22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	3.4	e3.3	e3.3	3.4	e3.6	4.1	4.0	3.9	3.9	3.7	3.7
2	3.8	3.5	e3.3	e3.3	3.5	e3.6	4.1	4.1	3.8	3.9	3.7	3.7
3	3.8	3.5	e3.3	e3.3	3.5	e3.8	4.0	4.1	4.0	3.9	3.7	3.8
4	3.8	3.5	e3.3	e3.3	3.5	e3.9	4.0	4.1	4.1	3.9	3.7	3.7
5	3.7	3.5	e3.3	e3.3	3.5	e4.0	4.1	4.0	3.9	3.8	3.7	3.9
6	3.9	3.5	e3.3	e3.3	3.5	e3.9	4.0	4.0	3.9	3.9	3.7	3.8
7	3.9	3.4	e3.3	e3.3	3.5	3.7	4.2	3.9	4.1	3.9	3.8	3.7
8	3.7	e3.5	e3.3	e3.3	3.5	3.6	4.3	3.9	4.0	3.9	3.9	3.8
9	3.7	e3.5	e3.3	e3.3	3.6	3.6	4.3	4.0	3.8	3.8	3.8	3.8
10	3.7	e3.5	e3.3	e3.3	3.6	3.6	4.2	4.0	3.8	3.9	3.8	3.8
11	3.7	e3.5	e3.3	e3.3	3.6	3.7	4.1	4.0	3.8	3.9	3.8	3.9
12	3.7	e3.5	e3.3	e3.3	3.6	3.7	3.9	4.1	3.8	3.9	3.9	4.0
13	3.7	e3.5	e3.3	e3.3	3.6	3.7	3.9	4.0	3.8	4.1	3.8	3.9
14	3.7	e3.5	e3.3	e3.3	3.6	3.7	3.8	4.0	3.9	3.9	3.8	3.9
15	3.7	e3.5	e3.3	e3.3	3.7	3.6	3.8	4.0	3.9	3.9	3.8	3.9
16	3.6	e3.5	e3.3	e3.3	3.7	3.6	3.8	3.9	3.8	3.9	3.8	3.9
17	3.6	e3.5	e3.3	3.3	e3.7	3.7	3.9	3.9	3.8	3.8	3.7	3.9
18	3.6	e3.5	e3.3	3.2	e3.7	3.7	4.0	3.8	3.9	3.7	3.7	4.0
19	3.7	e3.5	e3.3	3.1	e3.6	3.7	4.0	3.8	3.9	3.7	3.8	3.9
20	3.7	3.5	e3.3	3.1	e3.6	3.8	4.1	3.8	3.8	3.7	3.8	3.9
21	3.7	3.3	e3.3	3.1	e3.6	4.0	4.1	3.9	3.8	3.8	3.7	3.8
22	3.6	3.3	e3.3	3.1	e3.6	4.0	4.1	4.1	3.8	3.7	3.7	3.8
23	3.6	3.3	e3.3	3.2	e3.6	4.0	4.1	4.1	3.8	3.7	3.7	3.8
24	3.6	3.3	e3.3	3.2	e3.6	3.9	4.1	3.9	3.8	3.8	3.7	3.9
25	3.5	3.3	e3.3	3.2	e3.6	4.0	4.1	3.9	3.8	3.8	3.7	3.9
26	3.5	3.3	e3.3	3.2	e3.6	4.0	4.3	3.9	3.8	3.7	3.7	3.9
27	3.5	3.3	e3.3	3.2	e3.6	4.0	4.3	4.1	3.8	3.8	3.7	3.7
28	3.5	3.2	e3.3	3.2	e3.6	4.0	4.2	4.2	4.0	3.8	3.7	3.8
29	3.5	3.2	e3.3	3.2	---	4.0	4.2	4.1	3.9	3.8	3.7	3.7
30	3.5	3.3	e3.3	3.2	---	4.0	4.1	3.9	3.9	3.8	3.7	3.7
31	3.4	---	e3.3	3.3	---	4.0	---	3.8	---	3.7	3.7	---
TOTAL	113.4	102.6	102.3	100.6	100.3	118.1	122.2	123.3	116.1	118.7	116.1	114.9
MEAN	3.66	3.42	3.30	3.25	3.58	3.81	4.07	3.98	3.87	3.83	3.75	3.83
MAX	3.9	3.5	3.3	3.3	3.7	4.0	4.3	4.2	4.1	4.1	3.9	4.0
MIN	3.4	3.2	3.3	3.1	3.4	3.6	3.8	3.8	3.8	3.7	3.7	3.7
AC-FT	225	204	203	200	199	234	242	245	230	235	230	228

CAL YR 1990 TOTAL 1407.8 MEAN 3.86 MAX 5.5 MIN 3.2 AC-FT 2790
WTR YR 1991 TOTAL 1348.6 MEAN 3.69 MAX 4.3 MIN 3.1 AC-FT 2670

e Estimated

CHEYENNE RIVER BASIN

06408700 RHOADS FORK NEAR ROCHFORD, SD--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--April 1982 to current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity.

AVERAGE PRECIPITATION.--8 years, 19.52 in.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.34	.00	.00	.00	.10	.00	.00	.30	.00	.00	.00
2	.02	.13	.00	.00	.00	.01	.00	.14	.18	.00	.00	.00
3	.00	.00	.00	.00	.00	.02	.00	.12	.80	.00	.00	.00
4	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00
5	.00	.09	.00	.00	.00	.19	.00	.02	.04	.05	.29	.00
6	.15	.00	.00	.00	.00	.04	.00	.00	.24	.19	.07	.00
7	.08	.01	.00	.00	.00	.01	.23	.07	.00	.03	.19	.00
8	.00	.00	.00	.00	.00	.03	.10	.00	.00	.16	.02	.05
9	.00	.00	.00	.00	.00	.01	.11	.00	.00	.00	.04	.00
10	.00	.04	.00	.00	.00	.01	.30	.21	.00	.22	.10	.00
11	.09	.00	.00	.00	.00	.23	.47	.75	.00	.00	.43	.00
12	.00	.00	.00	.00	.02	.07	.36	.18	.00	.00	.04	.69
13	.21	.00	.01	.00	.24	.00	.10	.00	.37	.00	.01	.01
14	.00	.00	.56	.00	.13	.00	.03	.00	.29	.00	.00	.10
15	.00	.00	.00	.07	.00	.00	.02	.57	.00	.02	.00	.15
16	.11	.00	.00	.12	.01	.00	.00	.31	.00	.32	.00	.00
17	.23	.00	.00	.00	.53	.00	.00	.37	.00	.00	.00	.00
18	.00	.00	.18	.00	.24	.00	.41	.05	.04	.00	.00	.00
19	.11	.00	.10	.13	.00	.00	.26	.34	.00	.00	.00	.00
20	.00	.06	.03	.12	.00	.00	.01	.00	.00	.00	.00	.00
21	.00	.00	.06	.00	.00	.12	.00	.35	.00	.00	.00	.00
22	.06	.00	.02	.22	.00	.15	.04	.84	.04	.00	.00	.00
23	.00	.00	.05	.20	.02	.05	.00	.00	.00	.05	.07	.03
24	.01	.00	.11	.03	.12	.00	.00	.00	.00	.38	.00	.00
25	.00	.00	.00	.03	.37	.00	.24	.00	.00	.00	.00	.00
26	.02	.00	.00	.00	.02	.00	.69	.38	.00	.05	.00	.00
27	.00	.03	.02	.09	.00	.00	.50	.72	.01	.00	.00	.00
28	.00	.03	.07	.18	.00	.00	.35	.03	.31	.00	.00	.00
29	.00	.00	.02	.02	---	.00	.03	.22	.18	.00	.00	.00
30	.00	.00	.00	.00	---	.05	.06	.03	.00	.00	.05	.00
31	.00	---	.00	.00	---	.00	---	.28	---	.00	.00	---
TOTAL	1.09	0.73	1.23	1.21	1.70	1.15	4.31	5.98	2.80	1.47	1.31	1.03

CAL YR 1990 TOTAL 18.98

WTR YR 1991 TOTAL 24.01

CHEYENNE RIVER BASIN

85

06408860 RAPID CREEK NEAR ROCHFORD, SD

LOCATION.--Lat 44°06'17", long 103°38'35", in SW 1/4 sec.28, T.2 N., R.4 E., Pennington County, Hydrologic Unit 10120110, on left bank 0.2 mi below confluence of Gimlet Creek.

DRAINAGE AREA.--101 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,000 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 144 ft³/s, June 7, 1991, gage height, 5.58 ft, maximum gage height, 5.94 ft, Mar. 25, 1990, backwater from ice; minimum daily discharge, 3.8 ft³/s, Dec. 22, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	1045	57	5.06	May 28	0800	111	5.44
May 17	1945	62	5.12	June 7	0115	*144	*5.58
May 20	1430	85	5.27	July 11	0015	106	5.38
May 23	0130	101	5.37				

Minimum daily discharge, 4.8 ft³/s, Nov. 7.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	8.7	e8.2	e7.5	13	12	21	22	73	26	13	8.3
2	7.1	8.9	e8.0	e8.0	12	e11	23	22	62	24	13	8.1
3	7.1	8.7	e7.8	e8.8	11	11	23	22	87	23	12	8.3
4	7.1	7.9	e7.6	e9.8	11	12	22	25	94	22	12	8.5
5	7.1	9.6	7.2	11	11	17	20	22	100	21	14	8.7
6	7.1	8.2	e7.8	12	10	14	23	21	122	22	16	8.7
7	7.7	4.8	8.1	12	e10	13	21	22	117	21	16	8.5
8	8.3	8.6	9.2	12	e10	12	19	22	98	21	15	8.9
9	8.0	8.8	8.3	12	e10	12	18	22	84	26	13	9.2
10	8.1	9.2	8.3	13	10	13	18	23	74	40	12	9.1
11	8.3	9.2	8.4	14	e10	14	19	26	68	50	12	9.4
12	8.3	9.0	8.7	15	10	15	17	43	61	29	14	11
13	8.6	7.6	e8.5	15	e10	14	16	31	59	24	12	14
14	9.0	7.1	e8.2	14	e10	13	15	27	62	22	12	12
15	8.9	7.1	e8.1	14	e10	12	16	39	56	20	11	12
16	8.7	e7.2	e8.0	13	e11	12	17	44	49	20	12	11
17	8.9	e7.3	e7.9	12	e11	12	16	53	45	21	12	11
18	8.5	e6.8	e7.8	12	e11	12	18	51	43	19	11	10
19	10	e6.7	e7.6	12	e11	14	18	47	42	18	11	10
20	9.5	e8.0	e7.2	11	e11	18	18	55	40	17	10	10
21	8.7	e9.4	e7.1	11	11	19	22	46	38	17	9.7	10
22	9.4	e8.3	e7.0	11	11	17	23	51	36	16	9.5	10
23	9.2	e8.6	e7.0	11	11	15	23	74	36	15	11	10
24	8.8	8.9	e7.0	12	12	16	21	56	33	19	10	11
25	9.5	9.0	e7.0	e12	e11	18	22	55	31	18	9.6	11
26	9.2	8.1	e7.0	12	e11	20	30	51	29	17	9.1	10
27	8.9	5.4	e7.0	11	e11	19	29	59	28	17	9.2	10
28	8.7	5.0	e7.0	12	e11	16	28	81	32	15	8.6	10
29	8.7	6.5	e7.0	11	---	15	27	66	29	14	8.7	9.9
30	8.7	8.7	e7.0	14	---	15	23	64	29	14	8.7	9.6
31	8.7	---	e7.0	13	---	16	---	60	---	13	8.7	---
TOTAL	262.1	237.3	238.0	368.1	302	449	626	1302	1757	661	355.8	298.2
MEAN	8.45	7.91	7.68	11.9	10.8	14.5	20.9	42.0	58.6	21.3	11.5	9.94
MAX	10	9.6	9.2	15	13	20	30	81	122	50	16	14
MIN	7.1	4.8	7.0	7.5	10	11	15	21	28	13	8.6	8.1
AC-FT	520	471	472	730	599	891	1240	2580	3490	1310	706	591

CAL YR 1990 TOTAL 4253.3 MEAN 11.7 MAX 35 MIN 4.8 AC-FT 8440
WTR YR 1991 TOTAL 6856.5 MEAN 18.8 MAX 122 MIN 4.8 AC-FT 13600

e Estimated

CHEYENNE RIVER BASIN

06408860 RAPID CREEK NEAR ROCHFORD, SD--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 72 in. tall. Elevation of gage is 4,950 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is located 0.2 mi east of streamflow gage. Precipitation gage is read daily by observer at approximately 0800 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00
2	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.40	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.40	.30	.30	.00
7	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.30	.00
8	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.10	.00
9	.00	.00	.00	.00	.00	.00	.10	.00	.00	.30	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.70	1.00	.00	1.40	.00	.00
12	.00	.00	.00	.00	.00	.30	.40	.80	.00	.00	.00	.00
13	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00	.00	.30
14	.20	.00	.60	.00	.00	.00	.00	.00	.70	.00	.30	.00
15	.00	.00	.00	.00	.00	.00	.00	.50	.10	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.50	.00	.30	.10	.00
17	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.20	.00	.60	1.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.10	.00
22	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00	.00
23	.20	.00	.00	.60	.00	.00	.00	.70	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.30	.30	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.80	.40	.00	.70	.00	.00
28	.00	.00	.00	.10	.00	.00	.00	.00	.30	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.50	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.40	.30	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.10	---	.00	.00	---
TOTAL	0.40	0.20	0.60	0.70	1.30	0.60	3.30	6.00	3.60	3.30	1.20	0.30

CAL YR 1990 TOTAL 15.60
WTR YR 1991 TOTAL 21.50

CHEYENNE RIVER BASIN

87

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, SD
(Hydrologic bench-mark and radiochemical station)

LOCATION.--Lat 44°00'49", long 103°49'48", in NE¼SW¼SW¼ sec.25, T.1 N., R.2 E., Pennington County, Hydrologic Unit 10120110, at downstream end of highway culvert, 330 ft downstream from South Fork Castle Creek, 500 ft upstream from high-water line of Deerfield Reservoir, 2.5 mi southwest of Deerfield Dam, and 14 mi northwest of Hill City.

DRAINAGE AREA.--79.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1948 to current year. Prior to October 1953, published as "above Deerfield Reservoir, near Deerfield".

REVISED RECORDS.--WSP 1917: 1952(M). WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,920 ft, from Highway Department bench mark. Prior to Aug. 31, 1948, nonrecording gage at site 130 ft upstream at datum 2.05 ft higher. Sept. 1, 1948, to May 17, 1983, at same location and datum. May 18, 1983, to Oct. 11, 1985, at site 300 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--43 years, 10.6 ft³/s, 7,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft³/s, May 22, 1952, gage height, 5.81 ft, from rating curve extended above slope-area measurement of gage height, 5.67 ft; minimum, 1.2 ft³/s, Apr. 25, 1969; minimum gage height, 1.35 ft, Nov. 12, 1949, Feb. 19, 1954, Mar. 7, 1957, Mar. 29, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	2330	*106	*3.28	No other peak greater than base discharge.			

a Backwater from ice.

Minimum daily discharge, 4.0 ft³/s, Dec. 22, 23, Jan. 29.

CHEYENNE RIVER BASIN

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	8.3	e6.5	e6.5	6.8	6.8	11	13	50	13	10	8.1
2	7.8	8.1	e6.0	e5.5	6.8	6.6	13	15	31	13	10	8.3
3	7.8	e8.0	e6.0	e5.5	6.4	7.0	17	17	49	13	9.9	8.4
4	7.9	e7.5	e8.0	e6.0	6.5	7.0	16	16	62	13	9.3	8.3
5	8.2	e7.0	e6.5	e5.5	6.5	9.1	20	15	43	12	12	7.8
6	8.1	e6.5	e6.5	e6.0	6.4	7.1	18	15	38	13	12	8.0
7	8.1	e6.5	e7.0	6.4	6.2	6.5	13	16	34	12	18	7.9
8	7.7	e7.0	e7.0	5.4	6.6	6.7	12	17	30	12	15	8.1
9	8.9	e7.0	e7.5	5.2	6.4	6.7	12	19	28	13	12	8.8
10	8.0	e7.0	e8.0	5.2	6.8	7.3	11	19	26	16	12	8.7
11	7.6	e7.5	e7.4	5.2	7.1	8.5	11	20	25	15	12	8.5
12	7.8	e8.0	e7.0	5.2	7.1	7.5	11	22	23	12	13	11
13	7.7	e8.0	e6.0	5.2	6.9	6.6	13	16	23	12	11	11
14	7.6	8.3	e6.0	5.2	5.1	6.9	15	15	28	12	10	9.9
15	7.6	8.0	e5.5	5.2	6.1	7.0	10	17	24	11	10	9.9
16	7.6	e8.0	e6.0	5.2	7.5	7.1	11	18	21	12	11	9.7
17	7.4	e8.5	e5.5	5.2	7.9	7.3	11	21	20	11	10	9.3
18	8.7	7.8	e5.5	5.4	7.1	7.7	12	19	19	10	9.9	9.3
19	8.4	8.3	e5.0	5.6	7.0	9.5	12	19	18	10	9.9	9.8
20	8.3	7.8	e4.5	4.3	7.4	9.6	13	22	17	9.9	9.9	9.9
21	12	7.6	e4.5	4.6	7.3	8.6	13	19	17	10	10	9.9
22	8.3	e7.8	e4.0	e5.5	6.7	8.1	14	20	17	10	10	9.9
23	8.3	8.2	e4.0	e5.0	6.6	8.3	13	24	17	10	9.3	9.9
24	12	7.7	e4.5	e5.0	6.1	9.7	14	20	16	13	9.1	9.9
25	8.6	7.8	e4.5	e4.5	5.5	10	14	19	16	12	9.6	9.4
26	8.3	7.7	4.2	e5.0	6.9	10	17	21	15	10	10	9.6
27	8.5	e7.5	5.1	e5.0	7.7	9.2	8.8	27	14	10	9.1	9.9
28	8.3	e7.5	e5.5	e4.5	7.4	8.8	8.2	34	16	10	8.4	9.9
29	8.3	e8.0	e5.0	e4.0	---	8.9	11	27	14	11	8.1	9.9
30	8.3	9.4	e5.0	e5.0	---	8.2	11	25	15	12	8.1	9.6
31	8.3	---	e5.5	e6.0	---	9.2	---	24	---	11	7.9	---
TOTAL	258.4	232.3	179.2	163.0	188.8	247.5	386.0	611	766	363.9	326.5	278.6
MEAN	8.34	7.74	5.78	5.26	6.74	7.98	12.9	19.7	25.5	11.7	10.5	9.29
MAX	12	9.4	8.0	6.5	7.9	10	20	34	62	16	18	11
MIN	7.4	6.5	4.0	4.0	5.1	6.5	8.2	13	14	9.9	7.9	7.8
AC-FT	513	461	355	323	374	491	766	1210	1520	722	648	553

CAL YR 1990 TOTAL 3392.3 MEAN 9.29 MAX 20 MIN 4.0 AC-FT 6730
WTR YR 1991 TOTAL 4001.2 MEAN 11.0 MAX 62 MIN 4.0 AC-FT 7940

e Estimated

CHEYENNE RIVER BASIN

89

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, SD--Continued
(Hydrologic bench-mark and radiochemical station)

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1964 to September 1984.

REMARKS.--Periodic samples obtained for analysis of suspended-sediment concentration most years.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 22.0°C, July 17, 1969; minimum, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
NOV											
15...	1030	8.3	470	8.0	258	6.5	3.0	1.2	615	11.0	101
FEB											
04...	1200	6.6	461	8.6	267	6.0	0.5	5.0	--	--	--
APR											
23...	1200	13	471	8.8	254	11.5	6.0	5.6	611	10.2	103
AUG											
27...	0900	9.0	481	8.4	270	21.0	11.0	6.0	615	8.9	100

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY LAB (MG/L CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV										
15...	K9	K13	270	60	30	1.7	1	0.0	1.1	254
FEB										
04...	<1	8	270	60	30	1.6	1	0.0	1.6	266
APR										
23...	<1	<1	270	59	30	1.7	1	0.0	1.3	258
AUG										
27...	50	59	280	59	32	1.5	1	0.0	1.3	259

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)
NOV											
15...	2.5	<0.10	9.3	241	264	0.33	5.40	<0.010	0.010	--	0.090
FEB											
04...	3.3	0.20	9.2	255	273	0.35	4.54	0.020	0.020	0.180	0.180
APR											
23...	3.2	0.10	8.5	255	265	0.35	8.68	0.010	0.010	0.085	0.180
AUG											
27...	0.60	0.20	8.6	255	271	0.35	6.20	<0.010	<0.010	--	--

CHEYENNE RIVER BASIN

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
NOV 15...	0.100	0.100	<0.010	<0.010	--	0.30	1.8	0.010	<0.010	<0.010	<0.010
FEB 04...	0.200	0.200	0.020	<0.010	--	<0.20	--	<0.010	0.010	0.010	0.010
APR 23...	0.095	0.190	0.020	0.020	0.03	0.30	1.7	0.030	<0.010	<0.010	<0.010
AUG 27...	0.075	0.086	<0.010	<0.010	--	0.40	2.1	0.020	<0.010	<0.010	<0.010

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
NOV 15...	<10	<1	64	<0.5	<1.0	<1	<3	<1	5	<1	8
FEB 04...	<10	<1	61	<0.5	<1.0	<1	<3	1	39	<1	7
APR 23...	<10	<1	61	<0.5	<1.0	<1	<3	1	6	<1	5
AUG 27...	<10	<1	65	<0.5	<1.0	<1	<3	<1	4	<1	5

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)
NOV 15...	5	<0.1	<10	<1	<1	<1.0	69	<6	<3	--
FEB 04...	5	<0.1	<10	<1	<1	<1.0	66	<6	9	2.3
APR 23...	12	<0.1	<10	1	<1	<1.0	70	<6	<3	--
AUG 27...	7	<0.1	<10	<1	<1	<1.0	74	<6	<3	2.2

DATE	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	SEDI- MENT, DIS- SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. 1 FINER THAN .062 MM (70331)
NOV 15...	--	--	--	--	--	--	--	6	0.13	84
FEB 04...	<0.6	1.9	0.8	1.5	0.8	0.08	1.2	63	1.1	50
APR 23...	--	--	--	--	--	--	--	52	1.8	77
AUG 27...	<0.6	1.9	0.9	1.5	0.9	0.07	0.96	40	0.97	85

CHEYENNE RIVER BASIN

91

06409500 DEERFIELD RESERVOIR NEAR HILL CITY, SD

LOCATION.--Lat 44°01'41", long 103°47'09", in NE¼SW¼ sec.20, T.1 N., R.3 E., at dam on Castle Creek, Hydrologic Unit 10120110, 0.4 mi upstream from Dutchman Creek and 12.5 mi northwest of Hill City.

DRAINAGE AREA.--95 mi², approximately.

PERIOD OF RECORD.--May 1947 to current year (monthend contents only). Some elevations obtained during period of initial filling, December 1945 to May 1947, are available in Bureau of Reclamation files. Prior to October 1953, published as "near Deerfield."

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to July 20, 1964, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam. Storage began Dec. 3, 1945; dam completed in 1947. Conservation capacity, 15,504 acre-ft between elevations 5,839.0 ft (lowest outlet) and 5,908.0 ft (crest of spillway). Dead storage below elevation 5,839.0 ft, 200 acre-ft. Surcharge capacity, 26,700 acre-ft between elevations 5,908.0 ft and 5,953.0 ft. Figures given herein represent conservation and surcharge contents above elevation 5,839.0 ft. Water is used to supplement Rapid City water supply and for irrigation in Rapid Creek basin downstream from Rapid City.

COOPERATION.--Records of elevation and contents provided by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 15,357 acre-ft May 31, 1987 (elevation, 5,907.65 ft); minimum observed, 5 acre-ft Oct. 2, 1959 (elevation, 5,839.10 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 15,100 acre-ft, May 31, elevation, 5,907.24 ft; minimum, 13,000 acre-ft, Sept. 30, elevation, 5,901.99 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	5,902.63	13,300	-
Oct. 31	5,902.64	13,300	0
Nov. 30	5,903.33	13,600	+300
Dec. 31	5,904.08	13,900	+300
CAL YR 1990	-	-	-100
Jan. 31	5,904.85	14,200	+300
Feb. 28	5,905.61	14,500	+300
Mar. 31	5,906.73	14,900	+400
Apr. 30	5,906.36	14,800	-100
May 31	5,907.24	15,100	+300
June 30	5,905.29	14,300	-800
July 31	5,904.61	14,100	-200
Aug. 31	5,903.39	13,600	-500
Sept. 30	5,901.99	13,000	-600
WTR YR 1991	-	-	-300

CHEYENNE RIVER BASIN

06410000 CASTLE CREEK BELOW DEERFIELD DAM, SD

LOCATION.--Lat 44°01'45", long 103°46'53", in NW¼SE¼ sec.20, T.1 N., R.3 E., Pennington County, Hydrologic Unit 10120110, on left bank 200 ft upstream from Dutchman Creek, 1,100 ft downstream from Deerfield Dam, and 12.5 mi northwest of Hill City.

DRAINAGE AREA.--96 mi², approximately.

PERIOD OF RECORD.--July 1946 to current year, seasonal records only beginning October 1983.

GAGE.--Water-stage recorder. Datum of gage is 5,784.52 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Oct. 15, 1947, at site 400 ft downstream at datum 0.23 ft higher. Oct. 15, 1947, to Sept. 1, 1948, at site 550 ft downstream at datum 1.77 ft lower, and Sept. 2, 1948, to Nov. 2, 1971, at site 300 ft upstream at datum 4.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow completely regulated by Deerfield Dam, 1,100 ft upstream. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--37 years (water years 1946 to 1983), 11.1 ft³/s, 8,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 200 ft³/s, May 22, 1952; maximum gage height, 5.08 ft, present datum, June 5, 1991; no flow at times in 1948, 1950-60.

EXTREMES FOR CURRENT PERIOD.--Maximum daily discharge, 81 ft³/s, June 6; minimum daily discharge, 2.2 ft³/s, Apr. 1-10.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	2.2	18	45	16	15	20
2	---	---	---	---	---	---	2.2	18	43	16	15	26
3	---	---	---	---	---	---	2.2	18	49	16	15	22
4	---	---	---	---	---	---	2.2	18	60	16	15	14
5	---	---	---	---	---	---	2.2	18	76	16	15	14
6	---	---	---	---	---	---	2.2	18	81	17	15	15
7	---	---	---	---	---	---	2.2	16	80	17	15	e15
8	---	---	---	---	---	---	2.2	14	79	17	16	e15
9	---	---	---	---	---	---	2.2	14	79	17	16	e15
10	---	---	---	---	---	---	4.6	14	78	16	16	e15
11	---	---	---	---	---	---	28	14	54	15	16	e15
12	---	---	---	---	---	---	37	14	40	15	16	e14
13	---	---	---	---	---	---	38	14	39	15	16	e14
14	---	---	---	---	---	---	38	14	39	15	16	e14
15	---	---	---	---	---	---	38	14	39	15	16	e14
16	---	---	---	---	---	---	34	14	39	15	18	e14
17	---	---	---	---	---	---	28	14	39	15	21	e14
18	---	---	---	---	---	---	24	14	39	15	21	e14
19	---	---	---	---	---	---	21	14	39	15	21	14
20	---	---	---	---	---	---	20	19	39	15	20	13
21	---	---	---	---	---	2.2	20	22	40	15	21	14
22	---	---	---	---	---	2.2	20	22	40	15	21	14
23	---	---	---	---	---	2.2	20	22	40	15	20	15
24	---	---	---	---	---	2.2	20	22	28	15	20	16
25	---	---	---	---	---	2.2	20	22	16	15	20	16
26	---	---	---	---	---	2.3	20	22	16	15	20	16
27	---	---	---	---	---	2.2	20	22	16	15	20	17
28	---	---	---	---	---	2.2	20	29	16	15	20	17
29	---	---	---	---	---	2.2	18	35	16	15	20	17
30	---	---	---	---	---	2.2	16	35	16	15	20	18
31	---	---	---	---	---	2.2	---	41	---	15	20	---
TOTAL	---	---	---	---	---	---	524.4	605	1320	479	556	471
MEAN	---	---	---	---	---	---	17.5	19.5	44.0	15.5	17.9	15.7
MAX	---	---	---	---	---	---	38	41	81	17	21	26
MIN	---	---	---	---	---	---	2.2	14	16	15	15	13
AC-FT	---	---	---	---	---	---	1040	1200	2620	950	1100	934

e Estimated

CHEYENNE RIVER BASIN

93

06410500 RAPID CREEK ABOVE PACTOLA RESERVOIR, AT SILVER CITY, SD

LOCATION.--Lat 44°05'05", long 103°34'48", in SW¼ sec.36, T.2 N., R.4 E., Pennington County, Hydrologic Unit 10120110, on right bank 0.8 mi west of Silver City and 3.0 mi downstream from Slate Creek.

DRAINAGE AREA.--292 mi².

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,620.00 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Deerfield Dam on Castle Creek since December 1945. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--38 years, 39.3 ft³/s, 28,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,060 ft³/s, May 15, 1965, gage height, 10.44 ft, from rating curve extended above 1,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily discharge, 2.5 ft³/s, Dec. 2, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 421 ft³/s at 0230 hours, June 7, gage height, 6.55 ft; minimum daily discharge, 7.8 ft³/s, Dec. 5.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	13	e13	e8.6	e15	e14	22	48	216	74	39	33
2	18	13	e12	e8.8	e14	e14	25	46	221	70	40	33
3	18	13	e12	e9.0	e13	e13	26	47	266	66	39	33
4	18	11	e11	e10	e13	e14	26	47	340	62	38	33
5	17	13	7.8	e13	e13	13	25	47	366	60	41	35
6	17	14	10	e13	e12	15	26	46	390	60	45	36
7	18	e9.0	8.6	e14	e12	18	27	46	387	59	45	35
8	19	10	8.2	e14	e12	16	26	43	355	58	45	35
9	20	14	8.7	e14	e12	19	25	42	324	59	43	35
10	19	15	9.0	e15	e12	17	25	43	291	68	41	35
11	19	15	8.5	e15	e12	15	25	47	265	93	41	35
12	20	14	10	e16	e11	16	39	71	221	64	41	36
13	20	14	e12	e17	e10	18	48	65	207	57	40	40
14	21	15	8.4	e16	e9.0	17	51	56	213	54	39	36
15	21	15	e11	e16	e8.6	17	56	65	194	51	37	34
16	19	13	e9.0	e15	e9.0	14	57	77	174	50	38	33
17	17	12	e8.0	e14	e10	13	53	106	164	51	39	32
18	16	14	e8.8	e14	e11	13	52	121	149	49	40	31
19	17	14	e8.6	e14	e12	14	50	118	140	46	39	31
20	14	13	e8.2	e14	e13	18	48	117	132	44	39	30
21	13	14	e9.1	e13	e13	20	48	113	128	43	38	29
22	13	9.9	e9.0	e13	e13	21	49	120	124	43	37	28
23	14	13	e9.0	e13	e13	20	50	157	122	41	38	28
24	13	12	e8.0	e14	e13	20	50	142	115	43	38	28
25	13	13	e9.0	e14	e13	20	50	140	92	45	35	28
26	13	11	e10	e14	e13	21	61	135	83	44	34	28
27	14	e11	e9.0	e13	e13	22	65	149	79	43	34	28
28	14	9.1	e9.0	e14	e13	20	60	190	83	40	34	27
29	13	16	e8.5	e13	---	18	57	205	80	40	33	27
30	13	8.4	e8.5	e16	---	18	52	205	77	40	33	26
31	13	---	e9.0	e15	---	18	---	197	---	39	33	---
TOTAL	513	381.4	290.9	422.4	337.6	526	1274	3051	5998	1656	1196	958
MEAN	16.5	12.7	9.38	13.6	12.1	17.0	42.5	98.4	200	53.4	38.6	31.9
MAX	21	16	13	17	15	22	65	205	390	93	45	40
MIN	13	8.4	7.8	8.6	8.6	13	22	42	77	39	33	26
AC-FT	1020	757	577	838	670	1040	2530	6050	11900	3280	2370	1900

CAL YR 1990 TOTAL 9552.8 MEAN 26.2 MAX 88 MIN 6.5 AC-FT 18950
WTR YR 1991 TOTAL 16604.3 MEAN 45.5 MAX 390 MIN 7.8 AC-FT 32930

e Estimated

CHEYENNE RIVER BASIN

06411000 PACTOLA RESERVOIR NEAR SILVER CITY, SD

LOCATION.--Lat 44°04'20", long 103°29'17", in NE¼SW¼ sec.2, T.1 N., R.5 E., Pennington County, Hydrologic Unit 10120110, in outlet works of dam on Rapid Creek, 3.8 mi east of Silver City.

DRAINAGE AREA.--319 mi².

PERIOD OF RECORD.--August 1956 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation datum). Prior to Feb. 18, 1970, nonrecording gage at same site and datum.

REMARKS.--Reservoir formed by an earthfill dam completed August 1956. Storage began Aug. 22, 1956. Conservation capacity, 54,955 acre-ft between elevations 4,456.1 ft and 4,580.2 ft. Combined dead and inactive storage below elevation 4,456.1 ft is 1,017 acre-ft. Flood storage capacity, 43,057 acre-ft between elevations 4,580.2 ft and 4,621.5 ft (crest of spillway). Surge capacity, 41,892 acre-ft between elevations 4,621.5 ft and 4,651.7 ft (maximum pool elevation). Figures given herein represent contents above elevation 4,456.1 ft. Reservoir provides flood control and water for municipal and irrigation uses.

COOPERATION.--Records of elevation and contents provided by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 60,970 acre-ft, May 19, 1964, elevation, 4,585.87 ft; minimum observed, 24,000 acre-ft, Sept. 30, 1990, elevation, 4,531.74 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 46,000 acre-ft, July 31, elevation, 4,567.82 ft; minimum, 23,900 acre-ft, Jan. 31, elevation, 4,531.53 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	4,531.74	24,000	-
Oct. 31	4,532.31	24,800	+800
Nov. 30	4,532.27	24,200	-600
Dec. 31	4,531.71	24,000	-200
CAL YR 1990	-	-	-1,000
Jan. 31	4,531.53	23,900	-100
Feb. 28	4,531.91	24,100	+200
Mar. 31	4,533.01	24,600	+500
Apr. 30	4,537.08	26,700	+2,100
May 31	4,548.25	32,900	+6,200
June 30	4,566.70	45,200	+12,300
July 31	4,567.82	46,000	-800
Aug. 31	4,565.46	44,300	-1,700
Sept. 30	4,564.63	43,700	-600
WTR YR 1991	-	-	+18,100

CHEYENNE RIVER BASIN

95

06411500 RAPID CREEK BELOW PACTOLA DAM, SD

LOCATION.--Lat 44°04'36", long 103°28'54", in SW¼NE¼ sec.2, T.1 N., R.5 E., Pennington County, Hydrologic Unit 10120110, on right bank 2,000 ft downstream from Pactola Dam, 3.9 mi upstream from Deer Creek, and 13.0 mi west of Rapid City.

DRAINAGE AREA.--320 mi², approximately.

PERIOD OF RECORD.--October 1928 to September 1932 (combined records of Creek and Dakota Power and Light Co. flume), July 1946 to current year. Prior to October 1953, published as "near Pactola." Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1931(M).

GAGE.--Water-stage recorder and concrete control since Oct. 16, 1962. Datum of gage is 4,406.00 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Apr. 19, 1929, to June 30, 1932, nonrecording gage at site 3,500 ft upstream at different datum. July 24, 1946, to Aug. 24, 1947, nonrecording gage and Aug. 25, 1947, to Nov. 18, 1953, water-stage recorder, at site 2.0 mi upstream at different datum.

REMARKS.--Records good. Flow regulated by dam on Castle Creek since Dec. 3, 1945, and completely regulated by Pactola Dam 2,000 ft upstream since Aug. 22, 1956. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--49 years, 43.0 ft³/s, 31,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,170 ft³/s, May 22, 1952, gage height, 6.74 ft, site and datum then in use; no flow Oct. 11-17, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 78 ft³/s, Aug. 29-31, Sept. 2, gage height, 7.80 ft; minimum daily discharge, 9.0 ft³/s, Jan. 12, Apr. 3.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	11	9.8	13	10	11	10	11	12	19	62	76
2	12	10	9.9	12	11	11	9.2	10	12	19	57	78
3	12	10	10	12	11	11	9.0	9.6	13	19	55	68
4	11	10	10	12	11	12	10	9.9	13	19	54	55
5	10	10	10	12	11	12	11	9.6	14	19	52	54
6	10	10	10	11	11	12	11	10	18	19	49	55
7	10	10	10	11	9.9	12	11	10	18	19	48	58
8	10	10	10	11	9.9	12	10	10	18	36	48	61
9	10	10	10	11	11	12	11	10	18	48	48	55
10	10	10	10	11	11	12	11	11	18	49	50	51
11	10	10	10	9.6	11	12	11	12	19	46	50	49
12	10	10	11	9.0	11	12	11	12	18	43	53	39
13	12	10	14	9.3	11	12	11	11	19	41	55	36
14	12	10	14	9.8	11	12	11	11	19	41	60	34
15	12	10	14	10	11	12	11	11	19	44	61	33
16	12	10	14	10	11	12	11	11	19	47	50	31
17	12	10	12	10	11	11	10	11	19	48	46	29
18	11	10	12	10	11	11	10	11	19	48	45	29
19	11	10	14	10	11	11	11	11	19	49	43	29
20	11	10	14	10	11	10	11	11	19	51	42	25
21	11	10	14	10	11	11	11	11	19	51	51	22
22	11	10	14	10	11	10	13	11	19	56	68	22
23	11	10	14	10	11	11	16	12	19	59	74	21
24	11	10	14	10	11	11	16	13	19	59	74	21
25	10	10	14	11	11	11	15	12	19	59	75	21
26	11	10	14	11	11	10	13	12	19	59	76	21
27	11	10	14	11	11	11	11	12	18	58	75	21
28	11	10	14	11	11	11	11	12	19	58	76	20
29	11	10	14	10	---	10	11	12	19	58	78	21
30	10	10	13	10	---	10	11	12	19	58	78	21
31	10	---	13	10	---	10	---	12	---	61	78	---
TOTAL	344	301	380.7	327.7	304.8	348	339.2	344.1	532	1360	1831	1156
MEAN	11.1	10.0	12.3	10.6	10.9	11.2	11.3	11.1	17.7	43.9	59.1	38.5
MAX	18	11	14	13	11	12	16	13	19	61	78	78
MIN	10	10	9.8	9.0	9.9	10	9.0	9.6	12	19	42	20
AC-FT	682	597	755	650	605	690	673	683	1060	2700	3630	2290

CAL YR 1990 TOTAL 9555.5 MEAN 26.2 MAX 122 MIN 9.8 AC-FT 18950
WTR YR 1991 TOTAL 7568.5 MEAN 20.7 MAX 78 MIN 9.0 AC-FT 15010

CHEYENNE RIVER BASIN

06412200 RAPID CREEK ABOVE VICTORIA CREEK, NEAR RAPID CITY, SD

LOCATION.--Lat 44°02'48", long 103°21'06", in SW1/4 sec.13, T.1 N., R.6 E., Pennington County, Hydrologic Unit 10120110, on left bank 0.5 mi above Victoria Creek, and 3.0 mi west of Canyon Lake.

DRAINAGE AREA.--355 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,570 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Pactola Reservoir 18.0 mi upstream (see station 06411000). Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 147 ft³/s, July 16, 1991, gage height, 5.96 ft; minimum daily discharge, 5.0 ft³/s, Feb. 3, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1972, reached a stage of about 13.0 ft, present datum, discharge not determined; information supplied by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 147 ft³/s at 2145 hours, July 16, gage height, 5.96 ft; minimum daily discharge, 7.0 ft³/s, Feb. 28.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	10	e11	e9.0	e12	e8.0	11	14	42	28	68	86
2	15	12	e12	e9.0	e12	e8.0	11	13	40	27	65	85
3	11	11	12	e9.0	e12	e9.0	9.8	14	42	27	60	83
4	11	10	e13	e9.0	e12	e9.0	9.3	14	48	26	59	63
5	9.8	11	e13	e9.0	e12	e10	9.7	14	62	26	60	57
6	8.0	11	e13	e9.0	e12	e10	11	13	100	26	57	56
7	8.1	12	e13	e9.0	e12	e11	11	13	84	24	55	56
8	9.2	e12	e14	e9.0	e12	e11	11	14	73	27	54	60
9	9.2	11	e14	e9.0	e12	e11	10	13	72	59	54	59
10	9.0	11	e14	e9.0	e11	e12	11	13	67	58	57	51
11	9.6	12	e15	e10	e10	e12	17	28	59	59	58	52
12	9.4	11	e15	e10	e10	e12	14	86	53	52	58	44
13	9.3	11	e15	e10	e10	13	13	40	49	49	62	39
14	12	11	e15	e10	e10	13	12	28	51	48	65	34
15	11	11	e14	e10	e10	12	12	28	47	48	76	32
16	11	11	e14	e10	e10	12	12	33	43	70	65	31
17	11	11	e14	e10	e10	12	12	59	41	74	54	29
18	12	11	e13	e10	e10	12	13	56	39	62	54	28
19	11	9.5	e13	e10	e9.0	12	17	46	37	58	53	28
20	10	11	13	e11	e9.0	12	16	37	36	59	49	28
21	10	10	e13	e11	e9.0	12	15	32	35	60	52	23
22	10	10	e13	e11	e10	12	15	30	36	59	68	20
23	10	11	e12	e11	e10	11	17	30	37	65	87	20
24	10	11	e12	e12	e10	11	19	25	39	68	87	20
25	10	10	e12	e12	e10	12	19	25	34	66	87	21
26	10	e10	e11	e11	e10	11	26	23	32	67	87	21
27	10	e10	e10	e11	e9.0	10	20	25	30	66	87	21
28	11	9.9	e10	e11	e7.0	10	16	32	32	64	86	21
29	11	e11	e9.0	e12	---	11	15	37	30	64	87	21
30	11	e11	e9.0	e12	---	11	14	39	30	64	87	20
31	11	---	e9.0	e12	---	11	---	35	---	64	86	---
TOTAL	331.6	324.4	390.0	317.0	292.0	343.0	418.8	909	1420	1614	2084	1209
MEAN	10.7	10.8	12.6	10.2	10.4	11.1	14.0	29.3	47.3	52.1	67.2	40.3
MAX	21	12	15	12	12	13	26	86	100	74	87	86
MIN	8.0	9.5	9.0	9.0	7.0	8.0	9.3	13	30	24	49	20
AC-FT	658	643	774	629	579	680	831	1800	2820	3200	4130	2400

CAL YR 1990 TOTAL 10124.5 MEAN 27.7 MAX 132 MIN 7.0 AC-FT 20080
WTR YR 1991 TOTAL 9652.8 MEAN 26.4 MAX 100 MIN 7.0 AC-FT 19150

e Estimated

CHEYENNE RIVER BASIN

97

06412500 RAPID CREEK ABOVE CANYON LAKE, NEAR RAPID CITY, SD

LOCATION.--Lat 44°03'04", long 103°18'47", in NE¼NE¼ sec.18, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on right bank at bridge on State Highway 44, at city limits of Rapid City, and 2.8 mi downstream from Victoria Creek.

DRAINAGE AREA.--371 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1946 to October 1991 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 3,405.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 6, 1947, nonrecording gage, Oct. 6, 1947, to Nov. 2, 1967, and Oct. 1, 1968, to Sept. 30, 1976, water-stage recorder all at datum 2.0 ft higher. Nov. 3, 1967, to Sept. 30, 1968, nonrecording gage at site 0.2 mi downstream at datum 1.12 ft lower. Prior to Oct. 1, 1989, at datum 0.03 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Deerfield Reservoir since December 1945 and by Pactola Dam 21.0 mi upstream since August 1956. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. National Weather Service telemeter and recording rain gage at station.

AVERAGE DISCHARGE.--45 years, 37.9 ft³/s, 27,450 acre-ft/yr; median of yearly mean discharges, 34 ft³/s, 24,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,200 ft³/s, June 9, 1972, gage height, 17.77 ft, present datum, from floodmarks, from rating curve extended above 1,300 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1950-51, 1957-60, 1962-63, 1981, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 201 ft³/s at 2345 hours, May 11, gage height, 4.24 ft; no flow for several days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	.61	e.24	e.00	e.00	e.00	.29	3.5	42	21	60	72
2	6.8	1.6	e.30	e.00	e.00	e.00	.26	3.1	40	20	55	72
3	2.3	1.7	e.30	e.00	e.10	e.10	.28	4.3	42	20	49	71
4	1.7	1.3	e.30	e.00	e.10	e.40	.00	4.2	52	19	48	51
5	1.3	1.4	e.35	e.00	e.05	e.30	.00	3.5	67	19	49	42
6	.09	1.8	e.40	e.00	e.05	e.30	.06	2.9	110	19	47	41
7	.07	.83	e.40	e.00	e.05	e.30	.25	2.9	98	18	45	41
8	.41	2.4	e.30	e.00	e.05	e.30	.96	2.8	84	19	43	46
9	.55	2.6	e.30	e.00	e.05	e.20	.99	2.4	83	47	42	45
10	.42	2.1	e.20	e.00	e.05	e.20	.47	2.2	76	47	44	38
11	.39	1.8	e.10	e.00	e.05	e.20	5.2	15	64	49	44	38
12	.68	2.0	e.00	e.20	e.05	e.20	5.4	128	54	42	44	33
13	.20	1.6	e.00	e.30	e.05	e.30	3.4	57	48	38	49	28
14	.82	1.4	e.00	e.40	e.05	e.30	3.0	32	50	36	50	24
15	1.5	1.3	e.00	e.50	e.04	e.30	2.0	28	42	36	62	23
16	1.5	1.3	e.00	e.50	e.00	e.30	2.0	32	37	54	54	21
17	1.5	1.3	e.10	e.40	e.00	e.40	2.0	81	35	70	41	19
18	1.5	1.3	e.20	e.30	e.00	e.40	2.1	87	33	53	40	18
19	1.3	.81	e.30	e.20	e.00	e.40	5.1	67	31	49	39	18
20	.83	1.1	e.00	e.10	e.00	e.40	5.2	47	29	47	36	18
21	.83	1.2	e.00	e.00	e.10	e.40	4.4	36	27	47	37	15
22	.83	1.1	e.00	e.00	e.30	e.30	3.8	31	29	47	51	12
23	.83	e.80	e.00	e.00	e.40	e.30	3.9	31	28	54	70	12
24	.83	e.70	e.00	e.00	e.40	e.30	6.1	25	31	57	72	12
25	.83	e.60	e.00	e.00	e.20	e.30	5.9	23	26	57	72	12
26	.83	e.50	e.00	e.00	e.20	e.30	14	20	24	56	72	11
27	.52	e.22	e.00	e.00	e.20	.31	12	24	23	56	72	11
28	.74	e.20	e.00	e.00	e.10	.05	7.2	32	25	54	72	11
29	.80	e.24	e.00	e.00	---	.24	5.4	37	23	53	75	11
30	.79	e.24	e.00	e.00	---	.52	4.7	38	23	54	74	10
31	1.0	---	e.00	e.00	---	.62	---	33	---	53	72	---
TOTAL	42.69	36.05	3.79	2.90	2.64	8.94	106.36	935.8	1376	1311	1680	876
MEAN	1.38	1.20	.12	.094	.094	.29	3.55	30.2	45.9	42.3	54.2	29.2
MAX	10	2.6	.40	.50	.40	.62	14	128	110	70	75	72
MIN	.07	.20	.00	.00	.00	.00	.00	2.2	23	18	36	10
AC-FT	85	72	7.5	5.8	5.2	18	211	1860	2730	2600	3330	1740

CAL YR 1990 TOTAL 6431.63 MEAN 17.6 MAX 116 MIN .00 AC-FT 12760
WTR YR 1991 TOTAL 6382.17 MEAN 17.5 MAX 128 MIN .00 AC-FT 12660

e Estimated

CHEYENNE RIVER BASIN

06412500 RAPID CREEK ABOVE CANYON LAKE NEAR RAPID CITY, SD--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--April 1981 to July 1982 published in Open-File Report 87-45, March 1987 to current year.

INSTRUMENTATION.--Precipitation recorder.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.08	.00	.00	.00	.00	.00	.00	.58	.00	e.01	.00
2	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.01
3	.00	.00	.00	.00	.00	.00	.00	.00	.41	.00	e.00	.01
4	.00	.00	.00	.00	.00	.00	.00	.47	.75	.00	e.08	.00
5	.00	.09	.00	.00	.00	.00	.00	.00	.25	.00	e.08	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.06	.06	e.24	.00
7	.02	.07	.00	.00	.00	.00	.24	.01	.00	.00	.01	.02
8	.05	.04	.00	.00	.00	.00	.09	.00	.51	.23	e.03	1.02
9	.00	.00	.00	.00	.00	.00	.05	.00	.46	.09	e.00	.00
10	.00	.00	.00	.00	.00	.00	.70	.22	.00	.15	e.00	.25
11	.23	.00	.00	.04	.00	.00	.13	1.86	.00	.00	e.00	.00
12	.00	.00	.00	.04	.00	.18	.00	.23	.00	.00	e.00	.16
13	.14	.00	.00	.00	.00	.00	.00	.00	.13	.00	e.00	.03
14	.00	.00	.00	.00	.00	.00	.21	.45	.01	.00	e.00	.14
15	.00	.00	.00	.00	.04	.00	.62	.32	.03	.16	e.19	.00
16	.01	.00	.00	.00	.00	.00	.00	.56	.00	.46	e.30	.00
17	.00	.00	.00	.00	.02	.03	.00	.27	.01	e.00	e.00	.00
18	.00	.00	.00	.00	.00	.00	.40	.07	.02	e.00	e.00	.00
19	.00	.00	.00	.00	.13	.00	.37	.06	.00	e.00	e.00	.00
20	.00	.00	.00	.00	.31	.12	.00	.00	.00	e.00	e.00	.00
21	.00	.00	.00	.00	.00	.05	.00	.00	.01	e.01	e.00	.00
22	.01	.00	.00	.00	.00	.17	.00	.54	.35	e.00	e.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.01	e.00	e.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.19	e.00	.00
25	.00	.00	.00	.00	.04	.00	.08	.00	.00	e.00	e.00	.00
26	.00	.00	.00	.00	.00	.00	1.22	.27	.00	.09	e.00	.00
27	.00	.00	.00	.00	.00	.00	.02	.43	.00	.01	e.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.01	.35	e.00	e.00	.00
29	.00	.00	.00	.00	---	.00	.00	.12	.07	e.12	e.00	.00
30	.00	.00	.00	.00	---	.00	.00	.01	.00	e.00	e.00	.00
31	.00	---	.02	.00	---	.00	---	.00	---	e.09	e.00	---
TOTAL	0.46	0.48	0.02	0.08	0.54	0.55	4.13	5.90	4.01	1.66	0.94	1.64

CAL YR 1990 TOTAL 13.34
WTR YR 1991 TOTAL 20.41

e Estimated

CHEYENNE RIVER BASIN

99

06412510 RAPID CREEK ABOVE RAPID CITY, SD

LOCATION.--Lat 44°03'10", long 103°18'41", in NW¼NW¼NW¼ sec.17, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on left bank between bridges on State Highway 44, at city limits of Rapid City, and 2.9 mi downstream from Victoria Creek.

DRAINAGE AREA.--371 mi².

PERIOD OF RECORD.--December 1990 to September 1991.

GAGE.--Water-stage recorder and concrete broad-crested, V-notch weir. Elevation of gage is 3,390 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Discharge records for this station considered to be equivalent to those for station 06412500 above 40 ft³/s. National Weather Service LARK telemeter and recording precipitation gage at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period December to September, 251 ft³/s at 2345 hours, May 11, gage height, 3.17 ft; minimum daily discharge, 0.25 ft³/s, Dec. 22-25.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	e.30	e.70	e.60	.78	4.6	49	24	60	72
2	---	---	e.38	e.30	e.70	e.55	.74	4.2	48	24	59	72
3	---	---	e.35	e.35	e.70	e.70	.75	5.5	49	22	54	71
4	---	---	e.35	e.40	e.70	e.80	.58	5.2	57	22	53	54
5	---	---	e.40	e.40	e.70	e.70	.53	4.4	72	22	54	47
6	---	---	e.42	e.50	e.65	e.70	.52	4.1	125	22	52	46
7	---	---	e.45	e.63	e.60	e.70	.69	3.6	108	20	49	45
8	---	---	e.45	e.49	e.55	e.60	1.2	3.1	91	21	48	50
9	---	---	e.50	e.44	e.55	e.60	1.1	2.6	87	50	47	50
10	---	---	e.50	e.42	e.55	e.70	.82	2.4	81	52	48	44
11	---	---	e.45	e.45	e.55	e.90	5.6	17	68	53	49	45
12	---	---	e.45	e.50	e.54	e.80	4.8	149	59	48	49	39
13	---	---	e.45	e.70	e.54	e.70	3.2	61	54	44	52	33
14	---	---	e.45	e.90	e.54	e1.0	2.9	39	56	43	54	28
15	---	---	e.45	e1.0	e.52	1.5	2.0	36	50	43	64	25
16	---	---	e.45	e1.0	e.55	1.2	2.5	39	45	58	58	24
17	---	---	e.45	e.90	e.55	1.4	2.5	86	42	71	47	21
18	---	---	e.40	e.80	e.55	1.3	2.7	94	40	57	46	20
19	---	---	e.60	e.70	e.55	1.3	6.1	72	38	54	45	19
20	---	---	e.36	e.70	e.65	1.5	5.6	54	36	53	41	19
21	---	---	e.30	e.70	e.70	1.8	4.9	44	35	54	42	16
22	---	---	e.25	e.70	e.70	1.4	4.6	39	36	53	54	13
23	---	---	e.25	e.70	e.70	1.4	4.7	39	38	58	70	13
24	---	---	e.25	e.70	e.80	.81	6.5	32	43	60	72	13
25	---	---	e.25	e.75	e.89	1.2	6.6	29	38	59	73	12
26	---	---	e.27	e.68	e.70	1.2	14	25	40	60	72	12
27	---	---	e.30	e.80	e.70	1.1	12	29	35	60	72	12
28	---	---	e.40	e.83	e.65	.66	7.1	39	34	57	72	12
29	---	---	e.45	e.73	---	.86	5.9	43	31	57	73	12
30	---	---	e.45	e.57	---	.97	5.4	46	29	57	74	11
31	---	---	e.40	e.75	---	.83	---	41	---	56	72	---
TOTAL	---	---	---	19.79	17.78	30.48	117.31	1092.7	1614	1434	1775	950
MEAN	---	---	---	.64	.63	.98	3.91	35.2	53.8	46.3	57.3	31.7
MAX	---	---	---	1.0	.89	1.8	14	149	125	71	74	72
MIN	---	---	---	.30	.52	.55	.52	2.4	29	20	41	11
AC-FT	---	---	---	39	35	60	233	2170	3200	2840	3520	1880

e Estimated

CHEYENNE RIVER BASIN

06412600 CLEGHORN SPRINGS MAIN CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD

LOCATION.--Lat 44°03'32", long 103°17'50", in NE&NW&SE& sec.8, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, at concrete Parshall flume within Cleghorn Springs Fish Hatchery, 0.2 mi west of Canyon Lake within city limits of Rapid City.

DRAINAGE AREA.--Indeterminate.

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

REVISED RECORDS.--WDR SD-89-1: 1988 daily discharges. WDR SD-91-1: 1988 daily discharges, 1989 daily discharges.

GAGE.--Water-stage recorder and concrete Parshall flume. Datum of gage is 3,364.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records for revised water years 1988 and 1989 good except those for estimated daily discharges, which are fair. Records for water years 1990 and 1991 good except those for estimated daily discharges, which are fair. Flows may vary depending on operational activities of fish hatchery. This is one of three stations that monitors flow from Cleghorn Springs (see stations 06412700 and 06412800). Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

REVISIONS.--Revised figures of daily discharge for water years 1988 and 1989, superseding those published in reports for 1988 and 1989, are given below.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	9.6	8.7	9.7	9.5	10	10	10	9.0	9.7	11	11
2	8.7	9.5	9.2	9.5	9.4	10	10	10	8.7	9.5	11	11
3	8.5	9.0	9.3	9.6	9.5	10	9.9	9.9	8.8	9.8	11	11
4	8.7	8.9	9.1	9.6	9.3	10	9.9	10	8.8	10	11	11
5	8.5	8.8	9.5	9.7	9.5	9.7	10	9.9	8.8	10	11	11
6	8.3	8.3	9.4	9.6	9.6	9.9	10	10	9.2	10	11	11
7	8.4	7.6	9.0	9.5	9.7	10	9.6	9.8	9.3	10	11	11
8	8.4	7.5	9.8	9.5	9.6	10	9.3	9.7	9.4	11	11	11
9	8.5	7.2	11	9.7	9.5	10	9.1	10	9.3	11	11	11
10	8.9	7.1	10	9.6	10	9.9	9.1	9.9	9.4	11	11	11
11	e8.3	6.6	9.8	9.5	10	9.8	9.0	9.4	9.6	10	11	11
12	e8.3	6.8	9.9	9.5	9.9	10	9.2	8.9	9.2	10	11	11
13	e8.3	7.4	10	9.5	10	9.6	9.1	9.5	9.2	10	11	11
14	e8.2	7.6	10	9.6	10	9.6	9.3	9.7	9.1	11	11	11
15	e8.2	7.7	9.8	9.8	10	9.5	9.4	9.3	8.8	11	11	11
16	e8.2	7.6	9.6	9.5	10	9.7	9.0	9.5	9.1	11	11	11
17	e8.2	8.6	9.7	9.5	10	9.8	8.7	9.9	9.3	11	11	11
18	e8.2	8.7	9.8	9.5	10	9.6	9.2	10	9.2	11	11	11
19	e8.1	8.9	9.5	10	10	9.7	9.6	10	9.0	11	11	11
20	e8.1	8.9	9.6	11	10	10	9.6	10	9.2	11	11	11
21	e8.1	8.8	9.7	11	10	10	9.6	9.7	9.3	11	11	11
22	e8.1	8.9	9.5	11	10	9.9	9.3	9.7	9.4	11	11	11
23	e8.0	7.8	9.8	11	10	10	9.1	9.4	9.5	11	11	10
24	8.7	6.0	9.7	11	9.9	10	9.2	9.2	9.8	11	11	10
25	8.2	6.9	9.7	11	10	10	9.4	9.4	10	11	11	10
26	8.3	8.8	9.8	11	10	10	9.4	9.2	9.8	11	11	10
27	9.8	8.9	9.7	11	9.8	10	9.1	9.5	9.8	11	11	11
28	9.8	8.9	9.5	9.8	9.9	10	9.2	9.4	9.9	11	11	11
29	9.6	8.7	9.6	9.6	9.9	10	9.6	9.1	9.9	11	11	10
30	9.6	8.8	9.7	9.5	---	10	10	9.1	9.8	11	11	10
31	9.7	---	9.7	9.6	---	10	---	8.9	---	11	11	---
TOTAL	265.5	244.8	299.1	308.9	285.0	306.7	282.9	298.0	279.6	330.0	341	324
MEAN	8.56	8.16	9.65	9.96	9.83	9.89	9.43	9.61	9.32	10.6	11.0	10.8
MAX	9.8	9.6	11	11	10	10	10	10	10	11	11	11
MIN	8.0	6.0	8.7	9.5	9.3	9.5	8.7	8.9	8.7	9.5	11	10
AC-FT	527	486	593	613	565	608	561	591	555	655	676	643

WTR YR 1988 TOTAL 3565.5 MEAN 9.74 MAX 11 MIN 6.0 AC-FT 7070

e Estimated

CHEYENNE RIVER BASIN

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06412600 CLEGHORN SPRINGS MAIN CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	9.8	9.0	e9.0	8.7	8.0	9.3	9.0	8.8	8.8	9.0
2	10	11	9.8	8.7	e9.0	8.9	7.9	9.0	9.1	8.9	8.8	8.7
3	9.8	11	9.8	8.6	e9.0	9.0	8.4	9.2	9.5	8.8	9.1	8.4
4	9.9	11	9.8	9.3	e8.9	8.9	8.9	9.6	9.6	8.8	9.2	8.6
5	10	10	10	9.4	e8.9	8.8	8.6	9.3	9.6	8.8	9.2	8.7
6	10	11	9.9	9.6	e8.9	9.0	8.5	9.1	9.7	8.6	9.6	8.7
7	9.9	11	9.7	9.9	e8.9	9.1	8.3	9.2	9.6	8.7	9.4	8.7
8	9.6	10	9.9	10	e8.9	9.0	8.3	9.4	9.4	9.0	9.1	9.2
9	9.6	9.8	11	9.2	e8.9	9.0	8.8	9.4	9.5	8.9	9.2	9.3
10	9.4	9.6	11	9.2	e8.9	9.0	8.6	9.6	9.4	8.7	9.3	8.9
11	9.4	9.7	11	9.4	e8.8	8.9	8.8	9.5	9.5	8.8	9.2	9.1
12	9.7	10	11	9.6	e8.8	8.8	9.2	9.4	9.7	8.9	8.8	9.1
13	9.8	9.9	11	9.7	e8.8	8.8	9.2	9.4	10	8.7	9.0	9.1
14	9.7	9.7	9.8	9.4	e8.8	9.0	8.8	9.5	9.7	8.7	9.0	8.7
15	9.5	9.8	9.8	9.1	e8.8	9.1	8.6	9.6	8.8	8.5	9.0	8.8
16	9.6	9.7	9.8	9.4	8.7	9.3	9.0	9.5	8.2	9.0	9.3	9.0
17	9.8	9.4	9.7	9.3	8.7	8.8	9.4	9.5	8.5	8.7	9.3	8.8
18	9.7	9.7	9.9	9.3	8.7	8.7	9.3	9.3	8.4	8.3	9.0	9.2
19	9.9	9.8	10	9.5	8.8	8.9	9.1	9.4	8.3	8.1	8.8	9.6
20	9.7	9.7	10	9.4	8.7	8.9	9.1	9.4	8.4	8.4	8.8	9.4
21	9.8	9.9	9.7	e9.1	8.8	9.1	9.1	9.3	8.4	8.4	8.7	9.7
22	9.6	9.9	9.8	e9.1	8.7	9.2	8.8	9.5	8.3	8.6	8.6	9.7
23	9.7	9.5	9.6	e9.1	8.9	9.0	8.6	9.6	8.3	8.4	8.6	9.7
24	9.6	9.6	9.5	e9.1	8.7	8.9	8.8	9.7	8.4	8.5	8.2	9.4
25	9.7	9.9	9.7	e9.1	8.5	8.8	9.3	9.5	8.1	8.7	8.2	7.7
26	9.7	9.5	9.7	e9.1	8.8	8.8	9.4	9.6	8.3	8.7	9.0	6.9
27	9.6	9.6	9.3	e9.0	8.9	9.0	9.7	9.4	8.1	9.1	8.9	8.7
28	9.9	9.9	9.2	e9.0	8.9	8.7	9.6	9.3	8.2	9.4	8.9	8.9
29	11	9.8	9.1	e9.0	---	8.7	9.3	9.6	8.3	9.0	8.9	9.1
30	11	9.8	9.0	e9.0	---	8.5	9.4	9.7	8.7	8.9	8.9	8.9
31	11	---	9.3	e9.0	---	8.4	---	9.4	---	8.6	8.8	---
TOTAL	305.6	300.2	306.6	286.6	247.1	275.7	266.8	292.2	267.0	270.4	277.6	267.7
MEAN	9.86	10.0	9.89	9.25	8.82	8.89	8.89	9.43	8.90	8.72	8.95	8.92
MAX	11	11	11	10	9.0	9.3	9.7	9.7	10	9.4	9.6	9.7
MIN	9.4	9.4	9.0	8.6	8.5	8.4	7.9	9.0	8.1	8.1	8.2	6.9
AC-FT	606	595	608	568	490	547	529	580	530	536	551	531

CAL YR 1988 TOTAL 3668.5 MEAN 10.0 MAX 11 MIN 8.7 AC-FT 7280
WTR YR 1989 TOTAL 3363.5 MEAN 9.22 MAX 11 MIN 6.9 AC-FT 6670

e Estimated

CHEYENNE RIVER BASIN

06412600 CLEGHORN SPRINGS MAIN CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD--Continued

DISCHARGE, IN 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	8.5	11	9.7	9.1	9.5	8.4	9.0	9.4	9.4	9.3	9.1	8.4
2	8.5	11	9.9	9.2	9.0	8.4	8.9	9.5	9.2	9.4	9.1	8.4
3	9.3	10	9.7	9.6	9.3	8.4	8.6	9.6	9.3	9.5	8.7	8.4
4	9.4	9.8	9.8	9.7	9.6	8.4	8.9	10	9.0	9.5	8.7	8.4
5	9.1	10	9.9	9.4	9.7	8.7	8.9	10	9.0	9.7	8.9	8.3
6	9.1	9.8	9.8	9.3	9.6	8.6	9.1	9.9	9.2	9.8	9.0	8.3
7	9.1	9.1	9.9	9.5	9.5	8.4	9.1	9.9	9.3	9.8	8.6	8.5
8	9.0	9.1	10	9.5	9.0	8.5	9.1	9.9	9.9	10	8.7	8.4
9	9.0	9.0	10	9.5	8.8	8.9	8.7	9.7	9.5	9.7	8.7	8.7
10	9.0	9.1	9.8	9.5	9.1	8.8	9.2	9.5	9.3	9.4	8.6	8.6
11	8.9	9.0	10	9.5	9.1	8.9	9.5	9.8	9.1	9.3	8.9	8.3
12	9.1	9.1	9.6	9.2	8.9	8.9	9.2	9.7	9.4	9.3	8.9	8.2
13	9.1	8.9	9.3	9.1	8.8	8.8	9.3	10	9.2	9.2	8.7	8.3
14	9.2	8.9	10	9.2	8.7	8.9	9.4	9.7	8.8	9.1	8.6	8.6
15	9.2	9.1	9.8	9.2	8.6	8.6	9.1	9.8	8.9	9.1	8.6	8.5
16	8.9	9.3	9.8	9.2	8.9	8.8	9.4	9.8	8.9	9.1	8.5	8.3
17	9.1	9.1	9.8	9.3	9.3	8.7	9.2	9.4	9.0	9.1	8.6	8.6
18	9.0	8.8	9.8	9.5	9.3	8.8	9.2	9.5	8.8	9.0	8.6	8.6
19	8.9	8.8	9.8	9.5	9.3	8.9	8.9	9.4	8.6	9.2	8.7	8.4
20	9.3	9.5	9.8	9.0	9.3	8.7	9.1	9.5	8.8	9.4	8.7	8.7
21	9.2	10	9.8	9.4	9.2	8.8	9.3	9.5	9.1	9.3	8.7	8.7
22	8.9	10	9.8	9.3	9.2	8.9	9.1	9.6	9.3	9.2	8.7	8.7
23	8.6	10	9.8	8.9	8.9	8.9	9.0	9.5	9.2	9.1	8.7	8.9
24	9.0	10	9.7	9.4	8.7	8.7	9.2	9.2	9.0	8.9	8.5	8.9
25	9.1	10	9.9	9.3	8.9	8.9	9.6	9.5	9.0	8.9	8.5	8.5
26	9.2	10	9.6	9.4	8.7	9.1	9.5	9.2	9.1	8.8	8.4	8.4
27	9.5	9.8	9.6	9.5	8.5	9.3	9.5	9.5	9.3	8.7	8.3	8.5
28	9.7	9.5	9.7	9.5	8.3	9.2	9.6	9.3	9.2	8.8	8.4	8.7
29	9.3	9.6	9.7	9.6	---	9.0	9.6	9.5	9.1	8.8	8.4	8.7
30	9.8	9.5	9.4	9.5	---	9.1	9.5	9.5	9.1	8.7	8.3	8.8
31	10	---	9.4	9.7	---	9.0	---	9.2	---	8.7	8.4	---
TOTAL	283.0	286.8	302.6	290.5	253.7	272.4	275.7	297.5	274.0	285.8	268.2	255.7
MEAN	9.13	9.56	9.76	9.37	9.06	8.79	9.19	9.60	9.13	9.22	8.65	8.52
MAX	10	11	10	9.7	9.7	9.3	9.6	10	9.9	10	9.1	8.9
MIN	8.5	8.8	9.3	8.9	8.3	8.4	8.6	9.2	8.6	8.7	8.3	8.2
AC-FT	561	569	600	576	503	540	547	590	543	567	532	507

CAL YR 1989 TOTAL 3323.5 MEAN 9.11 MAX 11 MIN 6.9 AC-FT 6590
WTR YR 1990 TOTAL 3345.9 MEAN 9.17 MAX 11 MIN 8.2 AC-FT 6640

e Estimated

CHEYENNE RIVER BASIN

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06412600 CLEGHORN SPRINGS MAIN CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	8.4	8.2	8.5	8.7	8.8	8.5	8.7	9.6	8.9	9.0	10
2	8.2	8.4	8.1	8.6	8.7	8.8	8.6	9.0	9.5	8.9	9.4	10
3	8.1	8.6	8.0	8.7	8.7	8.8	8.4	9.0	9.6	9.0	9.7	10
4	7.9	8.9	7.7	8.8	8.9	8.6	8.3	8.9	9.7	9.2	9.8	10
5	7.8	9.0	7.9	8.7	8.8	8.5	8.4	8.9	9.7	9.3	9.8	9.9
6	8.1	8.6	8.0	8.9	8.8	8.5	8.5	8.8	9.8	9.1	9.8	9.9
7	8.1	8.2	8.0	9.2	8.9	8.6	8.4	8.8	9.8	9.1	9.7	10
8	7.7	8.5	7.8	8.6	9.0	8.6	8.7	8.8	9.7	9.0	9.7	10
9	7.9	8.8	8.0	8.6	9.0	8.6	8.7	8.7	9.7	9.2	9.6	10
10	8.0	8.3	8.0	8.8	8.7	8.7	8.8	9.0	9.4	9.2	9.5	10
11	7.9	8.4	8.1	8.6	8.9	8.6	8.9	9.1	9.2	9.4	9.6	10
12	8.0	8.7	8.1	8.8	8.9	8.7	8.9	9.5	9.5	9.2	9.6	10
13	8.0	8.3	7.9	9.0	8.7	8.6	8.9	9.3	9.6	9.1	9.6	10
14	7.6	8.1	8.5	8.9	8.9	8.6	8.9	9.2	9.6	9.2	9.6	10
15	8.1	8.2	8.5	8.8	8.9	8.6	8.9	9.1	9.5	9.2	10	10
16	8.5	8.5	8.3	8.8	8.8	8.9	8.9	9.4	9.5	9.1	10	10
17	8.5	8.4	8.0	8.8	8.9	8.8	8.7	9.6	9.3	9.5	10	10
18	8.3	8.2	8.4	8.9	8.9	8.8	8.9	9.4	9.1	9.4	9.9	10
19	8.4	8.2	8.7	8.8	8.8	8.7	9.0	9.4	9.2	9.3	9.6	10
20	8.5	8.3	9.2	8.9	8.9	8.8	8.7	9.2	9.2	9.3	9.6	10
21	8.4	8.3	●9.6	8.9	8.8	8.7	8.6	9.4	9.1	9.4	9.7	10
22	8.5	8.5	●8.9	8.7	8.9	8.4	8.5	9.3	9.1	9.3	9.8	10
23	8.5	8.7	●9.7	8.7	8.9	8.4	8.7	9.4	9.2	8.9	10	10
24	8.4	8.8	●9.7	8.6	8.7	8.4	8.6	9.3	9.0	8.8	10	10
25	8.4	8.8	●8.2	8.6	8.8	8.4	8.7	9.4	8.9	8.9	10	10
26	8.0	8.5	●9.0	8.6	8.9	8.5	8.9	9.3	●8.9	8.8	9.9	10
27	8.1	8.2	●8.5	8.6	8.7	8.5	8.9	9.4	9.0	8.9	10	10
28	8.4	8.2	●9.0	8.5	8.9	8.5	8.8	9.4	9.0	8.8	10	10
29	8.1	8.2	●9.0	8.6	---	8.5	8.8	9.4	9.0	8.8	10	9.9
30	8.0	8.0	●9.3	8.6	---	8.5	8.9	9.5	9.0	8.8	10	10
31	8.2	---	●8.4	8.7	---	8.5	---	9.5	---	8.8	10	---
TOTAL	253.0	253.2	262.7	270.8	247.4	266.9	261.4	285.1	280.4	281.8	302.9	299.7
MEAN	8.16	8.44	8.47	8.74	8.84	8.61	8.71	9.20	9.35	9.09	9.77	9.99
MAX	8.5	9.0	9.7	9.2	9.0	8.9	9.0	9.6	9.8	9.5	10	10
MIN	7.6	8.0	7.7	8.5	8.7	8.4	8.3	8.7	8.9	8.8	9.0	9.9
AC-FT	502	502	521	537	491	529	518	565	556	559	601	594

CAL YR 1990 TOTAL 3242.4 MEAN 8.88 MAX 10 MIN 7.6 AC-FT 6430
WTR YR 1991 TOTAL 3265.3 MEAN 8.95 MAX 10 MIN 7.6 AC-FT 6480

● Estimated

CHEYENNE RIVER BASIN

06412700 CLEGHORN SPRINGS SOUTH CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD

LOCATION.--Lat 44°03'31", long 103°17'52", in NE¼NW¼SE¼ sec.8, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, at weir on left bank within Cleghorn Springs Fish Hatchery and 0.2 mi west of Canyon Lake within city limits of Rapid City.

DRAINAGE AREA.--Indeterminate.

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

REVISED RECORDS.--WDR SD-89-1: 1988 daily discharges.

GAGE.--Water-stage recorder and Cipolletti weir. Datum of gage is 3,368.03 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records for water years 1990 and 1991 good. Flows may vary depending on operational activities of fish hatchery. This is one of three stations that monitors flow from Cleghorn Springs (see stations 06412600 and 06412800). Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2.2 ft³/s, Nov. 19, 1987; minimum daily discharge, 0.75 ft³/s, Feb. 20-21, 1990, Sept. 7, 1991.

DISCHARGE, IN 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	.90	.91	1.1	.94	.92	.90	.96	.88	.95	1.0	.98	.93
2	.93	.90	1.1	.93	.88	.91	.95	.88	.94	1.0	.97	.91
3	.91	1.0	1.1	.97	.98	.92	.93	.91	.95	1.0	.92	.92
4	.94	1.1	1.1	.98	1.0	.91	.86	.97	.92	1.0	.91	.90
5	.89	1.1	1.1	.97	.95	.91	.81	1.0	.91	.98	.94	.89
6	.89	1.0	1.1	.97	.96	.93	.80	.98	.93	.97	.97	.88
7	.94	.87	1.1	.97	.96	.91	.81	1.0	.94	1.1	.91	.91
8	.93	.80	1.0	.94	.95	.88	.84	.98	1.0	1.1	.94	.90
9	.86	.80	1.1	.92	.95	.95	.84	.96	.98	1.1	.92	.95
10	.86	.80	1.1	.93	.97	.93	.85	.93	.91	1.0	.92	.94
11	.86	.83	1.0	.92	1.0	.97	.86	.95	.91	1.0	.96	.88
12	.87	.83	.99	.87	.97	.90	.84	.95	.93	.99	.97	.87
13	.86	.88	.98	.88	.96	.86	.83	1.0	.93	.98	.93	.86
14	.90	.87	.94	.90	.96	.88	.83	.97	.87	.96	.91	.93
15	.89	.91	.99	.94	.91	.85	.80	1.0	.92	.96	.93	.91
16	.87	.88	.98	.98	.81	.92	.82	1.0	.92	.96	.92	.88
17	.89	.91	1.0	.92	.80	.88	.80	.96	.93	.96	.90	.92
18	.88	.94	1.0	.95	.83	.91	.79	.95	.92	.96	.91	.93
19	.85	1.0	.96	.96	.77	.88	.79	.97	.91	.98	.94	.89
20	.91	1.1	.98	1.0	.75	.84	.83	1.0	.91	1.0	.96	.94
21	.89	1.2	.96	1.0	.75	.84	.84	.98	.91	1.0	.96	.93
22	.95	1.2	.94	.98	.78	.84	.81	.89	.96	.98	.99	.94
23	.94	1.1	.93	1.0	.83	.85	.81	.91	.95	.97	.97	.95
24	.87	1.2	.90	1.0	.89	.83	.83	.94	.92	.93	.94	.95
25	.82	1.2	.96	.96	.88	.90	.90	.97	.91	.91	.93	.89
26	.83	1.2	.94	.97	.86	.88	.89	.93	.93	.92	.93	.87
27	.91	1.1	.95	.98	.87	.93	.89	.96	.96	.92	.91	.88
28	1.0	1.0	.97	.98	.85	.96	.90	.95	.96	.96	.95	.91
29	1.0	1.0	.98	.88	---	.90	.92	.98	.97	.96	.94	.92
30	.98	1.0	1.0	.90	---	.90	.91	.99	1.0	.96	.91	.95
31	.91	---	1.0	.94	---	.90	---	.94	---	.96	.93	---
TOTAL	27.93	29.63	31.25	29.43	24.99	27.77	25.54	29.68	28.05	30.47	29.07	27.33
MEAN	.90	.99	1.01	.95	.89	.90	.85	.96	.93	.98	.94	.91
MAX	1.0	1.2	1.1	1.0	1.0	.97	.96	1.0	1.0	1.1	.99	.95
MIN	.82	.80	.90	.87	.75	.83	.79	.88	.87	.91	.90	.86
AC-FT	55	59	62	58	50	55	51	59	56	60	58	54

CAL YR 1989 TOTAL 352.87 MEAN .97 MAX 1.2 MIN .80 AC-FT 700
WTR YR 1990 TOTAL 341.14 MEAN .93 MAX 1.2 MIN .75 AC-FT 677

CHEYENNE RIVER BASIN

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06412700 CLEGHORN SPRINGS SOUTH CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.89	.88	1.0	.84	.83	.83	.82	.79	.95	.83	.91	.83
2	.90	.88	1.0	.85	.84	.83	.79	.79	.96	.83	.87	.83
3	.89	.91	.98	.85	.83	.84	.78	.80	.94	.82	.87	.83
4	.85	.94	.92	.86	.84	.83	.77	.82	.98	.84	.88	.82
5	.81	.96	.97	.84	.84	.82	.81	.81	.97	.85	.88	.79
6	.88	.92	.93	.86	.84	.81	.81	.81	1.0	.83	.87	.78
7	.87	.88	.94	.87	.84	.82	.83	.79	1.0	.83	.87	.75
8	.87	.89	.92	.81	.84	.83	.83	.79	1.0	.83	.87	.81
9	.88	.92	.93	.79	.85	.83	.83	.78	1.0	.83	.89	.81
10	.91	.90	.94	.79	.83	.83	.83	.79	.95	.83	.91	.80
11	.87	.90	.94	.79	.83	.83	.84	.95	.91	.86	.91	.81
12	.86	.95	.93	.82	.83	.83	.83	1.0	.95	.87	.91	.83
13	.87	.90	.91	.86	.84	.83	.83	.95	.96	.87	.90	.82
14	.84	.88	.95	.83	.84	.82	.83	.90	.95	.87	.87	.84
15	.87	.87	.96	.83	.83	.79	.84	.89	.95	.86	.88	.84
16	.91	.90	.95	.83	.82	.83	.83	.94	.94	.88	.92	.83
17	.91	.92	.88	.83	.83	.79	.82	.98	.91	.93	.91	.83
18	.89	.89	.89	.86	.83	.81	.81	.96	.89	.88	.87	.83
19	.89	.90	.88	.85	.83	.83	.85	.96	.89	.87	.84	.82
20	.90	.91	.85	.86	.83	.82	.83	.92	.87	.87	.83	.82
21	.91	.91	.87	.86	.83	.81	.83	.92	.91	.87	.83	.83
22	.91	.91	.86	.83	.85	.84	.80	.91	.94	.87	.87	.83
23	.91	.96	.83	.83	.85	.83	.82	.91	.96	.84	.84	.83
24	.91	.96	.87	.83	.83	.83	.83	.91	.92	.86	.83	.87
25	.91	.96	.87	.82	.83	.82	.81	.91	.87	.87	.81	.87
26	.87	.91	.89	.84	.83	.83	.85	.91	.86	.86	.80	.89
27	.87	.93	.86	.83	.82	.83	.84	.92	.86	.91	.79	.87
28	.90	1.0	.87	.81	.83	.82	.83	.92	.84	.89	.79	.87
29	.89	.99	.87	.83	---	.79	.82	.92	.86	.87	.82	.85
30	.87	.97	.87	.83	---	.82	.81	.92	.85	.87	.83	.89
31	.89	---	.85	.83	---	.82	---	.91	---	.87	.83	---
TOTAL	27.40	27.60	28.18	25.86	23.36	25.49	24.65	27.48	27.84	26.66	26.70	24.92
MEAN	.88	.92	.91	.83	.83	.82	.82	.89	.93	.86	.86	.83
MAX	.91	1.0	1.0	.87	.85	.84	.85	1.0	1.0	.93	.92	.89
MIN	.81	.87	.83	.79	.82	.79	.77	.78	.84	.82	.79	.75
AC-FT	54	55	56	51	46	51	49	55	55	53	53	49

CAL YR 1990 TOTAL 335.51 MEAN .92 MAX 1.1 MIN .75 AC-FT 665
WTR YR 1991 TOTAL 316.14 MEAN .87 MAX 1.0 MIN .75 AC-FT 627

CHEYENNE RIVER BASIN

06412800 CLEGHORN SPRINGS NORTH CHANNEL AT FISH HATCHERY, AT RAPID CITY, SD

LOCATION.--Lat 44°03'32", long 103°17'50", in NE¼NW¼SE¼ sec.8, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, at weir on right bank within Cleghorn Springs Fish Hatchery and 0.2 mi west of Canyon Lake within city limits of Rapid City.

DRAINAGE AREA.--Indeterminate.

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

REVISED RECORDS.--WDR SD-89-1: 1988 daily discharges.

GAGE.--Water-stage recorder and V-notch weir. Datum of gage is 3,367.59 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharge, which is fair. Flows may vary depending on operational activities of fish hatchery. This is one of three stations that monitors flow from Cleghorn Springs (see stations 06412600 and 06412700). Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3.0 ft³/s, Nov. 13-16, 1987; minimum daily discharge, 0.27 ft³/s, Apr. 4, 1991.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.87	.71	1.1	.77	.86	.89	.73	.45	1.5	1.2	2.1	1.3
2	1.0	.72	1.2	.84	.97	1.0	.65	.99	1.5	1.0	1.4	1.3
3	.99	.84	1.1	.87	.94	1.0	.42	.85	1.6	.96	1.2	1.3
4	.83	.96	.92	.95	1.2	.74	.27	.89	1.6	1.4	1.2	1.1
5	.77	1.0	1.2	.79	1.1	.56	.45	.92	1.6	1.4	1.2	.94
6	.97	.90	1.0	.94	1.0	.40	.69	.90	1.7	1.2	1.1	.97
7	.98	.71	.86	.87	1.1	.43	.75	.55	1.8	1.2	1.1	1.0
8	.83	.77	.79	.53	1.1	.57	.86	.81	1.8	1.1	1.2	1.3
9	.92	.98	.87	.69	1.1	.69	.64	.42	1.7	1.3	1.2	1.3
10	.99	.92	.87	.97	.65	.81	.55	.98	1.5	1.3	1.1	1.1
11	.91	.96	.88	.65	1.0	.78	.70	1.4	1.4	1.4	1.1	1.4
12	.94	1.0	.88	1.1	1.0	.90	.73	1.8	1.6	1.4	1.2	1.4
13	.99	.82	.84	1.2	1.2	.88	.66	1.5	1.7	1.3	1.1	1.4
14	.78	.70	.77	1.1	1.1	.75	.64	1.3	1.7	1.4	1.2	1.4
15	.97	.70	.74	1.0	1.1	.62	.60	1.1	1.7	1.2	1.3	1.4
16	1.2	.84	.71	.94	.89	.88	.59	1.4	1.7	1.6	1.6	1.4
17	1.2	.85	.50	1.1	1.1	.54	.41	1.6	1.5	1.7	1.6	1.4
18	.95	.76	.48	1.1	1.1	.73	.47	1.5	1.3	1.4	1.3	1.3
19	.85	.81	.58	.99	1.1	.58	1.1	1.6	1.4	1.3	1.2	1.3
20	.92	.84	.85	1.0	1.2	.60	1.1	1.2	1.3	1.3	1.1	1.3
21	.92	.81	.94	1.1	1.1	.70	1.1	1.4	1.4	1.3	1.2	1.3
22	.92	.88	.90	.78	1.2	.98	.56	1.4	1.4	1.3	1.3	1.3
23	.93	1.0	.83	.81	1.2	.99	1.1	1.4	1.5	1.8	1.3	1.2
24	.96	1.0	.91	.60	.74	.98	1.0	1.4	1.4	2.0	1.3	1.3
25	.95	1.1	.85	.87	1.1	1.0	.72	1.4	1.2	2.0	1.3	1.3
26	.85	.89	.90	1.0	1.1	1.0	1.3	1.4	1.1	2.1	1.3	1.2
27	.90	.84	.83	.98	.84	.86	1.3	1.7	1.1	2.3	1.3	1.2
28	1.1	.92	.94	.54	1.0	.82	1.2	1.6	1.3	2.1	1.3	1.1
29	.96	.91	1.0	.89	---	.72	.77	1.6	1.5	1.9	1.2	1.1
30	.91	.91	1.1	.78	---	.74	.85	1.5	1.4	2.0	1.3	1.3
31	.90	---	1.1	.91	---	.73	---	1.5	---	2.0	1.3	---
TOTAL	29.16	26.05	27.44	27.66	29.09	23.87	22.91	38.46	44.9	46.86	39.6	37.61
MEAN	.94	.87	.89	.89	1.04	.77	.76	1.24	1.50	1.51	1.28	1.25
MAX	1.2	1.1	1.2	1.2	1.2	1.0	1.3	1.8	1.8	2.3	2.1	1.4
MIN	.77	.70	.48	.53	.65	.40	.27	.42	1.1	.96	1.1	.94
AC-FT	58	52	54	55	58	47	45	76	89	93	79	75

CAL YR 1990 TOTAL 343.58 MEAN .94 MAX 1.4 MIN .48 AC-FT 681
WTR YR 1991 TOTAL 393.61 MEAN 1.08 MAX 2.3 MIN .27 AC-FT 781

• Estimated

CHEYENNE RIVER BASIN

107

06412900 RAPID CREEK BELOW CLEGHORN SPRINGS, AT RAPID CITY, SD

LOCATION.--Lat 44°03'33", long 103°17'49", in NW¼NE¼SE¼ sec.8, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on right bank 100 ft downstream from confluence of fish hatchery discharge.

DRAINAGE AREA.--378 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 3,358.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Pactola Dam approximately 22 mi upstream since August 1956. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 694 ft³/s, May 11, 1991, gage height, 7.76 ft; minimum daily discharge, 12 ft³/s, Feb. 2, 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1972, reached a discharge of 43,800 ft³/s based on summation of slope-area measurements of peak flow at station 06412500 and miscellaneous site at Cleghorn Canyon.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 694 ft³/s at 2015 hours, May 11, gage height, 7.76 ft; minimum daily discharge, 13 ft³/s, Nov. 7, 14, Apr. 3-5.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	14	15	15	15	17	14	15	59	42	85	87
2	23	14	15	16	16	16	14	17	58	41	82	87
3	19	15	14	16	16	16	13	18	60	40	76	86
4	16	16	14	16	18	16	13	18	67	42	75	70
5	15	17	17	15	17	17	13	17	83	42	76	63
6	15	16	15	16	17	15	14	17	110	41	74	62
7	15	13	15	17	17	15	14	16	100	40	74	63
8	14	15	14	14	18	16	16	18	90	40	74	68
9	15	17	16	14	17	15	15	16	88	66	72	66
10	15	14	16	15	15	17	15	18	83	68	74	60
11	15	15	16	14	17	16	19	56	74	69	75	61
12	15	16	16	16	17	17	18	125	69	63	75	55
13	15	14	15	17	17	16	17	67	66	59	79	51
14	14	13	17	17	17	15	16	48	67	58	80	46
15	16	14	17	17	17	15	15	44	62	57	90	43
16	18	15	16	16	17	16	16	49	58	71	84	41
17	18	15	15	17	18	14	15	85	54	84	72	39
18	16	14	16	17	18	15	15	88	52	71	69	37
19	16	14	15	16	17	15	20	74	51	67	70	36
20	16	15	15	17	18	15	18	60	50	68	68	36
21	16	15	16	17	18	15	17	53	50	67	70	32
22	15	16	15	15	18	15	15	50	51	66	82	29
23	15	17	15	16	17	15	18	49	50	71	100	29
24	15	17	18	15	16	15	19	43	51	74	100	29
25	15	18	18	15	16	15	19	41	46	72	98	27
26	14	16	18	16	17	15	27	38	43	73	94	27
27	14	14	17	16	16	15	25	42	42	72	92	26
28	15	14	17	14	18	14	20	51	45	70	89	26
29	14	14	17	15	---	14	18	55	44	71	89	25
30	14	15	17	15	---	14	18	55	44	72	89	27
31	14	---	17	15	---	14	---	51	---	74	88	---
TOTAL	493	452	494	487	475	475	506	1394	1867	1911	2515	1434
MEAN	15.9	15.1	15.9	15.7	17.0	15.3	16.9	45.0	62.2	61.6	81.1	47.8
MAX	26	18	18	17	18	17	27	125	110	84	100	87
MIN	14	13	14	14	15	14	13	15	42	40	68	25
AC-FT	978	897	980	966	942	942	1000	2760	3700	3790	4990	2840

CAL YR 1990 TOTAL 11742 MEAN 32.2 MAX 134 MIN 12 AC-FT 23290
WTR YR 1991 TOTAL 12503 MEAN 34.3 MAX 125 MIN 13 AC-FT 24800

CHEYENNE RIVER BASIN

06413650 LIME CREEK AT MOUTH, AT RAPID CITY, SD

LOCATION.--Lat 44°04'27", long 103°15'53", in NW¼NE¼SW¼ sec.3, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, at weir 500 ft above mouth, and 1,000 ft downstream from Canyon Lake Drive.

DRAINAGE AREA.--10.1 mi².

PERIOD OF RECORD.--April 24, 1981, to July 21, 1982 (seasonal records only), October 1987 to current year.

GAGE.--Water-stage recorder and 5 ft metal rectangular weir since October 1987. Datum of gage is 3,281.11 ft above National Geodetic Vertical Datum of 1929. From April 24, 1981, to July 21, 1982 (seasonal records), at datum about 60 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some flow is pumped from stream for irrigation. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 210 ft³/s, May 11, 1991, gage height, 3.04 ft; minimum daily discharge, 0.10 ft³/s, Jan. 15, 1991.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 25, 1982, reached a stage of 3.6 ft, present datum, from floodmarks. A discharge of 103 ft³/s was measured July 22, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 210 ft³/s at 2030 hours, May 11, gage height, 3.04 ft; minimum daily discharge, 0.10 ft³/s, Jan. 15.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.31	.36	e.45	.28	.36	.36	1.7	4.4	1.3	1.6	.80
2	.22	e.35	.36	e.45	.33	e.36	.36	.93	2.4	1.3	1.3	.80
3	.22	.36	.36	e.40	.36	.40	.36	2.3	4.6	1.4	.99	.81
4	.22	.36	.36	e.35	.36	.50	.36	.99	7.3	1.2	1.1	.82
5	.23	e.36	e.36	e.35	.30	.54	.92	.96	4.1	1.2	1.4	.82
6	.22	e.36	e.36	e.30	.29	.52	.85	.96	3.7	1.3	2.2	.77
7	.22	.36	e.36	e.27	.28	.52	.39	.96	5.2	1.1	1.7	.77
8	.24	.36	e.36	e.25	.37	.50	1.1	.96	4.0	1.2	1.5	2.8
9	.28	.36	e.36	e.20	.28	.40	.54	.96	3.3	1.4	1.2	.87
10	.28	.36	e.40	e.18	.32	.36	1.9	1.0	2.3	1.5	1.2	1.1
11	.46	.36	e.50	e.16	.31	.36	3.1	21	2.1	1.3	1.1	.97
12	.28	.36	e.50	e.14	.30	.36	1.1	5.8	2.2	1.1	1.3	.94
13	.34	.36	e.50	e.12	.35	.36	.96	1.9	2.4	1.0	1.2	.87
14	.36	.36	e.45	.11	.35	.36	.59	1.4	2.2	1.0	1.4	1.0
15	.36	.36	e.45	.10	e.35	.36	.70	5.6	2.1	1.5	1.2	.89
16	.36	.36	e.50	.13	.36	.36	.68	4.1	1.9	2.7	1.8	.87
17	.33	.36	e.50	.15	.35	.36	.62	4.0	2.2	7.4	1.0	.87
18	.36	.36	e.53	.17	.31	.36	1.1	3.0	1.8	12	1.2	.87
19	.40	.36	e.53	.21	.35	.36	2.6	3.1	1.7	6.9	1.0	.89
20	.36	.36	e.50	.22	e.40	.36	.84	3.0	1.7	.97	1.0	.87
21	.36	.36	e.50	.22	e.40	.46	.75	2.4	1.7	1.0	1.1	.90
22	.42	.32	e.50	.22	e.40	.46	.67	4.7	2.4	.94	.90	.77
23	.45	.36	e.50	.22	.36	.45	.67	2.9	2.6	.94	.91	.79
24	.45	.36	e.50	.22	.36	.43	1.7	2.5	1.8	1.4	1.0	.77
25	.45	.36	e.50	.19	.36	.37	.92	2.3	1.6	.99	.90	.84
26	.43	.30	e.50	.21	.36	.36	5.8	3.4	1.8	1.1	.87	.86
27	.33	.28	e.53	.23	.36	.36	1.1	3.3	1.4	1.1	.90	.84
28	.28	.28	e.45	.28	.38	.36	.96	4.3	2.7	1.1	1.0	.85
29	.28	.28	e.45	e.25	---	.36	.96	5.0	1.5	1.1	.84	.82
30	.31	.36	e.50	e.25	---	.36	.96	2.7	1.6	1.1	.82	.84
31	.33	---	e.50	.22	---	.36	---	2.2	---	1.7	.82	---
TOTAL	10.05	10.40	14.03	7.22	9.58	12.39	33.92	100.32	80.7	61.24	36.45	27.68
MEAN	.32	.35	.45	.23	.34	.40	1.13	3.24	2.69	1.98	1.18	.92
MAX	.46	.36	.53	.45	.40	.54	5.8	21	7.3	12	2.2	2.8
MIN	.22	.28	.36	.10	.28	.36	.36	.93	1.4	.94	.82	.77
AC-FT	20	21	28	14	19	25	67	199	160	121	72	55

CAL YR 1990 TOTAL 331.43 MEAN .91 MAX 5.4 MIN .22 AC-FT 657
WTR YR 1991 TOTAL 403.98 MEAN 1.11 MAX 21 MIN .10 AC-FT 801

e Estimated

CHEYENNE RIVER BASIN

109

06414000 RAPID CREEK AT RAPID CITY, SD

LOCATION.--Lat 44°05'09", long 103°14'31", in NE¼SE¼SW¼ sec.35, T.2 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on left bank 1,300 ft upstream from 12th Street in Rapid City and 3.6 mi downstream from Canyon Lake Dam.

DRAINAGE AREA.--410 mi², approximately.

PERIOD OF RECORD.--June 1903 to November 1906, July 1942 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,230.14 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 30, 1906, nonrecording gage at site 1.0 mi downstream at different datum, and June 10, 1972, to Nov. 1, 1972, nonrecording gage at site 800 ft downstream at datum 0.80 ft higher. July 1942 to June 9, 1972, water-stage recorder at site 300 ft downstream at datum 0.80 ft higher (destroyed by flood).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Several small diversions upstream from station to municipal park pools and for irrigation of about 320 acres. Flow regulated by Pactola Dam 25.4 mi upstream since Aug. 22, 1956. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. National Weather Service telemeter at station.

AVERAGE DISCHARGE.--52 years, 58.8 ft³/s, 42,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s, June 9, 1972, gage height, 19.66 ft, from floodmarks, on basis of slope-area measurement of peak flow; minimum daily discharge, 1.6 ft³/s, Apr. 20, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 12, 13, 1920, reached a stage of 14.4 ft present datum, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 659 ft³/s at 2200 hours, May 11, gage height, 6.01 ft; minimum daily discharge, 13 ft³/s, Apr. 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	17	23	e20	19	21	15	28	76	41	70	78
2	20	20	22	e20	20	20	15	28	67	38	67	73
3	16	18	21	e20	19	20	15	38	76	29	63	76
4	14	19	17	e19	21	22	14	33	110	28	62	63
5	13	22	19	e20	21	21	14	31	96	28	66	53
6	13	22	19	e19	21	19	13	31	116	32	67	48
7	15	19	19	e19	20	18	14	31	108	34	63	46
8	15	18	19	e20	22	18	16	33	101	30	61	74
9	15	20	19	e20	22	18	16	29	98	56	58	57
10	16	19	20	e20	21	20	21	27	88	60	60	53
11	19	19	20	e20	21	20	35	107	77	65	61	54
12	16	21	20	19	22	20	27	159	73	60	61	48
13	18	21	20	23	23	18	24	80	69	54	63	44
14	17	22	21	20	21	18	22	58	71	48	58	43
15	17	22	23	19	24	17	22	66	67	49	71	39
16	19	24	21	18	20	17	22	67	64	57	78	37
17	21	23	20	19	22	18	22	100	60	75	61	36
18	20	23	20	20	22	18	23	102	57	62	57	34
19	18	23	e20	19	22	19	37	89	56	59	56	33
20	18	24	e19	18	23	19	27	73	52	59	47	34
21	18	24	e19	19	22	21	25	65	51	57	47	31
22	18	25	e20	18	20	19	24	67	57	56	56	28
23	18	25	e20	18	19	18	24	61	55	62	75	27
24	18	25	e20	e18	17	17	29	53	54	66	82	27
25	18	24	e20	e18	17	17	29	49	47	65	82	26
26	18	23	e20	e19	19	17	61	49	43	65	76	26
27	17	22	e20	23	19	17	38	54	39	70	76	25
28	17	21	e21	18	20	15	32	67	49	66	74	24
29	17	21	e20	e18	---	14	30	74	45	63	71	24
30	16	21	e20	e18	---	15	30	66	45	62	71	25
31	16	---	e20	e19	---	15	---	62	---	66	77	---
TOTAL	533	647	622	598	579	566	736	1877	2067	1662	2037	1286
MEAN	17.2	21.6	20.1	19.3	20.7	18.3	24.5	60.5	68.9	53.6	65.7	42.9
MAX	22	25	23	23	24	22	61	159	116	75	82	78
MIN	13	17	17	18	17	14	13	27	39	28	47	24
AC-FT	1060	1280	1230	1190	1150	1120	1460	3720	4100	3300	4040	2550

CAL YR 1990 TOTAL 11196 MEAN 30.7 MAX 108 MIN 11 AC-FT 22210
WTR YR 1991 TOTAL 13210 MEAN 36.2 MAX 159 MIN 13 AC-FT 26200

e Estimated

CHEYENNE RIVER BASIN

06418900 RAPID CREEK BELOW SEWAGE PLANT, NEAR RAPID CITY, SD

LOCATION.--Lat 44°01'24", long 103°05'43", in NW¼NE¼ sec.25, T.1 N., R.8 E., Pennington County, Hydrologic Unit 10120110, on right bank 120 ft downstream from sewage treatment plant effluent and 6.7 mi southeast of Rapid City.

DRAINAGE AREA.--452 mi², approximately.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,000 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Pactola Dam 40.9 mi upstream since Aug. 22, 1956. Diversions for irrigation of about 7,000 acres upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 53.8 ft³/s, 38,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft³/s, July 25, 1982, gage height, 9.12 ft; minimum daily discharge, 12 ft³/s, Oct. 8, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 427 ft³/s at 2330 hours, June 3, gage height, 4.79 ft; minimum daily discharge, 12 ft³/s, Oct. 8.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	24	32	29	28	32	33	e25	133	39	40	47
2	23	35	31	31	30	31	33	e25	93	37	35	46
3	17	26	30	29	32	33	34	e25	128	35	33	46
4	15	24	33	29	32	36	33	e45	185	24	29	53
5	13	25	34	28	31	35	33	e35	189	24	38	35
6	14	33	33	27	31	32	32	e30	182	22	38	30
7	13	24	35	27	30	30	27	e30	175	21	62	29
8	12	23	36	28	31	30	43	e25	155	24	49	58
9	13	24	36	29	31	31	38	e25	171	24	44	55
10	14	27	38	27	31	30	34	e90	160	35	42	70
11	15	27	37	28	30	31	134	e150	122	64	43	64
12	18	29	39	30	31	36	100	e130	105	39	43	67
13	16	29	37	30	31	33	76	e160	97	33	37	61
14	18	28	33	32	31	29	75	e90	85	29	41	63
15	18	26	35	34	31	30	60	e80	90	28	e40	55
16	18	27	34	32	36	30	69	e120	80	31	e40	50
17	17	28	32	31	34	30	58	182	72	69	e60	47
18	19	28	30	31	36	30	52	165	73	43	e30	49
19	20	28	22	32	34	30	63	148	66	36	e25	47
20	20	27	27	29	35	30	e65	113	60	33	e20	47
21	20	28	25	29	51	42	e40	84	56	28	e20	43
22	22	27	26	31	42	44	e30	97	58	26	e15	42
23	21	29	27	29	34	34	e20	107	73	24	e15	42
24	22	31	28	26	31	31	e20	64	54	34	e20	45
25	23	30	30	26	29	32	e15	53	48	33	e30	39
26	22	27	32	26	31	31	e15	46	41	31	e40	41
27	21	27	33	28	31	32	e200	83	38	31	e50	37
28	22	29	33	29	31	32	e50	145	61	27	e50	37
29	23	30	27	25	---	31	e30	136	42	26	e45	37
30	23	33	24	25	---	32	e30	98	42	25	44	41
31	22	---	28	27	---	32	---	77	---	25	43	---
TOTAL	579	833	977	894	916	1002	1542	2683	2934	1000	1161	1423
MEAN	18.7	27.8	31.5	28.8	32.7	32.3	51.4	86.5	97.8	32.3	37.5	47.4
MAX	25	35	39	34	51	44	200	182	189	69	62	70
MIN	12	23	22	25	28	29	15	25	38	21	15	29
AC-FT	1150	1650	1940	1770	1820	1990	3060	5320	5820	1980	2300	2820

CAL YR 1990 TOTAL 13382 MEAN 36.7 MAX 349 MIN 12 AC-FT 26540
WTR YR 1991 TOTAL 15944 MEAN 43.7 MAX 200 MIN 12 AC-FT 31620

e Estimated

CHEYENNE RIVER BASIN

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06421500 RAPID CREEK NEAR FARMINGDALE, SD

LOCATION.--Lat 43°56'31", long 102°51'12", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.19, T.1 S., R.11 E., Pennington County, Hydrologic Unit 10120110, on right bank at downstream side of bridge, 2 mi southeast of Farmingdale, and 4.8 mi downstream from Antelope Creek.

DRAINAGE AREA.--602 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 19, 1947, nonrecording gage at same site and datum. Crest-stage gage Oct. 1, 1989, to Sept. 30, 1990, at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Pactola Dam 67 mi upstream since Aug. 22, 1956. Diversions of irrigation of about 10,000 acres upstream from station. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

AVERAGE DISCHARGE.--44 years, 55.0 ft³/s, 39,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,320 ft³/s, June 10, 1972, gage height, 11.85 ft, from floodmarks, from rating curve extended about 400 ft³/s on basis of contracted-opening and flow-over-road measurement of peak flow; no flow at times in 1949, 1952-56, 1958-63, 1969-71.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,050 ft³/s at 2230 hours, May 10, gage height, 9.22 ft; minimum daily discharge, 5.0 ft³/s, July 23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	24	28	e30	e30	e30	21	25	72	40	9.2	24
2	20	26	33	e30	e32	e35	19	24	132	38	27	22
3	19	34	39	e30	e35	e40	17	27	87	31	19	26
4	18	30	42	e30	e35	e35	16	49	228	26	18	28
5	14	27	33	e30	e32	e40	16	36	262	18	16	29
6	14	30	36	e30	e35	e40	15	29	257	13	16	17
7	14	38	42	e28	e35	e35	13	27	265	12	16	12
8	15	30	39	e28	e35	e35	13	26	200	10	27	11
9	16	26	37	e25	e35	e35	20	24	173	11	15	54
10	17	28	34	e25	e35	e35	18	94	211	8.7	11	45
11	18	30	38	e28	e35	e38	28	172	152	25	13	44
12	20	31	30	e30	e35	e39	85	145	118	35	15	59
13	23	33	42	e30	e30	e40	57	185	100	20	16	57
14	21	33	29	e33	e30	e40	47	95	94	12	20	58
15	22	29	23	e33	e30	37	36	88	96	9.4	27	57
16	21	27	e35	e30	e30	33	35	153	86	7.1	22	55
17	23	27	e35	e30	e30	31	34	166	69	7.4	54	48
18	23	28	e30	e30	e35	29	28	150	68	36	24	41
19	25	28	e30	e32	e35	29	31	128	70	25	14	41
20	24	27	e30	e30	e40	30	70	108	63	20	9.6	41
21	26	27	e28	e32	e50	30	37	79	59	15	12	44
22	27	27	e30	e30	e35	37	28	113	58	8.3	8.1	38
23	28	26	e30	e30	e35	38	25	136	69	5.0	5.5	33
24	28	26	e30	e30	e32	32	19	55	63	7.1	6.7	32
25	28	28	e35	e30	e30	29	18	42	53	14	14	36
26	29	24	e35	e30	e30	25	16	43	49	19	23	37
27	28	23	e35	e30	e30	21	219	48	43	22	27	36
28	25	40	e30	e28	e30	22	49	265	38	22	17	39
29	26	37	e25	e25	---	23	33	150	57	21	13	35
30	24	28	e25	e28	---	22	28	148	43	19	12	35
31	25	---	e30	e30	---	22	---	90	---	11	17	---
TOTAL	678	872	1018	915	941	1007	1091	2920	3335	568.0	544.1	1134
MEAN	21.9	29.1	32.8	29.5	33.6	32.5	36.4	94.2	111	18.3	17.6	37.8
MAX	29	40	42	33	50	40	219	265	265	40	54	59
MIN	14	23	23	25	30	21	13	24	38	5.0	5.5	11
AC-FT	1340	1730	2020	1810	1870	2000	2160	5790	6610	1130	1080	2250

WTR YR 1991 TOTAL 15023.1 MEAN 41.2 MAX 265 MIN 5.0 AC-FT 29800

e Estimated

CHEYENNE RIVER BASIN

06422500 BOXELDER CREEK NEAR NEMO, SD

LOCATION.--Lat 44°08'38", long 103°27'16", in SE¼SE¼ sec.12, T.2 N., R.5 E., Lawrence County, Hydrologic Unit 10120111, on right bank at ranch 0.2 mi upstream from county line, 0.9 mi downstream from Jim Creek, and 4.5 mi southeast of Nemo.

DRAINAGE AREA.--96 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1945 to July 1947, May 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,320.27 ft above National Geodetic Vertical Datum of 1929. July 1945 to July 1947 nonrecording gage at site 100 ft upstream at different datum. May 17, 1966, to June 9, 1972, water-stage recorder (destroyed by flood) and June 10, 1972, to Aug. 8, 1972, nonrecording gage, both at site 100 ft upstream at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. Recording rain gage at station.

AVERAGE DISCHARGE.--26 years (water years 1946, 1967-91), 16.0 ft³/s, 11,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,100 ft³/s, June 9, 1972, gage height, 20.4 ft, site and datum then in use (22.0 ft, present site and datum, from floodmarks), from rating curve extended above 600 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 0.10 ft³/s, Aug. 8, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1911 reached a stage of about 16 ft, present datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 11	2100	112	2.74	June 6	0200	*401	*4.04
June 3	1045	146	3.17	June 14	0615	107	3.00

Minimum daily discharge, 1.1 ft³/s Feb. 6-12.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	2.4	1.9	e1.7	1.6	e1.8	6.4	10	78	21	9.9	7.2
2	1.5	2.6	1.9	e1.7	1.3	e1.8	8.3	8.9	61	19	11	7.1
3	1.6	2.5	1.8	e1.7	1.3	e1.9	9.0	9.8	107	17	9.8	8.1
4	1.6	2.4	1.8	e1.7	1.3	e2.0	9.2	11	107	15	8.6	8.9
5	1.6	2.5	1.6	e1.7	1.2	e2.5	8.0	10	110	13	8.8	8.1
6	1.5	2.7	1.8	e1.7	1.1	e3.0	8.0	8.7	199	15	9.0	7.0
7	1.4	2.4	1.7	e1.6	1.1	e3.0	7.7	8.0	151	15	8.9	6.3
8	1.7	2.1	1.5	e1.6	1.1	e3.0	7.2	7.5	123	19	10	12
9	1.8	2.3	1.4	e1.6	1.1	e3.0	6.8	6.9	104	22	7.5	9.6
10	1.8	2.6	1.4	e1.6	1.1	e3.0	7.3	6.3	90	21	6.3	9.1
11	1.8	2.6	1.5	e1.6	1.1	e3.0	10	17	77	28	7.0	e9.0
12	1.9	2.6	1.8	1.6	1.1	e3.0	8.6	43	61	21	8.8	e10.5
13	2.1	2.5	1.7	1.7	1.3	e3.0	7.2	23	62	16	6.6	e10
14	2.2	2.8	e1.7	1.7	e1.4	e3.0	5.6	16	81	14	6.7	e10
15	2.1	2.6	e1.7	1.7	e1.4	e3.0	7.3	33	60	13	7.2	e10
16	2.2	2.3	e1.7	1.6	e1.4	e3.2	7.8	46	45	15	13	e9.5
17	2.3	2.1	e1.7	1.6	e1.5	e3.4	9.1	70	38	26	12	e9.5
18	2.2	2.6	e1.7	1.6	e1.5	e3.5	11	78	41	18	11	e9.5
19	2.2	2.4	e1.7	1.6	e1.5	4.5	13	64	39	15	9.9	e9.5
20	2.5	2.3	e1.6	1.5	e1.6	6.6	13	57	32	14	9.4	e9.0
21	2.5	2.3	e1.5	1.5	e1.6	8.5	16	49	31	13	8.5	e9.0
22	2.4	2.1	e1.5	1.5	e1.8	7.7	17	47	30	12	8.2	e9.0
23	2.5	2.2	e1.5	1.5	e1.8	7.1	14	83	31	13	8.5	e9.0
24	2.5	2.3	e1.5	1.7	e1.8	6.8	13	54	31	14	8.3	e9.0
25	2.5	2.0	e1.5	e1.7	e1.8	6.9	12	49	24	14	8.1	e9.0
26	2.5	2.0	e1.6	e1.7	e1.8	7.4	16	43	21	14	8.2	e8.5
27	2.4	2.0	e1.7	e1.7	e1.8	7.8	19	52	19	18	8.4	e8.5
28	2.3	2.0	e1.7	e1.7	e1.8	7.0	16	78	26	16	8.1	e8.5
29	2.3	2.0	e1.7	e1.7	---	6.6	13	89	25	14	8.2	e8.5
30	2.4	1.8	e1.7	1.7	---	5.5	12	76	24	13	8.0	e8.5
31	2.3	---	e1.7	1.6	---	5.5	---	67	---	11	9.0	---
TOTAL	64.1	70.0	51.2	50.8	40.2	138.0	318.5	1221.1	1928	509	272.9	267.4
MEAN	2.07	2.33	1.65	1.64	1.44	4.45	10.6	39.4	64.3	16.4	8.80	8.91
MAX	2.5	2.8	1.9	1.7	1.8	8.5	19	89	199	28	13	12
MIN	1.4	1.8	1.4	1.5	1.1	1.8	5.6	6.3	19	11	6.3	6.3
AC-FT	127	139	102	101	80	274	632	2420	3820	1010	541	530

CAL YR 1990 TOTAL 2021.1 MEAN 5.54 MAX 24 MIN 1.2 AC-FT 4010
WTR YR 1991 TOTAL 4931.2 MEAN 13.5 MAX 199 MIN 1.1 AC-FT 9780

e Estimated

CHEYENNE RIVER BASIN

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06422500 BOXELDER CREEK NEAR NEMO, SD--Continued

PRECIPITATION RECORDS

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

INSTRUMENTATION.--Precipitation recorder.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.12	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00
2	.00	.17	.00	.00	.00	.00	.00	.26	.14	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.15	.86	.00	.00	.03
4	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.04	.00
5	.00	.19	.00	.00	.00	.00	.00	.00	.17	.00	.08	.00
6	.01	.00	.00	.00	.00	.00	.00	.00	.08	.27	.16	.00
7	.01	.00	.00	.00	.00	.00	.16	.00	.00	.02	.10	.49
8	.04	.00	.00	.00	.00	.00	.01	.00	.09	.58	.00	.01
9	.00	.00	.00	.00	.00	.00	.10	.00	.38	.01	.00	.00
10	.00	.00	.00	.00	.00	.00	.67	.41	.00	.13	.00	.11
11	.13	.00	.00	.00	.00	.07	.49	1.64	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.01	.42	.49	.00	.00	.00	.04
13	.29	.00	.00	.00	.07	.00	.00	.00	.78	.00	.00	.03
14	.00	.00	.28	.00	.02	.00	.03	.09	.04	.00	.00	.16
15	.00	.00	.00	.00	.00	.00	.00	.83	.01	.05	.04	.00
16	.00	.00	.00	.00	.00	.00	.00	.53	.01	.81	.08	.00
17	.04	.00	.00	.00	.46	.07	.00	.52	.00	.00	.00	.00
18	.00	.00	.00	.00	.13	.00	.30	.03	.11	.00	.00	.00
19	.00	.00	.00	.01	.00	.00	.21	.01	.00	.00	.00	.00
20	.00	.01	.01	.00	.00	.13	.00	.00	.02	.00	.01	.00
21	.00	.00	.00	.00	.00	.03	.01	.00	.07	.00	.00	.00
22	.02	.00	.00	.03	.00	.10	.00	.55	.19	.00	.00	.00
23	.01	.00	.00	.07	.00	.00	.00	.00	.22	.15	.02	.00
24	.00	.00	.01	.00	.00	.00	.00	.00	.00	.23	.00	.00
25	.00	.00	.00	.00	.08	.00	.12	.07	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.57	.47	.00	.13	.00	.00
27	.00	.00	.00	.00	.00	.00	.06	.55	.00	.00	.00	.00
28	.00	.00	.00	.03	.00	.00	.00	.18	.39	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.32	.22	.05	.00	.00
30	.00	.00	.00	.00	---	.04	.00	.05	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.04	.00	---
TOTAL	0.55	0.49	0.30	0.14	0.76	0.45	3.15	7.15	4.28	2.47	0.53	0.87

WTR YR 1991 TOTAL 21.14

CHEYENNE RIVER BASIN

06422600 BOXELDER CREEK AT CAMP COLUMBUS, NEAR NEMO, SD

WATER-DISCHARGE RECORDS

LOCATION.--Lat 44°07'30", long 103°25'30", in SE¼NW¼ sec.17, T.2 N., R.6 E., Pennington County, Hydrologic Unit 10120111, 0.2 mi southeast of Camp Columbus, 3.4 mi downstream from Jim Creek, and 6.0 mi southeast of Nemo.

PERIOD OF RECORD.--June 1978 to September 1980 (discontinued).

PRECIPITATION RECORDS

PERIOD OF DAILY RECORD.--

PRECIPITATION: October 1988 to current year (seasonal records).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,260 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor. Gage is located 0.2 mi northeast of discontinued streamflow gaging station. Precipitation gage is read daily by observer at approximately 0700 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	---	---	.00	.51	.62	.00	.00
2	.00	---	---	---	---	---	---	.00	.00	.00	.00	.00
3	.00	---	---	---	---	---	---	.00	.27	.00	.00	.00
4	.00	---	---	---	---	---	---	.40	.68	.00	.00	.00
5	.00	---	---	---	---	---	---	.00	.38	.00	.07	.00
6	.00	---	---	---	---	---	---	.00	.20	.30	.00	.00
7	.00	---	---	---	---	---	---	.00	.10	.03	.19	.00
8	.08	---	---	---	---	---	---	.00	.00	.03	.14	.20
9	.00	---	---	---	---	---	---	.00	.17	.49	.00	.13
10	.00	---	---	---	---	---	---	.00	.43	.11	---	.00
11	.23	---	---	---	---	---	---	.47	.00	.00	---	.16
12	.00	---	---	---	---	---	---	2.68	.00	.00	---	.01
13	.00	---	---	---	---	---	---	.00	.00	.00	---	.00
14	.31	---	---	---	---	---	---	.00	.59	.00	---	.18
15	.00	---	---	---	---	---	---	.78	.20	.00	---	.00
16	.00	---	---	---	---	---	---	.57	.05	.07	---	.00
17	.04	---	---	---	---	---	---	.93	.17	1.03	---	.00
18	.02	---	---	---	---	---	---	.21	.00	.00	---	.00
19	.00	---	---	---	---	---	---	.09	.00	.00	---	.00
20	.00	---	---	---	---	---	---	.50	.00	.00	---	.00
21	.00	---	---	---	---	---	---	.00	.04	.00	---	.00
22	.00	---	---	---	---	---	---	.00	.00	.00	---	.00
23	.00	---	---	---	---	---	---	.00	.18	.00	---	.00
24	.04	---	---	---	---	---	---	.00	.00	.13	---	.00
25	.00	---	---	---	---	---	---	.00	.00	.25	---	.00
26	.00	---	---	---	---	---	---	.00	.00	.00	---	.00
27	.00	---	---	---	---	---	---	.45	.00	.20	---	.00
28	.00	---	---	---	---	---	---	.62	.41	.00	---	.00
29	.00	---	---	---	---	---	---	.62	.00	.00	---	.00
30	.00	---	---	---	---	---	---	.19	.17	.00	---	.00
31	.00	---	---	---	---	---	---	.08	---	.00	---	---
TOTAL	0.72	---	---	---	---	---	---	8.59	4.55	3.26	---	0.68

CHEYENNE RIVER BASIN

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06423010 BOXELDER CREEK NEAR RAPID CITY, SD

LOCATION.--Lat 44°07'54", long 103°17'54", in NW¼ sec.17, T.2 N., R.7 E., Pennington County, Hydrologic Unit 10120111, near center span on downstream side of bridge on State Highway 79, and 4.0 mi northwest of Rapid City.

DRAINAGE AREA.--128 mi².

PERIOD OF RECORD.--May 1978 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,450 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Considerable loss occurs to sinkholes in reach above gage. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--13 years, 0.79 ft³/s, 570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 253 ft³/s, May 18, 1978, gage height, 31.14 ft, from floodmark; maximum gage height, 31.64 ft, June 6, 1991; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 160 ft³/s at 1000 hours, June 6, gage height, 31.64 ft; no flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	3.3	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	24	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	49	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	58	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	110	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	114	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	100	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	90	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	70	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	50	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	33	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	22	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	40	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	29	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	7.2	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	5.3	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	8.2	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	3.6	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	1.8	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	1.2	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.56	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.15	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	836.31	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	27.9	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	114	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	1660	.00	.00	.00

CAL YR 1990 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 AC-FT .00
WTR YR 1991 TOTAL 836.31 MEAN 2.29 MAX 114 MIN .00 AC-FT 1660

06423500 CHEYENNE RIVER NEAR WASTA, SD

LOCATION.--Lat 44°04'52", long 102°24'03", in NE¼NE¼NW¼ sec.2, T.1 N., R.14 E., Pennington County, Hydrologic Unit 10120111, on left bank at downstream side of highway bridge, 200 ft downstream from railroad bridge, 3.0 mi east of Wasta, and 8.6 mi downstream from Boxelder Creek.

DRAINAGE AREA.--12,800 mi², approximately.

PERIOD OF RECORD.--July 1914 to June 1915, August 1928 to June 1932, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1309. Records for Feb. 19-28, 1930, published in WSP 701, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 786: Drainage area. WSP 1279: 1930(M), 1931, 1937. See also Period of Record.

GAGE.--Water-stage recorder. Datum of gage is 2,260.78 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1940, nonrecording gage at site 50 ft upstream; Aug. 1, 1940, to Dec. 3, 1940, nonrecording gage and Dec. 4, 1940, to Sept. 30, 1968, water-stage recorder at present site all at datum 2.00 ft higher. Oct. 1, 1968, to Sept. 30, 1972, at datum 1.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Angostura Dam 108 mi upstream since October 1949 and by upstream dams on Rapid Creek since August 1956. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. National Weather Service telemeter and U.S. Army Corps of Engineers satellite data-collection platform at station.

AVERAGE DISCHARGE.--60 years (water years 1929-31, 1935-91), 335 ft³/s, 242,700 acre-ft/yr; median of yearly mean discharges, 290 ft³/s, 210,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,300 ft³/s, May 6, 1932, gage height, 13.28 ft, present datum, from rating curve extended above 11,000 ft³/s on basis of an incomplete discharge measurement at gage height 10.65 ft, present datum; maximum gage height observed, 14.5 ft, present datum, June 13, 1915; minimum discharge, 0.60 ft³/s, July 27, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1920 reached a stage of 18 ft, present datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,100 ft³/s at 1800 hours, May 28, gage height, 11.89 ft; minimum daily discharge, 3.0 ft³/s, Dec. 23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	65	e64	e5.0	e15	e27	90	92	4960	460	58	51
2	47	70	e70	e5.0	e20	e38	83	83	3760	339	55	55
3	44	371	e70	e4.6	e23	e60	76	83	4220	259	57	58
4	48	137	e69	e4.6	e26	e86	73	150	11500	203	58	58
5	50	96	e66	e4.6	e28	e100	71	184	9920	174	60	61
6	48	82	e62	e4.2	e28	e150	69	119	15000	149	93	65
7	49	85	e62	e4.2	e27	e180	67	86	12700	130	1510	62
8	51	97	e65	e5.0	e27	e160	64	73	4800	119	516	55
9	55	95	e70	e6.0	e27	e130	67	67	3470	112	181	53
10	53	85	e76	e6.5	e26	e120	59	73	2470	113	108	71
11	56	84	e75	e6.5	e26	e115	126	7260	1810	455	85	897
12	55	79	e70	e7.0	e26	e110	739	5600	1530	292	94	304
13	56	78	e62	e7.0	e26	e140	672	885	1240	159	88	155
14	66	76	e55	e7.2	e25	e120	384	445	1210	127	93	119
15	61	76	e50	e6.5	e25	e105	189	331	1090	102	175	188
16	61	74	e44	e5.2	e25	e115	121	1500	866	91	114	160
17	61	73	e40	e5.2	e25	e120	102	2980	770	83	124	117
18	60	74	e32	e5.2	e25	e150	100	2110	767	78	124	99
19	61	75	e26	e4.8	e25	e200	401	624	689	82	97	97
20	63	76	e14	e4.5	e25	125	1000	464	596	79	84	99
21	62	77	e7.5	e3.8	e26	120	257	372	698	73	74	104
22	65	76	e4.8	e3.5	e26	137	145	322	503	68	70	100
23	69	74	e3.0	e4.0	e25	139	105	513	1070	60	69	91
24	69	74	e3.6	e4.2	e25	138	88	358	702	59	65	85
25	66	73	e4.0	e4.2	e25	125	80	287	500	57	60	90
26	66	e72	e4.2	e4.2	e25	114	85	640	386	58	58	90
27	67	e70	e4.5	e4.1	e25	102	135	1120	349	65	61	93
28	67	e65	e4.5	e4.0	e25	92	363	12700	878	66	63	92
29	64	e60	e4.5	e4.0	---	86	158	3830	876	65	63	93
30	66	e60	e3.8	e4.4	---	89	109	3250	602	65	57	92
31	65	---	e4.0	e7.0	---	89	---	7530	---	63	56	---
TOTAL	1818	2649	1190.4	156.2	702	3582	6078	54131	89932	4305	4470	3754
MEAN	58.6	88.3	38.4	5.04	25.1	116	203	1746	2998	139	144	125
MAX	69	371	76	7.2	28	200	1000	12700	15000	460	1510	897
MIN	44	60	3.0	3.5	15	27	59	67	349	57	55	51
AC-FT	3610	5250	2360	310	1390	7100	12060	107400	178400	8540	8870	7450

CAL YR 1990 TOTAL 44662.4 MEAN 122 MAX 2050 MIN 3.0 AC-FT 88590
WTR YR 1991 TOTAL 172767.6 MEAN 473 MAX 15000 MIN 3.0 AC-FT 342700

e Estimated

CHEYENNE RIVER BASIN

117

06425100 ELK CREEK NEAR RAPID CITY, SD

LOCATION.--Lat 44°14'25", long 103°09'03", in NE1/4 sec.9, T.3 N., R.8 E., Meade County, Hydrologic Unit 10120110, on section line near right upstream corner of county road bridge, 1.7 mi downstream from Morris Creek tributary, and 10 mi north of Exit 61 and I-90 northeast of Rapid City.

DRAINAGE AREA.--190 mi².

PERIOD OF RECORD.--November 1978 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,950 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some flow is pumped from stream for irrigation. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--12 years, 5.11 ft³/s, 3,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,560 ft³/s, May 20, 1982, gage height, 10.79 ft; maximum gage height, 11.80 ft, Feb. 26, 1986, backwater from ice; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	1045	*995	*9.87	No other peak greater than base discharge.			

No flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	e5.0	e.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	e3.0	e.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	e2.0	e.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	e3.0	e.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	e16	e.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	e5.0	e.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	372	e2.0	e.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	97	e4.0	e.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	23	e2.0	e.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	19	e1.0	e.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	26	e2.0	e.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	9.1	e1.0	e.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	15	e1.0	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	5.6	e.50	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	1.8	e.20	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.78	e.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.46	e.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	12	e.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	24	e.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	5.1	e.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	1.7	e.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	1.1	e.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	3.3	e.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	35	e.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	e22	e.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	e8.0	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	681.94	52.70	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	22.0	1.76	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	372	16	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	1350	105	.00	.00	.00

CAL YR 1990 TOTAL 2.79 MEAN .008 MAX .49 MIN .00 AC-FT 5.5
WTR YR 1991 TOTAL 734.64 MEAN 2.01 MAX 372 MIN .00 AC-FT 1460

e Estimated

CHEYENNE RIVER BASIN

06425500 ELK CREEK NEAR ELM SPRINGS, SD

LOCATION.--Lat 44°14'54", long 102°30'10", in SW¼ sec.1, T.3 N., R.13 E., Meade County, Hydrologic Unit 10120111, on left bank near downstream end of county highway bridge, 1.4 mi downstream from Hay Draw, 5.0 mi southeast of Elm Springs, and 7.0 mi upstream from mouth.

DRAINAGE AREA.--540 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 2,304.49 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 2, 1976, nonrecording gage, and prior to Feb. 1, 1967, at site 350 ft downstream at present datum.

REMARKS.--Records fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--42 years, 21.6 ft³/s, 15,650 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,540 ft³/s, Mar. 29, 1952, gage height, 10.61 ft, from floodmarks, site and datum then in use, from rating curve extended above 5,100 ft³/s; maximum gage height, 13.25 ft, Feb. 27, 1986, backwater from ice; no flow for long periods in each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 17 ft, at former site, in May 1920, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 28	1745	*620	*7.84	May 30	0815	468	7.45

No flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	88	1.2	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	50	.84	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	30	.97	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	22	.65	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	17	.70	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	15	1.1	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	15	1.2	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	11	1.2	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	9.2	1.1	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	11	1.2	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	58	17	2.8	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	11	17	5.1	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	3.5	14	1.5	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	1.7	21	1.2	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	21	14	.77	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	39	6.0	.57	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	29	6.2	.57	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	18	3.9	.16	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	18	2.8	e.14	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	13	2.5	e.12	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	8.6	2.1	e.10	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	6.4	1.9	e.06	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	24	1.1	e.03	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	33	.78	e.01	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	12	.96	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	5.9	1.7	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	3.1	1.5	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	254	2.0	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	275	1.9	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	279	9.0	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	140	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1253.20	395.54	23.29	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	40.4	13.2	.75	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	279	88	5.1	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.78	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	2490	785	46	.00	.00

CAL YR 1990 TOTAL 86.94 MEAN .24 MAX 31 MIN .00 AC-FT 172
WTR YR 1991 TOTAL 1672.03 MEAN 4.58 MAX 279 MIN .00 AC-FT 3320

e Estimated

BELLE FOURCHE RIVER BASIN

119

06427000 KEYHOLE RESERVOIR NEAR MOORCROFT, WY

LOCATION.--Lat 44°22'55", long 104°46'45", in NW¼NW¼ sec.27, T.51 N., R.66 W., Crook County, Hydrologic Unit 10120201, at reservoir dam on Belle Fourche River, 12 mi northeast of Moorcroft.

DRAINAGE AREA.--2,000 mi², approximately.

PERIOD OF RECORD.--March 1952 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation datum). Prior to May 15, 1958, and Oct. 1, 1968, to Mar. 13, 1970, nonrecording gages, and May 15, 1958, to Sept. 30, 1968, water-stage recorder, all at present site and datum.

REMARKS.--Reservoir is formed by a zoned earth-fill dam completed by the Bureau of Reclamation Oct. 25, 1952. Storage began Feb. 12, 1952. Inactive storage, between elevations 4,036.0 ft and 4,051.0 ft, 7,230 acre-ft. Total capacity below elevation 4,099.3 ft (crest of spillway), 185,800 acre-ft. Siltation has eliminated dead storage. Figures given herein represent inactive and active contents above elevation 4,036.0 ft. The reservoir provides flood control and water for irrigation in Wyoming and near Belle Fourche, SD.

COOPERATION.--Records of elevation and contents provided by the Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 200,744 acre-ft, May 21, 1978, elevation, 4,100.38 ft; minimum daily contents (since appreciable storage was attained), 6,030 acre-ft, Mar. 8, 9, 1955, elevation, 4,046.35 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 47,700 acre-ft, May 31, elevation, 4,073.93 ft; minimum, 30,100 acre-ft, Nov. 30, elevation, 4,066.98 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	4,067.27	30,700	-
Oct. 31	4,067.09	30,300	-400
Nov. 30	4,066.98	30,100	-200
Dec. 31	4,066.99	30,100	0
CAL YR 1990	-	-	-9,500
Jan. 31	4,066.97	30,100	0
Feb. 28	4,067.24	30,600	+500
Mar. 31	4,067.35	30,900	+300
Apr. 30	4,067.84	32,000	+1,100
May 31	4,073.37	46,000	+14,000
June 30	4,073.93	47,700	-1,700
July 31	4,071.25	40,100	-7,600
Aug. 31	4,067.90	32,100	-8,000
Sept. 30	4,067.74	31,700	-400
WTR YR 1991	-	-	-2,400

BELLE FOURCHE RIVER BASIN

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°44'59", long 104°02'49", in NE¼NW¼ sec.18, T.9 N., R.1 E., Butte County, Hydrologic Unit 10120202, on left bank 0.3 mi downstream from State line, 3.7 mi downstream from Oak Creek, and 11 mi northwest of Belle Fourche, SD.

DRAINAGE AREA.--3,280 mi², approximately.

PERIOD OF RECORD.--December 1946 to current year. Records for water year 1947 incomplete, yearly estimate published in WSP 1729.

GAGE.--Water-stage recorder. Datum of gage is 3,095.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions upstream from station for irrigation of about 5,400 acres. Flow regulated by Keyhole Dam, usable capacity, 191,600 acre-ft, 143 mi upstream since Oct. 25, 1952. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. U.S. Bureau of Reclamation satellite data-collection platform at station.

AVERAGE DISCHARGE.--45 years, 86.2 ft³/s, 62,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,400 ft³/s, June 18, 1962, gage height, 15.59 ft; no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 877 ft³/s at 0545 hours, May 15, gage height, 8.27 ft; minimum daily discharge, 0.60 ft³/s, Jan. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	11	e11	e.60	e3.8	e17	14	41	222	31	96	82
2	9.4	11	11	e.65	e5.0	e17	14	42	146	28	93	72
3	9.2	10	12	e.70	e6.0	e16	13	52	125	26	96	69
4	8.5	11	13	e.80	e8.0	e15	13	50	113	22	98	70
5	8.3	11	13	e.80	e9.0	e14	12	44	102	21	101	72
6	8.2	12	15	e.70	e10	e13	12	41	90	39	102	71
7	8.8	9.7	16	e.70	e13	e13	13	39	86	49	102	72
8	9.0	10	14	e.70	e15	e14	15	36	233	50	102	76
9	8.9	14	15	e.65	e18	e15	19	33	133	50	102	104
10	9.2	12	16	e.80	e19	20	18	35	95	48	101	81
11	11	12	14	e1.0	e18	25	19	39	83	73	93	77
12	9.6	12	14	e1.5	e16	46	26	73	74	59	88	75
13	9.4	13	13	e1.8	e15	40	28	115	67	77	93	72
14	9.6	12	e11	e2.0	e15	36	29	259	63	104	90	59
15	9.7	11	e9.5	e2.4	e13	37	31	623	67	91	86	45
16	10	11	e8.0	e2.8	e13	34	59	326	59	88	84	39
17	12	10	e7.0	e3.2	e13	30	34	247	65	90	85	34
18	12	10	e6.5	e3.5	e13	27	28	312	68	92	87	31
19	13	11	e5.8	e4.0	e13	26	28	227	68	92	89	29
20	13	11	e5.0	e4.8	e14	23	29	182	63	88	87	27
21	13	11	e3.3	e5.2	e14	21	32	151	86	87	88	24
22	12	10	e2.4	e6.0	e15	21	29	152	99	86	88	22
23	12	9.8	e2.0	e7.0	e16	22	27	205	70	90	88	21
24	11	10	e1.8	e4.0	e17	20	30	147	59	96	89	21
25	11	10	e1.7	e2.8	e18	19	33	146	54	97	87	20
26	12	9.3	e1.5	e3.2	e18	18	44	243	47	96	86	18
27	11	10	e1.5	e3.8	e19	17	114	177	43	102	86	18
28	11	e11	e1.4	e4.2	e18	16	78	316	38	100	85	17
29	11	e12	e1.3	e2.0	---	16	62	182	34	100	84	17
30	11	e12	e1.0	e2.4	---	15	48	170	32	98	87	16
31	11	---	e.90	e3.0	---	15	---	204	---	98	89	---
TOTAL	324.4	329.8	248.60	77.70	384.8	678	951	4909	2584	2268	2832	1451
MEAN	10.5	11.0	8.02	2.51	13.7	21.9	31.7	158	86.1	73.2	91.4	48.4
MAX	13	14	16	7.0	19	46	114	623	233	104	102	104
MIN	8.2	9.3	.90	.60	3.8	13	12	33	32	21	84	16
AC-FT	643	654	493	154	763	1340	1890	9740	5130	4500	5620	2880

CAL YR 1990 TOTAL 18311.80 MEAN 50.2 MAX 1350 MIN .90 AC-FT 36320
WTR YR 1991 TOTAL 17038.30 MEAN 46.7 MAX 623 MIN .60 AC-FT 33800

e Estimated

BELLE FOURCHE RIVER BASIN

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06429500 COLD SPRINGS CREEK AT BUCKHORN, WY

LOCATION.--Lat 44°09'15", long 104°04'37", in NW¼NW¼SW¼ sec.9, T.48 N., R.60 W., Weston County, Hydrologic Unit 10120303, on right bank at downstream end of culvert at U.S. Highway 85 and 0.5 mi northeast of Buckhorn.

DRAINAGE AREA.--19.0 mi².

PERIOD OF RECORD.--October 1974 to September 1982, April to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 6,050 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1974 to September 1982, 200 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Apr. 30 and May 1. Records excellent. No diversion upstream from station.

AVERAGE DISCHARGE.--8 years (water years 1975-1982), 4.71 ft³/s, 3,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13 ft³/s, Apr. 1, 1981, gage height, 4.98 ft, site and datum then in use; maximum gage height, 8.61 ft, Jan. 12, 1978, backwater from ice, site and datum then in use; minimum daily discharge, 2.0 ft³/s, Mar. 28, 1975.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 11 ft³/s, Apr. 28, gage height, 2.51 ft, from rating curve extended above 5 ft³/s on basis of critical-depth computations of discharge; minimum daily discharge, 3.5 ft³/s on many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	4.0	4.0	3.6	3.5	3.5
2	---	---	---	---	---	---	---	3.8	3.8	3.6	3.5	3.5
3	---	---	---	---	---	---	---	3.7	4.0	3.6	3.5	3.5
4	---	---	---	---	---	---	---	3.6	3.9	3.6	3.5	3.5
5	---	---	---	---	---	---	---	3.6	3.8	3.6	3.5	3.6
6	---	---	---	---	---	---	---	3.7	3.8	3.7	3.5	3.6
7	---	---	---	---	---	---	---	3.9	3.8	3.6	3.5	3.5
8	---	---	---	---	---	---	---	3.9	3.8	3.7	3.5	3.5
9	---	---	---	---	---	---	---	4.0	3.8	3.7	3.5	3.6
10	---	---	---	---	---	---	---	4.0	3.8	3.7	3.5	3.6
11	---	---	---	---	---	---	---	3.9	3.8	3.7	3.6	3.6
12	---	---	---	---	---	---	---	4.2	3.7	3.6	3.5	3.6
13	---	---	---	---	---	---	---	4.0	3.8	3.6	3.5	3.6
14	---	---	---	---	---	---	---	4.0	3.9	3.6	3.5	3.6
15	---	---	---	---	---	---	---	4.3	3.8	3.6	3.5	3.6
16	---	---	---	---	---	---	---	4.0	3.7	3.7	3.5	3.6
17	---	---	---	---	---	---	---	4.0	3.7	3.6	3.5	3.6
18	---	---	---	---	---	---	---	4.0	3.7	3.5	3.5	3.6
19	---	---	---	---	---	---	---	4.0	3.6	3.5	3.5	3.6
20	---	---	---	---	---	---	---	3.9	3.6	3.5	3.5	3.6
21	---	---	---	---	---	---	---	3.9	3.7	3.5	3.5	3.6
22	---	---	---	---	---	---	---	4.0	3.7	3.5	3.5	3.6
23	---	---	---	---	---	---	---	4.0	3.6	3.5	3.5	3.6
24	---	---	---	---	---	---	---	3.9	3.6	3.6	3.5	3.6
25	---	---	---	---	---	---	4.2	3.8	3.6	3.5	3.5	3.6
26	---	---	---	---	---	---	4.0	3.9	3.6	3.5	3.5	3.6
27	---	---	---	---	---	---	4.5	3.9	3.6	3.5	3.5	3.6
28	---	---	---	---	---	---	6.1	4.0	3.7	3.5	3.5	3.6
29	---	---	---	---	---	---	6.2	3.9	3.6	3.5	3.5	3.6
30	---	---	---	---	---	---	4.8	3.9	3.6	3.5	3.5	3.6
31	---	---	---	---	---	---	---	3.8	---	3.5	3.5	---
TOTAL	---	---	---	---	---	---	---	121.5	112.1	110.9	108.6	107.4
MEAN	---	---	---	---	---	---	---	3.92	3.74	3.58	3.50	3.58
MAX	---	---	---	---	---	---	---	4.3	4.0	3.7	3.6	3.6
MIN	---	---	---	---	---	---	---	3.6	3.6	3.5	3.5	3.5
AC-FT	---	---	---	---	---	---	---	241	222	220	215	213

BELLE FOURCHE RIVER BASIN

06429900 SAND CREEK AT RANCH A, NEAR BEULAH, WY

WATER-DISCHARGE RECORDS

LOCATION.--Lat 44°29'42", long 104°06'34", in SW¼ sec.18, T.52 N., R.60 W., Crook County, Hydrologic Unit 10120203, on right bank 0.35 mi downstream from headquarters building of Ranch A Fish Genetics Laboratory, 0.9 mi upstream from Hospital Gulch, and 3.6 mi south of Beulah.

PERIOD OF RECORD.--October 1974 to September 1976.

PRECIPITATION RECORDS

PERIOD OF RECORD.--October 1988 to September 1989, April 1991 to September 1991.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 48 in. tall. Elevation of gage is 3,800 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0800 hours. Daily precipitation is for the previous 24 hours. Precipitation gage is located 0.3 mi south of specified location of streamflow gage.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
3	---	---	---	---	---	---	---	.10	.10	.00	.00	.05
4	---	---	---	---	---	---	---	.20	.50	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.30	.00	.00	.00
6	---	---	---	---	---	---	---	.00	.00	.10	.20	.00
7	---	---	---	---	---	---	---	.00	.30	.30	.00	.00
8	---	---	---	---	---	---	---	.20	.00	.00	.00	.15
9	---	---	---	---	---	---	---	.00	.00	.10	.00	.00
10	---	---	---	---	---	---	.00	.00	.00	.30	.00	.00
11	---	---	---	---	---	---	.00	.10	.00	.00	.00	.00
12	---	---	---	---	---	---	.30	.50	.00	.00	.00	.00
13	---	---	---	---	---	---	.80	.00	.00	.00	.00	.00
14	---	---	---	---	---	---	.00	.00	.50	.00	.20	.05
15	---	---	---	---	---	---	.00	.70	.00	.00	.00	.00
16	---	---	---	---	---	---	.00	.70	.00	.00	.70	.00
17	---	---	---	---	---	---	.00	.20	.00	.00	.00	.05
18	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
20	---	---	---	---	---	---	.30	.70	.00	.00	.00	.00
21	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
22	---	---	---	---	---	---	.20	.00	.00	.00	.00	.00
23	---	---	---	---	---	---	.00	1.20	.00	.00	.00	.00
24	---	---	---	---	---	---	.00	.00	.00	.00	.10	.00
25	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
26	---	---	---	---	---	---	.50	.00	.00	.00	.00	.00
27	---	---	---	---	---	---	.30	.30	.00	.00	.00	.00
28	---	---	---	---	---	---	.10	.30	.30	.00	.00	.00
29	---	---	---	---	---	---	.10	.50	.00	.00	.00	.00
30	---	---	---	---	---	---	.00	.00	.00	.30	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	5.70	2.00	1.10	1.20	0.30

BELLE FOURCHE RIVER BASIN

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06429905 SAND CREEK NEAR RANCH A, NEAR BEULAH, WY

LOCATION.--Lat 44°31'07", long 104°04'57", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.5, T.52 N., R.60 W., Crook County, Hydrologic Unit 10120303, on right bank 1.0 mi upstream from Bear Gulch and 1.8 mi south of Beulah.

DRAINAGE AREA.--267 mi².

PERIOD OF RECORD.--October 1976 to September 1983, April to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1976 to September 1982, at site 500 ft downstream at different datum.

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

AVERAGE DISCHARGE.--7 years (water years 1977-83), 24.1 ft³/s, 17,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 514 ft³/s, May 16, 1982, gage height, 7.35 ft, site and datum then in use; minimum daily discharge, 14 ft³/s, Jan. 13, 14, Feb. 11-16, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 700 ft³/s, June 15, 1976, gage height, 7.77 ft, site and datum then in use, from slope-area measurement of peak flow at site 3 mi upstream.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 21 ft³/s, May 22, gage height, 1.30 ft; maximum gage height, 1.33 ft, Sept. 16; minimum daily discharge, 15 ft³/s on several days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	17	17	17	16	15
2	---	---	---	---	---	---	---	17	17	17	16	15
3	---	---	---	---	---	---	---	17	18	17	16	15
4	---	---	---	---	---	---	---	17	18	17	16	15
5	---	---	---	---	---	---	---	17	17	17	16	15
6	---	---	---	---	---	---	---	17	17	17	16	15
7	---	---	---	---	---	---	---	17	17	17	16	16
8	---	---	---	---	---	---	---	17	17	17	16	16
9	---	---	---	---	---	---	---	17	17	17	16	16
10	---	---	---	---	---	---	---	17	17	17	16	16
11	---	---	---	---	---	---	---	17	17	17	16	16
12	---	---	---	---	---	---	---	17	17	16	16	16
13	---	---	---	---	---	---	---	17	17	16	16	16
14	---	---	---	---	---	---	---	17	17	16	15	16
15	---	---	---	---	---	---	---	18	17	16	16	16
16	---	---	---	---	---	---	17	18	17	16	16	16
17	---	---	---	---	---	---	18	17	17	16	15	16
18	---	---	---	---	---	---	18	17	17	16	15	16
19	---	---	---	---	---	---	18	17	17	16	15	16
20	---	---	---	---	---	---	18	17	17	16	15	16
21	---	---	---	---	---	---	17	17	17	16	15	16
22	---	---	---	---	---	---	17	18	17	16	15	16
23	---	---	---	---	---	---	17	18	17	16	16	16
24	---	---	---	---	---	---	17	18	17	16	15	16
25	---	---	---	---	---	---	17	18	17	16	15	16
26	---	---	---	---	---	---	18	18	17	16	15	16
27	---	---	---	---	---	---	18	18	17	16	15	16
28	---	---	---	---	---	---	18	18	17	16	15	16
29	---	---	---	---	---	---	17	18	17	16	15	16
30	---	---	---	---	---	---	17	17	17	16	15	16
31	---	---	---	---	---	---	---	17	---	16	15	---
TOTAL	---	---	---	---	---	---	---	537	512	507	481	474
MEAN	---	---	---	---	---	---	---	17.3	17.1	16.4	15.5	15.8
MAX	---	---	---	---	---	---	---	18	18	17	16	16
MIN	---	---	---	---	---	---	---	17	17	16	15	15
AC-FT	---	---	---	---	---	---	---	1070	1020	1010	954	940

BELLE FOURCHE RIVER BASIN

06429997 MURRAY DITCH ABOVE HEADGATE AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°34'35", long 104°03'20", in SW¼SW¼ sec.7, T.7 N., R.1 E., Butte County, Hydrologic Unit 10120203, on right bank at State line and 12 mi southwest of Belle Fourche, SD.

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,440 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 23, 1987, published as 06430000 (below diversion at site 15 ft downstream).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Ditch diverts water from left bank of Redwater Creek, 2.0 mi upstream, for irrigation of about 700 acres. Flow maintained during irrigation season only. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 46 ft³/s, Oct. 8, 1990; no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 46 ft³/s, Oct. 8; no flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	.00	.00	e.00	e.00	e.00	.00	.00	.00	6.9	25	8.9
2	29	.00	.00	e.00	e.00	e.00	.00	.00	.00	13	25	8.1
3	32	.00	e.00	e.00	e.00	e.00	.00	.00	.00	13	22	4.1
4	27	.00	e.00	e.00	e.00	e.00	.00	.00	.00	12	24	5.4
5	26	.00	e.00	e.00	e.00	e.00	.00	.00	.00	12	25	5.1
6	38	.00	e.00	e.00	e.00	e.00	.00	.00	.00	12	32	6.2
7	43	.00	e.00	e.00	e.00	e.00	.00	.00	.00	12	31	9.9
8	46	.00	e.00	e.00	e.00	e.00	.00	.00	.00	12	32	.44
9	33	.00	e.00	e.00	e.00	e.00	.00	.00	.00	15	29	.00
10	16	.00	e.00	e.00	e.00	e.00	.00	.00	.00	24	28	.00
11	20	.00	e.00	e.00	e.00	e.00	.00	.00	.00	24	37	.00
12	19	.00	e.00	e.00	e.00	e.00	.00	.00	.00	25	24	.00
13	18	.00	e.00	e.00	e.00	e.00	.00	.00	.00	31	15	.00
14	16	.00	e.00	e.00	e.00	e.00	.00	.00	.00	25	13	.00
15	16	.00	e.00	e.00	e.00	.00	.00	.00	.00	22	10	.00
16	16	.00	e.00	e.00	e.00	.00	.00	.00	.00	18	12	.00
17	22	.00	e.00	e.00	e.00	.00	.00	.00	.00	14	11	.00
18	21	.00	e.00	e.00	e.00	.00	.00	.00	.00	15	13	.00
19	19	.00	e.00	e.00	e.00	.00	.00	.00	.00	19	17	.00
20	25	.00	e.00	e.00	e.00	.00	.00	.00	.00	12	12	.00
21	32	.00	e.00	e.00	e.00	.00	.00	.00	.00	11	11	.00
22	27	.00	e.00	e.00	e.00	.00	.00	.10	.00	11	18	.00
23	5.0	.00	e.00	e.00	e.00	.00	.00	.36	.00	11	19	.00
24	10	.00	e.00	e.00	e.00	.00	.00	.00	.00	12	15	.00
25	18	.00	e.00	e.00	e.00	.00	.00	.00	.00	12	9.2	.00
26	20	.00	e.00	e.00	e.00	.00	.00	.00	.00	13	9.2	.00
27	17	.00	e.00	e.00	e.00	.00	.00	.00	.00	18	9.6	.00
28	.18	.00	e.00	e.00	e.00	.00	.00	.00	.00	18	10	.00
29	.00	.00	e.00	e.00	---	.00	.00	.00	.00	18	8.0	.00
30	.00	.00	e.00	e.00	---	.00	.00	.00	.00	23	8.3	7.5
31	.00	---	e.00	e.00	---	.00	---	.00	---	24	8.6	---
TOTAL	637.18	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	507.9	562.9	55.64
MEAN	20.6	.000	.000	.000	.000	.000	.000	.015	.000	16.4	18.2	1.85
MAX	46	.00	.00	.00	.00	.00	.00	.36	.00	31	37	9.9
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.9	8.0	.00
AC-FT	1260	.00	.00	.00	.00	.00	.00	.9	.00	1010	1120	110

CAL YR 1990 TOTAL 1766.88 MEAN 4.84 MAX 46 MIN .00 AC-FT 3500
WTR YR 1991 TOTAL 1764.08 MEAN 4.83 MAX 46 MIN .00 AC-FT 3500

e Estimated

06430500 REDWATER CREEK AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°34'26", long 104°02'54", in NW¼NW¼ sec.18 T.7 N., R.1 E., Butte County, Hydrologic Unit 10120203, on left bank 800 ft downstream from State line, 5.7 mi upstream from Crow Creek, and 12 mi south-west of Belle Fourche, SD.

DRAINAGE AREA.--471 mi².

PERIOD OF RECORD.--April 1929 to September 1931 and February 1936 to July 1937 (published as "near Beulah, WY"), June 1954 to current year.

REVISED RECORDS.--WSP 1309: 1931(M), 1936-37(M).

GAGE.--Water-stage recorder. Elevation of gage is 3,410 ft above National Geodetic Vertical Datum of 1929, from topographic map. Apr. 25, 1929, to Sept. 30, 1931, and Feb. 28, 1936, to July 31, 1937, nonrecording gage at site 2 mi upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Large diversions for irrigation upstream from station. Total flow passing State line may be obtained by adding flow of Murray ditch (see station 06429997). Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--39 years, 34.2 ft³/s, 24,780 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,440 ft³/s, Aug. 22, 1973, gage height, 12.19 ft, from rating curve extended above 1,000 ft³/s on basis of slope-area measurement at gage height 11.95 ft; no flow Aug. 13-15, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1430	*49	*2.76				

Minimum daily discharge, 3.1 ft³/s, July 15.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.2	33	28	e16	24	27	26	28	32	21	5.4	13
2	4.4	35	28	e17	24	27	26	28	32	16	5.7	21
3	4.6	34	e27	e18	24	27	26	30	34	15	5.6	21
4	4.7	33	e28	e18	24	27	26	30	33	14	5.6	19
5	4.2	33	e25	e18	24	28	26	29	32	14	5.8	17
6	3.9	34	e25	e18	24	27	26	29	32	14	6.7	17
7	4.4	32	e28	e20	24	27	26	29	33	15	6.5	23
8	4.6	33	e28	e21	24	27	28	29	32	15	6.7	34
9	4.7	32	30	e22	24	27	28	29	31	13	7.2	34
10	9.8	32	30	e24	24	27	28	29	31	10	7.8	34
11	9.4	32	30	e27	24	28	28	26	31	9.1	7.4	34
12	8.9	31	28	e28	25	28	29	24	31	7.5	7.4	e33
13	9.1	30	26	24	26	28	29	22	31	4.6	7.2	e32
14	9.3	30	28	24	26	28	28	22	33	3.5	6.5	e31
15	9.3	30	29	24	25	27	28	26	32	3.1	6.9	e30
16	9.7	30	28	24	25	27	28	27	31	3.4	7.9	e29
17	10	29	26	24	27	27	28	26	31	4.3	7.8	e28
18	10	29	26	24	27	27	28	26	31	4.2	8.7	28
19	11	29	e20	24	26	27	28	26	31	4.9	8.7	28
20	11	29	e15	24	26	27	28	28	31	4.5	8.9	28
21	10	29	e14	24	27	26	28	26	31	4.8	9.9	28
22	15	28	e14	24	26	26	28	25	31	4.7	11	27
23	26	29	e17	24	26	26	28	31	30	4.5	9.1	27
24	26	29	e17	24	27	26	28	32	31	4.8	12	27
25	27	29	e17	e20	26	26	28	35	31	5.1	18	27
26	27	29	e17	e20	26	27	31	34	30	4.9	19	27
27	28	29	e17	e20	26	27	30	35	31	5.5	18	26
28	33	28	e17	25	27	26	29	35	32	5.6	20	26
29	33	28	e16	e20	---	26	28	34	31	5.8	19	26
30	33	28	e15	e20	---	26	28	34	31	5.8	12	17
31	34	---	e14	e20	---	26	---	33	---	5.3	13	---
TOTAL	439.2	916	708	680	708	833	834	897	944	252.9	301.4	792
MEAN	14.2	30.5	22.8	21.9	25.3	26.9	27.8	28.9	31.5	8.16	9.72	26.4
MAX	34	35	30	28	27	28	31	35	34	21	20	34
MIN	3.9	28	14	16	24	26	26	22	30	3.1	5.4	13
AC-FT	871	1820	1400	1350	1400	1650	1650	1780	1870	502	598	1570

CAL YR 1990 TOTAL 8071.6 MEAN 22.1 MAX 35 MIN 3.2 AC-FT 16010
WTR YR 1991 TOTAL 8305.5 MEAN 22.8 MAX 35 MIN 3.1 AC-FT 16470

e Estimated

BELLE FOURCHE RIVER BASIN

06430540 COX LAKE OUTLET NEAR BEULAH, WY

LOCATION.--Lat 44°33'56", long 103°59'37", in SWNE1/4 sec.16, T.7 N., R.1 E., Lawrence County, Hydrologic Unit 10120203, along left bank at the outlet of Cox Lake and 4 mi east of Beulah.

DRAINAGE AREA.--0.07 mi².

PERIOD OF RECORD.--October 1990 to September 1991.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 3,415 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Spring outflow from limestone aquifer. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 5.0 ft³/s, May 15; minimum daily discharge, 4.1 ft³/s on many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	4.1	4.3	4.3	4.3	4.6	4.6	4.5	4.6	4.6	4.6	4.6
2	4.2	4.1	4.3	4.3	4.4	4.6	4.6	4.5	4.6	4.6	4.6	4.5
3	4.1	4.1	4.3	4.3	4.3	4.7	4.6	4.6	4.7	4.6	4.6	4.6
4	4.1	4.1	4.4	4.3	4.4	4.6	4.5	4.6	4.6	4.6	4.6	4.6
5	4.1	4.1	4.3	4.3	4.3	4.6	4.5	4.5	4.6	4.6	4.7	4.6
6	4.2	4.1	4.4	4.3	4.3	4.6	4.5	4.6	4.7	4.6	4.8	4.6
7	4.2	4.1	4.3	4.3	4.4	4.6	4.6	4.6	4.7	4.7	4.6	4.6
8	4.2	4.1	4.3	4.3	4.3	4.6	4.6	4.6	4.6	4.6	4.6	4.6
9	4.2	4.1	4.3	4.3	4.3	4.6	4.6	4.5	4.8	4.6	4.6	4.6
10	4.1	4.1	4.3	4.3	4.4	4.6	4.5	4.5	4.8	4.6	4.6	4.6
11	4.1	4.1	4.3	4.3	4.5	4.6	4.5	4.6	4.8	4.6	4.6	4.6
12	4.1	4.1	4.3	4.4	4.5	4.6	4.7	4.7	4.8	4.5	4.6	4.6
13	4.1	4.1	4.3	4.4	4.5	4.6	4.6	4.5	4.8	4.5	4.6	4.6
14	4.1	4.1	4.5	4.4	4.5	4.6	4.5	4.5	4.9	4.5	4.6	4.6
15	4.1	4.1	4.4	4.3	4.5	4.6	4.5	5.0	4.7	4.5	4.6	4.6
16	4.1	4.1	4.3	4.4	4.5	4.6	4.6	4.7	4.7	4.5	4.6	4.5
17	4.1	4.1	4.4	4.3	4.7	4.6	4.6	4.7	4.8	4.5	4.6	4.5
18	4.1	4.1	4.4	4.4	4.7	4.6	4.6	4.6	4.8	4.5	4.6	4.5
19	4.1	4.2	4.3	4.4	4.7	4.6	4.6	4.6	4.8	4.5	4.5	4.5
20	4.1	4.2	4.3	4.3	4.6	4.6	4.6	4.6	4.8	4.5	4.6	4.5
21	4.1	4.1	4.3	4.4	4.6	4.6	4.6	4.6	4.8	4.5	4.6	4.5
22	4.1	4.1	4.3	4.4	4.6	4.6	4.6	4.9	4.8	4.5	4.6	4.5
23	4.1	4.1	4.4	4.4	4.6	4.6	4.6	4.9	4.7	4.5	4.6	4.5
24	4.1	4.1	4.4	4.3	4.6	4.6	4.6	4.6	4.8	4.5	4.6	4.5
25	4.1	4.1	4.3	4.3	4.6	4.6	4.5	4.6	4.7	4.5	4.6	4.5
26	4.1	4.1	4.3	4.4	4.6	4.6	4.7	4.7	4.7	4.5	4.6	4.5
27	4.1	4.1	4.4	4.4	4.6	4.6	4.7	4.8	4.7	4.5	4.6	4.5
28	4.1	4.2	4.3	4.3	4.6	4.6	4.5	4.7	4.8	4.6	4.6	4.5
29	4.1	4.3	4.3	4.4	---	4.6	4.5	4.6	4.6	4.6	4.6	4.5
30	4.1	4.3	4.4	4.4	---	4.6	4.5	4.6	4.6	4.6	4.6	4.5
31	4.1	---	4.4	4.3	---	4.6	---	4.6	---	4.6	4.6	---
TOTAL	127.7	123.7	134.5	134.6	125.9	142.7	137.2	143.6	141.8	141.1	142.8	136.4
MEAN	4.12	4.12	4.34	4.34	4.50	4.60	4.57	4.63	4.73	4.55	4.61	4.55
MAX	4.2	4.3	4.5	4.4	4.7	4.7	4.7	5.0	4.9	4.7	4.8	4.6
MIN	4.1	4.1	4.3	4.3	4.3	4.6	4.5	4.5	4.6	4.5	4.5	4.5
AC-FT	253	245	267	267	250	283	272	285	281	280	283	271

WTR YR 1991 TOTAL 1632.0 MEAN 4.47 MAX 5.0 MIN 4.1 AC-FT 3240

BELLE FOURCHE RIVER BASIN

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06430770 SPEARFISH CREEK NEAR LEAD, SD

LOCATION.--Lat 44°17'56", long 103°52'02", in NE¼NW¼ sec.22, T.4 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on right bank 0.5 mi below confluence of East Spearfish Creek, in the vicinity of Cheyenne Crossing, approximately 5 mi southwest of Lead.

DRAINAGE AREA.--63.5 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,310 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Upstream diversions out of drainage basin to Whitewood Creek basin by Homestake Mining Co. average about 12 ft³/s. Figures of daily discharge do not include diversion by Homestake Mining Co. Satellite data-collection platform at station. Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34 ft³/s, July 10, 1991, gage height, 7.53 ft; maximum gage height, 7.79 ft, Jan. 29, 1991, backwater from ice; minimum daily discharge, 7.5 ft³/s, Dec. 22, 1991.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 673 ft³/s, May 14, 1965, from contracted opening measurement of peak flow 2.0 mi downstream; minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 34 ft³/s at 1400 hours, July 10, gage height, 7.53 ft; maximum gage height, 7.79 ft, Jan. 29, backwater from ice; minimum daily discharge, 7.5 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	13	13	9.9	e12	13	14	17	26	19	15	12
2	13	13	14	11	e12	13	13	17	26	18	15	11
3	13	13	13	11	15	13	14	17	27	17	15	11
4	13	13	13	12	15	13	16	17	28	18	16	11
5	12	13	13	12	15	13	16	17	28	18	15	12
6	13	13	13	12	14	13	17	17	27	18	15	11
7	13	13	13	12	14	12	17	17	28	18	15	12
8	12	13	13	12	13	12	17	17	28	18	16	13
9	13	13	13	12	13	12	17	18	27	18	15	13
10	13	14	13	13	13	13	17	19	27	21	16	12
11	13	14	13	12	14	12	17	19	24	20	16	13
12	13	14	13	13	13	12	16	22	23	18	16	14
13	13	13	13	13	13	12	14	19	23	17	16	13
14	14	13	13	13	13	13	14	18	25	17	14	14
15	13	13	13	13	13	13	14	25	22	16	15	15
16	13	13	e12	13	13	13	14	24	22	16	14	14
17	13	13	12	13	14	13	14	25	22	18	15	13
18	13	13	e11	13	14	13	15	25	22	16	15	13
19	14	13	11	13	13	12	15	23	22	15	15	14
20	13	13	e10	13	13	12	15	23	20	16	14	14
21	13	14	e8.0	14	13	13	16	23	22	16	13	14
22	13	14	e7.5	14	13	13	16	26	21	15	13	15
23	13	14	e9.5	14	13	12	16	29	21	15	14	14
24	13	14	11	13	13	13	16	27	21	16	14	14
25	13	15	12	e13	13	13	17	26	21	17	14	14
26	13	14	11	e12	13	13	17	26	20	16	13	14
27	13	13	12	e12	13	13	18	26	20	16	14	14
28	13	13	13	e12	13	13	18	30	20	17	13	14
29	13	13	11	e11	---	13	18	28	20	18	13	14
30	13	13	e10	e10	---	13	17	27	20	17	12	14
31	13	---	12	e12	---	13	---	26	---	15	12	---
TOTAL	403	400	369.0	382.9	373	394	475	690	703	530	448	396
MEAN	13.0	13.3	11.9	12.4	13.3	12.7	15.8	22.3	23.4	17.1	14.5	13.2
MAX	14	15	14	14	15	13	18	30	28	21	16	15
MIN	12	13	7.5	9.9	12	12	13	17	20	15	12	11
AC-FT	799	793	732	759	740	781	942	1370	1390	1050	889	785

CAL YR 1990 TOTAL 4959.5 MEAN 13.6 MAX 25 MIN 7.5 AC-FT 9840
WTR YR 1991 TOTAL 5563.9 MEAN 15.2 MAX 30 MIN 7.5 AC-FT 11040

e Estimated

BELLE FOURCHE RIVER BASIN

06430800 ANNIE CREEK NEAR LEAD, SD

LOCATION.--Lat 44°19'37", long 103°53'38", in NW¼NW¼ (revised) sec.9, T.4 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on left bank 200 ft upstream from mouth and about 6 mi southwest of Lead.

DRAINAGE AREA.--3.55 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder and V-notch weir. Elevation of gage is 5,110 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12 ft³/s, May 8, 1989, gage height, 4.27 ft, and May 17, 1991, gage height, 4.75 ft; no flow Mar. 2-7, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	0945	*12	*4.75	May 23	1315	11	4.74

Minimum daily discharge, 0.03 ft³/s, Feb. 26 to Mar. 4, Mar. 7-9, 13-17.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.21	e.06	.12	.10	e.03	.37	1.3	4.1	.66	.23	.12
2	.13	.21	e.06	.13	.11	e.03	.46	1.4	3.6	.59	.22	.11
3	.10	e.15	e.07	.14	.11	e.03	.44	1.4	3.7	.62	.22	.12
4	.09	e.15	e.08	.14	.11	e.03	.48	1.3	3.4	.52	.22	.12
5	.08	e.15	e.08	.14	.11	e.06	.62	1.3	3.2	.57	.22	.12
6	.09	e.15	e.10	.11	.11	e.04	.77	1.4	3.5	.58	.22	.12
7	.10	e.12	e.15	.07	.10	e.03	.59	1.8	4.1	.59	.21	.14
8	.09	e.15	e.15	.09	.09	e.03	.42	2.2	4.7	.53	.20	.14
9	.09	e.15	e.15	.11	.09	e.03	.37	3.2	4.4	.48	.19	.15
10	.10	e.18	e.15	.14	.09	e.04	.30	5.5	4.0	1.3	.20	.14
11	.12	e.20	e.16	.14	.09	.06	.51	5.8	3.6	.85	.20	.12
12	.11	.21	.16	.14	.09	.06	.29	7.3	3.3	.58	.25	.12
13	.11	.21	.16	.14	.08	.03	.32	6.7	3.1	.56	.23	.14
14	.12	.21	.13	.14	.08	.03	.29	5.5	3.1	.56	.20	.16
15	.14	.21	.13	.14	.08	.03	.32	8.5	2.7	.54	.20	.17
16	.14	.20	.13	.14	.09	e.03	.32	10	2.3	.47	.19	.16
17	.15	.21	.14	.14	.09	.03	.49	11	2.1	.51	.18	.15
18	.16	.19	.14	.13	.07	.05	.65	10	2.0	.45	.19	.15
19	.26	.17	e.08	.12	.08	.10	.49	8.5	1.7	.41	.19	.16
20	.27	.17	e.07	.12	.07	.13	.71	6.8	1.5	.40	.18	.15
21	.24	.18	e.08	.13	.06	.16	.82	5.5	1.3	.40	.18	.15
22	.25	.17	.23	.11	.06	.12	1.0	6.5	1.3	.36	.18	.16
23	.23	.19	.10	.11	.05	.12	1.1	10	1.2	.36	.18	.18
24	.25	.19	.11	.09	.04	.14	1.3	9.8	1.2	.40	.17	.17
25	.26	.17	.17	.09	.03	.18	1.4	8.2	1.0	.33	.16	.15
26	.26	.15	.21	.09	.03	.18	1.7	7.3	.89	.31	.16	.15
27	.23	e.08	.21	e.08	.03	.17	1.6	6.5	.89	.25	.15	.14
28	.23	e.06	.19	e.07	e.03	.13	1.5	6.5	1.0	.24	.14	.15
29	.23	e.07	.24	e.08	---	.11	1.5	5.7	.83	.24	.13	.15
30	.23	e.07	.16	e.08	---	.12	1.3	5.0	.75	.27	.12	.15
31	.23	---	.09	.09	---	.21	---	4.3	---	.22	.13	---
TOTAL	5.27	4.93	4.14	3.56	2.17	2.54	22.43	176.2	74.46	15.15	5.84	4.31
MEAN	.17	.16	.13	.11	.077	.082	.75	5.68	2.48	.49	.19	.14
MAX	.27	.21	.24	.14	.11	.21	1.7	11	4.7	1.3	.25	.18
MIN	.08	.06	.06	.07	.03	.03	.29	1.3	.75	.22	.12	.11
AC-FT	10	9.8	8.2	7.1	4.3	5.0	44	349	148	30	12	8.5

CAL YR 1990 TOTAL 313.43 MEAN .86 MAX 7.8 MIN .06 AC-FT 622
WTR YR 1991 TOTAL 321.00 MEAN .88 MAX 11 MIN .03 AC-FT 637

e Estimated

BELLE FOURCHE RIVER BASIN

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06430850 LITTLE SPEARFISH CREEK NEAR LEAD, SD

LOCATION.--Lat 44°20'58", long 103°56'08", in NE¼NW¼SE¼ sec.36, T.5 N., R.1 E., Lawrence County, Hydrologic Unit 10120203, on left bank 0.3 mi upstream from Savoy, 0.4 mi upstream from mouth, 0.6 mi downstream from Roughlock Falls, and 13.6 mi northwest of Lead.

DRAINAGE AREA.--25.8 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,020 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18 ft³/s, May 15-16, 1991; minimum daily discharge, 11 ft³/s on many days in 1990.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 18 ft³/s, May 15-16; minimum daily discharge, 11 ft³/s on many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	13	12	12	11	12	13	14	16	15	13	12
2	13	13	12	12	11	12	13	13	15	14	13	12
3	13	13	12	12	11	12	13	13	16	14	13	12
4	13	13	12	12	11	12	13	13	16	15	13	12
5	13	13	12	13	11	12	13	14	16	14	13	12
6	13	13	12	12	11	12	14	14	16	14	13	12
7	13	12	12	13	11	12	14	14	16	14	13	12
8	14	12	12	12	11	12	14	14	16	14	13	12
9	14	12	12	12	11	12	14	15	16	14	13	12
10	14	13	12	12	11	12	14	15	15	15	13	12
11	14	13	12	12	11	12	14	15	15	15	13	12
12	14	13	13	12	11	12	14	15	15	14	13	12
13	14	13	12	12	11	12	14	15	15	14	13	12
14	14	13	12	11	11	12	13	15	15	14	13	12
15	14	12	12	11	11	12	13	18	15	14	13	12
16	14	12	12	12	11	12	13	18	15	14	13	12
17	14	12	12	11	11	12	13	17	15	14	13	12
18	14	12	12	11	11	12	13	17	15	14	13	12
19	14	12	12	12	11	12	13	16	15	14	13	12
20	14	12	12	11	11	12	13	16	15	14	13	12
21	14	12	12	11	11	12	13	16	15	13	13	12
22	14	12	12	11	11	12	13	17	15	13	13	12
23	14	12	12	11	11	13	13	17	15	13	13	12
24	14	12	13	11	11	12	14	16	15	13	13	12
25	14	12	13	11	11	13	14	16	15	13	13	12
26	13	12	13	11	11	13	14	16	15	13	13	12
27	13	11	13	11	12	13	15	16	15	13	13	12
28	13	11	13	11	12	12	15	16	15	13	13	12
29	13	11	12	11	---	12	14	16	15	13	13	12
30	13	12	12	11	---	12	14	16	15	13	13	12
31	13	---	13	11	---	13	---	16	---	13	13	---
TOTAL	421	368	379	358	310	377	407	479	458	427	403	360
MEAN	13.6	12.3	12.2	11.5	11.1	12.2	13.6	15.5	15.3	13.8	13.0	12.0
MAX	14	13	13	13	12	13	15	18	16	15	13	12
MIN	13	11	12	11	11	12	13	13	15	13	13	12
AC-FT	835	730	752	710	615	748	807	950	908	847	799	714

CAL YR 1990 TOTAL 4773 MEAN 13.1 MAX 15 MIN 11 AC-FT 9470
WTR YR 1991 TOTAL 4747 MEAN 13.0 MAX 18 MIN 11 AC-FT 9420

BELLE FOURCHE RIVER BASIN

06430898 SQUAW CREEK NEAR SPEARFISH, SD

LOCATION.--Lat 44°24'04", long 103°53'35", in NE¼NE¼ sec.17, T.5 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on right bank 200 ft upstream from mouth and 8.0 mi south of Spearfish.

DRAINAGE AREA.--6.95 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41 ft³/s, May 7, 1989, gage height, 4.81 ft; minimum daily discharge, 0.20 ft³/s, Dec. 28, 29, 1988, Jan. 2, 3, 8-10, Feb. 4, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	1500	*35	*4.75	No other peak greater than base discharge.			

Minimum daily discharge, 0.28 ft³/s, many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	.35	e.35	.43	.31	.28	1.2	4.0	7.8	2.0	.52	.28
2	.35	.42	e.35	.43	.33	.28	1.8	4.0	7.0	1.8	.51	.29
3	.34	.36	e.35	.41	.31	.28	2.0	4.0	7.3	1.8	.47	.28
4	.29	.35	e.35	.39	.31	.34	2.1	3.9	7.2	1.7	.44	.30
5	.28	e.33	e.35	.39	.31	.66	2.6	3.7	6.4	1.6	.48	.31
6	.31	e.34	e.40	.39	.31	.45	3.3	3.6	7.8	1.5	.47	.28
7	.35	e.30	e.40	.39	.33	e.42	3.3	4.3	10	1.4	.50	.29
8	.35	e.35	e.40	.39	.35	e.40	2.5	6.8	10	1.4	.51	.36
9	.35	.39	e.40	.39	.35	e.45	2.3	11	9.7	1.9	.44	.37
10	.35	.41	e.40	.39	.35	e.40	2.1	13	8.8	2.5	.43	.31
11	.42	.45	e.50	.39	.35	e.50	2.4	12	7.7	2.0	.44	.31
12	.42	.43	e.45	.39	.35	e.48	2.4	13	6.9	1.6	.47	.50
13	.38	.43	e.45	.39	.35	e.45	2.2	11	6.0	1.4	.47	.40
14	.35	.44	e.40	.42	.32	.41	2.9	9.1	6.1	1.3	.49	.42
15	.35	.47	e.35	.43	.31	.43	1.5	16	5.3	1.2	.57	.48
16	.35	.49	e.35	.42	.31	.43	1.6	29	4.5	1.0	.55	.43
17	.46	.39	e.35	.39	.35	.43	1.7	28	4.2	1.0	.46	.39
18	.39	.39	e.35	.36	.30	.43	2.1	23	3.8	.94	.43	.37
19	.51	.39	.48	.35	.31	.55	2.2	18	3.7	.93	.41	.37
20	.50	.39	.47	.35	.31	.75	2.6	14	3.4	.86	.36	.39
21	.39	.40	.47	.35	.31	.97	3.0	11	3.2	.80	.34	.39
22	.39	e.40	.45	.35	.31	.82	3.6	13	3.0	.80	.33	.39
23	.39	.38	.43	.35	.31	.67	4.3	25	2.9	.80	.38	.39
24	.39	.39	.43	.35	.28	.78	5.1	25	2.7	.82	.38	.39
25	.39	.37	.43	.35	.28	.88	6.5	19	2.6	.74	.35	.39
26	.39	.38	.43	.35	.28	.94	8.1	15	2.3	.71	.34	.39
27	.39	.41	.43	.35	.28	.84	7.3	12	2.2	.68	.31	.35
28	.39	e.40	.43	.35	.28	.75	6.1	12	2.7	.66	.30	.35
29	.39	e.40	.39	.32	---	.66	5.2	9.8	2.2	.62	.29	.35
30	.35	e.35	.39	.31	---	.68	4.5	9.3	2.1	.62	.28	.35
31	.35	---	.42	.31	---	.81	---	8.4	---	.56	.28	---
TOTAL	11.66	11.75	12.60	11.63	8.85	17.62	98.5	390.9	159.5	37.64	13.00	10.87
MEAN	.38	.39	.41	.38	.32	.57	3.28	12.6	5.32	1.21	.42	.36
MAX	.51	.49	.50	.43	.35	.97	8.1	29	10	2.5	.57	.50
MIN	.28	.30	.35	.31	.28	.28	1.2	3.6	2.1	.56	.28	.28
AC-FT	23	23	25	23	18	35	195	775	316	75	26	22

CAL YR 1990 TOTAL 703.43 MEAN 1.93 MAX 20 MIN .28 AC-FT 1400
WTR YR 1991 TOTAL 784.52 MEAN 2.15 MAX 29 MIN .28 AC-FT 1560

e Estimated

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LOCATION.--Lat 44°24'06", long 103°53'40", in NW¼NE¼NE¼ sec.17, T.5 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on left bank immediately below confluence of Squaw Creek near Maurice and 8.0 mi south of Spearfish.

PERIOD OF RECORD.--October 1988 to current year.

REMARKS.--Records good. Upstream diversions out of drainage basin to Whitewood Creek basin by Homestake Mining Co. average about 12 ft³/s. Figures of daily discharge do not include diversion by Homestake Mining Co. Several water-quality samples were collected during the year, and the analytical results will be published in a later report. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR CURRENT YEAR--Maximum discharge, 129 ft³/s at 1630 hours, May 23, gage height, 4.28 ft; minimum daily discharge, 25 ft³/s, Dec. 20.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	36	34	38	40	38	43	48	74	45	40	34
2	36	38	34	38	39	38	44	49	71	45	40	35
3	36	37	35	36	39	39	45	50	77	43	40	34
4	36	36	37	36	38	39	45	48	89	44	42	34
5	35	37	37	36	37	40	45	48	81	44	42	34
6	35	35	36	34	37	39	49	47	85	43	42	34
7	36	32	36	40	38	39	48	50	94	43	41	33
8	35	36	36	39	36	38	47	54	88	45	41	35
9	35	37	36	39	38	38	45	70	84	45	39	34
10	35	39	36	38	38	40	45	76	78	53	40	34
11	35	39	36	38	38	39	46	78	75	52	41	34
12	36	38	36	40	36	39	46	82	68	46	41	35
13	36	37	38	41	37	38	44	76	65	45	40	34
14	37	37	44	40	36	38	43	72	68	45	38	33
15	36	36	39	39	32	38	42	97	61	43	36	34
16	37	36	38	39	39	40	44	118	59	43	37	34
17	39	36	36	39	40	40	44	118	58	44	38	34
18	37	37	41	37	40	39	44	111	57	42	39	35
19	38	36	26	39	38	39	44	103	55	40	37	37
20	39	38	25	40	39	40	45	97	53	43	35	34
21	39	39	30	42	39	43	46	88	49	42	36	36
22	39	40	34	39	39	41	46	91	48	42	36	37
23	38	40	36	37	39	41	47	120	48	41	35	35
24	37	40	41	36	39	41	49	116	48	42	36	38
25	37	40	40	32	34	42	51	106	48	42	36	38
26	37	37	39	35	39	42	57	99	48	41	35	34
27	36	36	39	42	39	41	58	90	47	42	35	35
28	36	38	38	40	38	41	55	90	48	43	34	37
29	36	37	31	30	---	40	52	84	47	42	33	36
30	35	36	35	39	---	41	50	80	47	42	33	37
31	35	---	38	40	---	42	---	76	---	41	34	---
TOTAL	1129	1116	1117	1178	1061	1233	1409	2532	1918	1353	1172	1048
MEAN	36.4	37.2	36.0	38.0	37.9	39.8	47.0	81.7	63.9	43.6	37.8	34.9
MAX	39	40	44	42	40	43	58	120	94	53	42	38
MIN	35	32	25	30	32	38	42	47	47	40	33	33
AC-FT	2240	2210	2220	2340	2100	2450	2790	5020	3800	2680	2320	2080
CAL YR 1990	TOTAL 15766											
WTR YR 1991	TOTAL 16266											
	MEAN 43.2	MEAN 44.6	MAX 94	MAX 120	MIN 25	MIN 25	AC-FT 31270	AC-FT 32260				

BELLE FOURCHE RIVER BASIN

06431500 SPEARFISH CREEK AT SPEARFISH, SD

LOCATION.--Lat 44°28'57", long 103°51'40", in SE¼NW¼ sec.15, T.6 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on right bank in city park in Spearfish, 500 ft downstream from fish hatchery and nearest tributary, and 9.8 mi upstream from mouth.

DRAINAGE AREA.--168 mi².

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

REVISED RECORDS.--WSP 1116: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 5, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Regulation by fish hatchery and by hydroelectric plant 0.5 mi upstream causes diurnal fluctuation, but since storage capacity is small, daily flows are not appreciably affected. Upstream diversions out of drainage basin to Whitewood Creek basin by the Homestake Mining Co. average about 12 ft³/s. Figures of daily discharge do not include diversion by Homestake Mining Co. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--45 years, 51.5 ft³/s, 37,310 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,240 ft³/s, May 15, 1965, gage height, 10.53 ft, from rating curve extended above 520 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 10.54 ft, June 15, 1976; no flow for part of Oct. 18, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 5, 1904, reached a stage of 7.00 ft, site and datum of former gage near Spearfish, 1.0 mi upstream, drainage area, 157 mi²; discharge about 5,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 106 ft³/s at 2330 hours, May 22, gage height, 6.69 ft; minimum daily discharge, 18 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	36	33	33	34	36	39	46	76	45	33	32
2	34	36	33	32	34	36	39	46	74	43	35	32
3	34	36	34	30	34	38	42	46	73	44	35	32
4	34	36	36	29	34	38	42	46	91	43	35	32
5	34	36	37	29	33	39	42	45	83	47	35	32
6	34	35	35	26	33	39	45	43	84	44	34	32
7	33	32	35	29	33	37	45	43	93	44	33	33
8	34	34	35	29	33	37	44	46	91	39	34	33
9	35	34	35	29	34	34	43	55	87	41	33	32
10	35	35	35	29	34	36	44	60	84	45	33	32
11	35	36	35	30	34	37	43	60	79	49	36	33
12	35	38	35	32	32	34	42	66	72	44	35	33
13	35	36	34	32	34	34	42	60	68	44	36	33
14	35	36	e34	32	34	34	41	61	66	43	33	33
15	35	36	e34	31	29	34	41	75	65	41	32	34
16	35	37	e34	30	37	34	41	86	61	39	32	34
17	36	38	e30	32	35	34	41	91	59	40	33	34
18	35	38	e25	32	35	34	41	92	52	38	34	36
19	35	38	e22	31	35	35	41	85	50	35	32	37
20	35	38	e20	30	36	35	41	83	48	39	31	35
21	35	38	e20	32	36	36	43	78	46	38	31	35
22	35	38	e18	33	36	36	45	80	44	38	31	38
23	35	38	e20	33	36	36	45	101	45	38	32	35
24	35	38	e25	31	36	36	45	103	41	37	33	35
25	35	38	e28	28	33	36	49	99	39	38	32	38
26	35	38	e28	29	35	36	48	89	45	38	32	37
27	33	37	e28	33	36	36	50	86	44	38	32	36
28	34	36	e28	34	35	37	49	87	46	41	33	36
29	34	36	e26	e30	---	34	48	82	47	41	31	36
30	34	36	e25	33	---	35	46	79	46	40	32	38
31	35	---	e34	33	---	36	---	77	---	38	31	---
TOTAL	1072	1094	931	956	960	1109	1307	2196	1899	1272	1024	1028
MEAN	34.6	36.5	30.0	30.8	34.3	35.8	43.6	70.8	63.3	41.0	33.0	34.3
MAX	36	38	37	34	37	39	50	103	93	49	36	38
MIN	33	32	18	26	29	34	39	43	39	35	31	32
AC-FT	2130	2170	1850	1900	1900	2200	2590	4360	3770	2520	2030	2040

CAL YR 1990 TOTAL 14949 MEAN 41.0 MAX 82 MIN 18 AC-FT 29650
WTR YR 1991 TOTAL 14848 MEAN 40.7 MAX 103 MIN 18 AC-FT 29450

e Estimated

BELLE FOURCHE RIVER BASIN

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06432020 SPEARFISH CREEK BELOW SPEARFISH, SD

LOCATION.--Lat 44°34'48", long 103°53'37", in SW¼NE¼SE¼ sec.8, T.7 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on right bank 2.3 mi above mouth and 5.0 mi north of Spearfish.

DRAINAGE AREA.--204 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,280 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow is regulated by Homestake Mining Co. power plant, located 10.0 mi upstream. Diversions for irrigation of about 3,200 acres above station. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 163 ft³/s, June 6, 1991, gage height, 5.31 ft; maximum gage height, 5.86 ft, Feb. 9, 1989, backwater from ice; minimum daily discharge, 1.0 ft³/s, July 3, 4, 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 15, 1965, reached stage of about 9.0 ft, according to local residents. Flood of June 5, 1904, probably reached a higher stage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 163 ft³/s at 1815 hours, June 6, gage height, 5.31 ft; minimum daily discharge, 1.6 ft³/s, July 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	45	42	16	51	43	47	56	87	20	2.2	9.1
2	29	46	43	14	50	45	46	54	81	19	2.4	8.8
3	29	45	42	e13	48	44	48	56	87	19	2.6	8.6
4	26	46	48	e12	49	45	48	55	103	18	2.8	9.1
5	25	47	47	e13	47	48	49	54	95	17	2.9	10
6	29	46	44	e13	46	45	51	51	101	14	6.6	15
7	32	43	45	e13	47	43	51	50	110	15	7.3	16
8	33	45	44	14	45	44	53	53	102	25	12	17
9	34	46	45	15	44	43	53	58	99	14	9.4	21
10	37	48	44	20	45	45	50	66	95	16	9.3	22
11	37	48	43	17	43	45	52	65	89	22	11	23
12	38	49	43	20	41	45	55	70	82	14	12	25
13	38	48	40	27	41	42	52	65	77	12	10	28
14	41	50	e35	31	42	43	49	64	83	11	5.6	29
15	40	49	e35	34	36	43	50	82	77	9.5	5.0	31
16	39	49	e35	33	48	43	49	95	72	7.4	4.9	36
17	44	46	e35	37	47	44	48	102	69	7.3	3.3	37
18	41	46	e35	39	46	44	49	104	65	6.0	5.2	36
19	40	47	e30	41	44	44	50	96	62	3.9	9.8	40
20	40	47	e25	40	48	43	49	96	57	2.2	9.5	38
21	40	48	e25	41	44	46	49	90	49	2.4	8.0	40
22	39	48	e25	e38	44	48	51	99	44	2.4	7.6	47
23	36	50	e25	e37	42	45	51	122	37	2.5	8.3	45
24	36	48	e20	e34	43	44	52	118	37	2.4	7.6	49
25	37	48	20	e34	39	46	56	115	33	3.0	8.0	45
26	38	48	19	e35	43	46	63	107	32	3.2	8.1	43
27	37	46	17	e39	45	46	67	110	25	3.5	9.7	42
28	43	46	e15	e35	43	46	61	110	24	2.8	11	35
29	45	45	e15	e30	---	43	58	102	23	1.9	10	35
30	45	45	e14	38	---	43	56	102	19	1.6	9.3	35
31	44	---	e14	44	---	46	---	94	---	2.0	8.2	---
TOTAL	1142	1408	1009	867	1251	1380	1563	2561	2016	300.0	229.6	875.6
MEAN	36.8	46.9	32.5	28.0	44.7	44.5	52.1	82.6	67.2	9.68	7.41	29.2
MAX	45	50	48	44	51	48	67	122	110	25	12	49
MIN	25	43	14	12	36	42	46	50	19	1.6	2.2	8.6
AC-FT	2270	2790	2000	1720	2480	2740	3100	5080	4000	595	455	1740

CAL YR 1990 TOTAL 13636.7 MEAN 37.4 MAX 82 MIN 1.0 AC-FT 27050
WTR YR 1991 TOTAL 14602.2 MEAN 40.0 MAX 122 MIN 1.6 AC-FT 28960

e Estimated

BELLE FOURCHE RIVER BASIN

06433000 REDWATER RIVER ABOVE BELLE FOURCHE, SD

LOCATION.--Lat 44°40'02", long 103°50'20", in NW¼SE¼ sec.11, T.8 N., R.2 E., Butte County, Hydrologic Unit 10120203, on right bank at upstream side of bridge on U.S. Highway 212 in Belle Fourche, 0.5 mi upstream from Hay Creek, and 0.9 mi upstream from mouth.

DRAINAGE AREA.--920 mi².

PERIOD OF RECORD.--November 1945 to current year. Records for water year 1946 incomplete, yearly discharge published in WSP 1309. Prior to October 1960, published as Redwater Creek above Belle Fourche.

REVISED RECORDS.--WSP 1389: 1954 (maximum gage height only).

GAGE.--Water-stage recorder. Elevation of gage is 3,000 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 13, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 13,000 acres upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 132 ft³/s, 95,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s, June 16, 1962, gage height, 11.69 ft, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1960, 1968-69, 1981-82, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 8	0200	*310	*3.12				

Minimum daily discharge, 2.4 ft³/s, July 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e70	130	127	e85	e101	130	118	132	82	31	2.8	4.7
2	e80	132	130	e90	e103	125	118	130	77	25	3.0	4.9
3	e70	137	e129	e90	104	134	120	132	81	18	2.6	5.4
4	e60	134	e128	e90	103	131	119	126	115	12	2.6	6.1
5	e60	136	128	e90	112	133	121	121	121	11	2.6	6.5
6	e65	e136	e128	e88	100	135	122	115	141	10	2.9	6.4
7	e75	136	e129	e85	97	129	124	112	219	8.8	3.4	7.1
8	e80	135	e128	e85	96	128	133	112	237	8.1	3.1	9.3
9	e80	138	e127	e92	96	128	128	111	197	5.9	3.2	22
10	e85	135	e126	e98	100	128	126	118	173	5.2	3.1	37
11	e95	133	e127	e102	104	129	125	109	161	4.4	3.2	36
12	e98	131	e128	e110	111	129	132	107	146	4.1	3.6	47
13	e98	133	e126	e120	112	129	134	96	143	3.6	3.7	66
14	e105	134	e126	e125	110	129	127	86	150	3.3	3.4	70
15	e105	132	e125	e128	106	126	129	104	148	3.1	3.5	68
16	107	133	e125	e125	112	125	131	121	137	2.9	3.7	72
17	114	132	e120	e122	118	127	127	124	128	2.8	3.6	80
18	111	133	e120	e120	120	126	125	117	120	2.7	3.5	82
19	112	132	e115	e118	115	122	127	104	120	2.6	3.3	86
20	108	131	e115	e113	119	121	124	97	114	2.6	3.5	90
21	109	127	e110	e110	116	126	123	93	104	2.6	3.5	87
22	106	125	e110	e110	112	129	124	92	101	2.4	3.5	88
23	106	128	e108	e105	116	124	124	159	94	2.6	3.6	83
24	105	126	e108	e105	120	122	126	127	84	2.8	3.9	80
25	108	125	e105	e105	121	122	129	103	79	2.7	3.9	78
26	112	126	e105	105	125	123	142	93	70	2.8	4.0	76
27	112	e130	e100	e103	128	121	149	99	57	3.0	4.0	79
28	116	130	e95	e101	129	118	142	106	41	3.0	4.1	75
29	127	131	e88	e100	---	115	137	103	39	2.8	4.7	76
30	130	129	e80	e100	---	116	135	93	33	2.8	4.9	75
31	132	---	e80	e101	---	118	---	86	---	2.7	4.7	---
TOTAL	3041	3950	3596	3221	3106	3898	3841	3428	3512	197.3	109.1	1603.4
MEAN	98.1	132	116	104	111	126	128	111	117	6.36	3.52	53.4
MAX	132	138	130	128	129	135	149	159	237	31	4.9	90
MIN	60	125	80	85	96	115	118	86	33	2.4	2.6	4.7
AC-FT	6030	7830	7130	6390	6160	7730	7620	6800	6970	391	216	3180

CAL YR 1990 TOTAL 33391.1 MEAN 91.5 MAX 198 MIN 2.3 AC-FT 66230
WTR YR 1991 TOTAL 33502.8 MEAN 91.8 MAX 237 MIN 2.4 AC-FT 66450

e Estimated

BELLE FOURCHE RIVER BASIN

135

06433500 HAY CREEK AT BELLE FOURCHE, SD

LOCATION.--Lat 44°40'01", long 103°50'46", in NW¼SW¼ sec.11, T.8 N., R.2 E., Butte County, Hydrologic Unit 10120203, on right bank at intersection of Tenth Avenue and Jackson Street in Belle Fourche, 0.5 mi upstream from mouth.

DRAINAGE AREA.--121 mi².

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,005.18 ft above National Geodetic Vertical Datum of 1929 (City of Belle Fourche bench mark). Prior to Dec. 8, 1953, nonrecording gage at site 300 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Minor diversion to the stream at times from city reservoir overflow, which enters stream upstream from gage. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--38 years, 1.42 ft³/s, 1,030 acre-ft/yr; median of yearly mean discharges, 0.82 ft³/s, 590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 930 ft³/s, June 19, 1972, gage height, 9.15 ft; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 20	0230	*27	*4.73				

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.02	e.03	.00	e.01	e.03	.02	.04	.68	.02	.00	.00
2	.00	.04	e.02	.00	e.02	e.02	.04	.04	.35	.01	.08	.00
3	.00	.04	e.02	.00	e.03	e.02	.04	.40	4.4	.01	.00	.00
4	.00	.04	e.03	.00	e.05	e.03	.04	.11	4.8	.01	.00	.27
5	.00	.16	.03	.00	e.05	e.03	.04	.06	11	.01	.00	.17
6	.02	.05	.04	.00	e.05	e.06	.04	.07	5.7	.01	.68	.95
7	.01	.04	.04	.00	e.06	e.06	.30	.04	3.3	.06	.23	.05
8	.01	.04	.04	.00	e.07	.06	.34	.04	2.1	.01	.00	.00
9	.01	.11	.04	.00	e.07	.06	.56	.03	1.4	.01	.00	.00
10	.01	.17	.04	.00	e.07	.06	.03	.02	.91	.03	.00	.00
11	.11	1.1	.04	.00	e.07	.07	.49	.03	.62	.02	.00	.02
12	.03	1.1	.03	.00	e.07	.09	1.6	.09	.34	.01	.00	3.0
13	.02	1.1	e.02	e.00	e.07	.06	1.2	.01	.83	.01	.00	.09
14	.02	.18	e.02	e.00	e.05	.05	.61	.00	6.8	.01	.00	.01
15	.03	.04	e.02	e.00	e.04	.05	.63	1.6	3.4	.00	.01	.00
16	.02	.01	e.01	e.00	e.05	.05	1.1	.26	3.4	.00	.01	.00
17	.14	.01	e.01	e.00	e.07	.04	.91	.23	2.6	.00	.00	.00
18	.02	.01	e.01	e.00	e.05	.04	.62	.07	1.6	.00	.00	.39
19	.02	.01	e.00	e.00	e.05	.04	.34	.07	5.6	.00	.00	.07
20	.01	.01	e.00	e.00	e.05	.50	.15	.09	18	.00	.00	.01
21	.02	.01	e.00	e.00	e.04	.18	.10	.04	5.6	.00	.00	.00
22	.02	.01	e.00	e.00	e.04	.33	.06	3.0	2.8	.00	.00	.00
23	.02	.02	e.00	e.00	e.03	.09	.04	8.4	1.5	.00	.00	.01
24	.01	.02	e.00	e.00	e.03	.02	.03	7.8	.99	.00	.40	.00
25	.02	.02	e.00	e.00	e.03	.04	.02	2.5	.75	.00	.00	e.36
26	.02	.02	e.00	e.00	.03	.14	2.0	1.5	.47	.00	.00	e.07
27	.02	e.01	e.00	.00	.03	.16	.48	2.5	.21	.00	.00	e.06
28	.03	e.02	e.00	.00	e.03	.06	.13	4.0	.60	.00	.00	e.05
29	.03	e.02	e.00	.00	---	.04	.09	2.2	.10	.00	.00	e.04
30	.02	.03	e.00	.00	---	.02	.08	2.3	.05	.00	.00	e.04
31	.03	---	.00	.00	---	.02	---	1.5	---	.00	.00	---
TOTAL	0.72	4.46	0.49	0.00	1.31	2.52	12.13	39.04	90.90	0.23	1.41	5.66
MEAN	.023	.15	.016	.000	.047	.081	.40	1.26	3.03	.007	.045	.19
MAX	.14	1.1	.04	.00	.07	.50	2.0	8.4	18	.06	.68	3.0
MIN	.00	.01	.00	.00	.01	.02	.02	.00	.05	.00	.00	.00
AC-FT	1.4	8.8	1.0	.00	2.6	5.0	24	77	180	.5	2.8	11

CAL YR 1990 TOTAL 184.67 MEAN .51 MAX 28 MIN .00 AC-FT 366
WTR YR 1991 TOTAL 158.87 MEAN .44 MAX 18 MIN .00 AC-FT 315

e Estimated

BELLE FOURCHE RIVER BASIN

06434500 INLET CANAL NEAR BELLE FOURCHE, SD

LOCATION.--Lat 44°42'14", long 103°49'23", in NE¼NW¼ sec.36, T.9 N., R.2 E., Butte County, Hydrologic Unit 10120202, on right bank 0.5 mi downstream from Crow Creek, 0.9 mi downstream from diversion dam on Belle Fourche River, and 2.5 mi northeast of Belle Fourche.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year. Monthly diversions from Inlet Canal between station and reservoir for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,985.22 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 10, 1946, nonrecording gage, and Dec. 10, 1946, to Nov. 26, 1949, water-stage recorder at site 0.8 mi upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Records show actual diversions to Belle Fourche Reservoir (see station 06435000), from Belle Fourche River and Crow Creek, except for 6,670 acre-ft which was diverted for irrigation from the canal between the station and reservoir.

COOPERATION.--Records of diversion from the canal provided by the Belle Fourche Irrigation District.

AVERAGE DISCHARGE.--46 years, 164 ft³/s, 118,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,410 ft³/s, May 16, 1982; no flow for some days in 1946-49, 1963, 1966, 1971-76, 1978-79, 1982-84, 1987-88, 1990.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	.00	117	e70.0	e95.0	136	126	181	375	43	76	38
2	87	.00	118	e70.0	e100	131	127	171	341	38	71	29
3	82	20	128	e73.0	e110	137	127	183	321	29	75	28
4	77	45	136	e75.0	e115	136	127	182	352	22	81	38
5	72	50	124	e80.0	e118	141	128	173	372	20	80	55
6	76	98	126	e80.0	e121	140	128	163	302	19	85	60
7	86	131	128	e85.0	122	138	132	157	320	36	83	54
8	88	133	128	e90.0	120	141	139	161	334	46	76	53
9	90	133	126	e97.0	120	138	147	153	443	41	76	73
10	93	131	125	e100	122	142	147	157	303	37	79	115
11	102	131	126	e105	126	145	147	156	261	36	82	77
12	103	130	127	e110	127	150	154	164	224	86	74	85
13	105	131	123	e115	130	143	157	210	195	84	61	102
14	109	143	e120	e122	132	143	156	236	200	85	61	102
15	110	134	e118	e122	126	141	156	582	187	88	60	70
16	111	123	e115	e120	134	141	170	623	175	76	63	74
17	120	123	e110	e120	137	141	211	435	157	63	70	102
18	120	123	e108	e115	135	139	167	471	153	53	58	105
19	120	127	e80	e115	131	138	164	433	274	56	52	99
20	117	130	e70	e110	135	136	154	340	203	49	62	99
21	116	126	e70	e105	138	139	151	304	163	41	57	102
22	116	124	e65	e103	145	144	154	270	198	37	66	100
23	113	124	e70	e100	138	142	150	489	183	35	54	92
24	119	123	e80	e100	135	138	147	426	157	44	60	93
25	120	124	e92.0	e95.0	133	135	150	326	120	67	64	88
26	122	123	e90.0	e90.0	131	134	180	355	99	82	64	79
27	121	131	e90.0	e88.0	133	132	220	421	82	83	62	100
28	26	133	e80.0	e83.0	134	129	278	396	62	85	58	82
29	.00	130	e70.0	e80.0	---	127	229	515	67	79	58	80
30	.00	119	e65.0	e80.0	---	126	199	345	50	77	59	79
31	.00	---	e68.0	e90.0	---	126	---	367	---	73	61	---
TOTAL	2799.00	3293.00	3193.0	2988.0	3543.0	4269	4822	9545	6673	1710	2088	2353
MEAN	90.3	110	103	96.4	127	138	161	308	222	55.2	67.4	78.4
MAX	122	143	136	122	145	150	278	623	443	88	85	115
MIN	.00	.00	65	70	95	126	126	153	50	19	52	28
AC-FT	5550	6530	6330	5930	7030	8470	9560	18930	13240	3390	4140	4670

CAL YR 1990 TOTAL 48943.00 MEAN 134 MAX 1030 MIN .00 AC-FT 97080
WTR YR 1991 TOTAL 47276.00 MEAN 130 MAX 623 MIN .00 AC-FT 93770

e Estimated

BELLE FOURCHE RIVER BASIN

137

06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURE: October 1968 to current year.

REMARKS.--Specific conductance and temperature data collected once daily by observer.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum observed daily, 3,100 microsiemens, Feb. 13, 1969; minimum daily, 335 microsiemens, Feb. 12, 1971.

WATER TEMPERATURE: Maximum observed daily, 30.0°C, Aug. 28-30, 1987, June 19, 1988, June 27, 1990; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed daily (more than 20 percent missing record), 1,950 microsiemens, July 10; minimum observed daily (more than 20 percent missing record), 930 microsiemens, June 10.

WATER TEMPERATURE: Maximum observed daily (more than 20 percent missing record), 27.5°C, July 15; minimum observed daily (more than 20 percent missing record), 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)
OCT											
10...	1630	92	1350	8.4	21.5	11.0	740	210	52	28	8
NOV											
19...	0900	125	1270	8.3	0.0	4.0	760	220	52	23	6
JAN											
03...	1415	73	1440	8.3	-11.0	0.0	860	260	51	12	3
MAR											
08...	0945	134	1310	8.4	1.5	3.0	720	210	48	24	7
APR											
09...	1215	147	1300	8.7	8.5	9.5	730	210	49	31	8
MAY											
07...	1130	156	1270	8.5	17.0	11.0	660	190	45	37	11
29...	0900	570	1060	8.3	16.0	16.0	410	110	32	75	28
JUL											
08...	1430	48	1820	8.2	31.5	25.0	890	240	70	110	21
AUG											
12...	1230	76	1420	8.4	29.0	24.0	460	110	44	150	41

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L AC-FT) (70301)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)
OCT											
10...	0.4	3.6	149	580	8.3	0.10	9.8	985	1.34	245	--
NOV											
19...	0.4	2.8	199	630	3.9	0.20	8.9	1060	1.44	358	0.010
JAN											
03...	0.2	2.7	232	640	7.0	0.50	12	1130	1.53	222	<0.010
MAR											
08...	0.4	3.0	198	--	--	--	8.0	--	--	--	0.020
APR											
09...	0.5	3.1	191	580	5.4	0.40	8.3	1000	1.36	398	<0.010
MAY											
07...	0.6	3.4	128	640	3.1	0.30	6.6	1000	1.36	422	0.020
29...	2	6.9	105	490	4.0	0.50	7.8	793	1.08	1220	--
JUL											
08...	2	11	147	980	11	0.50	8.0	1520	2.07	195	0.010
AUG											
12...	3	10	172	620	32	0.60	4.7	1070	1.46	222	<0.010

BELLE FOURCHE RIVER BASIN

06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

WATER QUALITY DATA. WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
OCT 10...	<0.010	--	--	0.200	--	<0.010	--	--	--	0.060	0.020
NOV 19...	<0.010	0.290	0.300	0.300	0.040	0.040	0.05	<0.20	--	0.040	0.020
JAN 03...	<0.010	--	0.500	0.600	0.070	0.090	0.12	0.30	3.5	0.030	0.030
MAR 08...	<0.010	0.270	0.290	0.290	0.020	0.030	0.04	0.30	2.6	0.030	0.020
APR 09...	--	--	0.210	--	0.010	--	--	--	--	0.060	0.030
MAY 07...	--	0.048	0.068	--	0.010	--	--	--	--	0.050	0.020
29...	<0.010	--	--	0.480	--	0.080	0.10	--	--	3.30	3.20
JUL 08...	--	--	<0.050	--	<0.010	--	--	--	--	0.070	0.010
AUG 12...	--	--	<0.050	--	<0.010	--	--	--	--	0.280	0.030

DATE	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 10...	--	<0.010	1	90	<1.0	1	<1	4	<0.010	6	2
NOV 19...	<0.010	<0.010	--	90	--	--	--	--	--	--	--
JAN 03...	0.030	0.030	--	80	--	--	--	--	--	--	--
MAR 08...	0.030	0.030	--	80	--	--	--	--	--	--	--
APR 09...	0.030	--	--	80	--	--	--	--	--	--	--
MAY 07...	<0.010	--	--	90	--	--	--	--	--	--	--
29...	--	0.040	1	170	<1.0	<1	<1	10	<0.010	6	1
JUL 08...	0.040	--	--	290	--	--	--	--	--	--	--
AUG 12...	0.030	--	--	200	--	--	--	--	--	--	--

[illegible]

BELLE FOURCHE RIVER BASIN

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06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	1020	1290	1330	---	1460	1460	---
2	---	---	---	---	---	---	---	---	---	1530	1460	1500
3	---	---	1240	---	---	---	1270	1270	1000	1590	---	1520
4	---	---	1150	---	1360	1170	---	---	1030	1660	1470	1530
5	---	1210	---	---	---	---	1280	---	1030	1720	1440	1540
6	---	1150	---	---	1150	1200	---	1250	1080	---	1430	1550
7	---	1210	---	1320	---	---	---	---	1030	1880	1430	1550
8	---	1230	---	---	1150	---	1260	1230	---	1870	1430	1560
9	---	1160	---	---	---	---	---	---	---	1840	1450	1560
10	---	---	1170	---	---	---	1310	1200	930	1950	1460	---
11	---	---	990	---	---	1300	1300	---	1020	1910	---	1420
12	---	---	---	---	---	---	---	1200	---	1750	1470	1430
13	---	1200	---	---	---	1260	---	---	1110	---	1480	1430
14	---	1240	---	1240	---	---	1370	1250	1150	1590	1480	1420
15	---	1260	---	---	---	1300	---	1030	---	1520	1490	1430
16	---	1250	---	1250	---	---	1410	---	---	---	1470	1410
17	---	---	1140	---	---	---	---	---	1250	1470	1490	1400
18	---	---	---	990	---	1280	1360	---	1300	1390	1490	1350
19	---	---	---	---	1210	---	1340	---	950	1400	1510	1380
20	---	---	---	---	---	1300	---	---	1140	1420	1500	1360
21	---	1260	---	1240	1270	---	---	---	1280	---	1500	1360
22	1190	---	---	---	---	1260	1370	1040	1390	1450	1500	---
23	---	---	---	---	---	---	---	990	---	1450	1500	1370
24	1310	---	1370	1090	---	---	1330	1140	1340	1480	1490	1370
25	---	---	---	---	1310	1290	---	---	1180	1460	---	1380
26	---	---	---	---	---	---	1300	---	1250	1460	1490	1360
27	---	---	---	---	1040	1280	---	---	1290	1450	1500	---
28	1430	---	---	1360	---	---	---	970	1240	1410	1500	---
29	---	---	---	---	---	1250	1310	1090	1310	1440	1500	---
30	---	---	---	---	---	---	---	---	1360	1440	1500	---
31	---	---	1390	---	---	---	---	1140	---	1460	1500	---

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	1.0	10.5	5.0	---	19.0	23.5	---
2	---	3.0	---	---	---	---	---	---	---	23.0	20.0	21.5
3	---	---	.0	---	---	---	10.0	6.0	19.5	21.0	---	19.5
4	---	---	.0	---	.0	4.5	---	---	18.0	25.0	22.0	23.0
5	---	3.0	---	---	---	---	10.5	---	16.0	26.0	25.5	18.0
6	---	5.0	---	---	4.0	2.5	---	9.0	20.5	---	21.5	19.5
7	---	4.0	---	.0	---	---	---	---	17.5	23.0	21.0	22.0
8	---	3.0	---	---	3.0	---	8.0	11.0	---	23.0	26.0	20.0
9	---	1.0	---	---	---	---	---	---	---	22.0	21.0	18.5
10	---	---	2.0	---	---	---	7.5	14.5	19.5	21.0	23.0	---
11	---	---	2.0	---	---	4.0	7.0	---	20.0	19.5	---	20.0
12	---	---	---	---	---	---	---	15.0	---	20.0	23.0	19.5
13	---	6.0	---	---	---	3.5	---	---	20.0	---	26.0	17.5
14	---	6.0	---	.0	---	---	4.5	14.5	21.0	27.0	24.0	16.0
15	---	6.0	---	---	---	3.0	---	16.0	---	27.5	23.5	11.5
16	---	4.0	---	.0	---	---	7.5	---	---	---	22.5	10.5
17	---	---	.0	---	---	---	---	---	19.5	26.5	20.0	12.0
18	---	---	---	.0	---	6.0	8.5	---	20.0	23.0	21.0	8.0
19	---	---	---	---	.0	---	7.0	---	17.0	24.0	25.5	11.0
20	---	---	---	---	---	8.0	---	---	25.0	23.0	22.0	8.5
21	---	5.0	---	.0	---	---	---	---	20.0	---	26.0	9.0
22	---	---	---	---	---	6.5	10.5	18.5	20.0	24.5	24.0	---
23	---	---	---	---	---	---	---	15.0	---	22.0	21.0	7.5
24	---	---	.0	.0	---	---	11.5	17.0	20.5	20.0	20.5	11.0
25	---	---	---	---	---	9.0	---	---	27.0	19.0	---	11.0
26	---	---	---	---	---	---	10.5	---	20.0	21.5	21.5	---
27	---	---	---	---	2.0	4.0	---	---	20.0	20.5	24.5	---
28	---	---	---	.0	---	---	---	14.5	20.3	21.0	24.5	---
29	---	---	---	---	---	4.5	5.5	15.5	20.1	24.0	23.0	---
30	---	---	---	---	---	---	---	---	20.0	21.5	23.5	---
31	---	---	.0	---	---	---	---	18.5	---	21.5	26.0	---

BELLE FOURCHE RIVER BASIN

06435000 BELLE FOURCHE RESERVOIR NEAR BELLE FOURCHE, SD

LOCATION.--Lat 44°44'12", long 103°40'27", in SW¼SE¼ sec.18, T.9 N., R.4 E., Butte County, Hydrologic Unit 10120202, at dam on Owl Creek, 9.8 mi northeast of Belle Fourche.

PERIOD OF RECORD.--January 1912 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929, adjustment of 1912. Prior to June 6, 1967, nonrecording gage at present site and datum.

REMARKS.--Offstream reservoir formed by earthfill dam. Storage began in May 1910; dam completed in April 1911. Conservation capacity, 185,277 acre-ft (1949 survey), between elevations 2,927.0 ft (lowest outlet) and 2,975.0 ft. Dead storage below elevation 2,927.0 ft, 6,800 acre-ft. Figures given herein represent contents above elevation 2,927.0 ft. Water diverted from Belle Fourche River through Inlet Canal (see station 06434500) is stored in Belle Fourche Reservoir for irrigation.

COOPERATION.--Records of elevation and contents provided by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 197,400 acre-ft, Apr. 30, 1919, May 20, 1920, elevation, 2,974.9 ft; minimum observed, -3,000 acre-ft, Sept. 30, 1936, water was lowered below dead storage level of 2,927.0 ft by opening holes in crib walls.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 106,100 acre-ft, June 30, elevation, 2,963.84 ft; minimum, 21,400 acre-ft, Sept. 30, elevation, 2,942.48 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,943.53	23,500	-
Oct. 31	2,946.23	29,800	+6,300
Nov. 30	2,948.86	37,400	+7,600
Dec. 31	2,951.12	44,900	+7,500
CAL YR 1990	-	-	-3,700
Jan. 31	2,952.99	51,900	+7,000
Feb. 28	2,954.84	59,600	+7,700
Mar. 31	2,956.96	69,200	+9,600
Apr. 30	2,959.43	81,500	+12,300
May 31	2,963.23	102,500	+21,000
June 30	2,963.84	106,100	+3,600
July 31	2,956.00	64,700	-41,400
Aug. 31	2,945.53	28,200	-36,500
Sept. 30	2,942.48	21,400	-6,800
WTR YR 1991	-	-	-2,100

BELLE FOURCHE RIVER BASIN

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06436000 BELLE FOURCHE RIVER NEAR FRUITDALE, SD

LOCATION.--Lat 44°41'27", long 103°44'14", in NW¼NE¼ sec.3, T.8 N., R.3 E., Butte County, Hydrologic Unit 10120202, on left bank near downstream end of bridge on U.S. Highway 212, 2.5 mi northwest of Fruitdale, and 8.8 mi downstream from point of diversion to Belle Fourche Reservoir.

DRAINAGE AREA.--4,540 mi², approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for October 1945, published in WSP 1309.

GAGE.--Water-stage recorder. Elevation of gage is 2,925 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 9, 1947, nonrecording gage and Apr. 10, 1947, to Oct. 14, 1948, water-stage recorder, at site 100 ft upstream at same datum. Oct. 15, 1948, to Dec. 30, 1958, water-stage recorder and Dec. 31, 1958, to Sept. 23, 1959, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Keyhole Dam since Feb. 12, 1952, usable capacity, 191,600 acre-ft, 180 mi upstream. At a point 8.8 mi above station, water is diverted to Belle Fourche Reservoir (see station 06435000) through Inlet Canal (see station 06434500), with other smaller diversions from the main stem and tributaries for irrigation. Total diversions for irrigation of about 60,000 acres upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section. Gage-height telemeter at station.

AVERAGE DISCHARGE.--46 years, 76.9 ft³/s, 55,710 acre-ft/yr; median of yearly mean discharges, 47 ft³/s, 34,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s, May 20, 1982, gage height, 14.32 ft; no flow at times in 1945, 1948, 1959-62, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 470 ft³/s at 1515 hours, Oct. 31, gage height, 4.45 ft; minimum daily discharge, 1.7 ft³/s, June 25.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	154	8.5	e3.6	e5.0	3.5	4.9	3.1	3.9	11	13	10
2	5.1	153	8.8	e3.6	e5.2	3.5	4.9	3.0	2.3	9.1	12	10
3	4.4	112	8.8	e3.7	e5.5	3.4	4.7	4.0	1.9	4.7	11	10
4	4.6	72	7.5	e3.7	e5.8	3.8	4.4	8.0	1.8	6.2	11	15
5	4.3	94	6.2	e3.8	e5.8	e4.5	4.2	4.3	4.2	4.7	11	14
6	3.8	64	5.7	e3.8	5.9	e5.3	4.1	3.3	8.1	5.1	12	13
7	4.2	20	5.7	e3.9	5.6	4.6	4.0	2.6	5.8	5.2	13	13
8	4.5	7.0	5.7	e4.2	5.2	3.5	11	3.9	5.6	7.2	14	12
9	4.9	5.2	5.6	e4.4	4.7	3.2	8.6	5.0	4.6	6.1	14	11
10	4.7	4.6	5.4	e4.5	4.7	3.2	4.8	3.8	4.0	4.9	15	11
11	7.4	4.3	5.7	e4.5	4.4	3.1	3.9	3.2	3.4	5.3	13	12
12	7.5	4.8	5.5	e4.8	4.2	3.1	4.8	5.1	2.3	5.3	12	11
13	7.4	4.9	5.4	e5.0	4.1	3.0	4.9	4.1	2.3	4.7	11	10
14	7.2	4.9	5.4	e5.0	e3.8	3.1	4.5	2.9	5.3	11	11	10
15	6.9	6.0	5.6	e5.0	3.8	3.1	4.4	9.0	9.3	12	11	10
16	7.9	10	5.3	e5.1	3.7	3.2	4.4	15	8.2	12	10	9.9
17	10	14	5.2	e5.3	4.1	3.0	4.4	4.5	7.1	12	8.4	9.7
18	11	12	5.2	e5.0	4.5	3.0	4.4	3.3	6.6	11	9.5	9.4
19	11	12	e3.8	e5.0	4.2	3.0	4.1	3.5	12	11	8.9	8.6
20	12	8.5	e3.3	e4.7	4.1	2.8	3.8	4.5	15	12	5.2	24
21	13	6.1	e2.8	e4.6	4.2	3.1	3.7	3.3	12	12	7.6	16
22	12	7.0	e2.5	e4.5	4.2	4.0	3.5	3.9	3.7	11	7.5	8.3
23	12	8.3	e2.5	e4.5	4.2	4.0	3.2	6.6	2.1	13	9.7	8.1
24	20	8.4	e3.2	e4.5	4.1	3.7	3.1	8.1	1.8	11	12	15
25	22	8.1	e3.3	e4.2	3.8	3.5	3.0	3.8	1.7	13	11	9.5
26	19	8.1	e3.3	e3.8	e3.6	3.1	3.8	2.9	2.3	13	10	9.7
27	18	8.1	e3.4	e3.5	3.4	3.2	5.0	3.4	5.0	17	8.5	8.8
28	95	8.1	e3.4	e3.5	3.4	3.1	4.4	3.8	6.5	18	8.7	8.9
29	170	8.4	e3.5	e3.5	---	3.8	3.4	4.4	8.6	18	8.9	7.8
30	148	8.3	e3.5	e4.0	---	5.0	3.1	4.3	8.9	15	9.3	6.9
31	187	---	e3.6	e4.5	---	4.9	---	5.0	---	14	9.9	---
TOTAL	852.0	846.1	153.3	133.7	125.2	110.3	135.4	145.6	166.3	315.5	329.1	332.6
MEAN	27.5	28.2	4.95	4.31	4.47	3.56	4.51	4.70	5.54	10.2	10.6	11.1
MAX	187	154	8.8	5.3	5.9	5.3	11	15	15	18	15	24
MIN	3.8	4.3	2.5	3.5	3.4	2.8	3.0	2.6	1.7	4.7	5.2	6.9
AC-FT	1690	1680	304	265	248	219	269	289	330	626	653	660

CAL YR 1990 TOTAL 4002.1 MEAN 11.0 MAX 548 MIN 1.1 AC-FT 7940
WTR YR 1991 TOTAL 3645.1 MEAN 9.99 MAX 187 MIN 1.7 AC-FT 7230

e Estimated

BELLE FOURCHE RIVER BASIN

06436156 WHITETAIL CREEK AT LEAD, SD

LOCATION.--Lat 44°20'36", long 103°45'57", in NE 1/4 sec. 4, T. 4 N., R. 3 E., Lawrence County, Hydrologic Unit 10120202, on right bank 0.5 mi upstream from confluence of Whitewood Creek and 0.25 mi upstream from Kirk Power Plant.

DRAINAGE AREA.--6.15 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder and 24-in. Parshall flume. Elevation of gage is 5,080 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33 ft³/s, June 5, 1991, gage height, 3.60 ft; minimum daily discharge, 0.06 ft³/s, Dec. 20, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	0115	13	2.61	May 27	2345	18	2.86
May 19	2215	18	2.85	June 5	1745	*33	*3.60
May 22	1930	19	2.90	June 14	1900	13	2.49

Minimum daily discharge, 0.06 ft³/s, Dec. 20.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.66	.73	e.60	e.20	.62	.69	2.0	4.2	11	3.0	1.6	.73
2	.66	.74	e.60	e.25	.64	.82	2.1	4.3	9.3	2.9	1.7	.72
3	.66	.73	e.60	e.25	.63	.80	2.1	4.3	9.8	2.8	1.6	.74
4	.66	.75	e.65	e.25	.64	.80	2.2	4.2	8.9	2.7	1.5	.74
5	.66	.79	e.60	e.25	.67	1.0	2.3	4.0	12	2.6	1.5	.75
6	.69	.86	e.70	e.25	.65	.90	2.6	4.0	15	2.7	1.5	.74
7	.73	e.75	e.70	e.35	.66	e1.0	2.5	4.1	12	2.6	1.4	.75
8	.73	.82	e.70	e.45	.67	.75	2.2	4.4	11	2.7	1.4	.78
9	.68	.82	e.70	e.55	.67	.86	2.2	5.5	11	3.0	1.3	.75
10	.66	.84	e.70	e.55	.66	.77	2.3	6.9	10	3.9	1.5	.79
11	.69	.77	.63	e.55	.66	.90	2.6	8.3	9.1	3.4	1.4	.78
12	.68	.76	.61	e.60	.69	.99	2.2	11	8.4	2.7	1.4	.84
13	.71	.73	e.60	e.70	.69	e1.5	2.1	10	7.9	2.5	1.3	.86
14	.73	.73	e.60	.60	.70	e1.2	1.9	9.4	8.2	2.3	1.3	.91
15	.73	.73	e.60	.61	e.60	1.0	2.0	13	7.2	2.2	1.4	.87
16	.73	.73	e.60	.61	e.60	.96	2.2	14	6.7	2.2	1.3	.87
17	.80	.73	e.60	.59	.73	.94	2.3	17	7.0	2.3	1.1	.86
18	.86	.70	e.60	.59	.96	.95	2.4	17	7.3	2.1	1.1	.84
19	.89	.70	e.30	.59	1.1	1.1	2.5	16	5.4	2.1	1.0	.84
20	.83	.70	.06	.59	.83	1.4	2.6	14	5.0	2.0	.98	.88
21	.82	.70	.21	.61	.75	1.6	2.7	13	4.7	1.9	.97	.89
22	.82	.83	.11	.59	.75	1.4	2.9	14	4.5	1.9	.99	.88
23	.87	.70	e.15	.59	.68	1.3	3.1	18	4.2	1.9	1.0	.85
24	.81	.66	e.15	.63	e.65	1.4	3.3	17	4.0	2.1	.98	.87
25	.77	.66	e.15	e.55	e.65	1.5	3.8	15	3.8	2.1	.94	.87
26	.77	.68	e.15	e.50	e.65	1.6	5.2	13	3.6	2.0	.92	.84
27	.74	e.70	e.18	e.50	e.65	1.6	5.4	13	3.4	2.0	.87	.85
28	.73	e.70	e.20	e.45	.71	1.5	5.1	14	3.6	1.9	.87	.83
29	.73	e.70	.13	e.50	---	1.4	4.8	13	3.4	1.8	.79	.85
30	.73	e.70	e.10	e.55	---	1.4	4.4	12	3.2	1.8	.75	.89
31	.73	---	e.15	e.60	---	1.5	---	11	---	1.7	.73	---
TOTAL	22.96	22.14	13.43	15.45	19.56	35.53	86.0	328.6	220.6	73.8	37.09	24.66
MEAN	.74	.74	.43	.50	.70	1.15	2.87	10.6	7.35	2.38	1.20	.82
MAX	.89	.86	.70	.70	1.1	1.6	5.4	18	15	3.9	1.7	.91
MIN	.66	.66	.06	.20	.60	.69	1.9	4.0	3.2	1.7	.73	.72
AC-FT	46	44	27	31	39	70	171	652	438	146	74	49

CAL YR 1990 TOTAL 848.70 MEAN 2.33 MAX 17 MIN .06 AC-FT 1680
WTR YR 1991 TOTAL 899.82 MEAN 2.47 MAX 18 MIN .06 AC-FT 1780

e Estimated

BELLE FOURCHE RIVER BASIN

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06436170 WHITEWOOD CREEK AT DEADWOOD, SD

LOCATION.--Lat 44°22'48", long 103°43'25", in NW¼NE¼SW¼ sec.23, T.5 N., R.3 E., Lawrence County, Hydrologic Unit 10120202, on left bank 1,000 ft downstream from box culvert where stream leaves city and at the junction of lower Main Street and truck route of highways U.S. 85 and A.H. 14 in Deadwood.

DRAINAGE AREA.--40.6 mi², approximately.

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

GAGE.--Water-stage recorder. Elevation of gage is 4,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 25, 1983, at datum 2.00 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Homestake Mining Co. 3.5 mi upstream. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 25.8 ft³/s, 18,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,660 ft³/s, May 15, 1982, gage height, 7.54 ft, present datum; minimum daily discharge, 3.5 ft³/s, Jan. 10, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,500 ft³/s at 1730 hours, June 5, gage height, 6.68 ft; minimum daily discharge, 8.5 ft³/s, Jan. 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	10	10	9.7	11	11	18	28	59	19	12	11
2	9.9	11	9.4	8.5	11	11	19	27	48	19	12	11
3	10	11	9.1	9.0	11	11	20	28	67	19	13	11
4	10	12	9.7	9.4	11	13	20	28	54	18	13	11
5	10	12	10	10	11	16	20	27	224	16	12	10
6	9.3	12	9.8	11	11	13	22	27	203	16	13	10
7	8.8	11	9.7	11	11	12	20	27	181	16	14	11
8	10	11	10	10	12	12	19	28	131	16	13	11
9	11	12	9.4	10	11	12	19	30	96	21	13	9.4
10	11	12	9.7	10	11	13	19	32	79	21	16	9.3
11	11	11	10	10	11	14	21	33	68	19	15	9.2
12	12	11	9.5	10	12	15	18	40	52	15	13	10
13	12	11	10	10	12	13	19	33	48	16	13	11
14	11	11	11	10	11	12	18	32	51	14	13	12
15	11	11	11	10	12	12	19	63	43	13	15	11
16	12	11	11	10	13	12	19	70	38	14	14	10
17	13	11	11	10	12	13	20	88	35	13	14	11
18	13	10	11	12	11	13	20	88	33	11	13	11
19	13	10	e10	11	11	13	22	78	31	11	12	11
20	12	9.9	e9.5	10	12	16	23	70	30	11	13	11
21	11	11	e9.5	10	12	18	24	58	30	12	12	12
22	12	9.9	e10	11	12	16	24	86	28	11	12	11
23	13	9.8	e10	11	12	15	24	109	26	12	12	11
24	12	9.7	e10	10	11	15	26	91	24	12	12	11
25	12	9.9	9.4	9.8	11	16	27	78	23	12	12	9.2
26	11	10	8.9	9.7	11	16	39	69	22	14	10	10
27	12	9.7	9.8	10	11	16	37	68	21	11	10	11
28	12	9.6	9.2	10	11	16	35	76	22	11	9.9	10
29	11	9.3	9.5	9.9	---	15	30	62	21	10	9.7	11
30	12	10	10	10	---	15	28	58	20	11	11	9.6
31	12	---	10	10	---	16	---	54	---	11	11	---
TOTAL	349.5	319.8	307.1	313.0	319	431	689	1686	1808	445	387.6	317.7
MEAN	11.3	10.7	9.91	10.1	11.4	13.9	23.0	54.4	60.3	14.4	12.5	10.6
MAX	13	12	11	12	13	18	39	109	224	21	16	12
MIN	8.8	9.3	8.9	8.5	11	11	18	27	20	10	9.7	9.2
AC-FT	693	634	609	621	633	855	1370	3340	3590	883	769	630

CAL YR 1990 TOTAL 6524.8 MEAN 17.9 MAX 75 MIN 8.8 AC-FT 12940
WTR YR 1991 TOTAL 7372.7 MEAN 20.2 MAX 224 MIN 8.5 AC-FT 14620

e Estimated

BELLE FOURCHE RIVER BASIN

06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD

LOCATION.--Lat 44°26'32", long 103°37'44", in SE 1/4 sec. 33, T.6 N., R.4 E., Lawrence County, Hydrologic Unit 10120202, on left bank 90 ft downstream from Crook Mountain Road and 1.1 mi south of Whitewood.

DRAINAGE AREA.--56.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow affected by transbasin diversions for industrial and municipal water supplies. Several water-quality samples were collected during the year and the analytical results will be published in a later report.

AVERAGE DISCHARGE.--8 years, 22.5 ft³/s, 16,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft³/s, June 5, 1991, gage height, 5.68 ft; minimum daily discharge, 5.0 ft³/s, Dec. 1, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	0730	232	3.40	June 3	0445	271	3.52
May 22	2215	248	3.45	June 5	1915	*2,080	*5.68
May 28	0230	185	3.25				

Minimum daily discharge, 5.5 ft³/s, Dec. 22-30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	14	e11	e6.5	e13	15	21	32	79	23	11	16
2	11	17	e11	e6.0	e13	e15	22	32	60	23	10	14
3	11	16	e10	e6.0	e13	e15	23	33	94	22	11	16
4	11	18	e11	e6.0	e13	18	23	33	75	e20	11	16
5	11	19	e10	e6.0	e14	24	23	32	185	e18	11	16
6	11	e19	e10	e7.0	e14	18	25	31	146	e18	12	14
7	9.6	e17	e10	e8.0	e15	17	24	30	79	e18	13	16
8	12	e14	e10	e9.0	15	16	23	31	64	e18	12	13
9	12	16	e9.5	e10	14	16	23	33	59	26	11	11
10	12	17	e9.0	e10	13	17	23	34	62	25	13	10
11	14	17	e9.0	e11	14	18	27	38	64	26	14	10
12	14	14	e9.0	e11	15	20	24	50	58	e18	13	12
13	15	14	e8.0	e13	14	17	23	38	53	e17	12	12
14	13	14	e7.5	e13	13	17	21	34	55	e16	12	9.8
15	14	15	e7.5	e13	e14	17	23	87	50	e14	14	9.6
16	14	12	e6.5	e13	e15	17	24	103	44	15	14	8.9
17	21	13	e6.5	e13	e14	17	24	134	41	15	14	9.0
18	17	11	e6.5	e15	14	18	25	130	39	11	13	9.4
19	18	11	e6.5	e13	13	18	28	109	36	9.7	9.8	9.2
20	18	10	e6.5	e11	16	20	28	100	34	11	9.0	9.5
21	15	11	e6.0	e12	16	27	28	74	34	11	11	9.9
22	14	10	e5.5	e12	14	22	28	106	33	10	12	9.7
23	18	11	e5.5	e12	15	20	29	176	32	10	14	9.5
24	16	11	e5.5	e12	14	20	29	140	30	11	15	9.5
25	16	11	e5.5	e12	14	21	31	113	28	11	13	8.5
26	14	e11	e5.5	e12	16	21	45	91	28	12	12	8.4
27	13	e10	e5.5	e12	16	20	45	87	26	13	11	9.2
28	17	e11	e5.5	e11	16	19	40	113	28	11	9.6	9.4
29	15	e11	e5.5	e10	---	19	36	89	25	10	11	9.3
30	17	e11	e5.5	e10	---	18	34	78	26	10	13	8.6
31	16	---	e6.0	e12	---	19	---	71	---	10	13	---
TOTAL	440.6	406	236.5	327.5	400	576	822	2282	1667	482.7	374.4	333.4
MEAN	14.2	13.5	7.63	10.6	14.3	18.6	27.4	73.6	55.6	15.6	12.1	11.1
MAX	21	19	11	15	16	27	45	176	185	26	15	16
MIN	9.6	10	5.5	6.0	13	15	21	30	25	9.7	9.0	8.4
AC-FT	874	805	469	650	793	1140	1630	4530	3310	957	743	661

CAL YR 1990 TOTAL 7271.6 MEAN 19.9 MAX 83 MIN 5.5 AC-FT 14420
WTR YR 1991 TOTAL 8348.1 MEAN 22.9 MAX 185 MIN 5.5 AC-FT 16560

e Estimated

BELLE FOURCHE RIVER BASIN

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06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Water-quality records from January 1983 to September 1988 published in separate reports.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
09...	1515	13	1090	9.0	13.0	10.0	670	10.9	110	480	96	57
NOV												
08...	1030	21	1210	8.1	5.5	0.0	663	12.9	103	500	110	55
DEC												
13...	0945	6.5	1220	9.0	0.0	0.0	666	13.6	107	500	110	54
JAN												
23...	1430	12	1100	8.4	-7.5	0.0	668	13.6	107	460	96	54
MAR												
06...	1230	17	1110	8.9	2.0	3.0	664	12.4	106	520	120	53
APR												
10...	1245	24	835	9.6	14.5	9.0	658	12.8	129	360	78	40
MAY												
09...	0830	34	775	9.0	15.5	12.5	660	11.0	120	330	76	33
JUN												
11...	0830	70	551	8.7	26.0	13.5	665	9.3	103	240	55	25
JUL												
11...	0945	26	834	8.5	24.0	17.0	670	9.1	108	350	79	38
AUG												
15...	0815	12	1180	8.6	20.0	17.5	668	9.0	108	510	110	56
SEP												
12...	0945	11	1380	8.7	22.0	17.0	670	10.1	120	580	130	63

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
09...	53	19	1	11	193	420	19	0.80	10	768	814	1.04
NOV												
08...	69	23	1	12	156	420	28	0.20	9.3	886	842	1.20
DEC												
13...	74	24	1	12	165	410	26	0.30	8.7	922	844	1.25
JAN												
23...	63	22	1	12	172	360	19	1.3	10	786	757	1.07
MAR												
06...	57	19	1	9.5	181	430	29	0.80	6.2	878	852	1.19
APR												
10...	49	22	1	7.9	112	280	27	0.80	4.4	564	572	0.77
MAY												
09...	38	20	0.9	6.7	133	230	21	0.60	2.9	501	505	0.68
JUN												
11...	20	15	0.6	4.8	119	140	16	0.40	13	342	346	0.47
JUL												
11...	36	18	0.8	8.0	155	240	24	0.70	11	567	534	0.77
AUG												
15...	67	22	1	13	168	500	25	0.90	5.5	877	914	1.19
SEP												
12...	81	23	1	15	158	600	25	0.40	7.8	990	1060	1.35

BELLE FOURCHE RIVER BASIN

06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 09...	26.3	0.030	6.67	6.70	<0.030	--	0.350	0.280	10	28	29
NOV 08...	49.0	0.040	9.76	9.80	<0.010	--	0.198	0.160	<10	18	17
DEC 13...	16.2	<0.010	--	11.0	0.020	0.03	0.297	0.210	10	19	19
JAN 23...	26.5	0.080	8.32	8.40	0.030	0.04	0.244	0.200	<10	24	18
MAR 06...	40.3	--	--	8.40	<0.010	--	0.163	--	<10	58	30
APR 10...	36.5	--	--	3.90	0.030	0.04	0.028	--	20	28	16
MAY 09...	45.3	--	--	3.80	<0.010	--	0.055	--	20	24	13
JUN 11...	64.6	--	--	<0.005	0.020	0.03	0.080	--	<10	40	18
JUL 11...	40.0	--	--	0.890	0.030	0.04	0.005	--	30	39	25
AUG 15...	28.2	--	--	8.00	<0.010	--	0.245	--	<10	38	32
SEP 12...	29.1	--	--	9.80	<0.010	--	0.207	--	<10	37	36

DATE	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)
OCT 09...	53	<0.5	100	<10	<1.0	<1	<5	<3	40	10	0.03
NOV 08...	59	<0.5	110	<10	<1.0	2	<5	7	<10	<10	0.03
DEC 13...	59	<0.5	120	--	<1.0	<1	<5	9	20	<10	<0.01
JAN 23...	53	<0.5	100	<1	<1.0	8	<5	7	10	<10	0.08
MAR 06...	29	<0.5	100	<1	<1.0	2	<5	5	10	<10	0.05
APR 10...	53	<0.5	70	<1	<1.0	<1	<5	3	30	10	0.03
MAY 09...	67	<0.5	70	<1	<1.0	<1	<5	5	<10	<10	0.02
JUN 11...	60	<0.5	50	<1	<1.0	2	<5	<3	20	<10	0.01
JUL 11...	79	<0.5	80	<1	<1.0	<1	<5	4	30	<10	0.01
AUG 15...	76	<0.5	130	<1	<1.0	<1	<5	9	20	10	0.05
SEP 12...	76	<0.5	130	<1	<1.0	<1	<5	10	20	<10	0.07

BELLE FOURCHE RIVER BASIN

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06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
OCT 09...	800	7	3	<10	25	80	34	<0.10	<0.1	<10	<10
NOV 08...	500	13	1	<10	28	80	51	<0.10	<0.1	<10	<10
DEC 13...	160	11	1	<10	31	50	47	<0.10	0.1	<10	<10
JAN 23...	530	46	2	<10	28	90	84	<0.10	<0.1	<10	<10
MAR 06...	1600	9	5	<10	23	180	130	<0.10	0.2	<10	<10
APR 10...	1700	6	3	<10	22	100	45	<0.10	<0.1	<10	<10
MAY 09...	1100	13	2	<10	18	90	51	0.10	<0.1	<10	<10
JUN 11...	2000	18	4	<10	12	130	74	0.10	<0.1	<10	<10
JUL 11...	3400	11	--	<10	33	200	40	0.10	<0.1	<10	<10
AUG 15...	270	21	3	<10	27	30	11	<0.10	<0.1	<10	<10
SEP 12...	290	53	<1	<10	32	50	16	<0.10	<0.1	10	<10

DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT 09...	2	3	2	<1	<1.0	470	<6	20	5	12	0.43
NOV 08...	1	2	3	<1	<1.0	520	<6	<10	4	6	0.34
DEC 13...	3	3	3	<1	<1.0	520	<6	<10	<3	2	0.03
JAN 23...	2	2	2	<1	<1.0	530	<6	10	18	7	0.22
MAR 06...	2	2	<1	<1	<1.0	740	<6	<10	<3	10	0.47
APR 10...	2	3	3	<1	<1.0	420	<6	30	4	29	1.9
MAY 09...	2	2	3	<1	<1.0	390	<6	<10	5	27	2.4
JUN 11...	3	1	<1	<1	<1.0	250	<6	<10	10	40	7.5
JUL 11...	3	--	3	<1	<1.0	370	<6	30	18	71	5.0
AUG 15...	5	3	4	<1	<1.0	530	<6	<10	8	8	0.24
SEP 12...	3	4	5	<1	<1.0	610	<6	<10	6	7	0.21

BELLE FOURCHE RIVER BASIN

06436190 WHITEWOOD CREEK NEAR WHITEWOOD, SD

LOCATION.--Lat 44°32'30", long 103°34'16", in SE¼NW¼SE¼NE¼ sec.25, T.7 N., R.4 E., Lawrence County, Hydrologic Unit 10120202, on right bank 30 ft downstream from county highway bridge and 6.9 mi northeast of Whitewood.

DRAINAGE AREA.--77.4 mi², approximately.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,175 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Small diversions upstream for irrigation of 256 acres. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 27.4 ft³/s, 19,850 acre-ft/yr; median of yearly mean discharges, 23 ft³/s, 16,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,050 ft³/s, May 20, 1982, gage height, 4.52 ft; minimum daily, 2.9 ft³/s, July 12, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 5	2200	*1,030	*3.41	No other peak greater than base discharge.			

Minimum daily discharge, 3.0 ft³/s, Dec. 22, 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	11	8.3	3.5	11	13	18	34	57	18	9.1	6.2
2	8.1	13	7.7	3.7	11	10	20	35	48	17	9.3	6.1
3	8.5	12	6.7	3.7	12	14	20	36	60	17	9.8	8.7
4	9.5	12	7.0	3.8	11	14	21	35	56	16	9.7	8.2
5	9.5	13	11	3.9	11	19	19	33	133	16	10	6.9
6	11	13	9.0	3.9	11	17	22	33	360	17	9.4	7.5
7	10	9.0	9.1	4.1	12	15	21	31	327	19	14	8.2
8	11	12	9.4	4.4	12	15	22	32	213	18	11	11
9	11	13	9.9	4.5	13	14	20	34	145	23	9.3	8.2
10	12	13	9.9	4.8	12	15	21	36	103	23	10	6.3
11	13	13	11	4.9	13	15	27	39	78	24	12	6.1
12	12	12	10	5.0	14	18	25	52	62	18	11	7.9
13	12	12	7.2	5.2	14	15	22	41	68	17	9.2	11
14	11	11	8.8	5.3	13	15	21	37	68	16	8.9	11
15	12	11	7.7	5.4	9.1	15	23	61	57	14	9.7	10
16	11	11	5.7	5.6	16	15	26	68	43	13	14	10
17	14	11	5.4	6.0	15	15	27	77	40	14	12	10
18	13	11	8.5	7.0	14	15	26	78	39	12	9.4	11
19	12	10	6.2	7.5	12	16	30	69	35	10	8.9	11
20	12	11	5.9	7.0	15	19	29	66	30	9.9	8.1	12
21	11	11	5.2	7.9	16	23	30	57	29	11	8.4	12
22	10	11	3.0	8.1	14	21	29	61	28	10	7.3	12
23	12	11	3.4	7.9	13	18	29	101	28	9.8	7.9	12
24	11	10	3.4	7.4	12	17	28	80	26	10	7.3	13
25	12	10	3.5	7.5	9.9	18	30	71	24	9.2	6.9	11
26	11	8.0	3.5	7.2	12	18	40	64	24	9.6	6.3	9.5
27	9.7	6.4	3.5	8.2	13	18	44	63	22	13	5.5	10
28	12	6.5	3.8	7.2	13	17	41	74	24	9.6	4.7	12
29	12	7.8	3.8	6.5	---	17	39	64	20	9.0	5.5	10
30	12	10	3.0	8.1	---	16	36	59	20	8.6	5.0	9.2
31	12	---	3.3	9.4	---	16	---	54	---	9.0	6.1	---
TOTAL	345.6	325.7	203.8	184.6	354.0	503	806	1675	2267	440.7	275.7	288.0
MEAN	11.1	10.9	6.57	5.95	12.6	16.2	26.9	54.0	75.6	14.2	8.89	9.60
MAX	14	13	11	9.4	16	23	44	101	360	24	14	13
MIN	8.1	6.4	3.0	3.5	9.1	10	18	31	20	8.6	4.7	6.1
AC-FT	685	646	404	366	702	998	1600	3320	4500	874	547	571

CAL YR 1990 TOTAL 6534.3 MEAN 17.9 MAX 79 MIN 3.0 AC-FT 12960
WTR YR 1991 TOTAL 7669.1 MEAN 21.0 MAX 360 MIN 3.0 AC-FT 15210

e Estimated

06436198 WHITEWOOD CREEK ABOVE VALE, SD

LOCATION.--Lat 44°37'04", long 103°28'52", in SE¼NW¼NE¼NW¼ sec.35, T.8 N., R.5 E., Butte County, Hydrologic Unit 10120202, on right bank at point where South Canal crosses creek, 3.2 mi above mouth, and 3.7 mi west of Vale.

DRAINAGE AREA.--102 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions upstream from station for irrigation of about 800 acres. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

AVERAGE DISCHARGE.--8 years, 24.4 ft³/s, 17,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,680 ft³/s, Sept. 24, 1986, gage height, 4.32 ft; from rating curve extended above 1,300 ft³/s on basis of slope-area estimate of peak flow; no flow July 21, 22 and Aug. 19, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 170 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	0615	325	1.87	May 28	0945	186	1.57
May 15	1100	331	1.88	June 6	0230	*726	*2.44
May 23	0630	223	1.66				

Minimum daily discharge, 2.8 ft³/s, Aug. 27.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	11	9.1	e5.5	e10	16	21	35	80	19	6.8	3.3
2	7.5	10	8.5	e5.0	e11	11	23	34	70	17	8.8	3.2
3	7.0	11	8.7	e5.0	e12	19	23	35	83	16	6.9	3.7
4	7.5	11	e9.5	e5.0	e13	22	24	36	82	15	7.0	4.5
5	6.6	12	e10	e5.0	e13	22	23	34	71	14	7.2	4.6
6	6.5	14	e11	e5.0	e14	23	25	33	340	14	6.8	4.3
7	8.2	12	e12	e5.5	e14	19	24	32	171	14	8.0	4.0
8	8.4	11	12	e5.5	e14	19	26	32	124	14	8.3	7.0
9	9.2	12	12	e5.5	e15	19	24	33	93	17	6.7	7.1
10	9.4	12	11	e6.0	e15	19	23	34	81	18	6.3	5.6
11	9.3	12	11	e6.0	e15	19	26	39	74	22	7.5	6.3
12	9.7	11	12	e6.0	e15	22	28	105	63	16	7.4	5.3
13	9.9	11	9.5	e7.0	e15	20	26	48	57	14	6.8	7.2
14	10	11	11	e9.0	e14	19	25	41	54	14	6.4	8.2
15	10	11	11	e12	e13	19	26	135	55	12	5.7	8.2
16	9.6	10	9.1	e12	e15	19	28	113	44	11	8.7	9.0
17	12	10	e7.5	e11	e18	19	27	110	39	13	7.0	8.4
18	13	11	e5.5	e11	e15	19	27	113	35	10	6.4	8.4
19	13	10	e5.0	e11	e13	20	29	102	34	10	5.5	9.2
20	11	11	e4.5	e11	e15	22	28	95	31	9.6	4.8	10
21	11	11	e5.0	e11	e18	26	29	79	31	10	4.9	9.4
22	10	11	e5.0	e10	19	27	30	73	30	9.7	3.8	9.8
23	9.9	11	e5.0	e10	18	25	30	176	29	9.5	4.5	9.8
24	12	11	e5.0	e9.5	16	22	29	133	27	10	4.8	11
25	12	10	e5.5	e9.0	16	22	30	113	25	9.2	4.6	10
26	11	8.3	e5.5	e9.0	e16	22	38	97	23	9.2	3.2	8.0
27	10	8.7	e5.5	e9.0	17	22	44	102	23	12	2.8	8.3
28	11	e9.0	e5.5	e8.5	17	21	43	135	24	9.6	3.3	9.6
29	11	e10	e5.5	e8.5	---	21	38	106	22	8.4	3.3	9.5
30	10	e11	e5.5	e9.0	---	19	37	92	20	8.0	3.3	8.7
31	11	---	e5.5	e10	---	20	---	79	---	7.2	3.3	---
TOTAL	304.4	325.0	248.4	252.5	416	634	854	2424	1935	392.4	180.8	221.6
MEAN	9.82	10.8	8.01	8.15	14.9	20.5	28.5	78.2	64.5	12.7	5.83	7.39
MAX	13	14	12	12	19	27	44	176	340	22	8.8	11
MIN	6.5	8.3	4.5	5.0	10	11	21	32	20	7.2	2.8	3.2
AC-FT	604	645	493	501	825	1260	1690	4810	3840	778	359	440

CAL YR 1990 TOTAL 6892.0 MEAN 18.9 MAX 138 MIN 1.4 AC-FT 13670
WTR YR 1991 TOTAL 8188.1 MEAN 22.4 MAX 340 MIN 2.8 AC-FT 16240

e Estimated

BELLE FOURCHE RIVER BASIN

06436198 WHITEWOOD CREEK ABOVE VALE, SD--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Water-quality records from January 1983 to September 1988 published in separate reports. The percent difference between cations and anions (in milliequivalents per liter) for the Aug. 14 and Sept. 11, 1991, samples exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT												
09...	1130	9.7	1180	8.4	13.5	7.5	694	11.6	107	540	120	58
NOV												
07...	1215	9.6	1260	7.9	5.0	1.5	689	13.5	107	580	130	62
DEC												
12...	1130	13	1280	8.5	3.0	2.0	690	13.2	106	590	140	59
JAN												
23...	0845	10	1380	8.3	-3.0	0.0	689	13.1	100	680	160	69
MAR												
06...	0830	19	1200	8.4	-0.5	0.5	686	13.6	105	450	96	50
APR												
10...	0830	22	1090	8.8	11.0	5.5	682	11.5	102	490	110	52
MAY												
08...	1045	33	981	8.6	20.0	12.5	686	10.1	106	430	100	43
JUN												
05...	1200	76	723	8.5	22.0	16.0	691	4.0	45	320	78	31
JUL												
10...	1300	22	1060	8.4	30.0	24.0	686	9.2	122	480	110	49
AUG												
14...	0845	6.3	1320	8.1	20.0	19.5	687	7.7	94	590	130	65
SEP												
11...	0815	6.3	1390	8.0	18.5	17.0	688	8.1	93	630	140	67
DATE		SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
OCT												
09...	56	18	1	10	177	480	25	0.60	8.7	864	879	1.18
NOV												
07...	60	18	1	11	189	470	24	0.70	7.2	938	898	1.28
DEC												
12...	63	18	1	12	184	440	26	0.20	5.2	962	882	1.31
JAN												
23...	59	16	1	11	220	550	26	0.60	8.2	1070	1030	1.46
MAR												
06...	64	23	1	11	152	380	34	1.2	10	784	759	1.07
APR												
10...	51	18	1	9.0	169	430	25	0.80	1.2	792	793	1.08
MAY												
08...	42	17	0.9	7.8	166	310	24	0.60	1.6	669	640	0.91
JUN												
05...	27	15	0.7	5.2	145	200	17	0.50	9.0	500	461	0.68
JUL												
10...	42	16	0.8	9.3	156	370	24	0.70	9.0	758	715	1.03
AUG												
14...	61	18	1	12	162	600	25	0.70	7.3	970	1010	1.32
SEP												
11...	65	18	1	13	165	640	27	0.80	6.6	1010	1070	1.37

BELLE FOURCHE RIVER BASIN

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06436198 WHITEWOOD CREEK ABOVE VALE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 09...	22.7	<0.010	--	3.00	<0.010	--	0.005	<0.010	<10	75	56
NOV 07...	24.3	<0.010	--	4.10	0.020	0.03	0.001	0.010	<10	73	39
DEC 12...	33.8	<0.010	--	5.70	0.030	0.04	0.001	<0.010	<10	53	30
JAN 23...	29.5	0.030	3.37	3.40	0.050	0.06	0.006	0.020	<10	66	28
MAR 06...	40.2	--	--	4.70	0.010	0.01	0.012	--	20	26	19
APR 10...	47.0	--	--	2.60	0.030	0.04	0.056	--	<10	74	25
MAY 08...	59.1	--	--	2.30	0.010	0.01	0.023	--	<10	70	36
JUN 05...	103	--	--	1.20	<0.010	--	0.043	--	<10	93	38
JUL 10...	45.6	--	--	1.30	0.260	0.33	0.147	--	<10	78	53
AUG 14...	16.5	--	--	2.30	<0.010	--	0.015	--	<10	--	46
SEP 11...	17.2	--	--	1.70	0.010	0.01	0.002	--	<10	80	58

DATE	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)
OCT 09...	28	<0.5	110	<10	<1.0	<1	<5	<3	<10	<10	<0.01
NOV 07...	32	<0.5	110	<10	<1.0	1	<5	4	<10	<10	<0.01
DEC 12...	34	<0.5	100	--	<1.0	<1	<5	5	10	<10	<0.01
JAN 23...	29	<0.5	90	<10	<1.0	2	<5	<3	10	<10	0.01
MAR 06...	58	<0.5	100	<1	<1.0	1	<5	6	30	20	0.06
APR 10...	34	<0.5	90	<1	<1.0	<1	<5	4	<10	<10	<0.01
MAY 08...	39	<0.5	90	<1	<1.0	1	<5	4	<10	<10	<0.01
JUN 05...	55	<0.5	70	<1	<1.0	<1	<5	<3	20	<10	0.01
JUL 10...	46	<0.5	90	<1	<1.0	<1	<5	4	20	<10	<0.01
AUG 14...	42	<0.5	140	--	<1.0	--	<5	5	20	<10	<0.01
SEP 11...	36	<0.5	130	<1	<1.0	<1	<5	<3	10	<10	<0.01

BELLE FOURCHE RIVER BASIN

06436198 WHITEWOOD CREEK ABOVE VALE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
OCT 09...	370	4	1	<10	24	100	80	<0.10	<0.1	<10	<10
NOV 07...	740	4	1	<10	29	200	160	<0.10	<0.1	<10	<10
DEC 12...	410	6	1	<10	30	110	100	<0.10	<0.1	<10	<10
JAN 23...	940	14	1	<10	31	180	180	0.10	<0.1	<10	<10
MAR 06...	760	13	3	<10	25	100	78	<0.10	<0.1	<10	<10
APR 10...	1800	6	1	<10	22	200	130	<0.10	<0.1	<10	<10
MAY 08...	880	5	1	<10	20	130	92	<0.10	0.2	<10	<10
JUN 05...	3900	13	7	<10	18	220	93	0.20	<0.1	<10	<10
JUL 10...	650	15	--	<10	27	100	42	0.10	<0.1	<10	<10
AUG 14...	--	7	1	<10	30	70	60	<0.10	<0.1	<10	<10
SEP 11...	550	<3	<1	<10	33	110	97	<0.10	<0.1	<10	<10

DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 09...	3	1	1	<1	<1.0	720	<6	<10	5	12	0.32
NOV 07...	3	1	<1	<1	<1.0	730	<6	<10	3	15	0.38
DEC 12...	4	2	1	<1	<1.0	760	<6	<10	5	9	0.30
JAN 23...	2	1	2	<1	<1.0	970	<6	<10	12	23	0.64
MAR 06...	2	3	2	<1	<1.0	510	<6	<10	3	66	3.4
APR 10...	4	2	3	<1	<1.0	700	<6	10	7	90	5.3
MAY 08...	2	2	2	<1	<1.0	580	<6	<10	5	32	2.8
JUN 05...	3	<1	1	<1	<1.0	420	<6	20	25	85	18
JUL 10...	5	--	3	<1	<1.0	660	<6	10	18	59	3.6
AUG 14...	2	1	1	<1	<1.0	850	<6	<10	<3	20	0.35
SEP 11...	4	<1	<1	<1	<1.0	900	<6	<10	9	13	0.22

BELLE FOURCHE RIVER BASIN

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06436760 HORSE CREEK ABOVE VALE, SD

LOCATION.--Lat 44°39'08", long 103°21'59", in SE¼NE¼SE¼ sec.15, T.8 N., R.6 E., Butte County, Hydrologic Unit 10120202, on left bank 2.6 mi upstream from Dry Creek, 5.5 mi upstream from mouth, 3.0 mi northeast of Vale, and 4.5 mi southeast of Newell.

DRAINAGE AREA.--464 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 2,710 ft above National Geodetic Vertical Datum of 1929, from topographic map. April 1962 to September 1980, water-stage recorder, at site 2.7 mi downstream, at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Natural flow of stream affected by diversions for irrigation upstream from station and by return flow from Belle Fourche Irrigation Project.

AVERAGE DISCHARGE.--11 years, 45.5 ft³/s, 32,960 acre-ft/yr; median of yearly mean discharges, 32 ft³/s, 23,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,700 ft³/s, May 21, 1982, gage height, 24.80 ft; minimum daily discharge, 0.07 ft³/s, Nov. 7, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	1900	*126	*3.70	No other peak greater than base discharge.			

Minimum daily discharge, 0.15 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.8	1.9	e.35	e2.8	2.3	.77	1.6	3.8	29	40	37
2	1.2	1.7	1.9	e.39	2.8	2.4	.65	1.4	4.3	26	42	35
3	1.2	1.6	1.8	e.37	3.0	2.8	.68	1.5	74	23	36	36
4	1.2	1.6	1.7	e.35	3.7	3.7	.69	1.8	40	28	30	36
5	1.0	1.8	1.7	e.50	3.7	5.3	.64	1.8	19	31	30	34
6	1.1	e1.9	1.8	e.75	4.0	3.9	.73	1.6	13	26	28	33
7	1.2	e2.0	1.9	e1.2	4.1	2.6	.79	2.0	9.7	26	28	32
8	1.2	2.1	2.0	1.8	3.0	2.4	1.2	2.9	7.6	29	43	36
9	1.3	2.0	2.1	2.2	2.7	2.2	1.5	4.1	5.7	33	43	41
10	1.4	2.0	2.1	2.1	3.1	2.6	1.7	7.0	3.9	36	43	38
11	2.0	2.1	2.1	2.1	2.9	2.9	2.6	14	3.1	38	36	29
12	1.9	2.1	2.2	2.3	2.9	2.9	4.4	48	2.2	38	34	30
13	1.7	1.9	2.4	2.8	3.2	2.7	5.5	34	1.7	40	30	33
14	1.9	1.7	2.1	3.3	2.9	2.7	6.2	54	1.5	48	32	35
15	1.9	1.7	2.1	4.1	2.2	2.5	4.7	35	1.3	51	28	35
16	1.9	1.6	e1.9	4.4	2.6	2.2	3.8	58	1.2	51	43	31
17	2.2	1.6	1.8	4.6	2.6	2.0	3.9	29	1.0	49	41	37
18	1.8	1.7	1.6	4.9	2.3	2.1	5.5	13	1.0	50	42	33
19	1.9	1.6	e1.2	3.6	e1.8	2.0	4.6	8.9	.98	40	49	10
20	1.7	1.9	e.80	3.5	2.1	1.9	3.8	7.0	.96	31	46	5.3
21	1.6	1.9	e.35	3.6	2.1	2.1	2.9	5.9	8.8	31	39	3.2
22	1.6	1.6	e.15	4.0	2.3	2.6	3.5	5.4	7.2	24	43	2.2
23	1.5	1.7	e.20	4.2	2.1	2.4	2.9	33	3.6	30	44	1.7
24	1.5	1.9	e.40	3.8	1.9	1.8	2.0	33	2.8	32	44	1.6
25	1.5	1.9	e.35	3.6	1.8	1.7	1.7	63	4.9	32	48	1.6
26	1.5	1.9	e.31	e3.3	1.8	1.7	3.1	22	4.7	32	41	1.5
27	1.5	1.8	e.30	e3.4	1.8	1.4	3.6	13	18	37	35	1.5
28	1.5	1.8	e.30	3.4	1.9	1.1	4.2	9.7	29	47	34	1.4
29	1.6	1.8	e.25	e2.8	---	.96	3.2	7.4	35	44	33	1.3
30	1.7	1.9	e.20	e2.5	---	.90	2.4	5.5	30	41	35	1.3
31	1.8	---	e.25	e2.7	---	.83	---	4.7	---	36	38	---
TOTAL	48.4	54.6	40.16	82.91	74.1	71.59	83.85	529.2	339.94	1109	1178	653.6
MEAN	1.56	1.82	1.30	2.67	2.65	2.31	2.79	17.1	11.3	35.8	38.0	21.8
MAX	2.2	2.1	2.4	4.9	4.1	5.3	6.2	63	74	51	49	41
MIN	1.0	1.6	.15	.35	1.8	.83	.64	1.4	.96	23	28	1.3
AC-FT	96	108	80	164	147	142	166	1050	674	2200	2340	1300

CAL YR 1990 TOTAL 5500.56 MEAN 15.1 MAX 181 MIN .15 AC-FT 10910
WTR YR 1991 TOTAL 4265.35 MEAN 11.7 MAX 74 MIN .15 AC-FT 8460

e Estimated

BELLE FOURCHE RIVER BASIN

06436760 HORSE CREEK ABOVE VALE, SD--Continued

WATER-QUALITY RECORDS

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

REMARKS.--The percent difference between cations and anions (in milliequivalents per liter) for the Apr. 9, May 7, and Aug. 13, 1991, samples exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	
OCT												
10...	1315	1.5	3910	8.2	18.0	8.0	1800	310	250	410	33	
NOV												
19...	1300	1.7	4330	8.2	11.5	2.5	2000	340	280	510	36	
JAN												
02...	1530	0.40	6810	7.9	-17.0	0.0	3000	490	430	810	37	
MAR												
07...	1430	2.6	4440	8.3	5.0	0.0	1900	300	280	500	36	
APR												
09...	0900	1.5	4260	8.5	3.5	8.0	1600	200	260	480	40	
MAY												
07...	0745	1.9	5070	8.6	8.5	11.0	2100	290	340	620	39	
JUN												
10...	1415	3.5	2510	8.7	27.5	26.0	800	140	110	300	44	
JUL												
09...	0815	33	1830	8.1	23.0	21.0	880	210	87	110	21	
AUG												
13...	0845	29	1880	8.1	21.5	20.0	900	220	84	99	19	
DATE		SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)
OCT												
10...	4	13	292	2200	48	<0.10	3.0	3420	4.65	13.8	--	
NOV												
19...	5	11	341	2900	60	0.20	2.9	4310	5.86	19.8	0.010	
JAN												
02...	6	16	621	4200	120	1.0	7.3	6460	8.78	6.97	0.020	
MAR												
07...	5	11	339	2700	71	0.50	3.6	4070	5.54	28.6	0.020	
APR												
09...	5	11	273	3700	71	0.30	1.1	4890	6.65	19.8	<0.010	
MAY												
07...	6	17	304	3700	80	0.40	0.90	5230	7.11	26.8	<0.010	
JUN												
10...	5	12	170	1200	36	<0.10	5.4	1910	2.59	18.0	0.040	
JUL												
09...	2	9.0	151	940	18	0.40	5.9	1470	2.00	131	0.030	
AUG												
13...	1	11	169	1100	14	0.40	7.4	1640	2.23	126	--	

BELLE FOURCHE RIVER BASIN

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06436760 HORSE CREEK ABOVE VALE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
OCT											
10...	<0.010	--	--	--	0.500	--	<0.010	--	--	--	<0.010
NOV											
19...	<0.010	0.490	--	0.500	0.600	0.060	0.060	0.08	0.40	4.0	0.010
JAN											
02...	0.030	1.78	1.77	1.80	1.80	0.210	0.230	0.30	0.90	12	0.020
MAR											
07...	<0.010	0.490	--	0.510	0.490	0.070	0.060	0.08	0.70	5.4	0.050
APR											
09...	--	--	--	0.093	--	0.010	--	--	--	--	0.040
MAY											
07...	--	--	--	0.050	--	0.020	--	--	--	--	0.090
JUN											
10...	--	--	--	<0.050	--	0.020	--	--	--	--	0.120
JUL											
09...	--	--	--	<0.050	--	<0.010	--	--	--	--	0.120
AUG											
13...	<0.010	--	--	--	<0.050	--	<0.010	--	--	--	0.130

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT											
10...	<0.010	--	0.010	<1	850	<1.0	<1	<1	<1	<0.010	30
NOV											
19...	<0.010	<0.010	0.020	--	980	--	--	--	--	--	--
JAN											
02...	0.030	<0.010	<0.010	--	1600	--	--	--	--	--	--
MAR											
07...	0.020	<0.010	<0.010	--	840	--	--	--	--	--	--
APR											
09...	0.020	0.010	--	--	820	--	--	--	--	--	--
MAY											
07...	0.020	<0.010	--	--	990	--	--	--	--	--	--
JUN											
10...	<0.010	0.040	--	--	500	--	--	--	--	--	--
JUL											
09...	<0.010	0.070	--	--	300	--	--	--	--	--	--
AUG											
13...	0.030	--	0.010	<1	310	<1.0	<1	<1	<1	<0.010	6

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT											
10...	<1	270	40	<0.10	3	3	10	<1.0	4300	--	<10
NOV											
19...	--	--	--	--	--	--	--	--	--	--	--
JAN											
02...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
APR											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
07...	--	--	--	--	--	--	--	--	--	--	--
JUN											
10...	--	--	--	--	--	--	--	--	--	--	--
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
13...	<1	75	22	<0.10	7	4	3	<1.0	2600	2	<3

BELLE FOURCHE RIVER BASIN

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD

LOCATION.--Lat 44°30'47", long 103°08'11", in SE¼NW¼ sec.3, T.6 N., R.8 E., Meade County, Hydrologic Unit 10120202, on right bank near upstream end of bridge on State Highway 34, 0.5 mi upstream from Bear Butte Creek, and 20 mi northeast of Sturgis.

DRAINAGE AREA.--5,870 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,526.13 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 31, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Keyhole Dam, usable capacity, 191,600 acre-ft, 246 mi upstream since February 1952. At a point 75 mi upstream, water is diverted to Belle Fourche Reservoir (see station 06435000), through Inlet Canal (see station 06434500), with other small diversions from the main stem and tributaries for irrigation. Total diversion for irrigation of about 60,000 acres upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 262 ft³/s, 189,800 acre-ft/yr; median of yearly mean discharges, 220 ft³/s, 159,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft³/s, May 21, 1982, gage height, 19.10 ft; no flow for many days in 1945, 1950, and Aug. 9, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,820 ft³/s at 1800 hours, May 12, gage height, 7.48 ft; minimum daily discharge, 4.0 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	129	e25	e5.5	e19	e36	35	69	179	146	147	154
2	33	160	e24	e6.0	e24	e37	33	61	139	131	156	151
3	35	147	e23	e8.0	e30	e39	36	62	124	105	156	155
4	34	151	e25	e9.0	e36	e44	38	62	173	95	146	150
5	32	119	e26	e11	e35	e48	37	70	163	94	151	152
6	28	96	e28	e13	e34	e52	36	64	193	127	144	144
7	27	e80	e30	e15	e33	e56	37	63	287	118	140	145
8	25	e90	e28	e17	e31	e60	41	60	256	118	149	147
9	26	75	e27	e20	e30	e70	44	54	176	133	164	156
10	28	56	e25	e22	e28	e80	45	50	146	145	162	160
11	30	48	e24	e23	e27	e135	52	55	127	159	157	158
12	32	43	e22	e25	e26	e130	73	1650	111	159	160	159
13	33	39	e20	e28	e25	e120	80	998	99	139	164	159
14	37	36	e17	e30	e25	e100	80	288	94	134	142	161
15	36	36	e16	e30	e24	e90	92	244	88	146	143	160
16	37	36	e14	e29	e26	e80	109	632	87	149	149	167
17	40	34	e13	e28	e28	e75	116	357	79	151	161	186
18	41	32	e10	e27	e24	e75	97	235	80	149	163	191
19	43	35	e8.0	e25	e20	e75	83	186	83	152	167	147
20	42	46	e6.5	e24	e25	e73	72	160	119	155	162	108
21	41	45	e5.0	e22	e29	72	65	141	136	168	166	90
22	40	44	e4.0	e19	e30	71	60	129	158	177	165	77
23	39	40	e5.5	e17	e30	71	55	300	141	170	172	73
24	37	36	e7.0	e16	e31	61	52	606	119	173	168	65
25	37	35	e6.5	e15	e32	53	50	279	107	154	167	56
26	37	35	e6.0	e16	e33	48	78	205	103	146	167	50
27	36	e27	e7.0	e16	e34	45	200	168	102	148	154	52
28	35	e21	e8.0	e14	e35	42	183	169	101	172	139	50
29	36	e24	e6.0	e10	---	40	104	183	114	178	136	47
30	47	e26	e4.5	e13	---	39	83	172	136	173	145	48
31	138	---	e5.0	e16	---	37	---	148	---	164	153	---
TOTAL	1196	1821	476.0	569.5	804	2054	2166	7920	4020	4528	4815	3718
MEAN	38.6	60.7	15.4	18.4	28.7	66.3	72.2	255	134	146	155	124
MAX	138	160	30	30	36	135	200	1650	287	178	172	191
MIN	25	21	4.0	5.5	19	36	33	50	79	94	136	47
AC-FT	2370	3610	944	1130	1590	4070	4300	15710	7970	8980	9550	7370

CAL YR 1990 TOTAL 33466.0 MEAN 91.7 MAX 519 MIN 4.0 AC-FT 66380
WTR YR 1991 TOTAL 34087.5 MEAN 93.4 MAX 1650 MIN 4.0 AC-FT 67610

e Estimated

BELLE FOURCHE RIVER BASIN

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06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1953 to September 1958, October 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1954 to September 1958, October 1968 to September 1971, October 1973 to current year.

WATER TEMPERATURE: August 1954 to September 1958, October 1968 to September 1971, October 1974 to current year.

REMARKS.--Water temperature and specific conductance samples are collected once daily by an observer. The percent difference between cations and anions (in milliequivalents per liter) for the Apr. 8 and Aug. 13, 1991, samples exceeded 5 percent; these data should be used with caution.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 7,000 microsiemens, May 16, 1981; minimum daily, 650 microsiemens, Feb. 15, 1971.

WATER TEMPERATURE: Maximum daily, 30.5°C, July 5, 1981; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed daily, 6,460 microsiemens, Jan. 6; minimum observed daily, 900 microsiemens, June 8.

WATER TEMPERATURE: Maximum observed daily, 24.0°C, July 18; minimum observed daily, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)
OCT											
10...	1015	27	2280	8.4	9.5	7.0	1100	240	120	150	23
NOV											
19...	1530	38	2180	8.4	12.0	5.0	1000	230	110	160	25
JAN											
02...	1145	6.0	5510	7.8	-14.0	0.0	2800	590	320	480	27
MAR											
07...	1130	56	2750	8.2	5.5	0.0	1100	220	140	260	33
APR											
08...	1230	42	2180	8.7	8.5	10.0	930	190	110	170	28
MAY											
06...	1230	61	2070	8.8	13.0	13.0	850	160	110	190	32
JUN											
10...	1100	148	1220	8.5	23.0	22.5	530	120	55	82	25
JUL											
09...	1145	136	1850	8.2	31.0	24.0	840	190	89	130	25
AUG											
13...	1230	171	1880	8.5	28.0	24.0	880	210	86	110	21

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)
OCT											
10...	2	10	183	1100	22	0.30	3.3	1760	2.40	128	--
NOV											
19...	2	9.0	201	1100	23	0.50	3.9	1770	2.41	182	0.030
JAN											
02...	4	24	608	3200	91	1.1	8.8	5100	6.94	82.7	0.030
MAR											
07...	3	10	222	1400	45	0.60	3.6	2260	3.07	341	0.090
APR											
08...	2	10	173	1400	29	0.60	0.80	2010	2.74	228	0.030
MAY											
06...	3	9.6	161	1100	32	0.50	0.80	1700	2.31	282	0.050
JUN											
10...	2	6.6	147	510	18	0.10	10	890	1.21	356	0.080
JUL											
09...	2	9.2	139	940	20	0.50	3.4	1470	1.99	538	0.020
AUG											
13...	2	9.7	129	1100	18	0.40	2.4	1620	2.20	747	--

BELLE FOURCHE RIVER BASIN

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (006113)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
OCT 10...	<0.010	--	--	--	0.500	--	0.020	0.03	--	--	<0.010
NOV 19...	0.010	2.97	2.99	3.00	3.00	0.080	0.080	0.10	0.50	15	<0.010
JAN 02...	0.040	4.77	4.76	4.80	4.80	0.690	0.710	0.91	1.4	27	0.010
MAR 07...	0.080	9.91	9.92	10.0	10.0	0.140	0.140	0.18	0.90	48	0.020
APR 08...	--	1.37	--	1.40	--	0.030	--	--	--	--	0.020
MAY 06...	--	3.05	--	3.10	--	0.010	--	--	--	--	0.030
JUN 10...	--	1.02	--	1.10	--	0.030	--	--	--	--	0.160
JUL 09...	--	0.320	--	0.340	--	<0.010	--	--	--	--	0.060
AUG 13...	<0.010	--	--	--	0.083	--	<0.010	--	--	--	0.090

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 10...	0.010	--	0.010	6	370	<1.0	<1	<1	1	<0.010	<10
NOV 19...	<0.010	<0.010	<0.010	--	300	--	--	--	--	--	--
JAN 02...	<0.010	<0.010	<0.010	--	880	--	--	--	--	--	--
MAR 07...	0.030	<0.010	<0.010	--	300	--	--	--	--	--	--
APR 08...	0.010	0.010	--	--	300	--	--	--	--	--	--
MAY 06...	<0.010	<0.010	--	--	270	--	--	--	--	--	--
JUN 10...	0.010	0.080	--	--	170	--	--	--	--	--	--
JUL 09...	<0.010	0.020	--	--	280	--	--	--	--	--	--
AUG 13...	<0.010	--	<0.010	10	300	<1.0	1	<1	<1	<0.010	4

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 10...	<1	110	20	<0.10	3	2	2	<1.0	3100	1	<10
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
JAN 02...	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	--	--	--	--	--	--	--	--	--	--
APR 08...	--	--	--	--	--	--	--	--	--	--	--
MAY 06...	--	--	--	--	--	--	--	--	--	--	--
JUN 10...	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	<1	82	8	<0.10	7	3	4	<1.0	2600	<1	<3

CHEYENNE RIVER BASIN

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06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2280	2250	2610	3970	2730	2550	2620	2500	1540	1970	1800	2010
2	2300	1710	2830	2920	2770	2560	2410	2330	1440	1680	1810	2030
3	2330	1540	2820	6160	2620	2650	2380	2260	1530	1690	1880	2020
4	2400	1500	2920	4570	2540	2820	2400	2200	1500	1780	1870	2030
5	2290	1560	2900	6240	2560	2560	2400	2110	1840	1860	1890	2010
6	2280	1450	2760	6460	2460	2550	2350	2130	1430	2100	1900	2000
7	2230	1540	2670	5250	2390	2660	2320	2370	1600	1880	1900	2020
8	2200	1590	2610	5060	2420	2860	2260	2140	900	1830	1970	2050
9	2190	1620	2480	5150	2270	2750	2210	2280	1020	1840	1980	2100
10	2250	1690	---	5070	2220	2540	2200	2220	1200	1860	1950	2110
11	2250	1720	2450	4740	2260	2390	2250	2260	1260	1830	1940	2090
12	2270	1790	2670	4470	2180	2290	2250	1650	1310	1770	1950	2070
13	2250	1860	2450	4030	2160	2270	2130	1460	1360	1840	1930	2100
14	2200	1950	2540	3890	2230	2320	2420	1980	1400	1870	1980	2050
15	2240	2020	2510	3700	2260	2350	2690	2080	1440	1930	1970	2130
16	2230	2050	2520	3750	2400	2360	3390	1630	1470	1910	1940	2080
17	2190	2020	2840	3550	2300	2280	4680	1460	1460	1950	1990	2030
18	2220	2080	2700	3310	2390	2210	2910	1550	1500	1900	1960	2000
19	2210	2120	2910	3120	2480	2200	2620	1530	1480	1890	1940	1970
20	2230	2160	3130	3110	2480	1980	2630	1540	1570	1860	2010	1970
21	2290	2160	3420	3000	2340	2090	2590	1530	2500	1870	1960	2050
22	2280	2070	3450	3120	2280	2070	2530	1560	1570	1820	1900	2160
23	2220	2140	3860	2880	2250	2250	2530	1530	1540	1820	1970	2220
24	2300	2170	3860	2930	2260	2260	2500	1640	1890	1810	1990	2220
25	2320	2290	3800	2730	2240	2370	2470	1420	1770	1820	1950	2260
26	2310	2360	3880	2840	2320	2380	2260	1600	1720	1910	1950	2310
27	2300	2680	4080	2740	2490	2480	2080	1560	1790	1900	1940	2270
28	2430	2590	4130	2770	2590	2470	2130	1430	1870	1870	1940	2290
29	2380	2670	4250	2710	---	2460	2420	1450	1810	1850	1990	2270
30	2290	2570	3720	2820	---	2450	2520	1430	1810	1800	2010	2240
31	2330	---	4530	2880	---	2490	---	1730	---	1790	2000	---

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.5	7.0	1.0	.0	.0	.0	9.0	4.0	19.5	19.5	20.5	18.5
2	13.0	6.5	.0	.0	.0	.0	8.0	7.0	19.0	18.0	21.0	19.5
3	9.0	3.5	.5	.0	.0	.0	10.0	3.5	19.0	18.5	18.0	19.0
4	8.5	1.5	.0	.0	.0	.0	9.0	7.0	17.0	19.0	18.0	18.0
5	11.0	3.0	.5	.0	.0	.0	10.0	5.0	18.5	21.0	18.0	17.5
6	8.5	.0	.0	.0	.0	.0	12.0	6.0	18.5	21.5	20.5	16.5
7	4.5	.0	.5	.0	.0	.0	8.0	10.0	19.0	21.0	21.0	20.0
8	5.0	.0	.0	.0	.0	.0	7.0	9.5	17.5	19.0	20.5	20.5
9	4.0	.5	.0	.0	.0	.0	6.0	13.5	19.0	20.5	20.0	19.0
10	5.5	3.5	.5	.0	.0	.0	7.0	17.0	19.0	21.0	20.0	17.5
11	8.5	2.5	.5	.0	.0	.0	5.0	16.0	20.0	20.5	19.5	17.5
12	5.0	2.0	.5	.0	.0	.0	1.0	16.5	20.0	20.0	19.5	19.0
13	7.0	2.0	.0	.0	.0	.0	1.5	17.0	21.0	20.0	19.0	18.0
14	4.0	2.0	.0	.0	.0	.0	3.0	16.0	19.0	19.0	20.0	19.0
15	6.0	3.0	.0	.0	.0	.0	5.0	16.5	16.0	22.0	20.5	12.5
16	5.5	.0	.0	.0	.0	.5	7.5	15.5	18.5	23.0	20.5	10.5
17	5.0	.0	.0	.0	.0	1.0	8.5	14.5	20.5	23.0	19.0	12.0
18	1.5	1.5	.0	.0	.0	1.0	7.5	13.0	20.5	24.0	18.5	7.5
19	6.0	1.0	.0	.0	.0	1.0	5.5	13.0	19.5	22.5	20.5	6.5
20	4.5	3.5	.0	.0	.0	1.0	5.5	17.0	20.0	23.0	20.5	8.5
21	1.5	2.0	.0	.0	.0	1.0	7.5	18.0	20.5	23.5	20.5	12.0
22	5.0	.0	.0	.0	.0	1.0	10.0	18.5	18.0	22.5	19.0	9.5
23	4.5	1.0	.0	.0	.0	1.0	8.0	15.5	17.0	23.0	19.5	14.5
24	2.0	2.5	.0	.0	.0	3.5	11.0	17.0	20.0	20.0	20.0	8.0
25	3.5	.5	.0	.0	.0	5.0	10.5	17.0	21.0	19.5	20.0	11.5
26	6.0	.0	.0	.0	.0	6.0	10.0	18.0	19.0	19.0	22.0	7.0
27	5.0	.0	.0	.0	.0	.5	7.0	16.5	19.5	20.0	22.0	12.0
28	4.0	.0	.0	.0	.0	2.0	6.5	16.0	21.0	21.0	23.0	12.0
29	5.0	.0	.0	.0	---	1.0	6.0	16.5	22.5	22.0	21.0	13.5
30	4.0	.0	.0	.0	---	3.5	4.0	17.0	22.5	21.0	20.5	12.5
31	4.5	---	.0	.0	---	4.0	---	17.0	---	20.5	20.5	---

BELLE FOURCHE RIVER BASIN

06437020 BEAR BUTTE CREEK NEAR DEADWOOD, SD

LOCATION.--Lat 44°20'08", long 103°38'06", in NE 1/4 sec. 4, T. 4 N., R. 4 E., Lawrence County, Hydrologic Unit 10120202, on right bank 0.4 mi northeast of Galena, 0.5 mi downstream from Butcher Gulch, and 5.3 mi southeast of Deadwood.

DRAINAGE AREA.--16.6 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,750 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several water-quality samples were collected during the year, and the analytical results will be published in a later report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 938 ft³/s, June 5, 1991, gage height, 7.70 ft; no flow Sept. 1-4, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	0300	26	4.53	May 28	0115	51	4.83
May 17	0800	47	4.80	June 3	0300	102	5.26
May 22	1800	47	4.80	June 5	1915	*938	*7.70

Minimum daily discharge, 0.07 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.80	e.40	e.50	e.12	.53	6.5	8.9	29	6.1	2.4	1.0
2	.12	.90	e.40	e.40	.12	.40	6.8	8.6	24	5.7	2.5	1.0
3	.18	e.75	e.35	e.40	.12	.42	6.7	9.5	44	5.5	2.3	1.0
4	.25	e.70	e.40	e.40	.21	e.50	5.7	9.5	41	5.1	2.2	1.0
5	.23	e.70	e.40	e.40	.20	e.70	6.3	8.6	126	4.8	2.2	.92
6	.16	e.70	e.40	e.40	.25	e.60	6.7	8.3	188	4.8	2.5	.92
7	.29	e.70	e.40	e.35	.25	e.50	5.8	7.9	158	4.5	3.6	.96
8	.40	e.80	e.50	e.60	.25	e.50	5.1	7.9	121	4.6	2.5	1.2
9	.54	e1.0	e.50	e.50	.21	e.60	5.2	7.8	96	4.5	2.2	1.1
10	.64	1.4	e.50	e.45	.36	e.90	5.3	7.7	77	6.2	2.1	1.0
11	.64	1.5	e.50	e.45	.52	e1.5	5.8	8.6	61	6.3	2.1	1.0
12	.71	1.3	e.45	e.50	.67	e2.0	4.6	16	51	4.7	2.1	1.2
13	1.1	e1.0	e.40	e.60	.68	3.1	5.6	9.7	44	4.2	2.0	1.4
14	1.2	1.2	e.30	e.60	.30	2.2	6.9	8.6	40	4.0	2.0	1.5
15	1.1	1.1	e.30	e.40	.25	1.9	4.8	29	34	3.7	4.5	1.7
16	1.0	e1.0	e.30	e.20	.40	2.3	5.4	33	28	6.3	3.1	1.4
17	1.3	e.90	e.25	e.15	.64	1.9	5.9	41	25	5.0	2.3	1.3
18	1.6	.96	e.20	.12	.43	1.8	6.4	38	23	3.8	2.1	1.3
19	2.0	e.90	e.15	.12	.68	4.8	6.9	31	19	3.5	1.8	1.3
20	1.7	.96	e.10	.17	.72	3.8	7.3	29	16	3.2	1.8	1.3
21	1.3	e.80	e.08	.25	1.0	4.7	7.9	24	15	3.1	1.6	1.2
22	1.3	e.60	e.07	.25	.93	4.5	8.5	31	13	2.9	1.6	1.2
23	1.2	.47	e.08	.17	.68	3.3	8.2	33	11	2.8	1.7	1.2
24	1.1	.53	e.09	.12	.56	4.1	8.6	30	9.6	3.0	1.6	1.2
25	1.0	e.50	e.10	.10	.50	5.0	8.5	28	8.4	2.9	1.5	1.1
26	.92	e.50	e.10	.12	.42	5.0	13	26	7.9	3.6	1.4	1.0
27	.85	e.40	e.15	.12	.58	5.9	12	27	7.6	3.8	1.4	1.0
28	.80	e.50	e.25	.12	.50	5.4	11	37	8.5	2.7	1.3	.92
29	.80	e.60	e.20	e.10	---	3.2	10	32	7.2	2.5	1.3	.92
30	.80	e.50	e.15	e.08	---	4.0	9.5	30	6.8	2.6	1.0	.92
31	.80	---	e.30	e.10	---	5.3	---	27	---	2.5	1.0	---
TOTAL	26.15	24.67	8.77	9.24	12.55	81.35	216.9	653.6	1340.0	128.9	63.7	34.16
MEAN	.84	.82	.28	.30	.45	2.62	7.23	21.1	44.7	4.16	2.05	1.14
MAX	2.0	1.5	.50	.60	1.0	5.9	13	41	188	6.3	4.5	1.7
MIN	.12	.40	.07	.08	.12	.40	4.6	7.7	6.8	2.5	1.0	.92
AC-FT	52	49	17	18	25	161	430	1300	2660	256	126	68

CAL YR 1990 TOTAL 1114.73 MEAN 3.05 MAX 22 MIN .00 AC-FT 2210
WTR YR 1991 TOTAL 2599.99 MEAN 7.12 MAX 188 MIN .07 AC-FT 5160

e Estimated

BELLE FOURCHE RIVER BASIN

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06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD
(National stream-quality accounting network station)

LOCATION.--Lat 44°22'11", long 102°33'56", in NE¼NE¼ sec.29, T.5 N., R.13 E., Meade County, Hydrologic Unit 10120202, on right bank 50 ft downstream from highway bridge, 4.3 mi northwest of Elm Springs, and 4.7 mi downstream from Hay Creek.

DRAINAGE AREA.--7,210 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to June 1932, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 786: Drainage area. WSP 926: 1929, 1931(M), 1935, 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,171.60 ft above National Geodetic Vertical Datum of 1929. Prior to July 27, 1939, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Keyhole Dam, usable capacity, 191,600 acre-ft, 304 mi upstream since Feb. 12, 1952. At a point 133 mi above station, water is diverted to Belle Fourche Reservoir (see station 06435000), through Inlet Canal near Belle Fourche (see station 06434500), with other smaller diversions from the main stem and tributaries for irrigation. Total diversion for irrigation of about 60,000 acres upstream from station.

AVERAGE DISCHARGE.--60 years (water years 1929-31, 1935-91), 346 ft³/s, 250,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,100 ft³/s, June 8, 1964, gage height, 15.90 ft, from rating curve extended above 23,000 ft³/s; maximum gage height, 18.22 ft, May 21, 1982; no flow for many days in 1936-37, 1939-40, 1961-62, 1981, 1991.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1927 reached a stage of 21.8 ft. Flood in spring of 1933 reached a stage of about 20 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,270 ft³/s at 0230 hours, May 13, gage height, 8.75 ft; no flow Jan. 7-29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	72	34	e.20	e.06	e.95	30	109	423	104	145	118
2	30	145	33	e.10	e.10	e.85	29	75	406	126	131	122
3	27	155	29	e.08	e.15	e3.0	28	64	256	121	129	122
4	25	149	30	e.05	e.15	e10	26	58	178	96	134	132
5	25	153	39	e.02	e.15	e8.0	27	52	228	76	128	126
6	25	142	32	e.01	e.15	e10	29	84	373	73	131	122
7	25	91	29	e.00	e.15	e21	28	68	494	82	132	119
8	26	111	e29	e.00	e.16	e40	29	55	700	95	129	111
9	25	110	e29	e.00	e.20	e68	35	49	619	98	121	116
10	23	88	e27	e.00	e.18	e100	32	41	461	106	147	126
11	23	67	e24	e.00	e.18	e120	e44	46	349	205	149	158
12	25	52	e22	e.00	e.20	e170	e59	218	242	145	144	149
13	25	46	e16	e.00	e.20	e180	e90	5430	172	150	141	150
14	27	42	e14	e.00	e.15	e170	e175	1370	142	121	160	143
15	30	39	e14	e.00	e.10	e130	e280	1020	114	102	141	144
16	31	34	e14	e.00	e.40	e120	e390	2050	111	117	123	143
17	35	33	e12	e.00	e.70	e100	247	1470	105	131	129	154
18	36	32	e10	e.00	e.65	74	188	808	92	128	149	183
19	36	32	e6.0	e.00	e.60	61	148	529	79	124	160	197
20	36	30	e2.0	e.00	e.70	60	110	373	73	126	174	170
21	37	30	e1.5	e.00	e.90	78	83	276	83	130	153	110
22	38	37	e1.7	e.00	e1.0	61	70	214	137	172	156	79
23	37	37	e1.8	e.00	e.90	62	57	197	172	175	164	66
24	36	40	e2.5	.00	e.85	61	45	567	162	168	165	59
25	37	34	e2.2	.00	e.80	77	44	811	122	173	176	55
26	36	19	e2.6	.00	e.85	59	47	465	101	140	151	49
27	34	11	e1.6	.00	e.90	47	142	344	94	128	162	43
28	35	12	e.60	e.00	e1.0	39	562	501	92	125	143	40
29	35	14	e.20	e.00	---	35	389	432	86	146	118	40
30	33	29	e.28	e.01	---	33	205	1290	87	171	110	39
31	34	---	e.38	e.03	---	32	---	585	---	162	111	---
TOTAL	957	1886	460.36	0.50	12.53	2030.80	3668	19651	6753	4016	4406	3385
MEAN	30.9	62.9	14.9	.016	.45	65.5	122	634	225	130	142	113
MAX	38	155	39	.20	1.0	180	562	5430	700	205	176	197
MIN	23	11	.20	.00	.06	.85	26	41	73	73	110	39
AC-FT	1900	3740	913	1.0	25	4030	7280	38980	13390	7970	8740	6710

CAL YR 1990 TOTAL 31348.36 MEAN 85.9 MAX 650 MIN .20 AC-FT 62180
WTR YR 1991 TOTAL 47226.19 MEAN 129 MAX 5430 MIN .00 AC-FT 93670

e Estimated

BELLE FOURCHE RIVER BASIN

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,000 microsiemens, Jan. 31, Feb. 7-11, 1979; minimum daily, 800 microsiemens, June 19, 1976.

WATER TEMPERATURE: Maximum daily, 33.5°C, June 25, 1977; minimum, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
DEC											
10...	1110	27	2920	8.1	222	9.0	0.5	2.3	700	13.8	K1
MAR											
11...	1415	111	2060	7.8	159	22.0	0.5	15	685	10.5	K2
MAY											
23...	1315	182	1590	8.4	139	23.5	22.5	65	699	9.8	K230
AUG											
01...	1615	144	1850	8.1	100	28.5	23.5	32	700	8.1	K66
SEP											
04...	1515	136	2020	8.1	107	28.0	24.5	15	707	8.6	K46

DATE	STREP- TOCOC- CI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
DEC										
10...	K9	1400	300	150	230	27	3	11	203	40
MAR										
11...	95	840	180	94	160	29	2	7.4	161	34
MAY										
23...	K280	600	140	61	130	32	2	9.9	145	25
AUG										
01...	K18	830	190	86	110	22	2	10	105	16
SEP										
04...	K52	950	220	97	130	23	2	10	113	26

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
DEC											
10...	0.60	3.0	2710	2490	3.69	198	0.030	0.030	3.17	3.27	3.20
MAR											
11...	0.30	2.1	1680	1550	2.28	503	0.070	0.060	4.03	4.04	4.10
MAY											
23...	0.50	7.7	1230	1230	1.67	604	0.070	0.030	0.930	0.970	1.00
AUG											
01...	0.40	3.8	1530	1480	2.08	595	<0.010	<0.010	--	--	<0.050
SEP											
04...	0.60	3.8	1700	1650	2.31	624	<0.010	<0.010	--	--	<0.050

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WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

CHEYENNE RIVER BASIN

06439000 CHERRY CREEK NEAR PLAINVIEW, SD

LOCATION.--Lat 44°44'35", long 102°03'11", in SW¼NE¼ sec.16, T.9 N., R.17 E., Meade County, Hydrologic Unit 10120113, on left upstream wingwall of bridge on State Highway 73, 0.2 mi downstream from small right-bank tributary, 6.2 mi downstream from Red Owl Creek, and 11 mi northeast of Plainview.

DRAINAGE AREA.--1,190 mi², approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for October and November 1945, published in WSP 1309.

REVISED RECORDS.--WDR SD-85-1: Location and datum.

GAGE.--Water-stage recorder. Datum of gage is 2,157.91 ft above National Geodetic Vertical Datum of 1929, datum in error since 1945 based on NGVD levels of 1963. Prior to June 8, 1948, nonrecording gage at same site and datum. Prior to Sept. 27, 1985, recording gage at site 100 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 44.6 ft³/s, 32,310 acre-ft/yr; median of yearly mean discharges, 22 ft³/s, 15,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, Apr. 1, 1952, gage height, 22.63 ft; no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 9	2000	*762	*8.63				

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	12	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	8.5	.00	25	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	6.7	.00	2.4	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	6.5	.00	.42	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	32	.00	.10	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	43	.00	.14	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	32	.00	1.1	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	36	.00	.55	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	78	.00	279	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	49	.00	370	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	27	.00	95	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	20	.00	69	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	17	.00	40	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	14	.00	29	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	11	.00	23	.00
16	.00	.00	.00	.00	.00	.00	.00	154	7.9	.00	18	.00
17	.00	.00	.00	.00	.00	.00	.00	81	5.8	.00	13	.00
18	.00	.00	.00	.00	.00	.00	.00	55	4.3	.00	9.6	.00
19	.00	.00	.00	.00	.00	.00	.00	77	3.4	.00	7.2	.00
20	.00	.00	.00	.00	.00	.00	.00	48	2.2	.00	5.4	.00
21	.00	.00	.00	.00	.00	.00	.00	32	1.5	103	3.6	.00
22	.00	.00	.00	.00	.00	.00	.00	27	1.1	53	2.4	.00
23	.00	.00	.00	.00	.00	.00	.00	22	.82	17	1.7	.00
24	.00	.00	.00	.00	.00	.00	.00	16	.48	6.3	.95	.00
25	.00	.00	.00	.00	.00	.00	.00	12	.31	2.5	.39	.00
26	.00	.00	.00	.00	.00	.00	.00	8.3	.17	1.1	.12	.00
27	.00	.00	.00	.00	.00	.00	.00	6.2	.02	.48	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	13	.00	.16	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	7.4	.00	.02	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	8.1	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	23	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	590.00	420.70	183.56	997.07	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	19.0	14.0	5.92	32.2	.000
MAX	.00	.00	.00	.00	.00	.00	.00	154	78	103	370	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	1170	834	364	1980	.00

CAL YR 1990 TOTAL 3029.67 MEAN 8.30 MAX 400 MIN .00 AC-FT 6010
WTR YR 1991 TOTAL 2191.33 MEAN 6.00 MAX 370 MIN .00 AC-FT 4350

CHEYENNE RIVER BASIN

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06439300 CHEYENNE RIVER AT CHERRY CREEK, SD
(National stream-quality accounting network station)

LOCATION.--Lat 44°35'59", long 101°29'51", in SW¼NW¼ (revised) sec.5, T.7 N., R.22 E., Ziebach County, Hydrologic Unit 10120112, on left bank at village of Cherry Creek, 500 ft downstream from Cherry Creek, and 2.1 mi upstream from Plum Creek.

DRAINAGE AREA.--23,900 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,702.87 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 18, 1960, nonrecording gage and Oct. 19, 1960, to Oct. 29, 1986, at site 0.5 mi downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Angostura Dam 197 mi upstream (see station 06401000) since October 1949 and upstream on Rapid Creek since 1956 and Belle Fourche River since 1952. Flow also affected by diversions for irrigation of about 70,000 acres and return flow from irrigated areas. U.S. Army Corps of Engineers satellite data-collection platform at station. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--31 years, 800 ft³/s, 579,600 acre-ft/yr; median of yearly mean discharges, 700 ft³/s, 507,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,900 ft³/s, May 22, 1982, gage height, 15.77 ft; no flow Jan. 6 to Feb. 2, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,000 ft³/s at unknown hours, June 7, gage height, 12.73 ft, from floodmarks; minimum daily, 5.0 ft³/s, Dec. 23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	83	e102	e7.0	e10	e38	140	403	7610	990	205	138
2	74	83	e105	e7.0	e12	e44	126	295	5630	859	293	132
3	72	96	e105	e7.0	e16	e75	119	259	4750	657	237	133
4	71	235	e102	e6.4	e20	e120	117	225	5240	580	200	128
5	62	375	e100	e6.2	e28	e160	117	203	10600	487	202	132
6	57	268	e98	e6.0	e37	e210	110	240	e11000	411	211	134
7	66	225	e95	e6.0	e42	e240	108	255	e18500	363	214	135
8	69	195	e92	e6.0	e46	e235	102	241	e15000	339	897	126
9	70	171	e90	e7.0	e47	e320	108	210	e7800	325	1230	126
10	70	207	e94	e8.2	e45	e510	119	176	e6200	296	460	126
11	73	198	e95	e9.0	e43	e450	125	280	e5800	280	406	140
12	76	175	e92	e9.0	e40	e380	143	5050	e3700	306	573	502
13	72	162	e90	e10	e38	e320	385	5580	2670	695	e391	781
14	70	141	e87	e10	e37	e290	827	5530	2420	413	350	399
15	69	130	e84	e10	e36	e270	586	2360	2100	344	318	316
16	74	122	e70	e8.2	e35	e300	368	2130	1920	294	313	276
17	88	120	e60	e6.2	e35	e320	345	3980	1580	262	347	330
18	85	117	e48	e5.6	e35	337	362	4520	1410	263	283	297
19	82	107	e36	e5.5	e35	307	345	3270	1270	244	280	273
20	85	107	e24	e5.5	e35	273	306	1440	1200	248	279	273
21	84	113	e13	e5.7	e36	297	1310	1040	967	240	257	274
22	83	111	e7.2	e5.9	e36	258	583	905	1000	218	245	248
23	85	111	e5.0	e5.9	e36	250	365	1100	975	221	217	219
24	86	110	e5.6	e5.8	e35	225	268	665	1210	222	220	202
25	84	113	e5.8	e5.8	e35	214	218	913	1420	223	216	184
26	86	e112	e6.2	e5.7	e36	206	197	1230	965	213	204	164
27	87	e110	e6.8	e5.5	e37	210	189	903	731	211	200	156
28	89	e105	e6.6	e5.5	e38	188	172	2680	663	191	178	151
29	86	e100	e6.2	e6.0	---	171	564	10100	620	177	177	144
30	86	e100	e5.6	e7.0	---	159	651	5380	1760	182	172	138
31	86	---	e6.0	e8.0	---	149	---	5770	---	192	152	---
TOTAL	2401	4402	1743.0	212.6	961	7526	9475	67333	126711	10946	9927	6777
MEAN	77.5	147	56.2	6.86	34.3	243	316	2172	4224	353	320	226
MAX	89	375	105	10	47	510	1310	10100	18500	990	1230	781
MIN	57	83	5.0	5.5	10	38	102	176	620	177	152	126
AC-FT	4760	8730	3460	422	1910	14930	18790	133600	251300	21710	19690	13440

CAL YR 1990 TOTAL 76210.0 MEAN 209 MAX 2610 MIN 5.0 AC-FT 151200
WTR YR 1991 TOTAL 248414.6 MEAN 681 MAX 18500 MIN 5.0 AC-FT 492700

e Estimated

CHEYENNE RIVER BASIN

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1971 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

SPECIFIC CONDUCTANCE: January 1975 to September 1976.

WATER TEMPERATURE: January 1975 to September 1976, October 1977 to September 1978.

REMARKS.--The percent difference between cations and anions (in milliequivalents per liter) for the Jan. 18 and July 25, 1991, samples exceeded 5 percent; these data should be used with caution.

INSTRUMENTATION.--Water-quality monitor June 16, 1977, to September 1979.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 66,000 mg/L, May 25, 1976; minimum daily mean, 80 mg/L, Nov. 15-17, 1972.

SEDIMENT LOAD: Maximum daily, 2,530,000 tons, June 12, 1972; minimum daily, 15 tons, Dec. 14, 1973.

SPECIFIC CONDUCTANCE: Maximum daily, 3,400 microsiemens, Jan. 27, 28, 1975; minimum daily, 620 microsiemens, Apr. 25, 1975.

WATER TEMPERATURE: Maximum daily, 35.0°C, Aug. 26, 1975; minimum daily, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) ATON) (00300)	OXYGEN, DIS- SOLVED (MG/L) SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT												
22...	1205	84	--	8.1	151	15.5	7.5	45	710	10.8	--	K8
JAN												
18...	1255	5.6	3420	8.0	228	8.0	0.0	6.5	708	21.8	163	<2
APR												
15...	1230	534	1030	7.6	148	11.0	7.0	8800	707	10.6	94	K1100
JUL												
25...	1310	225	2250	7.9	113	29.0	24.5	65	720	7.3	94	K20

DATE	STREP- TOCOCCE FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
OCT											
22...	K18	930	220	92	240	36	3	13	153	1200	100
JAN											
18...	K22	1100	290	99	410	44	5	13	242	1900	95
APR											
15...	6000	120	36	6.7	160	74	6	6.3	162	290	26
JUL											
25...	K50	810	180	86	210	36	3	14	120	1200	53

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
OCT											
22...	0.20	4.6	2000	1960	2.72	456	0.080	<0.010	--	--	<0.100
JAN											
18...	0.30	5.1	2840	2950	3.86	43.0	<0.010	<0.010	--	--	<0.100
APR											
15...	0.60	16	639	643	0.87	921	0.080	0.020	2.62	2.68	2.70
JUL											
25...	0.60	9.7	1900	1820	2.58	1150	0.020	<0.010	--	--	<0.050

CHEYENNE RIVER BASIN

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06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT 22...	<0.100	0.030	<0.010	--	0.60	--	0.070	<0.010	0.060	<0.010	<10
JAN 18...	<0.100	0.020	0.020	0.03	<0.20	--	0.020	<0.010	0.020	<0.010	10
APR 15...	2.70	0.060	0.020	0.03	4.9	34	0.440	0.020	0.100	<0.010	30
JUL 25...	0.051	<0.010	<0.010	--	0.60	--	0.130	<0.010	<0.010	<0.010	20

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 22...	1	37	<0.5	<1.0	2	<3	2	8	<1	160	39
JAN 18...	2	<100	<10	<1.0	1	1	1	<10	<1	210	300
APR 15...	13	67	<0.5	<1.0	<1	<3	1	15	<1	46	<1
JUL 25...	3	<100	<10	<1.0	2	<1	6	<10	<1	130	10

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 22...	<0.1	<10	3	1	<1.0	2800	<6	3	1000	228	100
JAN 18...	<0.1	2	4	2	<1.0	3200	3	<10	--	--	--
APR 15...	<0.1	<10	1	4	<1.0	460	12	5	23500	33900	100
JUL 25...	<0.1	7	3	2	<1.0	2800	2	<10	188	114	97

CHEYENNE RIVER BASIN

06439430 COTTONWOOD CREEK NEAR CHERRY CREEK, SD

LOCATION.--Lat 44°40'28", long 101°24'16", in NW 1/4 sec. 12, T.8 N., R.22 E., Ziebach County, Hydrologic Unit 10120112, on right bank at upstream side of highway bridge, 2.1 mi upstream from mouth, and 6.7 mi northeast of Cherry Creek.

DRAINAGE AREA.--120 mi², approximately.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,810 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--9 years, 8.77 ft³/s, 6,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,640 ft³/s, Mar. 30, 1987, gage height, 12.58 ft; no flow for long periods in each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 4,200 ft³/s, May 18, 1982, gage height, 13.03 ft, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	0415	*117	*4.76	No other peak greater than base discharge.			

No flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	6.4	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	3.7	.00	.04	.00
3	.00	.00	.00	.00	.00	.00	.00	.01	2.8	.00	.00	.00
4	.00	.00	.00	.00	.00	.19	.00	.00	2.8	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	1.5	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.93	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.32	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.72	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	2.1	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	2.7	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	e.00	e.00	.06	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	e.00	e.00	.04	.70	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.83	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	48	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	13	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	4.5	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	2.4	.00	.11	.00	.00
21	.00	.00	.00	.00	.25	.00	.00	.96	.00	.03	.00	.00
22	.00	.00	.00	.00	.07	.00	.00	3.1	.00	.16	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	13	.00	.02	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	16	.00	.01	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	17	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	6.0	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	3.7	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	18	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	16	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	13	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	12	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.32	0.19	5.62	188.20	18.49	0.33	0.04	0.00
MEAN	.000	.000	.000	.000	.011	.006	.19	6.07	.62	.011	.001	.000
MAX	.00	.00	.00	.00	.25	.19	2.7	48	6.4	.16	.04	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.6	.4	11	373	37	.7	.08	.00

CAL YR 1990 TOTAL 58.64 MEAN .16 MAX 17 MIN .00 AC-FT 116
WTR YR 1991 TOTAL 213.19 MEAN .58 MAX 48 MIN .00 AC-FT 423

e Estimated

06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE¼ sec.1, T.111 N., R.80 W., 5th principal meridian, Hughes County, Hydrologic Unit 10130105, in Pier A of Control Tower No. 1 of powerhouse intake structure of dam on Missouri River, 6.0 mi northwest of Pierre, 7.1 mi upstream from Bad River, and at mile 1,072.3.

DRAINAGE AREA.--243,500 mi², approximately.

PERIOD OF RECORD.--August 1958 to current year (monthend contents only). Prior to October 1967, published as Oahe Reservoir near Pierre.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 14, 1958, nonrecording gages at various locations upstream from outlet works, Jan. 14, 1959, to Sept. 30, 1962, recorder in Tower No. 1 of outlet works, all at same datum.

REVISED RECORDS.--WDR SD-88-1: September monthend elevation.

REMARKS.--Reservoir is formed by an earthfill dam; storage began in August 1958. Maximum capacity, 23,338,000 acre-ft below elevation 1,620.0 ft (top of spillway gates). Normal maximum, 22,240,000 acre-ft below 1,617.0 ft, of which about 2,390,000 acre-ft is designated for flood control. Inactive storage, 5,451,000 acre-ft below elevation 1,540.0 ft. Dead storage, 1,970 acre-ft below elevation 1,425.0 ft (invert of lowest outlet tunnel). Figures given herein represent elevations at powerhouse intake structure and total contents adjusted for wind effect.

The spillway consists of a gated chute with flat crest at elevation 1,596.5 ft, 8 gates, 50 by 23.5 ft each; design capacity, 300,000 ft³/s. The outlet works consist of 7 turbines with a generating capacity of 85,000 kilowatts each. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Records of elevation and contents provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 22,764,000 acre-ft, May 14, 1986, affected by wind; minimum since initial filling, 12,071,000 acre-ft, Oct. 30, 1989, Nov. 1, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,945,000 acre-ft, June 30; minimum contents, 12,111,000 acre-ft, Oct. 28.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,583.49	12,633,000	-
Oct. 31	1,581.18	12,142,000	-491,000
Nov. 30	1,582.21	12,378,000	+236,000
Dec. 31	1,582.17	12,365,000	-13,000
CAL YR 1990	-	-	-386,000
Jan. 31	1,583.43	12,649,000	+284,000
Feb. 28	1,585.97	13,223,000	+574,000
Mar. 31	1,587.87	13,710,000	+487,000
Apr. 30	1,587.17	13,486,000	-224,000
May 31	1,588.50	13,844,000	+358,000
June 30	1,592.90	14,945,000	+1,101,000
July 31	1,591.17	14,506,000	-439,000
Aug. 31	1,588.50	13,862,000	-644,000
Sept. 30	1,583.31	12,633,000	-1,229,000
WTR YR 1991	-	-	0

NOTE.--Lake frozen over Dec. 31 to Mar. 25.

MISSOURI-FORT RANDALL RIVER BASIN

06440000 MISSOURI RIVER AT PIERRE, SD

LOCATION (REVISED).--Lat 44°22'23", long 100°22'03" in NW¼SW¼ sec.32, T.111 N., R.79 W., Hughes County, Hydrologic Unit 10140101, on left bank downstream from Dakota Minnesota and Eastern Railroad bridge, 1.3 mi upstream from Bad River, 5.8 mi downstream from Oahe Dam, and at mile 1,066.5.

PERIOD OF RECORD.--October 1929 to September 1965, October 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,414.26 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 11, 1932, chain gage at same site at datum 2.00 ft higher.

REMARKS.--Records good. Stage regulated by Oahe Reservoir. Gage heights for period of October 1965 to September 1988 in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.03	6.01	5.94	7.73	7.45	7.26	7.67	7.58	6.58	7.87	8.66	8.94
2	7.99	5.82	6.59	8.51	7.05	6.79	7.86	7.35	6.76	7.75	8.34	9.03
3	7.30	6.19	6.48	8.28	7.17	6.90	7.88	7.69	7.63	7.91	8.22	9.58
4	7.30	6.63	6.90	8.27	7.58	6.96	7.65	7.45	7.69	6.82	8.33	10.02
5	6.92	6.39	6.55	7.74	7.08	6.55	7.87	7.22	7.97	7.72	8.80	10.01
6	6.75	5.97	6.36	7.68	7.33	6.71	7.96	7.73	7.12	7.33	8.83	10.13
7	6.77	6.25	6.38	8.31	6.60	6.21	7.58	7.72	6.71	6.56	8.87	10.03
8	7.58	6.06	6.31	7.74	6.32	6.30	8.87	7.78	6.33	8.02	8.54	9.18
9	7.28	5.95	6.19	8.10	6.17	6.45	9.20	8.06	6.15	8.35	8.68	9.56
10	8.18	6.17	6.73	8.11	6.30	6.53	8.92	8.45	6.19	8.88	8.49	9.44
11	7.73	6.18	6.51	7.23	7.09	6.66	9.64	7.93	6.14	8.48	7.94	10.04
12	8.14	6.50	6.45	7.47	7.00	6.63	9.25	7.97	6.26	8.82	8.34	10.01
13	7.95	6.46	6.53	6.75	6.42	6.40	8.10	8.43	6.21	9.18	8.37	10.01
14	6.91	6.29	6.86	7.43	6.46	6.31	7.48	8.24	6.15	7.33	8.51	9.47
15	8.76	6.19	6.34	7.63	6.88	6.44	7.74	7.52	5.78	8.64	7.97	8.49
16	8.14	6.25	6.43	7.83	6.76	6.70	7.64	7.63	6.52	8.72	7.55	9.29
17	7.93	6.35	7.68	7.11	6.86	6.41	7.64	7.68	6.39	8.59	7.59	9.46
18	7.23	6.30	7.26	6.68	7.54	6.47	7.50	7.66	6.56	8.51	7.33	9.10
19	7.21	6.92	7.03	5.72	7.38	6.36	7.21	7.69	6.74	8.35	8.44	8.63
20	7.17	6.87	8.32	6.12	7.15	6.74	7.10	8.03	6.51	8.84	8.29	9.01
21	7.16	6.27	8.38	7.35	7.13	6.50	7.24	8.31	6.43	8.54	8.26	9.23
22	7.89	6.43	7.60	7.83	7.17	7.32	7.71	7.85	6.41	8.72	8.31	7.94
23	7.67	6.46	7.33	7.00	6.74	5.63	7.89	6.91	6.17	8.21	8.39	8.90
24	7.77	6.60	7.76	7.44	6.72	6.39	7.77	7.06	6.79	8.34	9.02	8.95
25	7.49	6.71	7.11	7.37	7.41	6.84	7.96	6.93	7.24	8.33	8.19	8.48
26	7.63	6.93	8.09	7.57	6.98	7.04	8.22	6.73	6.33	8.56	9.33	8.75
27	6.85	6.43	8.08	7.50	7.11	6.36	7.44	7.20	6.92	8.48	9.50	9.02
28	7.23	6.20	7.68	8.20	7.17	6.32	7.43	8.01	7.70	8.06	9.42	9.09
29	6.70	6.13	8.41	8.14	---	6.07	7.71	7.18	7.01	8.51	9.23	8.09
30	6.65	5.68	8.10	7.88	---	5.96	7.04	7.58	6.29	8.43	8.96	6.99
31	6.40	---	8.09	7.64	---	6.21	---	7.73	---	8.54	9.24	---
MEAN	7.44	6.32	7.11	7.56	6.96	6.53	7.91	7.65	6.66	8.24	8.51	9.16
MAX	8.76	6.93	8.41	8.51	7.58	7.32	9.64	8.45	7.97	9.18	9.50	10.13
MIN	6.40	5.68	5.94	5.72	6.17	5.63	7.04	6.73	5.78	6.56	7.33	6.99

MISSOURI-FORT RANDALL RIVER BASIN

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06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD
(Formerly published as Buffalo Creek near Cottonwood)

LOCATION.--Lat 43°53'08", long 101°46'00", in NE¼SW¼SE¼ sec.7, T.1 S., R.20 E., Jackson County, Hydrologic Unit 10140102, on right bank at upstream side of bridge on old U.S. Highway 16, 1.0 mi above confluence with Cottonwood Creek, and 7.0 mi east of Cottonwood.

DRAINAGE AREA.--250 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1954 to September 1960 (discharge measurements only), October 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,242.96 ft above National Geodetic Vertical Datum of 1929.
October 1954 to September 1960, nonrecording gage at same site at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft³/s, May 31, 1991, gage height, 17.89 ft; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	1200	2,160	12.60	June 11	0845	281	7.57
May 29	1345	1,450	11.46	June 15	1430	385	8.11
May 31	1215	*15,200	*17.89	July 1	1730	474	8.51
June 6	2000	5,440	14.79				

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.25	.00	.06	1570	337	.02	.01
2	.00	.00	.00	.00	.00	e.60	.00	.04	1220	105	.02	.00
3	.00	.00	.00	.00	.00	e.30	.00	.08	481	30	.02	.00
4	.00	.00	.00	.00	.00	e.28	.00	3.0	601	16	.03	.00
5	.00	.00	.00	.00	.00	e.50	.00	9.2	746	10	.04	.00
6	.00	.00	.00	.00	.00	e1.0	.00	4.5	1820	5.2	.04	.00
7	.00	.00	.00	.00	.00	e3.0	.00	1.5	1960	1.9	.11	.00
8	.00	.00	.00	.00	.00	e2.0	.00	.44	647	1.0	.09	.00
9	.00	.00	.00	.00	.00	e1.7	.00	.20	138	.76	32	.00
10	.00	.00	.00	.00	.00	e1.5	.00	.12	82	.56	12	.00
11	.00	.00	.00	.00	.00	e1.9	.00	.07	230	.38	3.0	.00
12	.00	.00	.00	.00	.00	3.0	.00	64	93	36	.67	.00
13	.00	.00	.00	.00	.00	1.0	22	19	48	29	.22	6.0
14	.00	.00	.00	.00	.00	.47	45	4.8	52	11	6.4	12
15	.00	.00	.00	.00	.00	.53	30	2.2	256	4.7	8.9	3.0
16	.00	.00	.00	.00	.00	.53	12	1010	103	1.8	1.7	21
17	.00	.00	.00	.00	.00	.36	2.8	686	33	.61	.45	11
18	.00	.00	.00	.00	.00	.17	.72	396	19	.21	.19	1.8
19	.00	.00	.00	.00	.00	.13	.50	249	13	.12	.13	.32
20	.00	.00	.00	.00	.00	.09	.32	39	8.7	.07	.10	.15
21	.00	.00	.00	.00	.00	.08	55	19	4.8	.05	.08	.09
22	.00	.00	.00	.00	.00	.09	14	12	3.3	.05	.07	.06
23	.00	.00	.00	.00	.00	.09	4.2	13	2.7	.04	.06	.04
24	.00	.00	.00	.00	.00	.06	1.1	6.7	1.6	.04	.06	.03
25	.00	.00	.00	.00	e.00	.05	.46	2.2	1.4	.03	.05	.02
26	.00	.00	.00	.00	e.02	.03	.21	.65	.98	.03	.04	.01
27	.00	.00	.00	.00	e.05	.02	.12	.27	.69	.03	.03	.01
28	.00	.00	.00	.00	e.12	.00	.09	170	22	.03	.03	.01
29	.00	.00	.00	.00	---	.00	.08	1020	146	.02	.02	.01
30	.00	.00	.00	.00	---	.00	.13	272	108	.02	.02	.01
31	.00	---	.00	.00	---	.00	---	3990	---	.02	.01	---
TOTAL	0.00	0.00	0.00	0.00	0.19	19.73	188.73	7995.03	10412.17	591.67	66.60	55.57
MEAN	.000	.000	.000	.000	.007	.64	6.29	258	347	19.1	2.15	1.85
MAX	.00	.00	.00	.00	.12	3.0	55	3990	1960	337	32	21
MIN	.00	.00	.00	.00	.00	.00	.00	.04	.69	.02	.01	.00
AC-FT	.00	.00	.00	.00	.4	39	374	15860	20650	1170	132	110

CAL YR 1990 TOTAL 991.76 MEAN 2.72 MAX 141 MIN .00 AC-FT 1970
WTR YR 1991 TOTAL 19329.69 MEAN 53.0 MAX 3990 MIN .00 AC-FT 38340

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1989 to current year.

REMARKS.--Records fair. Sediment samples collected daily by local observer. One bedload sample collected this year. Flow affected by ice Feb. 25 to Mar. 10.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 39,800 mg/L, Aug. 24, 1990; minimum daily mean, 0 mg/L on many days each year.

SEDIMENT LOAD: Maximum daily, 39,900 tons, May 31, 1991; minimum daily, 0 ton on many days each year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 39,100 mg/L, May 13; minimum daily mean, 0 mg/L on many days.

SEDIMENT LOAD: Maximum daily, 39,900 tons, May 31; minimum daily, 0 ton on many days.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)
MAY 31...	1900	4790	190	22.5	15.5	0.030	0.010	0.360

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
MAY 31...	0.400	0.390	0.410	0.030	0.050	0.06	0.120	0.100

06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00
JANUARY			FEBRUARY			MARCH			
1	.00	0	.00	.00	0	.00	e.25	e1270	.86
2	.00	0	.00	.00	0	.00	e.60	e1350	2.2
3	.00	0	.00	.00	0	.00	e.30	e1520	1.2
4	.00	0	.00	.00	0	.00	e.28	e1500	1.1
5	.00	0	.00	.00	0	.00	e.50	e1500	2.0
6	.00	0	.00	.00	0	.00	e1.0	e3120	8.4
7	.00	0	.00	.00	0	.00	e3.0	e4790	39
8	.00	0	.00	.00	0	.00	e2.0	e5170	28
9	.00	0	.00	.00	0	.00	e1.7	e5250	24
10	.00	0	.00	.00	0	.00	e1.5	e5180	21
11	.00	0	.00	.00	0	.00	e1.9	e5170	27
12	.00	0	.00	.00	0	.00	3.0	e5110	41
13	.00	0	.00	.00	0	.00	1.0	e4620	12
14	.00	0	.00	.00	0	.00	.47	e4550	5.8
15	.00	0	.00	.00	0	.00	.53	e4410	6.3
16	.00	0	.00	.00	0	.00	.53	e4110	5.9
17	.00	0	.00	.00	0	.00	.36	e3110	3.0
18	.00	0	.00	.00	0	.00	.17	e1650	.76
19	.00	0	.00	.00	0	.00	.13	e560	.20
20	.00	0	.00	.00	0	.00	.09	e150	.04
21	.00	0	.00	.00	0	.00	.08	e130	.03
22	.00	0	.00	.00	0	.00	.09	e120	.03
23	.00	0	.00	.00	0	.00	.09	e100	.02
24	.00	0	.00	.00	0	.00	.06	e90	.01
25	.00	0	.00	e.00	0	.00	.05	e60	.01
26	.00	0	.00	e.02	e1500	.08	.03	e10	.00
27	.00	0	.00	e.05	e1650	.22	.02	e0	.00
28	.00	0	.00	e.12	e1510	.49	.00	0	.00
29	.00	0	.00	---	---	---	.00	0	.00
30	.00	0	.00	---	---	---	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.19	---	0.79	19.73	---	229.86

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	.00	0	.00	.06	2800	.45	1570	3290	13900
2	.00	0	.00	.04	2300	.25	1220	e2750	9060
3	.00	0	.00	.08	1680	.36	481	1900	2470
4	.00	0	.00	3.0	e5260	89	601	2250	3650
5	.00	0	.00	9.2	e6450	160	746	2850	5740
6	.00	0	.00	4.5	4760	58	1820	2680	13200
7	.00	0	.00	1.5	3550	14	1960	2980	15800
8	.00	0	.00	.44	2400	2.8	647	1090	1900
9	.00	0	.00	.20	1900	1.0	138	1150	428
10	.00	0	.00	.12	e1550	.50	82	640	142
11	.00	0	.00	.07	e1200	.23	230	1070	664
12	.00	0	.00	64	e27700	9200	93	1150	289
13	22	e6940	1230	19	e39100	2010	48	700	91
14	45	e19400	2360	4.8	e31200	404	52	470	66
15	30	13400	1090	2.2	28000	166	256	e800	553
16	12	10700	347	1010	11600	8850	103	e630	175
17	2.8	8500	64	686	4770	8830	33	e300	27
18	.72	8250	16	396	5950	6360	19	127	6.5
19	.50	8200	11	249	4950	3330	13	64	2.2
20	.32	7600	6.6	39	3000	316	8.7	39	.92
21	55	e19400	3400	19	1250	64	4.8	34	.44
22	14	16000	605	12	520	17	3.3	e33	.29
23	4.2	13700	155	13	350	12	2.7	e32	.23
24	1.1	e12400	37	6.7	240	4.3	1.6	32	.14
25	.46	e11200	14	2.2	285	1.7	1.4	e30	.11
26	.21	e9800	5.6	.65	280	.49	.98	29	.08
27	.12	e8150	2.6	.27	100	.07	.69	25	.05
28	.09	e5800	1.4	170	e1920	1080	22	e2540	223
29	.08	e4000	.86	1020	7560	23000	146	e3900	1540
30	.13	e3250	1.1	272	3000	2200	108	e3020	881
31	---	---	---	3990	3700	39900	---	---	---
TOTAL	188.73	---	9347.16	7995.03	---	106072.25	10412.17	---	70809.96

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

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06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	337	e5480	4990	.02	32	.00	.01	0	.00
2	105	4700	1330	.02	e30	.00	.00	0	.00
3	30	e1780	144	.02	e28	.00	.00	0	.00
4	16	250	11	.03	e26	.00	.00	0	.00
5	10	72	1.9	.04	e24	.00	.00	0	.00
6	5.2	51	.72	.04	e22	.00	.00	0	.00
7	1.9	47	.24	.11	e46	.01	.00	0	.00
8	1.0	43	.12	.09	44	.01	.00	0	.00
9	.76	35	.07	32	e35700	3840	.00	0	.00
10	.56	29	.04	12	e29700	962	.00	0	.00
11	.38	e26	.03	3.0	e17100	139	.00	0	.00
12	36	e2420	472	.67	e7000	13	.00	0	.00
13	29	e3720	291	.22	1400	.83	6.0	e9080	613
14	11	e2320	69	6.4	e7440	365	12	e31500	1020
15	4.7	e1090	14	8.9	e17800	428	3.0	e24600	199
16	1.8	280	1.4	1.7	8250	38	21	e27100	1720
17	.61	50	.08	.45	1750	2.1	11	19500	579
18	.21	50	.03	.19	314	.16	1.8	e13700	67
19	.12	49	.02	.13	205	.07	.32	12200	11
20	.07	48	.01	.10	118	.03	.15	10500	4.3
21	.05	e48	.01	.08	72	.02	.09	6200	1.5
22	.05	e46	.01	.07	65	.01	.06	e2700	.44
23	.04	e46	.00	.06	60	.01	.04	e1000	.11
24	.04	e44	.00	.06	e54	.01	.03	e300	.02
25	.03	43	.00	.05	e45	.01	.02	190	.01
26	.03	42	.00	.04	e37	.00	.01	103	.00
27	.03	40	.00	.03	e28	.00	.01	22	.00
28	.03	39	.00	.03	e20	.00	.01	e0	.00
29	.02	38	.00	.02	e10	.00	.01	e0	.00
30	.02	36	.00	.02	e0	.00	.01	e0	.00
31	.02	34	.00	.01	e0	.00	---	---	---
TOTAL	591.67	---	7325.68	66.60	---	5788.27	55.57	---	4215.38
YEAR	19329.69		203789.35						

e Estimated

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)
APR 1991											
16...	1200	10	7.0	11000	100	94	97	98	98	--	--
MAY											
13...	1445	14	18.0	17900	100	87	97	98	99	--	--
16...	1450	1810	13.0	3360	--	82	91	95	97	100	--
31...	1900	4790	15.5	4290	--	80	91	95	98	99	100

MISSOURI-FORT RANDALL RIVER BASIN

06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SEDI- MENT DIS- CHARGE, BEDLOAD (TONS/ DAY) (80225)	NUM- BER OF COM- POSITES (COUNT) (04118)	BEDLOAD TRANS- PORT RATE (TONS/ DAY/FT) (04122)	NUMBER OF VERT- ICALS IN COM- POSITE (COUNT) (04119)	WIDTH INCRE- MENT OF SAMPLE (FT) (04121)	SAMP- LING TIME OF SAMPLE (SEC) (04120)	TETHER LINE (0=NO 1=YES) (04117)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .062 MM (80226)
MAY 1991 31...	2020	60	20	0.52	20	5.0	60	0	1

DATE	SED. BEDLOAD SIEVE DIAM. % FINER THAN .125 MM (80227)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .250 MM (80228)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .500 MM (80229)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 1.00 MM (80230)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 2.00 MM (80231)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 4.00 MM (80232)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 8.00 MM (80233)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 16.0 MM (80234)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 32.0 MM (80235)
MAY 1991 31...	2	3	10	28	41	58	76	92	100

MISSOURI-FORT RANDALL RIVER BASIN

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06441000 BAD RIVER NEAR MIDLAND, SD

LOCATION.--Lat 44°04'01", long 101°09'36", in NE1/4 sec.7, T.1 N., R.25 E., Haakon County, Hydrologic Unit 10140102, on right bank at downstream side of bridge on State Highway 63, 0.4 mi southwest of Midland, 2.0 mi upstream from Mitchell Creek, and 3.7 mi upstream from Ash Creek.

DRAINAGE AREA.--1,460 mi², approximately.

PERIOD OF RECORD.--October 1945 to current year. Prior to February 1946 monthly discharge only, published in WSP 1309.

REVISED RECORDS.--WSP 2117: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,849.14 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 21, 1961, nonrecording gage, and Feb. 21, 1961, to June 14, 1967, water-stage recorder at site 4.2 mi downstream at datum 15.72 ft lower. June 15 to July 26, 1967, nonrecording gage at site 30 ft upstream and July 27, 1967, to June 14, 1971, water-stage recorder at site 60 ft upstream, both at present datum.

REMARKS.--Records good. Only daily discharges above 100 ft³/s are being published. National Weather Service telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft³/s, June 15, 1967, gage height, 24.44 ft, from floodmarks, 20.10 ft, from floodmarks, at former site and datum, from rating curve extended above 16,000 ft³/s; no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0400	1,410	10.94	June 6	0500	1,430	11.00
May 20	0600	506	7.58	June 8	2200	*3,490	*15.91
May 31	0200	1,400	10.90	July 1	0200	641	8.20
June 2	1900	3,280	15.49				

No flow for many days.

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

Daily discharge, in cubic feet per second, above 100 ft³/s are given herewith:

May 17	278	June 1	980	June 8	2,600	June 15	199
May 18	1,010	June 2	2,670	June 9	2,820	June 16	246
May 19	336	June 3	2,540	June 10	825	June 17	169
May 20	342	June 4	1,380	June 11	300	June 30	187
May 28	173	June 5	734	June 12	324	July 1	358
May 29	268	June 6	1,090	June 13	174	July 2	308
May 30	775	June 7	1,210	June 14	131	July 3	175
May 31	828						

MISSOURI-FORT RANDALL RIVER BASIN

06441110 PLUM CREEK BELOW HAYES, SD

LOCATION.--Lat 44°12'38", long 100°43'34", in NW¼NW¼ sec.23, T.3 N., R.28 E., Stanley County, Hydrologic Unit 10140102, on left bank at downstream side of county bridge, 0.3 mi upstream from mouth, 3.0 mi southwest of Wendte, 18.5 mi southeast of Hayes, and 21.2 mi southwest of Fort Pierre.

DRAINAGE AREA.--252 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,612 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft³/s, May 30, 1991, gage height, 23.74 ft; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 13	1800	85	7.91	June 1	1500	538	11.76
May 3	1715	196	8.57	June 4	0230	880	13.37
May 19	0245	156	8.07	June 5	0200	785	13.08
May 28	1145	537	11.38	June 10	--	175	unknown
May 30	0300	*13,500	*23.74	June 30	1015	195	8.59

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	1.2	268	15	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	1.0	206	14	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	75	396	5.8	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	62	550	3.5	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	15	362	1.9	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	8.2	133	.87	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	5.7	86	.50	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	4.6	83	.06	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	3.9	e110	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	3.6	e170	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	3.4	e100	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	3.7	e86	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	22	4.0	e75	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	43	4.3	e78	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	6.6	4.6	e80	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	2.2	4.8	e60	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.79	5.3	e30	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.29	15	e15	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	86	e7.0	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	12	e4.9	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	12	e2.8	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	11	e1.5	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	8.4	e.50	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.03	8.2	.10	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.14	8.7	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.24	9.2	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.37	9.8	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	4.2	132	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	3.0	13	.24	.00	.00	.00
30	.00	.00	.00	.00	---	.00	2.3	3370	57	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	176	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	85.16	4081.6	2962.04	41.63	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	2.84	132	98.7	1.34	.000	.000
MAX	.00	.00	.00	.00	.00	.00	43	3370	550	15	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	1.0	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	169	8100	5880	83	.00	.00

CAL YR 1990 TOTAL 1058.30 MEAN 2.90 MAX 522 MIN .00 AC-FT 2100
WTR YR 1991 TOTAL 7170.43 MEAN 19.6 MAX 3370 MIN .00 AC-FT 14220

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

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06441110 PLUM CREEK BELOW HAYES, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1989 to current year.

REMARKS.--Records fair. Sediment samples collected daily by local observer. Two bedload samples collected this year.

EXTREMES FOR PERIOD OF DAILY RECORD.

SEDIMENT CONCENTRATION: Maximum daily mean, 57,000 mg/L, June 16, 1990; minimum daily mean, 0 mg/L on many days each year.

SEDIMENT LOAD: Maximum daily, 304,000 tons, May 30, 1991; minimum daily, 0 ton on many days each year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 31,000 mg/L, May 28; minimum daily mean, 0 mg/L on many days.

SEDIMENT LOAD: Maximum daily, 304,000 tons, May 30; minimum daily, 0 ton on many days.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)
MAY								
28...	1200	359	2250	25.0	16.0	0.030	0.040	1.97
30...	1505	578	1540	27.5	16.5	0.020	0.020	1.28

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS ORTHO, DIS- SOLVED TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
MAY								
28...	1.96	2.00	2.00	0.110	0.130	0.17	0.020	0.020
30...	1.28	1.30	1.30	0.040	0.060	0.08	0.030	0.020

MISSOURI-FORT RANDALL RIVER BASIN

06441110 PLUM CREEK BELOW HAYES, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00
JANUARY			FEBRUARY			MARCH			
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	---	---	---	.00	0	.00
30	.00	0	.00	---	---	---	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00

MISSOURI-FORT RANDALL RIVER BASIN

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06441110 PLUM CREEK BELOW HAYES, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	.00	0	.00	1.2	e260	.84	268	e9670	9770
2	.00	0	.00	1.0	e180	.49	206	5800	3230
3	.00	0	.00	75	5780	2030	396	3600	3850
4	.00	0	.00	62	18300	3240	550	e2350	3490
5	.00	0	.00	15	e5820	255	362	10400	8870
6	.00	0	.00	8.2	1450	32	133	e3500	1260
7	.00	0	.00	5.7	e800	12	86	e1850	430
8	.00	0	.00	4.6	e550	6.8	83	1100	247
9	.00	0	.00	3.9	e500	5.3	e110	e5000	e350
10	.00	0	.00	3.6	e900	8.7	e170	e4800	2200
11	.00	0	.00	3.4	e200	1.8	e100	e1550	418
12	.00	0	.00	3.7	e200	2.0	e86	e850	197
13	22	10300	1280	4.0	e200	2.2	e75	e700	142
14	43	22300	2590	4.3	e200	2.3	e78	e500	105
15	6.6	10000	208	4.6	e300	3.7	e80	e400	86
16	2.2	2300	14	4.8	e350	4.5	e60	e250	40
17	.79	e750	1.6	5.3	e1050	15	e30	e200	16
18	.29	e150	.12	15	e2600	105	e15	e250	10
19	.00	0	.00	86	18900	3240	e7.0	e240	4.5
20	.00	0	.00	12	e12500	383	e4.9	e230	3.0
21	.00	0	.00	12	e3700	120	e2.8	e200	1.5
22	.00	0	.00	11	e550	16	e1.5	e180	.73
23	.00	0	.00	8.4	e200	4.5	e.50	e150	.20
24	.03	0	.00	8.2	e150	3.3	.10	e80	.02
25	.14	0	.00	8.7	e100	2.3	.00	0	.00
26	.24	0	.00	9.2	e100	2.5	.00	0	.00
27	.37	0	.00	9.8	e230	6.1	.00	0	.00
28	4.2	e4560	62	132	31000	17600	.00	0	.00
29	3.0	e3600	29	13	20500	1050	.24	e615	1.3
30	2.3	e1280	7.9	3370	23900	304000	57	19900	4970
31	---	---	---	176	6350	3020	---	---	---
TOTAL	85.16	---	4192.62	4081.6	---	335175.33	2962.04	---	39692.25

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06441110 PLUM CREEK BELOW HAYES, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	15	12100	490	.00	0	.00	.00	0	.00
2	14	e11000	416	.00	0	.00	.00	0	.00
3	5.8	e3800	60	.00	0	.00	.00	0	.00
4	3.5	e1700	16	.00	0	.00	.00	0	.00
5	1.9	e900	4.6	.00	0	.00	.00	0	.00
6	.87	e700	1.6	.00	0	.00	.00	0	.00
7	.50	e450	.61	.00	0	.00	.00	0	.00
8	.06	e200	.03	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	.00	0	.00	---	---	---
TOTAL	41.63	---	988.84	0.00	---	0.00	0.00	---	0.00
YEAR	7170.43		380049.04						

e Estimated

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1991					
15...	1045	7.1	8.0	9230	100
MAY					
28...	1200	359	16.0	58700	100
30...	1505	578	16.5	20900	99

MISSOURI-FORT RANDALL RIVER BASIN

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06441110 PLUM CREEK BELOW HAYES, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SEDI-MENT DIS-CHARGE, BEDLOAD (TONS/DAY) (80225)	NUM-BER OF COM-POSITES (COUNT) (04118)	BEDLOAD TRANS-PORT RATE (TONS/DAY/FT) (04122)	NUMBER OF VERT-ICALS IN COM-POSITE (COUNT) (04119)	WIDTH INCRE-MENT OF SAMPLE (FT) (04121)	SAMP-LING TIME OF SAMPLE (SEC) (04120)	TETHER LINE (0=NO 1=YES) (04117)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .062 MM (80226)
MAY 1991									
28...	1310	4.8	8	0.10	8	5.0	60	0	58
30...	1440	2.3	13	0.04	13	4.0	60	0	8

DATE	SED. BEDLOAD SIEVE DIAM. % FINER THAN .125 MM (80227)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .250 MM (80228)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .500 MM (80229)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 1.00 MM (80230)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 2.00 MM (80231)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 4.00 MM (80232)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 8.00 MM (80233)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 16.0 MM (80234)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 32.0 MM (80235)
MAY 1991									
28...	81	82	94	96	98	99	100	--	--
30...	50	97	98	100	--	--	--	--	--

MISSOURI-FORT RANDALL RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD

LOCATION.--Lat 44°19'36", long 100°23'02", in NW¼NW¼ sec.10, T.4 N., R.31 E., Stanley County, Hydrologic Unit 10140102, on right bank at downstream side of highway bridge, 2.1 mi south of Fort Pierre, 4.3 mi downstream from Willow Creek, and 6.0 mi upstream from mouth.

DRAINAGE AREA.--3,107 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to current year. Monthly discharge only for July 1932 to February 1934, published in WSP 1309.

REVISED RECORDS.--WSP 786: Drainage area. WSP 856: 1929(M), 1937.

GAGE.--Water-stage recorder. Datum of gage is 1,427.83 ft above National Geodetic Vertical Datum of 1929. Prior to July 10, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--63 years, 148 ft³/s, 107,200 acre-ft/yr; median of yearly mean discharges, 99 ft³/s, 71,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,800 ft³/s, June 18, 1967, gage height, 29.55 ft; no flow for long periods in each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1927 reached a stage of 30.89 ft, from floodmarks, discharge, about 55,000 ft³/s. Flood in July 1905 reached a stage about 2 ft higher than that in April 1927.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	0345	3,430	12.95	June 4	0100	7,770	19.45
May 31	0245	*8,050	*19.71	June 10	1930	2,550	11.11
June 2	0345	5,730	16.76				

No flow for many days.

MISSOURI-FORT RANDALL RIVER BASIN

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06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.00	.00	e.02	2620	135	1.9	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	3670	271	1.0	.00
3	.00	.00	.00	.00	.00	.00	.00	132	2960	256	.68	.00
4	.00	.00	.00	.00	.00	e.00	.00	285	6370	321	.68	.00
5	.00	.00	.00	.00	.00	e.00	.00	108	3530	149	.54	.00
6	.00	.00	.00	.00	.00	e.00	.00	43	1920	81	.42	.00
7	.00	.00	.00	.00	.00	e.00	.00	23	1600	53	.24	.00
8	.00	.00	.00	.00	.00	e.00	.00	13	1110	39	e.00	.00
9	.00	.00	.00	.00	.00	e.01	.00	8.2	1550	30	e.00	.00
10	.00	.00	.00	.00	.00	e.03	.00	3.2	2280	26	e.00	.00
11	.00	.00	.00	.00	.00	e.05	15	e.88	1420	16	e.00	.00
12	.00	.00	.00	.00	.00	e.03	257	e.18	594	12	.00	.00
13	.00	.00	.00	.00	.00	e.02	299	e.06	412	9.3	.00	.00
14	.00	.00	.00	.00	.00	e.01	270	e.00	714	7.6	.00	.00
15	.00	.00	.00	.00	.00	e.01	130	e.00	727	6.0	.00	.00
16	.00	.00	.00	.00	.00	e.05	55	e.90	424	4.9	.00	.00
17	.00	.00	.00	.00	.00	e.20	28	e56	259	4.0	.00	.00
18	.00	.00	.00	.00	.00	e.40	17	e143	302	4.7	.00	.00
19	.00	.00	.00	.00	.00	e.50	11	e393	148	10	.00	.00
20	.00	.00	.00	.00	.00	e.40	9.0	e592	107	6.9	.00	.00
21	.00	.00	.00	.00	.00	e.30	7.3	382	80	5.1	.00	.00
22	.00	.00	.00	.00	.00	e.20	6.3	283	58	4.4	.00	.00
23	.00	.00	.00	.00	.00	e.15	4.8	97	46	7.0	.00	.00
24	.00	.00	.00	.00	.00	e.20	4.0	43	38	8.7	.00	.00
25	.00	.00	.00	.00	.00	e.25	2.8	25	31	5.6	.00	.00
26	.00	.00	.00	.00	.00	e.18	1.9	17	25	9.9	.00	.00
27	.00	.00	.00	.00	.00	.00	.60	12	21	12	.00	.00
28	.00	.00	.00	.00	.00	.00	.42	1020	18	7.5	.00	.00
29	.00	.00	.00	.00	---	.00	.48	2230	22	4.7	.00	.00
30	.00	.00	.00	.00	---	.00	.12	5350	35	3.1	.00	.00
31	.00	---	.00	.00	---	.00	---	4360	---	2.5	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	2.99	1119.72	15620.44	33091	1512.9	5.46	0.00
MEAN	.000	.000	.000	.000	.000	.096	37.3	504	1103	48.8	.18	.000
MAX	.00	.00	.00	.00	.00	.50	299	5350	6370	321	1.9	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	18	2.5	.00	.00
AC-FT	.00	.00	.00	.00	.00	5.9	2220	30980	65640	3000	11	.00

CAL YR 1990 TOTAL 8105.48 MEAN 22.2 MAX 1480 MIN .00 AC-FT 16080
WTR YR 1991 TOTAL 51352.51 MEAN 141 MAX 6370 MIN .00 AC-FT 101900

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1945 to September 1953, October 1971 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to current year.

WATER TEMPERATURE: October 1972 to June 1983.

REVISED RECORDS.--WDR SD-81-1: 1979-80.

REMARKS.--Records fair. Observer collects samples on a daily basis. Flow affected by ice Mar. 9-26. Two bedload samples collected this year. Sediment-discharge records prior to Oct. 1, 1971, on file in the District office, U.S. Army Corps of Engineers, Omaha, NE.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 124,000 mg/L, July 17, 1981; minimum daily mean, 0 mg/L on many days each year.

SEDIMENT LOAD: Maximum daily, 949,000 tons, May 14, 1982; minimum daily, 0 ton on many days each year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 47,200 mg/L, May 28; minimum daily mean, 0 mg/L on many days.

SEDIMENT LOAD: Maximum daily, 610,000 tons, May 30; minimum daily, 0 ton on many days.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)
MAY								
29...	1200	2340	1770	25.0	19.5	0.030	0.030	1.37
30...	1235	5460	1360	25.0	16.0	0.150	0.020	0.790
DATE		NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (70507)
MAY								
29...	1.37	1.40	1.40	0.060	0.160	0.21	0.030	0.060
30...	0.870	0.940	0.890	0.080	0.080	0.10	0.150	0.030

06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00
JANUARY			FEBRUARY			MARCH			
1	.00	0	.00	.00	0	.00	e.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	e.00	0	.00
5	.00	0	.00	.00	0	.00	e.00	0	.00
6	.00	0	.00	.00	0	.00	e.00	0	.00
7	.00	0	.00	.00	0	.00	e.00	0	.00
8	.00	0	.00	.00	0	.00	e.00	e0	.00
9	.00	0	.00	.00	0	.00	e.01	e0	.00
10	.00	0	.00	.00	0	.00	e.03	e0	.00
11	.00	0	.00	.00	0	.00	e.05	e0	.00
12	.00	0	.00	.00	0	.00	e.03	e0	.00
13	.00	0	.00	.00	0	.00	e.02	e0	.00
14	.00	0	.00	.00	0	.00	e.01	e0	.00
15	.00	0	.00	.00	0	.00	e.01	e0	.00
16	.00	0	.00	.00	0	.00	e.05	e0	.00
17	.00	0	.00	.00	0	.00	e.20	e0	.00
18	.00	0	.00	.00	0	.00	e.40	e0	.00
19	.00	0	.00	.00	0	.00	e.50	e0	.00
20	.00	0	.00	.00	0	.00	e.40	e0	.00
21	.00	0	.00	.00	0	.00	e.30	e0	.00
22	.00	0	.00	.00	0	.00	e.20	e0	.00
23	.00	0	.00	.00	0	.00	e.15	e0	.00
24	.00	0	.00	.00	0	.00	e.20	e0	.00
25	.00	0	.00	.00	0	.00	e.25	e0	.00
26	.00	0	.00	.00	0	.00	e.18	e0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	---	---	---	.00	0	.00
30	.00	0	.00	---	---	---	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	2.99	---	0.00

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	.00	0	.00	e.02	e0	.00	2620	18400	130000
2	.00	0	.00	.00	0	.00	3670	12100	120000
3	.00	0	.00	132	11500	4100	2960	8000	63900
4	.00	0	.00	285	26300	20200	6370	16000	275000
5	.00	0	.00	108	15100	4400	3530	9300	88600
6	.00	0	.00	43	4900	569	1920	5500	28500
7	.00	0	.00	23	e700	43	1600	5000	21600
8	.00	0	.00	13	e160	5.6	1110	5650	16900
9	.00	0	.00	8.2	e89	2.0	1550	6000	25100
10	.00	0	.00	3.2	40	.35	2280	6600	40600
11	15	e5600	227	e.88	28	.07	1420	4300	16500
12	257	e34000	23600	e.18	32	.02	594	4800	7700
13	299	e32700	26400	e.06	e8	.00	412	6100	6790
14	270	e26400	19200	e.00	e0	.00	714	20600	46700
15	130	16900	5930	e.00	e0	.00	727	16500	32400
16	55	6100	906	e.90	e60	.15	424	8400	9620
17	28	e1050	79	e56	6700	1010	259	4750	3320
18	17	e168	7.7	e143	16500	6370	302	2750	2240
19	11	e128	3.8	e393	29200	48000	148	694	277
20	9.0	e112	2.7	e592	21300	39600	107	500	144
21	7.3	e108	2.1	382	10200	10500	80	383	83
22	6.3	e102	1.7	283	12300	9400	58	280	44
23	4.8	e98	1.3	97	6800	1780	46	272	34
24	4.0	e92	.99	43	5700	662	38	145	15
25	2.8	e87	.66	25	4800	324	31	e140	12
26	1.9	78	.40	17	3000	138	25	138	9.3
27	.60	e66	.11	12	1100	36	21	133	7.5
28	.42	e55	.06	1020	47200	209000	18	129	6.3
29	.48	e40	.05	2230	38600	232000	22	136	8.1
30	.12	e28	.01	5350	40400	610000	35	158	15
31	---	---	---	4360	22000	259000	---	---	---
TOTAL	1119.72	---	76363.58	15620.44	---	1457140.19	33091	---	936125.2

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

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06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	135	18100	6880	1.9	70	.36	.00	0	.00
2	271	12800	9370	1.0	70	.19	.00	0	.00
3	256	6000	4150	.68	70	.13	.00	0	.00
4	321	8100	7020	.68	69	.13	.00	0	.00
5	149	12800	5150	.54	61	.09	.00	0	.00
6	81	e6600	1440	.42	55	.06	.00	0	.00
7	53	1550	222	.24	40	.03	.00	0	.00
8	39	572	60	.00	e0	.00	.00	0	.00
9	30	218	18	.00	e0	.00	.00	0	.00
10	26	140	9.8	.00	0	.00	.00	0	.00
11	16	118	5.1	.00	0	.00	.00	0	.00
12	12	110	3.6	.00	0	.00	.00	0	.00
13	9.3	108	2.7	.00	0	.00	.00	0	.00
14	7.6	104	2.1	.00	0	.00	.00	0	.00
15	6.0	94	1.5	.00	0	.00	.00	0	.00
16	4.9	80	1.1	.00	0	.00	.00	0	.00
17	4.0	76	.82	.00	0	.00	.00	0	.00
18	4.7	63	.80	.00	0	.00	.00	0	.00
19	10	95	2.6	.00	0	.00	.00	0	.00
20	6.9	82	1.5	.00	0	.00	.00	0	.00
21	5.1	71	.98	.00	0	.00	.00	0	.00
22	4.4	71	.84	.00	0	.00	.00	0	.00
23	7.0	80	1.5	.00	0	.00	.00	0	.00
24	8.7	79	1.9	.00	0	.00	.00	0	.00
25	5.6	73	1.1	.00	0	.00	.00	0	.00
26	9.9	76	2.0	.00	0	.00	.00	0	.00
27	12	73	2.4	.00	0	.00	.00	0	.00
28	7.5	72	1.5	.00	0	.00	.00	0	.00
29	4.7	71	.90	.00	0	.00	.00	0	.00
30	3.1	71	.59	.00	0	.00	.00	0	.00
31	2.5	71	.48	.00	0	.00	---	---	---
TOTAL	1512.9	---	34355.81	5.46	---	0.99	0.00	---	0.00
YEAR	51352.51		2503985.77						

e Estimated

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1991					
15...	1345	111	10.0	16100	100
MAY					
20...	1515	531	20.0	12900	100
28...	1430	1650	17.0	69300	100
29...	1200	2340	19.5	36900	100
30...	1235	5460	16.0	41600	98
JUL					
01...	1005	148	24.5	43500	100

MISSOURI-FORT RANDALL RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SEDI- MENT DIS- CHARGE, BEDLOAD (TONS/ DAY) (80225)	NUM- BER OF COM- POSITES (COUNT) (04118)	BEDLOAD TRANS- PORT RATE (TONS/ DAY/FT) (04122)	NUMBER OF VERT- ICALS IN COM- POSITE (COUNT) (04119)	WIDTH INCRE- MENT OF SAMPLE (FT) (04121)	SAMP- LING TIME OF SAMPLE (SEC) (04120)	TETHER LINE (0=NO 1=YES) (04117)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .062 MM (80226)
MAY 1991									
28...	1430	67	20	0.75	20	5.0	60	0	0.5
30...	1235	264	13	0.54	13	10.0	60	0	0.4

DATE	SED. BEDLOAD SIEVE DIAM. % FINER THAN .125 MM (80227)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .250 MM (80228)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .500 MM (80229)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 1.00 MM (80230)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 2.00 MM (80231)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 4.00 MM (80232)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 8.00 MM (80233)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 16.0 MM (80234)	SED. BEDLOAD SIEVE DIAM. % FINER THAN 32.0 MM (80235)
MAY 1991									
28...	0.8	1	11	67	91	97	100	--	--
30...	0.6	1	5	26	38	52	72	94	100

MISSOURI-FORT RANDALL RIVER BASIN

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06441590 MISSOURI RIVER AT LA FRAMBOISE ISLAND, AT PIERRE, SD

LOCATION.--Lat 44°21'07", long 100°21'31", in NW¼SW¼NE¼ sec.34, T.110 N., R.79 W., Hughes County, Hydrologic Unit 10140101, on left bank of La Framboise Island Recreation Area, 0.2 mi downstream from Bad River, 1.5 mi downstream from U.S. Highways 14 and 83, 7.8 mi downstream from Oahe Dam, and at mile 1,064.5.

PERIOD OF RECORD.--October 1988 to current year.

REVISED RECORDS.--WDR SD-90-1: Datum.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft (revised) above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Stage regulated by Oahe Reservoir. Gage heights prior to October 1988 in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.28	20.59	20.68	22.20	22.06	21.57	22.12	22.11	21.41	22.21	22.84	23.13
2	22.21	20.41	21.45	22.85	21.76	21.21	22.20	21.94	21.65	21.93	22.53	23.25
3	21.53	20.71	21.26	22.65	21.92	21.39	22.23	22.23	22.27	22.14	22.40	23.69
4	21.53	21.17	21.60	22.69	22.21	21.44	22.03	22.02	22.54	21.35	22.59	24.09
5	21.20	21.03	21.23	22.19	21.79	21.06	22.21	21.84	22.86	22.29	23.02	24.06
6	21.05	20.60	21.14	22.22	21.92	21.17	22.25	22.33	22.00	21.94	23.01	24.18
7	21.20	20.86	21.17	22.78	21.37	20.77	21.97	22.41	21.48	21.45	23.03	24.07
8	21.91	20.65	21.13	22.21	21.06	20.73	23.08	22.42	21.14	22.74	22.70	23.40
9	21.66	20.51	21.11	22.55	20.95	20.97	23.37	22.70	21.05	22.91	22.82	23.70
10	22.05	20.72	21.49	22.58	21.10	21.09	23.29	23.00	21.10	23.34	22.65	23.60
11	21.62	20.76	21.13	21.82	21.65	21.24	24.06	22.53	20.98	22.98	22.25	24.11
12	22.02	21.09	20.87	22.02	21.47	21.24	23.49	22.59	20.92	23.07	22.58	24.03
13	21.87	21.04	21.04	21.41	20.90	21.02	22.47	22.95	20.92	23.32	22.55	24.02
14	21.03	20.86	21.30	21.96	20.89	20.91	21.99	22.85	20.89	21.72	22.66	23.54
15	22.71	20.78	20.99	22.03	21.35	20.97	22.18	22.15	20.53	22.79	22.16	22.64
16	22.05	20.84	21.13	22.18	21.25	21.19	22.06	22.21	21.22	22.81	21.75	23.40
17	21.72	20.97	22.13	21.51	21.43	21.05	22.01	22.39	21.03	22.66	21.82	23.53
18	21.57	20.93	21.71	21.10	22.00	21.08	21.90	22.37	21.12	22.60	21.68	23.19
19	21.58	21.45	21.40	20.31	21.84	20.95	21.63	22.49	21.25	22.49	22.69	22.83
20	21.48	21.39	22.56	20.90	21.60	21.29	21.54	22.74	21.10	22.96	22.51	23.10
21	21.60	20.81	22.64	22.07	21.55	20.98	21.71	22.88	20.99	22.75	22.46	23.31
22	22.28	21.12	21.97	22.47	21.57	21.65	22.08	22.51	21.04	22.91	22.49	22.17
23	22.05	21.09	21.79	21.75	21.18	20.25	22.21	21.71	20.91	22.46	22.52	23.12
24	22.13	21.20	22.16	22.19	21.25	21.19	22.13	21.80	21.36	22.54	23.10	23.10
25	21.86	21.38	21.62	22.06	21.84	21.42	22.29	21.70	21.70	22.54	22.46	22.62
26	21.94	21.54	22.45	22.28	21.43	21.51	22.56	21.58	20.91	22.76	23.42	22.87
27	21.26	20.99	22.43	22.23	21.52	20.90	21.76	22.01	21.35	22.62	23.54	23.11
28	21.74	20.74	22.06	22.91	21.54	20.85	21.91	22.66	21.99	22.36	23.44	23.30
29	21.32	20.66	22.83	22.78	---	20.70	22.14	21.95	21.54	22.78	23.24	22.55
30	21.24	20.29	22.62	22.42	---	20.56	21.54	22.27	21.11	22.68	23.00	21.59
31	21.01	---	22.57	22.17	---	20.81	---	22.33	---	22.76	23.29	---
MEAN	21.70	20.91	21.67	22.11	21.51	21.07	22.28	22.31	21.35	22.54	22.68	23.31
MAX	22.71	21.54	22.83	22.91	22.21	21.65	24.06	23.00	22.86	23.34	23.54	24.18
MIN	21.01	20.29	20.68	20.31	20.89	20.25	21.54	21.58	20.53	21.35	21.68	21.59

MISSOURI-FORT RANDALL RIVER BASIN

06441595 MISSOURI RIVER AT FARM ISLAND, NEAR PIERRE, SD

LOCATION.--Lat 44°20'03", long 100°15'54", in NW¼SW¼NE¼ sec.18, T.110 N., R.79 W., Hughes County, Hydrologic Unit 10140101, on left bank of Farm Island Recreation Area, 4.8 mi downstream from La Framboise gage, 4.9 mi southeast of Pierre, 5.2 mi downstream from Bad River, 12.6 mi downstream from Oahe Dam, and at mile 1,059.2.

PERIOD OF RECORD.--October 1988 to current year.

REVISED RECORDS.--WDR SD-90-1: Datum.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft (revised) above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Stage regulated by Oahe Reservoir. Gage heights prior to October 1988 in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.21	20.10	19.72	21.25	20.75	20.43	21.00	20.60	20.43	20.78	21.42	21.64
2	21.03	19.90	20.51	21.62	20.61	20.37	20.77	20.68	20.78	20.51	21.12	21.86
3	20.42	20.06	20.23	21.50	20.93	20.67	20.96	20.74	21.07	20.58	21.00	21.93
4	20.43	20.56	20.51	21.44	21.10	20.77	20.73	20.64	21.69	20.20	21.39	22.13
5	20.22	20.55	20.24	21.13	20.75	20.31	21.00	20.65	22.05	20.53	21.68	22.00
6	20.07	20.17	20.16	21.17	20.65	20.36	20.88	20.94	21.21	20.56	21.57	22.06
7	20.44	20.35	20.21	21.64	20.35	20.08	20.93	20.98	20.63	20.43	21.51	21.98
8	20.91	20.14	20.26	21.22	20.08	19.87	21.51	21.02	20.36	21.31	21.17	21.82
9	20.71	19.96	20.33	21.36	20.04	20.18	21.62	21.18	20.22	21.23	21.21	21.96
10	20.86	20.12	20.51	21.33	20.18	20.40	21.73	21.28	20.21	21.42	21.17	21.96
11	20.44	20.22	20.24	20.74	20.60	20.62	22.40	20.98	20.21	21.16	21.18	22.21
12	20.71	20.51	20.03	20.91	20.44	20.44	21.87	21.18	20.19	21.08	21.32	22.06
13	20.66	20.48	20.30	20.66	19.98	20.34	21.27	21.20	20.20	21.36	21.16	21.99
14	20.37	20.28	20.43	21.04	19.96	20.29	21.20	20.95	20.14	20.92	21.17	21.73
15	21.43	20.24	20.17	21.05	20.52	20.34	21.21	20.78	19.91	21.43	20.76	21.15
16	21.08	20.32	20.36	20.99	20.49	20.48	20.93	20.76	20.56	21.31	20.41	21.74
17	20.50	20.45	20.88	20.54	20.80	20.49	20.81	20.98	20.36	21.09	20.57	21.71
18	20.63	20.45	20.75	20.35	21.15	20.38	20.79	21.03	20.30	21.06	20.74	21.45
19	20.47	20.72	20.21	19.86	21.05	20.38	20.61	21.34	20.34	21.07	21.44	21.35
20	20.31	20.69	21.07	20.13	20.80	20.48	20.55	21.41	20.32	21.41	21.19	21.40
21	20.74	19.93	21.14	20.80	20.67	20.28	20.81	21.30	20.17	21.50	21.06	21.54
22	21.25	20.28	20.79	21.21	20.69	20.63	20.90	21.01	20.23	21.56	21.03	20.83
23	20.99	20.22	20.72	20.68	20.44	19.69	20.83	20.59	20.18	21.31	20.96	21.71
24	21.01	20.38	21.12	20.88	20.61	20.43	20.80	20.55	20.43	21.23	21.36	21.49
25	20.82	20.66	20.80	20.90	20.98	20.57	20.83	20.51	20.50	21.23	21.23	20.99
26	20.75	20.57	21.16	20.99	20.61	20.51	21.09	20.60	19.97	21.38	21.78	21.18
27	20.38	20.15	21.11	21.29	20.61	19.97	20.41	20.90	20.30	21.15	21.81	21.32
28	21.02	19.97	20.74	21.72	20.56	20.05	20.83	21.20	20.71	21.29	21.69	21.85
29	20.84	19.90	21.25	21.55	---	20.16	20.87	20.89	20.65	21.61	21.40	21.74
30	20.72	19.60	21.35	21.23	---	19.99	20.22	20.96	20.40	21.43	21.24	21.09
31	20.51	---	21.57	21.02	---	20.16	---	20.86	---	21.44	21.44	---
MEAN	20.71	20.26	20.61	21.04	20.59	20.33	21.01	20.93	20.49	21.12	21.23	21.66
MAX	21.43	20.72	21.57	21.72	21.15	20.77	22.40	21.41	22.05	21.61	21.81	22.21
MIN	20.07	19.60	19.72	19.86	19.96	19.69	20.22	20.51	19.91	20.20	20.41	20.83

MISSOURI-FORT RANDALL RIVER BASIN

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06442700 LAKE SHARPE NEAR FORT THOMPSON, SD

LOCATION.--Lat 44°02'18", long 99°26'45", in SE¼ sec.27, T.107 N., R.72 W., Lyman County, Hydrologic Unit 10140101, at left approach wall of powerhouse at Big Bend Dam on Missouri River, 2.5 mi south of Fort Thompson, and at mile 987.4.

DRAINAGE AREA.--249,300 mi², approximately.

PERIOD OF RECORD.--July 1963 to current year (monthend contents only).

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

REMARKS.--Reservoir is formed by earthfill dam; closure made July 1963; intentional storage began November 1963. Maximum capacity, 1,874,000 acre-ft below elevation, 1,423.0 ft (top of spillway gates). Normal maximum, 1,697,000 acre-ft below elevation 1,424.0 ft. Inactive storage, 1,424,000 acre-ft below elevation 1,415.0 ft. Figures given herein represent elevations at powerhouse and total contents adjusted for wind effect.

The spillway consists of a concrete chute with flat crest at elevation 1,385.0 ft surmounted by 8 taintor gates, each 40 by 38 ft; design capacity, 390,000 ft³/s. Normal releases are through 8 power units (completed in July 1966), with a generating capacity of 58,500 kilowatts each. Maximum release through power-plant about 100,000 ft³/s. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Records of elevation and contents provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,829,000 acre-ft, Apr. 22, 1971, affected by wind; minimum since initial filling, 1,448,000 acre-ft, Sept. 17, 1967, affected by wind.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,816,000 acre-ft, June 4; minimum contents, 1,680,000 acre-ft, Oct. 19.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,420.98	1,754,000	-
Oct. 31	1,420.48	1,726,000	-28,000
Nov. 30	1,420.00	1,698,000	-28,000
Dec. 31	1,420.98	1,750,000	+52,000
CAL YR 1990	-	-	+21,000
Jan. 31	1,420.12	1,706,000	-44,000
Feb. 28	1,420.17	1,707,000	+1,000
Mar. 31	1,420.53	1,729,000	+22,000
Apr. 30	1,420.90	1,746,000	+17,000
May 31	1,420.63	1,733,000	-13,000
June 30	1,420.79	1,741,000	+8,000
July 31	1,420.62	1,726,000	-15,000
Aug. 31	1,420.34	1,722,000	-4,000
Sept. 30	1,421.50	1,790,000	+68,000
WTR YR 1991	-	-	+36,000

NOTE.--Lake frozen over Dec. 19 to Apr. 2.

MISSOURI-FORT RANDALL RIVER BASIN

06442718 CAMPBELL CREEK NEAR LEE'S CORNER, SD

LOCATION.--Lat 44°04'39", long 99°22'51", in NW¼NE¼NW¼ sec.17, T.107 N., R.71 W., Buffalo County, Hydrologic Unit 10140105, on left bank at downstream side of bridge on State Highway 34, 2.8 mi east of Fort Thompson, and 5.4 mi upstream from high-water line of Lake Francis Case.

DRAINAGE AREA.--54.1 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,440.32 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,920 ft³/s, May 25, 1988, gage height, 14.19 ft; no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 3	0815	96	3.50	June 1	1245	418	6.18
May 17	1200	*2,650	13.50	June 4	0015	678	7.45
May 22	2000	1,350	9.94	June 14	0745	382	5.98
May 29	0445	277	5.29				

No flow for many days.

REVISIONS.--The peak discharges above base of 50 ft³/s reported for water years 1988, 1989, and 1990 have been revised as shown in the following table.

Water year	Date	Discharge (ft ³ /s)	Gage height (ft)
1988	Mar. 22, 1988	170	4.29
	May 22, 1988	220	4.77
	May 25, 1988	*2,920	*14.19
1989	July 17, 1989	*658	*7.36
	Sept. 21, 1989	237	4.93
1990	May 19, 1990	161	4.20
	June 16, 1990	*1,120	*9.16

MISSOURI-FORT RANDALL RIVER BASIN

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06442718 CAMPBELL CREEK NEAR LEE'S CORNER, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.01	e.02	.00	e.01	e.08	.14	.14	115	.21	.00	.00
2	.00	.01	e.02	.00	e.01	e.10	.14	.15	43	.19	.00	.00
3	.00	.01	e.01	.00	e.01	e.16	.14	47	109	.14	.00	.00
4	.00	.01	e.01	.00	e.02	e.20	.14	4.0	423	.08	.00	.00
5	.00	.01	e.01	.00	e.02	e.18	.14	.85	162	.06	.00	.00
6	.00	.01	e.02	.00	e.02	e.17	.14	.57	47	.05	.00	.00
7	.00	e.01	e.02	.00	e.02	e.18	.14	.34	23	.05	.00	.00
8	.00	.02	e.02	.00	e.03	e.20	.14	.25	15	.04	.00	.00
9	.00	.02	e.03	.00	e.03	e.20	e.30	.22	10	.03	.00	.00
10	.00	.02	e.03	.00	e.02	e.20	e1.0	.14	6.4	.03	.00	.00
11	.00	.02	e.02	.00	e.02	e.22	e3.0	.06	3.3	.03	.00	.00
12	.00	.02	e.02	.00	e.02	e.20	e9.0	.06	1.6	.02	.00	.00
13	.00	.02	e.02	.00	e.02	e.18	24	.06	.96	.02	.00	.00
14	.00	.02	e.02	.00	e.02	e.16	6.9	.05	74	.01	.00	.00
15	.00	.03	e.02	.00	e.02	e.13	1.0	.05	16	.01	.00	.00
16	.00	.03	e.01	.00	e.03	e.16	.55	e462	10	.00	.00	.00
17	.00	.02	e.01	.00	e.04	e.18	.32	909	5.9	.00	.00	.00
18	.00	.02	e.01	.00	e.05	e.20	.19	156	2.4	.00	.00	.00
19	.00	.03	e.01	.00	e.06	e.25	.12	31	1.1	.00	.00	.00
20	.00	.03	e.00	.00	e.07	e.28	.13	13	.64	.00	.00	.00
21	.00	.03	e.00	.00	e.07	e.24	.12	5.6	.47	.00	.00	.00
22	.00	.03	e.00	.00	e.07	e.18	.12	239	.45	.00	.00	.00
23	.00	.03	.00	.00	e.06	e.18	.12	182	.39	.00	.00	.00
24	.00	.03	.00	.00	e.06	e.20	.12	48	.34	.00	.00	.00
25	.00	.03	.00	.00	e.06	e.22	.12	25	.28	.00	.00	.00
26	.00	.03	.00	.00	e.08	e.20	.14	17	.22	.00	.00	.00
27	.00	e.03	.00	.00	e.09	e.16	.15	13	.19	.00	.00	.00
28	.00	e.02	.00	.00	e.09	e.15	.13	11	.16	.00	.00	.00
29	.00	e.02	.00	.00	---	e.13	.18	126	.60	.00	.00	.00
30	.01	e.02	.00	e.00	---	e.13	.28	49	.22	.00	.00	.00
31	.01	---	.00	e.00	---	e.14	---	36	---	.00	.00	---
TOTAL	0.02	0.64	0.33	0.00	1.12	5.56	49.11	2376.54	1072.62	0.97	0.00	0.00
MEAN	.001	.021	.011	.000	.040	.18	1.64	76.7	35.8	.031	.000	.000
MAX	.01	.03	.03	.00	.09	.28	24	909	423	.21	.00	.00
MIN	.00	.01	.00	.00	.01	.08	.12	.05	.16	.00	.00	.00
AC-FT	.04	1.3	.7	.00	2.2	11	97	4710	2130	1.9	.00	.00

CAL YR 1990 TOTAL 228.25 MEAN .63 MAX 41 MIN .00 AC-FT 453
WTR YR 1991 TOTAL 3506.91 MEAN 9.61 MAX 909 MIN .00 AC-FT 6960

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06442900 ELM CREEK NEAR GANN VALLEY, SD

LOCATION.--Lat 44°04'38", long 99°09'03", in NW¼NE¼NE¼ sec.18, T.107 N., R.69 W., Buffalo County, Hydrologic Unit 10140105, on right bank at downstream side of bridge on State Highway 34.

DRAINAGE AREA.--381 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 1,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,400 ft³/s, June 5, 1991, gage height, 12.31 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0645	1,050	10.91	May 30	1500	746	9.48
May 24	0015	309	6.95	June 5	0945	*1,400	*12.31

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	e.00	.00	.00	.00	e.14	.04	.65	107	.84	.10	.01
2	.01	e.00	.00	.00	.00	e.18	.03	.21	93	6.7	.11	.01
3	.02	e.00	.00	.00	.00	.11	.03	1.6	95	6.3	.10	.01
4	.01	e.00	.00	.00	.00	.13	.04	2.3	383	3.7	.10	.02
5	.01	e.00	.00	.00	.00	.16	.05	19	1210	2.2	.10	.01
6	.02	e.00	.00	.00	.00	.15	.06	23	657	1.4	.10	.01
7	.02	e.00	.00	.00	.00	.17	.06	13	216	1.1	.13	.01
8	.02	e.00	.00	.00	.00	.20	.06	8.7	93	.88	.06	.01
9	.02	e.00	.00	.00	.00	.11	.06	6.9	56	.74	.04	.01
10	.01	e.00	.00	.00	.00	.16	.06	5.1	38	.41	.03	.01
11	.01	e.00	.00	.00	.00	.17	.11	3.7	27	.31	.03	.01
12	.01	e.00	.00	.00	.00	.14	.65	2.4	22	.39	.03	.02
13	.01	e.00	.00	.00	e.00	.14	3.5	1.7	18	.26	.03	.03
14	.01	.00	.00	.00	e.00	.11	5.3	.78	15	.12	.03	.00
15	.02	.00	.00	.00	e.00	.10	16	.36	12	.11	.02	.00
16	.02	.00	.00	.00	e.01	.09	20	58	11	.12	.03	.00
17	.02	.00	.00	.00	e.03	.11	14	441	9.1	.11	.03	.00
18	.02	.00	.00	.00	e.05	.11	9.7	825	7.6	.12	.03	.00
19	.02	.00	.00	.00	e.08	.10	6.4	209	5.1	.15	.03	.00
20	.01	.00	.00	.00	.09	.11	4.1	60	3.4	.14	.03	.00
21	e.00	.00	.00	.00	.11	.11	2.6	29	2.8	.15	.02	.00
22	e.00	.00	.00	.00	.17	.09	1.6	19	2.3	.15	.02	.00
23	e.00	.00	.00	.00	.17	e.11	1.1	82	1.6	.11	.02	.00
24	e.00	.00	.00	.00	.13	.11	.56	184	1.6	.11	.02	.00
25	e.00	.00	.00	.00	.11	.09	.30	70	1.4	.11	.01	.00
26	e.00	.00	.00	.00	.11	.09	.36	32	.70	.10	.01	.00
27	e.00	.00	.00	.00	.11	.08	.39	19	.58	.10	.01	.00
28	e.00	.00	.00	.00	.12	.07	.32	15	.43	.10	.01	.00
29	e.00	.00	.00	.00	---	.06	.26	42	.39	.10	.01	.00
30	e.00	.00	.00	.00	---	.06	.37	610	.56	.10	.01	.00
31	e.00	---	.00	.00	---	.05	---	258	---	.10	.01	---
TOTAL	0.31	0.00	0.00	0.00	1.29	3.61	88.11	3042.40	3090.56	27.33	1.31	0.17
MEAN	.010	.000	.000	.000	.046	.12	2.94	98.1	103	.88	.042	.006
MAX	.02	.00	.00	.00	.17	.20	20	825	1210	6.7	.13	.03
MIN	.00	.00	.00	.00	.00	.05	.03	.21	.39	.10	.01	.00
AC-FT	.6	.00	.00	.00	2.6	7.2	175	6030	6130	54	2.6	.3

CAL YR 1990 TOTAL 753.04 MEAN 2.06 MAX 152 MIN .00 AC-FT 1490
WTR YR 1991 TOTAL 6255.09 MEAN 17.1 MAX 1210 MIN .00 AC-FT 12410

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

197

06442996 LAKE FRANCIS CASE (AMERICAN CREEK BAY) AT CHAMBERLAIN, SD

LOCATION.--Lat 43°48'52", long 099°19'24", in SE¼NE¼NW¼ sec.15, T.104 N., R.71 W., Brule County, Hydrologic Unit 10140101, on left bank at upstream end of American Creek Recreation Area, 0.5 mi upstream from intersection of I-90 and State Highway 50 Business Loop, 1.5 mi upstream from Lewis and Clark Memorial Bridge, and at mile 967.5.

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,360 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Stage regulated by Ft. Randall Reservoir. Gage heights prior to October 1988 in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	54.22	53.74	55.17	57.28	55.65	56.35	55.29
2	---	---	---	---	---	54.11	53.54	55.33	57.30	55.99	56.34	55.39
3	---	---	---	---	---	54.11	---	55.42	57.58	55.94	55.94	55.48
4	---	---	---	---	---	54.29	---	55.34	58.10	56.06	55.90	55.88
5	---	---	---	---	---	54.49	---	55.02	58.73	56.12	56.18	56.34
6	---	---	---	---	---	54.56	---	55.18	59.93	55.74	56.34	56.45
7	---	---	---	---	---	54.77	---	55.39	60.39	55.12	56.63	56.63
8	---	---	---	---	---	54.89	---	55.48	60.47	55.23	56.60	56.12
9	---	---	---	---	---	55.18	53.81	55.72	60.36	55.50	56.80	56.09
10	---	---	---	---	---	55.14	54.38	55.89	60.31	55.64	56.66	56.45
11	---	---	---	---	---	55.05	54.78	55.70	60.20	55.78	56.29	56.74
12	---	---	---	---	---	55.15	54.61	55.46	60.05	56.03	56.30	57.10
13	---	---	---	---	---	55.38	54.53	55.65	59.93	55.93	56.40	57.48
14	---	---	---	---	---	55.51	54.33	55.85	59.37	55.93	56.59	57.33
15	---	---	---	---	---	55.55	54.49	55.70	58.83	56.02	56.67	56.89
16	---	---	---	---	---	55.49	54.84	55.71	58.77	56.36	56.64	56.93
17	---	---	---	---	---	55.36	55.09	55.88	58.43	56.58	56.20	57.24
18	---	---	---	---	---	55.40	55.14	56.09	58.08	56.28	55.75	57.38
19	---	---	---	---	---	55.57	54.99	56.32	58.11	56.24	55.77	57.77
20	---	---	---	---	---	55.64	54.90	56.39	58.03	56.13	55.99	58.25
21	---	---	---	---	---	55.69	54.67	56.66	57.54	55.88	56.00	58.13
22	---	---	---	---	---	55.79	54.66	56.89	57.41	56.02	56.15	57.06
23	---	---	---	---	---	55.59	54.83	56.72	57.10	56.03	56.23	57.31
24	---	---	---	---	---	55.78	55.10	56.74	56.85	56.21	56.07	57.48
25	---	---	---	---	---	55.61	55.28	56.64	56.91	56.43	55.55	57.40
26	---	---	---	---	---	55.48	55.32	56.29	56.52	56.79	55.77	57.68
27	---	---	---	---	---	55.14	55.11	56.01	56.25	56.40	56.12	57.41
28	---	---	---	---	---	55.28	54.88	56.12	56.39	55.87	56.27	57.04
29	---	---	---	---	---	55.08	54.65	56.31	56.19	56.04	56.13	56.53
30	---	---	---	---	---	54.56	54.77	56.65	55.68	56.18	56.15	55.83
31	---	---	---	---	---	54.02	---	57.03	---	56.16	55.70	---
MEAN	---	---	---	---	---	55.09	---	55.96	58.24	56.01	56.21	56.84
MAX	---	---	---	---	---	55.79	---	57.03	60.47	56.79	56.80	58.25
MIN	---	---	---	---	---	54.02	---	55.02	55.68	55.12	55.55	55.29

06444000 WHITE RIVER AT CRAWFORD, NE

LOCATION.--Lat 42°41'33", long 103°25'03", in W $\frac{1}{2}$ sec.3, T.31 N., R.52 W., Dawes County, Hydrologic Unit 10140201, on right bank 15 ft downstream from bridge in city park at Crawford.

DRAINAGE AREA.--313 mi².

PERIOD OF RECORD.--February 1931 to September 1943, October 1947 to current year.

REVISED RECORDS.--WSP 1309: 1931(M), 1942(M). WSP 1729: 1958-59(M). WSP 1917: 1958-59.

GAGE.--Water-stage recorder. Datum of gage is 3,659.85 ft above National Geodetic Vertical Datum of 1929. Feb. 25, 1931, to Oct. 2, 1933, nonrecording gage at old highway bridge 0.5 mi upstream at different datum and Oct. 3, 1933, to Sept. 30, 1943, 1 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 7-8, 29, Dec. 4, 16-17, Dec. 19 to Jan. 14, Jan. 24 to Feb. 1, and May 12, 15, 19, 25-27. Records good except for periods of estimated record, which are poor. Some regulation at low flows by pumps for irrigation and diversion for water supply for town of Crawford.

AVERAGE DISCHARGE.--56 years, 20.3 ft³/s, 14,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft³/s, May 10, 1991, gage height, 16.32 ft, from floodmark, from rating curve extended above 1,200 ft³/s on basis of peakflow from slope-area and road overflow measurements; minimum daily discharge, 2.7 ft³/s, Aug. 13, 31, Sept. 1, 1960.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	2330	*13,300	*a16.32	July 19	0530	264	5.99
May 16	0745	569	7.66	July 26	2200	1,930	a10.18
May 28	0615	467	7.19	Aug. 7	2345	139	5.14
May 29	2345	1,680	9.86	Sept. 13	0545	217	5.69
June 9	1030	115	5.78				

a From floodmark.

Minimum daily discharge, 13.0 ft³/s, Sept. 7-8.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	15	15	19	20	19	19	18	50	31	19	15
2	15	15	15	18	20	19	19	18	50	29	19	14
3	14	16	15	18	20	19	18	19	50	27	19	14
4	15	16	15	18	20	20	18	20	53	27	20	14
5	15	16	16	18	19	20	17	18	46	27	26	14
6	14	17	15	17	19	19	17	18	60	24	20	14
7	15	16	15	17	19	18	17	19	46	24	29	13
8	16	15	15	17	19	18	19	20	45	24	57	13
9	18	14	15	17	19	17	18	18	56	25	27	14
10	17	16	16	17	19	17	17	700	37	27	24	15
11	18	16	16	17	18	17	19	1080	35	27	24	17
12	18	15	16	17	19	17	21	120	33	27	27	17
13	17	15	16	17	19	17	21	92	33	28	25	71
14	17	15	16	17	18	17	20	86	44	26	22	29
15	17	15	16	17	17	17	18	88	42	25	21	23
16	17	15	16	17	18	17	17	270	32	25	21	20
17	17	15	15	16	20	17	17	72	31	26	19	20
18	17	15	15	17	20	17	17	58	35	43	18	19
19	16	15	15	17	19	17	20	52	32	110	18	19
20	16	15	16	16	19	17	19	50	40	48	25	19
21	16	15	17	16	21	17	22	47	34	33	21	18
22	16	15	18	16	20	18	23	47	34	24	19	17
23	15	15	19	16	21	19	20	49	33	22	18	18
24	15	15	20	16	20	18	19	50	32	25	16	18
25	15	15	22	16	20	17	19	49	33	26	15	18
26	15	15	24	17	20	18	20	49	32	220	15	18
27	15	16	23	18	20	17	20	48	33	175	15	18
28	15	15	22	17	19	18	19	155	48	29	15	17
29	15	16	20	18	---	19	19	98	51	24	15	17
30	15	16	20	19	---	20	18	270	34	21	14	17
31	15	---	19	20	---	21	---	75	---	19	14	---
TOTAL	491	460	533	533	542	558	567	3773	1214	1268	657	570
MEAN	15.8	15.3	17.2	17.2	19.4	18.0	18.9	122	40.5	40.9	21.2	19.0
MAX	18	17	24	20	21	21	23	1080	60	220	57	71
MIN	14	14	15	16	17	17	17	18	31	19	14	13
AC-FT	974	912	1060	1060	1080	1110	1120	7480	2410	2520	1300	1130

CAL YR 1990 TOTAL 6784 MEAN 18.6 MAX 49 MIN 11 AC-FT 13460
WTR YR 1991 TOTAL 11166 MEAN 30.6 MAX 1080 MIN 13 AC-FT 22150

WHITE RIVER BASIN

199

06445685 WHITE RIVER NEAR NEBRASKA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 43°00'47", long 102°50'07", in NE¼SW¼NE¼ sec.15, T.35 N., R.47 W., Shannon County, Hydrologic Unit 10140201, on left bank 1.0 mi north of Nebraska-South Dakota State line, and 4.3 mi south of Slim Butte.

DRAINAGE AREA.--1,440 mi², approximately.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,030 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,820 ft³/s, May 12, 1991, gage height, 19.07 ft; no flow July 13-18, Aug. 3-17, Sept. 5-10, 1989, Sept. 6-19, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 12	1215	*3,820	*19.07	May 30	1015	1,700	15.80
May 19	1230	1,440	14.75	June 5	0645	789	11.00

Minimum daily discharge, 0.97 ft³/s, Oct. 4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	e3.5	3.3	e2.0	e1.5	e2.6	e5.5	57	807	120	35	11
2	2.0	e2.0	3.8	e1.9	e1.5	e1.5	e5.0	102	452	122	30	12
3	1.6	e2.7	e4.5	e1.8	e2.0	e1.5	e5.0	105	318	91	25	11
4	.97	e2.7	4.2	e1.8	e1.9	e3.5	e6.0	107	456	75	24	11
5	1.7	e2.8	4.2	e1.9	e1.9	e5.0	e6.5	108	751	63	23	10
6	2.4	e2.7	3.4	e1.6	e1.8	e4.4	e7.0	105	633	59	25	10
7	1.8	e2.5	4.5	e1.7	e1.7	e4.0	e7.0	95	632	55	28	10
8	1.7	e2.5	5.2	e2.0	e1.8	e4.0	e7.0	120	706	51	33	11
9	1.6	e2.7	4.7	e1.9	e1.8	e5.0	e7.0	122	548	49	30	11
10	1.3	e3.5	4.4	e1.9	e1.8	e5.5	e6.5	128	470	48	33	e19
11	1.1	e5.0	5.5	e2.0	e2.0	e6.0	e6.5	153	392	70	59	e17
12	1.3	e5.0	5.4	e2.0	e2.0	e6.0	e6.5	1910	233	47	39	e18
13	5.3	e4.0	e5.0	e2.0	e3.0	e5.5	e7.0	1630	149	32	31	e22
14	9.6	e4.0	e5.0	e1.8	e2.8	e5.5	e8.0	1020	137	28	35	e41
15	3.4	e4.0	e5.0	e1.7	e1.2	e5.5	e9.0	504	127	27	39	e60
16	2.5	e3.5	e4.0	e1.6	e1.2	e5.5	e10	183	116	26	40	e70
17	2.0	e3.5	e3.4	e1.5	e1.6	e6.0	e12	174	120	21	36	e50
18	1.6	e3.4	e3.5	e1.4	e1.4	e6.0	e13	447	101	17	27	e40
19	1.6	e3.6	e3.0	e1.4	e1.2	e5.7	e13	1320	88	16	26	e34
20	1.2	e3.6	e2.5	e1.2	e1.2	e6.0	e15	1090	83	16	23	e31
21	1.3	e3.8	e2.0	e1.1	e2.0	e7.0	e17	757	83	21	21	e31
22	1.3	e3.4	e1.5	e1.2	e2.0	e6.0	e20	308	77	64	20	e30
23	1.1	e3.4	e1.7	e1.3	e2.0	e6.0	e44	236	82	32	24	e29
24	1.0	e3.6	e1.8	e1.2	e2.0	e5.4	83	210	76	23	25	e25
25	1.1	e3.6	e1.8	e1.1	e1.8	e5.2	136	176	74	18	21	e25
26	1.2	e2.0	e1.8	e1.1	e1.8	e5.0	135	166	68	16	19	e23
27	1.5	e2.0	e1.9	e1.1	e2.0	e4.6	124	174	62	14	19	e20
28	1.7	3.4	e2.0	e1.1	e2.0	e5.0	112	816	66	14	17	e19
29	1.9	3.4	e1.6	e1.0	---	e5.2	79	850	105	40	15	e18
30	2.1	3.4	e1.6	e1.0	---	e5.5	57	1560	130	81	12	e16
31	1.9	---	e1.6	e1.0	---	e6.0	---	1210	---	43	11	---
TOTAL	64.07	99.2	103.8	47.3	50.9	155.6	969.5	15943	8142	1399	845	735
MEAN	2.07	3.31	3.35	1.53	1.82	5.02	32.3	514	271	45.1	27.3	24.5
MAX	9.6	5.0	5.5	2.0	3.0	7.0	136	1910	807	122	59	70
MIN	.97	2.0	1.5	1.0	1.2	1.5	5.0	57	62	14	11	10
AC-FT	127	197	206	94	101	309	1920	31620	16150	2770	1680	1460

CAL YR 1990 TOTAL 5281.07 MEAN 14.5 MAX 117 MIN .00 AC-FT 10480
WTR YR 1991 TOTAL 28554.37 MEAN 78.2 MAX 1910 MIN .97 AC-FT 56640

e Estimated

WHITE RIVER BASIN

06445700 WHITE RIVER NEAR SLIM BUTTE, SD

LOCATION.--Lat 43°05'23", long 102°47'52", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.13 T.36 N., R.47 W., Shannon County, Hydrologic Unit 10140201, on left bank 1.25 mi downstream from Janis Creek, about 7.5 mi southwest of Oglala, and about 12.25 mi downstream from the Nebraska-South Dakota State line.

DRAINAGE AREA.--1,500 mi², approximately.

PERIOD OF RECORD.--July 1962 to September 1965, December 1990 to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 3,000 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to September 1965, water-stage recorder and supplemental staff or wire-weight gage read daily was operated 1.25 mi upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some diversions for irrigation above station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,750 ft³/s, May 13, 1991, gage height, 16.61 ft; no flow for many days some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 13, 1962, reached a stage of 20.54 ft, from floodmarks (discharge, 14,400 ft³/s), from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period December to September, 1,750 ft³/s at 1200 hours, May 13, gage height, 16.61 ft; minimum daily discharge, 1.0 ft³/s, Jan. 31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	e1.1	e1.3	e1.5	9.4	11	835	111	50	12
2	---	---	---	e1.1	e1.5	e1.4	9.8	15	522	124	44	14
3	---	---	---	e1.1	e1.5	e1.4	9.7	21	323	98	40	13
4	---	---	e2.8	e1.1	e1.7	e1.7	9.3	20	455	81	38	12
5	---	---	e2.7	e1.1	e1.7	e1.9	8.9	20	650	72	38	11
6	---	---	e2.6	e1.2	e1.5	e1.8	8.9	20	667	67	38	12
7	---	---	e2.5	e1.2	e1.5	e1.8	8.2	18	581	63	46	12
8	---	---	e2.5	e1.3	e1.5	e1.8	7.2	19	637	61	44	10
9	---	---	e2.5	e1.3	e1.4	e1.9	6.7	24	611	61	45	12
10	---	---	e2.5	e1.3	e1.4	e2.0	6.2	22	482	63	41	11
11	---	---	e2.5	e1.4	e1.7	e2.0	6.7	27	412	78	64	16
12	---	---	e2.5	e1.4	e1.7	e2.0	7.4	423	290	59	53	15
13	---	---	e2.6	e1.4	e1.8	e1.8	7.5	1560	166	48	44	15
14	---	---	e2.7	e1.4	e1.8	e2.0	7.4	1150	140	42	44	18
15	---	---	e2.7	e1.4	e1.6	e4.0	8.3	631	143	41	47	35
16	---	---	e2.5	e1.4	e1.7	e5.3	8.5	233	119	41	52	53
17	---	---	e2.4	e1.3	e1.6	e7.0	9.5	195	122	37	48	62
18	---	---	e2.2	e1.2	e1.6	e9.0	12	305	112	31	41	44
19	---	---	e2.1	e1.2	e1.6	e11	13	850	96	28	38	37
20	---	---	e2.0	e1.2	e1.6	13	11	1070	91	27	36	32
21	---	---	e1.9	e1.1	e1.7	12	12	749	90	28	33	29
22	---	---	e1.8	e1.1	e1.7	13	9.6	390	86	65	32	29
23	---	---	e1.7	e1.5	e1.7	13	9.2	229	87	51	32	28
24	---	---	e1.6	e1.5	e1.6	12	10	206	85	40	38	27
25	---	---	e1.5	e1.3	e1.6	11	24	167	82	32	34	25
26	---	---	e1.4	e1.2	e1.6	11	22	149	79	28	30	25
27	---	---	e1.3	e1.2	e1.7	9.9	21	154	74	24	29	25
28	---	---	e1.2	e1.3	e1.7	10	22	514	85	21	25	24
29	---	---	e1.2	e1.3	---	10	20	750	94	21	21	14
30	---	---	e1.2	e1.1	---	9.8	14	1130	169	91	18	8.5
31	---	---	e1.2	e1.0	---	9.8	---	1260	---	60	13	---
TOTAL	---	---	---	38.7	45.0	195.8	339.4	12332	8385	1694	1196	680.5
MEAN	---	---	---	1.25	1.61	6.32	11.3	398	279	54.6	38.6	22.7
MAX	---	---	---	1.5	1.8	13	24	1560	835	124	64	62
MIN	---	---	---	1.0	1.3	1.4	6.2	11	74	21	13	8.5
AC-FT	---	---	---	77	89	388	673	24460	16630	3360	2370	1350

e Estimated

WHITE RIVER BASIN

201

06445980 WHITE CLAY CREEK NEAR OGLALA, SD

LOCATION.--Lat 43°08'46", long 102°40'58", in NW¼SE¼SE¼ sec.30, T.37 N., R.45 W., Shannon County, Hydrologic Unit 10140201, on left bank at downstream side of bridge on U.S. Highway 18, 4.3 mi southeast of Oglala, 5.5 mi upstream from Oglala Dam, and 11 mi northwest of Pine Ridge.

DRAINAGE AREA.--340 mi², approximately.

PERIOD OF RECORD.--August 1965 to September 1981, October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,001.54 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some storage and possible regulation upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--20 years (water years 1966-81, 1988-91), 10.1 ft³/s, 7,320 acre-ft/yr; median of yearly mean discharges, 8.5 ft³/s, 6,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 659 ft³/s, June 16, 1967, gage height, 14.74 ft; maximum gage height, 15.02 ft, Mar. 11, 1966, backwater from ice; no flow at times in 1965, 1970, 1973-75, 1978, 1980-81, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 5	2115	*540	*13.83	No other peak greater than base discharge.			

Minimum daily discharge, 1.1 ft³/s, Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	3.8	e5.5	e2.7	e3.5	e3.5	8.1	12	13	12	9.0	17
2	1.2	3.9	e5.5	e2.7	e3.5	e2.7	8.4	11	13	12	8.7	12
3	1.2	e4.0	e5.0	e2.7	e4.0	e2.7	8.7	11	25	11	8.5	5.5
4	1.4	e4.0	e5.5	e2.7	e3.0	e4.0	8.7	11	29	11	8.3	4.2
5	1.5	e4.0	e5.6	e2.5	e3.0	e5.0	8.6	11	84	11	8.5	3.5
6	1.5	e3.8	e5.7	e2.2	e3.0	e4.0	8.9	12	92	11	8.6	4.1
7	1.5	e3.5	e5.0	e2.2	e3.0	e3.8	8.8	13	85	11	9.4	3.6
8	1.6	e3.5	4.7	e2.5	e3.0	e4.0	8.7	13	92	11	9.6	3.7
9	1.7	e4.0	5.7	e2.5	e3.0	e4.5	8.5	13	67	11	12	3.1
10	1.9	e4.0	7.0	e2.5	e3.0	e5.6	8.2	12	48	12	7.5	3.0
11	2.1	4.3	6.5	e2.4	e3.8	e6.0	8.4	12	39	12	7.3	5.1
12	2.1	4.5	6.2	e2.4	e3.8	e6.0	8.7	12	33	11	7.3	4.3
13	2.2	4.5	4.4	e2.5	e4.0	e5.5	8.7	12	27	11	7.5	4.4
14	2.2	4.5	3.5	e2.7	e3.8	e5.5	9.1	11	49	11	7.7	4.6
15	2.4	4.5	e3.5	e2.7	e2.0	e6.0	9.4	11	26	10	7.5	4.0
16	2.4	4.7	e2.7	e2.7	e2.0	e6.0	9.3	12	19	10	7.6	2.8
17	2.6	4.3	e2.8	e2.7	e3.2	e7.0	9.2	12	17	10	7.7	3.3
18	2.8	4.3	e2.8	e2.7	e3.0	e7.1	9.1	12	15	10	7.5	6.7
19	2.9	4.4	e2.5	e2.7	e2.8	e7.3	11	12	14	10	7.4	3.9
20	3.1	4.6	e2.0	e2.7	e2.8	e7.8	11	12	14	10	7.3	5.0
21	3.1	4.6	e1.8	e2.8	e3.2	e9.0	11	12	13	10	7.1	4.3
22	3.2	4.7	e1.5	e2.8	e3.2	e8.5	12	11	13	9.8	7.0	4.5
23	3.2	4.8	e1.8	e2.8	e3.2	e8.5	11	11	13	9.8	6.9	4.6
24	3.5	4.8	e2.0	e2.5	e3.2	e8.5	11	11	13	9.9	6.8	4.5
25	3.5	4.8	e1.8	e2.2	e3.0	e8.5	10	11	12	10	6.8	5.3
26	3.6	e5.0	e2.0	e2.2	e3.0	e8.5	16	11	11	10	6.7	5.1
27	4.0	e5.0	e2.4	e2.2	e3.0	e8.5	15	11	11	9.8	14	5.5
28	4.2	e5.0	e2.3	e2.8	e3.5	e8.0	14	12	12	9.6	17	5.5
29	4.1	e5.0	e2.2	e2.4	---	e8.0	13	14	13	9.4	17	5.3
30	4.1	e5.0	e2.2	e1.8	---	e8.0	12	24	14	9.6	17	5.1
31	4.0	---	e2.6	e2.0	---	e8.0	---	16	---	9.6	17	---
TOTAL	79.9	131.8	114.7	77.9	88.5	196.0	304.5	381	926	325.5	288.2	153.5
MEAN	2.58	4.39	3.70	2.51	3.16	6.32	10.1	12.3	30.9	10.5	9.30	5.12
MAX	4.2	5.0	7.0	2.8	4.0	9.0	16	24	92	12	17	17
MIN	1.1	3.5	1.5	1.8	2.0	2.7	8.1	11	11	9.4	6.7	2.8
AC-FT	158	261	228	155	176	389	604	756	1840	646	572	304

CAL YR 1990 TOTAL 2005.79 MEAN 5.50 MAX 20 MIN .40 AC-FT 3980
WTR YR 1991 TOTAL 3067.5 MEAN 8.40 MAX 92 MIN 1.1 AC-FT 6080

e Estimated

06446000 WHITE RIVER NEAR OGLALA, SD

LOCATION.--Lat 43°15'17", long 102°49'29", in SW¼NE¼ sec.24, T.38 N., R.47 W., Shannon County, Hydrologic Unit 10140201, on right bank at downstream side of bridge, 3.0 mi downstream from Blacktail Creek, and 7.0 mi northwest of Oglala.

DRAINAGE AREA.--2,200 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 2,853.54 ft above National Geodetic Vertical Datum of 1929. Prior to May 6, 1947, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some diversions for irrigation upstream from station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--48 years, 52.9 ft³/s, 38,300 acre-ft/yr; median of yearly mean discharges, 45 ft³/s, 32,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,200 ft³/s, June 21, 1947, gage height, 23.50 ft, from rating curve extended above 2,800 ft³/s on basis of velocity-area studies; maximum gage height, 23.61 ft, June 16, 1967; no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	1245	1,120	15.70	June 2	1400	1,350	17.00
May 21	1630	1,050	15.22	June 7	0400	*1,530	*17.65

No flow Oct. 31 to Nov. 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	.00	e4.0	e1.3	e.60	e3.0	15	45	1140	168	49	13
2	1.9	.00	e3.5	e1.0	e.60	e2.5	15	40	1230	120	38	12
3	1.1	.02	e3.5	e1.0	e.70	e2.5	14	38	636	129	33	13
4	.59	.01	e4.0	e1.0	e.80	e4.0	15	44	837	96	29	15
5	.47	.02	e4.5	e1.0	e.80	e6.0	15	50	767	78	28	15
6	.27	e3.5	e4.6	.84	e.80	e6.0	16	49	958	69	28	14
7	.22	e3.0	e4.0	.79	e.90	e5.0	15	51	1250	63	46	13
8	.20	e3.0	e4.5	.70	e1.0	e5.0	15	52	733	59	36	12
9	.16	e4.0	e4.5	.62	e1.0	e5.0	15	52	765	56	33	11
10	.13	e4.0	e5.0	.56	e1.0	e6.0	14	57	669	55	36	13
11	.12	e4.5	e4.5	.52	e1.5	e7.0	14	198	522	57	31	17
12	.12	e4.5	e4.5	.49	e1.5	e8.0	15.0	526	418	73	50	16
13	.09	e4.0	e4.5	.50	e1.8	e8.0	16	615	276	59	46	14
14	.08	e4.0	e4.0	.46	e1.5	e8.0	17	984	197	48	36	15
15	.06	e4.0	e4.0	.44	e1.0	e8.0	18.0	1100	170	41	33	15
16	.05	e3.5	e3.5	.44	e1.5	e8.0	17	636	170	38	37	32
17	.02	e3.5	e3.0	.44	e2.0	e15	17	239	150	36	41	41
18	1.6	e3.5	e3.0	.47	e1.5	e20	18	209	154	33	37	62
19	1.4	e3.5	e2.5	.58	e1.0	e31	25	361	141	28	33	41
20	1.2	e3.5	e2.0	.63	e1.0	28	30	835	126	26	28	34
21	.56	e4.0	e1.5	.75	e1.5	28	30	1030	113	24	27	28
22	.68	e3.5	e1.0	.75	e1.5	27	30	851	113	23	24	24
23	.43	e3.5	e1.0	e.70	e1.5	26	30	360	114	46	23	24
24	.66	e3.8	e1.5	e.60	e1.3	25	27	255	105	45	23	24
25	.30	e3.5	e1.5	e.50	e1.0	24	27	230	101	32	27	23
26	.18	e3.0	e1.0	e.50	e1.0	21	32	192	95	26	26	22
27	.13	e3.0	e1.0	e.50	e1.5	19	59	181	89	23	22	21
28	.12	e3.5	e1.3	e.50	e2.0	17	54	224	124	21	21	21
29	.09	e3.5	e1.0	e.40	---	16	50	663	114	19	20	20
30	.02	e4.0	e1.0	e.40	---	15	49	866	137	21	17	17
31	.00	---	e1.3	e.50	---	15	---	1010	---	70	16	---
TOTAL	15.35	91.35	90.7	19.88	33.80	419.0	724.0	12043	12414	1682	974	642
MEAN	.50	3.04	2.93	.64	1.21	13.5	24.1	388	414	54.3	31.4	21.4
MAX	2.4	4.5	5.0	1.3	2.0	31	59	1100	1250	168	50	62
MIN	.00	.00	1.0	.40	.60	2.5	14	38	89	19	16	11
AC-FT	30	181	180	39	67	831	1440	23890	24620	3340	1930	1270

CAL YR 1990 TOTAL 5947.45 MEAN 16.3 MAX 99 MIN .00 AC-FT 11800
WTR YR 1991 TOTAL 29149.08 MEAN 79.9 MAX 1250 MIN .00 AC-FT 57820

e Estimated

WHITE RIVER BASIN

203

06447000 WHITE RIVER NEAR KADOKA, SD

LOCATION.--Lat 43°45'09", long 101°31'28", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.30, T.3 S., R.22 E., Black Hills meridian, Jackson County, Hydrologic Unit 10140202, on left bank 1,000 ft downstream from bridge on State Highway 73 (revised), 5.0 mi upstream from Pass Creek, 5.5 mi downstream from Cottonwood Creek, and 5.8 mi south of Kadoka.

DRAINAGE AREA.--5,000 mi², approximately.

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

REVISED RECORDS.--WSP 1279: 1944(M), 1948.

GAGE.--Water-stage recorder. Datum of gage is 2,122.18 ft above National Geodetic Vertical Datum of 1929. Prior to June 14, 1949, nonrecording gage, and June 14, 1949, to Mar. 8, 1955, water-stage recorder at site 0.3 mi downstream at same datum. Mar. 9, 1955, to May 17, 1957, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--49 years, 267 ft³/s, 193,400 acre-ft/yr. The figure published in the 1990 report was in error; the correct figure is 266 ft³/s, 192,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft³/s, June 7, 1951, gage height, 13.83 ft, site then in use, from rating curve extended above 16,000 ft³/s; maximum gage height, 16.18 ft, May 20, 1982; no flow at times in many years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1942, reached a stage of 16.24 ft, from floodmarks (discharge, about 32,000 ft³/s, from rating curve extended above 16,000 ft³/s). Floods of Mar. 8, 1905, and in spring of 1927 were 1 or 2 ft higher than flood of June 4, 1942, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	0300	*9,480	*10.66	June 4	0245	7,190	9.60
May 29	0745	8,400	10.18	June 7	0115	9,220	10.55
June 2	0015	5,030	8.41				

No flow Dec. 30 to Jan. 31.

WHITE RIVER BASIN

06447000 WHITE RIVER NEAR KADOKA, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	4.9	13	e.00	e.50	e52	35	68	2380	1880	19	13
2	3.9	4.6	12	e.00	e3.0	e46	30	58	3020	872	48	11
3	2.5	5.6	11	e.00	e8.0	e60	21	342	2340	308	42	6.9
4	1.9	60	12	e.00	e15	e80	15	280	4040	234	24	7.0
5	1.5	145	13	e.00	e30	e100	14	116	1600	168	327	5.5
6	.65	69	e10	e.00	e35	e260	4.5	66	5550	127	696	3.6
7	.57	e28	e10	e.00	e40	e200	13	66	5690	121	293	2.4
8	.78	e20	e11	e.00	e60	151	15	54	2790	98	332	2.7
9	1.4	e21	e11	e.00	e55	117	15	51	1830	78	481	22
10	1.4	23	e11	e.00	e50	112	14	41	2020	68	181	13
11	1.5	25	e10	e.00	e45	101	68	32	956	393	105	66
12	3.1	27	e9.0	e.00	e50	93	238	2040	736	306	64	1240
13	1.3	19	e8.0	e.00	e55	90	617	1610	567	530	219	528
14	3.4	13	e8.0	e.00	e50	91	501	611	743	236	91	485
15	3.2	13	e8.0	e.00	e45	76	312	561	1380	141	60	164
16	3.1	14	e8.0	e.00	e50	75	150	4370	425	96	47	113
17	3.4	12	e7.0	e.00	e45	76	87	4530	271	86	68	72
18	6.1	11	e7.0	e.00	e42	69	60	3720	197	60	97	55
19	7.0	12	e5.0	e.00	e45	65	163	1490	165	47	119	51
20	4.5	14	e2.0	e.00	e50	60	792	722	151	35	72	36
21	4.2	14	e.50	e.00	e55	57	576	422	131	28	61	26
22	3.7	e12	e.10	e.00	e53	47	302	404	130	25	50	31
23	4.1	13	e.10	e.00	e51	46	136	1050	121	23	40	50
24	4.5	13	e.15	e.00	e50	43	83	952	619	21	34	40
25	5.6	e12	e.10	e.00	e51	42	65	649	484	17	26	32
26	5.6	e10	e.05	e.00	e50	38	76	335	206	11	22	27
27	4.8	12	e.10	e.00	e52	34	59	270	127	15	24	23
28	5.2	12	e.10	e.00	e55	41	51	1740	452	16	32	20
29	4.9	13	e.05	e.00	---	40	60	5470	2520	43	17	18
30	4.8	14	e.00	e.00	---	39	100	2030	2270	24	14	18
31	5.2	---	e.00	e.00	---	38	---	1280	---	19	12	---
TOTAL	108.30	666.1	187.25	0.00	1190.50	2439	4672.5	35430	43911	6126	3717	3182.1
MEAN	3.49	22.2	6.04	.000	42.5	78.7	156	1143	1464	198	120	106
MAX	7.0	145	13	.00	60	260	792	5470	5690	1880	696	1240
MIN	.57	4.6	.00	.00	.50	34	4.5	32	121	11	12	2.4
AC-FT	215	1320	371	.00	2360	4840	9270	70280	87100	12150	7370	6310

CAL YR 1990 TOTAL 44317.84 MEAN 121 MAX 3440 MIN .00 AC-FT 87900
WTR YR 1991 TOTAL 101629.75 MEAN 278 MAX 5690 MIN .00 AC-FT 201600

e Estimated

06447500 LITTLE WHITE RIVER NEAR MARTIN, SD

LOCATION.--Lat 43°10'00", long 101°37'47", in NW¼ sec.19, T.37 N., R.36 W., Bennett County, Hydrologic Unit 10140203, on right bank 70 ft downstream from highway culvert and 5.4 mi east of Martin.

DRAINAGE AREA.--310 mi², approximately, of which about 230 mi² probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year. Prior to October 1965, published as South Fork White River near Martin.

GAGE.--Water-stage recorder. Elevation of gage is 3,045 ft, by barometer. Prior to Aug. 14, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--31 years, 19.3 ft³/s, 13,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,190 ft³/s, July 19, 1965, gage height, 12.90 ft, from rating curve extended above 340 ft³/s on basis of computation of peak flow through culvert and flow-over-road measurement of peak flow; maximum gage height, 13.21 ft, Mar. 11, 1966, backwater from ice; minimum daily discharge, 0.6 ft³/s, Aug. 14, 16, 18, 1940; no flow for part of each day Oct. 19, 20, 22, 1962 (regulation caused by construction work above station).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 5, 1932, reached a stage of 13.3 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 28	2400	158	5.39	July 29	1615	*281	*6.87

Minimum daily discharge, 2.6 ft³/s, Dec. 31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	12	16	e3.2	e8.0	e40	19	23	43	14	30	8.0
2	7.2	12	16	e3.5	e9.0	e38	19	22	54	13	21	8.0
3	7.2	12	15	e3.0	e12	e35	19	25	48	12	17	7.8
4	7.3	12	13	e3.0	e15	e35	19	43	51	12	15	7.8
5	7.5	e12	e14	e3.0	e17	e37	19	49	47	11	16	8.1
6	7.2	e12	e14	e3.0	e19	e39	19	42	63	11	38	8.5
7	7.2	e11	e14	e3.0	e20	e38	18	34	72	10	45	8.5
8	7.8	e13	e13	e3.0	e22	e36	18	28	71	9.6	79	8.5
9	8.7	14	e15	e3.0	e23	e36	18	25	76	9.7	31	8.3
10	9.6	16	e16	e3.0	e23	e37	19	23	96	10	24	8.5
11	9.9	15	e19	e3.0	e23	e39	23	21	80	14	19	9.5
12	10	14	e16	e3.5	e23	e38	34	19	56	15	34	11
13	9.7	13	e14	e4.0	e23	e35	40	18	49	13	25	10
14	9.6	13	e13	e5.0	e22	e33	37	16	42	11	17	10
15	9.9	13	e12	e5.5	e20	e29	33	17	38	9.6	15	10
16	9.9	12	e11	e6.0	e20	19	29	21	35	9.1	15	9.7
17	10	12	e10	e6.5	e22	19	25	27	33	8.7	15	9.5
18	10	13	e10	e7.0	e21	18	22	31	31	8.3	13	9.2
19	11	13	e10	e8.0	e20	19	22	34	30	7.9	13	9.0
20	12	13	e8.0	e7.5	e20	21	29	32	29	7.6	12	9.2
21	12	13	e6.0	e7.0	e23	21	39	28	26	7.5	11	9.4
22	12	14	e4.0	e7.0	e24	22	42	25	21	7.2	10	9.4
23	12	13	e4.0	e7.0	e30	23	39	23	21	7.1	9.8	9.4
24	12	13	e4.5	e7.0	e33	23	32	21	19	7.2	9.5	9.6
25	12	13	e5.0	e6.5	e35	22	26	20	18	7.4	9.2	9.9
26	12	13	e4.5	e6.5	e36	22	22	22	17	9.2	9.0	9.9
27	12	13	e4.5	e7.0	e37	22	21	18	16	78	8.6	10
28	12	e13	e5.0	e7.5	e38	21	23	74	16	208	8.3	10
29	12	e14	e4.5	e7.0	---	20	24	87	15	260	8.1	10
30	12	16	e3.5	e7.0	---	20	23	58	15	97	7.9	10
31	12	---	e2.6	e7.5	---	19	---	47	---	25	8.0	---
TOTAL	310.7	392	317.1	163.7	638.0	876	772	973	1228	930.1	593.4	276.7
MEAN	10.0	13.1	10.2	5.28	22.8	28.3	25.7	31.4	40.9	30.0	19.1	9.22
MAX	12	16	19	8.0	38	40	42	87	96	260	79	11
MIN	7.0	11	2.6	3.0	8.0	18	18	16	15	7.1	7.9	7.8
AC-FT	616	778	629	325	1270	1740	1530	1930	2440	1840	1180	549

CAL YR 1990 TOTAL 6879.8 MEAN 18.8 MAX 351 MIN 2.6 AC-FT 13650
WTR YR 1991 TOTAL 7470.7 MEAN 20.5 MAX 260 MIN 2.6 AC-FT 14820

e Estimated

WHITE RIVER BASIN

06449000 LAKE CREEK BELOW REFUGE, NEAR TUTHILL, SD

LOCATION.--Lat 43°08'46", long 101°30'38", in SW¼ sec.30, T.37 N., R.35 W., Bennett County, Hydrologic Unit 10140203, on left bank 400 ft downstream from east boundary of LaCreek game refuge, 1.2 mi southwest of Tuthill, and 5.5 mi upstream from mouth.

DRAINAGE AREA.--120 mi², approximately, of which about 60 mi² probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,055 ft, by barometer. Prior to Aug. 4, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--31 years, 17.1 ft³/s, 12,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 594 ft³/s, Mar. 25, 1987, gage height, 5.57 ft, from rating curve extended above 150 ft³/s; maximum gage height, 6.46 ft, Mar. 12, 1988, backwater from ice; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 217 ft³/s at 1300 hours, June 1, gage height, 5.24 ft; no flow Oct. 6-9.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	2.3	25	e25	10	e8.2	20	e18	202	36	3.4	23
2	.55	2.1	25	e25	10	e7.6	20	e18	205	32	3.4	23
3	.20	2.3	25	e24	11	7.1	20	e18	189	25	3.7	22
4	.03	1.5	25	e24	12	5.3	26	e18	186	20	4.1	21
5	.13	1.4	25	e24	12	2.9	34	e18	183	19	4.6	24
6	.00	1.5	25	e24	13	2.2	34	e18	205	15	4.5	32
7	.00	2.1	e25	e24	13	2.0	33	18	198	11	5.2	31
8	.00	1.5	25	24	14	1.6	33	19	193	9.9	7.7	31
9	.00	1.6	25	23	13	1.4	34	19	194	9.3	10	31
10	.67	1.6	26	22	14	.92	36	19	187	6.8	12	31
11	1.5	1.7	26	22	14	.63	37	19	183	6.8	16	33
12	1.6	1.6	26	22	14	.06	35	25	176	6.1	45	34
13	1.1	1.7	26	21	13	.04	32	26	170	5.9	62	39
14	.92	1.5	28	21	12	.09	31	24	171	5.9	67	38
15	.95	1.2	32	20	e12	.30	27	36	159	5.7	65	34
16	.97	1.1	32	20	12	.34	26	84	153	5.6	69	33
17	.99	1.0	32	20	11	.33	26	100	143	5.3	65	32
18	.89	1.2	31	20	11	6.0	24	115	127	4.8	59	32
19	.67	1.3	e30	20	11	16	19	121	124	4.8	53	44
20	.53	6.6	e27	19	11	15	20	125	119	4.9	51	51
21	.50	7.3	e24	18	11	15	20	128	109	4.6	46	50
22	.44	6.0	e23	16	11	15	e20	129	102	4.2	42	45
23	.43	5.3	e24	15	9.6	12	e20	136	92	4.0	37	44
24	.40	3.1	e24	e14	9.2	11	e20	133	82	4.0	34	44
25	.37	11	e24	e13	8.7	11	e19	134	72	4.1	31	42
26	1.1	16	e24	e13	8.6	11	e19	129	61	5.2	29	40
27	2.4	25	e24	e12	8.5	10	e19	124	55	5.5	27	39
28	2.4	19	e24	12	8.5	10	e19	171	48	4.9	25	37
29	2.4	18	e24	e10	---	13	e19	182	43	4.9	25	36
30	2.3	21	e23	e10	---	20	e18	173	43	4.2	24	34
31	2.4	---	e24	e10	---	20	---	160	---	3.8	22	---
TOTAL	28.84	168.5	803	587	318.1	226.01	760	2457	4174	289.2	952.6	1050
MEAN	.93	5.62	25.9	18.9	11.4	7.29	25.3	79.3	139	9.33	30.7	35.0
MAX	2.4	25	32	25	14	20	37	182	205	36	69	51
MIN	.00	1.0	23	10	8.5	.04	18	18	43	3.8	3.4	21
AC-FT	57	334	1590	1160	631	448	1510	4870	8280	574	1890	2080

CAL YR 1990 TOTAL 7156.82 MEAN 19.6 MAX 97 MIN .00 AC-FT 14200
WTR YR 1991 TOTAL 11814.25 MEAN 32.4 MAX 205 MIN .00 AC-FT 23430

e Estimated

06449100 LITTLE WHITE RIVER NEAR VETAL, SD

LOCATION.--Lat 43°06'03", long 101°13'49", in NE¼NW¼ sec.17, T.36 N., R.33 W., Bennett County, Hydrologic Unit 10140203, on left bank downstream side of highway culvert, 0.3 mi downstream from small right-bank tributary, 10.8 mi southeast of Vetal, and 15.3 mi upstream from Spring Creek.

DRAINAGE AREA.--590 mi², approximately, of which about 415 mi² probably contributes directly to surface runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1959 to current year. Prior to October 1965, published as South Fork White River near Vetal.

GAGE.--Water-stage recorder. Datum of gage is 2,780.69 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some small diversion for irrigation and some storage in several small lakes above station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--32 years, 53.7 ft³/s, 38,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,540 ft³/s, May 16, 1991, gage height, 12.53 ft; minimum daily, 9.0 ft³/s, Dec. 24, 25, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	0700	*3,540	*12.53	Aug. 1	0615	154	4.57

Minimum daily discharge, 17 ft³/s, Dec. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	26	36	e20	e48	57	56	60	250	e95	132	49
2	21	25	40	e20	e55	53	56	59	373	e88	74	48
3	22	25	39	e18	e58	63	55	77	300	e83	61	47
4	21	25	40	e18	e52	67	54	73	322	e77	56	47
5	20	26	44	e20	43	58	55	64	306	e74	57	49
6	21	27	44	e20	40	51	70	62	280	e70	66	47
7	19	29	46	e24	39	50	73	64	279	e73	81	54
8	25	28	48	e28	40	49	70	66	269	e76	81	56
9	25	25	51	e34	40	50	70	68	272	e72	68	55
10	21	24	53	e40	42	51	70	69	275	e80	82	56
11	23	22	53	e42	43	52	75	68	269	e90	82	61
12	22	22	56	e42	50	51	77	66	272	e72	83	61
13	24	21	48	e48	52	51	77	65	265	e58	98	58
14	24	21	e42	e57	49	50	75	67	326	e48	104	72
15	22	21	e39	e62	44	48	73	84	305	e42	109	63
16	25	21	e40	e64	51	48	74	1200	240	39	116	60
17	25	22	e40	e64	60	47	72	431	214	39	110	56
18	31	22	e39	e62	55	48	72	270	196	38	105	55
19	36	21	e32	e52	49	47	81	200	179	38	98	55
20	64	21	e28	e50	57	58	85	181	170	38	93	57
21	62	20	e23	e45	60	63	73	171	163	38	89	63
22	61	22	e20	e46	60	59	70	169	149	38	84	63
23	71	23	e21	e47	61	58	66	170	142	37	78	62
24	70	23	e22	e43	54	57	77	167	136	38	73	62
25	59	23	e24	e41	52	54	82	173	132	35	69	62
26	37	23	e24	e41	55	52	81	168	124	40	65	59
27	31	e23	e23	e45	56	50	77	171	e120	49	61	59
28	30	e22	e22	e47	56	49	75	312	e118	44	59	58
29	31	e25	e18	e47	---	48	71	373	e110	43	56	57
30	29	e31	e17	e44	---	47	66	306	e102	51	52	56
31	27	---	e18	e42	---	53	---	247	---	101	50	---
TOTAL	1021	709	1090	1273	1421	1639	2128	5721	6658	1804	2492	1707
MEAN	32.9	23.6	35.2	41.1	50.7	52.9	70.9	185	222	58.2	80.4	56.9
MAX	71	31	56	64	61	67	85	1200	373	101	132	72
MIN	19	20	17	18	39	47	54	59	102	35	50	47
AC-FT	2030	1410	2160	2520	2820	3250	4220	11350	13210	3580	4940	3390

CAL YR 1990 TOTAL 19217 MEAN 52.6 MAX 313 MIN 17 AC-FT 38120
WTR YR 1991 TOTAL 27663 MEAN 75.8 MAX 1200 MIN 17 AC-FT 54870

e Estimated

WHITE RIVER BASIN

06449100 LITTLE WHITE RIVER NEAR VETAL, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1986-89, October 1990 to September 1991 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1990 to September 1991 (discontinued).

REMARKS.--Records poor. Observer collects samples on an intermittent basis. Flow affected by ice Nov. 27-30, Dec. 14 to Feb. 4.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 1,230 mg/L, May 17; minimum daily mean, 23 mg/L, Nov. 14.

SEDIMENT LOAD: Maximum daily, 2,750 tons, May 16; minimum daily, 1.3 tons, Nov. 14, 21.

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	22	e60	3.6	26	87	6.1	36	e75	7.3
2	21	e58	3.3	25	83	5.6	40	e92	9.9
3	22	e58	3.4	25	e76	5.1	39	e107	11
4	21	e59	3.3	25	63	4.3	40	e123	13
5	20	e57	3.1	26	52	3.7	44	150	18
6	21	e56	3.2	27	43	3.1	44	e149	18
7	19	e56	2.9	29	60	4.7	46	131	16
8	25	e61	4.1	28	51	3.9	48	e126	16
9	25	e76	5.1	25	45	3.0	51	e134	18
10	21	e75	4.3	24	e37	2.4	53	136	19
11	23	e68	4.2	22	e35	2.1	53	117	17
12	22	e68	4.0	22	e32	1.9	56	e103	16
13	24	e72	4.7	21	28	1.6	48	107	14
14	24	e78	5.1	21	23	1.3	e42	e111	13
15	22	e77	4.6	21	25	1.4	e39	e94	9.9
16	25	e78	5.3	21	29	1.6	e40	e77	8.3
17	25	e88	5.9	22	e30	1.8	e40	68	7.3
18	31	e94	7.9	22	e33	2.0	e39	e70	7.4
19	36	e107	10	21	36	2.0	e32	e68	5.9
20	64	e137	24	21	29	1.6	e28	e62	4.7
21	62	e156	26	20	24	1.3	e23	e55	3.4
22	61	e147	24	22	e25	1.5	e20	e47	2.5
23	71	e147	28	23	e26	1.6	e21	e48	2.7
24	70	e156	29	23	e28	1.7	e22	e48	2.9
25	59	e134	21	23	e32	2.0	e24	e50	3.2
26	37	e106	11	23	e34	2.1	e24	e50	3.2
27	31	e94	7.9	e23	36	2.2	e23	e49	3.0
28	30	e90	7.3	e22	47	2.8	e22	e48	2.9
29	31	e96	8.0	e25	e54	3.6	e18	e48	2.3
30	29	98	7.7	e31	e65	5.4	e17	e47	2.2
31	27	93	6.8	---	---	---	e18	e47	2.3
TOTAL	1021	---	288.7	709	---	83.4	1090	---	280.3

e Estimated

06449100 LITTLE WHITE RIVER NEAR VETAL, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	e20	e47	2.5	e48	e25	3.2	57	e48	7.4
2	e20	e47	2.5	e55	e26	3.9	53	e49	7.0
3	e18	e47	2.3	e58	e27	4.2	63	e53	9.0
4	e18	e47	2.3	e52	e31	4.4	67	e82	15
5	e20	e47	2.5	43	50	5.8	58	93	15
6	e20	e47	2.5	40	83	9.0	51	83	11
7	e24	46	3.0	39	77	8.1	50	e73	9.9
8	e28	45	3.4	40	e66	7.1	49	e68	9.0
9	e34	43	3.9	40	e63	6.8	50	e67	9.0
10	e40	e40	4.3	42	e60	6.8	51	e66	9.1
11	e42	37	4.2	43	e61	7.1	52	64	9.0
12	e42	e39	4.4	50	64	8.6	51	e60	8.3
13	e48	e45	5.8	52	e57	8.0	51	57	7.8
14	e57	e50	7.7	49	e48	6.4	50	e57	7.7
15	e62	e55	9.2	44	43	5.1	48	e57	7.4
16	e64	61	11	51	e49	6.7	48	e54	7.0
17	e64	e62	11	60	e65	11	47	e51	6.5
18	e62	e58	9.7	55	e85	13	48	e50	6.5
19	e52	e54	7.6	49	e92	12	47	49	6.2
20	e50	e50	6.7	57	90	14	58	112	18
21	e45	e45	5.5	60	73	12	63	e180	31
22	e46	e40	5.0	60	e66	11	59	125	20
23	e47	e37	4.7	61	e77	13	58	e93	15
24	e43	35	4.1	54	e101	15	57	e91	14
25	e41	e33	3.7	52	103	14	54	90	13
26	e41	e31	3.4	55	96	14	52	90	13
27	e45	e30	3.6	56	70	11	50	96	13
28	e47	e29	3.7	56	e51	7.7	49	e97	13
29	e47	28	3.6	---	---	---	48	e95	12
30	e44	e26	3.1	---	---	---	47	e93	12
31	e42	e25	2.8	---	---	---	53	e95	14
TOTAL	1273	---	149.7	1421	---	248.9	1639	---	355.8
APRIL			MAY			JUNE			
1	56	e109	16	60	e304	49	250	e380	256
2	56	e125	19	59	e297	47	373	e520	524
3	55	e129	19	77	e320	67	300	490	397
4	54	e128	19	73	e338	67	322	e395	343
5	55	e135	20	64	e325	56	306	420	347
6	70	e225	43	62	e305	51	280	e380	287
7	73	e310	61	64	280	48	279	360	271
8	70	e317	60	66	e260	46	269	e350	254
9	70	e314	59	68	e230	42	272	e360	264
10	70	310	59	69	195	36	275	390	290
11	75	e309	63	68	e180	33	269	e405	294
12	77	e315	65	66	e165	29	272	430	316
13	77	e323	67	65	e155	27	265	e440	315
14	75	e326	66	67	150	27	326	822	724
15	73	e317	62	84	e185	42	305	e700	576
16	74	e297	59	1200	850	2750	240	e590	382
17	72	e271	53	431	e1230	1430	214	475	274
18	72	248	48	270	e820	598	196	e335	177
19	81	e248	54	200	e565	305	179	315	152
20	85	e261	60	181	e490	239	170	e305	140
21	73	e245	48	171	445	205	163	320	141
22	70	205	39	169	e410	187	149	e345	139
23	66	e187	33	170	e370	170	142	e360	138
24	77	e220	46	167	e345	156	136	375	138
25	82	290	64	173	e335	156	132	e360	128
26	81	e327	72	168	e330	150	124	325	109
27	77	e321	67	171	e325	150	e120	e320	104
28	75	e315	64	312	e450	379	e118	e325	104
29	71	e310	59	373	e610	614	e110	e330	98
30	66	305	54	306	575	475	e102	e355	98
31	---	---	---	247	440	293	---	---	---
TOTAL	2128	---	1518	5721	---	8924	6658	---	7780

e Estimated

WHITE RIVER BASIN

06449100 LITTLE WHITE RIVER NEAR VETAL, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	e95	e380	97	132	e625	223	49	e180	24
2	e88	430	102	74	e660	132	48	e160	21
3	e83	e465	104	61	e508	84	47	147	19
4	e77	e495	103	56	e400	60	47	e145	18
5	e74	e475	95	57	330	51	49	e155	21
6	e70	e420	79	66	e335	60	47	170	22
7	e73	e370	73	81	e400	87	54	e235	34
8	e76	325	67	81	e450	98	56	e305	46
9	e72	e280	54	68	410	75	55	302	45
10	e80	240	52	82	e395	87	56	e298	45
11	e90	e300	73	82	e458	101	61	e315	52
12	e72	460	89	83	e475	106	61	e325	54
13	e58	e490	77	98	e525	139	58	252	39
14	e48	e395	51	104	590	166	72	e300	58
15	e42	320	36	109	e635	187	63	e380	65
16	39	e275	29	116	e670	210	60	e348	56
17	39	225	24	110	e630	187	56	e330	50
18	38	e205	21	105	e540	153	55	e320	48
19	38	e185	19	98	458	121	55	e322	48
20	38	e175	18	93	e400	100	57	e325	50
21	38	e160	16	89	e355	85	63	e349	59
22	38	e158	16	84	e325	74	63	e375	64
23	37	e155	15	78	e295	62	62	e370	62
24	38	e151	15	73	e275	54	62	e365	61
25	35	149	14	69	e255	48	62	e348	58
26	40	e165	18	65	e235	41	59	335	53
27	49	e212	28	61	225	37	59	e330	53
28	44	e238	28	59	e215	34	58	e327	51
29	43	185	21	56	e205	31	57	e325	50
30	51	e170	23	52	e195	27	56	e320	48
31	101	e360	98	50	e185	25	---	---	---
TOTAL	1804	---	1555	2492	---	2945	1707	---	1374
YEAR	27663		25502.8						
e Estimated									

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)
DEC 1990											
05...	1440	43	3.0	156	82	--	--	--	--	--	--
JAN 1991											
10...	1530	40	0.0	198	75	--	--	--	--	--	--
APR											
10...	1220	70	8.5	286	74	--	--	--	--	--	--
MAY											
07...	1510	65	12.5	256	76	--	--	--	--	--	--
16...	1530	992	13.0	984	--	60	74	81	87	98	100
21...	1210	171	19.5	444	76	--	--	--	--	--	--
JUN											
12...	1430	274	24.0	397	51	--	--	--	--	--	--
JUL											
17...	1340	39	28.0	215	82	--	--	--	--	--	--
AUG											
19...	1430	97	24.0	389	67	--	--	--	--	--	--

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD

LOCATION.--Lat 43°15'47", long 100°55'02", in NW 1/4 sec.18, T.38 N., R.30 W., Todd County, Hydrologic Unit 10140203, on right bank at downstream side of Lampert bridge on BIA highway in Crazy Horse Canyon, at Ghost Hawk Park, 3.1 mi upstream from Rosebud Creek, and 4.6 mi northwest of Rosebud.

DRAINAGE AREA.--890 mi², approximately, of which an undetermined amount contributes directly to surface runoff.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 2,415 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some small diversions for irrigation and some storage in several small lakes above station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 104 ft³/s, 75,350 acre-ft/yr; median of yearly mean discharges, 110 ft³/s, 79,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft³/s, Aug. 4, 1983, gage height, 3.51 ft; maximum gage height, 5.67 ft, Dec. 23, 1988, backwater from ice; minimum daily, 20 ft³/s, Feb. 3, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	2315	*2,190	*7.18	June 3	0800	659	2.49
May 29	1330	576	2.26	June 14	2100	481	1.79

Minimum daily discharge, 33 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	66	81	e40	e90	e110	e106	126	359	120	145	93
2	64	67	87	e45	e95	e88	e108	125	462	112	153	88
3	62	69	84	e50	e100	86	e108	130	485	108	120	86
4	60	67	69	e55	e110	e105	e106	134	456	106	115	98
5	62	67	75	e58	e120	e125	e108	129	445	103	112	110
6	57	67	e80	e60	e130	e110	e107	128	389	98	121	95
7	57	64	68	e60	e130	e105	e107	133	385	100	144	92
8	65	63	80	e63	e125	e104	e104	e130	377	100	131	100
9	66	68	75	e63	e125	e104	e105	e135	367	90	117	102
10	64	67	82	e65	e125	e106	e109	e130	371	106	110	105
11	66	67	e83	e65	e120	e110	e131	e125	353	122	121	111
12	62	69	84	e70	e120	e114	134	e120	322	102	118	114
13	65	69	e80	e75	e130	e105	133	e120	310	87	119	113
14	63	69	e75	e80	e125	e100	146	e113	352	83	132	115
15	65	69	e70	e85	e120	e100	144	161	393	80	137	120
16	66	70	e65	e85	e120	e100	143	612	292	76	143	110
17	64	70	e60	e80	e125	e105	143	891	240	75	135	109
18	62	69	e55	e80	e130	e110	139	355	213	80	135	96
19	82	69	e45	e80	e125	e108	143	284	194	76	128	93
20	113	69	e40	e85	e130	e115	151	234	180	75	133	101
21	125	69	e35	e80	e140	e120	155	211	177	75	133	106
22	118	71	e33	e75	e110	e118	140	213	164	75	132	109
23	151	70	e35	e80	e110	e112	141	214	156	75	126	101
24	157	69	e38	e75	e115	e115	144	216	149	76	123	105
25	154	70	e40	e75	e110	e118	148	222	143	74	119	109
26	140	71	e38	e75	e115	e112	149	215	146	74	114	108
27	89	e65	e40	e80	115	e109	140	217	138	102	109	110
28	68	e55	e45	e85	104	e104	135	313	139	94	105	109
29	67	e65	e40	e80	---	e102	131	485	137	88	104	111
30	70	87	e38	e80	---	e102	123	398	130	83	96	108
31	65	---	e38	e85	---	e102	---	366	---	89	94	---
TOTAL	2532	2047	1858	2214	3314	3324	3881	7385	8424	2804	3824	3127
MEAN	81.7	68.2	59.9	71.4	118	107	129	238	281	90.5	123	104
MAX	157	87	87	85	140	125	155	891	485	122	153	120
MIN	57	55	33	40	90	86	104	113	130	74	94	86
AC-FT	5020	4060	3690	4390	6570	6590	7700	14650	16710	5560	7580	6200

CAL YR 1990 TOTAL 33401 MEAN 91.5 MAX 424 MIN 33 AC-FT 66250
WTR YR 1991 TOTAL 44734 MEAN 123 MAX 891 MIN 33 AC-FT 88730

e Estimated

WHITE RIVER BASIN

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT											
16...	1150	66	--	8.3	20.0	8.0	5.7	680	7.6	--	110
DEC											
04...	1345	76	353	8.7	13.0	0.5	24	690	8.9	68	K25
JAN											
09...	1430	63	356	8.8	4.0	0.0	12	690	10.2	77	64
FEB											
27...	1040	115	286	8.7	6.0	1.0	--	690	12.6	98	K21
APR											
16...	1200	142	276	8.1	13.0	10.5	57	690	9.4	93	K11
MAY											
14...	1030	113	292	8.1	27.0	19.0	43	680	7.0	85	310
16...	1930	997	248	--	14.0	12.5	--	--	--	--	--
21...	1745	209	360	--	30.0	24.0	--	--	--	--	--
JUN											
12...	0920	356	353	8.1	27.0	22.5	95	690	6.7	86	1800
JUL											
16...	1410	77	348	--	34.0	29.0	--	--	--	--	1100
AUG											
07...	1025	157	267	8.3	25.0	23.0	84	--	8.0	--	--
20...	1030	130	334	8.2	30.0	22.0	80	700	6.9	86	670

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT											
16...	110	36	4.9	19	26	0.8	8.3	129	9.7	16	0.30
DEC											
04...	130	41	6.0	24	27	0.9	10	164	22	9.0	0.60
JAN											
09...	130	42	7.0	23	25	0.9	12	173	18	3.5	0.70
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
APR											
16...	120	37	5.9	22	27	0.9	9.0	143	11	4.0	0.40
MAY											
14...	120	38	5.9	22	27	0.9	9.9	149	16	0.80	0.50
16...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
JUN											
12...	130	39	6.9	27	29	1	13	166	20	3.6	0.50
JUL											
16...	--	--	--	--	--	--	--	--	--	--	--
AUG											
07...	94	30	4.7	16	25	0.7	10	122	12	1.0	0.40
20...	120	38	6.0	29	32	1	13	163	18	3.5	0.50

WHITE RIVER BASIN

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06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
OCT											
16...	--	222	26	174	0.30	39.5	--	<0.010	--	--	--
DEC											
04...	--	263	45	215	0.36	54.0	--	0.010	--	0.690	--
JAN											
09...	--	277	29	215	0.38	46.9	--	<0.010	--	--	--
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
APR											
16...	--	175	146	178	0.24	67.1	0.050	<0.010	0.400	--	0.450
MAY											
14...	--	236	135	186	0.32	72.0	--	0.020	--	0.420	--
16...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
JUN											
12...	--	284	<1	213	0.39	273	--	0.040	--	0.190	--
JUL											
16...	--	--	--	--	--	--	--	--	--	--	--
AUG											
07...	41	188	--	192	0.26	79.7	--	0.010	--	0.670	--
20...	--	280	181	210	0.38	98.3	<0.010	0.010	--	0.540	0.520
DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO DIS- SOLVED (MG/L AS P) (00671)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT											
16...	0.500	--	0.010	0.01	--	--	--	0.080	--	0.070	--
DEC											
04...	0.700	--	0.040	0.05	--	--	--	0.260	--	0.240	--
JAN											
09...	0.900	--	0.110	0.14	--	--	--	0.270	--	0.226	--
FEB											
27...	--	--	--	--	--	--	--	--	--	--	--
APR											
16...	0.440	0.070	0.020	0.03	0.60	4.6	0.240	0.170	0.165	0.130	7
MAY											
14...	0.440	--	0.100	0.13	--	--	--	0.280	--	0.240	--
16...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
JUN											
12...	0.230	--	0.030	0.04	--	--	--	0.540	--	0.470	--
JUL											
16...	--	--	--	--	--	--	--	--	--	--	--
AUG											
07...	0.680	--	<0.010	--	--	--	--	--	--	0.220	--
20...	0.550	0.040	<0.010	--	1.5	8.9	0.520	0.440	0.241	0.380	12

WHITE RIVER BASIN

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT										
16...	5	40	--	<10	--	1	--	<0.01	--	75
DEC										
04...	10	50	--	<10	--	1	--	<0.01	--	110
JAN										
09...	8	40	--	<10	--	3	--	<0.01	--	88
FEB										
27...	--	--	--	--	--	--	--	--	--	--
APR										
16...	7	40	<1	<10	--	2	<0.010	<0.01	3000	290
MAY										
14...	8	50	--	<10	--	2	--	<0.01	--	240
16...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
JUN										
12...	13	60	--	<10	--	2	--	<0.01	--	430
JUL										
16...	--	--	--	--	--	--	--	--	--	--
AUG										
07...	7	--	--	<1.0	<1	1	--	--	--	53
20...	13	60	<1	<10	--	3	<0.010	<0.01	4500	380
DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
16...	<1	--	4	<0.1	--	<1	29	--	--	--
DEC										
04...	1	--	8	<0.1	--	<1	6	--	--	--
JAN										
09...	<1	--	6	<0.1	--	<3	24	160	27	64
FEB										
27...	--	--	--	--	--	--	--	850	264	22
APR										
16...	2	90	12	<0.1	<1	<1	17	607	233	36
MAY										
14...	<1	--	23	<0.1	--	<1	14	572	175	57
16...	--	--	--	--	--	--	--	3870	10400	69
21...	--	--	--	--	--	--	--	1380	779	48
JUN										
12...	2	--	25	<0.1	--	<1	28	1280	1230	39
JUL										
16...	--	--	--	--	--	--	--	--	--	--
AUG										
07...	<1	--	3	<0.1	--	<1	<3	--	--	--
20...	1	150	17	0.1	<1	<1	33	2900	1020	12

WHITE RIVER BASIN

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06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (00301)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS- SOLVED (UG/L) (39331)
MAY												
14...	1030	113	292	8.1	27.0	19.0	680	7.0	85	<0.20	<0.010	<0.01
AUG												
20...	1030	130	334	8.2	30.0	22.0	700	6.9	86	<0.10	<0.010	<0.01
DATE	AME- TRYNE TOTAL (82184)	ATRA- ZINE, TOTAL (UG/L) (39630)	CHLOR- DANE, TOTAL (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED (UG/L) (39352)	CYAN- AZINE TOTAL (UG/L) (81757)	DDD, TOTAL (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDE, TOTAL (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDT, TOTAL (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DI- AZINON, TOTAL (UG/L) (39570)
MAY												
14...	<0.10	<0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01
AUG												
20...	<0.10	0.50	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01
DATE	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN TOTAL (UG/L) (39380)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)
MAY												
14...	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010
AUG												
20...	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010
DATE	HEPTA- CHLOR EPOXIDE DIS- SOLVED (UG/L) (39421)	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV (UG/L) (82350)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METHYL TRI- THION, TOTAL (UG/L) (39790)	METHYL- TRI- THION DISSOLV (UG/L) (82344)	MIREX, TOTAL (UG/L) (39755)
MAY												
14...	<0.01	<0.010	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AUG												
20...	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01
DATE	MIREX, DIS- SOLVED (UG/L) (39756)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PCB, TOTAL (UG/L) (39516)	PCB, DIS- SOLVED (UG/L) (39517)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV (UG/L) (82348)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	
MAY												
14...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1	
AUG												
20...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1	
DATE	PRO- PAZINE TOTAL (UG/L) (39024)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)	SIME- TRYNE TOTAL (UG/L) (39054)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TOTAL TRI- THION (UG/L) (39786)	TRI- THION DISSOLV (UG/L) (82342)	2,4-D, TOTAL (UG/L) (39730)	2, 4-DP TOTAL (UG/L) (82183)	2,4,5-T TOTAL (UG/L) (39740)	
MAY												
14...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.02	<0.01	<0.01	
AUG												
20...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	<0.01	<0.01	<0.01	

WHITE RIVER BASIN

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS- SOLVED (UG/L) (39331)
MAY												
14...	1030	113	292	8.1	27.0	19.0	680	7.0	85	<0.20	<0.010	<0.01
AUG												
20...	1030	130	334	8.2	30.0	22.0	700	6.9	86	<0.10	<0.010	<0.01

DATE	AME- TRYNE TOTAL (82184)	ATRA- ZINE, TOTAL (UG/L) (39630)	CHLOR- DANE, TOTAL (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED (UG/L) (39352)	CYAN- AZINE TOTAL (UG/L) (81757)	DDD, TOTAL (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDE, TOTAL (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDT, TOTAL (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DI- AZINON, TOTAL (UG/L) (39570)
MAY												
14...	<0.10	<0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01
AUG												
20...	<0.10	0.50	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01

DATE	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN TOTAL (UG/L) (39380)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION, DISSOLV (UG/L) (82346)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)
MAY												
14...	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010
AUG												
20...	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010

DATE	HEPTA- CHLOR EPOXIDE DIS- SOLVED (UG/L) (39421)	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV (UG/L) (82350)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METHYL TRI- THION, TOTAL (UG/L) (39790)	METHYL- TRI- THION DISSOLV (UG/L) (82344)	MIREX, TOTAL (UG/L) (39755)
MAY												
14...	<0.01	<0.010	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AUG												
20...	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01

DATE	MIREX, DIS- SOLVED (UG/L) (39756)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PCB, TOTAL (UG/L) (39516)	PCB, DIS- SOLVED (UG/L) (39517)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV (UG/L) (82348)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)
MAY											
14...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1
AUG											
20...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1

DATE	PRO- PAZINE TOTAL (UG/L) (39024)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)	SIME- TRYNE TOTAL (UG/L) (39054)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TOTAL TRI- THION (UG/L) (39786)	TRI- THION DISSOLV (UG/L) (82342)	2,4-D, TOTAL (UG/L) (39730)	2, 4-DP TOTAL (UG/L) (82183)	2,4,5-T TOTAL (UG/L) (39740)
MAY											
14...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.02	<0.01	<0.01
AUG											
20...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	<0.01	<0.01	<0.01

WHITE RIVER BASIN

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06449400 ROSEBUD CREEK AT ROSEBUD, SD

LOCATION.--Lat 43°14'14", long 100°51'26", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.27, T.38 N., R.30 W., Todd County, Hydrologic Unit 10140203, on left bank 40 ft upstream from bridge on Spotted Tail Lane in town of Rosebud, 0.4 mi downstream from small right bank tributary, and 1.0 mi downstream from Spotted Tail Dam.

DRAINAGE AREA.--50.8 mi², approximately.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,531.91 ft above National Geodetic Vertical Datum of 1929. October 1963 to September 1970, low-flow partial-record station 0.26 mi² upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Spotted Tail Dam and dam forming Indian Scout Lake, combined capacity, about 50 acre-ft, and some small diversions for irrigation of Spotted Tail Golf Course above station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--17 years, 7.47 ft³/s, 5,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 643 ft³/s, July 27, 1976, gage height, 10.34 ft; no flow Apr. 21, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 120 ft³/s at 0100 hours, May 28, gage height, 5.95 ft; minimum daily discharge, 1.2 ft³/s, July 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	6.6	7.1	e5.8	8.0	7.4	6.2	8.1	16	6.7	5.4	4.1
2	13	6.5	7.4	e5.5	9.0	6.4	6.2	8.4	8.1	6.3	5.2	4.2
3	12	6.6	7.0	e5.6	7.8	7.2	6.6	13	20	5.9	4.6	4.3
4	8.5	6.9	7.3	e5.8	8.0	7.5	6.6	7.8	20	3.9	4.5	4.9
5	8.4	7.0	7.3	e6.0	7.8	7.7	6.4	7.8	12	5.0	4.6	9.5
6	7.3	7.4	7.0	e6.0	7.9	7.1	6.4	8.0	17	5.3	4.6	5.0
7	7.5	6.6	e7.4	e6.8	8.1	6.7	6.8	8.1	10	5.3	12	4.6
8	5.3	7.1	e7.6	e7.0	8.2	6.7	7.0	7.9	9.5	5.8	6.3	4.5
9	6.0	7.8	e7.8	e7.0	7.9	5.9	7.9	7.4	12	6.4	6.5	4.4
10	5.9	7.5	e7.8	6.6	7.9	6.8	7.2	7.3	11	6.7	4.7	4.3
11	5.7	6.9	e7.4	6.4	7.9	6.9	13	7.2	9.0	13	4.6	4.8
12	6.2	6.7	7.0	6.8	8.2	7.4	18	7.2	9.1	6.6	4.8	4.6
13	5.8	6.9	6.6	8.6	9.8	7.1	23	7.0	9.6	6.6	4.6	5.0
14	6.3	7.4	7.3	9.5	8.7	6.5	20	6.9	15	5.7	4.6	5.2
15	6.2	6.7	7.6	8.9	9.7	6.5	7.7	8.6	9.1	5.4	4.5	4.6
16	5.8	6.7	7.4	7.8	11	6.8	7.2	15	7.7	5.1	4.6	4.5
17	6.5	6.7	7.1	8.0	10	7.3	7.4	13	6.4	6.6	4.6	4.4
18	6.6	6.9	7.3	8.7	9.4	7.4	7.1	8.2	7.0	3.1	4.9	4.6
19	6.3	7.1	e6.0	8.6	11	6.9	11	7.7	6.5	4.6	4.4	4.3
20	7.5	7.0	e5.0	7.5	10	11	8.3	7.7	6.3	4.6	4.4	4.9
21	6.7	6.8	e4.6	8.3	11	8.3	7.6	7.7	7.2	4.6	4.4	4.8
22	6.7	7.1	e5.2	8.4	10	7.9	7.8	7.8	8.5	5.4	4.4	4.8
23	6.7	7.4	e5.8	7.7	11	7.9	7.7	7.7	8.6	4.9	4.4	5.4
24	6.4	7.4	e6.4	7.9	11	10	7.3	7.7	8.5	4.5	4.2	5.9
25	6.5	7.0	e6.8	8.8	11	7.3	7.5	7.7	8.5	4.9	3.9	6.0
26	6.7	7.0	e6.4	e8.2	8.6	6.1	7.7	7.7	8.0	14	3.7	5.6
27	6.7	6.7	e6.8	8.8	7.1	6.1	7.8	8.0	8.4	2.9	3.4	5.7
28	6.7	6.9	e5.2	8.1	7.3	6.1	7.8	37	7.9	4.6	3.7	6.0
29	9.1	7.0	e4.5	e7.8	---	5.8	9.1	15	7.3	15	3.9	5.5
30	6.8	7.2	e4.0	e7.8	---	5.7	9.0	13	7.0	1.2	4.2	5.5
31	6.7	---	e4.6	e8.0	---	6.0	---	8.6	---	4.1	4.4	---
TOTAL	223.5	209.5	202.7	232.7	253.3	220.4	269.3	300.2	301.2	184.7	149.0	151.9
MEAN	7.21	6.98	6.54	7.51	9.05	7.11	8.98	9.68	10.0	5.96	4.81	5.06
MAX	13	7.8	7.8	9.5	11	11	23	37	20	15	12	9.5
MIN	5.3	6.5	4.0	5.5	7.1	5.7	6.2	6.9	6.3	1.2	3.4	4.1
AC-FT	443	416	402	462	502	437	534	595	597	366	296	301

CAL YR 1990 TOTAL 2657.7 MEAN 7.28 MAX 35 MIN 4.0 AC-FT 5270
WTR YR 1991 TOTAL 2698.4 MEAN 7.39 MAX 37 MIN 1.2 AC-FT 5350

e Estimated

06449500 LITTLE WHITE RIVER NEAR ROSEBUD, SD

LOCATION.--Lat 43°19'32", long 100°53'00", in SW¼NW¼ sec.28, T.39 N., R.30 W., Todd County, Hydrologic Unit 10140203, on left bank at downstream side of bridge on U.S. Highway 18, 0.3 mi downstream from Scabby Creek, 0.7 mi downstream from Soldier Creek, and 6.4 mi north of Rosebud.

DRAINAGE AREA.--1,020 mi², approximately, of which about 760 mi² probably contributes directly to surface runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1943 to current year. Prior to October 1965, published as South Fork White River near Rosebud.

REVISED RECORDS.--WSP 1056: Drainage area. WSP 1309: 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 2,294.99 ft above National Geodetic Vertical Datum of 1929. Prior to May 11, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some small diversions for irrigation and some storage in several small lakes above station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--48 years, 111 ft³/s, 80,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,640 ft³/s, June 11, 1967, gage height, 14.09 ft, from rating curve extended above 1,300 ft³/s; minimum daily, 10 ft³/s, Jan. 4, 1949, Feb. 20, 1955.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 330 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	0230	*2,140	*9.76	June 3	0845	1,450	8.38
May 29	1415	705	8.56	June 14	2400	544	6.09

Minimum daily discharge, 36 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	86	97	e45	e110	114	111	139	421	119	131	115
2	67	82	97	e50	e120	91	113	136	514	115	148	112
3	66	81	89	e55	e130	95	113	155	713	109	120	112
4	65	86	71	e60	e140	111	111	158	597	107	112	111
5	66	83	91	e65	e150	130	113	154	521	108	111	128
6	66	84	85	e65	e150	117	112	148	439	110	121	115
7	65	e80	86	e70	e145	111	112	148	423	109	141	114
8	68	e90	90	e75	e145	112	109	145	403	98	135	118
9	68	84	88	e80	e145	109	110	149	380	97	132	118
10	71	85	87	e80	e140	112	114	153	378	101	127	112
11	71	90	90	e85	e140	115	136	153	364	114	131	118
12	67	89	90	e85	e140	119	141	153	346	105	129	126
13	70	87	83	e95	e145	111	132	148	352	95	133	129
14	71	90	80	e100	e140	104	136	146	390	94	140	131
15	71	89	71	e110	e130	105	135	250	475	92	148	131
16	70	86	74	e110	e130	104	136	386	390	91	154	118
17	e70	86	67	e105	e140	112	137	1140	312	91	145	120
18	e71	87	e60	e100	e135	117	132	426	274	89	146	106
19	e95	90	e50	e110	e135	114	145	301	254	87	141	104
20	e125	90	e40	e100	e140	120	151	271	227	89	144	111
21	e140	92	e38	e100	e150	126	147	257	219	88	137	120
22	e130	86	e36	e105	107	123	146	252	207	89	137	120
23	e165	88	e38	e110	110	117	144	259	182	87	135	112
24	e175	91	e40	e105	121	120	143	249	163	88	135	111
25	e170	89	e45	e100	114	123	148	261	152	87	131	114
26	e155	85	e40	e100	113	117	152	256	143	90	124	110
27	e105	83	e45	e105	120	114	151	264	132	98	122	108
28	e100	60	e50	e110	116	109	146	397	134	105	120	104
29	e92	71	e45	e105	---	107	143	612	131	104	120	109
30	93	99	e40	e100	---	107	141	503	128	96	117	112
31	91	---	e40	e105	---	107	---	433	---	99	118	---
TOTAL	2866	2569	2043	2790	3701	3493	3960	8602	9764	3051	4085	3469
MEAN	92.5	85.6	65.9	90.0	132	113	132	277	325	98.4	132	116
MAX	175	99	97	110	150	130	152	1140	713	119	154	131
MIN	65	60	36	45	107	91	109	136	128	87	111	104
AC-FT	5680	5100	4050	5530	7340	6930	7850	17060	19370	6050	8100	6880

CAL YR 1990 TOTAL 38152 MEAN 105 MAX 394 MIN 36 AC-FT 75670
WTR YR 1991 TOTAL 50393 MEAN 138 MAX 1140 MIN 36 AC-FT 99950

e Estimated

WHITE RIVER BASIN

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06449500 LITTLE WHITE RIVER NEAR ROSEBUD, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1990 to September 1991 (discontinued).

REMARKS.--Records poor. Observer collects samples on an intermittent basis. Flow affected by ice Nov. 7, 8, Dec. 18 to Feb. 21.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 5,300 mg/L, May 17; minimum daily mean, 48 mg/L, Jan. 16.

SEDIMENT LOAD: Maximum daily, 16,300 tons, May 17; minimum daily, 10 tons, Dec. 31.

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	67	e219	40	86	450	104	97	e477	125
2	67	e223	40	82	429	95	97	e472	124
3	66	e219	39	81	e453	99	89	e450	108
4	65	e216	38	86	647	150	71	e403	77
5	66	e212	38	83	562	126	91	477	117
6	66	e216	38	84	355	81	85	e689	158
7	65	e218	38	e80	344	74	86	986	229
8	68	e216	40	e90	742	180	90	e996	242
9	68	e223	41	84	705	160	88	e837	199
10	71	e223	43	85	e615	141	87	668	157
11	71	e225	43	90	e641	156	90	827	201
12	67	e227	41	89	e631	152	90	e943	229
13	70	e225	43	87	599	141	83	822	184
14	71	e225	43	90	440	107	80	705	152
15	71	e230	44	89	355	85	71	e583	112
16	70	e230	43	86	424	98	74	e530	106
17	e70	e230	43	86	e456	106	67	413	75
18	e71	e230	44	87	e466	109	e60	795	129
19	e95	e265	68	90	477	116	e50	e954	129
20	e125	e337	114	90	482	117	e40	e731	79
21	e140	e387	146	92	413	103	e38	e504	52
22	e130	e371	130	86	e355	82	e36	e307	30
23	e165	e398	177	88	e360	86	e38	e238	24
24	e175	e466	220	91	e398	98	e40	e212	23
25	e170	e493	226	89	e408	98	e45	e191	23
26	e155	e472	198	85	e360	83	e40	e170	18
27	e105	e408	116	83	e260	58	e45	e148	18
28	e100	e371	100	60	148	24	e50	e138	19
29	e92	e355	88	71	e122	23	e45	e122	15
30	93	371	93	99	e313	84	e40	e106	11
31	91	599	147	---	---	---	e40	e95	10
TOTAL	2866	---	2562	2569	---	3136	2043	---	3175

e Estimated

WHITE RIVER BASIN

06449500 LITTLE WHITE RIVER NEAR ROSEBUD, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	e45	e90	11	e110	e64	19	114	e822	253
2	e50	e85	11	e120	e69	22	91	e784	193
3	e55	e80	12	e130	e74	26	95	e758	194
4	e60	e77	12	e140	e80	30	111	e806	242
5	e65	e74	13	e150	85	34	130	869	305
6	e65	e74	13	e150	117	47	117	e874	276
7	e70	85	16	e145	138	54	111	e784	235
8	e75	223	45	e145	e143	56	112	e700	212
9	e80	159	34	e145	e148	58	109	e636	187
10	e80	e117	25	e140	e154	58	112	e625	189
11	e85	117	27	e140	e159	60	115	636	197
12	e85	159	36	e140	e159	60	119	e662	213
13	e95	e143	37	e145	e159	62	111	572	171
14	e100	e85	23	e140	e159	60	104	e509	143
15	e110	53	16	e130	e164	58	105	e482	137
16	e110	48	14	e130	e164	58	104	e488	137
17	e105	e51	14	e140	e170	64	112	e530	160
18	e100	e53	14	e135	e170	62	117	e662	209
19	e110	e53	16	e135	175	64	114	806	248
20	e100	e56	15	e140	175	66	120	1020	330
21	e100	e56	15	e150	1910	774	126	e1220	415
22	e105	e58	16	107	e2540	734	123	954	317
23	e110	e64	19	110	e2090	621	117	e721	228
24	e105	64	18	121	e1600	523	120	e742	240
25	e100	e64	17	114	1170	360	123	954	317
26	e100	e64	17	113	795	243	117	1070	338
27	e105	e64	18	120	716	232	114	763	235
28	e110	e61	18	116	e880	276	109	e594	175
29	e105	61	17	---	---	---	107	e551	159
30	e100	e58	16	---	---	---	107	e519	150
31	e105	e58	16	---	---	---	107	e504	146
TOTAL	2790	---	591	3701	---	4781	3493	---	6951
APRIL			MAY			JUNE			
1	111	e504	151	139	e991	372	421	e1700	1930
2	113	e509	155	136	e980	360	514	e2230	3090
3	113	e509	155	155	e1020	427	713	5190	9990
4	111	e509	153	158	e1120	478	597	e4980	8030
5	113	e509	155	154	e1100	457	521	2120	2980
6	112	e509	154	148	e975	390	439	e1380	1640
7	112	e509	154	148	e806	322	423	e1310	1500
8	109	e509	150	145	700	274	403	e1270	1380
9	110	e514	153	149	e684	275	380	e1250	1280
10	114	610	188	153	689	285	378	1250	1280
11	136	e721	265	153	e700	289	364	1270	1250
12	141	e806	307	153	e700	289	346	1320	1230
13	132	e822	293	148	e678	271	352	e1430	1360
14	136	e784	288	146	668	263	390	1590	1670
15	135	e768	280	250	e1590	1070	475	e3070	3940
16	136	e747	274	386	e3500	3650	390	e3920	4130
17	137	e726	269	1140	5300	16300	312	2920	2460
18	132	700	249	426	e4560	5240	274	e2120	1570
19	145	e710	278	301	e2120	1720	254	1270	871
20	151	e795	324	271	1380	1010	227	e827	507
21	147	e912	362	257	e954	662	219	e901	533
22	146	859	339	252	e848	577	207	1020	570
23	144	806	313	259	e848	593	182	e954	469
24	143	e774	299	249	e848	570	163	806	355
25	148	763	305	261	e901	635	152	e848	348
26	152	e827	339	256	e1010	698	143	975	376
27	151	e986	402	264	e1010	720	132	e1010	360
28	146	e1020	402	397	e1590	1700	134	e1010	365
29	143	e1010	390	612	e3070	5070	131	e954	337
30	141	1000	381	503	2120	2880	128	e901	311
31	---	---	---	433	1700	1990	---	---	---
TOTAL	3960	---	7927	8602	---	49837	9764	---	56112

e Estimated

WHITE RIVER BASIN

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06449500 LITTLE WHITE RIVER NEAR ROSEBUD, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JULY			AUGUST			SEPTEMBER		
1	119	e822	264	131	e583	206	115	e382	119
2	115	e742	230	148	e890	356	112	e376	114
3	109	e721	212	120	e1010	327	112	371	112
4	107	e689	199	112	e880	266	111	e366	110
5	108	e657	192	111	832	249	128	e530	183
6	110	e636	189	121	e880	287	115	583	181
7	109	e615	181	141	e996	379	114	e519	160
8	98	e604	160	135	e954	348	118	e525	167
9	97	e594	156	132	753	268	118	530	169
10	101	583	159	127	e721	247	112	e519	157
11	114	e954	294	131	e763	270	118	e435	139
12	105	e1180	335	129	e827	288	126	e360	122
13	95	e954	245	133	e848	305	129	350	122
14	94	e678	172	140	912	345	131	e371	131
15	92	562	140	148	e975	390	131	e382	135
16	91	e541	133	154	e1040	432	118	e382	122
17	91	e498	122	145	e1020	399	120	e382	124
18	89	e477	115	146	e869	343	106	e371	106
19	87	e456	107	141	e689	262	104	e344	97
20	89	e424	102	144	e562	219	111	e344	103
21	88	e403	96	137	477	176	120	e371	120
22	89	e392	94	137	e435	161	120	e413	134
23	87	e360	85	135	e403	147	112	e424	128
24	88	e323	77	135	e398	145	111	e403	121
25	87	318	75	131	e382	135	114	e403	124
26	90	e339	82	124	e376	126	110	419	124
27	98	e382	101	122	e376	124	108	e413	120
28	105	e456	129	120	e376	122	104	e403	113
29	104	541	152	120	e387	125	109	e403	119
30	96	e551	143	117	e392	124	112	e424	128
31	99	e530	142	118	e387	123	---	---	---
TOTAL	3051	---	4883	4085	---	7694	3469	---	3904
YEAR	50393		151553						
e Estimated									

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	TEMPER- ATURE WATER (DEG C) (000010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1990					
10...	1245	70	8.0	210	23
DEC					
05...	1000	94	0.5	358	29
APR 1991					
10...	1515	122	11.0	573	43
MAY					
08...	1230	139	13.0	648	29
17...	1100	1010	13.0	4970	75
20...	1605	272	21.0	1090	66
JUN					
11...	1320	386	23.0	1750	36
AUG					
21...	1215	129	23.0	517	64

06450500 LITTLE WHITE RIVER BELOW WHITE RIVER, SD

LOCATION.--Lat 43°36'05", long 100°44'58", in SW¼NW¼ sec.23, T.42 N., R.29 W., Mellette County, Hydrologic Unit 10140203, on left bank at downstream side of bridge on U.S. Highway 83, 1.3 mi downstream from Pine Creek, and 2.0 mi north of town of White River.

DRAINAGE AREA.--1,570 mi², approximately, of which about 1,310 mi² probably contributes directly to surface runoff.

PERIOD OF RECORD.--October 1949 to current year. Prior to October 1965, published as South Fork White River below White River.

REVISED RECORDS.--WDR SD-85-1: Location.

GAGE.--Water-stage recorder. Datum of gage is 1,912.78 ft above National Geodetic Vertical Datum of 1929. Prior to June 8, 1968, at site 0.8 mi downstream at datum 4.50 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diurnal fluctuations caused by small powerplant 2.2 mi upstream. Several small diversions for irrigation and some storage in several small lakes above station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--42 years, 128 ft³/s, 92,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft³/s, June 12, 1967, gage height, 10.02 ft, site and datum then in use; maximum gage height, 11.21 ft, June 7, 1968, site and datum then in use; maximum gage height at present site and datum, 15.46 ft, June 7, 1968, from floodmarks; no flow for parts of several days in 1952, 1954, 1956; minimum daily discharge, 7.0 ft³/s, July 31, Aug. 31, Sept. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,410 ft³/s at 1845 hours, June 4, gage height, 6.17 ft; maximum gage height, 7.28 ft³/s, Feb. 21, backwater from ice; minimum daily discharge, 38 ft³/s, Dec. 22.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	66	e60	e75	e80	e130	110	123	604	174	67	125
2	67	68	e60	e70	e85	e125	113	129	749	170	155	98
3	64	69	e60	e65	e95	e120	111	153	1160	167	117	113
4	65	75	e65	e65	e100	e150	111	187	2220	168	86	85
5	63	76	e70	e70	e110	e180	113	144	1280	164	82	94
6	63	78	e70	e65	e120	160	118	138	716	147	87	107
7	65	74	e65	e70	e115	131	132	150	548	135	101	94
8	70	78	e68	e75	e120	115	138	153	499	123	130	74
9	72	77	e70	e70	e125	112	140	167	476	117	111	79
10	76	54	e72	e80	e120	100	140	185	751	109	90	66
11	63	69	e75	e80	e115	107	156	215	581	153	82	89
12	65	68	e70	e80	e110	112	196	212	399	168	99	92
13	80	67	e65	e85	e115	114	177	183	375	136	101	92
14	55	67	e60	e90	e110	103	176	236	448	81	108	89
15	58	69	e60	e95	e105	114	156	224	642	84	135	94
16	63	66	e60	e100	e105	89	149	462	418	78	132	94
17	64	65	e60	e95	e110	103	144	1130	339	76	136	e94
18	66	67	e60	e95	e105	105	145	642	290	74	136	94
19	62	68	e60	e100	e102	106	154	369	273	69	122	92
20	78	89	e50	e95	e105	108	167	310	248	65	110	84
21	99	59	e40	e90	e110	125	155	266	241	61	124	89
22	103	77	e38	e92	e120	126	150	293	246	64	127	89
23	94	78	e45	e95	e115	130	149	313	218	61	132	92
24	99	83	e50	e90	e115	126	149	305	207	63	117	94
25	98	88	e60	e85	e115	124	146	309	203	59	119	94
26	90	e80	e55	e80	e115	121	160	295	192	60	109	105
27	81	e70	e60	e80	e115	114	152	296	191	67	131	94
28	85	e60	e70	e80	e120	107	152	381	175	82	103	105
29	54	e55	e65	e78	---	111	148	698	180	69	97	99
30	69	e60	e60	e75	---	115	145	728	199	70	97	99
31	69	---	e65	e78	---	106	---	502	---	57	115	---
TOTAL	2266	2120	1888	2543	3077	3689	4352	9898	15068	3171	3458	2809
MEAN	73.1	70.7	60.9	82.0	110	119	145	319	502	102	112	93.6
MAX	103	89	75	100	125	180	196	1130	2220	174	155	125
MIN	54	54	38	65	80	89	110	123	175	57	67	66
AC-FT	4490	4210	3740	5040	6100	7320	8630	19630	29890	6290	6860	5570

CAL YR 1990 TOTAL 42364 MEAN 116 MAX 1050 MIN 38 AC-FT 84030
WTR YR 1991 TOTAL 54339 MEAN 149 MAX 2220 MIN 38 AC-FT 107800

e Estimated

06452000 WHITE RIVER NEAR OACOMA, SD
(National stream-quality accounting network station)

LOCATION.--Lat 43°44'54", long 99°33'22", in SE¼SW¼ sec.3, T.103 N., R.73 W., Lyman County, Hydrologic Unit 10140204, on left bank at downstream side of bridge on State Highway 47, 1.5 mi downstream from Wagner Draw, 1.8 mi upstream from high-water line of Lake Francis Case, and 8.8 mi southwest of Oacoma.

DRAINAGE AREA.--10,200 mi², approximately.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 786: Drainage area. WSP 1309: 1929-30(M).

GAGE.--Water-stage recorder. Datum of gage is 1,377.29 ft above National Geodetic Vertical Datum of 1929. See WSP 1709, 1729, or 1917 for history of changes prior to Feb. 27, 1960.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--63 years, 527 ft³/s, 381,800 acre-ft/yr; median of yearly mean discharges, 440 ft³/s, 319,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,900 ft³/s, Mar. 30, 1952, gage height, 15.40 ft, site and datum then in use; maximum gage height, 23.59 ft, Mar. 14, 1978, ice jam; no flow Aug. 14-28, 1971, July 16-23, 1974, Aug. 29 to Sept. 9, Sept. 13, 1976, July 23 to Aug. 7, 1980, July 9, 10, Aug. 12-23, Aug. 26 to Sept. 5, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1700	7,850	10.67	June 5	0200	*30,200	*14.10
May 19	0345	9,920	11.26	June 8	1700	18,000	12.65
May 31	0300	12,500	11.90	June 12	0600	7,180	10.40
June 2	2100	15,000	12.00				

Minimum daily discharge, 0.04 ft³/s, Jan. 8.

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	64	e25	e.07	e7.0	e700	195	438	4030	420	63	66
2	70	44	e23	e.06	e9.0	e600	166	346	7630	2200	49	67
3	61	43	e20	e.06	e15	e650	153	505	11600	2910	48	63
4	57	43	e22	e.06	e20	e700	163	458	15700	1760	e50	61
5	54	44	e25	e.05	e25	e800	163	432	23100	1300	57	61
6	49	64	e30	e.05	e30	e700	156	1230	10900	925	96	59
7	45	e60	e34	e.05	e35	e650	153	1090	6760	611	176	61
8	45	e50	e34	e.04	e40	e800	147	750	13000	464	124	59
9	42	e60	e35	e.05	e45	e1500	144	534	6490	408	488	61
10	42	e70	e35	e.06	e50	1350	114	402	4960	335	644	64
11	44	124	e38	e.08	e55	1090	134	325	3410	295	519	60
12	48	124	e35	e.12	e60	970	340	295	6150	268	438	64
13	49	128	e30	e.20	e60	961	402	250	3510	241	564	92
14	57	98	e31	e.34	e50	644	379	219	2330	e232	362	153
15	46	98	e28	e.80	e50	527	340	940	1830	329	286	97
16	50	94	e24	e3.0	e60	432	997	3310	1590	611	250	618
17	64	88	e20	e6.0	e70	484	1260	4370	2210	541	219	556
18	57	92	e15	e7.0	e90	478	934	4380	2670	445	281	536
19	54	92	e10	e7.0	e110	458	731	6120	1590	286	264	385
20	57	88	e7.0	e6.0	e115	414	579	4270	1060	228	255	301
21	58	86	e4.0	e6.0	e105	379	484	3280	830	191	203	263
22	57	79	e2.0	e7.0	e95	362	445	2460	695	184	173	206
23	54	81	e1.0	e8.0	e100	320	796	2110	595	150	173	182
24	64	81	e.70	e7.5	e110	295	1620	1510	541	131	190	170
25	84	72	e.50	e7.0	e115	295	1020	1160	519	114	173	157
26	74	e48	e.35	e6.0	e150	295	731	1140	432	103	141	158
27	77	e32	e.25	e6.0	e300	281	587	1910	408	92	121	145
28	83	e20	e.20	e6.4	e600	272	458	1880	570	e81	108	133
29	83	e21	e.14	e6.4	---	250	414	2270	952	70	99	125
30	77	e24	e.10	e6.0	---	228	498	3610	512	69	88	126
31	79	---	e.08	e6.0	---	215	---	8260	---	67	79	---
TOTAL	1858	2112	530.32	103.39	2571.0	18100	14703	60254	136574	16061	6781	5149
MEAN	59.9	70.4	17.1	3.34	91.8	584	490	1944	4552	518	219	172
MAX	84	128	38	8.0	600	1500	1620	8260	23100	2910	644	618
MIN	42	20	.08	.04	7.0	215	114	219	408	67	48	59
AC-FT	3690	4190	1050	205	5100	35900	29160	119500	270900	31860	13450	10210

CAL YR 1990 TOTAL 110154.32 MEAN 302 MAX 4100 MIN .08 AC-FT 218500
WTR YR 1991 TOTAL 264796.71 MEAN 725 MAX 23100 MIN .04 AC-FT 525200

e Estimated

WHITE RIVER BASIN

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06452000 WHITE RIVER NEAR OACOMA, SD--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1945 to September 1953, October 1968 to September 1969, October 1971 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1976, October 1977 to Sept. 30, 1981.

WATER TEMPERATURE: October 1974 to September 1976, October 1978 to September 1988.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976, October 1981 to current year.

REMARKS.--Sediment-discharge records fair. Observer collects samples on a daily basis. Sediment-discharge records prior to Oct. 1, 1971, on file in the District office, U.S. Army Corps of Engineers, Omaha, NE.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,950 microsiemens, Aug. 8, 1980; minimum daily, 370 microsiemens, Mar. 17, 1975.

WATER TEMPERATURE: Maximum daily, 33.5°C, July 18, 1986; minimum daily, -1.0°C on many days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily mean, 72,300 mg/L, Apr. 15, 1974; minimum daily mean, 0 mg/L, July 17-23, 1974, Aug. 29 to Sept. 9, Sept. 13, 1976, Aug. 11-23, Aug. 26 to Sept. 5, 1989.

SEDIMENT LOAD: Maximum daily, 1,640,000 tons, May 17, 1982; 0 ton, July 17-23, 1974, Aug. 29 to Sept. 9, Sept. 13, 1976, Aug. 11-23, Aug. 26 to Sept. 5, 1989.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 44,000 mg/L, May 18; minimum daily mean, 30 mg/L, Jan. 30.

SEDIMENT LOAD: Maximum daily, 855,000 tons, June 3; minimum daily, 0.01 ton, Jan. 8, 9.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (MG/L) (00300)
NOV 29...	1115	21	--	7.9	268	1.0	2.0	100	720	15.5	--
JAN 07...	1330	0.05	--	7.9	466	-6.0	0.0	4.5	720	8.9	--
MAR 01...	1000	614	498	7.8	146	-5.0	0.0	2500	710	12.7	93
MAY 14...	1830	209	517	8.0	136	30.0	25.0	1300	710	7.3	95
JUL 18...	1430	396	562	8.1	164	34.0	26.0	9000	720	7.4	97

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	
NOV 29...	K11	K63	150	51	5.6	85	54	3	7.8	238	84
JAN 07...	K6	K1	850	270	42	220	35	3	18	430	680
MAR 01...	K160	1900	41	14	1.4	91	81	6	3.4	172	79
MAY 14...	K120	530	57	20	1.7	89	75	5	5.9	181	80
JUL 18...	2000	700	28	10	0.74	110	87	9	6.4	170	91

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)
NOV 29...	18	0.50	58	455	474	0.62	26.2	0.010	0.020	0.990	0.580
JAN 07...	150	1.0	73	1810	1740	2.46	0.24	<0.010	<0.010	--	--
MAR 01...	5.7	0.40	23	417	309	0.57	691	0.020	<0.010	0.840	--
MAY 14...	10	0.70	33	353	325	0.48	199	0.020	0.020	0.610	0.600
JUL 18...	9.1	0.80	33	438	367	0.60	468	0.080	0.030	1.42	1.37

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
NOV 29...	1.00	0.600	0.040	0.040	0.05	0.20	5.3	0.300	0.060	0.070	0.060
JAN 07...	1.20	1.20	0.080	0.080	0.10	0.60	8.0	0.140	0.130	0.160	0.140
MAR 01...	0.860	0.820	<0.010	0.020	0.03	2.3	14	4.30	0.050	0.040	0.040
MAY 14...	0.630	0.620	<0.010	0.020	0.03	4.1	21	2.80	0.070	0.060	0.060
JUL 18...	1.50	1.40	0.030	0.040	0.05	10	51	1.30	0.210	--	0.190

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 29...	--	--	--	--	--	--	--	--	--	--
JAN 07...	10	15	160	<0.5	2.0	2	<3	3	33	<1
MAR 01...	40	9	13	<0.5	<1.0	<1	<3	4	55	1
MAY 14...	170	15	63	<0.5	<1.0	1	<3	3	51	1
JUL 18...	210	24	52	<0.5	<1.0	1	<3	13	110	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 29...	--	--	--	--	--	--	--	--	--	--
JAN 07...	150	1000	<0.1	<10	4	1	<1.0	2000	12	29
MAR 01...	24	3	<0.1	<10	1	2	<1.0	110	12	<3
MAY 14...	32	5	0.4	<10	1	2	<1.0	130	24	<3
JUL 18...	27	10	<0.1	<10	<1	7	<1.0	74	42	11

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	77	15200	3160	64	400	69	e25	e519	35
2	70	13800	2610	44	332	39	e23	e472	29
3	61	12100	1990	43	239	28	e20	e440	24
4	57	10800	1660	43	194	23	e22	e421	25
5	54	10100	1470	44	173	21	e25	e422	28
6	49	8800	1160	64	153	26	e30	e424	34
7	45	5800	705	e60	120	19	e34	e424	39
8	45	3200	389	e50	120	16	e34	e424	39
9	42	3000	340	e60	383	62	e35	e425	40
10	42	2400	272	e70	4500	850	e35	e425	40
11	44	2200	261	124	9700	3250	e38	e425	44
12	48	1450	188	124	9300	3110	e35	e420	40
13	49	1340	177	128	6750	2330	e30	e350	28
14	57	1200	185	98	6700	1770	e31	e225	19
15	46	1100	137	98	8950	2370	e28	e145	11
16	50	900	121	94	10400	2640	e24	e118	7.6
17	64	882	152	88	10200	2420	e20	e108	5.8
18	57	867	133	92	8800	2190	e15	e108	4.4
19	54	618	90	92	7800	1940	e10	e100	2.7
20	57	483	74	88	7000	1660	e7.0	e95	1.8
21	58	470	74	86	5990	1390	e4.0	e94	1.0
22	57	450	69	79	4800	1020	e2.0	e90	.49
23	54	397	58	81	3700	809	e1.0	e85	.23
24	64	358	62	81	2500	547	e.70	e83	.16
25	84	668	152	72	e1500	292	e.50	e80	.11
26	74	636	127	e48	e940	122	e.35	e80	.08
27	77	568	118	e32	e812	70	e.25	e90	.06
28	83	590	132	e20	e720	39	e.20	e100	.05
29	83	622	139	e21	e635	36	e.14	e112	.04
30	77	483	100	e24	e573	37	e.10	e125	.03
31	79	409	87	---	---	---	e.08	e140	.03
TOTAL	1858	---	16392	2112	---	29195	530.32	---	499.58
JANUARY			FEBRUARY			MARCH			
1	e.07	e152	.03	e7.0	e37	.70	e700	e8600	16300
2	e.06	e162	.03	e9.0	e38	.92	e600	e7700	12500
3	e.06	e155	.03	e15	e39	1.6	e650	e6800	11900
4	e.06	e150	.02	e20	e40	2.2	e700	e5910	11200
5	e.05	e141	.02	e25	e44	3.0	e800	e5020	10800
6	e.05	e135	.02	e30	e54	4.4	e700	e4100	7750
7	e.05	e120	.02	e35	e70	6.6	e650	e3400	5970
8	e.04	e105	.01	e40	e95	10	e800	e3040	6570
9	e.05	e100	.01	e45	e105	13	e1500	e3590	14500
10	e.06	e104	.02	e50	e115	16	1350	8730	32000
11	e.08	e102	.02	e55	e122	18	1090	8270	24300
12	e.12	e99	.03	e60	e132	21	970	7770	20300
13	e.20	e94	.05	e60	e145	23	961	7470	19400
14	e.34	e85	.08	e50	e150	20	644	6140	10700
15	e.80	e112	.24	e50	e160	22	527	5530	7870
16	e3.0	e280	2.3	e60	e165	27	432	5150	6010
17	e6.0	e360	5.8	e70	e190	36	484	4600	6010
18	e7.0	e274	5.2	e90	e380	92	478	4130	5330
19	e7.0	e160	3.0	e110	e580	172	458	4430	5480
20	e6.0	e112	1.8	e115	e670	208	414	4800	5370
21	e6.0	e90	1.5	e105	e650	184	379	3640	3720
22	e7.0	e75	1.4	e95	e618	159	362	3320	3240
23	e8.0	e65	1.4	e100	e585	158	320	2700	2330
24	e7.5	e60	1.2	e110	e555	165	295	1980	1580
25	e7.0	e55	1.0	e115	e525	163	295	1670	1330
26	e6.0	e48	.78	e150	e1750	709	295	1500	1190
27	e6.0	e42	.68	e300	e9460	7660	281	1420	1080
28	e6.4	e39	.67	e600	e9180	14900	272	1370	1010
29	e6.4	e35	.60	---	---	---	250	1300	877
30	e6.0	e30	.49	---	---	---	228	1250	769
31	e6.0	e35	.57	---	---	---	215	1190	691
TOTAL	103.39	---	29.02	2571.0	---	24795.42	18100	---	258077

e Estimated

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	APRIL			MAY			JUNE		
1	195	1150	605	438	8700	10300	4030	31500	343000
2	166	920	412	346	8650	8080	7630	27800	573000
3	153	750	310	505	8900	12100	11600	27300	855000
4	163	642	283	458	6900	8530	15700	19400	822000
5	163	640	282	432	4700	5480	23100	12900	805000
6	156	595	251	1230	18800	71900	10900	14200	418000
7	153	572	236	1090	29600	87100	6760	11900	217000
8	147	560	222	750	22700	46000	13000	13600	477000
9	144	525	204	534	17000	24500	6490	20300	356000
10	114	465	143	402	13800	15000	4960	22500	301000
11	134	658	238	325	13300	11700	3410	20400	188000
12	340	2450	2250	295	11000	8760	6150	18900	314000
13	402	2870	3120	250	6100	4120	3510	14000	133000
14	379	2350	2400	219	3700	2190	2330	8600	54100
15	340	1100	1010	940	17200	89000	1830	6200	30600
16	997	13400	58900	3310	38800	347000	1590	5600	24000
17	1260	28700	97600	4370	37900	503000	2210	5600	33400
18	934	26300	66300	4380	44000	520000	2670	5050	36400
19	731	24500	48400	6120	41800	691000	1590	6600	28300
20	579	19600	30600	4270	32500	375000	1060	10400	29800
21	484	15000	19600	3280	27000	239000	830	8600	19300
22	445	11200	13500	2460	22500	149000	695	7050	13200
23	796	13800	42200	2110	17100	97400	595	5550	8920
24	1620	28800	126000	1510	13700	55900	541	4100	5990
25	1020	29800	82100	1160	11000	34500	519	2500	3500
26	731	27500	54300	1140	10100	31100	432	1600	1870
27	587	22000	34900	1910	14500	74800	408	1000	1100
28	458	16900	20900	1880	10800	54800	570	1500	2310
29	414	13400	15000	2270	10500	64400	952	4400	11300
30	498	11000	14800	3610	8310	106000	512	2500	3460
31	---	---	---	8260	34400	755000	---	---	---
TOTAL	14703	---	737066	60254	---	4502660	136574	---	6109550

WHITE RIVER BASIN

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06452000 WHITE RIVER NEAR OACOMA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	420	1300	1470	63	665	113	66	3900	695
2	2200	17700	115000	49	635	84	67	3200	579
3	2910	34200	267000	48	613	79	63	2900	493
4	1760	31200	148000	e50	545	74	61	2450	404
5	1300	28100	98600	57	430	66	61	1500	247
6	925	23400	58400	96	1450	376	59	1000	159
7	611	18300	30200	176	3440	1630	61	1000	165
8	464	14900	18700	124	2490	834	59	1100	175
9	408	11000	12100	488	16400	43000	61	1000	165
10	335	8300	7510	644	36100	62800	64	1000	173
11	295	7300	5810	519	27500	38500	60	800	130
12	268	5750	4160	438	22200	26300	64	1200	207
13	241	4750	3090	564	23600	35900	92	1250	310
14	e232	4000	2510	362	20600	20100	153	2250	929
15	329	4000	3550	286	20000	15400	97	1000	262
16	611	8450	13900	250	20600	13900	618	24700	41100
17	541	13000	19000	219	18400	10900	556	38500	57800
18	445	22000	26400	281	16900	12800	536	31500	45600
19	286	21800	16800	264	14400	10300	385	25500	26500
20	228	18000	11100	255	14700	10100	301	22400	18200
21	191	12300	6340	203	8900	4880	263	16900	12000
22	184	9100	4520	173	6400	2990	206	e11400	6340
23	150	7300	2960	173	5800	2710	182	e8950	4400
24	131	6000	2120	190	6100	3130	170	e7750	3560
25	114	5100	1570	173	6050	2830	157	e7000	2970
26	103	3750	1040	141	5200	1980	158	e6700	2860
27	92	2600	646	121	3800	1240	145	e6400	2510
28	e81	1800	394	108	1800	525	133	e5600	2010
29	70	1100	208	99	2000	535	125	e4500	1520
30	69	730	136	88	4150	986	126	e3200	1090
31	67	698	126	79	4400	939	---	---	---
TOTAL	16061	---	883360	6781	---	326001	5149	---	233553
YEAR	264796.71		13121178.02						

e Estimated

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV				
29...	21	2.0	357	100
APR				
03...	153	17.5	720	99
MAY				
14...	209	25.0	3600	100
20...	4210	18.0	32200	97
JUN				
01...	4140	21.5	29100	95
04...	13200	19.0	16100	93
06...	8820	21.0	14500	95
JUL				
18...	396	26.0	22400	100
AUG				
23...	178	23.0	6030	100

MISSOURI-FORT RANDALL RIVER BASIN

06452278 LAKE FRANCIS CASE (FT. RANDALL RESERVOIR) NEAR PLATTE, SD

LOCATION.--Lat 43°23'37", long 99°07'11", in SE 1/4 SW 1/4 sec.15, T.99 N., R.70 W., Charles Mix County, Hydrologic Unit 10140101, on left bank at Snake Creek Recreation Area, 0.4 mi upstream from Platte-Winner bridge, 3.9 mi west of junction on State Highways 44 and 50, 14.2 mi west of Platte, 38.4 mi upstream from Ft. Randall Reservoir, and at mile 921.

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,365 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Stage regulated by Ft. Randall Reservoir. Gage heights prior to October 1988 in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.95	---	---	---	---	---	---	---	---	54.91	55.43	54.49
2	45.93	---	---	---	---	---	---	---	---	55.08	55.60	53.98
3	45.57	---	---	---	---	---	---	---	---	55.34	55.60	54.03
4	45.82	---	---	---	---	---	---	---	---	55.62	55.34	54.21
5	45.87	---	---	---	---	---	---	---	---	55.59	55.15	54.60
6	45.74	---	---	---	---	---	---	---	---	55.44	55.25	54.98
7	45.72	---	---	---	---	---	---	---	---	55.13	55.55	55.31
8	45.70	---	---	---	---	---	---	---	---	54.43	55.84	55.19
9	45.90	---	---	---	---	---	---	---	---	54.43	55.97	55.03
10	45.94	---	---	---	---	---	---	---	---	54.50	56.08	55.20
11	45.75	---	---	43.22	---	---	---	---	59.94	54.68	---	55.39
12	45.94	---	---	43.65	---	---	---	---	59.64	55.04	---	55.77
13	45.82	---	---	43.61	---	---	---	---	59.46	55.33	---	56.19
14	45.84	---	---	43.57	---	---	---	---	59.13	55.19	---	56.53
15	45.89	---	---	43.78	---	---	---	---	58.79	54.94	---	56.40
16	45.90	---	---	44.23	---	---	---	---	58.35	55.15	---	56.17
17	45.73	---	---	44.82	---	---	---	---	58.01	55.54	---	---
18	45.85	---	---	45.24	---	---	---	---	57.84	55.64	---	---
19	45.88	---	---	45.38	---	---	---	---	57.76	55.66	---	56.96
20	45.74	---	---	45.16	---	---	---	---	57.53	55.57	---	57.18
21	45.88	---	---	44.85	---	---	---	---	57.35	55.35	---	57.19
22	45.82	---	---	44.72	---	---	---	---	57.13	55.33	55.14	56.98
23	45.80	---	---	44.80	---	---	---	---	56.70	55.37	55.24	---
24	45.80	---	---	44.95	---	---	---	---	56.26	55.55	55.14	56.73
25	45.83	---	---	45.11	---	---	---	---	56.12	55.70	54.72	56.85
26	45.78	---	---	45.26	---	---	---	---	56.09	55.81	54.33	56.94
27	45.70	---	---	---	---	---	---	---	55.87	55.85	54.39	56.98
28	45.72	---	---	---	---	---	---	---	55.74	55.60	54.56	56.52
29	45.78	---	---	---	---	---	---	---	55.61	55.27	54.80	55.99
30	45.65	---	---	---	---	---	---	---	55.26	55.32	54.87	55.55
31	---	---	---	---	---	---	---	---	---	55.32	54.84	---
MEAN	---	---	---	---	---	---	---	---	---	55.28	---	---
MAX	---	---	---	---	---	---	---	---	---	55.85	---	---
MIN	---	---	---	---	---	---	---	---	---	54.43	---	---

MISSOURI-FORT RANDALL RIVER BASIN

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06452320 PLATTE CREEK NEAR PLATTE, SD

LOCATION.--Lat 43°19'38", long 98°58'13", in NW¼NW¼ sec.11, T.98 N., R.69 W., Charles Mix County, Hydrologic Unit 10140101, on right bank at upstream side of bridge on State Highway 1804, 0.5 mi above high-water line of Fort Randall Reservoir, and 8.0 mi southwest of Platte.

DRAINAGE AREA.--741 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,370 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow regulated by Lake Platte, capacity, 100 acre-ft, 13.6 mi upstream. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 447 ft³/s, May 24, 1990, gage height, 5.14 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 12	--	a60	unknown	June 4	1845	*187	*4.28
May 4	--	a110	unknown				

a Estimated.

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	e.01	.50	.56	e6.0	5.1	1.9	.00	.00
2	.00	.00	.00	e.01	e.02	.50	.50	e5.7	19	1.4	.01	.00
3	.00	.01	.00	e.01	e.05	.34	.50	e8.5	18	1.1	.00	.00
4	.00	.00	.00	e.01	e.16	.30	e.50	e100	98	1.0	.00	.00
5	.00	.00	.00	e.01	e.37	.41	e.50	e40	121	.75	.00	.00
6	.00	.01	.00	e.01	e.45	.50	e.50	e15	97	.59	.00	.00
7	.00	.00	.00	e.01	e.55	.50	e.50	e5.2	99	.31	.00	.00
8	.00	.00	e.00	e.01	e.50	.55	e.60	e1.8	109	.21	.00	.00
9	.00	.01	e.00	e.01	e.60	.57	e.76	e.90	90	.20	.00	.00
10	.00	.01	e.01	e.01	e.60	.78	e1.1	1.1	72	.16	.00	.00
11	.00	.00	e.01	e.01	e.55	1.3	e22	.75	53	.14	.00	.00
12	.00	.00	e.01	e.01	e.54	1.9	e55	.64	40	.08	.00	.00
13	.00	.00	e.01	e.01	e.50	2.5	e38	.51	34	.05	.00	.00
14	.00	.01	e.01	e.01	e.58	2.2	e25	.41	26	.04	.00	.00
15	.00	.00	e.01	e.02	e.52	1.5	e13	.32	18	.03	.00	.00
16	.00	.00	e.01	e.03	e.46	1.0	e6.5	.27	14	.02	.00	.00
17	.00	.00	e.01	e.03	e.50	.97	e3.6	.55	11	.02	.00	.00
18	.00	.00	e.01	e.02	e.70	.96	e2.3	.60	9.1	.00	.00	.00
19	.00	.00	e.01	e.02	e.66	.96	e1.9	.53	7.6	.00	.00	.00
20	.00	e.00	e.01	e.02	e.60	.78	e1.7	.63	6.5	.00	.00	.00
21	.00	e.00	e.01	e.02	e.60	.94	e1.7	.53	5.6	.00	.00	.00
22	.00	e.00	e.00	e.01	e.66	.97	e1.8	.45	5.3	.00	.00	.00
23	.00	e.00	.00	e.01	e.70	1.4	e1.8	.34	4.9	.00	.00	.00
24	.00	.00	.00	e.01	e.65	1.1	e1.8	.22	4.4	.00	.00	.00
25	.00	.00	.00	e.01	e.60	.87	e1.8	.19	4.2	.00	.00	.00
26	.00	.00	.00	e.01	e.56	.84	e1.8	.21	3.3	.00	.00	.00
27	.00	.00	.00	e.01	e.53	.90	e2.1	.13	3.2	.00	.00	.01
28	.00	.00	.00	e.01	.48	3.3	e3.2	.12	3.0	.00	.00	.01
29	.00	.00	.00	e.01	---	2.1	e9.0	.22	2.5	.00	.00	.01
30	.00	.00	.00	e.01	---	1.4	e7.5	.20	2.0	.00	.00	.01
31	.00	---	.00	e.01	---	.89	---	.86	---	.00	.00	---
TOTAL	0.00	0.05	0.12	0.39	13.70	33.73	207.52	192.88	985.7	8.00	0.01	0.04
MEAN	.000	.002	.004	.013	.49	1.09	6.92	6.22	32.9	.26	.000	.001
MAX	.00	.01	.01	.03	.70	3.3	55	100	121	1.9	.01	.01
MIN	.00	.00	.00	.00	.01	.30	.50	.12	2.0	.00	.00	.00
AC-FT	.00	.1	.2	.8	27	67	412	383	1960	16	.02	.08

CAL YR 1990 TOTAL 2049.93 MEAN 5.62 MAX 355 MIN .00 AC-FT 4070
WTR YR 1991 TOTAL 1442.14 MEAN 3.95 MAX 121 MIN .00 AC-FT 2860

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06452380 ANDES CREEK NEAR ARMOUR, SD

LOCATION.--Lat 43°15'23", long 97°24'08", in SW¼NW¼ sec.3, T.97 N., R.64 W., Charles Mix County, Hydrologic Unit 10140101, at bridge 2.8 mi west of U.S. Highway 281 and 4.0 mi south of Armour.

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

REMARKS.--Samples are collected only when discharge is greater than $2 \text{ ft}^3/\text{s}$. No water-quality samples collected this water year; discharge at times of inspections less than $2 \text{ ft}^3/\text{s}$.

MISSOURI-FORT RANDALL RIVER BASIN

06452383 LAKE ANDES TRIBUTARY NO. 3 NEAR ARMOUR, SD

LOCATION.--Lat 43°15'23", long 98°25'58", in SW¼NE¼ sec.5, T.98 N., R.64 W., Charles Mix County, Hydrologic Unit 10140101, at bridge 4.3 mi west of U.S. Highway 281 and 4.0 mi south of Armour.

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

REMARKS.--Samples are taken when discharge exceeds $2 \text{ ft}^3/\text{s}$. No water-quality samples collected this water year; discharge at times of inspections less than $2 \text{ ft}^3/\text{s}$.

MISSOURI-FORT RANDALL RIVER BASIN

06452386 LAKE ANDES TRIBUTARY NO. 2 NEAR LAKE ANDES, SD

LOCATION.--Lat 43°12'43", long 98°26'45", in SE¼SE¼SE¼ sec.18, T.97 N., R.64 W., Charles Mix County, Hydrologic Unit 10140101, at culvert 3.0 mi north and 4.6 mi east of town of Lake Andes.

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

REMARKS.--Water-quality samples are taken only when discharge exceeds $2 \text{ ft}^3/\text{s}$. No water-quality samples collected this water year; discharge at times of inspections less than $2 \text{ ft}^3/\text{s}$.

MISSOURI-FORT RANDALL RIVER BASIN

06452389 LAKE ANDES TRIBUTARY NO. 1 NEAR LAKE ANDES, SD

LOCATION.--Lat 43°11'25", long 98°27'57", in NE¼NE¼SE¼ sec.25, T.97 N., R.65 W., Charles Mix County, Hydrologic Unit 10140101, at culvert 1.0 mi north and 3.0 mi east of town of Lake Andes.

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

REMARKS.--Samples are taken when discharge exceeds $2 \text{ ft}^3/\text{s}$. No water-quality samples collected this water year; discharge at times of inspections less than $2 \text{ ft}^3/\text{s}$.

MISSOURI-FORT RANDALL RIVER BASIN

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06452390 LAKE ANDES ABOVE RAVINIA, SD

LOCATION.--Lat 43°13'15", long 98°24'55", in SW 1/4 SW 1/4 NE 1/4 sec.16, T.97 N., R.64 W., Charles Mix County, Hydrologic Unit 10140101, about 1.5 mi south of mouth of Andes Creek and about 5.5 mi north of Ravinia.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples and bottom sediment samples only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND. The percent difference between cations and anions (in milliequivalents per liter) for the Apr. 9, 1991, sample exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PERCENT) (00301)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)
NOV 07...	0915	4820	8.2	-6.0	5.0	734	12.9	107	2100	390	280	440
FEB 11...	0930	7590	7.3	-3.0	3.0	731	12.2	97	3400	530	510	720
APR 09...	1115	4760	8.0	10.0	9.5	722	11.4	108	1700	250	260	410
JUN 25...	1000	2950	9.2	21.5	22.5	716	7.6	95	1200	220	150	250
AUG 26...	0900	4700	8.3	23.5	22.5	721	3.9	48	2000	430	220	430
SEP 23...	0930	5690	8.1	10.0	10.5	726	6.8	65	2500	520	280	510

DATE	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 07...	30	4	100	171	2700	240	0.30	3.9	4340	4260	5.90	<0.010
FEB 11...	30	5	160	282	4300	390	0.10	6.0	7180	6790	9.76	0.010
APR 09...	33	4	100	138	2500	210	0.60	2.1	4310	3820	5.86	<0.010
JUN 25...	30	3	80	164	1500	150	0.30	11	2540	2460	3.45	<0.010
AUG 26...	30	4	130	140	2700	260	0.30	25	4550	4280	6.19	<0.010
SEP 23...	29	4	160	170	3100	170	0.70	25	5100	4870	6.94	<0.010

DATE	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)
NOV 07...	<0.050	0.020	0.03	0.140	<0.010	1	<1.0	--	<1	<0.1	<3
FEB 11...	<0.100	1.70	2.2	0.630	0.070	2	<1.0	--	<1	<0.1	<2
APR 09...	0.590	0.050	0.06	0.010	0.010	3	<1.0	--	<1	<0.1	1
JUN 25...	<0.050	0.070	0.09	1.60	0.230	17	<1.0	--	2	<0.1	1
AUG 26...	<0.050	0.090	0.12	2.00	0.170	14	<1.0	--	<1	<0.1	<1
SEP 23...	0.190	0.060	0.08	0.670	<0.010	5	<1.0	<1	<1	<0.1	2

MISSOURI-FORT RANDALL RIVER BASIN

06452390 LAKE ANDES ABOVE RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PER-CENT) (00301)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS-SOLVED (UG/L) (39331)	AME-TRYNE TOTAL (82184)
APR 09...	1115	4760	8.0	10.0	9.5	722	11.4	108	<0.20	<0.010	<0.01	<0.10
JUN 25...	1000	2950	9.2	21.5	22.5	716	7.6	95	<0.20	<0.010	<0.01	<0.10

DATE	ATRAZINE, TOTAL (UG/L) (39630)	CHLORDANE, TOTAL (UG/L) (39350)	CHLORDANE, DIS-SOLVED (UG/L) (39352)	CYAN-AZINE TOTAL (UG/L) (81757)	DDD, TOTAL (UG/L) (39360)	DDD, DIS-SOLVED (UG/L) (39361)	DDE, TOTAL (UG/L) (39365)	DDE, DIS-SOLVED (UG/L) (39366)	DDT, TOTAL (UG/L) (39370)	DDT, DIS-SOLVED (UG/L) (39371)	DI-AZINON, TOTAL (UG/L) (39570)	DI-AZINON, DIS-SOLVED (UG/L) (39572)
APR 09...	<0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01
JUN 25...	1.1	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01

DATE	DI-ELDRIN TOTAL (UG/L) (39380)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	ENDO-SULFAN, TOTAL (UG/L) (39388)	ENDO-SULFAN, DISSOLV (UG/L) (82354)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DIS-SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION, DISSOLV (UG/L) (82346)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR, DIS-SOLVED (UG/L) (39411)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTA-CHLOR EPOXIDE DIS-SOLVED (UG/L) (39421)
APR 09...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01
JUN 25...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01

DATE	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS-SOLVED (UG/L) (39341)	MALATHION, TOTAL (UG/L) (39530)	MALATHION, DIS-SOLVED (UG/L) (39532)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	METH-OXY-CHLOR, DISSOLV (UG/L) (82350)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL PARATHION, DIS-SOLVED (UG/L) (39602)	METHYL TRI-THION, TOTAL (UG/L) (39790)	METHYL TRI-THION, DISSOLV (UG/L) (82344)	MIREX, TOTAL (UG/L) (39755)
APR 09...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
JUN 25...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01

DATE	MIREX, DIS-SOLVED (UG/L) (39756)	PARATHION, TOTAL (UG/L) (39540)	PARATHION, DIS-SOLVED (UG/L) (39542)	PCB, TOTAL (UG/L) (39516)	PCB, DIS-SOLVED (UG/L) (39517)	NAPHTHALENES, POLY-CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PER-THANE TOTAL (UG/L) (39034)	PER-THANE DISSOLV (UG/L) (82348)	PROMETHONE TOTAL (UG/L) (39056)	PROMETHONE TRYNE TOTAL (UG/L) (39057)
APR 09...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1
JUN 25...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1

06452390 LAKE ANDES ABOVE RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	PRO- PAZINE TOTAL (UG/L) (39024)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)	SIME- TRYNE TOTAL (UG/L) (39054)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TOTAL TRI- THION (UG/L) (39786)	TRI- THION DISSOLV (UG/L) (82342)	2,4-D, TOTAL (UG/L) (39730)	2, 4-DP TOTAL (UG/L) (82183)	2,4,5-T TOTAL (UG/L) (39740)
APR 09...	<0.10	--	<0.10	<0.1	<1	<1.0	<0.01	<0.01	--	--	--
JUN 25...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.10	<0.01	<0.01

MISSOURI-FORT RANDALL RIVER BASIN

06452391 LAKE ANDES NEAR RAVINIA, SD

LOCATION.--Lat 43°11'05", long 98°26'10", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.29, T.97 N., R.64 W., Charles Mix County, Hydrologic Unit 10140101, about 1.25 mi northeast of the Lake Andes National Wildlife Refuge office and about 3 mi north of Ravinia.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples and bottom sediment samples only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND. The percent difference between cations and anions (in milliequivalents per liter) for the Feb. 11, Apr. 9, and Aug. 26, 1991, samples exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PER-CENT) (00301)	HARDNESS TOTAL (MG/L AS CaCO ₃) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)
NOV 07...	1010	2920	7.8	-1.0	0.5	734	14.3	104	1100	210	140	210
FEB 11...	1005	2740	8.2	-1.5	3.5	731	27.3	216	940	180	120	190
APR 09...	1245	3130	8.1	20.0	11.5	722	10.4	102	1100	200	150	230
JUN 25...	1100	3200	8.5	24.5	23.0	716	6.5	82	1300	230	170	240
AUG 26...	1025	4320	8.0	26.0	24.0	721	3.9	50	1700	320	230	360
SEP 23...	1100	4780	7.8	13.0	11.5	726	7.4	72	2000	360	270	400

DATE	SODIUM PERCENT (00932)	SODIUM AD-SORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 07...	27	3	93	98	1400	160	0.30	7.2	2440	2280	3.32	<0.010
FEB 11...	28	3	83	117	1800	190	0.60	10	2120	2650	2.88	<0.010
APR 09...	29	3	96	112	1700	160	0.60	4.9	2480	2610	3.37	<0.010
JUN 25...	27	3	110	135	1600	180	0.50	13	2650	2620	3.60	<0.010
AUG 26...	29	4	170	109	2500	260	0.70	11	3840	3920	5.22	<0.010
SEP 23...	28	4	160	95	2600	340	0.80	11	4260	4200	5.79	<0.010

DATE	NITROGEN, NO ₂ +NO ₃ DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS NH ₄) (71846)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)
NOV 07...	<0.050	0.170	0.22	0.220	<0.010	<1	<1.0	--	<1	<0.1	<1
FEB 11...	0.200	0.410	0.53	0.210	<0.010	1	<1.0	--	<1	0.1	<1
APR 09...	<0.050	0.070	0.09	0.260	<0.010	3	<1.0	--	1	<0.1	<1
JUN 25...	<0.050	0.240	0.31	0.630	<0.010	7	<1.0	--	<1	<0.1	<1
AUG 26...	0.089	0.060	0.08	0.730	<0.010	9	<1.0	--	<1	<0.1	<1
SEP 23...	0.089	0.650	0.84	0.700	<0.010	4	<1.0	<1	<1	<0.1	1

06452391 LAKE ANDES NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PER-CENT) (00301)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS-SOLVED (UG/L) (39331)	AME-TRYNE TOTAL (82184)
APR 09...	1245	3130	8.1	20.0	11.5	722	10.4	102	<0.20	<0.010	<0.01	<0.10
JUN 25...	1100	3200	8.5	24.5	23.0	716	6.5	82	<0.20	<0.010	<0.01	0.10
DATE	ATRA-ZINE, TOTAL (UG/L) (39630)	CHLOR-DANE, TOTAL (UG/L) (39350)	CHLOR-DANE, DIS-SOLVED (UG/L) (39352)	CYAN-AZINE TOTAL (UG/L) (81757)	DDD, TOTAL (UG/L) (39360)	DDD, DIS-SOLVED (UG/L) (39361)	DDE, TOTAL (UG/L) (39365)	DDE, DIS-SOLVED (UG/L) (39366)	DDT, TOTAL (UG/L) (39370)	DDT, DIS-SOLVED (UG/L) (39371)	DI-AZINON, TOTAL (UG/L) (39570)	DI-AZINON, DIS-SOLVED (UG/L) (39572)
APR 09...	<0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01
JUN 25...	0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01
DATE	DI-ELDRIN TOTAL (UG/L) (39380)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	ENDO-SULFAN, TOTAL (UG/L) (39388)	ENDO-SULFAN, DISSOLV (UG/L) (82354)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DIS-SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION, DISSOLV (UG/L) (82346)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR, DIS-SOLVED (UG/L) (39411)	HEPTA-CHLOR, EPOXIDE TOTAL (UG/L) (39420)	HEPTA-CHLOR, EPOXIDE DIS-SOLVED (UG/L) (39421)
APR 09...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01
JUN 25...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01
DATE	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS-SOLVED (UG/L) (39341)	MALA-THION, TOTAL (UG/L) (39530)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	METH-OXY-CHLOR, DISSOLV (UG/L) (82350)	METHYL-PARA-THION, TOTAL (UG/L) (39600)	METHYL-PARA-THION, DIS-SOLVED (UG/L) (39602)	METHYL-TRI-THION, TOTAL (UG/L) (39790)	METHYL-TRI-THION, DISSOLV (UG/L) (82344)	MIREX, TOTAL (UG/L) (39755)	
APR 09...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
JUN 25...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	
DATE	MIREX, DIS-SOLVED (UG/L) (39756)	PARA-THION, TOTAL (UG/L) (39540)	PARA-THION, DIS-SOLVED (UG/L) (39542)	PCB, TOTAL (UG/L) (39516)	PCB, DIS-SOLVED (UG/L) (39517)	NAPHTHALENES, POLY-CHLOR. TOTAL (UG/L) (39250)	PCN, DISSOLV (UG/L) (82360)	PER-THANE TOTAL (UG/L) (39034)	PER-THANE DISSOLV (UG/L) (82348)	PROMETONE TOTAL (UG/L) (39056)	PROMETRYNE TOTAL (UG/L) (39057)	
APR 09...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1	
JUN 25...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1	
DATE	PRO-PAZINE TOTAL (UG/L) (39024)	SILVEX, TOTAL (UG/L) (39760)	SIMA-ZINE TOTAL (UG/L) (39055)	SIME-TRYNE TOTAL (UG/L) (39054)	TOX-APHENE, TOTAL (UG/L) (39400)	TOX-APHENE, DIS-SOLVED (UG/L) (39401)	TOTAL TRI-THION (UG/L) (39786)	TRI-THION DISSOLV (UG/L) (82342)	2,4-D, TOTAL (UG/L) (39730)	2, 4-DP, TOTAL (UG/L) (82183)	2,4,5-T, TOTAL (UG/L) (39740)	
APR 09...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.01	<0.01	<0.01	
JUN 25...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	<0.01	<0.01	<0.01	

MISSOURI-FORT RANDALL RIVER BASIN

06452403 OWENS BAY NEAR RAVINIA, SD

LOCATION.--Lat 43°09'40", long 98°26'45", in NW¼NW¼SW¼ sec.5, T.96 N., R.64 W., Charles Mix County, Hydrologic Unit 10140101, about 0.7 mi southeast of the Lake Andes National Wildlife Refuge office and about 1.8 mi northwest of Ravinia.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples and bottom sediment samples only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND. The percent difference between cations and anions (in milliequivalents per liter) for the Feb. 11 and Apr. 9, 1991, samples exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	HARD- NESS TOTAL (MG/L CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
NOV												
07...	1045	5590	8.0	0.0	1.5	734	18.0	136	2800	760	230	420
FEB												
11...	1115	2080	7.6	-0.5	0.5	730	14.1	104	910	250	70	120
APR												
09...	0930	4150	7.9	9.5	9.0	724	10.7	99	1600	390	150	270
JUN												
25...	1220	4750	8.8	31.0	24.0	716	6.8	88	2200	600	170	320
AUG												
26...	1120	3810	8.5	31.0	24.0	721	10.6	135	1900	510	140	260
SEP												
23...	1135	3860	8.4	15.5	10.0	726	8.2	77	1700	480	130	250

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV												
07...	24	3	73	85	3000	510	2.9	13	5110	5060	6.95	<0.010
FEB												
11...	22	2	19	109	1000	150	1.6	8.5	1670	1690	2.27	0.020
APR												
09...	26	3	45	108	1800	360	3.0	14	3500	3100	4.76	<0.010
JUN												
25...	23	3	55	--	2500	400	2.6	5.1	4170	--	--	<0.010
AUG												
26...	23	3	50	81	2000	330	3.1	27	3480	3370	4.73	<0.010
SEP												
23...	23	3	44	90	1700	340	2.9	20	3240	3020	4.41	<0.010

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
NOV											
07...	<0.050	0.070	0.09	0.260	<0.010	<1	<1.0	--	<1	0.1	<1
FEB											
11...	<0.100	1.00	1.3	0.090	<0.010	1	<1.0	--	<1	0.2	<1
APR											
09...	<0.050	0.040	0.05	0.450	<0.010	3	<1.0	--	<1	<0.1	<1
JUN											
25...	<0.050	0.090	0.12	0.090	0.030	6	<1.0	--	<1	<0.1	<1
AUG											
26...	<0.050	0.050	0.06	0.040	<0.010	14	<1.0	--	<1	<0.1	<1
SEP											
23...	0.073	0.080	0.10	0.030	<0.010	5	<1.0	<1	<1	<0.1	<1

06452403 OWENS BAY NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PERCENT) (00301)	ALACHLOR TOTAL RECOVER (UG/L) (77825)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS-SOLVED (UG/L) (39331)	AME-TRYNE TOTAL (82184)
APR 09...	0930	4150	7.9	9.5	9.0	724	10.7	99	<0.20	<0.010	<0.01	<0.10
JUN 25...	1220	4750	8.8	31.0	24.0	716	6.8	88	<0.20	<0.010	<0.01	<0.10

DATE	ATRAZINE, TOTAL (UG/L) (39630)	CHLORDANE, TOTAL (UG/L) (39350)	CHLORDANE, DIS-SOLVED (UG/L) (39352)	CYANAZINE TOTAL (UG/L) (81757)	DDD, TOTAL (UG/L) (39360)	DDD, DIS-SOLVED (UG/L) (39361)	DDE, TOTAL (UG/L) (39365)	DDE, DIS-SOLVED (UG/L) (39366)	DDT, TOTAL (UG/L) (39370)	DDT, DIS-SOLVED (UG/L) (39371)	DI-AZINON, TOTAL (UG/L) (39570)	DI-AZINON, DIS-SOLVED (UG/L) (39572)
APR 09...	<0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01
JUN 25...	0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01

DATE	DI-ELDRIN TOTAL (UG/L) (39380)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDOSULFAN, DISSOLV (UG/L) (82354)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DIS-SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION, DISSOLV (UG/L) (82346)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR, DIS-SOLVED (UG/L) (39411)	HEPTACHLOR, EPOXIDE TOTAL (UG/L) (39420)	HEPTACHLOR, EPOXIDE DIS-SOLVED (UG/L) (39421)
APR 09...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01
JUN 25...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01

DATE	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS-SOLVED (UG/L) (39341)	MALATHION, TOTAL (UG/L) (39530)	MALATHION, DIS-SOLVED (UG/L) (39532)	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHOXYCHLOR, DISSOLV (UG/L) (82350)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL PARATHION, DIS-SOLVED (UG/L) (39602)	METHYL TRI-THION, TOTAL (UG/L) (39790)	METHYL TRI-THION, DISSOLV (UG/L) (82344)	MIREX, TOTAL (UG/L) (39755)
APR 09...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
JUN 25...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01

DATE	MIREX, DIS-SOLVED (UG/L) (39756)	PARATHION, TOTAL (UG/L) (39540)	PARATHION, DIS-SOLVED (UG/L) (39542)	PCB, TOTAL (UG/L) (39516)	PCB, DIS-SOLVED (UG/L) (39517)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PER-THANE TOTAL (UG/L) (39034)	PER-THANE DISSOLV (UG/L) (82348)	PROMETHONE TOTAL (UG/L) (39056)	PROMETHONE TRYNE TOTAL (UG/L) (39057)
APR 09...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1
JUN 25...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1

DATE	PROPAZINE TOTAL (UG/L) (39024)	SILVEX, TOTAL (UG/L) (39760)	SIMAZINE TOTAL (UG/L) (39055)	SIME-TRYNE TOTAL (UG/L) (39054)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, DIS-SOLVED (UG/L) (39401)	TOTAL TRI-THION (UG/L) (39786)	TRI-THION DISSOLV (UG/L) (82342)	2,4-D, TOTAL (UG/L) (39730)	2, 4-DP TOTAL (UG/L) (82183)	2,4,5-T TOTAL (UG/L) (39740)
APR 09...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.02	<0.01	<0.01
JUN 25...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.07	<0.01	<0.01

MISSOURI-FORT RANDALL RIVER BASIN

06452406 LAKE ANDES ABOVE LAKE ANDES, SD

LOCATION.--Lat 43°09'40", long 98°29'10", in NW1/4SW1/4 sec.1, T.96 N., R.65 W., Charles Mix County, Hydrologic Unit 10140101, about 1.9 mi west southwest of the Lake Andes National Wildlife Refuge office and about 2.5 mi east of Lake Andes.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples and bottom sediment samples only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND. The percent difference between cations and anions (in milliequivalents per liter) for the Apr. 9, 1991, sample exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PERCENT) (00301)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM DIS-SOLVED (MG/L AS Na) (00930)
NOV 07...	1230	2920	8.7	4.0	2.5	734	13.4	103	1400	310	140	180
FEB 11...	1230	3490	8.1	4.0	6.0	730	25.2	214	1400	310	150	190
APR 09...	1510	3230	8.4	20.0	12.5	722	12.1	121	1300	270	140	190
JUN 25...	1325	3220	9.0	32.5	24.0	715	10.7	137	1400	320	150	200
AUG 26...	1215	3860	8.1	32.5	24.0	721	5.7	72	1700	400	180	260
SEP 23...	1230	4090	8.8	15.0	12.0	726	9.9	98	1900	430	200	270

DATE	SODIUM PERCENT (00932)	SODIUM AD-SORPTION RATIO (00931)	POTASSIUM DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 07...	21	2	84	88	1400	150	0.40	16	2450	2330	3.33	<0.010
FEB 11...	22	2	92	114	1700	160	0.90	18	2740	2690	3.73	<0.010
APR 09...	23	2	84	94	1700	150	0.90	5.9	2720	2600	3.70	<0.010
JUN 25...	22	2	93	78	1700	170	0.90	4.3	2700	2690	3.67	<0.010
AUG 26...	23	3	120	96	2200	200	1.1	18	3420	3440	4.65	<0.010
SEP 23...	22	3	140	68	2200	290	1.3	13	3610	3590	4.91	<0.010

DATE	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)
NOV 07...	<0.050	0.050	0.06	0.330	0.010	3	<1.0	--	<1	<0.1	<3
FEB 11...	<0.100	0.740	0.95	0.130	<0.010	2	<1.0	--	<1	<0.1	<1
APR 09...	<0.050	0.050	0.06	0.190	<0.010	3	<1.0	--	<1	<0.1	<1
JUN 25...	<0.050	0.030	0.04	0.200	<0.010	6	<1.0	--	<1	<0.1	<1
AUG 26...	<0.050	0.050	0.06	0.460	<0.010	10	<1.0	--	<1	<0.1	<1
SEP 23...	0.150	0.050	0.06	0.390	<0.010	7	<1.0	<1	<1	0.4	<1

MISSOURI-FORT RANDALL RIVER BASIN

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06452406 LAKE ANDES ABOVE LAKE ANDES, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE	PH	TEMPER- ATURE AIR	TEMPER- ATURE WATER	BARO- METRIC PRES- SURE	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED	ALA- CHLOR TOTAL RECOVER	ALDRIN, TOTAL	ALDRIN, DIS- SOLVED	AME- TRYNE TOTAL
		(US/CM) (00095)	(STAND- ARD UNITS) (00400)	(DEG C) (00020)	(DEG C) (00010)	(MM OF HG) (00025)	(MG/L) (00300)	(PER- CENT SATUR- ATION) (00301)	(UG/L) (77825)	(UG/L) (39330)	(UG/L) (39331)	(82184)
APR 09...	1510	3230	8.4	20.0	12.5	722	12.1	121	<0.20	<0.010	<0.01	<0.10
JUN 25...	1325	3220	9.0	32.5	24.0	715	10.7	137	<0.20	<0.010	<0.01	<0.10
DATE	ATRA- ZINE, TOTAL (UG/L) (39630)	CHLOR- DANE, TOTAL (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED (UG/L) (39352)	CYAN- AZINE TOTAL (UG/L) (81757)	DDD, TOTAL (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDE, TOTAL (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDT, TOTAL (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DI- AZINON, TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED (UG/L) (39572)
APR 09...	0.20	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01
JUN 25...	0.10	<0.1	<0.1	<0.20	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01
DATE	DI- ELDRIN TOTAL (UG/L) (39380)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTA- CHLOR EPOXIDE DIS- SOLVED (UG/L) (39421)
APR 09...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01
JUN 25...	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.010	<0.01
DATE	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV (UG/L) (82350)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METHYL TRI- THION, TOTAL (UG/L) (39790)	METHYL- TRI- THION DISSOLV (UG/L) (82344)	MIREX, TOTAL (UG/L) (39755)	
APR 09...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
JUN 25...	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
DATE	MIREX, DIS- SOLVED (UG/L) (39756)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PCB, TOTAL (UG/L) (39516)	PCB, DIS- SOLVED (UG/L) (39517)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV (UG/L) (82348)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	
APR 09...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1	
JUN 25...	<0.01	<0.01	<0.01	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.2	<0.1	
DATE	PRO- PAZINE TOTAL (UG/L) (39024)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)	SIME- TRYNE TOTAL (UG/L) (39054)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TOTAL TRI- THION (UG/L) (39786)	TRI- THION DISSOLV (UG/L) (82342)	2,4-D, TOTAL (UG/L) (39730)	2, 4-DP TOTAL (UG/L) (82183)	2,4,5-T TOTAL (UG/L) (39740)	
APR 09...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.07	<0.01	<0.01	
JUN 25...	<0.10	<0.01	<0.10	<0.1	<1	<1.0	<0.01	<0.01	0.10	<0.01	<0.01	

06452500 LAKE FRANCIS CASE AT PICKSTOWN, SD

LOCATION.--Lat 43°04'05", long 98°33'15", in SE¼ sec.5, T.95 N., R.65 W., Charles Mix County, Hydrologic Unit 10140101, in tower 6 of outlet works at Fort Randall Dam, on Missouri River at Pickstown, 1.0 mi upstream from Randall Creek, and at mile 880.0.

DRAINAGE AREA.--263,500 mi², approximately.

PERIOD OF RECORD.--December 1952 to current year (monthend contents only). Prior to October 1964, published as Fort Randall Reservoir at Pickstown.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 25, 1953, elevations determined from temporary nonrecording gages.

REMARKS.--Reservoir is formed by earthfill dam; storage began in December 1952; initial closure made July 1952. Maximum capacity, 5,574,000 acre-ft below elevation 1,375.0 ft (top of spillway gates). Normal maximum, 4,589,000 acre-ft below elevation 1,365.0 ft. Inactive storage, 1,184,000 acre-ft below elevation 1,310.0 ft. No dead storage; elevation of invert of lowest outlet is 1,227.0 ft. Figures given herein represent elevations at outlet works and total contents adjusted for wind effect.

The spillway consists of 21 taintor gates, each 40 ft wide by 29 ft high; spillway capacity, 490,000 ft³/s at pool elevation 1,375 ft. Crest of spillway is at elevation 1,346 ft. Normal releases are through 12 tunnels 22 ft in diameter. Installation of power units in 8 of these tunnels was completed in January 1956; maximum release through power tunnels is 46,000 ft³/s; maximum release through 4 other tunnels is 130,000 ft³/s at pool elevation 1,375 ft. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Records of elevation and contents provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,087,000 acre-ft, June 20, 1962, affected by wind; minimum since initial filling, 1,450,000 acre-ft, Oct. 23, 1956, affected by wind.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,032,000 acre-ft, June 10; minimum contents, 2,396,000 acre-ft, Nov. 19.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,346.58	2,997,000	-
Oct. 31	1,338.79	2,487,000	-510,000
Nov. 30	1,339.40	2,518,000	+31,000
Dec. 31	1,341.00	2,623,000	+105,000
CAL YR 1990	-	-	-147,000
Jan. 31	1,347.14	3,046,000	+423,000
Feb. 28	1,353.42	3,456,000	+410,000
Mar. 31	1,353.18	3,454,000	-2,000
Apr. 30	1,354.43	3,562,000	+108,000
May 31	1,356.90	3,751,000	+189,000
June 30	1,354.69	3,575,000	-176,000
July 31	1,354.92	3,585,000	+10,000
Aug. 31	1,354.43	3,547,000	-38,000
Sept. 30	1,354.81	3,603,000	+56,000
WTR YR 1991	-	-	+606,000

NOTE.--Lake frozen over Dec. 23 to Mar. 7.

MISSOURI-LEWIS AND CLARK RIVER BASIN

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06453020 MISSOURI RIVER BELOW GREENWOOD, SD

LOCATION.--Lat 42°54'19", long 98°20'58", in SE&NE&NE& sec.1, T.93 N., R.64 W., Charles Mix County, Hydrologic Unit 10170101, on left bank 2.05 mi downstream from Greenwood and 1.27 mi downstream from the mouth of Slaughter Creek.

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. U.S. Army Corps of Engineers satellite data-collection platform at station. Stage regulated by Fort Randall Dam about 17 mi upstream.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.48	21.70	21.65	27.08	21.55	20.60	26.54	24.86	24.18	24.87	26.12	27.48
2	26.53	22.16	22.46	26.68	21.04	20.91	26.85	24.79	24.12	25.62	26.30	27.48
3	26.08	21.61	21.85	26.29	20.94	21.23	26.87	24.94	24.24	25.58	26.19	27.18
4	25.69	21.46	21.61	25.76	20.90	21.09	26.86	24.90	25.08	24.43	26.02	27.10
5	25.84	21.77	21.32	25.77	20.98	20.83	24.96	25.06	24.71	25.75	26.25	27.13
6	25.61	21.63	21.23	25.29	21.04	20.43	24.28	24.93	24.32	25.57	26.21	26.97
7	25.77	21.09	21.48	25.34	20.99	20.12	23.95	24.97	24.23	25.17	26.29	27.02
8	26.20	21.43	21.29	25.00	21.08	19.92	23.79	25.30	24.32	26.18	26.18	27.00
9	26.15	20.81	21.46	25.20	20.72	20.14	24.42	25.83	24.10	26.53	26.26	27.09
10	26.39	21.17	21.29	25.26	20.67	19.89	25.48	25.11	23.78	26.37	26.26	26.85
11	26.19	21.13	21.46	25.29	20.71	20.36	25.76	25.53	25.15	26.22	26.42	27.17
12	25.93	21.30	21.29	24.92	20.98	20.29	25.39	25.79	25.19	25.31	26.10	27.09
13	26.13	21.06	21.32	25.04	21.14	20.87	25.53	25.13	24.56	25.18	26.26	27.05
14	25.80	21.02	21.12	24.47	21.78	20.92	25.18	25.66	25.27	25.36	26.26	26.98
15	25.99	21.00	21.24	23.10	22.67	21.14	24.89	25.70	24.99	25.48	26.29	26.64
16	26.04	20.98	21.41	22.13	22.74	20.57	24.04	24.75	24.09	25.40	26.28	26.97
17	26.19	20.93	21.77	22.15	22.29	20.75	24.37	25.48	24.90	26.03	26.25	25.79
18	25.98	21.12	23.10	22.78	21.89	20.76	24.49	25.16	25.10	25.95	26.27	26.65
19	25.96	21.29	24.19	23.19	21.00	20.74	25.39	24.54	24.60	25.89	26.33	26.43
20	25.96	21.65	23.86	23.50	20.98	20.74	25.17	25.18	25.17	26.18	26.47	26.82
21	26.06	21.67	24.64	24.42	20.58	21.01	25.16	24.94	25.33	26.08	26.45	27.08
22	25.92	21.50	25.74	24.24	20.54	20.89	25.14	24.99	24.89	25.97	26.77	26.99
23	26.08	21.33	25.93	23.72	20.59	20.95	25.16	25.80	25.35	25.93	26.74	27.02
24	25.87	21.25	26.69	23.64	20.68	21.93	25.21	25.53	25.12	25.43	27.17	27.11
25	25.50	21.29	26.23	23.48	20.54	23.40	25.25	24.89	24.81	25.35	27.35	27.17
26	24.53	21.22	26.55	23.32	20.50	23.87	25.31	25.66	25.19	25.58	27.43	27.12
27	23.80	21.33	25.87	23.16	20.17	24.20	25.15	25.44	25.24	26.09	27.48	27.00
28	22.57	21.26	25.15	23.13	20.31	24.40	25.11	25.06	24.86	26.10	27.40	27.06
29	22.19	21.43	25.99	23.05	---	24.41	25.06	25.85	25.51	25.92	27.48	27.09
30	21.12	21.40	26.80	23.01	---	25.38	24.95	25.44	25.65	26.27	27.64	26.99
31	21.75	---	27.25	22.34	---	25.22	---	24.34	---	26.65	27.50	---
MEAN	25.36	21.33	23.33	24.25	21.07	21.55	25.19	25.21	24.80	25.76	26.59	26.98
MAX	26.53	22.16	27.25	27.08	22.74	25.38	26.87	25.85	25.65	26.65	27.64	27.48
MIN	21.12	20.81	21.12	22.13	20.17	19.89	23.79	24.34	23.78	24.43	26.02	25.79

MISSOURI-FORT RANDALL RIVER BASIN

06453120 MISSOURI RIVER ABOVE CHOTEAU CREEK, NEAR VERDEL, NE

LOCATION.--Lat 42°50'40", long 98°11'50", in NE¼SW¼SE¼ sec.12, T.33 N., R.8 W., Charles Mix County, Hydrologic Unit 10170101, 2.3 mi upstream from mouth of Choteau Creek and 2.3 mi north of Verdel, NE.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples and bottom sediment samples only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CA) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
NOV												
08...	1230	774	7.8	--	8.0	734	11.9	105	240	55	24	73
FEB												
12...	1200	772	8.3	5.0	2.5	722	13.3	103	250	60	24	72
APR												
10...	1045	781	8.2	14.0	5.5	728	13.0	108	250	60	24	73
JUN												
26...	1020	725	8.4	28.0	18.0	720	8.8	99	240	58	23	70
AUG												
27...	0900	752	8.5	23.5	23.5	725	7.5	93	220	55	21	74
SEP												
24...	1015	743	8.4	11.5	18.5	734	8.7	96	230	56	21	73

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CAO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV											
08...	40	2	4.9	164	240	13	0.50	5.8	510	515	0.69
FEB											
12...	38	2	5.4	172	220	13	0.70	5.9	512	504	0.70
APR											
10...	38	2	4.8	175	230	14	0.70	4.8	531	516	0.72
JUN											
26...	38	2	5.1	164	220	12	0.60	4.6	480	492	0.65
AUG											
27...	41	2	5.8	160	230	15	0.70	5.9	484	503	0.66
SEP											
24...	40	2	5.7	157	220	10	0.50	6.0	463	487	0.63

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
NOV											
08...	<0.010	<0.050	<0.010	--	0.020	<0.010	1	<1.0	<1	<0.1	<3
FEB											
12...	<0.010	<0.100	0.020	0.03	0.040	0.010	2	<1.0	<1	<0.1	<1
APR											
10...	<0.010	<0.050	0.030	0.04	0.010	<0.010	1	<1.0	1	<0.1	1
JUN											
26...	<0.010	<0.050	0.040	0.05	<0.010	<0.010	1	<1.0	<1	<0.1	1
AUG											
27...	<0.010	<0.050	0.030	0.04	0.020	<0.010	3	<1.0	<1	<0.1	2
SEP											
24...	<0.010	0.120	<0.010	--	<0.010	0.010	3	<1.0	<1	<0.1	1

MISSOURI-LEWIS AND CLARK RIVER BASIN

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06453200 CHOTEAU CREEK NEAR WAGNER, SD

LOCATION.--Lat 43°05'52", long 98°17'15", on section line between sec.27 and 28, T.95 N., R.63 W., Charles Mix County, Hydrologic Unit 10170101, at bridge on section line road 1.1 mi north of State Route 46.

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

REMARKS.--No flow at times of inspection in water year 1991.

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453252 CHOTEAU CREEK NEAR DANTE, SD

LOCATION.--Lat 43°01'32", long 98°10'03", on section line between sec.21 and 22, T.95 N., R.62 W., Charles Mix County, Hydrologic Unit 10170101, at bridge on section line road 0.9 mi southeast of Dante.

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

REMARKS.--No flow at times of inspection in water year 1991.

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453255 CHOTEAU CREEK NEAR AVON, SD

LOCATION.--Lat 42°55'24", long 98°06'21", in NW¼NW¼ sec.31, T.94 N., R.61 W., Bon Homme County, Hydrologic Unit 10170101, on left bank at downstream side of highway bridge, 6.3 mi southwest of Avon, 0.7 mi downstream from Dry Choteau Creek, and 12.7 mi upstream from mouth.

DRAINAGE AREA.--602 mi².

PERIOD OF RECORD.--October 1982 to current year.

REVISED RECORDS.--WDR SD-86-1: 1984(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,290 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--9 years, 63.0 ft³/s, 45,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,280 ft³/s, June 12, 1984, gage height, 13.93 ft; no flow Aug. 23 to Sept. 10, 15-18, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0700	*256	*4.49	No other peak greater than base discharge.			

No flow Aug. 23 to Sept. 10, 15-18.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	.89	e.80	e.10	e.25	.79	.72	.30	29	.21	.15	.00
2	1.3	1.0	e.90	e.10	e.50	.38	.71	.19	6.7	.21	.14	.00
3	2.8	1.2	e.90	e.10	e.90	e.30	.66	.72	2.0	.21	.13	.00
4	1.5	1.2	e.90	e.10	e.80	.68	.88	.63	1.1	.21	.11	.00
5	1.2	1.1	e.90	e.10	e.70	.56	.36	.39	.94	.24	.11	.00
6	.94	1.1	e1.0	e.10	e.70	.53	.41	.33	.66	.25	.11	.00
7	.89	e1.0	1.1	e.10	e.60	.51	.35	.30	.48	.23	.13	.00
8	.94	e1.0	1.2	e.10	e.60	e.20	.42	.30	.48	.18	.15	.00
9	1.1	e1.2	1.3	e.10	e.85	e.20	.51	.27	.58	.18	.13	.00
10	1.6	1.2	1.4	e.10	1.0	e.20	.54	.23	.67	.20	.09	.00
11	1.5	1.2	1.4	e.10	1.6	e.20	.98	.16	32	.21	.09	.04
12	1.4	1.3	1.2	e.10	1.0	e.20	1.2	.14	6.7	.20	.09	.04
13	1.4	1.1	e1.1	e.10	1.1	e.20	1.2	.16	.90	.18	.08	.04
14	e1.5	1.0	e1.0	e.10	1.1	e.20	1.2	.11	.30	.20	.07	.06
15	e1.5	1.1	e.95	e.20	.89	1.4	.83	.21	.29	.21	.08	.00
16	e1.5	.97	e.90	e.15	e.80	1.7	.77	.73	.22	.20	.11	.00
17	e1.5	.95	e.90	e.15	.87	2.4	1.1	3.4	.21	.21	.09	.00
18	e1.5	1.2	e.90	e.20	.90	1.7	1.0	.73	.19	.21	.07	.00
19	e1.5	.99	e.85	e.15	.89	.86	.96	.39	.21	.20	.07	.01
20	e1.5	.89	e.65	e.20	1.1	.77	.94	.32	.21	.22	.05	.02
21	e1.5	.84	e.60	e.15	1.8	.58	.52	.39	.40	.25	.03	.03
22	e1.2	.70	e.50	e.15	.86	.60	.43	.46	.27	.33	.01	.04
23	e1.1	.81	e.40	e.25	e.80	.52	.42	.43	.25	.30	.00	.05
24	e1.0	.92	e.35	e.20	e.80	.32	.42	.28	.25	.27	.00	.06
25	e1.0	1.0	e.30	e.20	e.80	.48	.39	.31	.25	.24	.00	.06
26	e1.0	.87	e.25	e.15	e.80	.34	.42	.25	.25	.25	.00	.06
27	e.90	.83	e.20	e.15	.89	.33	.47	.32	.21	.50	.00	.07
28	e.90	e.80	e.18	e.25	1.0	.37	.42	.25	.21	.53	.00	.07
29	e.90	e.80	e.15	e.25	---	.50	.56	.55	.21	.34	.00	.08
30	e.85	e.80	e.15	e.20	---	.54	.49	149	.21	.17	.00	.09
31	.87	---	e.10	e.20	---	.60	---	81	---	.16	.00	---
TOTAL	39.69	29.96	23.43	4.60	24.90	19.16	20.28	243.25	86.35	7.50	2.09	0.82
MEAN	1.28	1.00	.76	.15	.89	.62	.68	7.85	2.88	.24	.067	.027
MAX	2.8	1.3	1.4	.25	1.8	2.4	1.2	149	32	.53	.15	.09
MIN	.85	.70	.10	.10	.25	.20	.35	.11	.19	.16	.00	.00
AC-FT	79	59	46	9.1	49	38	40	482	171	15	4.1	1.6

CAL YR 1990 TOTAL 937.85 MEAN 2.57 MAX 179 MIN .10 AC-FT 1860
WTR YR 1991 TOTAL 502.03 MEAN 1.38 MAX 149 MIN .00 AC-FT 996

e Estimated

MISSOURI-LEWIS AND CLARK RIVER BASIN

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06453300 CHOTEAU CREEK BELOW AVON, SD

LOCATION.--Lat 42°51'40", long 98°08'25", in SW~~1~~SW~~1~~NE~~1~~ sec.23, T.93 N., R.62 W., Charles Mix County, Hydrologic Unit 10170101, at bridge over Choteau Creek, 1.4 mi upstream from mouth, and 11.0 mi south-southwest of Avon.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples, bottom sediment samples, and discharge measurements only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND. The percent difference between cations and anions (in milliequivalents per liter) for the Aug. 27, 1991, sample exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- PER ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED OF (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
NOV 07...	1200	2.4	1740	8.1	0.0	3.0	738	13.2	102	780
FEB 11...	1250	2.4	1550	7.2	0.0	1.0	735	14.0	103	730
APR 09...	1210	1.5	1770	8.2	18.0	12.0	729	11.8	115	850
JUN 26...	1245	1.4	1670	8.0	34.0	29.0	720	7.8	108	700
AUG 27...	1130	0.08	1860	8.0	33.0	24.0	727	9.4	118	800
SEP 24...	1140	0.74	1820	8.1	16.5	13.0	734	10.3	102	850

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
NOV 07...	210	63	76	17	1	15	244	750	24	0.10
FEB 11...	200	55	64	16	1	11	228	640	19	0.20
APR 09...	230	68	84	17	1	16	271	790	25	0.40
JUN 26...	180	61	78	19	1	18	178	710	21	0.30
AUG 27...	200	74	100	21	2	21	138	990	32	0.40
SEP 24...	220	72	100	20	1	21	180	920	26	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
NOV 07...	17	1360	1300	1.85	8.81	<0.010	<0.050	0.010	0.01	0.040
FEB 11...	17	1130	1140	1.54	7.32	<0.010	<0.100	<0.010	--	0.020
APR 09...	21	1480	1400	2.01	5.99	<0.010	<0.050	0.040	0.05	0.050
JUN 26...	12	1200	1190	1.63	4.54	<0.010	<0.050	0.030	0.04	0.150
AUG 27...	12	1550	1510	2.11	0.33	<0.010	<0.050	0.030	0.04	0.070
SEP 24...	13	1490	1480	2.03	2.98	<0.010	<0.050	0.020	0.03	0.020

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453300 CHOTEAU CREEK BELOW AVON, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 07...	<0.010	<1	<1.0	<1	0.1	<3	84	0.54	41
FEB 11...	<0.010	1	<1.0	<1	0.1	<1	47	0.30	52
APR 09...	<0.010	2	<1.0	1	0.4	2	76	0.31	80
JUN 26...	<0.010	2	<1.0	<1	<0.1	2	105	0.40	82
AUG 27...	<0.010	3	<1.0	<1	<0.1	3	28	0.01	99
SEP 24...	0.020	2	<1.0	<1	<0.1	1	39	0.08	97

MISSOURI-LEWIS AND CLARK RIVER BASIN

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06453305 MISSOURI RIVER BELOW CHOTEAU CREEK, NEAR VERDEL, NE

LOCATION.--Lat 42°50'05", long 98°08'20", in NW¼SW¼NW¼ sec.35, T.93 N., R.62 W., Charles Mix County, Hydrologic Unit 10170101, 1.7 mi upstream from mouth of Coffee Creek and 3.1 mi northeast of Verdel, NE.

PERIOD OF RECORD.--February 1990 to current year.

REMARKS.--Water-quality samples and bottom sediment samples only. Bottom sediments analyzed by USGS Geologic Division and results available from U.S. Bureau of Reclamation, Bismarck, ND.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
NOV												
08...	1300	779	7.8	--	7.5	734	11.7	102	240	56	24	74
FEB												
12...	1110	770	8.3	5.0	2.0	722	13.5	104	250	60	24	72
APR												
10...	1115	782	8.2	14.0	5.5	728	12.7	106	250	60	24	72
JUN												
26...	0935	713	8.4	27.5	19.5	719	8.5	98	240	58	22	69
AUG												
27...	0820	752	8.3	23.5	24.0	725	7.5	94	230	56	22	77
SEP												
24...	0930	745	8.4	11.0	18.0	734	8.6	94	230	56	21	70

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV											
08...	40	2	4.9	164	240	13	0.50	5.7	501	516	0.68
FEB											
12...	38	2	4.8	172	240	13	0.70	5.9	520	524	0.71
APR											
10...	38	2	4.7	175	230	14	0.60	4.9	499	515	0.68
JUN											
26...	38	2	5.0	164	220	12	0.60	4.6	473	490	0.64
AUG											
27...	41	2	5.6	160	220	14	0.70	5.9	490	497	0.67
SEP											
24...	39	2	5.6	157	230	10	0.60	6.1	477	494	0.65

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
NOV											
08...	--	--	--	--	--	--	<1	<1.0	<1	<0.1	1
FEB											
12...	<0.010	<0.100	<0.010	--	<0.010	<0.010	2	<1.0	<1	0.2	<1
APR											
10...	<0.010	<0.050	0.030	0.04	0.420	<0.010	1	<1.0	1	<0.1	1
JUN											
26...	<0.010	<0.050	0.030	0.04	<0.010	<0.010	2	<1.0	<1	<0.1	1
AUG											
27...	<0.010	<0.050	0.020	0.03	0.040	<0.010	2	<1.0	<1	<0.1	2
SEP											
24...	<0.010	0.074	0.010	0.01	0.010	0.020	3	<1.0	<1	<0.1	1

NIOBRARA RIVER BASIN

06464100 KEYA PAHA RIVER NEAR KEYAPAHA, SD

LOCATION.--Lat 43°07'45", long 100°06'24", in NW¼SW¼SW¼ sec.17, T.96 N., R.78 W., Tripp County, Hydrologic Unit 10150006, on left bank at downstream side of highway bridge, 2.0 mi northeast of Keyapaha, and 2.0 mi upstream from Sand Creek.

DRAINAGE AREA.--466 mi², approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 2,230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 38.4 ft³/s, 27,820 acre-ft/yr; median of yearly mean discharge, 43 ft³/s, 31,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 820 ft³/s, May 3, 1983, gage height, 7.95 ft; maximum gage height, 9.45 ft, Feb. 20, 1982; minimum daily discharge, 3.4 ft³/s, Feb. 10, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1952 reached a stage of about 14 ft, at present datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0730	225	5.49	June 5	1245	*644	*8.30

Minimum daily discharge, 2.4 ft³/s, Jan. 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	16	e14	e2.6	e7.8	e56	30	33	93	27	12	10
2	10	15	e13	e2.6	e10	e59	30	32	103	26	14	11
3	10	15	e13	e2.6	e15	e56	29	41	90	26	14	10
4	11	15	e12	e2.5	e20	e60	28	47	123	27	15	10
5	10	15	e14	e2.5	e19	e64	28	46	516	26	13	10
6	10	16	e14	e2.4	e20	e68	27	45	388	25	13	9.8
7	11	e13	e13	e2.6	e23	e63	25	45	248	26	13	11
8	11	e17	e14	e3.0	e27	e59	25	44	191	24	13	11
9	11	18	e14	e2.9	e29	e52	26	42	157	24	13	10
10	11	18	e15	e3.0	e29	e42	26	39	128	24	13	11
11	11	17	e15	e3.0	e28	37	28	35	109	26	14	9.9
12	12	16	e14	e3.0	e28	37	36	32	94	23	14	11
13	12	15	e13	e3.4	e31	36	45	30	81	21	13	10
14	12	15	e12	e4.0	e28	35	50	27	71	19	13	11
15	13	16	e11	e4.5	e28	34	51	27	64	18	14	11
16	12	15	e10	e4.5	e30	35	48	44	57	16	14	11
17	11	17	e10	e4.5	e37	36	43	94	52	15	13	11
18	13	17	e10	e4.5	e46	39	39	203	49	15	12	12
19	13	16	e9.6	e4.8	e42	41	38	152	45	14	11	12
20	12	15	e9.0	e4.2	e38	43	39	126	42	14	11	11
21	13	16	e8.5	e3.8	e42	50	40	104	41	14	10	12
22	13	18	e8.0	e3.2	e49	49	41	92	39	14	9.9	12
23	12	19	e8.0	e3.4	e49	48	41	87	38	15	9.7	12
24	12	17	e8.4	e3.3	e45	45	40	83	37	13	8.8	12
25	13	16	e9.0	e3.3	e42	42	39	77	35	12	9.0	13
26	12	14	e8.5	e3.2	e40	39	37	69	34	12	9.4	13
27	11	e9.0	e8.5	e3.4	e40	36	37	63	32	12	8.9	12
28	12	e10	e7.0	e3.6	e48	34	35	62	30	12	8.0	12
29	12	e12	e4.8	e4.0	---	33	34	91	28	12	7.6	12
30	12	e13	e3.4	e4.6	---	32	35	126	28	11	8.9	11
31	12	---	e3.0	e5.8	---	30	---	102	---	11	9.0	---
TOTAL	360	461.0	326.7	108.7	890.8	1390	1070	2140	3043	574	361.2	334.7
MEAN	11.6	15.4	10.5	3.51	31.8	44.8	35.7	69.0	101	18.5	11.7	11.2
MAX	13	19	15	5.8	49	68	51	203	516	27	15	13
MIN	10	9.0	3.0	2.4	7.8	30	25	27	28	11	7.6	9.8
AC-FT	714	914	648	216	1770	2760	2120	4240	6040	1140	716	664

CAL YR 1990 TOTAL 7896.1 MEAN 21.6 MAX 118 MIN 3.0 AC-FT 15660
WTR YR 1991 TOTAL 11060.1 MEAN 30.3 MAX 516 MIN 2.4 AC-FT 21940

e Estimated

NIOBRARA RIVER BASIN

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06464100 KEYA PAHA RIVER NEAR KEYAPAHA, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1990 to September 1991 (discontinued).

REMARKS.--Records poor. Observer collects samples on a daily basis. Flow affected by ice Nov. 7, 8, and Nov. 27 to Mar. 10.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 582 mg/L, June 5; minimum daily mean, 22 mg/L, Feb. 26, 27.

SEDIMENT LOAD: Maximum daily, 811 tons, June 5; minimum daily, 0.61 tons, Jan. 6.

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	10	e55	1.5	16	e85	3.7	e14	e133	5.0
2	10	e56	1.5	15	e93	3.8	e13	e132	4.6
3	10	e57	1.5	15	e92	3.7	e13	e133	4.7
4	11	e59	1.8	15	e92	3.7	e12	e135	4.4
5	10	e60	1.6	15	e94	3.8	e14	e135	5.1
6	10	e60	1.6	16	e98	4.2	e14	e134	5.1
7	11	e63	1.9	e13	e97	3.4	e13	e133	4.7
8	11	e67	2.0	e17	e103	4.7	e14	e134	5.1
9	11	e69	2.0	18	e109	5.3	e14	e134	5.1
10	11	e67	2.0	18	e108	5.2	e15	e128	5.2
11	11	e67	2.0	17	e107	4.9	e15	e127	5.1
12	12	e68	2.2	16	e105	4.5	e14	e124	4.7
13	12	e69	2.2	15	e104	4.2	e13	e117	4.1
14	12	e70	2.3	15	e102	4.1	e12	e111	3.6
15	13	e71	2.5	16	e104	4.5	e11	e104	3.1
16	12	e71	2.3	15	e104	4.2	e10	e98	2.6
17	11	e70	2.1	17	e108	5.0	e10	e98	2.6
18	13	e71	2.5	17	e109	5.0	e10	e98	2.6
19	13	e72	2.5	16	e107	4.6	e9.6	e95	2.5
20	12	e72	2.3	15	e106	4.3	e9.0	e94	2.3
21	13	e73	2.6	16	e106	4.6	e8.5	e93	2.1
22	13	e74	2.6	18	e110	5.3	e8.0	e91	2.0
23	12	e74	2.4	19	e120	6.2	e8.0	e89	1.9
24	12	e73	2.4	17	e123	5.6	e8.4	e87	2.0
25	13	e73	2.6	16	e122	5.3	e9.0	e88	2.1
26	12	e73	2.4	14	e119	4.5	e8.5	e90	2.1
27	11	e72	2.1	e9.0	e118	2.9	e8.5	e90	2.1
28	12	e72	2.3	e10	e126	3.4	e7.0	e95	1.8
29	12	e72	2.3	e12	e132	4.3	e4.8	e97	1.3
30	12	e73	2.4	e13	e133	4.7	e3.4	e93	.85
31	12	e73	2.4	---	---	---	e3.0	e92	.75
TOTAL	360	---	66.8	461.0	---	133.6	326.7	---	101.20

e Estimated

NIOBRARA RIVER BASIN

06464100 KEYA PAHA RIVER NEAR KEYAPAHA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	e2.6	e98	.69	e7.8	e82	1.7	e56	e39	5.9
2	e2.6	e99	.69	e10	e86	2.3	e59	30	4.8
3	e2.6	e95	.67	e15	e94	3.8	e56	31	4.7
4	e2.5	e94	.63	e20	e95	5.1	e60	69	11
5	e2.5	e95	.64	e19	e92	4.7	e64	144	25
6	e2.4	e94	.61	e20	e95	5.1	e68	e162	30
7	e2.6	e92	.65	e23	e102	6.3	e63	133	23
8	e3.0	e93	.75	e27	e107	7.8	e59	e122	19
9	e2.9	e92	.72	e29	e110	8.6	e52	131	18
10	e3.0	e93	.75	e29	e111	8.7	e42	e141	16
11	e3.0	e98	.79	e28	e109	8.2	37	e157	16
12	e3.0	e97	.79	e28	e105	7.9	37	e168	17
13	e3.4	e97	.89	e31	e96	8.0	36	175	17
14	e4.0	e104	1.1	e28	e84	6.4	35	e160	15
15	e4.5	e108	1.3	e28	e67	5.1	34	144	13
16	e4.5	e112	1.4	e30	e61	4.9	35	163	15
17	e4.5	e109	1.3	e37	e63	6.3	36	e164	16
18	e4.5	e108	1.3	e46	e57	7.1	39	157	17
19	e4.8	e110	1.4	e42	e47	5.3	41	147	16
20	e4.2	e107	1.2	e38	e46	4.7	43	132	15
21	e3.8	e93	.95	e42	e48	5.4	50	173	23
22	e3.2	e88	.76	e49	e54	7.1	49	158	21
23	e3.4	e90	.83	e49	e48	6.4	48	212	27
24	e3.3	e89	.79	e45	e38	4.6	45	e163	20
25	e3.3	e85	.76	e42	e29	3.3	42	144	16
26	e3.2	e79	.68	e40	e22	2.4	39	139	15
27	e3.4	e77	.71	e40	e22	2.4	36	134	13
28	e3.6	e81	.79	e48	e32	4.1	34	130	12
29	e4.0	e79	.85	---	---	---	33	125	11
30	e4.6	e76	.94	---	---	---	32	119	10
31	e5.8	e78	1.2	---	---	---	30	e115	9.3
TOTAL	108.7	---	27.53	890.8	---	153.7	1390	---	491.7
APRIL			MAY			JUNE			
1	30	e111	9.0	33	189	17	93	e253	64
2	30	e105	8.5	32	248	21	103	e281	78
3	29	102	8.0	41	e262	29	90	e290	70
4	28	97	7.3	47	216	27	123	363	121
5	28	94	7.1	46	e214	27	516	582	811
6	27	e93	6.8	45	229	28	388	330	346
7	25	e96	6.5	45	e221	27	248	212	142
8	25	98	6.6	44	190	23	191	226	117
9	26	e108	7.6	42	166	19	157	e221	94
10	26	e121	8.5	39	e181	19	128	206	71
11	28	136	10	35	e198	19	109	e214	63
12	36	e147	14	32	e214	18	94	232	59
13	45	164	20	30	231	19	81	e247	54
14	50	e197	27	27	e248	18	71	254	49
15	51	e232	32	27	e265	19	64	273	47
16	48	252	33	44	270	32	57	e274	42
17	43	228	26	94	244	62	52	e259	36
18	39	e182	19	203	e290	159	49	e246	33
19	38	e150	15	152	e355	146	45	237	29
20	39	143	15	126	273	93	42	e220	25
21	40	e182	20	104	232	65	41	e212	23
22	41	292	32	92	e206	51	39	e207	22
23	41	e293	32	87	210	49	38	e204	21
24	40	272	29	83	218	49	37	e200	20
25	39	202	21	77	220	46	35	e200	19
26	37	e175	17	69	e220	41	34	e200	18
27	37	e170	17	63	e225	38	32	e204	18
28	35	e175	17	62	229	38	30	e205	17
29	34	e180	17	91	319	78	28	208	16
30	35	187	18	126	283	96	28	e205	15
31	---	---	---	102	e252	69	---	---	---
TOTAL	1070	---	506.9	2140	---	1442	3043	---	2540

e Estimated

NIOBRARA RIVER BASIN

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06464100 KEYA PAHA RIVER NEAR KEYAPAHA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	27	197	14	12	100	3.2	10	e67	1.8
2	26	e182	13	14	138	5.2	11	e69	2.0
3	26	174	12	14	140	5.3	10	71	1.9
4	27	e164	12	15	e120	4.9	10	73	2.0
5	26	161	11	13	99	3.5	10	72	1.9
6	25	e156	11	13	117	4.1	9.8	70	1.9
7	26	e147	10	13	122	4.3	11	68	2.0
8	24	e124	8.0	13	129	4.5	11	e64	1.9
9	24	111	7.2	13	100	3.5	10	60	1.6
10	24	150	9.7	13	91	3.2	11	59	1.8
11	26	183	13	14	e93	3.5	9.9	e59	1.6
12	23	e178	11	14	96	3.6	11	e59	1.8
13	21	154	8.7	13	103	3.6	10	e59	1.6
14	19	e144	7.4	13	110	3.9	11	e61	1.8
15	18	144	7.0	14	111	4.2	11	e70	2.1
16	16	e147	6.4	14	97	3.7	11	e80	2.4
17	15	150	6.1	13	90	3.2	11	90	2.7
18	15	154	6.2	12	e95	3.1	12	73	2.4
19	14	e148	5.6	11	105	3.1	12	64	2.1
20	14	e140	5.3	11	96	2.9	11	e58	1.7
21	14	e133	5.0	10	100	2.7	12	54	1.7
22	14	127	4.8	9.9	115	3.1	12	e57	1.8
23	15	120	4.9	9.7	101	2.6	12	e69	2.2
24	13	114	4.0	8.8	e89	2.1	12	e77	2.5
25	12	110	3.6	9.0	e81	2.0	13	83	2.9
26	12	105	3.4	9.4	72	1.8	13	65	2.3
27	12	150	4.9	8.9	70	1.7	12	e60	1.9
28	12	e139	4.5	8.0	69	1.5	12	e61	2.0
29	12	120	3.9	7.6	79	1.6	12	e62	2.0
30	11	113	3.4	8.9	95	2.3	11	60	1.8
31	11	110	3.3	9.0	73	1.8	---	---	---
TOTAL	574	---	230.3	361.2	---	99.7	334.7	---	60.1
YEAR	11060.1		5853.53						
e Estimated									

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)
NOV 1990									
28...	1100	9.6	0.5	124	28	--	--	--	--
MAR 1991									
05...	1015	64	4.0	162	300	--	--	--	--
APR									
05...	1310	28	17.5	62	63	--	--	--	--
MAY									
09...	0940	42	13.5	169	59	--	--	--	--
JUN									
05...	1050	615	19.5	570	--	61	66	88	100
AUG									
21...	1745	11	30.0	105	94	--	--	--	--

NIOBRARA RIVER BASIN

06464500 KEYS PAHA RIVER AT WEWELA, SD

LOCATION.--Lat 43°01'44", long 99°46'49", in NW¼SW¼SE¼ sec.24, T.95 N., R.76 W., Tripp County, Hydrologic Unit 10150006, on right bank at downstream side of bridge on U.S. Highway 183, 1.0 mi north of Wewela, 4.5 mi upstream from Holt Creek, and 11.5 mi downstream from Lost Creek.

DRAINAGE AREA.--1,070 mi², approximately.

PERIOD OF RECORD.--November 1937 to September 1940, October 1947 to current year. Monthly discharge only for October 1947, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,049.78 ft above National Geodetic Vertical Datum of 1929. Prior to June 21, 1957, nonrecording gage at site 13 ft upstream at same datum. Prior to Aug. 23, 1984, recording gage on left bank 13 ft downstream from bridge at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years (water years 1939-40, 1948-91), 70.9 ft³/s, 51,370 acre-ft/yr; median of yearly mean discharges, 58 ft³/s, 42,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,430 ft³/s, Mar. 31, 1952, gage height, 13.08 ft; maximum gage height, 13.5 ft, Mar. 25, 1950, from floodmark, backwater from ice; no flow Jan. 10 to Feb. 15, 1949, Aug. 19 to Sept. 14, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 19	0230	282	2.84	June 6	1230	*807	*4.59
June 1	1815	252	2.71				

Minimum daily discharge, 2.9 ft³/s, Jan. 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	33	e19	e3.4	e12	e86	70	94	232	42	21	12
2	29	35	e20	e3.4	e16	e88	69	88	222	39	22	12
3	30	37	e20	e3.3	e21	e90	68	117	213	37	23	13
4	29	36	e20	e3.3	e25	e98	66	159	201	35	24	12
5	29	37	e19	e3.2	e26	e105	65	147	232	33	25	13
6	28	e37	e19	e2.9	e25	e118	64	130	574	32	27	13
7	27	e34	e20	e3.5	e28	e120	62	116	414	31	30	13
8	31	34	e20	e4.5	e34	e115	60	110	295	33	30	14
9	33	49	e22	e4.6	e38	e105	62	100	256	33	31	14
10	32	43	e22	e4.6	e38	102	60	89	240	33	30	15
11	31	41	e19	e4.6	e37	100	62	83	225	35	29	17
12	31	40	e18	e4.6	e36	109	74	76	182	36	28	18
13	31	38	e17	e4.8	e36	98	87	67	143	34	26	19
14	31	37	e16	e5.4	e36	91	94	61	118	33	25	19
15	31	37	e15	e5.6	e39	88	94	58	102	33	24	17
16	31	36	e14	e5.9	e42	87	91	60	89	30	28	18
17	33	36	e12	e5.9	e49	91	85	90	79	28	28	19
18	32	36	e12	e5.9	e58	104	80	172	72	28	28	20
19	33	35	e12	e6.4	e54	108	77	255	68	26	26	20
20	35	35	e11	e5.8	e50	107	78	218	63	24	22	22
21	33	36	e10	e5.5	e58	107	81	193	61	25	19	23
22	34	35	e9.2	e5.0	e68	110	82	163	61	33	16	23
23	34	35	e9.2	e5.5	e65	110	79	195	59	30	15	22
24	34	35	e10	e5.5	e60	103	76	186	57	29	15	23
25	33	35	e10	e5.4	e60	98	75	164	55	27	14	24
26	33	e28	e10	e5.2	e60	92	75	137	51	26	14	23
27	33	e12	e9.2	e5.2	e72	86	81	122	48	29	14	24
28	32	e14	e8.0	e5.6	e82	81	77	111	46	29	12	24
29	32	e18	e6.2	e6.5	---	77	78	131	44	28	12	24
30	33	e18	e4.8	e8.2	---	74	89	177	44	25	11	25
31	33	---	e3.7	e9.5	---	73	---	217	---	23	11	---
TOTAL	980	1012	437.3	158.7	1225	3021	2261	4086	4546	959	680	555
MEAN	31.6	33.7	14.1	5.12	43.7	97.5	75.4	132	152	30.9	21.9	18.5
MAX	35	49	22	9.5	82	120	94	255	574	42	31	25
MIN	27	12	3.7	2.9	12	73	60	58	44	23	11	12
AC-FT	1940	2010	867	315	2430	5990	4480	8100	9020	1900	1350	1100

CAL YR 1990 TOTAL 18596.3 MEAN 50.9 MAX 364 MIN 3.7 AC-FT 36890
WTR YR 1991 TOTAL 19921.0 MEAN 54.6 MAX 574 MIN 2.9 AC-FT 39510

e Estimated

06464900 KEYA PAHA RIVER NEAR NAPER, NE

LOCATION.--Lat 42°55'00", long 99°05'50", in SE&SE& sec.17, T.34 N., R.15 W., Boyd County, Hydrologic Unit 10150006, on left upstream bank near highway bridge abutment, 3.3 mi south of Napier, and 8.6 mi upstream from mouth.

DRAINAGE AREA.--1,630 mi², approximately.

PERIOD OF RECORD.--October 1957 to current year.

REVISED RECORDS.--WSP 1709: 1959(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,680 ft, from topographic map. Prior to May 2, 1958, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 4-10, 22, Nov. 25 to Mar. 4. Records good except for periods of estimated record, which are poor. Minor diversions for irrigation above station.

AVERAGE DISCHARGE.--34 years, 137 ft³/s, 99,960 acre-ft/yr; median of yearly mean discharges, 116 ft³/s, 84,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,280 ft³/s, July 1, 1962, gage height, 10.91 ft; maximum gage height, 13.34 ft, Mar. 23, 1960, backwater from ice; no flow July 22-30, Aug. 10, 11, 1976, Aug. 3, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 3	--	(a)	*7.88	No other peak greater than base discharge.			
June 7	0600	*1,480	7.67				

a Backwater from ice.

Minimum daily discharge, 9.2 ft³/s, Sept. 4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	66	31	17	35	185	136	187	504	78	30	11
2	45	63	25	17	45	190	129	185	532	78	28	9.9
3	67	69	21	16	50	200	123	262	465	68	25	9.6
4	63	58	21	16	52	220	120	330	402	64	24	9.2
5	54	50	22	17	70	195	120	231	479	55	26	11
6	48	48	22	18	110	159	114	208	462	53	28	12
7	46	50	30	19	130	133	108	254	746	48	32	12
8	53	66	35	19	150	134	97	212	741	46	34	12
9	57	68	37	18	140	128	93	189	575	45	35	14
10	57	70	40	18	160	133	91	173	664	49	32	15
11	56	67	39	19	170	144	117	162	467	50	29	23
12	57	69	35	23	180	155	142	154	454	51	27	26
13	58	66	30	28	160	171	168	134	342	49	27	67
14	62	64	32	33	160	152	211	122	287	46	26	37
15	62	62	28	35	160	143	212	117	315	44	25	30
16	66	61	29	34	180	144	186	125	260	38	29	28
17	65	66	27	33	200	153	169	165	203	35	26	26
18	66	70	22	30	220	163	146	275	167	30	27	23
19	66	70	23	30	205	197	136	484	147	26	27	25
20	65	73	26	28	220	249	134	509	136	26	25	27
21	64	73	27	30	230	242	127	427	134	28	22	28
22	66	73	30	29	200	234	132	378	130	35	20	28
23	67	72	33	30	180	232	127	332	121	44	18	29
24	66	71	32	27	175	235	110	378	115	39	15	31
25	66	70	34	25	170	192	103	451	113	33	13	31
26	65	66	34	28	170	177	113	385	106	27	12	32
27	62	35	36	30	175	162	119	305	100	25	11	33
28	62	20	37	32	180	147	116	264	90	28	11	34
29	65	23	33	30	---	136	132	418	86	26	11	36
30	64	30	20	29	---	128	175	348	79	27	17	36
31	64	---	18	31	---	135	---	428	---	37	14	---
TOTAL	1868	1809	909	789	4277	5368	4006	8592	9422	1328	726	745.7
MEAN	60.3	60.3	29.3	25.5	153	173	134	277	314	42.8	23.4	24.9
MAX	67	73	40	35	230	249	212	509	746	78	35	67
MIN	44	20	18	16	35	128	91	117	79	25	11	9.2
AC-FT	3710	3590	1800	1560	8480	10650	7950	17040	18690	2630	1440	1480

CAL YR 1990 TOTAL 33335 MEAN 91.3 MAX 509 MIN 18 AC-FT 66120
WTR YR 1991 TOTAL 39839.7 MEAN 109 MAX 746 MIN 9.2 AC-FT 79020

MISSOURI-LEWIS AND CLARK RIVER BASIN

06466700 LEWIS AND CLARK LAKE AT SPRINGFIELD, SD

LOCATION.--Lat 42°51'21", long 97°53'06", in SW 1/4 sec.24, T.93 N., R.60 W., Bon Homme County, Hydrologic Unit 10170101, on left bank at east edge of Springfield at mile 832.20.

PERIOD OF RECORD.--August 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Stage regulated by Gavins Point Dam 21.2 mi downstream. U.S. Army Corps of Engineers satellite data-collection platform at station. Prior to Oct. 1, 1980, gage heights in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.20	7.87	7.71	8.82	8.39	5.80	7.48	7.27	7.37	7.39	7.96	9.17
2	9.27	7.88	7.95	8.87	8.23	5.94	8.04	7.26	7.32	7.18	7.85	9.21
3	9.36	8.03	7.90	8.91	8.09	5.98	8.28	7.34	7.00	7.59	7.84	9.22
4	9.30	8.13	8.00	8.90	7.98	5.97	8.47	7.37	7.34	7.23	7.80	9.18
5	9.19	8.21	7.96	8.84	7.92	6.03	8.46	7.37	8.01	7.05	7.76	9.16
6	9.05	8.21	7.97	8.82	7.86	6.18	8.01	7.42	7.64	7.48	7.81	9.17
7	8.91	8.23	7.99	8.76	7.75	6.14	7.63	7.36	7.34	7.33	7.88	9.14
8	8.89	8.19	8.06	8.76	7.65	5.92	7.20	7.39	7.10	7.33	7.93	9.10
9	8.89	8.16	8.06	8.70	7.54	5.88	6.95	7.71	7.13	7.76	7.86	9.03
10	8.96	8.12	8.12	8.72	7.42	5.78	7.33	7.57	6.93	7.94	7.88	9.10
11	9.02	8.02	8.12	8.81	7.35	5.71	8.08	7.35	7.09	7.90	7.91	9.14
12	9.05	8.05	8.06	8.88	7.20	5.69	7.86	7.73	7.63	7.81	7.87	9.20
13	9.02	7.99	8.17	8.89	7.07	5.59	7.71	7.54	7.40	7.39	7.77	9.28
14	8.91	7.85	8.21	8.95	6.92	5.66	7.69	7.42	7.19	7.34	7.81	9.34
15	8.93	7.79	8.08	8.91	7.20	5.75	7.58	7.72	7.58	7.45	7.79	9.29
16	8.92	7.74	8.09	8.68	7.41	5.72	7.28	7.47	7.20	7.39	7.83	9.29
17	8.78	7.73	7.94	8.46	7.42	5.65	7.07	7.48	6.98	7.49	7.81	9.26
18	9.01	7.65	7.88	8.33	7.13	5.62	6.93	7.77	7.38	7.65	7.82	8.97
19	8.99	7.67	7.84	8.30	7.10	5.64	7.36	7.51	7.18	7.66	7.85	9.06
20	8.92	7.71	9.03	8.41	7.06	5.71	7.44	7.24	7.08	7.72	7.85	9.03
21	8.95	7.57	8.75	8.38	7.03	5.64	7.38	7.45	7.53	7.84	7.89	9.08
22	8.94	7.73	8.76	8.41	6.81	5.74	7.37	7.22	7.44	7.79	7.96	9.02
23	8.92	7.80	8.89	8.57	6.60	5.46	7.37	7.37	7.35	7.74	8.05	9.16
24	8.95	7.85	9.04	8.70	6.55	5.79	7.35	7.84	7.61	7.68	8.14	9.17
25	8.90	7.95	9.11	8.71	6.43	6.13	7.36	7.49	7.35	7.46	8.34	9.18
26	8.73	7.84	9.01	8.67	6.21	6.48	7.53	7.31	7.18	7.41	8.49	9.33
27	8.42	7.77	9.11	8.67	6.06	6.73	7.37	7.72	7.48	7.61	8.61	9.44
28	8.31	7.78	9.13	8.65	5.92	6.87	7.36	7.50	7.28	7.77	8.69	9.43
29	8.06	7.73	8.78	8.62	---	6.81	7.34	7.38	7.21	7.70	8.76	9.44
30	7.97	7.71	8.43	8.55	---	7.06	7.29	8.01	7.59	7.70	8.91	9.40
31	7.89	---	8.61	8.47	---	7.33	---	7.76	---	7.89	9.07	---
MEAN	8.86	7.90	8.35	8.68	7.22	6.01	7.55	7.49	7.33	7.57	8.06	9.20
MAX	9.36	8.23	9.13	8.95	8.39	7.33	8.47	8.01	8.01	7.94	9.07	9.44
MIN	7.89	7.57	7.71	8.30	5.92	5.46	6.93	7.22	6.93	7.05	7.76	8.97

MISSOURI-LEWIS AND CLARK RIVER BASIN

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06467000 LEWIS AND CLARK LAKE NEAR YANKTON, SD

LOCATION.--Lat 42°50'56", long 97°28'54", in SW¼ sec.7, T.33 N., R.1 W., Cedar County, NE, Hydrologic Unit 10170101, in powerhouse of Gavins Point Dam on Missouri River, 3.75 mi southwest of Yankton, 13.6 mi upstream from James River, 32.5 mi downstream from Niobrara River, and at mile 811.0.

DRAINAGE AREA.--279,500 mi², approximately.

PERIOD OF RECORD.--July 1955 to current year (monthend contents only). Prior to October 1955, published as Gavins Point Reservoir near Yankton.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 9, 1955, recorder at temporary location on wall of intake structure unit 3.

REMARKS.--Reservoir is formed by earthfill dam; storage began in July 1955. Maximum capacity, 504,000 acre-ft below elevation 1,210.0 ft (top of spillway gates). Normal maximum, 442,600 acre-ft below elevation 1,208.0 ft. Inactive storage, 157,000 acre-ft below elevation 1,195.0 ft. Dead storage, 23,000 acre-ft below elevation 1,180.0 ft (crest of spillway). From capacity table put into use Nov. 1, 1986; maximum capacity, 491,700 acre-ft. Normal maximum, 432,000 acre-ft. Inactive storage, 149,400 acre-ft. Dead storage, 17,700 acre-ft. Figures given herein represent elevations at powerhouse and total contents adjusted for wind effect.

The spillway consists of 14 taintor gates, each 40 ft wide by 30 ft high; spillway capacity, 280,000 ft³/s at pool elevation 1,210.0 ft. Crest of spillway is at elevation 1,180.0 ft. Normal releases are through 3 power units, installation completed in January 1957; maximum release through power units is 35,000 ft³/s at pool elevation, 1,210.0 ft. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Records of elevation and contents provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 565,000 acre-ft, Apr. 1, 1960, affected by wind; minimum since initial filling, 61,950 acre-ft, Apr. 23, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 441,000 acre-ft, Oct. 3, Jan. 15; minimum contents, 331,000 acre-ft, Mar. 30.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,208.02	431,000	-
Oct. 31	1,207.66	423,000	-8,000
Nov. 30	1,207.53	420,000	-3,000
Dec. 31	1,207.22	411,000	-9,000
CAL YR 1990	-	-	-23,000
Jan. 31	1,207.89	428,000	+17,000
Feb. 28	1,205.46	364,000	-64,000
Mar. 31	1,204.31	335,000	-29,000
Apr. 30	1,205.26	357,000	+22,000
May 31	1,205.70	370,000	+13,000
June 30	1,204.97	352,000	-18,000
July 31	1,204.81	348,000	-4,000
Aug. 31	1,207.19	409,000	+61,000
Sept. 30	1,208.15	436,000	+27,000
WTR YR 1991	-	-	+5,000

NOTE.--Lake frozen over Dec. 20 to Mar. 21.

06467500 MISSOURI RIVER AT YANKTON, SD

LOCATION.--Lat 42°51'58", long 97°23'37", in SW¼SW¼ sec.18, T.93 N., R.55 W., Yankton County, Hydrologic Unit 10170101, near left bank in downstream end of left pier of Meridian Highway Bridge on U.S. Highway 81, 5.2 mi downstream from Gavins Point Dam, 6.0 mi upstream from James River, and at mile 805.8.

DRAINAGE AREA.--279,500 mi², approximately.

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1309. Gage-height records collected at same site March 1873 to November 1886, March 1905 to May 1908 (fragmentary), August 1921 to September 1950 (except winter months prior to 1932), are contained in reports of the National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 1,139.68 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 20, 1932, nonrecording gage, and Sept. 20, 1932, to Mar. 9, 1967, water-stage recorder at present site and at datum 20.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow completely regulated by Gavins Point Dam 5.2 mi upstream since July 1955. Many diversions for irrigation and water supply above station. U.S. Army Corps of Engineers gage-height telemeter and satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--16 years (water years 1976-91, since main-stem reservoirs initially reached maximum pool elevation), 28,280 ft³/s, 20,489,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480,000 ft³/s, Apr. 13, 1952; maximum gage height, 35.5 ft, Apr. 13, 14, 1952 (present datum); minimum daily discharge, 2,700 ft³/s, Nov. 15, 16, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 50.5 ft, Apr. 5, 1881, ice jam, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32,400 ft³/s at 1600 hours, Sept. 3, gage height, 16.03 ft; maximum gage height, 16.42 ft, Dec. 24, backwater from ice; minimum daily discharge, 7,080 ft³/s, Mar. 23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30900	9620	10100	e17000	10600	9300	22900	23500	24900	24000	28400	31900
2	30700	9550	10300	e17000	10200	e8500	22800	24000	26200	23600	28300	32000
3	30400	9620	10300	e16000	10300	e8500	23000	24000	26200	28300	28200	32000
4	30500	9530	9770	e16000	10200	e8500	23600	23800	23500	24800	28500	31900
5	30500	9620	9220	e16000	10300	e8500	23700	23700	22900	24300	28500	32100
6	30500	9530	9000	e16000	10200	e8500	23700	23300	25600	28500	28700	31900
7	30600	9280	9070	e15000	9820	e8500	23700	23500	26000	24700	28700	31900
8	30600	9210	9110	e15000	9270	e8500	23800	23700	23000	24200	28600	31900
9	30600	9340	9060	e15000	9360	8520	23700	29000	28400	28600	28500	31900
10	30000	9270	9090	e14000	9360	8480	24400	24200	23000	24900	28500	31800
11	29500	9330	9090	e14000	9320	8230	25400	24100	22700	24700	28400	31900
12	29500	9230	8980	e14000	9330	7890	24300	29500	28300	28300	28500	31600
13	29500	9110	9050	e14000	10600	7890	24000	24700	23100	25100	28500	31100
14	29600	8570	9060	e13000	13000	7960	24000	24600	22300	24700	28300	30600
15	29900	8530	9040	e12500	13900	7970	24000	30400	28000	28600	28300	30700
16	29800	8570	9940	e12000	12400	7930	24000	25500	23000	25600	28400	30600
17	29600	8590	11200	e12000	11200	7950	23200	24800	22400	25900	28000	30400
18	29700	8560	13200	12900	10300	7950	23400	29900	28500	28900	28000	30500
19	29700	8650	15600	14000	8770	7880	23500	25000	23000	26500	28200	30500
20	29700	8680	e15500	14000	7750	7530	23800	24700	22400	26200	28400	30700
21	29800	8380	e15000	e14000	10800	7400	23700	29900	28300	28900	28500	30900
22	29700	8570	e15000	14200	11200	7260	23800	25000	23000	27300	28600	30700
23	29600	8430	e15000	14000	10000	7080	23800	24600	22700	27000	29000	30800
24	29700	8680	e16500	14100	10200	10600	24200	29800	28200	28800	29700	30900
25	28900	8510	e16000	14100	10300	14200	24100	24900	23200	27100	29500	31000
26	26200	8570	e16000	14100	10300	17200	24200	24700	22100	27300	29400	31100
27	22000	8570	e17000	14000	10000	19600	23700	29800	28400	28900	29700	31200
28	18000	8780	e17000	14100	9300	22400	23900	25200	23500	27300	30100	31300
29	13900	9330	e17000	14100	---	22800	23700	24600	23000	27300	30400	31300
30	11500	9150	e17000	13000	---	22700	23400	28600	28600	28200	31100	31300
31	9320	---	e17000	11900	---	22600	---	24900	---	28300	31400	---
TOTAL	850420	269360	384180	441000	288280	338820	713400	797900	744400	826800	895300	938400
MEAN	27430	8979	12390	14230	10300	10930	23780	25740	24810	26670	28880	31280
MAX	30900	9620	17000	17000	13900	22800	25400	30400	28600	28900	31400	32100
MIN	9320	8380	8980	11900	7750	7080	22800	23300	22100	23600	28000	30400
AC-FT	1687000	534300	762000	874700	571800	672000	1415000	1583000	1477000	1640000	1776000	1861000

CAL YR 1990 TOTAL 7504870 MEAN 20560 MAX 33400 MIN 8290 AC-FT 14890000
WTR YR 1991 TOTAL 7488260 MEAN 20520 MAX 32100 MIN 7080 AC-FT 14850000

e Estimated

JAMES RIVER BASIN

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06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND

LOCATION.--Lat 45°56'52", long 98°10'29", in SE¼NE¼NE¼ sec.34, T.129 N., R.60 W., Dickey County, Hydrologic Unit 10160003, on left bank, 10 ft upstream from dam, 4.5 mi southwest of Ludden, and 0.8 mi upstream from North Dakota-South Dakota State line.

DRAINAGE AREA.--5,480 mi², of which about 3,300 mi² are noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete dam control. Datum of gage is 1,280.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for periods of estimated daily discharges, which are poor. Flow regulated by upstream reservoirs, Jamestown Reservoir (station 06469000), Pipestem Lake, capacity 147,000 acre-ft, and Lake LaMoure.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 2,300 ft³/s, Mar. 28, 1987, gage height, 13.76 ft, no flow at times during some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 433 ft³/s, June 20, gage height, 10.36 ft; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	e.15	e1.0	e11	50	52	e50	120	14	.00
2	.00	.00	.00	e.15	e6.0	e11	40	58	e45	162	12	.00
3	.00	.00	.00	e.15	e8.0	11	12	69	e60	188	30	.00
4	.00	.00	.00	e.13	e10	9.7	64	58	e45	159	2.1	.00
5	.29	.00	.00	e.11	e12	10	80	113	e30	140	.09	.00
6	.03	.00	.00	e.10	e14	8.2	93	114	e28	132	.01	.00
7	.00	.00	.00	e.10	e16	8.1	153	41	30	160	.38	.00
8	.00	.00	.00	e.10	e18	11	114	17	47	77	2.3	.00
9	.00	.00	.04	e.08	e20	12	49	1.7	99	92	.11	.00
10	.00	.00	.15	e.06	e18	12	4.2	.02	107	70	.00	.00
11	.00	.00	.43	e.04	e16	13	14	6.6	56	73	.00	.00
12	.00	.00	1.0	e.02	e14	16	50	16	26	106	.00	.00
13	.00	.00	e1.0	e.02	e12	17	16	15	12	70	.00	.00
14	.00	.00	e.80	e.01	e12	17	17	e30	57	20	.00	.04
15	.00	.46	e.50	e.01	e10	17	17	e33	91	1.1	.00	.00
16	.00	.00	e.50	e.00	e10	17	38	e35	24	31	.71	.00
17	58	.00	e.48	e.00	e10	19	34	e36	19	37	.01	.09
18	.00	.00	e.46	e.00	e11	20	91	e38	58	19	.00	4.0
19	.00	.00	e.43	e.00	e12	27	75	e38	50	19	.00	.00
20	.01	.00	e.40	e.00	e12	38	14	e40	201	20	.00	.00
21	.00	.00	e.37	e.00	e11	48	5.2	e38	316	17	.52	.00
22	.00	.00	e.34	e.00	e11	48	67	e35	299	51	.00	.41
23	.00	.00	e.30	e.00	e11	48	39	e60	265	21	.11	.00
24	.00	5.5	e.27	e.00	e11	46	1.2	e80	210	29	.00	.00
25	.00	.13	e.25	e.00	e11	48	.00	e90	165	6.6	.00	18
26	.00	.00	e.23	e.00	e11	49	.00	e100	236	.85	.00	.00
27	.01	.00	e.21	e.00	e11	67	.15	e100	209	1.5	.00	.00
28	.00	.00	e.19	e.00	e11	62	.00	e98	206	6.9	.00	.00
29	.00	.00	e.17	e.00	---	60	90	e85	170	3.8	.00	.01
30	.00	.00	e.15	e.00	---	52	165	e70	130	1.8	.00	.00
31	.00	---	e.15	e.50	---	49	---	e55	---	5.5	.00	---
TOTAL	58.34	6.09	8.82	1.73	330.0	882.0	1392.75	1622.32	3341	1841.05	62.34	22.55
MEAN	1.88	.20	.28	.056	11.8	28.5	46.4	52.3	111	59.4	2.01	.75
MAX	58	5.5	1.0	.50	20	67	165	114	316	188	30	18
MIN	.00	.00	.00	.00	1.0	8.1	.00	.02	12	.85	.00	.00
AC-FT	116	12	17	3.4	655	1750	2760	3220	6630	3650	124	45

CAL YR 1990 TOTAL 3067.58 MEAN 8.40 MAX 157 MIN .00 AC-FT 6080
WTR YR 1991 TOTAL 9568.99 MEAN 26.2 MAX 316 MIN .00 AC-FT 18980

e Estimated

JAMES RIVER BASIN

06470878 JAMES RIVER AT ND-SD STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE½SE¼ sec. 34, T.129 N., R.60 W., Dickey County, Hydrologic Unit 10160003, at bridge on North Dakota-South Dakota State line road 6.5 mi south, and 1 mi west from Ludden, ND.

DRAINAGE AREA.--5,480 mi², approximately, revised, of which about 3,300 mi² is probably noncontributing.

WATER-STAGE RECORDS

PERIOD OF RECORD.--October 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,200 ft above National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed, 93.60 ft, Mar. 28, 1987; minimum observed, 86.45 ft, Oct. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum, 89.76 ft, June 22; minimum observed, 87.03 ft, Sept. 24.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87.58	87.64	---	---	---	---	---	88.72	88.98	89.21	88.16	87.56
2	87.69	87.52	---	---	---	---	---	88.69	88.93	89.18	88.11	87.58
3	87.58	87.47	---	---	---	---	---	88.70	88.88	89.19	88.10	87.56
4	87.54	87.45	---	---	---	---	---	88.89	89.02	89.18	88.07	87.52
5	87.53	87.45	---	---	---	---	---	88.84	88.96	89.13	88.11	87.50
6	87.49	87.44	---	---	---	---	---	88.81	88.91	89.07	88.10	87.49
7	87.46	87.43	---	---	---	---	---	88.85	88.88	89.01	88.04	87.48
8	87.45	87.43	---	---	---	---	88.14	88.91	88.83	88.98	87.95	87.48
9	87.47	87.42	---	---	---	---	88.17	89.11	88.82	88.87	87.92	87.49
10	87.65	87.41	---	---	---	---	88.35	89.26	88.82	88.79	87.93	87.47
11	87.64	87.40	---	---	---	---	88.26	88.94	88.77	88.73	87.90	87.46
12	87.53	87.39	---	---	---	---	88.10	88.91	88.74	88.70	87.87	87.45
13	87.59	87.39	---	---	---	---	88.27	88.91	88.77	88.68	87.84	87.44
14	87.52	87.43	---	---	---	---	88.39	88.84	88.77	88.64	87.82	87.43
15	87.50	87.44	---	---	---	---	88.46	88.96	88.72	88.69	87.79	87.45
16	87.50	87.42	---	---	---	---	88.43	89.02	88.73	88.53	87.75	87.44
17	87.48	87.41	---	---	---	---	88.44	89.04	88.75	88.43	87.71	87.43
18	87.45	87.42	---	---	---	---	88.37	89.02	88.68	88.42	87.68	87.42
19	87.45	87.41	---	---	---	---	88.32	89.03	88.65	88.33	87.66	---
20	87.45	87.48	---	---	---	---	88.44	89.06	89.00	88.35	87.70	---
21	87.44	87.55	---	---	---	---	88.52	89.03	89.56	88.31	87.66	---
22	87.52	87.49	---	---	---	---	88.39	88.99	89.74	88.42	87.62	---
23	87.51	87.48	---	---	---	---	88.36	89.15	89.72	88.41	87.64	---
24	87.48	87.46	---	---	---	---	88.66	89.16	89.64	88.37	87.67	---
25	87.50	87.43	---	---	---	---	88.74	89.11	89.52	88.34	87.68	---
26	87.57	87.42	---	---	---	---	88.71	89.05	89.42	88.36	87.65	---
27	87.51	---	---	---	---	---	88.81	89.04	89.42	88.35	87.64	---
28	87.51	---	---	---	---	---	88.95	89.01	89.36	88.30	87.66	---
29	87.58	---	---	---	---	---	88.57	88.98	89.32	88.29	87.67	---
30	87.49	---	---	---	---	---	88.63	88.96	89.24	88.31	87.61	---
31	87.49	---	---	---	---	---	---	88.98	---	88.24	87.58	---
MEAN	87.52	---	---	---	---	---	---	88.97	89.05	88.64	87.82	---
MAX	87.69	---	---	---	---	---	---	89.26	89.74	89.21	88.16	---
MIN	87.44	---	---	---	---	---	---	88.69	88.65	88.24	87.58	---

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LOCATION.--Lat 45°53'34", long 98°10'13", in SW¹/₄SE¹/₄SE¹/₄ sec. 16, T.128 N., R.61 W., Brown County, Hydrologic Unit 10160003, on left bank 30 ft upstream from bridge on county road 1.0 mi northwest of Hecla, and 3.0 mi downstream from the North Dakota-South Dakota border.

WATER-STAGE RECORDS

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 92.72 ft, Apr. 1, 1987; minimum, 86.15 ft, Sept. 18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 87.74, Oct. 2; minimum, 86.88 ft, Oct. 17.

[illegible]

JAMES RIVER BASIN

06470990 SAND LAKE - OPEN PLATFORM 1

LOCATION.--Lat 45°44'02", long 98°16'51", in NE~~NE~~NE~~NE~~ sec.15, T.126 N., R.62 W., Brown County, Hydrologic Unit 10160003, on floating platform 8.2 mi north of Columbia.

REMARKS.--Records for 1991 water year will be published in a separate open-file report.

JAMES RIVER BASIN

06470992 SAND LAKE NEAR COLUMBIA, SD

LOCATION.--Lat 45°40'10", long 98°18'31", in NW~~SW~~SW~~SW~~ sec.4, T.125 N., R.62 W., Brown County, Hydrologic Unit 10160003, near outlet control structure 3 mi north of Columbia.

REMARKS.--Records for 1991 water year will be published in a separate open-file report.

06471000 JAMES RIVER AT COLUMBIA, SD
(National stream-quality accounting network station)

LOCATION.--Lat 45°36'13", long 98°18'36", in NW¼NW¼ sec.33, T.125 N., R.62 W., Brown County, Hydrologic Unit 10160003, on left bank 20 ft downstream from highway bridge, 0.6 mi south of Columbia, 0.9 mi downstream from Chicago and North Western Transportation Company bridge, 0.3 mi upstream from Elm River, and 12.7 mi downstream from Columbia Road Dam.

DRAINAGE AREA.--5,857 mi², of which about 3,376 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WDR SD-84-1: Drainage area. WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,272.91 ft above National Geodetic Vertical Datum of 1929. From Oct. 1, 1945, to Oct. 4, 1957, nonrecording gage. From Oct. 5, 1957, to Sept. 30, 1980, water-stage recorder. Both gages described above at site 3.3 mi upstream from present site and at different datum.

REMARKS.--Records poor. Flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, since May 1953, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft, since 1973. Gage-height telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 108 ft³/s, 78,200 acre-ft/yr; median of yearly mean discharges, 62 ft³/s, 44,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,420 ft³/s, May 24, 25, 1950, gage height, 16.89 ft, from graph based on gage readings; maximum gage height, 17.11 ft, Mar. 24, 1987, backwater from Elm River; maximum daily reverse flow, 1,860 ft³/s, Apr. 8, 1952, backwater from Elm River.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 120 ft³/s, July 12, 13; maximum gage height, 8.43 ft, June 30, backwater from Elm River; no flow for several months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e.02	.60	e.50	e35	63	.36
2	.00	.00	.00	.00	.00	.00	e.03	.51	e.50	e40	61	.24
3	.00	.00	.00	.00	.00	.00	e.03	1.8	e.50	e50	60	.11
4	.00	.00	.00	.00	.00	.00	e.04	3.8	e.50	e60	53	.03
5	.00	.00	.00	.00	.00	.00	e.04	4.0	e.50	e80	45	.00
6	.00	.00	.00	.00	.00	.00	e.05	4.0	e.50	e90	37	.00
7	.00	.00	.00	.00	.00	.00	e.05	4.0	e.50	e90	31	.00
8	.00	.00	.00	.00	.00	.00	e.06	4.5	e.50	e95	24	.00
9	.00	.00	.00	.00	.00	.00	e.06	5.0	e.50	e100	19	.06
10	.00	.00	.00	.00	.00	.00	e.07	5.0	e.50	e110	14	.05
11	.00	.00	.00	.00	.00	.00	e.10	4.5	e.50	e115	10	.06
12	.00	.00	.00	.00	.00	.00	.15	3.8	e1.0	e120	8.2	.05
13	.00	.00	.00	.00	.00	.00	.82	3.0	e1.0	120	6.7	.00
14	.00	.00	.00	.00	.00	.00	1.1	2.4	e2.0	115	5.6	.00
15	.00	.00	.00	.00	.00	.00	.81	e3.0	e3.0	110	4.6	.00
16	.00	.00	.00	.00	.00	.00	.61	e5.0	e2.0	106	3.7	.00
17	.00	.00	.00	.00	.00	.00	.54	e3.0	e1.0	105	3.1	.00
18	.00	.00	.00	.00	.00	.00	.55	e3.0	e.50	101	2.5	.00
19	.00	.00	.00	.00	.00	.00	.31	e3.0	e.50	96	1.9	.00
20	.00	.00	.00	.00	.00	.00	e.20	e3.0	e.50	93	1.5	.00
21	.00	.00	.00	.00	.00	.00	e.20	e3.0	e.50	90	1.0	.00
22	.00	.00	.00	.00	.00	.00	e.20	e4.0	e.50	89	.59	.00
23	.00	.00	.00	.00	.00	.00	e.20	e3.0	e.50	86	.48	.00
24	.00	.00	.00	.00	.00	.00	e.20	e3.0	e.50	83	2.2	.00
25	.00	.00	.00	.00	.00	.00	e.25	e3.0	e.50	80	3.0	.00
26	.00	.00	.00	.00	.00	.00	e.30	e3.0	e1.0	75	2.7	.00
27	.00	.00	.00	.00	.00	.00	.42	e.50	e20	72	1.8	.00
28	.00	.00	.00	.00	.00	.00	.23	e.00	e70	70	1.1	.00
29	.00	.00	.00	.00	---	.00	.33	e.00	e70	68	.74	.00
30	.00	.00	.00	.00	---	.00	.91	e.50	e60	66	.53	.00
31	.00	---	.00	.00	---	e.01	---	e.50	---	64	.44	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.01	8.88	87.41	240.50	2674	469.38	0.96
MEAN	.0000	.0000	.0000	.0000	.0000	.0000	.30	2.82	8.02	86.3	15.1	.032
MAX	.00	.00	.00	.00	.00	.01	1.1	5.0	70	120	63	.36
MIN	.00	.00	.00	.00	.00	.00	.02	.00	.50	35	.44	.00
AC-FT	.00	.00	.00	.00	.00	.02	18	173	477	5300	931	1.9

CAL YR 1990 TOTAL 85.09 MEAN .23 MAX 5.0 MIN .00 AC-FT 169
WTR YR 1991 TOTAL 3481.14 MEAN 9.54 MAX 120 MIN .00 AC-FT 6900

e Estimated

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1948 to September 1964, October 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to September 1981; April 1986 to November 1987 (seasonal records only),
November 1987 to current year.

pH: December 1987 to current year.

WATER TEMPERATURE: October 1966 to September 1981; April 1986 to November 1987 (seasonal records only),
November 1987 to current year.

DISSOLVED OXYGEN: November 1987 to current year.

REMARKS.--Daily records of specific conductance, pH, water temperature, and dissolved oxygen for water year 1991 are available from the District office and will be published in a separate open-file report.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum observed, 2,500 microsiemens, Mar. 1, 1974, Jan. 27-29, Jan. 31, 1979; minimum observed, 240 microsiemens, Mar. 17, 1972.

WATER TEMPERATURE: Maximum observed, 36.5°C, June 21, 1988; minimum observed, 0.0°C on many days during winter periods.

pH: Maximum observed, 9.9, Mar. 18, 1988; minimum observed, 7.3, July 13, 1988.

DISSOLVED OXYGEN: Maximum observed, 19.8 mg/L, Apr. 20, 1989; minimum observed, 0.0 mg/L, June 2, 1988.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300) (00301)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	
APR												
17...	1300	0.53	1330	8.4	--	14.0	10.0	5.8	731	11.2	104	--
MAY												
13...	1300	3.1	1220	8.1	258	22.0	20.0	4.2	723	9.0	105	--
JUN												
12...	1345	<0.50	1100	7.7	--	30.5	25.5	3.6	721	5.0	65	--
JUL												
24...	1110	84	1180	7.9	355	23.0	22.5	1.1	730	3.6	44	3.4
AUG												
07...	1045	31	1180	7.9	358	19.0	20.0	2.6	730	2.4	28	--
SEP												
04...	0930	0.03	1600	9.0	--	22.0	18.5	6.5	733	18.7	209	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOC- CI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
APR										
17...	--	--	370	75	45	150	45	3	17	270
MAY										
13...	K160	230	350	73	40	120	41	3	24	260
JUN										
12...	--	--	350	70	42	110	39	3	15	180
JUL										
24...	140	96	290	53	39	130	47	3	21	180
AUG										
07...	K89	210	280	51	36	130	48	3	20	170
SEP										
04...	--	--	500	83	70	170	41	3	26	320

JAMES RIVER BASIN

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06471000 JAMES RIVER AT COLUMBIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
APR 17...	130	0.20	--	908	13	858	1.23	1.30	--	<0.010	--
MAY 13...	90	0.20	44	852	--	808	1.16	7.04	0.010	<0.010	<0.050
JUN 12...	62	0.20	--	736	14	693	1.00	--	--	0.030	--
JUL 24...	80	0.30	33	800	--	753	1.09	181	<0.010	<0.010	<0.050
AUG 07...	81	0.30	32	766	--	738	1.04	64.1	<0.010	<0.010	<0.050
SEP 04...	100	0.30	--	1170	18	1050	1.59	0.09	0.010	<0.010	<0.050
DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHORUS TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHOPHOS- PHORUS DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)
APR 17...	<0.050	--	0.020	0.03	--	--	0.080	--	0.030	--	--
MAY 13...	<0.050	0.030	0.020	0.03	2.1	0.460	0.380	0.350	0.340	<10	--
JUN 12...	<0.050	--	0.040	0.05	--	--	1.10	--	1.00	--	--
JUL 24...	<0.050	0.030	0.040	0.05	2.5	1.10	1.00	1.00	1.00	<10	--
AUG 07...	<0.050	0.130	0.140	0.18	2.5	1.00	0.880	0.910	0.890	--	--
SEP 04...	<0.050	0.030	0.040	0.05	2.7	0.680	0.600	0.565	0.510	--	13
DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)
APR 17...	3	--	--	350	--	<10	--	--	1	--	<0.01
MAY 13...	5	68	<0.5	--	--	<1.0	<1	<3	3	--	--
JUN 12...	8	--	--	340	--	<10	--	--	2	--	<0.01
JUL 24...	11	100	<0.5	--	--	<1.0	<1	<3	12	--	--
AUG 07...	--	--	--	--	--	--	--	--	--	--	--
SEP 04...	13	--	--	430	<1	<10	--	--	2	<0.010	<0.01

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
APR 17...	--	11	1	--	--	56	0.2	--	--	--	<1
MAY 13...	--	60	<1	76	--	400	0.1	<10	4	--	<1
JUN 12...	--	63	<1	--	--	270	<0.1	--	--	--	<2
JUL 24...	--	27	2	97	--	190	<0.1	<10	8	--	<2
AUG 07...	--	--	--	--	--	--	--	--	--	--	--
SEP 04...	420	7	<1	--	3300	3000	<0.1	--	--	<1	<1

DATE	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)	PLANK- TON BIOMASS ASH WT (MG/L) (81353)	PLANK- TON BIOMASS DRY WT (MG/L) (81354)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 17...	--	--	--	<3	--	--	--	--	14	0.02	100
MAY 13...	<1.0	380	<6	12	--	--	--	--	13	0.11	100
JUN 12...	--	--	--	35	--	--	--	--	--	--	--
JUL 24...	<1.0	320	<6	6	3.80	0.600	580	590	4	0.91	88
AUG 07...	--	--	--	--	--	--	--	--	7	0.59	87
SEP 04...	--	--	--	4	--	--	--	--	14	0.00	93

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼SE¼ sec.33, T.129 N., R.62 W., Dickey County, ND, Hydrologic Unit 10160004, on left bank 0.4 mi upstream from State line, 7.8 mi northeast of Frederick, SD, and 15.7 mi upstream from mouth.

DRAINAGE AREA.--716 mi², of which about 332 mi² is probably noncontributing.

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

REVISED RECORDS.--WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Elevation of gage is 1,365 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 14, 1962, nonrecording gage at site 0.4 mi downstream at datum 0.94 ft lower.

REMARKS.--Records good. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--35 years, 19.2 ft³/s, 13,910 acre-ft/yr; median of yearly mean discharges, 11 ft³/s, 8,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s, Apr. 11, 1969; maximum gage height, 16.05 ft, Apr. 11, 1969, backwater from ice; no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0500	59	4.66	June 26	1500	126	5.29
May 24	1100	*174	*5.65	July 21	1700	56	4.62
June 22	1800	84	4.93				

No flow for many months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	19	52	1.4	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	16	42	1.3	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	15	34	1.1	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	16	28	.78	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	14	26	.65	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	12	32	.61	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	10	47	.58	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	9.1	45	.53	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	8.9	38	.42	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	7.2	30	.35	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	5.7	27	.28	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	4.2	24	.22	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	3.2	23	.16	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	4.3	21	.10	.00
15	.00	.00	.00	.00	.00	.00	.00	17	3.9	19	.08	.00
16	.00	.00	.00	.00	.00	.00	.00	14	2.8	17	.07	.00
17	.00	.00	.00	.00	.00	.00	.00	19	2.2	15	.04	.00
18	.00	.00	.00	.00	.00	.00	.00	55	2.1	13	.02	.00
19	.00	.00	.00	.00	.00	.00	.00	35	1.9	12	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	25	31	11	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	21	43	20	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	23	77	15	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	108	75	6.3	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	167	54	4.5	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	123	68	3.6	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	77	121	3.2	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	53	121	2.8	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	39	108	2.6	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	32	85	2.1	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	25	68	1.8	.00	.00
31	.00	---	.00	.00	---	.00	---	21	---	1.5	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	854.00	1008.5	619.4	8.69	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	27.5	33.6	20.0	.28	.000
MAX	.00	.00	.00	.00	.00	.00	.00	167	121	52	1.4	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	1.9	1.5	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	1690	2000	1230	17	.00

CAL YR 1990 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 AC-FT .00
WTR YR 1991 TOTAL 2490.59 MEAN 6.82 MAX 167 MIN .00 AC-FT 4940

06471500 ELM RIVER AT WESTPORT, SD

LOCATION.--Lat 45°39'22", long 98°29'48", in SW¼NW¼ sec.12, T.125 N., R.64 W., Brown County, Hydrologic Unit 10160004, on right bank 12 ft downstream from highway bridge, 0.5 mi north of Westport, 0.7 mi upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, 9.3 mi downstream from Willow Creek, and 30.4 mi upstream from mouth.

DRAINAGE AREA.--1,493 mi², of which about 444 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,309.3 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 6, 1951, and Apr. 8 to Sept. 9, 1952, nonrecording gage 12 ft upstream at same datum. Aug. 6, 1951, to Apr. 7, 1952, water-stage recorder at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated for Aberdeen municipal water supply by dam forming Elm Lake and other small reservoirs upstream, combined capacity, about 16,000 acre-ft. National Weather Service gage-height telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 45.3 ft³/s, 32,800 acre-ft/yr; median of yearly mean discharges, 25 ft³/s, 18,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft³/s, Apr. 10, 1969, gage height, 22.11 ft; no flow for many days in most years prior to 1960.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 25	2100	169	5.72	June 28	1000	*238	*6.06

Minimum daily discharge, 0.15 ft³/s, Dec. 23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	e1.4	e4.0	e.23	e.52	e.40	e6.0	6.3	48	142	10	10
2	5.3	1.3	e3.5	e.20	.95	e.20	e4.0	3.6	35	118	9.7	10
3	5.5	1.2	e3.0	e.20	1.1	e.25	e3.0	3.4	28	95	9.2	10
4	5.4	1.1	e2.5	e.20	1.4	e.30	e3.0	2.5	22	80	8.5	10
5	5.9	1.1	e2.0	e.20	1.4	e.50	e3.0	1.7	17	69	8.5	10
6	5.6	1.1	1.4	e.20	1.7	e.30	e3.0	1.4	11	63	8.4	10
7	5.6	1.1	1.1	e.20	1.7	e.20	e2.0	1.3	9.1	50	8.1	3.9
8	6.0	1.2	e1.0	e.20	1.5	e.20	e2.0	1.2	9.2	42	8.0	1.7
9	6.3	1.1	e1.0	e.20	1.4	e.20	e2.0	.94	7.8	46	7.8	1.8
10	6.8	1.2	e1.0	e.20	1.2	e.25	e2.0	.90	5.5	48	7.4	.98
11	7.1	1.2	e1.5	e.20	1.0	e.30	e2.0	1.2	3.8	50	7.5	.68
12	7.1	1.1	e1.5	e.23	.92	e.25	e2.0	2.4	3.1	40	7.2	.60
13	6.8	1.1	e1.6	e.30	e.90	e.20	e2.0	2.5	2.7	34	6.7	.59
14	6.4	1.1	1.5	e.37	e.90	e.20	e3.0	5.4	6.8	27	5.4	.59
15	6.0	1.1	1.5	e.37	.84	e.20	e4.0	23	11	21	5.1	.59
16	5.9	1.1	1.4	e.40	.92	e.20	e5.0	60	7.2	16	4.9	.59
17	6.8	1.2	e1.2	e.42	1.0	e.20	e7.0	32	7.3	12	5.0	.59
18	e6.5	1.2	e.90	e.50	1.1	e.20	e7.8	17	6.8	9.5	5.5	.64
19	e6.0	1.1	e.60	e.45	1.1	e.25	e10	11	6.0	8.1	5.2	.54
20	e5.5	1.1	e.45	e.37	1.0	e.30	e10	31	5.7	6.1	5.1	.42
21	e5.0	1.2	e.33	e.30	1.7	e.30	e9.0	38	5.9	4.9	5.1	.37
22	e4.0	1.0	e.20	e.33	1.3	e.25	7.8	29	5.3	4.5	5.2	.33
23	e3.0	.92	e.15	e.29	.60	e.70	7.4	26	15	4.0	5.4	.27
24	e2.0	1.2	e.18	e.25	e.40	e1.5	7.8	29	89	3.8	6.2	.26
25	e2.0	1.3	e.20	e.23	e.30	1.9	7.8	127	107	3.6	6.2	.26
26	e1.5	e1.5	e.18	e.25	e.30	3.7	8.4	160	137	3.6	6.2	.23
27	e1.5	e2.0	e.22	e.28	e.30	4.0	8.6	129	163	3.6	6.2	.23
28	e1.5	e2.2	e.20	e.27	e.40	11	6.8	104	205	3.5	6.3	4.1
29	e1.5	e2.5	e.19	e.26	---	12	7.5	87	183	4.1	9.1	6.6
30	e1.5	e3.0	e.18	e.29	---	e10	7.7	70	159	7.2	9.6	6.7
31	e1.5	---	e.22	e.38	---	e8.0	---	69	---	9.1	9.9	---
TOTAL	145.7	39.92	34.90	8.77	27.85	58.45	161.6	1076.74	1322.2	1028.6	218.6	93.56
MEAN	4.70	1.33	1.13	.28	.99	1.89	5.39	34.7	44.1	33.2	7.05	3.12
MAX	7.1	3.0	4.0	.50	1.7	12	10	160	205	142	10	10
MIN	1.5	.92	.15	.20	.30	.20	2.0	.90	2.7	3.5	4.9	.23
AC-FT	289	79	69	17	55	116	321	2140	2620	2040	434	186

CAL YR 1990 TOTAL 1535.43 MEAN 4.21 MAX 23 MIN .05 AC-FT 3050
WTR YR 1991 TOTAL 4216.89 MEAN 11.6 MAX 205 MIN .15 AC-FT 8360

e Estimated

JAMES RIVER BASIN

269

06471550 JAMES RIVER BELOW COLUMBIA, SD

LOCATION.--Lat 45°36'17", long 98°18'15", in SW¼SE¼SW¼ sec.28, T.125 N., R.62 W., Brown County, Hydrologic Unit 10160003, on left bank 0.46 mi below mouth of Elm River and approximately 0.5 mi southeast of Columbia.

DRAINAGE AREA.--7,393 mi², of which 3,820 mi² is probably noncontributing.

PERIOD OF RECORD.--September 1988 to current year.

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 1,274.11 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Low flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft³/s, Mar. 31, 1989, gage height, 15.26 ft, backwater from ice; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 220 ft³/s at 1800 hours, June 30, gage height, 6.95 ft; no flow for several days.

REVISIONS.--The maximum gage height for water year 1990 has been revised to 3.72 ft.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.23	.42	e.50	e.15	e.50	e.80	2.4	2.4	e70	220	63	e.50
2	.00	.53	e.70	e.10	e.60	e.60	2.5	2.4	e70	193	63	e.50
3	.00	.76	e.80	e.10	e.60	e.80	2.4	3.4	e50	180	62	e.20
4	.00	.51	.86	e.05	e.70	e1.5	2.0	4.3	e40	174	54	e.05
5	.00	.34	.86	e.05	e.80	e1.5	1.9	4.2	e30	172	46	e.01
6	.00	.43	.81	e.05	e.80	e1.0	1.9	4.0	e20	170	38	e.00
7	.00	.65	.95	e.05	e.90	e1.5	1.6	4.3	e20	169	32	e.00
8	.00	1.1	1.1	e.05	e.90	e1.5	1.3	4.6	e10	168	26	e.00
9	.00	1.7	1.2	e.05	e1.0	e2.0	1.1	5.0	e10	167	19	e.10
10	.00	2.4	.90	e.05	e1.0	e2.5	1.5	5.0	e9.0	165	15	e.10
11	.00	3.0	.54	e.05	e.90	e2.0	1.8	4.4	e8.0	165	11	e.10
12	.00	3.4	.55	e.05	e.90	e2.0	2.3	4.0	e7.7	166	9.1	e.05
13	.00	3.7	.48	e.10	e1.0	e2.0	2.5	3.4	e7.0	163	8.1	.00
14	.00	3.9	.39	e.20	e.70	e2.5	2.7	3.3	e7.0	152	e6.0	e.05
15	.00	4.0	e.35	e.20	e.50	e2.5	2.5	4.6	e6.5	140	e5.0	e.00
16	.00	3.3	e.35	e.20	e.60	e3.0	2.4	e5.0	e6.5	129	e4.0	e.00
17	.00	2.2	e.35	e.20	e.60	3.0	2.5	e30	e6.0	122	e3.5	e.00
18	.00	1.5	e.35	e.30	e.50	3.0	2.5	e70	e6.0	115	e3.0	e.00
19	.00	.91	e.35	e.40	e.60	3.1	2.1	e40	e6.0	108	e2.5	e.00
20	.00	.90	e.30	e.30	e.70	3.3	1.9	e20	e6.0	104	e2.0	e.00
21	.26	.89	e.25	e.40	e.70	3.4	1.8	e15	e6.0	99	e1.5	e.00
22	.43	.95	e.20	e.40	e.70	3.3	1.5	e40	e6.0	96	e1.0	e.00
23	.25	1.1	e.15	e.40	e.60	3.2	1.4	e40	e6.0	91	e.50	e.00
24	.19	.95	e.20	e.30	e.50	2.9	1.6	e35	e6.0	86	e2.5	e.00
25	.49	.43	e.15	e.30	e.50	2.4	1.8	e30	e6.0	81	e5.0	e.00
26	.60	.07	e.15	e.40	e.70	2.1	2.2	e30	e7.0	76	e4.0	e.00
27	.37	.05	e.20	e.50	e.80	1.6	2.5	e120	e100	73	e3.0	e.00
28	.30	.06	e.15	e.50	e1.0	1.9	2.5	e150	e180	71	e2.0	e.00
29	.22	.09	e.10	e.40	---	1.9	2.4	e120	210	69	e1.5	e.00
30	.14	e.30	e.10	e.40	---	2.0	2.2	e100	219	67	e1.0	e.00
31	.25	---	e.15	e.50	---	2.1	---	e90	---	65	e1.0	---
TOTAL	3.73	40.54	14.49	7.20	20.30	66.90	61.7	994.3	1141.7	4016	495.20	1.66
MEAN	.12	1.35	.47	.23	.72	2.16	2.06	32.1	38.1	130	16.0	.055
MAX	.60	4.0	1.2	.50	1.0	3.4	2.7	150	219	220	63	.50
MIN	.00	.05	.10	.05	.50	.60	1.1	2.4	6.0	65	.50	.00
AC-FT	7.4	80	29	14	40	133	122	1970	2260	7970	982	3.3

CAL YR 1990 TOTAL 533.32 MEAN 1.46 MAX 20 MIN .00 AC-FT 1060
WTR YR 1991 TOTAL 6863.72 MEAN 18.8 MAX 220 MIN .00 AC-FT 13610

e Estimated

JAMES RIVER BASIN

06473000 JAMES RIVER AT ASHTON, SD

LOCATION.--Lat 44°59'54", long 98°28'50", in NW1/4 sec.36, T.118 N., R.64 W., Spink County, Hydrologic Unit 10160006, on right bank at downstream side of highway bridge, 0.9 mi east of Ashton, 6.1 mi upstream from Snake Creek, and 14.2 mi upstream from Turtle Creek.

DRAINAGE AREA.--9,742 mi², of which 4,069 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1209: 1947. WDR SD-84-1: Drainage area. WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,244.4 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 26, 1957, nonrecording gage at present site and Nov. 26, 1957, to Oct. 7, 1974, water-stage recorder at site 900 ft upstream, all at present datum.

REMARKS.--Records poor. Low flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, since May 1953, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft, since 1973. Occasional backwater and reverse flow caused by Snake Creek during most years. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--46 years, 160 ft³/s, 115,900 acre-ft/yr; median of yearly mean discharges, 110 ft³/s, 79,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,680 ft³/s, Apr. 24, 1969, gage height, 20.63 ft; maximum gage height, 21.17 ft, Apr. 13, 1969, backwater from Snake Creek; maximum daily reverse flow, 2,100 ft³/s, Apr. 9, 1969, backwater from Snake Creek.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 300 ft³/s, May 29, 30; maximum gage height, 8.99 ft, June 10, backwater from Snake Creek; no flow Dec. 20 to Feb. 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.50	e.10	e.03	.00	.00	e.03	8.6	39	e200	52	138	3.0
2	e.50	e.10	e.02	.00	.00	e.02	7.4	39	e150	54	141	2.3
3	e.50	e.20	e.01	.00	e.01	e.03	8.4	55	e100	58	134	1.8
4	e.50	e.10	e.01	.00	e.02	e.04	12	74	e50	57	125	1.2
5	e.50	e.10	e.01	.00	e.03	e.05	19	91	e10	56	119	.90
6	e.10	e.10	e.01	.00	e.05	e.04	20	103	e10	57	123	.90
7	e.10	e.10	e.02	.00	e.05	e.05	18	109	e15	63	114	.95
8	e.10	e.10	e.02	.00	e.05	e.05	15	121	e30	72	107	1.2
9	e.10	e.10	e.02	.00	e.05	e.06	13	133	e90	86	102	2.2
10	e.10	e.10	e.02	.00	e.04	e.10	11	146	e120	95	95	e5.0
11	e.10	e.10	e.01	.00	e.03	e.10	11	154	e130	100	89	e6.0
12	e.10	e.10	e.01	.00	e.03	e.20	19	149	e140	106	82	e4.0
13	e.10	e.10	e.01	.00	e.03	e.15	22	141	e150	113	76	e2.0
14	e.10	e.10	e.01	.00	e.01	e.20	21	130	e155	118	69	e3.0
15	e.10	e.10	e.01	.00	e.01	e.25	21	123	e140	124	64	e2.0
16	e.10	e.10	e.01	.00	e.03	e.40	22	e150	e130	129	58	e1.0
17	e.50	e.10	e.01	.00	e.02	e.50	19	e200	e120	129	52	e1.0
18	e.50	e.10	e.01	.00	e.02	e.75	17	e150	e115	132	44	e.90
19	e.50	e.10	e.01	.00	e.02	e1.0	16	e130	e110	132	38	e.80
20	e.50	e.10	.00	.00	e.03	e1.5	16	e120	e105	135	35	e.70
21	e.10	e.10	.00	.00	e.04	e2.5	14	118	e100	136	32	e.60
22	e.10	e.10	.00	.00	e.03	2.9	14	115	e95	145	29	e.50
23	e.10	e.10	.00	.00	e.03	2.6	15	114	e90	152	25	e.50
24	e.10	e.10	.00	.00	e.02	3.9	16	108	e88	153	20	e.60
25	e.10	e.05	.00	.00	e.02	6.7	18	96	86	153	17	e.50
26	e.10	e.02	.00	.00	e.02	7.9	21	103	79	154	14	e.50
27	e.10	e.01	.00	.00	e.03	e8.0	26	e150	71	159	12	e.50
28	e.10	e.01	.00	.00	e.03	e8.5	30	e200	64	159	9.1	e.50
29	e.10	e.02	.00	.00	---	e8.0	34	e300	58	156	8.3	e.50
30	e.10	e.03	.00	.00	---	7.7	36	e300	56	151	6.0	e.50
31	e.10	---	.00	.00	---	8.4	---	e250	---	144	4.0	---
TOTAL	6.70	2.64	0.26	0.00	0.75	72.62	540.4	4211	2857	3530	1981.4	46.05
MEAN	.22	.088	.008	.000	.027	2.34	18.0	136	95.2	114	63.9	1.53
MAX	.50	.20	.03	.00	.05	8.5	36	300	200	159	141	6.0
MIN	.10	.01	.00	.00	.00	.02	7.4	39	10	52	4.0	.50
AC-FT	13	5.2	.5	.00	1.5	144	1070	8350	5670	7000	3930	91

CAL YR 1990 TOTAL 2890.49 MEAN 7.92 MAX 250 MIN .00 AC-FT 5730
WTR YR 1991 TOTAL 13248.82 MEAN 36.3 MAX 300 MIN .00 AC-FT 26280

e Estimated

06476000 JAMES RIVER AT HURON, SD

LOCATION.--Lat 44°21'49", long 98°11'56", in SW¼SE¼NE¼ sec.6, T.110 N., R.61 W., Beadle County, Hydrologic Unit 10160006, on right bank 15 ft upstream from city dam at Huron, 135 ft downstream from Chicago and North Western Transportation Co. bridge, and 165 ft upstream from bridge on business loop U.S. Highway 14.

DRAINAGE AREA.--15,869 mi², of which 4,148 mi² is probably noncontributing.

PERIOD OF RECORD.--August 1928 to September 1932, August 1943 to current year. Monthly discharge only for some periods, published in WSP 1309. Gage-height records collected at site about 100 ft downstream for period of open water each year July 1902 to June 1914 and for period March to June 1915-23 are in reports of the National Weather Service.

REVISED RECORDS.--WDR SD-84-1: Drainage area. WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder, wire-weight gage, and concrete dam. Datum of gage is 1,223.44 ft above National Geodetic Vertical Datum of 1929. Aug. 29, 1928, to Mar. 15, 1929, nonrecording gage at site 100 ft downstream at about same datum. Mar. 16, 1929, to June 30, 1932, nonrecording gage 165 ft downstream at present datum. Aug. 3, 1943, to Oct. 17, 1951, nonrecording gage at site 15 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Low flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, since May 1953, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft, since 1973. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--52 years, 241 ft³/s, 174,600 acre-ft/yr; median of yearly mean discharges, 140 ft³/s, 101,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,000 ft³/s, Apr. 13, 1969, gage height, 16.70 ft; no flow for long periods in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood between Apr. 11 and 13, 1881, reached a stage of 19.8 ft, from U.S. Weather Bureau publication. Flood of Mar. 22, 1922, reached a stage of 16.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,580 ft³/s at 0100 hours, June 7, gage height, 10.44 ft; maximum gage height, 10.46 ft, June 12, backwater; no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.38	.00	.00	.00	.00	9.4	63	1280	294	109	14
2	.00	e10	.00	.00	.00	.00	.57	66	1210	282	110	7.8
3	.00	e6.6	.00	.00	.00	.00	.99	78	940	302	111	16
4	.00	e.52	.00	.00	.00	2.3	7.0	91	920	266	105	9.3
5	.00	e.00	.00	.00	.00	6.8	11	101	1350	219	99	9.8
6	.00	e1.5	.00	.00	.00	6.8	11	115	1550	188	102	4.2
7	.00	.00	.00	.00	.00	6.8	29	e200	1550	171	114	4.4
8	.00	.00	.00	.00	.00	6.8	6.0	e170	1490	146	115	.80
9	.00	.00	.00	.00	.00	9.4	8.8	e150	1430	132	114	5.9
10	.00	.00	.00	.00	.00	6.8	2.2	e150	1460	130	111	6.2
11	.00	.00	.00	.00	.00	9.4	14	e160	1510	137	110	4.8
12	.00	.00	.00	.00	.00	9.4	36	e180	1500	148	103	5.3
13	.00	.00	.00	.00	.00	18	33	e200	1360	142	104	4.9
14	.00	.00	.00	.00	.00	13	41	e200	1260	123	98	8.3
15	.00	.00	.00	.00	.00	13	44	e180	1120	108	95	3.8
16	.00	.00	.00	.00	.00	9.4	51	e210	990	117	91	6.0
17	.00	.00	.00	.00	.00	13	53	e220	910	122	85	10
18	.00	.00	.00	.00	.00	18	55	e210	794	122	83	11
19	.00	.00	.00	.00	.00	9.4	50	e210	693	123	70	8.5
20	.00	.00	.00	.00	.00	6.8	52	212	658	122	64	2.9
21	.00	.00	.00	.00	.00	2.3	48	278	617	118	66	.00
22	.00	.00	.00	.00	.00	6.8	53	298	e550	119	56	1.1
23	.00	.00	.00	.00	.00	23	43	302	634	112	56	8.4
24	.00	.28	.00	.00	.00	11	33	302	558	111	44	9.2
25	.00	.00	.00	.00	.00	10	27	262	414	104	43	16
26	e.20	.00	.00	.00	.00	18	35	230	459	113	34	14
27	e7.1	.00	.00	.00	.00	22	38	245	422	111	33	14
28	e3.5	.00	.00	.00	.00	11	42	282	326	115	23	9.8
29	e2.7	.00	.00	.00	.00	---	56	350	338	112	30	8.0
30	e7.8	.00	.00	.00	---	12	59	450	318	108	28	12
31	e2.5	---	.00	.00	---	15	---	638	---	109	22	---
TOTAL	23.80	19.28	0.00	0.00	0.00	307.20	948.96	6803	28611	4626	2428	236.40
MEAN	.77	.64	.000	.000	.000	9.91	31.6	219	954	149	78.3	7.88
MAX	7.8	10	.00	.00	.00	23	59	638	1550	302	115	16
MIN	.00	.00	.00	.00	.00	.00	.57	63	318	104	22	.00
AC-FT	47	38	.00	.00	.00	609	1880	13490	56750	9180	4820	469

CAL YR 1990 TOTAL 5438.78 MEAN 14.9 MAX 195 MIN .00 AC-FT 10790
WTR YR 1991 TOTAL 44003.64 MEAN 121 MAX 1550 MIN .00 AC-FT 87280

e Estimated

JAMES RIVER BASIN

06477000 JAMES RIVER NEAR FORESTBURG, SD

LOCATION.--Lat 43°58'26", long 98°04'14", in SW¼SW¼NW¼ sec.20, T.106 N., R.60 W., Sanborn County, Hydrologic Unit 10160011, on right bank 5.0 ft downstream from highway bridge, 3.8 mi southeast of Forestburg, 5.4 mi downstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 6.1 mi downstream from Sand Creek.

DRAINAGE AREA.--17,590 mi², of which about 4,148 mi² is probably noncontributing.

PERIOD OF RECORD.--March 1950 to current year.

REVISED RECORDS.--WDR SD-84-1: Drainage area. WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,208.34 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Sept. 5, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and May 7-17, which are fair. Low flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, since May 1953, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft, since 1973. Gage-height telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--41 years, 298 ft³/s, 215,900 acre-ft/yr; median of yearly mean discharges, 180 ft³/s, 130,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s, Apr. 9, 1969, gage height, 17.16 ft; no flow at times some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in March 1920 and March 1922 reached a stage of about 18 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,520 ft³/s at 1300 hours, June 10, gage height, 12.76 ft; minimum daily discharge, 0.21 ft³/s, Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	1.5	2.2	e1.5	e2.5	5.3	10	66	674	444	139	34
2	.26	1.3	2.0	e1.0	e3.0	5.6	7.9	73	1070	416	157	28
3	1.1	1.7	1.9	e1.0	e3.5	5.6	5.9	87	1490	386	167	29
4	1.0	1.9	1.9	e1.0	4.0	5.9	5.5	105	1770	360	156	26
5	.83	1.9	2.0	e1.0	4.8	13	5.2	131	1920	357	146	23
6	.32	1.9	2.1	e1.0	4.8	12	4.3	147	2140	327	139	21
7	.46	2.1	2.1	e1.0	5.1	9.6	4.0	243	2430	293	149	19
8	.53	2.1	2.1	e1.0	4.9	9.8	3.7	252	2480	260	167	19
9	.54	2.2	2.1	e1.0	4.8	9.2	2.7	197	2500	236	138	19
10	.64	2.6	2.2	e1.0	4.7	8.7	2.2	168	2510	214	102	19
11	.41	2.8	2.3	e1.0	4.6	8.5	2.5	162	2430	200	113	18
12	.67	3.0	2.5	e1.0	4.5	9.3	4.3	161	2350	198	127	17
13	.71	3.0	2.0	e1.0	e4.0	10	4.8	172	2270	196	134	16
14	.66	2.8	e2.0	e1.5	e4.0	9.0	8.8	188	2190	197	131	17
15	.86	2.8	e2.0	e2.0	e3.5	9.0	25	197	2080	190	129	14
16	.89	3.0	e2.0	e2.0	e3.5	9.0	37	206	1970	185	126	12
17	.59	2.8	e2.0	e2.0	e4.0	9.0	44	223	1810	175	122	12
18	2.3	2.6	e1.5	e2.0	e6.0	9.0	48	253	1570	172	119	12
19	2.2	2.8	e1.5	e2.5	6.7	9.7	50	245	1360	174	111	11
20	1.9	2.7	e1.4	e2.0	6.1	11	51	234	1200	173	104	9.0
21	2.4	2.6	e1.3	e1.5	5.9	11	51	233	1090	168	102	6.9
22	2.3	3.0	e1.2	e2.0	5.5	12	51	250	998	166	92	7.1
23	2.0	3.0	e1.1	e2.5	5.6	17	50	322	896	158	87	9.0
24	2.0	2.7	e1.0	e2.0	5.3	16	45	357	831	151	78	11
25	2.0	2.8	e1.0	e2.0	5.3	12	38	349	792	144	71	9.8
26	1.8	2.5	e1.0	e2.0	5.0	12	36	320	724	143	64	9.8
27	1.5	2.5	e1.0	e2.5	5.0	18	39	293	648	150	58	5.5
28	1.9	2.5	e1.0	e3.0	5.2	13	43	275	574	163	52	4.6
29	1.7	2.3	e1.5	e2.5	---	11	51	425	506	154	47	4.7
30	1.7	2.2	e1.0	e2.5	---	11	62	427	476	147	46	5.4
31	1.6	---	e1.0	e2.5	---	11	---	477	---	149	41	---
TOTAL	37.98	73.6	51.9	52.5	131.8	322.2	792.8	7238	45749	6846	3414	448.8
MEAN	1.23	2.45	1.67	1.69	4.71	10.4	26.4	233	1525	221	110	15.0
MAX	2.4	3.0	2.5	3.0	6.7	18	62	477	2510	444	167	34
MIN	.21	1.3	1.0	1.0	2.5	5.3	2.2	66	476	143	41	4.6
AC-FT	75	146	103	104	261	639	1570	14360	90740	13580	6770	890

CAL YR 1990 TOTAL 9205.03 MEAN 25.2 MAX 245 MIN .00 AC-FT 18260
WTR YR 1991 TOTAL 65158.58 MEAN 179 MAX 2510 MIN .21 AC-FT 129200

e Estimated

JAMES RIVER BASIN

273

06477500 FIRESTEEL CREEK NEAR MOUNT VERNON, SD

LOCATION.--Lat 43°46'30", long 98°14'33", in SW¼SW¼ sec.26, T.104 N., R.62 W., Davison County, Hydrologic Unit 10160011, near center of span on downstream side of highway bridge, 4.5 mi north of Mount Vernon, 5.2 mi downstream from West Firesteel Creek, and 12 mi northwest of Mitchell.

DRAINAGE AREA.--521 mi².

PERIOD OF RECORD.--September 1955 to current year.

REVISED RECORDS.--WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,297.22 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1972, nonrecording gage and crest-stage gage.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--36 years, 24.6 ft³/s, 17,820 acre-ft/yr; median of yearly mean discharges, 9.3 ft³/s, 6,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,610 ft³/s, Apr. 4, 1969, gage height, 15.34 ft; maximum gage height, 17.12 ft, Apr. 3, 1969, backwater from ice; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 25	1600	146	5.15	June 1	1300	107	4.82
May 29	0300	112	4.87	June 8	0900	*541	*7.24

No flow Aug. 25 to Sept. 13.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.02	e.02	e.02	e.06	e.08	.02	.03	88	3.1	.03	.00
2	.01	.02	e.02	e.01	e.07	e.07	.02	.02	80	2.5	.03	.00
3	.02	.02	e.02	e.01	e.09	e.08	.02	.25	54	2.2	.03	.00
4	.02	.02	e.02	e.01	e.11	e.10	.03	.48	87	1.9	.03	.00
5	.01	.02	e.02	e.01	e.10	e.10	.03	.37	177	1.4	.03	.00
6	.01	.02	e.02	e.01	e.09	e.10	.03	.50	287	1.2	.03	.00
7	.01	.02	e.02	e.02	e.08	e.10	.03	.57	433	1.3	.04	.00
8	.01	.03	e.02	e.02	e.07	e.13	.02	2.7	507	1.1	.04	.00
9	.01	.03	e.02	e.02	e.07	e.14	.02	15	463	.82	.03	.00
10	.01	.03	e.03	e.02	e.06	e.15	.02	12	399	.72	.03	.00
11	.01	.03	e.03	e.02	e.08	e.12	.13	8.6	307	.58	.03	.00
12	.01	.03	e.03	e.02	e.08	e.10	.34	6.9	216	.64	.04	.00
13	.01	.03	e.03	e.03	e.06	e.13	.42	6.0	154	.42	.04	.00
14	.01	.03	e.03	e.02	e.05	e.14	.44	4.2	108	.28	.03	.03
15	.01	.03	e.02	e.02	e.07	e.14	.68	3.1	83	.35	.03	.03
16	.01	.03	e.02	e.02	e.10	e.17	.59	2.2	62	.27	.03	.02
17	.01	.03	e.02	e.02	e.08	e.20	.30	2.1	46	.19	.03	.03
18	.01	.02	e.02	e.02	e.08	e.15	.09	2.3	36	.10	.05	.02
19	.01	.02	e.02	e.03	e.10	.10	.04	2.6	29	.04	.04	.02
20	.01	.02	e.02	e.02	e.10	.05	.06	1.9	24	.04	.03	.02
21	.02	.03	e.01	e.02	e.09	.09	.07	24	19	.03	.03	.02
22	.02	.03	e.01	e.03	e.08	.32	.07	24	16	.02	.03	.02
23	.02	.03	e.01	e.03	e.07	.38	.04	18	15	.02	e.01	.02
24	.02	.03	e.02	e.02	e.06	.16	.39	84	13	.02	e.01	.03
25	.02	.03	e.02	e.02	e.06	.05	.26	143	11	.02	.00	.03
26	.02	.03	e.02	e.03	e.07	.04	.08	142	9.1	.02	.00	.03
27	.02	e.02	e.02	e.03	e.08	.03	.03	116	7.3	.03	.00	.03
28	.02	e.01	e.02	e.04	e.10	.02	.03	84	6.3	.03	.00	.03
29	.02	e.02	e.02	e.03	---	.02	.03	78	4.8	.03	.00	.03
30	.02	e.02	e.01	e.04	---	.13	.04	48	4.2	.03	.00	.03
31	.02	---	e.02	e.05	---	.03	---	58	---	.03	.00	---
TOTAL	0.44	0.75	0.63	0.71	2.21	3.62	4.37	890.82	3745.7	19.43	0.75	0.44
MEAN	.014	.025	.020	.023	.079	.12	.15	28.7	125	.63	.024	.015
MAX	.02	.03	.03	.05	.11	.38	.68	143	507	3.1	.05	.03
MIN	.01	.01	.01	.01	.05	.02	.02	.02	4.2	.02	.00	.00
AC-FT	.9	1.5	1.2	1.4	4.4	7.2	8.7	1770	7430	39	1.5	.9

CAL YR 1990 TOTAL 878.02 MEAN 2.41 MAX 89 MIN .00 AC-FT 1740
WTR YR 1991 TOTAL 4669.87 MEAN 12.8 MAX 507 MIN .00 AC-FT 9260

e Estimated

JAMES RIVER BASIN

06478500 JAMES RIVER NEAR SCOTLAND, SD
(National stream-quality accounting network station)

LOCATION.--Lat 43°11'09", long 97°38'07", in SW¼SW¼ sec.30, T.97 N., R.57 W., Hutchinson County, Hydrologic Unit 10160011, on right bank 5.0 ft downstream from highway bridge, 0.3 mi upstream from Dawson Creek, and 5.2 mi northeast of Scotland.

DRAINAGE AREA.--20,653 mi², of which 4,148 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 786: Drainage area. WSP 956: 1937-38. WSP 1279: 1932, 1948. WDR SD-84-1: Drainage area. WDR SD-86-1: Drainage area. WDR SD-88-1: Datum.

GAGE.--Water-stage recorder, crest-stage gage, and rock and earth control. Datum of gage is 1,168.02 ft (revised) above National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1972, at site 0.25 mi downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Low flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, since May 1953, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft, since 1973. Occasional backwater caused by Dawson Creek; reverse flow occurred for part of May 15, 1961, from information by local residents. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite data-collection platform at station. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--63 years, 418 ft³/s, 302,800 acre-ft/yr; median of yearly mean discharges, 210 ft³/s, 152,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft³/s, June 23, 1984, gage height, 20.45 ft; no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,310 ft³/s at 1300 hours, June 20, gage height, 11.38 ft; minimum daily discharge, 5.5 ft³/s, Jan. 26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	33	20	8.0	6.1	35	30	75	e850	774	151	46
2	6.9	33	18	7.9	6.0	26	26	66	e1150	708	156	37
3	11	34	18	8.0	6.2	33	24	70	e1400	648	160	30
4	12	42	17	7.9	7.3	36	24	81	e1620	598	163	24
5	13	42	18	7.6	9.0	39	23	89	e1650	543	162	26
6	13	39	18	7.4	11	39	23	102	e1650	490	151	22
7	12	33	19	7.4	13	40	23	112	e1600	468	149	19
8	12	32	20	7.1	15	38	22	118	1590	434	156	17
9	13	32	20	7.0	17	36	22	123	1610	397	160	15
10	13	30	20	7.0	19	35	21	128	1660	373	159	14
11	14	27	20	6.8	22	32	20	155	1730	352	148	19
12	12	25	21	6.8	25	35	24	198	1800	326	146	25
13	12	24	20	6.6	28	41	24	223	1860	298	143	28
14	12	23	20	6.4	26	48	30	223	1940	262	134	29
15	11	22	20	6.5	21	51	37	211	2050	223	122	33
16	12	22	20	6.7	23	47	40	202	2130	201	125	29
17	14	20	20	7.0	25	46	39	197	2200	194	128	27
18	13	21	20	7.3	28	47	40	198	2240	187	130	24
19	15	20	19	7.4	28	49	39	200	2280	181	122	22
20	18	19	15	7.7	28	52	40	208	2300	182	113	19
21	19	19	15	7.7	30	48	40	223	2290	187	108	16
22	19	19	14	7.4	32	56	38	237	2260	183	105	14
23	18	20	12	6.9	34	63	36	251	2200	168	100	11
24	17	21	11	6.8	32	67	37	270	2100	159	90	12
25	17	18	10	e6.0	33	59	39	284	1890	154	78	14
26	20	19	10	e5.5	35	50	37	299	1630	152	69	14
27	23	17	9.8	e6.0	35	47	37	329	1350	144	64	14
28	24	15	9.8	6.4	35	50	47	359	1150	149	56	13
29	29	18	10	6.4	---	53	60	378	988	156	50	11
30	31	20	10	6.4	---	42	71	481	857	155	49	10
31	32	---	9.0	6.3	---	36	---	736	---	148	51	---
TOTAL	495.1	759	503.6	216.3	629.6	1376	1013	6826	52025	9594	3698	634
MEAN	16.0	25.3	16.2	6.98	22.5	44.4	33.8	220	1734	309	119	21.1
MAX	32	42	21	8.0	35	67	71	736	2300	774	163	46
MIN	6.9	15	9.0	5.5	6.0	26	20	66	850	144	49	10
AC-FT	982	1510	999	429	1250	2730	2010	13540	103200	19030	7330	1260

CAL YR 1990 TOTAL 20512.7 MEAN 56.2 MAX 440 MIN 6.9 AC-FT 40690
WTR YR 1991 TOTAL 77769.6 MEAN 213 MAX 2300 MIN 5.5 AC-FT 154300

e Estimated

JAMES RIVER BASIN

275

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1955 to September 1964, October 1966 to September 1973, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981; June 1985 to September 1988 (seasonal records only).

pH: June to August 1985.

WATER TEMPERATURE: January 1953 to September 1969, October 1974 to September 1983; June 1985 to September 1988 (seasonal records only).

DISSOLVED OXYGEN: June to August 1985.

SUSPENDED-SEDIMENT DISCHARGE: October 1981 to September 1983.

REMARKS.--Prior to October 1969, continuous temperature thermograph at station. The percent difference between cations and anions (in milliequivalents per liter) for the Feb. 13, 1991, sample exceeded 5 percent; these data should be used with caution.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,660 microsiemens, Jan. 9, 1977; minimum daily, 300 microsiemens, Mar. 19, 1977.

WATER TEMPERATURE: Maximum, 32.5°C, Aug. 1, 2, 1987; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily mean, 953 mg/L, June 21, 1983; minimum daily mean, 12 mg/L, Nov. 8, 1982.

SEDIMENT LOAD: Maximum daily, 5,890 tons, June 21, 1983; minimum daily, 1.7 tons, Oct. 2, 11, 1981.

pH: Maximum daily, 8.6, June 17, 19, 20, 1985; minimum daily, 7.5, June 30, 1985, July 2, 1985.

DISSOLVED OXYGEN: Maximum daily, 16.3 mg/L, June 30, 1985; minimum daily, 1.0 mg/L, June 27, 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT											
29...	0925	29	1950	8.4	241	17.0	9.0	8.6	727	10.8	99
FEB											
13...	1000	28	--	8.2	254	10.0	0.5	3.0	720	>20.0	--
MAY											
14...	1130	223	1740	8.4	217	25.5	22.5	11	724	7.7	94
AUG											
20...	0955	115	1360	8.5	264	28.0	24.0	33	725	7.1	89

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOC CI KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT											
29...	K54	K24	840	200	83	120	23	2	20	263	800
FEB											
13...	700	K4	980	230	97	170	27	2	24	183	1200
MAY											
14...	K65	80	660	150	68	130	30	2	16	218	710
AUG											
20...	K78	140	470	110	46	120	35	2	19	267	390

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT											
29...	53	<0.10	16	1510	1440	2.05	118	<0.010	<0.010	<0.100	<0.100
FEB											
13...	120	0.50	10	1870	2010	2.54	141	0.010	<0.010	<0.100	<0.100
MAY											
14...	11	0.40	11	1280	1230	1.74	771	0.020	<0.010	<0.050	<0.050
AUG											
20...	74	0.30	16	932	935	1.27	289	0.010	<0.010	<0.050	<0.050

JAMES RIVER BASIN

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
OCT 29...	0.010	0.020	0.03	0.90	0.060	0.060	0.030	0.020	<10	2	97
FEB 13...	0.150	0.150	0.19	1.3	0.090	<0.010	0.030	<0.010	<10	<1	100
MAY 14...	0.020	0.020	0.03	1.6	0.110	0.070	0.050	0.020	<10	3	65
AUG 20...	0.030	0.020	0.03	1.1	0.360	0.100	0.090	0.060	10	5	76

DATE	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)
OCT 29...	<0.5	<1.0	3	<3	3	16	<1	150	180	0.1
FEB 13...	<10	<1.0	<1	<1	3	20	<1	210	460	<0.1
MAY 14...	<0.5	<1.0	<1	<3	1	12	<1	120	590	<0.1
AUG 20...	<0.5	<1.0	1	<3	2	16	<1	66	100	<0.1

DATE	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 29...	<10	5	<1	<1.0	2100	<6	8	50	3.9	74
FEB 13...	4	4	<1	<1.0	2800	3	<10	77	5.8	18
MAY 14...	<10	2	<1	<1.0	1700	<6	18	153	92	87
AUG 20...	<10	6	1	<1.0	890	8	5	99	31	99

JAMES RIVER BASIN

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06478513 JAMES RIVER NEAR YANKTON, SD

LOCATION.--Lat 42°59'45", long 97°22'10", in NE¼NW¼ sec.5, T.94 N., R.55 W., Yankton County, Hydrologic Unit 10160011, on left bank at downstream side of highway bridge, 3.9 mi upstream from Beaver Creek, 17.2 mi upstream from mouth, and 9.0 mi northeast of Yankton.

DRAINAGE AREA.--20,942 mi², of which 4,148 mi² is probably noncontributing.

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

REVISED RECORDS.--WDR SD-84-1: Drainage area. WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,153.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Low flow regulated by dams forming Arrowwood and Jim Lakes, combined capacity, 16,530 acre-ft, and by dam forming Jamestown Reservoir, capacity, 229,470 acre-ft, since May 1953, and by dam forming Pipestem Reservoir, capacity, 147,000 acre-ft, since 1973. Occasional backwater caused by Beaver Creek. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 715 ft³/s, 518,000 acre-ft/yr; median of yearly mean discharges, 370 ft³/s, 268,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s, June 23, 1984, gage height, 24.34 ft; minimum daily discharge, 0.78 ft³/s, Oct. 4, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,210 ft³/s at 1200 hours, June 22, gage height, 10.70 ft; minimum daily discharge, 6.0 ft³/s, Jan. 26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	27	23	e12	e11	e40	39	54	623	858	145	43
2	9.8	27	21	e12	e15	e30	34	58	910	754	144	46
3	20	29	21	e11	e18	e30	30	74	1250	677	147	43
4	17	31	20	e11	e23	e35	27	74	1520	625	152	35
5	17	31	22	e10	e25	e40	25	71	1680	577	160	29
6	21	36	22	e10	e27	e60	23	74	1650	537	161	25
7	20	34	22	e10	e28	e40	23	81	1570	516	164	25
8	20	33	21	e9.5	e29	e45	22	98	1530	497	165	25
9	21	29	21	e9.0	e30	e50	20	108	1520	456	158	23
10	21	28	22	e9.0	e30	e40	17	115	1570	423	160	20
11	23	27	22	e9.0	e30	e40	20	119	1620	399	160	21
12	22	26	22	e9.0	e30	37	27	135	1690	375	155	22
13	23	26	24	e8.5	e31	38	34	170	1770	350	150	25
14	24	26	17	e8.0	e32	38	34	197	1850	326	152	33
15	18	26	18	e8.0	e29	41	30	206	1900	299	146	31
16	19	24	19	e8.5	e27	49	30	204	1940	263	143	28
17	23	22	20	e9.0	e30	56	34	201	1970	234	128	28
18	22	23	e18	e9.5	e30	51	38	192	2010	216	124	27
19	20	21	18	e10	e29	46	40	192	2070	207	127	25
20	24	20	e17	e10	e28	46	40	196	2120	245	130	23
21	23	23	e13	e9.0	e30	49	39	201	2160	355	127	23
22	23	21	e12	e8.0	e33	48	40	209	2200	304	112	23
23	24	21	e12	e9.0	e35	50	37	223	2200	228	109	19
24	22	20	e12	e8.0	e33	52	33	232	2180	188	101	19
25	21	20	e12	e7.0	e32	57	32	243	2130	170	89	16
26	19	20	e12	e6.0	e30	61	31	255	1980	160	79	14
27	19	e18	e13	e7.0	e34	56	39	263	1670	161	68	14
28	16	16	e15	e8.0	e38	47	38	281	1360	156	59	14
29	19	16	e15	e9.0	---	43	39	308	1160	150	56	15
30	21	21	e13	e9.0	---	46	42	341	986	150	51	16
31	24	---	e12	e9.0	---	49	---	436	---	152	44	---
TOTAL	626.8	742	551	282.0	797	1410	957	5611	50789	11008	3866	750
MEAN	20.2	24.7	17.8	9.10	28.5	45.5	31.9	181	1693	355	125	25.0
MAX	24	36	24	12	38	61	42	436	2200	858	165	46
MIN	9.8	16	12	6.0	11	30	17	54	623	150	44	14
AC-FT	1240	1470	1090	559	1580	2800	1900	11130	100700	21830	7670	1490

CAL YR 1990 TOTAL 20626.7 MEAN 56.5 MAX 379 MIN 8.8 AC-FT 40910
WTR YR 1991 TOTAL 77389.8 MEAN 212 MAX 2200 MIN 6.0 AC-FT 153500

e Estimated

MISSOURI-LEWIS AND CLARK RIVER BASIN

06478515 MISSOURI RIVER NEAR GAYVILLE, SD

LOCATION.--Lat 42°51'01", Long 97°13'12", in SW¼ sec.27, T.93 N., R.54 W., Yankton County, Hydrologic Unit 10170101, 3.8 mi southwest of Gayville, 4.1 mi downstream from James River, and at mile 796.0.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good. Stage regulated by Gavins Point Dam 15.0 mi upstream. U.S. Army Corps of Engineers data-collection platform at station. Gage heights for period of October 1969 to September 1980 in files of U.S. Army Corps of Engineers.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48.02	45.03	44.90	48.02	44.88	44.51	47.17	47.15	47.31	47.42	47.86	48.38
2	48.10	45.00	44.93	47.84	44.56	44.52	47.17	47.16	47.40	47.23	47.85	48.42
3	47.96	45.00	44.97	47.62	44.42	44.49	47.17	47.21	47.70	47.73	47.85	48.39
4	47.98	44.96	44.90	47.53	44.34	44.52	47.30	47.17	47.18	47.49	47.89	48.41
5	47.99	44.95	44.75	47.41	44.30	44.50	47.30	47.16	47.16	47.30	47.91	48.41
6	47.93	44.95	44.71	47.34	44.25	44.46	47.34	47.12	47.35	47.76	47.95	48.40
7	47.96	44.90	44.74	47.20	44.18	44.48	47.34	47.09	47.73	47.45	47.94	48.42
8	47.96	44.90	44.70	47.05	43.84	44.46	47.29	47.13	47.13	47.26	47.94	48.41
9	47.98	44.89	44.70	47.04	43.75	44.50	47.28	47.81	47.77	47.74	47.93	48.37
10	47.93	44.87	44.69	46.96	43.69	44.50	47.35	47.33	47.35	47.49	47.93	48.37
11	47.83	44.88	44.69	46.81	43.65	44.49	47.37	47.13	47.10	47.34	47.94	48.39
12	47.84	44.84	44.69	46.76	43.65	44.49	47.34	47.80	47.77	47.75	47.93	48.35
13	47.83	44.83	44.66	46.81	43.85	44.49	47.28	47.32	47.36	47.48	47.94	48.31
14	47.86	44.79	44.68	46.77	44.41	44.49	47.26	47.16	47.07	47.34	47.93	48.26
15	47.88	44.76	44.68	46.41	44.85	44.49	47.23	47.84	47.72	47.78	47.97	48.24
16	47.89	44.76	44.76	46.15	44.63	44.50	47.21	47.48	47.34	47.56	47.93	48.25
17	47.88	44.77	45.01	45.76	44.31	44.50	47.17	47.18	47.12	47.48	47.91	48.18
18	47.85	44.75	45.39	45.66	44.29	44.50	47.16	47.73	47.79	47.85	47.89	48.19
19	47.89	44.75	45.82	45.66	44.05	44.50	47.19	47.36	47.37	47.62	47.89	48.19
20	47.87	44.76	46.15	45.50	44.05	44.51	47.24	47.16	47.16	47.54	47.94	48.24
21	47.87	44.77	46.63	47.24	44.34	44.48	47.24	47.79	47.83	47.88	47.93	48.30
22	47.90	44.78	48.06	46.82	44.72	44.48	47.25	47.44	47.40	47.74	47.94	48.22
23	47.85	44.72	48.60	45.77	44.40	44.47	47.24	47.17	47.23	47.66	47.98	48.24
24	47.86	44.72	48.62	45.40	44.44	44.85	47.28	47.75	47.86	47.82	48.12	48.23
25	47.78	44.69	48.53	45.81	44.52	45.45	47.26	47.39	47.48	47.69	48.12	48.25
26	47.46	44.71	48.40	45.72	44.59	46.08	47.17	47.18	47.19	47.67	48.08	48.26
27	46.91	44.78	48.38	45.48	44.63	46.57	47.19	47.77	47.85	47.88	48.11	48.28
28	46.38	44.77	48.23	45.30	44.53	47.05	47.17	47.37	47.48	47.72	48.16	48.30
29	45.81	44.82	48.25	45.62	---	47.17	47.19	47.19	47.18	47.74	48.16	48.32
30	45.46	44.77	48.27	45.85	---	47.19	47.15	47.73	47.81	47.82	48.16	48.29
31	45.16	---	48.20	45.29	---	47.13	---	47.39	---	47.84	48.31	---
MEAN	47.58	44.83	46.09	46.47	44.29	44.99	47.24	47.38	47.44	47.62	47.98	48.31
MAX	48.10	45.03	48.62	48.02	44.88	47.19	47.37	47.84	47.86	47.88	48.31	48.42
MIN	45.16	44.69	44.66	45.29	43.65	44.46	47.15	47.09	47.07	47.23	47.85	48.18

MISSOURI-LEWIS AND CLARK RIVER BASIN

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06478530 LAKE THOMPSON NEAR OLDHAM, SD

LOCATION.--Lat 44°13'24", long 97°26'46", in SW¼SE¼SW¼ sec.21, T.109 N., R.55 W., Kingsbury County, Hydrologic Unit 10170103, on right bank 8.9 river miles upstream from the stage station Lake Thompson near Ramona, SD (discontinued October 1988) and 6.75 mi west of Oldham.

DRAINAGE AREA.--472 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,683.25 ft above National Geodetic Vertical Datum of 1964.

REMARKS.--Published records good. Because of the large surface area of the lake, wind conditions have a drastic affect on stage at this location; such as a northerly wind increasing the stage and a southerly wind decreasing the stage.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.42	2.34	2.26	---	---	2.36	2.37	2.55	2.87	2.94	2.75	2.49
2	2.31	2.43	2.25	---	---	2.37	2.30	2.50	2.87	2.91	2.81	2.41
3	2.58	2.43	2.25	---	---	2.35	2.34	2.54	2.88	2.90	2.82	2.48
4	2.60	2.38	2.25	---	---	2.35	2.37	2.60	2.93	2.87	2.78	2.45
5	2.59	2.35	2.25	---	---	2.37	2.36	2.61	2.96	2.83	2.73	2.41
6	2.61	2.39	2.25	---	2.26	2.38	2.35	2.61	2.95	2.85	2.73	2.40
7	2.59	2.33	2.25	---	2.27	2.37	2.36	2.56	2.94	2.85	2.83	2.38
8	2.56	2.25	2.25	---	2.27	2.37	2.39	2.54	2.90	2.81	2.89	2.38
9	2.54	2.33	2.25	---	2.27	2.36	2.35	2.46	2.89	2.78	2.88	2.47
10	2.49	2.33	2.24	---	2.27	2.37	2.26	2.44	2.95	2.79	2.86	2.46
11	2.51	2.33	2.25	---	2.27	2.37	2.19	2.51	2.93	2.90	2.84	2.45
12	2.48	2.32	2.25	---	2.28	2.39	2.35	2.52	2.89	3.02	2.84	2.47
13	2.45	2.29	2.24	---	2.28	2.40	2.41	2.53	2.78	3.00	2.84	2.48
14	2.48	2.27	2.25	---	2.29	2.40	2.44	2.50	2.86	2.93	2.81	2.46
15	2.46	2.32	2.27	---	2.27	2.40	2.46	2.48	2.90	2.87	2.78	2.44
16	2.46	2.33	2.27	---	2.27	2.40	2.46	2.57	2.83	2.88	2.81	2.42
17	2.48	2.24	2.26	---	2.27	2.40	2.45	2.67	2.75	2.89	2.80	2.39
18	2.54	2.31	2.26	---	2.33	2.40	2.46	2.66	2.80	2.84	2.79	2.40
19	2.33	2.28	2.26	---	2.34	2.40	2.45	2.60	2.76	2.89	2.73	---
20	2.45	2.25	2.27	---	2.34	2.41	2.44	2.58	2.74	2.87	2.69	---
21	2.47	2.27	2.27	---	2.34	2.42	2.41	2.57	2.92	2.87	2.73	---
22	2.43	2.28	2.26	---	2.34	2.43	2.41	2.58	2.89	2.87	2.69	---
23	2.46	2.30	2.26	---	2.34	2.45	2.43	2.68	2.86	2.85	2.71	---
24	2.46	2.27	2.27	---	2.33	2.43	2.35	2.72	2.84	2.82	2.64	---
25	2.41	2.29	---	---	2.34	2.42	2.28	2.71	2.75	2.78	2.59	---
26	2.42	2.25	---	---	2.34	2.43	2.21	2.69	2.78	2.76	2.58	---
27	2.45	2.26	---	---	2.34	2.45	2.34	2.70	2.88	2.79	2.56	---
28	2.36	2.27	---	---	2.35	2.42	2.39	2.71	2.83	2.84	2.52	---
29	2.37	2.25	---	---	---	2.41	2.51	2.83	2.88	2.81	2.56	---
30	2.42	2.26	---	---	---	2.38	2.58	2.83	2.92	2.74	2.58	---
31	2.37	---	---	---	---	2.40	---	2.83	---	2.78	2.56	---
MEAN	2.47	2.31	---	---	---	2.40	2.38	2.61	2.86	2.86	2.73	---
MAX	2.61	2.43	---	---	---	2.45	2.58	2.83	2.96	3.02	2.89	---
MIN	2.31	2.24	---	---	---	2.35	2.19	2.44	2.74	2.74	2.52	---

MISSOURI-LEWIS AND CLARK RIVER BASIN

06478540 LITTLE VERMILLION RIVER NEAR SALEM, SD
(Hydrologic bench-mark station)

LOCATION.--Lat 43°47'39", long 97°22'02", in SW¼ sec.19, T.104 N., R.54 W., McCook County, Hydrologic Unit 10170102, on right bank near downstream end of culvert on county highway, 2.0 mi upstream from small left-bank tributary, and 5.2 mi northeast of Salem.

DRAINAGE AREA.--78.6 mi².

PERIOD OF RECORD.--October 1966 to current year.

REVISED RECORDS.--WDR SD-84-1, WDR SD-89-1: Drainage area.

GAGE.--Water-stage recorder, crest-stage gage, and concrete dam. Elevation of gage is 1,510 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--25 years, 4.29 ft³/s, 3,110 acre-ft/yr; median of yearly mean discharges, 1.9 ft³/s, 1,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft³/s, June 20, 1984, gage height, 9.88 ft, backwater from tributary; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 19	1500	11	5.18	June 19	2200	*19	*5.48

No flow for many months.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.01	4.0	2.1	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	5.5	1.3	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.08	4.9	.78	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.43	5.1	.51	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.51	6.1	.26	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.43	4.6	.06	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.28	3.7	.03	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.20	4.4	.02	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.15	5.0	.02	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.05	4.5	.01	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.02	3.8	.02	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.02	3.0	.02	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.01	1.9	.03	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	1.1	.03	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	3.3	.02	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	3.5	.01	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.07	3.5	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.77	2.8	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.93	5.1	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	8.6	11	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	6.9	8.9	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	5.3	8.0	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	4.2	8.8	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	3.6	8.8	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	3.2	8.1	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	2.7	7.1	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	2.0	6.0	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	2.6	4.7	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	2.7	3.7	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.02	2.2	3.1	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	1.9	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.03	58.23	154.0	5.22	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.001	1.88	5.13	.17	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.02	9.3	11	2.1	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	1.1	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.06	115	305	10	.00	.00

CAL YR 1990 TOTAL 1064.62 MEAN 2.92 MAX 179 MIN .00 AC-FT 2110
WTR YR 1991 TOTAL 217.48 MEAN .60 MAX 11 MIN .00 AC-FT 431

e Estimated

MISSOURI-LEWIS AND CLARK RIVER BASIN

281

06478690 WEST FORK VERMILLION RIVER NEAR PARKER, SD

LOCATION.--Lat 43°24'55", long 97°12'18", in NE¼NE¼ sec.10, T.99 N., R.54 W., Turner County, Hydrologic Unit 10170102, on right bank 10 ft downstream from bridge, 3.7 mi northwest of Parker, and 13.9 mi upstream from confluence with East Fork Vermillion River.

DRAINAGE AREA.--377 mi².

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

REVISED RECORDS.--WDR SD-89-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,340 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 11, 1973, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--30 years, 31.7 ft³/s, 22,970 acre-ft/yr; median of yearly mean discharges, 8.7 ft³/s, 6,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,800 ft³/s, June 16, 1984, gage height, 12.57 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 22	0300	*695	*6.40	No other peak greater than base discharge.			
No flow for many months.							

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e.01	e.01	45	63	.27	.00
2	.00	.00	.00	.00	.00	.00	e.01	e.01	35	55	.29	.00
3	.00	.00	.00	.00	.00	.00	e.01	.04	35	49	.19	.00
4	.00	.00	.00	.00	.00	.00	e.01	.15	35	44	.05	.00
5	.00	.00	.00	.00	.00	.00	e.01	.14	33	40	.04	.00
6	.00	.00	.00	.00	.00	.00	e.01	.11	32	36	.04	.00
7	.00	.00	.00	.00	.00	.00	e.01	.08	37	32	.04	.00
8	.00	.00	.00	.00	.00	.00	e.01	.01	49	25	.04	.00
9	.00	.00	.00	.00	.00	.00	e.01	e.01	43	22	.05	.00
10	.00	.00	.00	.00	.00	.00	e.01	e.01	39	18	.04	.00
11	.00	.00	.00	.00	.00	.00	e.01	e.01	35	16	.08	.00
12	.00	.00	.00	.00	.00	.00	e.01	e.01	34	14	.02	.00
13	.00	.00	.00	.00	.00	e.01	.02	e.01	31	11	.00	.00
14	.00	.00	.00	.00	.00	e.10	.11	e.01	27	10	.00	.00
15	.00	.00	.00	.00	.00	e.10	.09	e.01	27	8.4	.00	.00
16	.00	.00	.00	.00	.00	e.10	.03	e.01	28	7.0	.07	.00
17	.00	.00	.00	.00	.00	e.10	.01	e.01	68	5.5	.01	.00
18	.00	.00	.00	.00	.00	e.15	e.01	e.01	82	4.3	e.01	.00
19	.00	.00	.00	.00	.00	e.20	e.01	e.01	59	3.3	.01	.00
20	.00	.00	.00	.00	.00	e.25	e.01	.00	49	1.8	.00	.00
21	.00	.00	.00	.00	.00	.27	.00	.00	443	1.7	.00	.00
22	.00	.00	.00	.00	.00	.27	.00	.00	576	1.3	.01	.00
23	.00	.00	.00	.00	.00	.26	.00	.00	251	1.0	.04	.00
24	.00	.00	.00	.00	.00	.15	.00	.00	123	.66	.03	.00
25	.00	.00	.00	.00	.00	.15	.00	.00	86	.51	.00	.00
26	.00	.00	.00	.00	.00	.12	.00	.00	89	.45	.00	.00
27	.00	.00	.00	.00	.00	.03	.00	.00	105	.45	.00	.00
28	.00	.00	.00	.00	.00	e.02	.00	.00	98	.39	.00	e.00
29	.00	.00	.00	.00	---	e.02	e.01	.00	84	.34	.00	.00
30	.00	.00	.00	.00	---	e.02	e.01	.00	72	.33	.00	.00
31	.00	---	.00	.00	---	e.01	---	16	---	.29	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	2.33	0.43	16.66	2750	472.72	1.33	0.00
MEAN	.000	.000	.000	.000	.000	.075	.014	.54	91.7	15.2	.043	.000
MAX	.00	.00	.00	.00	.00	.27	.11	16	576	63	.29	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	27	.29	.00	.00
AC-FT	.00	.00	.00	.00	.00	4.6	.9	33	5450	938	2.6	.00

CAL YR 1990 TOTAL 1531.91 MEAN 4.20 MAX 303 MIN .00 AC-FT 3040
WTR YR 1991 TOTAL 3243.47 MEAN 8.89 MAX 576 MIN .00 AC-FT 6430

e Estimated

06479010 VERMILLION RIVER NEAR VERMILLION, SD

LOCATION.--Lat 42°49'02", long 96°55'26", in SE&SE&NW¼ sec.1, T.92 N., R.52 W., Clay County, Hydrologic Unit 10170102, on left bank 30 ft downstream from bridge, 2.7 mi north of Vermillion, 2.9 mi upstream from Clay Creek, and 10.8 mi upstream from mouth.

DRAINAGE AREA.--2,302 mi², of which 494 mi² usually is noncontributing (area was contributing during 1986-88).

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

REVISED RECORDS.--WDR SD-89-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,125 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and Oct. 5-28, Mar. 16 to May 19, June 3, 4, July 19-23, Aug. 1-21, which are fair. U.S. Army Corps of Engineers satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--8 years, 317 ft³/s, 229,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,400 ft³/s, June 23, 1984, gage height, 31.77 ft; minimum daily discharge, 4.0 ft³/s, Dec. 24, 1990, Sept. 10, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 25	1745	*491	*9.35				

Minimum daily discharge, 4.0 ft³/s, Dec. 24, Sept. 10.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	7.0	e9.0	e6.0	e7.5	e10	16	15	22	161	21	5.7
2	5.4	6.9	e9.0	e6.0	e7.5	e9.0	14	14	36	139	21	6.0
3	7.8	8.1	e8.5	e6.0	e8.0	e9.0	14	16	86	120	22	5.3
4	8.4	7.3	e8.5	e6.0	e8.0	e10	14	19	81	106	20	5.2
5	10	e7.0	e8.5	e6.0	e8.5	e12	14	20	70	97	19	4.8
6	12	e7.0	e8.5	e6.0	e8.8	e12	14	24	69	88	19	4.4
7	9.6	e7.0	e8.5	e6.0	e9.0	e11	14	21	75	81	21	4.1
8	8.1	e7.0	e9.0	e6.5	e10	e10	12	25	100	75	23	5.0
9	7.6	e7.5	e9.0	e6.5	e11	e10	11	24	99	72	32	5.0
10	6.4	e8.0	e9.0	e6.5	e12	e10	11	23	127	64	21	4.0
11	6.7	e8.0	e9.0	e6.5	e13	e10	12	22	230	60	19	5.4
12	6.9	e8.0	e8.5	e6.5	e13	e15	16	21	318	56	18	4.9
13	6.7	e9.0	e8.5	e6.5	e14	e18	19	19	365	53	17	5.7
14	6.9	e10	e8.5	e7.0	e10	e18	20	19	262	49	16	9.4
15	6.9	e10	e8.0	e7.0	e8.0	e17	17	17	163	45	15	5.1
16	7.6	e10	e8.0	e7.0	e11	16	13	17	118	42	17	4.6
17	8.7	e10	e8.0	e7.5	e12	20	13	18	122	40	15	6.7
18	7.4	e10	e8.0	e7.5	e12	20	18	22	129	38	14	4.8
19	7.2	e10	e8.0	e7.5	e12	19	19	59	113	46	13	4.5
20	8.4	10	e7.5	e7.5	e13	15	21	41	92	40	12	4.3
21	8.4	11	e7.0	e7.0	e13	17	20	29	80	35	11	4.7
22	7.8	11	e6.0	e7.0	e14	18	20	25	82	40	9.8	4.7
23	8.4	10	e5.0	e7.0	e13	18	19	24	76	38	9.3	4.4
24	7.4	10	e4.0	e7.0	e10	19	17	23	190	40	8.8	7.0
25	7.6	10	e5.0	e6.5	e10	21	16	20	463	34	8.6	5.3
26	9.6	e9.5	e5.0	e7.0	e10	21	17	19	429	30	8.1	4.1
27	8.7	e9.0	e5.0	e7.0	e10	19	18	17	307	28	7.6	5.4
28	7.9	e9.0	e6.0	e7.0	e10	19	16	15	223	27	7.4	5.7
29	e7.7	e9.0	e6.0	e7.0	---	17	18	15	182	24	7.1	5.6
30	7.2	e9.5	e5.0	e6.5	---	17	17	14	174	23	6.8	4.9
31	6.7	---	e5.0	e7.0	---	17	---	19	---	22	6.2	---
TOTAL	241.6	265.8	228.5	208.0	298.3	474.0	480	676	4883	1813	465.7	156.7
MEAN	7.79	8.86	7.37	6.71	10.7	15.3	16.0	21.8	163	58.5	15.0	5.22
MAX	12	11	9.0	7.5	14	21	21	59	463	161	32	9.4
MIN	5.4	6.9	4.0	6.0	7.5	9.0	11	14	22	22	6.2	4.0
AC-FT	479	527	453	413	592	940	952	1340	9690	3600	924	311

CAL YR 1990 TOTAL 11087.5 MEAN 30.4 MAX 1000 MIN 4.0 AC-FT 21990
WTR YR 1991 TOTAL 10190.6 MEAN 27.9 MAX 463 MIN 4.0 AC-FT 20210

e Estimated

BIG SIOUX RIVER BASIN

283

06479215 BIG SIOUX RIVER NEAR FLORENCE, SD

LOCATION.--Lat 45°10'51", long 97°11'09", in NE¼NE¼NE¼ sec.17, T.120 N., R.52 W., Grant County, Hydrologic Unit 10170202, on right bank near downstream side of county highway bridge, 11.0 mi northeast of Florence, and 2.2 mi upstream from Indian Creek.

DRAINAGE AREA.--638 mi², of which 570 mi² is partly or entirely noncontributing.

PERIOD OF RECORD.--June 6, 1984, to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,780 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--7 years, 9.55 ft³/s, 6,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,810 ft³/s, Mar. 29, 1986, gage height, 9.08 ft; no flow Aug. 9-11, 1985, Dec. 16 to Mar. 5, 1990, and Feb. 16-25, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 31	2000	80	6.62	July 22	1700	59	6.18
June 21	1200	86	6.80	Aug. 2	1100	*287	*8.16
June 30	2300	156	7.66	Aug. 6	1600	88	6.83

No flow Feb. 16-25.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.09	.08	e.02	e.02	e.05	.22	22	55	112	29	6.4
2	.05	.09	.08	e.02	e.02	e.03	.21	18	44	63	173	5.6
3	.10	.09	.08	e.02	e.02	e.02	.21	16	32	37	116	4.7
4	.09	.08	.09	e.02	e.03	e.02	.20	28	30	34	69	4.0
5	.07	.08	.09	e.02	e.03	e.03	.23	32	38	37	63	3.6
6	.06	.09	.08	e.02	e.03	e.04	.31	23	37	34	82	3.0
7	.06	.09	.08	e.02	e.03	e.05	.35	17	30	29	78	2.7
8	.06	.09	.08	e.02	e.03	e.04	.32	14	26	24	75	3.2
9	.07	.09	.08	e.02	e.04	e.06	.32	11	24	21	62	6.1
10	.07	.09	.09	e.02	e.04	e.10	.29	9.4	22	18	50	10
11	.07	.09	.09	e.02	e.04	e.20	.32	8.0	19	16	42	14
12	.07	.09	.09	e.02	e.03	e.30	.94	7.0	15	15	36	13
13	.09	.09	.09	e.02	e.02	e.30	2.2	5.9	13	14	33	13
14	.08	.10	.09	e.02	e.02	e.20	4.0	5.0	12	13	29	13
15	.07	.11	e.08	e.02	e.01	e.20	8.0	4.4	11	12	26	12
16	.07	.10	e.07	e.03	e.00	e.20	17	4.1	11	11	23	11
17	.08	.10	e.07	e.03	e.00	e.30	18	3.8	11	10	20	10
18	.09	.09	e.07	e.03	e.00	e.40	14	3.2	10	9.1	18	9.4
19	.09	.10	e.06	e.03	e.00	e.50	10	2.7	9.2	7.6	16	8.5
20	.09	.11	e.05	e.03	e.00	e.80	8.2	2.6	13	6.3	15	7.8
21	.09	.11	e.04	e.03	e.00	e1.5	7.1	2.5	63	6.1	15	7.2
22	.09	.11	e.03	e.02	e.00	e2.0	6.2	3.3	42	39	14	6.3
23	.08	.11	e.02	e.02	e.00	e3.0	5.4	6.9	37	49	13	5.3
24	.09	.12	e.03	e.01	e.00	e2.0	4.5	7.2	27	40	12	4.6
25	.09	.12	e.03	e.01	e.00	e1.5	3.9	6.6	21	32	12	3.7
26	.09	.10	e.03	e.01	e.01	e1.0	3.6	6.2	17	28	11	3.0
27	.09	.09	e.03	e.01	e.03	e.60	4.4	6.4	16	26	8.7	2.5
28	.09	.09	e.03	e.01	e.08	.38	4.5	10	17	28	8.7	2.2
29	.09	.09	e.02	e.01	---	.33	7.2	23	23	26	9.4	2.0
30	.09	.08	e.02	e.01	---	.29	17	31	59	24	8.6	1.9
31	.09	---	e.02	e.02	---	.26	---	50	---	22	7.3	---
TOTAL	2.46	2.88	1.89	0.61	0.53	16.70	149.12	390.2	784.2	843.1	1175.7	199.7
MEAN	.079	.096	.061	.020	.019	.54	4.97	12.6	26.1	27.2	37.9	6.66
MAX	.10	.12	.09	.03	.08	3.0	18	50	63	112	173	14
MIN	.05	.08	.02	.01	.00	.02	.20	2.5	9.2	6.1	7.3	1.9
AC-FT	4.9	5.7	3.7	1.2	1.1	33	296	774	1560	1670	2330	396

CAL YR 1990 TOTAL 521.51 MEAN 1.43 MAX 22 MIN .00 AC-FT 1030
WTR YR 1991 TOTAL 3567.09 MEAN 9.77 MAX 173 MIN .00 AC-FT 7080

e Estimated

BIG SIOUX RIVER BASIN

06479438 BIG SIOUX RIVER NEAR WATERTOWN, SD

LOCATION.--Lat 45°00'22", long 97°09'53", in NE¼NE¼NE¼ sec.16, T.118 N., R.52 W., Codington County, Hydrologic Unit 10170202, on left bank at downstream side of county highway bridge, 4.9 mi downstream from Mahoney Creek, 6.5 mi upstream from inlet-outlet to Lake Kampeska, and 7.5 mi northwest of Watertown.

DRAINAGE AREA.--1,007 mi², of which 779 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR SD-78-1: 1973-74(M), 1976-77(M). WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,725.81 ft above National Geodetic Vertical Datum of 1929 (South Dakota Department of Transportation bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--19 years, 24.3 ft³/s, 17,610 acre-ft/yr; median of yearly mean discharge, 13 ft³/s, 9,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,970 ft³/s, Mar. 30, 1986, gage height, 11.08 ft; maximum gage height, 11.13 ft, June 21, 1991, backwater; no flow at times in 1974-82, 1984, 1988-91.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 21	0500	*3,300	*11.13	Aug. 3	0600	886	8.87
July 1	0400	1,190	9.29				

a Backwater.
No flow Feb. 17-26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	.95	e.60	e.15	e.04	e.01	3.6	37	82	994	40	24
2	.33	.76	e.60	e.10	e.05	e.01	3.4	35	84	552	187	22
3	2.0	.69	e.68	e.08	e.06	e.02	2.7	37	92	292	777	20
4	1.9	.68	e.80	e.07	e.07	e.02	2.5	52	94	194	387	19
5	1.7	.79	e.90	e.06	e.07	e.03	2.2	65	89	143	220	17
6	1.3	.80	1.7	e.05	e.07	e.03	2.4	63	82	114	191	17
7	1.0	.80	1.3	e.04	e.07	e.03	2.4	59	74	97	221	17
8	.95	.80	1.2	e.04	e.07	e.03	2.0	44	66	83	255	19
9	.82	.86	1.2	e.04	e.07	e.03	2.0	35	56	70	233	19
10	.71	.95	1.2	e.05	e.07	e.06	2.0	29	47	61	186	20
11	.56	.95	1.2	e.06	e.07	e.08	2.3	25	36	52	143	22
12	.47	.95	1.2	e.07	e.05	e.10	4.1	22	30	46	109	25
13	.52	.95	e1.2	e.08	e.03	e.15	9.4	19	27	41	87	28
14	.45	1.1	1.5	e.08	e.03	e.20	16	16	25	38	73	29
15	.40	1.3	1.5	e.08	e.02	e.30	21	13	26	34	62	30
16	.46	1.3	1.5	e.08	e.01	e.70	24	14	28	31	55	28
17	.41	1.3	1.4	e.06	e.00	e2.0	25	15	23	29	51	27
18	.84	1.2	1.3	e.07	e.00	e2.5	24	15	20	26	46	25
19	1.2	.99	1.1	e.08	e.00	e3.0	24	13	19	25	43	25
20	1.3	.88	e1.0	e.06	e.00	3.5	21	11	70	24	41	24
21	1.1	.97	e.70	e.04	e.00	3.9	19	9.8	e1800	23	39	22
22	1.0	.87	e.60	e.05	e.00	4.5	16	8.9	499	25	36	21
23	1.0	.91	e.50	e.06	e.00	4.5	15	12	259	42	33	20
24	1.1	.87	e.40	e.04	e.00	4.7	14	17	190	80	31	20
25	1.1	e.90	e.40	e.03	e.00	5.8	12	21	142	76	29	19
26	1.2	e.80	e.40	e.03	e.00	6.5	11	19	104	52	28	18
27	.95	e.70	e.40	e.03	e.01	5.8	12	17	102	43	25	17
28	1.0	e.60	e.40	e.04	e.02	5.9	12	21	126	43	24	15
29	1.1	e.60	e.30	e.04	---	5.7	15	35	157	41	24	14
30	.95	e.60	e.20	e.03	---	4.7	22	55	251	39	24	13
31	.86	---	e.20	e.03	---	3.9	---	68	---	37	25	---
TOTAL	28.89	26.82	27.58	1.82	0.88	68.70	344.0	902.7	4700	3447	3725	636
MEAN	.93	.89	.89	.059	.031	2.22	11.5	29.1	157	111	120	21.2
MAX	2.0	1.3	1.7	.15	.07	6.5	25	68	1800	994	777	30
MIN	.21	.60	.20	.03	.00	.01	2.0	8.9	19	23	24	13
AC-FT	57	53	55	3.6	1.7	136	682	1790	9320	6840	7390	1260

CAL YR 1990 TOTAL 1078.53 MEAN 2.95 MAX 27 MIN .00 AC-FT 2140
WTR YR 1991 TOTAL 13909.39 MEAN 38.1 MAX 1800 MIN .00 AC-FT 27590

e Estimated

BIG SIOUX RIVER BASIN

285

06479525 BIG SIOUX RIVER NEAR CASTLEWOOD, SD

LOCATION.--Lat 44°43'54", long 97°02'39", in SW¼SW¼ sec.26, T.115 N., R.52 W., Hamlin County, Hydrologic Unit 10170202, on right bank at upstream side of highway bridge on State Highway 22, 3.25 mi east of intersection of U.S. Highway 81 and State Highway 22, and 1.0 mi northwest of Castlewood.

DRAINAGE AREA.--1,997 mi², of which 1,427 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1976 to current year.

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,667.52 ft above National Geodetic Vertical Datum of 1929 (South Dakota Department of Transportation bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--15 years, 57.2 ft³/s, 41,440 acre-ft/yr; median of yearly mean discharges, 35 ft³/s, 25,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,250 ft³/s, Mar. 30, 1986, gage height, 11.73 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 22	1700	*1,270	*10.93	No other peak greater than base discharge.			

No flow Dec. 29 to Feb. 3, 16-26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	5.8	e3.0	.00	.00	e.05	11	31	114	184	51	96
2	4.5	4.2	e2.5	.00	.00	e.10	11	22	107	241	67	94
3	7.1	4.0	e2.5	.00	.00	e.20	11	29	50	206	122	94
4	26	3.7	e3.0	.00	e.03	e.40	8.5	56	42	177	130	82
5	4.4	e3.5	e3.0	.00	e.05	e.70	7.5	36	43	162	114	78
6	1.7	e3.0	e3.5	.00	e.06	e1.0	7.0	30	74	156	118	72
7	1.6	e3.1	e3.5	.00	e.06	e1.5	5.9	27	52	149	124	79
8	2.0	3.7	e5.0	.00	e.07	e2.0	5.0	24	34	148	145	93
9	2.8	4.6	e7.0	.00	e.07	e3.0	4.9	22	28	142	174	92
10	3.5	5.0	e7.0	.00	e.07	e4.0	5.1	19	25	138	197	87
11	3.2	5.4	e5.5	.00	e.05	e6.0	5.0	16	22	132	191	80
12	4.0	3.9	e4.0	.00	e.04	e8.0	12	14	20	125	183	82
13	3.8	3.7	e3.5	.00	e.03	e10	30	13	18	123	178	82
14	3.8	5.4	e3.5	.00	e.02	e15	22	11	19	111	174	84
15	4.1	4.3	e3.7	.00	e.01	e20	16	10	30	107	171	86
16	4.0	4.0	e4.0	.00	.00	e25	18	33	30	100	170	98
17	2.8	3.8	e3.5	.00	.00	e28	12	30	31	91	171	85
18	3.9	3.4	e2.5	.00	.00	e29	10	24	25	84	169	85
19	7.9	4.6	e1.5	.00	.00	e30	9.9	19	23	78	160	72
20	4.0	5.0	e1.0	.00	.00	e30	9.4	15	91	69	165	59
21	3.7	4.2	e.50	.00	.00	e29	9.3	13	438	63	167	61
22	3.0	4.5	e.20	.00	.00	e28	9.6	12	1150	72	157	63
23	2.9	3.0	e.10	.00	.00	e27	7.9	16	917	104	151	59
24	3.2	4.4	e.08	.00	.00	e25	7.3	19	336	99	144	58
25	4.1	3.1	e.06	.00	.00	e25	6.8	12	193	65	141	60
26	4.0	e2.0	e.04	.00	.00	e30	6.4	13	156	52	135	55
27	3.4	e2.0	e.02	.00	e.01	e20	6.8	14	141	49	131	50
28	4.9	e2.0	e.01	.00	e.10	e16	8.4	18	143	60	119	49
29	4.2	e2.5	.00	.00	---	e14	9.7	40	147	60	113	52
30	4.7	e3.0	.00	.00	---	e13	44	34	152	61	107	49
31	6.1	---	.00	.00	---	e11	---	48	---	58	102	---
TOTAL	143.3	114.8	73.71	0.00	0.67	451.95	337.4	720	4651	3466	4441	2236
MEAN	4.62	3.83	2.38	.000	.024	14.6	11.2	23.2	155	112	143	74.5
MAX	26	5.8	7.0	.00	.10	30	44	56	1150	241	197	98
MIN	1.6	2.0	.00	.00	.00	.05	4.9	10	18	49	51	49
AC-FT	284	228	146	.00	1.3	896	669	1430	9230	6870	8810	4440

CAL YR 1990 TOTAL 2961.91 MEAN 8.11 MAX 216 MIN .00 AC-FT 5870
WTR YR 1991 TOTAL 16635.83 MEAN 45.6 MAX 1150 MIN .00 AC-FT 33000

e Estimated

BIG SIOUX RIVER BASIN

06479928 BATTLE CREEK NEAR NUNDA, SD

LOCATION.--Lat 44°09'10", long 96°53'18", in SE¼SE¼SE¼ sec.13, T.108 N., R.51 W., Lake County, Hydrologic Unit 10170202, on left bank 21 ft from downstream bridge abutment, and 6.0 mi east of Nunda.

DRAINAGE AREA.--163 mi², of which 4.8 mi² probably is noncontributing.

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,590 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 578 ft³/s, June 17, 1990, gage height, 9.64 ft; no flow for many days each year.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	1300	*157	*6.73	June 23	1900	116	6.17
June 18	0300	56	5.11				

No flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.05	e.01	e.01	e.00	e.01	e.05	2.1	8.5	18	26	2.1	.00
2	e.05	e.01	e.01	e.00	e.02	e.03	1.9	4.9	15	23	1.9	.00
3	e.25	e.01	e.01	e.00	e.03	e.02	1.7	5.4	14	20	1.6	.00
4	e.30	e.01	e.01	e.00	e.06	e.07	1.5	12	14	18	1.3	.00
5	e.25	e.01	e.01	e.00	e.06	e.20	1.6	9.9	19	15	1.1	.00
6	e.20	e.01	e.01	e.00	e.06	e.50	1.7	7.4	27	13	.96	.00
7	e.20	e.01	e.02	e.00	e.06	e.20	2.1	5.9	30	11	4.6	.00
8	e.15	e.01	e.02	e.00	e.05	e.40	2.1	5.1	28	8.9	4.9	.19
9	e.15	e.02	e.03	e.00	e.04	e.50	1.8	5.0	23	8.8	3.8	.06
10	e.10	e.02	e.03	e.00	e.03	e.60	1.5	4.8	22	7.4	2.9	.05
11	e.10	e.02	e.03	e.00	e.02	e.70	1.4	4.5	29	7.1	2.1	.21
12	e.09	e.02	e.03	e.00	e.02	e.70	3.1	3.8	35	8.6	1.5	.15
13	e.08	e.02	e.02	e.00	e.02	e.60	5.2	3.3	30	6.5	1.1	.15
14	e.07	e.03	e.02	e.00	e.02	e.50	6.0	3.0	27	5.0	1.0	.25
15	e.06	e.04	e.01	e.00	e.01	e.50	5.6	2.3	34	3.8	.53	.11
16	e.05	e.05	e.01	e.00	e.00	e.50	4.9	2.0	37	3.0	.35	.08
17	e.04	e.06	e.01	e.00	e.00	e.57	3.3	39	45	2.1	.27	.06
18	e.03	e.06	e.01	e.00	e.01	.62	1.7	139	47	1.7	.22	.06
19	e.02	e.08	e.01	e.00	e.01	.79	1.2	82	33	1.5	.14	.06
20	e.02	e.10	e.00	e.00	e.02	.99	.88	48	25	1.5	.09	.07
21	e.02	e.07	e.00	e.00	e.03	.95	.72	35	29	1.9	.07	.05
22	e.02	e.05	e.00	e.00	e.04	.76	.63	30	63	2.0	.05	.04
23	e.02	e.05	e.00	e.00	e.03	.86	.43	31	103	1.9	.04	.06
24	e.02	e.05	e.00	e.00	e.02	.86	.33	31	93	1.6	.02	.29
25	e.02	e.05	e.00	e.00	e.01	.85	.14	29	61	1.2	.00	.13
26	e.02	e.03	e.00	e.00	e.01	.86	.09	27	43	1.0	.00	.09
27	e.02	e.02	e.00	e.00	e.02	1.2	.16	24	35	4.3	.00	.09
28	e.01	e.01	e.00	e.00	e.03	1.1	.21	23	31	4.2	.00	.09
29	e.01	e.01	e.00	e.00	---	1.1	1.8	22	29	4.2	.00	.08
30	e.01	e.01	e.00	e.00	---	1.4	10	21	28	3.6	.00	.06
31	e.01	---	e.00	e.00	---	1.9	---	20	---	3.1	.00	---
TOTAL	2.44	0.95	0.31	0.00	0.74	20.88	65.79	688.8	1067	220.9	32.64	2.48
MEAN	.079	.032	.010	.000	.026	.67	2.19	22.2	35.6	7.13	1.05	.083
MAX	.30	.10	.03	.00	.06	1.9	10	139	103	26	4.9	.29
MIN	.01	.01	.00	.00	.00	.02	.09	2.0	14	1.0	.00	.00
AC-FT	4.8	1.9	.6	.00	1.5	41	130	1370	2120	438	65	4.9

CAL YR 1990 TOTAL 4593.90 MEAN 12.6 MAX 456 MIN .00 AC-FT 9110
WTR YR 1991 TOTAL 2102.93 MEAN 5.76 MAX 139 MIN .00 AC-FT 4170

e Estimated

06480000 BIG SIOUX RIVER NEAR BROOKINGS, SD

LOCATION.--Lat 44°10'48", long 96°44'55", in NW¼NW¼ sec.8, T.108 N., R.49 W., Moody County, Hydrologic Unit 10170203, on right bank 3 ft downstream from highway bridge, 2.2 mi downstream from Medary Creek, and 9.5 mi southeast of Brookings.

DRAINAGE AREA.--3,898 mi², of which 1,479 mi² is probably noncontributing.

PERIOD OF RECORD.--August 1953 to current year.

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,551.91 ft above National Geodetic Vertical Datum of 1929. Prior to May 30, 1959, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--38 years, 213 ft³/s, 154,300 acre-ft/yr; median of yearly mean discharges, 140 ft³/s, 101,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,900 ft³/s, Apr. 9, 1969, gage height, 14.77 ft; no flow at times in 1956, 1959, 1976, 1977, 1982.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 8	1000	1,350	8.07	June 25	0700	*1,430	*8.32

Minimum daily discharge, 5.0 ft³/s, Dec. 25.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	51	e34	e7.0	e7.0	e25	80	301	589	633	193	145
2	40	52	e35	e8.0	e7.0	e23	78	338	672	644	186	139
3	57	52	e36	e7.0	e8.0	e16	75	351	688	684	183	133
4	75	52	e37	e6.0	e9.0	e21	75	393	732	683	176	127
5	78	51	e39	e6.0	e10	e24	76	416	846	650	191	128
6	75	e49	e43	e6.0	e13	e26	78	412	961	571	217	123
7	79	e46	e44	e6.0	e15	e25	82	388	1180	489	241	123
8	74	e46	e45	e6.0	e20	e28	83	344	1340	436	339	141
9	67	e46	e45	e6.0	e24	e32	83	305	1180	404	389	136
10	61	e47	e46	e6.0	e27	e38	82	284	904	380	411	143
11	57	e47	46	e7.0	e27	e45	86	260	673	400	401	149
12	54	e48	46	e7.0	e24	e57	97	237	509	657	359	157
13	52	49	e45	e8.0	e21	e55	134	223	424	845	328	153
14	50	50	e44	e8.0	e17	e53	182	205	377	839	306	163
15	50	51	e43	e9.0	e13	e52	215	188	344	728	286	161
16	49	52	e42	e8.0	e14	52	233	172	336	553	271	151
17	51	50	e42	e7.0	e15	54	228	267	363	444	268	146
18	52	50	e38	e6.0	e16	58	214	431	334	386	261	143
19	53	50	e35	e8.0	e18	61	206	468	295	345	252	143
20	58	50	e33	e9.0	e20	76	189	436	271	306	245	134
21	65	50	e27	e8.0	e22	90	175	381	450	286	234	131
22	64	50	e20	e8.0	e23	91	165	333	695	265	228	119
23	68	49	e15	e9.0	e21	89	154	295	1070	241	224	114
24	63	49	e10	e9.0	e20	82	144	274	1360	223	216	126
25	60	49	e5.0	e8.0	e18	84	137	252	1430	216	205	129
26	58	e47	e6.0	e7.0	e18	86	133	232	1410	223	195	122
27	57	e42	e7.0	e6.0	e19	91	127	219	1340	219	185	120
28	55	e35	e8.0	e8.0	e20	89	123	212	1180	223	177	117
29	54	e32	e8.0	e7.0	---	94	140	236	938	226	170	111
30	53	e32	e7.0	e6.0	---	92	230	342	712	220	163	107
31	51	---	e7.0	e6.0	---	85	---	491	---	205	154	---
TOTAL	1819	1424	938.0	223.0	486.0	1794	4104	9686	23603	13624	7654	4034
MEAN	58.7	47.5	30.3	7.19	17.4	57.9	137	312	787	439	247	134
MAX	79	52	46	9.0	27	94	233	491	1430	845	411	163
MIN	39	32	5.0	6.0	7.0	16	75	172	271	205	154	107
AC-FT	3610	2820	1860	442	964	3560	8140	19210	46820	27020	15180	8000

CAL YR 1990 TOTAL 49508.9 MEAN 136 MAX 1950 MIN 3.2 AC-FT 98200
WTR YR 1991 TOTAL 69389.0 MEAN 190 MAX 1430 MIN 5.0 AC-FT 137600

e Estimated

06480400 SPRING CREEK NEAR FLANDREAU, SD

LOCATION.--Lat 44°07'18", long 96°35'19", in SE¼NE¼NE¼ sec.33, T.108 N., R.48 W. (revised), Moody County, Hydrologic Unit 10170203, on left bank at downstream side of bridge on State Highway 13, 5.0 mi north of Flandreau, and 6.6 mi upstream from mouth.

DRAINAGE AREA.--63.2 mi².

PERIOD OF RECORD.--October 1982 to current year.

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,580 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--9 years, 20.3 ft³/s, 14,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,030 ft³/s, June 20, 1984, gage height, 15.72 ft; minimum daily discharge, 0.00 ft³/s, Dec. 26, 1989, to Jan. 13, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 22	0100	*86	*9.95				

Minimum daily discharge, 0.04 ft³/s, Dec. 31 to Jan. 18, 21-31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	2.3	e1.5	e.04	e.05	e.60	5.7	14	8.9	4.6	1.7	.50
2	2.0	2.3	e1.5	e.04	e.07	e.60	5.7	10	9.2	4.1	1.6	.43
3	3.4	2.4	e1.5	e.04	e.09	e.50	5.8	9.3	8.7	3.5	1.7	.40
4	4.5	2.5	e1.5	e.04	e.10	e.50	5.9	16	9.2	3.2	1.9	.40
5	3.6	2.3	e1.5	e.04	e.15	e.60	6.0	17	11	2.7	1.6	.48
6	2.9	2.9	e1.5	e.04	e.15	e.70	6.2	12	11	2.4	1.5	.58
7	2.6	2.1	e1.5	e.04	e.20	e.90	6.7	9.0	42	2.4	2.9	1.7
8	2.4	2.2	e1.5	e.04	e.20	e1.0	6.7	7.7	20	2.7	5.9	4.6
9	2.3	2.4	e1.5	e.04	e.30	e1.5	6.5	6.9	5.4	2.5	5.2	5.8
10	2.3	3.0	2.9	e.04	e.30	e2.0	6.1	6.4	5.2	2.6	3.8	3.7
11	2.4	2.9	3.0	e.04	e.25	e2.5	6.2	5.9	5.5	3.7	2.4	2.8
12	2.4	2.8	3.0	e.04	e.20	e4.0	7.3	5.5	5.0	13	2.0	3.4
13	2.3	2.7	e2.0	e.04	e.20	e6.0	10	6.0	3.9	17	1.7	3.3
14	2.4	2.8	e1.5	e.04	e.20	e4.0	11	5.6	3.4	6.4	1.6	3.2
15	2.7	3.0	e.90	e.04	e.15	e3.0	10	4.8	3.4	3.9	1.6	3.3
16	2.5	2.9	e.70	e.04	e.15	e3.0	8.8	4.6	3.3	2.9	1.4	2.7
17	2.5	2.6	e.50	e.04	e.15	e3.0	7.9	6.1	2.9	2.2	1.8	2.3
18	2.7	2.6	e.40	e.04	e.20	e3.0	7.7	8.4	2.4	1.8	1.8	2.1
19	2.9	2.7	e.30	e.05	e.30	e3.0	8.1	7.4	2.1	1.9	1.4	2.0
20	3.4	2.7	e.25	e.05	e.60	e3.5	7.5	6.5	2.1	1.8	1.3	2.1
21	3.8	3.0	e.20	e.04	e.60	e5.0	6.8	5.8	24	1.6	1.3	2.1
22	3.5	4.3	e1.5	e.04	e.70	e7.0	6.3	5.5	72	1.6	1.1	2.0
23	3.0	3.2	e.10	e.04	e.60	e10	5.8	8.0	78	1.5	1.0	1.8
24	2.7	3.6	e.09	e.04	e.50	e10	5.3	7.5	57	1.4	.91	2.6
25	2.4	2.7	e.08	e.04	e.50	e11	4.9	6.8	26	1.4	.80	3.3
26	2.5	e1.5	e.08	e.04	e.50	e30	4.9	6.2	12	1.3	.58	2.7
27	2.5	e1.5	e.08	e.04	e.50	e20	5.5	5.8	7.9	1.7	.51	2.4
28	2.2	e1.5	e.07	e.04	e.50	e17	5.6	7.1	6.0	2.9	.46	2.3
29	2.2	e1.5	e.06	e.04	---	e10	7.5	7.9	5.4	3.0	.44	2.2
30	2.3	e1.5	e.05	e.04	---	e7.0	14	8.8	4.8	2.2	.52	2.1
31	2.3	---	e.04	e.04	---	e6.0	---	8.7	---	1.9	.56	---
TOTAL	83.5	76.4	29.95	1.26	8.41	176.90	212.4	247.2	457.7	105.8	52.98	69.29
MEAN	2.69	2.55	.97	.041	.30	5.71	7.08	7.97	15.3	3.41	1.71	2.31
MAX	4.5	4.3	3.0	.05	.70	30	14	17	78	17	5.9	5.8
MIN	1.9	1.5	.04	.04	.05	.50	4.9	4.6	2.1	1.3	.44	.40
AC-FT	166	152	59	2.5	17	351	421	490	908	210	105	137

CAL YR 1990 TOTAL 2284.55 MEAN 6.26 MAX 364 MIN .00 AC-FT 4530
WTR YR 1991 TOTAL 1521.79 MEAN 4.17 MAX 78 MIN .04 AC-FT 3020

e Estimated

06480650 FLANDREAU CREEK ABOVE FLANDREAU, SD

LOCATION.--Lat 44°03'45", long 96°29'15", in SE¼NE¼NE¼ sec.20, T.107 N., R.47 W., Moody County, Hydrologic Unit 10170203, on right bank 500 ft downstream from county highway bridge, 5.9 mi upstream from mouth, and 5.2 mi east of Flandreau.

DRAINAGE AREA.--100 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,555 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor and June 16-25, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--10 years, 34.9 ft³/s, 25,290 acre-ft/yr; median of yearly mean discharges, 26 ft³/s, 18,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,650 ft³/s, June 20, 1984, gage height, 11.02 ft; no flow at times in 1982, 1988-90.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 6	1400	*328	*6.72	June 23	0430	244	6.32

Minimum daily discharge, 0.01 ft³/s, Jan. 26-28, 31, Feb. 1, 16, 17.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	2.3	e1.6	e.10	e.01	e.60	9.4	26	12	13	1.6	.80
2	1.0	2.1	e1.5	e.10	e.02	e.40	8.6	21	12	13	1.6	.63
3	1.9	2.3	e1.6	e.05	e.04	e.30	8.8	19	10	12	1.7	.59
4	2.3	2.5	1.7	e.05	e.10	e.30	8.9	25	10	9.8	1.5	.57
5	3.5	2.2	1.8	e.05	e.10	e.40	9.4	31	23	8.9	1.4	.63
6	3.0	2.4	1.9	e.05	e.20	e.60	9.6	26	207	7.6	1.4	.69
7	2.2	2.3	2.2	e.05	e.10	e.40	10	21	138	6.8	4.3	.77
8	2.0	2.0	2.4	e.05	e.10	e.50	11	17	59	6.0	17	1.7
9	1.9	2.1	2.5	e.05	e.15	e.70	11	16	36	5.4	24	6.9
10	1.8	2.2	2.5	e.05	e.08	e1.3	11	14	73	5.1	20	7.8
11	1.7	2.4	2.6	e.05	e.05	e1.8	11	13	86	5.6	13	6.1
12	1.8	2.4	2.6	e.05	e.03	e2.4	11	14	50	6.4	8.6	6.0
13	1.8	2.2	1.9	e.05	e.04	e3.0	15	14	35	8.9	5.9	7.1
14	1.6	2.4	e1.2	e.05	e.05	e2.3	27	13	24	9.8	3.9	6.3
15	1.1	2.8	e1.0	e.06	e.02	e1.8	30	11	19	7.8	3.1	6.5
16	1.4	3.1	e1.0	e.05	e.01	e2.0	25	11	16	4.8	2.7	6.3
17	1.7	2.2	e1.0	e.05	e.01	4.0	22	11	23	4.2	3.0	4.1
18	2.1	2.9	e1.0	e.05	e.03	5.0	19	14	18	3.3	2.4	2.8
19	2.6	2.9	e1.0	e.05	e.30	6.4	18	16	13	2.9	2.2	2.8
20	3.1	2.9	e1.0	e.06	e.40	9.4	17	14	10	2.6	1.9	2.5
21	3.8	2.8	e.50	e.04	e.80	13	16	14	28	2.4	1.7	2.1
22	3.4	3.0	e.30	e.02	e.90	19	14	12	121	2.2	1.5	1.7
23	3.7	2.9	e.20	e.04	e.60	13	13	10	220	1.8	1.4	1.7
24	2.3	2.8	e.10	e.02	e.70	7.8	12	9.2	122	1.6	1.2	2.7
25	2.6	3.5	e.10	e.02	e.20	14	11	8.3	57	1.7	1.3	3.1
26	2.5	2.3	e.10	e.01	e.20	25	10	7.5	36	1.6	1.2	4.7
27	2.3	1.9	e.15	e.01	e.30	25	9.7	6.8	25	1.7	.99	3.6
28	2.2	e1.9	e.20	e.01	e.40	18	10	6.6	18	2.8	.85	3.2
29	2.2	e1.8	e.20	e.02	---	15	13	14	15	2.6	.81	2.7
30	2.1	e1.7	e.10	e.02	---	12	19	17	13	2.3	.80	2.5
31	2.2	---	e.10	e.01	---	11	---	13	---	2.1	.75	---
TOTAL	68.8	73.2	36.05	1.34	5.94	216.40	420.4	465.4	1529	166.7	133.70	99.58
MEAN	2.22	2.44	1.16	.043	.21	6.98	14.0	15.0	51.0	5.38	4.31	3.32
MAX	3.8	3.5	2.6	.10	.90	25	30	31	220	13	24	7.8
MIN	1.0	1.7	.10	.01	.01	.30	8.6	6.6	10	1.6	.75	.57
AC-FT	136	145	72	2.7	12	429	834	923	3030	331	265	198

CAL YR 1990 TOTAL 5464.33 MEAN 15.0 MAX 1430 MIN .00 AC-FT 10840
WTR YR 1991 TOTAL 3216.51 MEAN 8.81 MAX 220 MIN .01 AC-FT 6380

e Estimated

BIG SIOUX RIVER BASIN

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD

LOCATION.--Lat 43°47'25", long 96°44'42", in NW¼NW¼ sec.29, T.104 N., R.49 W., Minnehaha County, Hydrologic Unit 10170203, on left bank at downstream side of highway bridge, 0.2 mi downstream from confluence of divided channels, and 3.0 mi southwest of Dell Rapids.

DRAINAGE AREA.--4,483 mi², of which 1,479 mi² is probably noncontributing.

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

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,455.99 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 11, 1949, nonrecording gage and Nov. 11, 1949, to Sept. 30, 1951, water-stage recorder, at present site at datum 0.04 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--43 years, 317 ft³/s, 229,700 acre-ft/yr; median of yearly mean discharges, 200 ft³/s, 145,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,300 ft³/s, Apr. 9, 1969, gage height, 16.47 ft; no flow Aug. 25 to Oct. 17, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 4	1200	1,360	7.14	June 21	0700	1,070	6.41
June 10	2000	*1,470	*7.42	June 28	1000	1,460	7.40

Minimum daily discharge, 7.0 ft³/s, Jan. 30, 31.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	72	e40	e8.5	e8.5	e28	106	176	368	1040	231	159
2	63	64	e41	e10	e8.5	e26	100	250	480	802	234	155
3	66	64	e43	e8.5	e11	e19	93	334	569	712	222	142
4	67	66	e45	e7.5	e13	e25	89	370	952	719	206	135
5	71	64	e47	e7.5	e14	e27	91	391	888	733	198	136
6	74	62	e48	e7.5	e17	e28	90	429	833	721	189	137
7	86	60	51	e7.5	e21	e28	91	447	1010	677	200	137
8	88	59	51	e7.5	e24	e31	85	434	1180	603	248	145
9	86	61	51	e7.5	e28	e35	87	409	1270	523	272	143
10	92	57	52	e7.5	e33	e43	98	368	1400	466	352	139
11	87	62	53	e8.5	e33	e51	111	330	1340	430	397	157
12	84	65	49	e8.5	e30	e63	110	310	1120	420	410	168
13	80	66	58	e10	e25	e64	112	290	843	483	392	174
14	72	70	46	e10	e21	e65	124	267	663	700	356	179
15	72	65	e45	e13	e17	e68	152	248	560	836	327	172
16	69	60	e45	e10	e17	77	199	237	485	822	303	163
17	60	64	e44	e9.0	e18	74	227	240	431	713	287	160
18	65	63	e42	e8.0	e19	69	240	262	410	555	274	149
19	70	63	e40	e10	e20	66	237	342	418	446	263	147
20	67	64	e37	e12	e23	69	228	467	392	398	262	148
21	72	64	e34	e10	e24	83	222	494	644	360	249	152
22	76	63	e25	e10	e25	93	209	462	466	317	240	136
23	73	59	e20	e12	e23	96	193	422	682	287	233	136
24	75	59	e15	e12	e22	110	186	374	1040	263	228	141
25	76	58	e8.0	e10	e20	104	178	334	1290	243	226	137
26	76	52	e8.5	e9.0	e20	93	176	306	1400	236	214	136
27	67	e47	e9.0	e8.0	e21	90	164	282	1450	233	204	130
28	73	e40	e9.5	e9.5	e22	105	152	275	1450	252	191	126
29	70	e38	e9.5	e8.5	---	109	157	259	1410	242	180	149
30	63	e38	e8.5	e7.0	---	105	166	248	1290	237	173	132
31	78	---	e8.5	e7.0	---	100	---	270	---	237	165	---
TOTAL	2277	1789	1083.5	281.5	578.0	2044	4473	10327	26734	15706	7926	4420
MEAN	73.5	59.6	35.0	9.08	20.6	65.9	149	333	891	507	256	147
MAX	92	72	58	13	33	110	240	494	1450	1040	410	179
MIN	59	38	8.0	7.0	8.5	19	85	176	368	233	165	126
AC-FT	4520	3550	2150	558	1150	4050	8870	20480	53030	31150	15720	8770

CAL YR 1990 TOTAL 67787.5 MEAN 186 MAX 2240 MIN 8.0 AC-FT 134500
WTR YR 1991 TOTAL 77639.0 MEAN 213 MAX 1450 MIN 7.0 AC-FT 154000

e Estimated

06481500 SKUNK CREEK AT SIOUX FALLS, SD

LOCATION.--Lat 43°32'01", long 96°47'26", in NW¼SW¼ sec.24, T.101 N., R.50 W., Minnehaha County, Hydrologic Unit 10170203, on left bank 5 ft downstream from bridge on Marion Road, 1.3 mi upstream from mouth, 1.8 mi downstream from small right-bank tributary, and 4.0 mi southwest of Sioux Falls.

DRAINAGE AREA.--622 mi², of which 8.51 mi² is probably noncontributing.

PERIOD OF RECORD.--May 1948 to current year. May 1948 to September 1971 (published as "near Sioux Falls").

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,405.10 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Oct. 24, 1949, nonrecording gage, and Oct. 24, 1949, to Apr. 28, 1972, water-stage recorder, both at site 1.9 mi upstream at datum 10.19 ft higher, and from Apr. 28, 1972, to May 18, 1987, near right end of bridge at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and May 7 to June 25, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--43 years, 66.5 ft³/s, 48,180 acre-ft/yr; median of yearly mean discharges, 30 ft³/s, 21,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft³/s, June 17, 1957, gage height, 17.78 ft, site and datum then in use, from rating curve extended above 8,100 ft³/s on basis of slope-area measurement of peak flow; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 22	1700	*435	*3.85				

Minimum daily discharge, 0.25 ft³/s, Dec. 23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	4.3	e.90	e.40	e.45	e1.3	4.7	6.9	26	27	4.2	.59
2	1.5	3.7	e.80	e.45	e.70	e1.0	4.5	6.8	19	24	6.9	.59
3	7.1	4.4	e.75	e.40	e.90	e.80	6.5	e9.0	16	22	4.8	.64
4	4.0	3.7	e.70	e.35	e1.5	e1.2	9.2	e11	31	21	3.8	.54
5	2.7	3.8	e.65	e.35	e2.0	e1.8	4.3	e13	27	20	3.5	.74
6	2.0	3.3	e.60	e.35	e2.4	e3.0	3.6	e15	23	20	4.8	.71
7	2.2	2.7	e.65	e.35	e2.5	e1.7	3.2	17	24	19	7.0	.74
8	2.5	2.4	e.70	e.35	e2.3	e1.8	2.4	17	21	18	7.7	.87
9	2.8	2.9	e.80	e.35	e1.6	e2.0	2.5	16	16	19	7.8	.75
10	3.4	3.0	e1.0	e.35	e1.3	e2.1	2.1	17	29	18	6.8	.70
11	4.1	3.2	e1.3	e.40	e.90	e2.3	3.0	16	16	22	5.8	6.4
12	3.5	3.2	e1.5	e.40	e.60	e2.8	5.6	16	19	19	5.0	2.5
13	3.3	3.6	e3.0	e.50	e.70	e3.0	5.9	15	17	17	3.8	5.2
14	4.0	3.0	e1.5	e.60	e.80	e3.5	6.5	15	11	16	3.2	2.8
15	4.2	2.9	e1.4	e.70	e.60	4.0	10	15	20	16	2.9	1.6
16	4.0	2.7	e1.3	e.60	e.50	3.5	7.9	23	16	14	2.9	1.2
17	4.0	2.6	e1.0	e.55	e.60	4.4	6.2	33	12	12	2.4	1.2
18	4.9	2.5	e.90	e.50	e.70	4.5	6.2	16	9.6	13	2.2	1.3
19	6.0	2.9	e.85	e.60	e.80	5.3	6.3	16	9.1	11	1.8	1.3
20	3.8	2.4	e.80	e.70	e.80	8.8	5.3	15	7.9	9.2	1.8	1.5
21	4.0	2.7	e.65	e.50	e.80	11	5.5	14	24	8.7	1.5	1.1
22	4.6	2.5	e.45	e.55	e.80	7.8	4.5	13	283	8.2	1.4	1.0
23	4.1	2.8	e.25	e.55	e.80	7.5	4.6	13	311	7.7	1.2	1.4
24	4.0	2.8	e.26	e.55	e.70	7.3	4.0	12	184	7.0	1.1	2.9
25	3.9	2.3	e.28	e.40	e.60	7.3	3.4	12	125	5.0	1.0	1.3
26	4.1	e2.0	e.32	e.38	e.60	7.0	2.9	12	65	4.9	1.0	1.2
27	4.2	e1.5	e.35	e.35	e.70	8.9	3.6	12	47	5.4	1.0	1.1
28	3.3	e1.0	e.40	e.40	e.80	7.0	3.7	14	38	9.2	.84	1.2
29	3.6	e1.2	e.40	e.37	---	5.4	8.4	15	32	5.9	.73	1.1
30	3.6	e1.1	e.35	e.34	---	4.5	5.7	45	29	4.8	.73	.90
31	3.7	---	e.30	e.37	---	4.7	---	40	---	4.8	.65	---
TOTAL	115.1	83.1	25.11	14.01	28.45	137.20	152.2	510.7	1507.6	428.8	100.25	45.07
MEAN	3.71	2.77	.81	.45	1.02	4.43	5.07	16.5	50.3	13.8	3.23	1.50
MAX	7.1	4.4	3.0	.70	2.5	11	10	45	311	27	7.8	6.4
MIN	1.5	1.0	.25	.34	.45	.80	2.1	6.8	7.9	4.8	.65	.54
AC-FT	228	165	50	28	56	272	302	1010	2990	851	199	89

CAL YR 1990 TOTAL 5532.79 MEAN 15.2 MAX 455 MIN .25 AC-FT 10970
WTR YR 1991 TOTAL 3147.59 MEAN 8.62 MAX 311 MIN .25 AC-FT 6240

e Estimated

BIG SIOUX RIVER BASIN

06482020 BIG SIOUX RIVER AT NORTH CLIFF AVENUE, AT SIOUX FALLS, SD

LOCATION.--Lat 43°34'01", long 96°42'39", in SW¹/₄ NW¹/₄ sec.10, T.101 N., R.49 W., Minnehaha County, Hydrologic Unit 10170203, on right bank 20 ft downstream from bridge on North Cliff Avenue and 4.1 mi upstream from Slip Up Creek.

DRAINAGE AREA.--5,216 mi², of which 1,487 mi² is probably noncontributing.

PERIOD OF RECORD.--March 1962 to September 1971 (gage heights and discharge measurements only in files of U.S. Army Corps of Engineers). October 1971 to current year.

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,294.18 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Dec. 15, 1971, nonrecording gage 20 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--20 years, 490 ft³/s, 355,000 acre-ft/yr; median of yearly mean discharges, 240 ft³/s, 174,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s, June 22, 1984, gage height, 25.40 ft; minimum daily discharge, 0.81 ft³/s, Feb. 13, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 10, 1969, reached a stage of 27.45 ft, discharge, 40,700 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 4	1200	1,420	9.21	June 28	0800	1,300	8.89
June 10	0200	*1,800	*10.08				

Minimum daily discharge, 8.0 ft³/s, Jan. 5.

BIG SIOUX RIVER BASIN

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06482020 BIG SIOUX RIVER AT NORTH CLIFF AVENUE, AT SIOUX FALLS, SD--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	e75	56	e10	e10	33	105	224	319	1090	261	126
2	39	e80	54	e10	e12	33	92	247	391	891	298	122
3	40	e75	52	e10	e15	36	84	428	408	730	262	119
4	46	e75	53	e9.0	17	43	93	408	1020	682	240	108
5	e60	e70	52	e8.0	20	48	87	403	968	689	231	109
6	e65	e70	52	e9.0	20	48	80	425	767	693	202	109
7	e70	e65	54	e10	19	49	81	444	813	680	206	130
8	e75	67	55	e10	18	53	85	451	982	636	230	124
9	e85	67	55	e10	18	48	82	430	1050	573	259	110
10	e95	68	64	e10	17	56	80	399	1490	501	285	137
11	e90	62	70	e10	17	59	104	369	1210	543	326	250
12	e90	66	69	e10	20	70	130	348	1030	462	333	152
13	e85	71	47	e10	23	68	121	345	1030	442	339	248
14	e75	72	e55	e10	21	72	116	320	758	561	320	174
15	e75	72	e50	e10	20	77	123	299	712	647	295	154
16	e70	71	e45	e10	25	79	156	431	567	743	301	147
17	e65	66	e45	e10	18	81	193	533	465	718	284	144
18	e70	64	e40	e10	18	80	226	415	429	676	271	137
19	e75	64	e40	e10	21	80	226	338	409	548	222	134
20	e70	65	e30	e10	31	78	217	417	407	458	246	132
21	e75	70	e30	e10	37	66	203	466	558	417	245	129
22	e80	66	e25	e10	34	97	200	458	954	367	214	130
23	e75	65	e20	e10	29	106	181	419	1060	341	198	125
24	e80	68	e20	e10	22	102	165	355	1020	319	186	189
25	e80	64	e20	e10	27	97	152	353	1180	294	179	137
26	e80	66	e18	e10	31	97	151	337	1250	285	176	122
27	e70	49	e18	e11	32	100	151	327	1280	303	170	115
28	e75	28	e15	e10	31	103	144	337	1290	357	132	115
29	e75	43	e15	e10	---	109	322	319	1280	294	150	113
30	e65	57	e10	e10	---	108	223	358	1220	283	138	118
31	e70	---	e10	e10	---	105	---	334	---	266	132	---
TOTAL	2204	1961	1239	307.0	623	2281	4373	11737	26317	16489	7331	4159
MEAN	71.1	65.4	40.0	9.90	22.2	73.6	146	379	877	532	236	139
MAX	95	80	70	11	37	109	322	533	1490	1090	339	250
MIN	39	28	10	8.0	10	33	80	224	319	266	132	108
AC-FT	4370	3890	2460	609	1240	4520	8670	23280	52200	32710	14540	8250

CAL YR 1990 TOTAL 67673.8 MEAN 185 MAX 2140 MIN 7.7 AC-FT 134200

WTR YR 1991 TOTAL 79021.0 MEAN 216 MAX 1490 MIN 8.0 AC-FT 156700

e Estimated

BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW¼SW¼ sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 3 ft upstream from bridge on county highway K30, 0.3 mi north of Rock Valley and at mile 19.1.

DRAINAGE AREA.--1,592 mi².

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

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,222.54 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 13, 1952, nonrecording gage with supplementary water-stage recorder operating above 6.2 ft gage height. June 4, 1949, to Aug. 12, 1952, and Aug. 13, 1952, to May 4, 1976, water-stage recorder, at site 3.2 mi downstream at datum 10.73 ft lower.

REMARKS.--Estimated daily discharges: Dec. 3-6 and Dec. 13 to Mar. 9. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

AVERAGE DISCHARGE.--43 years, 398 ft³/s, 3.40 in/yr, 288,400 acre-ft/yr; median of yearly mean discharges, 260 ft³/s, 2.2 in/yr, 188,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,400 ft³/s, Apr. 7, 1969, gage height, 17.32 ft, site and datum then in use; no flow for many days during winter period in 1959 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft, former site and datum, discharge not determined, from information by State Highway Commission.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 6	1800	*1,390	*7.72				

Minimum daily discharge, 4.8 ft³/s, Dec. 21.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	33	43	17	8.0	37	171	139	377	233	37	5.9
2	15	30	43	10	10	35	161	149	309	202	37	6.4
3	27	33	40	9.2	14	60	155	155	303	177	38	7.9
4	37	36	34	9.6	20	120	150	163	344	160	35	8.1
5	38	36	43	12	19	73	144	178	791	146	33	10
6	34	37	39	8.0	18	70	137	199	1320	134	32	9.4
7	31	33	48	7.0	17	68	131	218	1250	131	38	8.5
8	27	39	52	11	16	74	124	230	1080	124	51	8.6
9	27	35	52	7.4	17	86	118	222	936	114	43	8.9
10	27	38	56	6.2	16	91	112	220	765	105	36	9.7
11	24	39	53	12	15	103	108	221	633	109	32	12
12	24	38	47	7.6	14	128	115	206	532	129	30	14
13	24	38	44	8.2	20	110	138	187	464	103	27	22
14	23	39	45	6.2	17	90	259	172	542	92	25	34
15	22	41	48	6.6	13	95	508	161	581	83	25	39
16	21	40	40	7.4	17	95	490	151	599	74	25	36
17	22	39	48	6.2	15	94	390	332	553	64	26	30
18	27	39	33	6.8	16	92	322	441	499	57	24	26
19	28	41	20	11	20	92	271	486	480	54	21	26
20	30	39	11	8.0	25	97	232	438	387	55	32	27
21	40	39	4.8	5.2	35	108	206	406	366	48	36	25
22	42	37	5.6	7.0	45	120	184	377	383	60	27	23
23	41	36	10	10	37	143	168	347	618	57	20	23
24	38	36	13	6.6	35	144	153	303	737	45	18	25
25	37	34	14	5.2	33	141	139	264	654	38	16	24
26	36	31	10	7.0	38	147	129	239	537	35	15	23
27	34	31	17	11	48	179	125	247	450	36	12	21
28	32	35	19	11	40	218	120	220	377	50	11	20
29	32	44	7.4	9.0	---	229	126	231	316	59	10	19
30	31	44	6.4	8.0	---	204	139	226	268	54	8.5	17
31	31	---	15	6.0	---	189	---	359	---	43	6.7	---
TOTAL	917	1110	961.2	263.4	638.0	3532	5725	7887	17451	2871	827.2	569.4
MEAN	29.6	37.0	31.0	8.50	22.8	114	191	254	582	92.6	26.7	19.0
MAX	42	44	56	17	48	229	508	486	1320	233	51	39
MIN	15	30	4.8	5.2	8.0	35	108	139	268	35	67	5.9
AC-FT	1820	2200	1910	522	1270	7010	11360	15640	34610	5690	1640	1130

CAL YR 1990 TOTAL 43177.7 MEAN 118 MAX 2160 MIN 4.0 AC-FT 85640
WTR YR 1991 TOTAL 42752.2 MEAN 117 MAX 1320 MIN 4.8 AC-FT 84800

06485500 BIG SIOUX RIVER AT AKRON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°50'14", long 96°33'41", in SWSE&SW sec.30, T.93 N., R.48 W., Plymouth County, Hydrologic Unit 10170203, on left bank 15 ft downstream from Iowa Highway 403 bridge, 0.5 mi northwest of Akron, and 2.9 mi upstream from Union Creek.

DRAINAGE AREA.--8,424 mi², of which 1,487 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1309: 1929(M), 1931-33(M), 1936(M), 1938(M), 1940(M). WSP 1389: Drainage area. WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,118.90 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1934, nonrecording gage at bridge 0.5 mi downstream at same datum. From Dec. 3, 1934, to Oct. 31, 1985, water-stage recorder at site 0.6 mi downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data-collection platform at station. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--63 years, 1,010 ft³/s, 731,700 acre-ft/yr; median of yearly mean discharges, 730 ft³/s, 529,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,800 ft³/s, Apr. 9, 1969, gage height, 22.99 ft; minimum daily, 4.0 ft³/s, Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 15	1200	*2,270	*9.26				

Minimum daily discharge, 50 ft³/s, Jan. 7-11, 24, 25, 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	181	e190	e70	e60	e320	444	498	1270	1840	409	239
2	146	179	e195	e65	e65	e300	420	562	1180	1750	392	235
3	161	180	e200	e60	e65	e290	393	517	937	1610	380	237
4	165	187	e210	e60	e70	e300	381	527	932	1420	386	226
5	176	193	e210	e55	e70	e320	372	587	1110	1210	385	221
6	240	204	e200	e55	e70	e350	352	757	1410	1080	363	218
7	190	205	e200	e50	e80	295	345	744	2100	1120	357	212
8	179	193	e200	e50	e100	285	330	793	2080	1110	408	218
9	179	198	e195	e50	e150	291	315	819	1920	1010	398	207
10	175	200	e190	e50	e190	285	306	826	1970	961	369	206
11	171	194	e180	e50	e200	292	310	815	1910	892	365	225
12	172	193	e180	e55	e190	285	335	788	2150	851	375	222
13	172	195	e180	e55	e190	295	360	748	2080	821	395	251
14	178	191	e180	e60	e180	310	421	694	1860	789	432	341
15	182	188	e175	e65	e170	293	492	656	2140	693	427	317
16	181	188	e170	e65	e160	282	703	623	1880	689	448	341
17	181	185	e160	e65	e160	290	767	636	1790	768	424	294
18	182	186	e150	e65	e160	299	742	938	1660	830	405	261
19	179	184	e140	e65	e160	300	725	1160	1460	988	391	248
20	178	186	e130	e60	e170	302	711	1150	1290	864	372	244
21	194	187	e110	e55	e220	307	692	974	1240	809	362	238
22	202	182	e80	e60	e300	318	657	926	1180	727	351	232
23	203	187	e70	e55	e340	340	610	971	1290	663	351	226
24	206	188	e70	e50	e350	342	570	977	1650	590	336	230
25	195	186	e70	e50	e350	363	540	923	1990	511	316	231
26	194	180	e60	e55	e330	376	496	846	1920	476	301	245
27	195	e160	e70	e55	e330	388	467	844	1920	470	288	265
28	188	e170	e80	e55	e310	409	435	868	1950	464	276	238
29	188	e185	e70	e55	---	433	444	742	1930	429	269	224
30	186	e190	e65	e50	---	460	459	730	1890	466	261	213
31	183	---	e65	e55	---	463	---	779	---	440	245	---
TOTAL	5677	5625	4445	1765	5190	10183	14594	24418	50089	27341	11237	7305
MEAN	183	187	143	56.9	185	328	486	788	1670	882	362	243
MAX	240	205	210	70	350	463	767	1160	2150	1840	448	341
MIN	146	160	60	50	60	282	306	498	932	429	245	206
AC-FT	11260	11160	8820	3500	10290	20200	28950	48430	99350	54230	22290	14490

CAL YR 1990 TOTAL 170443 MEAN 467 MAX 5080 MIN 60 AC-FT 338100
WTR YR 1991 TOTAL 167869 MEAN 460 MAX 2150 MIN 50 AC-FT 333000

e Estimated

BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,310 microsiemens, Jan. 20, 1977; minimum daily, 260 microsiemens, Mar. 20, 23, 1978.

WATER TEMPERATURE: Maximum daily, 31.0°C, Feb. 19, 1975, July 23, 1976, July 11, 1981; minimum daily, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00300)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
DEC												
11...	1040	191	1200	7.8	233	15.0	1.0	10	725	14.4	107	K14
MAR												
26...	1100	379	910	9.1	214	21.0	12.0	69	717	15.0	148	900
JUN												
19...	0930	1510	850	8.3	231	30.0	26.5	96	733	7.4	96	K1500

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
DEC										
11...	76	470	110	47	79	27	2	6.7	247	110
MAR										
26...	K40	390	95	36	46	20	1	5.5	180	60
JUN										
19...	570	390	95	37	25	12	0.6	6.4	242	27

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
DEC											
11...	0.50	7.3	760	783	1.03	392	0.040	0.010	4.66	4.39	4.70
MAR											
26...	0.30	2.7	577	574	0.78	590	0.050	0.040	2.05	1.96	2.10
JUN											
19...	0.40	20	544	518	0.74	2220	0.050	0.030	3.75	3.77	3.80

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTH DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
DEC											
11...	4.40	0.030	0.030	0.04	1.8	29	0.790	0.600	0.600	0.550	10
MAR											
26...	2.00	0.020	0.010	0.01	2.5	20	0.750	0.220	0.290	0.220	<10
JUN											
19...	3.80	0.030	0.030	0.04	1.1	22	0.370	0.250	0.260	0.220	<10

BIG SIOUX RIVER BASIN

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06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
DEC 11...	2	71	<0.5	<1.0	<1	<3	2	3	<1	42	52
MAR 26...	2	66	<0.5	<1.0	<1	<3	3	6	1	31	14
JUN 19...	4	110	<0.5	<1.0	<1	<3	3	15	<1	27	3

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC 11...	<0.1	<10	2	<1	<1.0	460	<6	4	31	16	82
MAR 26...	<0.1	<10	3	3	<1.0	370	<6	4	401	410	98
JUN 19...	<0.1	<10	4	2	<1.0	360	8	<3	446	1820	97

BIG SIOUX RIVER BASIN

06485696 BRULE CREEK NEAR ELK POINT, SD

LOCATION.--Lat 42°48'32", long 96°41'11", in SW¼SW¼ sec.6, T.92 N., R.49 W., Union County, Hydrologic Unit 10170203, on right bank 10 ft upstream from county highway bridge, 8.8 mi upstream from mouth, and 8.5 mi north of Elk Point.

DRAINAGE AREA.--204 mi².

REVISED RECORDS.--WDR SD-84-1: Drainage area.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,150 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

AVERAGE DISCHARGE.--9 years, 63.1 ft³/s, 45,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,290 ft³/s, June 28, 1983, gage height, 22.39 ft; minimum daily discharge, 0.60 ft³/s, Dec. 23, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 28	0400	*739	*9.62	No other peak greater than base discharge.			

Minimum daily discharge, 1.2 ft³/s, Oct. 1, 8.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	2.7	e3.9	e1.8	e3.7	e7.5	14	21	50	20	2.8	e2.5
2	1.3	2.4	e3.8	e2.1	e4.8	e7.0	12	16	73	e3.5	e2.5	e3.3
3	2.2	3.0	e3.6	e1.9	e7.3	e6.0	11	15	30	e3.5	e3.3	e3.1
4	2.3	4.1	e3.6	e1.9	e12	e6.5	10	18	23	e3.1	e3.3	e2.0
5	2.4	3.5	e3.7	e2.0	e14	e7.5	9.8	28	21	e2.5	e3.7	e2.0
6	2.0	3.7	e4.0	e2.1	e15	e8.5	9.6	23	25	e2.9	e3.3	e1.6
7	1.6	e4.3	e4.2	e2.1	e16	e7.5	9.4	20	24	e2.3	e3.3	e1.5
8	1.2	e4.9	e4.6	e2.2	e17	e8.0	8.3	20	17	e2.3	e4.4	e3.0
9	1.3	4.3	e5.2	e2.3	e18	e8.5	8.2	20	12	e3.7	64	4.0
10	1.7	5.0	e6.4	e2.3	e17	e9.5	8.1	21	16	e5.5	31	2.3
11	1.7	5.4	e6.8	e2.4	e16	e11	8.6	18	47	e3.3	e10	e3.5
12	1.6	6.4	7.0	e2.4	e14	e12	12	15	25	e3.1	e5.7	e3.1
13	1.5	6.1	e6.7	e2.5	e9.0	e15	30	13	16	e2.5	e3.9	e3.9
14	1.8	6.1	e6.0	e2.7	e8.5	e14	47	11	12	e3.1	e3.5	e3.7
15	1.6	6.4	e5.8	e2.8	e6.5	e11	32	9.7	16	e3.1	e3.5	e4.4
16	1.7	5.9	e5.7	e2.8	e5.0	9.9	23	8.8	15	e2.0	e3.5	e4.4
17	1.8	5.5	e5.5	e2.8	e6.0	9.3	17	11	19	e1.6	e3.9	e4.1
18	1.8	5.1	e5.0	e2.7	e6.3	9.3	14	11	12	e1.3	e4.4	e3.1
19	2.1	4.9	e4.0	e3.0	e6.3	9.5	14	21	9.3	51	e4.9	2.3
20	3.1	4.7	e3.2	e3.1	e6.4	10	13	21	8.5	26	e4.6	2.4
21	4.9	4.5	e2.5	e2.9	e7.0	11	12	16	12	8.0	e3.9	e2.7
22	4.9	4.2	e1.8	e2.8	e8.0	11	11	13	8.3	4.2	e3.7	e2.7
23	3.9	4.1	e1.6	e3.1	e7.5	13	10	11	6.8	25	e3.7	e2.3
24	3.6	4.9	e1.5	e2.9	e7.0	13	9.6	11	e6.9	15	e3.5	e2.5
25	2.8	5.0	e1.6	e2.8	e6.5	14	9.0	8.9	e7.9	5.4	e3.5	3.2
26	2.3	4.8	e1.6	e2.8	e6.6	12	8.3	8.0	e6.5	2.9	e3.3	3.2
27	2.6	e4.6	e1.7	e3.0	e6.7	12	9.0	7.6	e5.1	3.2	e3.1	2.7
28	2.2	e4.3	e1.8	e3.1	e7.0	13	9.1	7.2	e4.6	205	e3.1	3.0
29	2.5	e4.0	e1.8	e3.0	---	12	12	14	e3.7	16	e3.5	3.1
30	2.5	e3.8	e1.6	e2.9	---	17	16	9.5	4.4	5.6	e3.3	2.6
31	2.5	---	e1.6	e3.1	---	15	---	9.0	---	3.8	e2.3	---
TOTAL	70.6	138.6	117.8	80.3	265.1	330.5	417.0	456.7	537.0	440.4	206.4	88.2
MEAN	2.28	4.62	3.80	2.59	9.47	10.7	13.9	14.7	17.9	14.2	6.66	2.94
MAX	4.9	6.4	7.0	3.1	18	17	47	28	73	205	64	4.4
MIN	1.2	2.4	1.5	1.8	3.7	6.0	8.1	7.2	3.7	1.3	2.3	1.5
AC-FT	140	275	234	159	526	656	827	906	1070	874	409	175

CAL YR 1990 TOTAL 6867.8 MEAN 18.8 MAX 1000 MIN 1.2 AC-FT 13620
WTR YR 1991 TOTAL 3148.6 MEAN 8.63 MAX 205 MIN 1.2 AC-FT 6250

e Estimated

06486000 MISSOURI RIVER AT SIOUX CITY, IA

LOCATION.--Lat 42°29'09", long 96°24'49", in NW¼SE¼ sec.16, T.29 N., R.9 E., sixth principal meridian, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 20 and 77 at South Sioux City, Nebraska, 1.9 mi downstream from Big Sioux River, and at mile 732.2.

DRAINAGE.--314,600 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of the U.S. Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890, monthly discharges only, in House Document 238, 73rd Congress, 2d session, Missouri River. Gage height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,056.98 ft above NGVD. Sept. 2, 1878, to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935, to Sept. 30, 1969, water-stage recorder at site 227 ft downstream at datum 19.98 ft higher, and Oct. 1, 1969, to Sept. 30, 1970, at datum 20.00 ft higher. Oct. 1, 1970, to Jan. 30, 1981, water-stage recorder at site 227 ft downstream at present datum.

REMARKS.--Estimated daily discharges: Dec. 24 to Feb. 23. Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

AVERAGE DISCHARGE.--94 years, 31,740 ft³/s, 22,996,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s, Apr. 14, 1952, gage height, 24.28 ft, datum then in use; minimum, 2,500 ft³/s, Dec. 29, 1941; minimum gage height, 7.83 ft, Jan. 9, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35,200 ft³/s, June 1; maximum gage height, 19.04 ft, June 1; minimum daily discharge, 5,880 ft³/s, Dec. 21; minimum gage height, 8.64 ft, Dec. 21.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29200	11700	9770	17100	13200	10600	22700	23200	31400	30600	27700	31500
2	29300	10700	9990	16700	12500	10200	23100	23200	28700	27900	27800	32100
3	30000	10600	10300	16500	12000	9090	23100	24000	27400	25600	27800	32500
4	29100	10600	10400	16400	11500	9310	23200	24600	30600	28400	27600	32500
5	28900	10200	10200	16400	11500	9270	24000	24000	27800	27400	27800	32100
6	29000	10300	9440	16400	11500	9280	24100	24200	25900	25500	27800	32100
7	28900	10300	9200	16300	11400	8880	24200	24100	26200	28100	28500	32000
8	29100	9920	9260	16000	11400	9490	24300	24500	30000	27000	29500	32000
9	29300	9940	9230	15500	11300	9600	24200	24300	25600	25200	28600	32300
10	29100	10000	9270	15500	10900	9770	24000	27600	29300	27900	28200	32000
11	28700	9950	9310	15000	10700	9720	24100	26600	27500	27100	28100	32600
12	28100	10000	9320	14300	10600	9690	25200	24200	24900	25700	28000	32400
13	28000	9930	9230	14400	10200	9580	25600	27500	29100	27500	27900	32400
14	28100	9890	9090	14500	9300	9360	24700	26300	27900	26500	28100	32600
15	28200	9620	9300	14000	9000	9370	24400	24200	28400	24800	27900	31600
16	28300	9430	9130	13400	11300	9460	24300	27600	29700	27200	28200	31400
17	28500	9310	9590	13000	14700	9530	24300	27500	27400	26400	28500	31700
18	28800	9410	10100	12400	14500	9640	24000	25000	25100	25300	28000	31000
19	28200	9440	11900	13000	12500	9610	24100	28000	28900	27800	27800	30800
20	28400	9500	12900	14000	11000	9720	24100	27200	27200	27400	27900	30600
21	28900	9740	5880	14300	10900	9830	24200	25000	25100	26200	28300	30500
22	28600	9580	7580	14500	12500	9790	24500	28400	30100	28000	28500	30900
23	28500	9630	13000	14600	13000	9750	24600	27400	27300	27800	28700	30600
24	28400	9480	16000	14600	11700	9270	24600	25000	24700	26700	28600	30800
25	28400	9620	18500	14600	11100	10300	24500	28100	28600	27600	29600	30600
26	27700	9530	16500	14600	11200	13200	24300	26800	27700	27000	29500	30300
27	25500	9640	17000	14600	11200	16500	24100	24500	25200	26400	29200	30500
28	21900	9370	17300	14600	11100	19200	23800	27600	29200	28100	29300	30800
29	18400	9320	17300	14600	---	21400	23700	26700	27700	27800	30000	31200
30	15000	9810	17300	14800	---	22900	24000	24700	25600	26700	30300	31200
31	13100	---	17300	14000	---	23000	---	28000	---	27400	31100	---
TOTAL	839600	296460	360590	460600	323700	356310	724000	800000	830200	839000	884800	945600
MEAN	27080	9882	11630	14860	11560	11490	24130	25810	27670	27060	28540	31520
MAX	30000	11700	18500	17100	14700	23000	25600	28400	31400	30600	31100	32600
MIN	13100	9310	5880	12400	9000	8880	22700	23200	24700	24800	27600	30300
AC-FT	1665000	588000	715200	913600	642100	706700	1436000	1587000	1647000	1664000	1755000	1876000

CAL YR 1990 TOTAL 7656150 MEAN 20980 MAX 36700 MIN 5880 AC-FT 15190000
WTR YR 1991 TOTAL 7660860 MEAN 20990 MAX 32600 MIN 5880 AC-FT 15200000

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.

Crest-stage partial-record stations

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

Annual maximum discharge at crest-stage partial-record stations during water year 1991							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Annual Maximum	
						Gage height (ft)	Dis-charge (ft ³ /s)
MISSOURI-OAHE RIVER BASIN							
06354860	Spring Creek near Herreid, SD	Lat 45°58'52", long 100°06'28", in SW $\frac{1}{4}$ sec.13, T.127 N., R.77 W., Campbell County, Hydrologic Unit 10130102, on left bank 0.5 mi upstream from county highway bridge, 2.4 mi southwest of Herreid, and 13.2 mi upstream from high-water line of Lake Oahe. Datum of gage is 1,653.80 ft above National Geodetic Vertical Datum of 1929.	440, of which 220 is probably noncontributing	1962-86 ⁺ , 1989-91	1991	--	(a)
BELLE FOURCHE RIVER BASIN							
06437500	Bear Butte Creek near Sturgis, SD	Lat 44°28'53", long 103°16'31", in NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.16, T.6 N., R.7 E., Meade County, Hydrologic Unit 10120202, on left bank 0.8 mi downstream from Spring Creek, 12.5 mi northeast of Sturgis, and 13.4 mi upstream from mouth. Datum of gage is 2,779.91 ft above National Geodetic Vertical Datum of 1929.	192	1945-62, 1962-72 ⁺ , 1990-91	1991	10.20	^{b,d} _{3,140}
MISSOURI-OAHE RIVER BASIN							
06439960	Chantier Creek near Hayes, SD	Lat 44°31'20", long 100°42'13", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.35, T.7 N., R.28 E., Stanley County, Hydrologic Unit 10130105, at bridge on State Highway 1806, 1.7 mi upstream from mouth, 18 mi northeast of Hayes, and 23 mi northwest of Pierre. Elevation of gage is 1,670 ft above National Geodetic Vertical Datum of 1929, from topographic map.	21.5	1990-91	6- 5-91	5.21	unknown
MISSOURI-FORT RANDALL RIVER BASIN							
06440850	Medicine Creek near Philip, SD	Lat 44°03'17", long 101°29'12", in SE $\frac{1}{4}$ sec.8, T.1 N., R.22 E., Haakon County, Hydrologic Unit 10140102, at bridge on county highway, 1.3 mi upstream from mouth, and 9.0 mi east of Philip. Elevation of gage is 2,040 ft above National Geodetic Vertical Datum of 1929, from topographic map.	56.5	1989-91	6-15-91	6.82	unknown
06441100	Plum Creek near Hayes, SD	Lat 44°20'41", long 101°07'40", in SW $\frac{1}{4}$ sec.32, T.5 N., R.25 E., Stanley County, Hydrologic Unit 10140102, at bridge on U.S. Highway 14 and State Highway 63, 7.0 mi southwest of Hayes. Elevation of gage is 2,034 ft above National Geodetic Vertical Datum of 1929, from topographic map.	24.5	1989-91	5-30-91	2.72	^b ₄₉

Annual maximum discharge at crest-stage partial-record stations during water year 1991

Annual maximum discharge at crest stage partial-record stations during water year 1991					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
MISSOURI-FORT RANDALL RIVER BASIN--Continued							
06442000	Medicine Knoll Creek near Blunt, SD	Lat 44°33'46", long 99°54'50", in NW¼ sec.31, T.11 N., R.75 W., Sully County, Hydrologic Unit 10140103, on left downstream wingwall of bridge, 4.8 mi north-east of Blunt, and 5.5 mi upstream from South Fork Medicine Knoll Creek. Datum of gage is 1,611.08 ft above National Geodetic Vertical Datum of 1929.	317	1950-90†, 1991	6- 5-91	12.98	6,370
06442500	Medicine Creek at Kennebec, SD	Lat 43°54'17", long 99°52'35", in NW¼NE¼ sec.18, T.105 N., R.75 W., Lyman County, Hydrologic Unit 10140104, on right downstream wingwall of bridge, 0.5 mi west of Kennebec, and 0.5 mi downstream from small right-bank tributary. Datum of gage is 1,659.64 ft above National Geodetic Vertical Datum of 1929.	464	1954-90†, 1991	6- 4-91	19.11	16,100
06452330	Campbell Creek near Geddes, SD	Lat 43°11'08", long 98°48'19", in SE¼ sec.30, T.97 N., R.67 W., Charles Mix County, Hydrologic Unit 10140101, at bridge on county highway, 1.1 mi upstream from mouth and 7.5 mi southwest of Geddes. Elevation of gage is 1,415 ft above National Geodetic Vertical Datum of 1929, from topographic map.	8.37	1989-91	6- 4-91	7.62	222
NIOBRARA RIVER BASIN							
06463900	Antelope Creek near Mission, SD	Lat 43°16'26", long 100°40'56", in SE¼SW¼ sec.7, T.38 N., R.28 W., Todd County, Hydrologic Unit 10150006, at culvert on county road, 2.0 mi southwest of Mission. Elevation of gage is 2,595 ft above National Geodetic Vertical Datum of 1929, from topographic map.	71.3	1990-91	6- 4-91	4.93	44
JAMES RIVER BASIN							
06474000	Turtle Creek near Tulare, SD	Lat 44°44'06", long 98°35'09", in SE¼SE¼ sec.25, T.115 N., R.65 W., Spink County, Hydrologic unit 10160009, on right bank 200 ft upstream from highway bridge, 3.9 mi west of Tulare, and 8.9 mi downstream from Wolf Creek. Elevation of gage is 1,300 ft, by barometer.	1,124	1953-56, 1965-81†, 1984-89†, 1990-91	6-10-91	8.30	640
06475000	James River near Redfield, SD	Lat 44°54'38", long 98°28'18", in NW¼NW¼NW¼ sec.31, T.177 N., R.63 W., Spink County, Hydrologic Unit 10160001, on downstream side of county highway bridge, 2.8 mi northeast of Redfield, and 0.7 mi downstream from Turtle Creek. Datum of gage is 1,239.50 ft above National Geodetic Vertical Datum of 1929.	13,911, of which 4,118 is probably noncontributing	1950-90†, 1991	6-10-91	11.16	1,810
06476500	Sand Creek near Alpena, SD	Lat 44°09'15", long 98°26'06", in NE¼NE¼ sec.19, T.108 N., R.63 W., Jerauld County, Hydrologic Unit 10160006, at downstream left wing-wall of bridge, 4 mi southwest of Alpena, 7.0 mi upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 10.5 mi upstream from interlink with Cain Creek. Elevation of gage is 1,315 ft, by barometer.	261	1950-89†, 1990-91	6- 8-91	11.06	^b 400

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1991							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Annual Maximum	
						Gage height (ft)	Dis-charge (ft ³ /s)
JAMES RIVER BASIN--Continued							
06477150	Rock Creek near Fulton, SD	Lat 43°45'39", long 97°54'25", in NW¼NW¼ sec.3, T.103 N., R.59 W., Hanson County, Hydrologic Unit 10160011, at right downstream wing-wall of highway bridge, 4.9 mi north-west of Fulton, and 9.5 mi upstream from mouth. Elevation of gage is 1,235 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to 1989 at same site and different datum.	240	1966-72 ⁺ , 1972-79, 1989-91	6-10-91	9.34	^b 140
06478052	Enemy Creek near Mitchell, SD	Lat 43°38'33", long 97°59'09", in NW¼NW¼ sec.13, T.102 N., R.60 W., Davison County, Hydrologic Unit 10160011, at right downstream wing-wall of highway bridge, 7.3 mi upstream from mouth, and 4.5 mi southeast of Mitchell. Elevation of gage is 1,280 ft above National Geodetic Vertical Datum of 1929, from topographic map.	163	1975-87 ⁺ , 1989-91	6- 4-91	8.77	470
06478300	Dry Creek near Parkston, SD	Lat 43°22'18", long 97°49'23", in SE¼ sec.21, T.99 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, at left downstream wingwall on county highway bridge and 8.5 mi southeast of Parkston. Elevation of gage is 1,265 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to 1989 at same site and different datum.	76.8	1955-80, 1989-91	1991	--	(a)
06478390	Wolf Creek near Clayton, SD	Lat 43°22'18", long 97°36'12", in NW¼NE¼ sec.29, T.99 N., R.57 W., Hutchinson County, Hydrologic Unit 10160011, at left downstream pier on highway bridge, 4.1 mi upstream from mouth, and 5.6 mi southeast of Clayton. Elevation of gage is 1,210 ft above National Geodetic Vertical Datum of 1929, from topographic map.	396	1975-88 ⁺ , 1989-91	5-31-91	5.78	80
MISSOURI-LEWIS AND CLARK RIVER BASIN							
06479000	Vermillion River near Wakonda, SD	Lat 42°59'27", long 96°57'49", in SW¼NW¼ sec.2, T.94 N., R.52 W., Clay County, Hydrologic Unit 10170102, at right downstream wingwall of State Highway 19, 4.3 mi downstream from Frog Creek, 7.4 mi southeast of Wakonda, and 29.6 mi upstream from mouth. Datum of gage is 1,150.9 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).	2,170, of which 494 is usually noncon-tributing	1945-83 ⁺ , 1989-91	6-24-91	7.10	462
BIG SIOUX RIVER BASIN							
06479640	Hidewood Creek near Estelline, SD	Lat 44°36'42", long 96°54'17", in SW¼NW¼ sec.12, T.113 N., R.51 W., Hamlin County, Hydrologic Unit 10170202, at left upstream wing-wall, 2.7 mi north of Estelline, 2.8 mi southeast of Dempster, and 4.7 mi upstream from mouth. Elevation of gage is 1,665 ft, by barometer.	164	1968-85 ⁺ , 1990-91	5-31-91	5.28	193

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

303

Annual maximum discharge at crest-stage partial-record stations during water year 1991							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
BIG SIOUX RIVER BASIN--Continued							
06479980	Medary Creek near Brookings, SD	Lat 44°13'27", long 96°46'06", in NE¼NE¼ sec.25, T.109 N., R.50 W., Brookings County, Hydrologic Unit 10170202, on right bank 400 ft downstream from county highway bridge, 5.2 mi downstream from Deer Creek, 4.1 mi upstream from mouth, and 6.1 mi southeast of Brookings. Datum of gage is 1,570.20 ft above National Geodetic Vertical Datum of 1929.	200	1981-90†, 1991	7-12-91	7.83	626
06482610	Split Rock Creek at Corson, SD	Lat 43°36'59", long 96°33'54", in NE¼NW¼ sec.26, T.102 N., R.48 W., Minnehaha County, Hydrologic Unit 10170203, at right downstream side of bridge, 0.3 mi east of Corson, and 3.4 mi upstream from mouth. Datum of gage is 1,304.22 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).	464	1951-65, 1965-89†, 1990-91	(c)	unknown	<500
06482848	Beaver Creek at Canton, SD	Lat 43°17'12", long 96°35'46", in SW¼SW¼SE¼ Sec.23, T.98 N., R.49 W., Lincoln County, Hydrologic Unit 10170203, on left bank about 1,000 ft downstream from county highway bridge, 1.0 mi southwest of Canton, and 2.2 mi upstream from mouth. Elevation of gage is 1,225 ft above National Geodetic Vertical Datum of 1929, from topographic map.	124	1982-89†, 1990-91	(c)	unknown	<200

† Operated as a continuous-record gaging station.

a No evidence of any flow during the water year.

b Estimated.

c Sometime between June 20-25.

d From floodmark.

DAILY PRECIPITATION STATIONS

The following daily precipitation stations are listed in alphabetical order.

BELLE FOURCHE RIVER BASIN

441859103385600 ADAMS RANCH NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°18'59", long 103°38'56", in NW¼SE¼SW¼ sec.9, T.4 N., R.4 E., Lawrence County, Hydrologic Unit 10120202, at Adams Ranch 0.25 mi west of U.S.Forest Service Road 534, 1.5 mi southwest of Galena, and 5.5 mi southeast of Lead.

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

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Prior to October 1988, gage was not shielded. Elevation of gage is 5,020 ft above National Geodetic Vertical Datum of 1929, from topographic map.

AVERAGE PRECIPITATION.--8 years, 22.58 in.

REMARKS.--Records fair except those for estimated periods, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.13	.00	.00	.00	.02	.00	.00	.29	.00	.03	.00
2	.00	.23	.00	.00	.00	.00	.00	.30	.53	.00	.02	.00
3	.00	.04	.00	.00	.00	.00	.00	.09	.60	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.02	.55	.00	.00	.00
5	.00	.44	.01	.00	.00	.11	.00	.00	1.20	.00	.00	.00
6	.12	.04	.00	.00	.00	.07	.00	.00	.08	.05	.53	.00
7	.03	.02	.00	.00	.00	.00	.18	.00	.01	.10	.02	.25
8	.00	.00	.00	.00	.00	.03	.09	.00	.13	.13	.00	.00
9	.00	.00	.00	.00	.00	.00	.40	.00	e.11	.01	.00	.00
10	.05	.00	.00	.00	.00	.00	.37	.23	e.00	.49	.00	.00
11	.10	.00	.01	.00	.00	.63	.42	1.12	e.00	.00	.00	.00
12	.00	.00	.03	.00	.00	.14	.69	.05	e.00	.00	.00	.21
13	.07	.00	.00	.00	.31	.00	.03	.00	e.09	.00	.04	.00
14	.02	.00	.51	.00	.09	.00	.00	.58	e.24	.00	.00	.18
15	.00	.00	.00	.00	.00	.00	.00	1.33	.00	.08	.78	.06
16	.03	.00	.00	.05	.01	.07	.00	.48	.00	e.57	.00	.00
17	.33	.00	.01	.00	.79	.01	.00	.50	.00	e.00	.00	.06
18	.02	.00	.06	.00	.53	.00	.32	.01	.19	e.00	.00	.00
19	.04	.00	.08	.25	.00	.02	.14	.20	.00	e.00	.00	.00
20	.00	.00	.08	.09	.00	.35	.00	.02	.00	e.00	.00	.00
21	.00	.00	.03	.00	.00	.27	.05	.00	.06	e.00	.00	.00
22	.04	.00	.00	.17	.00	.26	.01	.99	.05	e.00	.06	.05
23	.05	.00	.04	.28	.10	.06	.00	.00	.00	e.00	.04	.03
24	.00	.00	.11	.01	.18	.00	.00	.00	.00	e.62	.00	.00
25	.00	.00	.01	.00	.37	.00	.08	.00	.05	.00	.00	.00
26	.00	.04	.00	.00	.00	.00	.77	.38	.00	.40	.00	.00
27	.00	.00	.00	.04	.00	.00	.11	.67	.00	.00	.00	.00
28	.00	.00	.07	.19	.00	.00	.08	.20	.31	.00	.00	.00
29	.00	.00	.00	.00	---	.02	.12	.10	.06	.00	.00	.00
30	.00	.03	.00	.00	---	.00	.07	.01	.02	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.01	---	.00	.00	---
TOTAL	0.90	0.97	1.05	1.08	2.38	2.06	3.93	7.29	4.57	2.45	1.52	0.84

CAL YR 1990 TOTAL 19.49
WTR YR 1991 TOTAL 29.04

e Estimated

CHEYENNE RIVER BASIN

305

433758103353300 PRECIP AT BEAVER VALLEY NEAR PRINGLE, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°37'58", long 103°35'33", in NE¼NW¼SE¼NW¼ sec.12, T.5 S., R.4 E., Custer County, Hydrologic Unit 10120109, 1.7 mi north of Pringle and 8.8 mi south of Custer.

PERIOD OF RECORD.--December 1990 to September 1991.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 5,000 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.30	.00	.00	.00	.02	---	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	---	.15	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.02	---	.23	1.60	.16	.02	.00
4	.00	.00	.00	.00	.00	.00	---	.00	.10	.00	.00	.00
5	.00	.00	.00	.00	.00	.02	---	.00	.25	.00	.02	.00
6	e.12	.00	.00	.00	.00	.00	---	.00	.20	.00	.84	.00
7	e.25	.00	.00	.02	.00	.00	---	.15	.10	.00	.02	.00
8	.00	.00	.00	.00	.00	.00	---	.02	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	---	.00	.00	.00	.02	.02
10	.00	.00	.00	.00	.00	.00	---	.70	.00	.00	.00	.92
11	.50	.00	.00	.00	.00	.00	---	.77	.00	.00	.00	.04
12	.00	.00	.00	.00	.10	.53	---	.08	.00	.00	.00	.08
13	.00	.00	.29	.00	.00	.00	---	.02	.60	.00	.00	.00
14	.00	.00	.02	.00	.00	.00	---	.00	.60	.00	.00	.02
15	.00	.00	.00	.00	.00	.00	---	.04	.00	.22	.00	.00
16	.00	.00	.00	.00	.04	.00	---	.81	.00	.00	1.30	.00
17	.00	.00	.00	.00	.82	.00	---	.56	---	.00	.00	.00
18	.00	.00	.20	.12	.11	.00	---	.22	---	.00	.00	.02
19	.00	.00	.04	.00	.00	.00	---	.02	---	.00	.02	.00
20	.00	.00	.06	.02	.00	.06	---	.00	---	.00	.00	.00
21	.00	.00	.00	.00	.00	.11	---	.00	.10	.00	.00	.00
22	.00	.00	.02	.00	.00	.13	---	.41	.50	.00	.00	.00
23	.05	.00	.00	.02	.00	---	---	.31	.00	.00	.00	.00
24	.00	.00	.02	.00	.00	---	---	---	.00	.14	.00	.00
25	.00	.00	.00	.00	.00	---	---	---	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	---	e.35	e.68	.00	.00	.02	.00
27	.00	.00	.04	.16	.00	---	e.20	e.82	.60	.00	.00	.00
28	.00	.00	.02	.02	.00	---	.00	e.10	.48	.00	.00	.00
29	.00	.00	.00	.00	---	---	.00	e.00	.34	.38	.00	.00
30	.00	.00	.00	.02	---	---	.00	e.00	.02	.36	.00	.00
31	.00	---	.02	.00	---	---	---	e1.00	---	.22	.00	---
TOTAL	0.92	0.30	0.73	0.38	1.07	---	---	---	---	1.48	2.26	1.10

e Estimated

CHEYENNE RIVER BASIN

441716103300800 PRECIP AT BETHLEHEM CAVE NEAR TILFORD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°17'16", long 103°30'08", in SW¹/₄NW¹/₄SW¹/₄SE¹/₄, sec.22, T.4 N., R.5 E., Meade County, Hydrologic Unit 10120111, at Bethlehem Cave, 0.1 mi north of U.S. Forest Service Road 168, and 3.5 mi west of Telford.

PERIOD OF RECORD.--October 1987 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,560 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0800 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	.00	A.00	.00	.00	.02	.00
2	---	---	---	---	---	---	.00	.34	.33	.00	.00	.00
3	---	---	---	---	---	---	.00	.00	.13	.00	.00	.00
4	---	---	---	---	---	---	.00	.00	1.45	.00	.00	.00
5	---	---	---	---	---	---	.00	.00	.49	.08	.00	.00
6	---	---	---	---	---	---	.00	.00	.05	.04	.20	.00
7	---	---	---	---	---	---	.20	.00	.12	.06	.03	.53
8	---	---	---	---	---	---	.33	.00	.33	.16	.00	.00
9	---	---	---	---	---	---	.00	.00	.15	.00	.00	.00
10	---	---	---	---	---	---	.56	.62	.00	.13	.00	.01
11	---	---	---	---	---	---	.73	2.29	.00	.00	.00	.00
12	---	---	---	---	---	---	.47	.01	.00	.00	.00	.20
13	---	---	---	---	---	---	.00	.00	.18	.00	.00	.00
14	---	---	---	---	---	---	.04	.68	.09	.00	.00	.50
15	---	---	---	---	---	---	.00	.56	.00	.03	.50	.01
16	---	---	---	---	---	---	.00	.64	.00	.19	.00	.03
17	---	---	---	---	---	---	.00	.10	.21	.00	.00	.00
18	---	---	---	---	---	---	.52	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	.02	.06	.00	.00	.00	.00
20	---	---	---	---	---	---	.00	.00	.07	.01	.00	.00
21	---	---	---	---	---	---	.00	.00	.10	.00	.00	.04
22	---	---	---	---	---	---	.00	1.00	.07	.00	.04	.00
23	---	---	---	---	---	---	.00	.00	.03	.00	.25	.09
24	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
25	---	---	---	---	---	---	.68	.00	.07	.00	.00	.00
26	---	---	---	---	---	---	.15	.50	.00	.22	.00	.00
27	---	---	---	---	---	---	.01	.64	.25	.00	.00	.00
28	---	---	---	---	---	---	.02	.20	.00	.00	.00	.00
29	---	---	---	---	---	---	.03	.12	.11	.00	.00	.00
30	---	---	---	---	---	---	.00	.16	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.28	---	.00	.00	---
TOTAL	---	---	---	---	---	---	3.76	8.20	4.23	0.92	1.04	1.41

CHEYENNE RIVER BASIN

307

434732103305500 PRECIP AT BISMARK LAKE NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°47'32", long 103°30'55", in NW¼NE¼SW¼NW¼ sec.15, T.3 S., R.5 E., Custer County, Hydrologic Unit 10120109, 300 ft northeast of U.S. Forest Service Road 345, 1.0 mi north of Bismark Lake, and 3.7 mi east of Custer.

PERIOD OF RECORD.--May 1989 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 5,280 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated period, which are poor. Precipitation gage is read daily by observer at approximately 0700 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.01	.00	.00	.00
2	---	---	---	---	---	---	---	.41	.23	.00	.00	.12
3	---	---	---	---	---	---	---	.00	1.33	.00	e.00	.00
4	---	---	---	---	---	---	---	.00	.16	.00	e.15	.00
5	---	---	---	---	---	---	---	.00	.19	.00	e.22	.00
6	---	---	---	---	---	---	---	.00	.04	.00	e.93	.00
7	---	---	---	---	---	---	---	.09	.03	.08	e.07	.18
8	---	---	---	---	---	---	---	.00	.00	.02	e.00	.05
9	---	---	---	---	---	---	---	.00	.00	.01	e.00	.00
10	---	---	---	---	---	---	---	.47	.00	.79	e.00	.67
11	---	---	---	---	---	---	---	1.22	.00	.00	e.03	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
13	---	---	---	---	---	---	---	.00	.22	.00	.00	.07
14	---	---	---	---	---	---	---	.03	.09	.00	.00	.07
15	---	---	---	---	---	---	---	.14	.00	.42	.53	.00
16	---	---	---	---	---	---	---	1.03	.00	.02	.00	.00
17	---	---	---	---	---	---	---	.44	.00	.00	.00	.00
18	---	---	---	---	---	---	---	.19	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.02	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.00	1.11	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.08	.00	.00	.00
22	---	---	---	---	---	---	---	.85	.25	.00	.00	.00
23	---	---	---	---	---	---	---	.89	.00	.00	.00	.00
24	---	---	---	---	---	---	---	.04	.00	.27	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
26	---	---	---	---	---	---	---	1.78	.00	.45	.00	.00
27	---	---	---	---	---	---	---	.74	.48	.00	.00	.00
28	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.01	.20	.39	.00	.00
30	---	---	---	---	---	---	---	.04	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.96	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	9.38	4.42	2.45	1.93	1.16

e Estimated

CHEYENNE RIVER BASIN

309

434939103272800 PRECIP AT CAMP REMINGTON NEAR HAYWARD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°49'39", long 103°27'28", in NW¼NW¼SW¼SW¼ sec.31, T.2 S. R.6 E., Custer County, Hydrologic Unit 10120201, 100 ft east of U.S. Forest Service Road 345 within Camp Remington, 0.2 mi north of Custer State Park, and 7.0 mi southwest of Hayward.

PERIOD OF RECORD.--April 1989 to current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 5,010 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for estimated period, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.09	.00	.00	.00	.00	.00	.00	---	---	.00	.00
2	.00	.47	.00	.00	.00	.00	.00	.45	---	---	.00	.28
3	.00	.00	.00	.00	.00	.00	.22	.22	---	.00	.00	.00
4	.00	.00	.00	.00	.00	.08	.00	.00	---	.00	.08	.00
5	.00	.30	.00	.00	.00	.07	.00	.00	---	.00	.38	.00
6	.06	.07	.00	.00	.00	.00	.05	.01	---	.00	.50	.00
7	.15	.00	.00	.00	.00	.00	.20	.04	---	.00	.00	.08
8	.04	.00	.00	.00	.00	.00	.06	.03	---	.10	.00	.00
9	.00	.00	.00	.00	.00	.00	.04	.00	---	.00	.00	.00
10	.00	.01	.00	.00	.00	.00	1.34	.37	---	.45	.00	.89
11	.21	.00	.00	.00	.00	.04	.68	e1.28	---	.00	.00	.00
12	.00	.00	.00	.00	.00	.54	.38	e.50	---	.00	.00	.00
13	.22	.00	.00	.00	.03	.00	.01	e.00	---	.00	.00	.03
14	.00	.00	.34	.00	.02	.00	.01	e.00	---	.00	.00	.02
15	.00	.00	.00	.03	.00	.00	.00	e.15	---	.30	.44	.00
16	.05	.00	.00	.00	.03	.00	.00	e.94	---	.00	.12	.00
17	.00	.00	.00	.00	.60	.00	.00	e.79	---	.03	.00	.00
18	.00	.00	.00	.00	.13	.00	.95	e.43	---	.00	.00	.00
19	.02	.00	.21	.07	.00	.00	.31	e.22	---	.00	.04	.00
20	.00	.00	.02	.02	.00	.09	.00	e.00	---	.00	.00	.00
21	.00	.00	.08	.00	.00	.16	.03	e.07	---	.00	.00	.00
22	.00	.00	.00	.00	.00	.08	.00	e1.02	---	.00	.00	.00
23	.06	.00	.02	.00	.00	.00	.00	e.02	---	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	e.14	---	.24	.00	.00
25	.00	.00	.00	.00	.04	.00	.15	e.06	---	.00	.00	.00
26	.00	.02	.00	.00	.00	.00	.78	e.73	---	.06	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	e.87	---	.00	.00	.00
28	.00	.00	.03	.20	.00	.00	.00	e.06	---	.00	.00	.00
29	.00	.00	.03	.00	---	.13	.00	e.00	---	.41	.00	.00
30	.00	.00	.00	.00	---	.00	.00	---	---	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	---	---	.05	.00	---
TOTAL	0.81	0.96	0.73	0.32	0.85	1.19	5.21	---	---	---	1.56	1.30

CAL YR 1990 TOTAL 24.44

e Estimated

CHEYENNE RIVER BASIN

434807103235400 PRECIP AT CENTER LAKE NEAR HAYWARD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°48'07", long 103°23'54", in SW1/4NW1/4SW1/4, sec.10, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, 100 ft downstream from mouth of South Fork Bear Gulch, 0.8 mi east of Center Lake, and approximately 5 mi southwest of Hayward.

PERIOD OF RECORD.--June 1989 to current year. Published as Precip at Bear Gulch at Center Lake, near Hayward, SD, from June to September 1989.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 4,635 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.56	.00	.00	.00	.01	.00	.00	.66	.02	.00	.00
2	.00	.08	.00	.00	.00	.02	.00	.32	.21	.00	.02	.00
3	.00	.00	.00	.00	.00	.00	.46	.26	.71	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.02	.09	.00	.03	.00
5	.00	.28	.00	.00	.00	.00	.02	.02	.78	.00	.41	.00
6	.14	.00	.00	.00	.00	.00	.00	.00	.23	.05	.41	.00
7	.16	.00	.00	.00	.00	.03	.16	.06	.00	.00	.03	.00
8	.20	.00	.00	.00	.00	.03	.12	.02	.02	.00	.03	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	1.04	.16	.00	1.60	.00	1.20
11	.14	.00	.00	.00	.00	.00	.78	1.04	.00	.03	.00	.02
12	.00	.00	.00	.00	.00	.00	.36	.42	.00	.00	.00	.00
13	.22	.00	.00	.00	.00	.07	.06	.00	.15	.00	.00	.04
14	.00	.00	.00	.00	.00	.08	.00	.00	.07	.00	.00	.10
15	.00	.00	.08	.00	.06	.07	.00	.10	.02	.34	.00	.04
16	.02	.00	.14	.00	.00	.05	.00	.82	.00	.00	.35	.00
17	.00	.00	.06	.02	.00	.04	.00	.68	.00	.02	.00	.00
18	.00	.00	.00	.00	.06	.03	.76	.36	.00	.00	.00	.00
19	.00	.00	.02	.00	.05	.01	.54	.20	.01	.00	.00	.00
20	.00	.00	.15	.05	.08	.02	.02	.00	.07	.00	.00	.00
21	.00	.00	.10	.02	.10	.00	.02	.02	.03	.00	.00	.00
22	.00	.00	.08	.00	.07	.02	.02	.88	.82	.00	.00	.00
23	.06	.00	.00	.00	.06	.07	.04	.02	.00	.01	.00	.00
24	.00	.00	.00	.00	.14	.06	.00	.08	.00	.21	.00	.00
25	.00	.00	.00	.00	.12	.08	.12	.04	.00	.00	.00	.00
26	.00	.00	.00	.00	.08	.00	.86	.62	.00	.07	.00	.00
27	.00	.00	.00	.00	.04	.00	.04	.74	.00	.00	.00	.00
28	.00	.00	.00	.00	.03	.00	.00	.04	.54	.00	.00	.00
29	.00	.00	.06	.10	---	.00	.00	.02	.15	.32	.00	.00
30	.00	.00	.01	.06	---	.02	.00	.02	.00	.00	.00	.00
31	.00	---	.00	.03	---	.00	---	.01	---	.10	.00	---
TOTAL	0.94	0.92	0.70	0.28	0.89	0.71	5.42	6.97	4.56	2.77	1.28	1.40

CAL YR 1990 TOTAL 22.20
WTR YR 1991 TOTAL 26.84

CHEYENNE RIVER BASIN

311

441832103523200 PRECIP AT CHEYENNE CROSSING NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°18'32", long 103°52'32", in NE¼SE¼SE¼NE¼, sec.16, T.4 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, 0.1 mi southwest of State Highway 14A, 0.9 mi northwest of Cheyenne Crossing, and 5.5 mi southwest of Lead.

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Non-shielded precipitation recorder with 8.0-in. orifice. Elevation of gage is 5,280 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.09	.00	.00	.00	.01	.00	.00	.16	.00	.16	.00
2	.00	.26	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.14	.67	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00	.00
5	.00	.17	.00	.00	.00	.13	.00	.00	.02	.00	.01	.00
6	.12	.01	.00	.00	.00	.01	.00	.00	.33	.07	.07	.00
7	.00	.00	.00	.00	.00	.00	.19	.37	.00	.08	.00	.02
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.01
9	.00	.00	.00	.00	.00	.00	.38	.00	.00	.03	.00	.00
10	.01	.00	.00	.00	.00	.00	.27	.05	.00	2.06	.00	.00
11	.14	.00	.02	.00	.00	.20	.12	.42	.00	.00	.09	.00
12	.00	.00	.02	.00	.01	.44	.26	.16	.00	.00	.06	.23
13	.11	.00	.00	.00	.12	.00	.00	.00	.23	.00	.00	.01
14	.00	.00	.33	.00	.06	.00	.00	.13	.38	.00	.00	.22
15	.00	.00	.06	.00	.03	.00	.00	1.16	.00	.00	.01	.01
16	.08	.00	.00	.13	.00	.00	.00	.14	.00	.24	.00	.00
17	.27	.00	.00	.00	.54	.00	.00	.25	.00	.00	.00	.02
18	.00	.00	.04	.00	.55	.00	.15	.00	.16	.00	.00	.00
19	.10	.00	.01	.13	.00	.00	.16	.18	.00	.00	.00	.00
20	.00	.06	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.09	.01	.04	.00	.00	.00	.00
22	.04	.00	.00	.07	.00	.08	.00	1.30	.00	.00	.11	.00
23	.05	.00	.00	.18	.06	.04	.00	.00	.00	.00	.04	.06
24	.00	.00	.01	.00	.11	.00	.00	.00	.00	.16	.00	.00
25	.00	.00	.00	.00	.16	.00	.10	.00	.04	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.59	.23	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.29	.46	.00	.00	.00	.00
28	.00	.00	.00	.06	.00	.00	.10	.15	.44	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.04	.04	.09	.13	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.03	---	.04	.00	---
TOTAL	0.92	0.59	0.49	0.57	1.64	1.03	2.66	5.35	2.75	2.92	0.55	0.58

CAL YR 1990 TOTAL 12.54
WTR YR 1991 TOTAL 20.05

BELLE FOURCHE RIVER BASIN

442745103434500 PRECIP AT ELKHORN PEAK NEAR WHITEWOOD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°27'45", long 103°43'45", in NE¼SE¼SE¼ sec.22, T.6 N., R.3 E., Lawrence County, Hydrologic Unit 10120203, along Polo Creek, 0.2 mi west of U.S. Highway 85, 2.0 mi southwest of Elkhorn Peak, and 4.5 mi west of Whitewood.

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 48 in. tall. Elevation of gage is 3,835 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated period, which are poor. Precipitation gage is read daily by observer at approximately 0800 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.20	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	e.00	.00	.00	.00	.00	.70	.00	.00	.00
4	.00	.00	.00	e.00	.00	.00	.00	.20	.20	.00	.00	.00
5	.00	.25	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	e.00	.00	.00	.00	.00	.30	.00	.20	.00
7	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.30	.00	.00
9	.00	.00	.00	e.00	.00	.00	.70	.00	.00	.00	.00	.00
10	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	e.00	.00	.50	.30	.50	.00	.30	.00	.00
13	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.50	e.00	.00	.00	.00	.00	.10	.00	.00	.00
15	.00	.00	.00	e.00	.00	.00	.40	1.00	.00	.00	.00	.00
16	.00	.00	.00	e.00	.00	.00	.00	.50	.00	.00	.30	.00
17	1.00	.00	.00	e.00	.00	.20	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	e.00	.00	.00	.00	.50	.00	.00	.00	.00
19	.00	.00	.00	e.00	1.10	.00	.00	.00	.20	.00	.00	.00
20	.00	.00	.00	e.55	.00	.00	.30	.10	.00	.00	.00	.00
21	.00	.00	.00	e.00	.00	.10	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	e.00	.00	.60	.00	.00	.00	.00	.00	.20
23	.00	.00	.00	e.00	.00	.00	.00	1.50	.00	.00	.00	.00
24	.00	.00	.00	e.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	e.55	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	e.00	.00	.00	.50	.00	.00	.00	.00	.00
27	.00	.00	.00	e.00	.00	.00	.30	.40	.00	.20	.00	.00
28	.00	.00	.00	e.00	.40	.00	.00	.50	.20	.00	.00	.00
29	.00	.00	.00	e.00	---	.00	.00	.30	.20	.00	.00	.00
30	.00	.27	.00	e.00	---	.10	.00	.00	.10	.00	.00	.00
31	.00	---	.00	e.00	---	.00	---	.00	---	.00	.00	---
TOTAL	1.00	0.72	0.50	1.10	1.50	1.50	2.50	5.50	2.00	0.80	0.50	0.20

CAL YR 1990 TOTAL 13.12
WTR YR 1991 TOTAL 17.82

e Estimated

BELLE FOURCHE RIVER BASIN

313

441852103594800 PRECIP AT HEADWATERS LITTLE SPEARFISH CREEK NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°18'52", long 103°59'48", in NE¼NE¼ sec.16, T.4 N., R.1 E., Lawrence County, Hydrologic Unit 10120103, 0.1 mi west of U.S. Forest Service Road 134, 1.1 mi south of Timon Campground, and 11 mi southwest of Lead.

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 72 in. tall. Elevation of gage is 5,710 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0730 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.10	.00	.00	.20	.00	.00	.00
2	.00	.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.30	1.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
5	.00	.25	.00	.00	.00	.00	.00	.00	.10	.20	.00	.00
6	.25	.00	.00	.00	.00	.20	.00	.00	.20	.40	.50	.00
7	.00	.00	.00	.00	.00	.00	.00	.30	.20	.00	1.50	.00
8	.00	.00	.00	.00	.00	.00	.30	.00	.20	.00	.10	.00
9	.00	.00	.00	.00	.00	.00	.60	.00	.00	.35	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00
11	.10	.00	.00	.00	.00	.00	.10	.10	.00	.40	.00	.00
12	.00	.00	.50	.00	.00	.50	.00	.00	.00	.00	.10	.00
13	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00	.60	.00
14	.05	.00	.00	.00	.40	.00	.00	.00	.15	.00	.00	.15
15	.00	.00	.65	.00	.00	.00	.20	1.30	.15	.00	.00	.00
16	.00	.00	.00	.15	.00	.00	.00	.40	.00	.00	.00	.65
17	.40	.00	.00	.00	.20	.00	.00	.20	.00	.10	.00	.00
18	.00	.00	.00	.00	.80	.00	.00	.20	.10	.00	.00	.00
19	.00	.00	.10	.00	.00	.00	.50	.00	.00	.00	.00	.00
20	.02	.00	.10	.15	.00	.00	.00	.20	.00	.00	.00	.00
21	.00	.00	.00	.10	.00	.20	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.20	.00	.30	.00	.00	.00	.00
23	.08	.00	.00	.40	.10	.00	.00	1.00	.00	.00	.00	.00
24	.10	.00	.10	.00	.35	.00	.00	.00	.00	.20	.00	.00
25	.00	.00	.30	.00	.25	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.10	.00	.30	.00	.00	.00	.00	.00
27	.00	.10	.00	.00	.00	.00	.90	.30	.00	.00	.00	.00
28	.00	.00	.00	.40	.00	.00	.70	.30	.00	.00	.00	.00
29	.00	.00	.10	.00	---	.00	.20	.20	.40	.00	.00	.00
30	.00	.10	.00	.00	---	.00	.30	.20	.30	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.35	.00	---
TOTAL	1.00	0.70	1.85	1.20	2.20	1.20	4.40	5.30	3.10	2.10	2.80	0.80

CAL YR 1990 TOTAL 20.00

WTR YR 1991 TOTAL 26.65

CHEYENNE RIVER BASIN

431806103351800 PRECIP AT HIGHLAND CEMETERY NEAR HOT SPRINGS, SD

LOCATION.--Lat 43°18'06", long 103°35'18", in NW¼ sec.1, T.9 S., R.4 E., Fall River County, Hydrologic Unit 10120106, 0.2 mi south of Highland Cemetery, 2.8 mi southwest of Cascade Springs, and 10 mi southwest of Hot Springs.

PERIOD OF RECORD.--May to September 1991 (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 3,380 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0700 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.93	.00	.12	.00
2	---	---	---	---	---	---	---	.06	.00	.00	.00	.00
3	---	---	---	---	---	---	---	.00	.16	.00	.00	.00
4	---	---	---	---	---	---	---	.00	.07	.00	.07	.00
5	---	---	---	---	---	---	---	.00	.40	.00	.22	.00
6	---	---	---	---	---	---	---	.00	.13	.00	.18	.00
7	---	---	---	---	---	---	---	.11	.10	.00	.05	.00
8	---	---	---	---	---	---	---	.00	.10	.00	.00	.00
9	---	---	---	---	---	---	---	.29	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.50	.00	.00	.00	.28
11	---	---	---	---	---	---	---	.11	.00	.00	.00	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.00	.02
13	---	---	---	---	---	---	---	.00	.00	.00	.00	.05
14	---	---	---	---	---	---	---	.00	.03	.00	.00	.05
15	---	---	---	---	---	---	---	.16	.00	.00	.00	.00
16	---	---	---	---	---	---	---	.48	.00	.00	.26	.00
17	---	---	---	---	---	---	---	.29	.00	.00	.00	.00
18	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
22	---	---	---	---	---	---	---	.00	.49	.00	.00	.00
23	---	---	---	---	---	---	---	.32	.00	.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.13	.00	.11	.00	.00
27	---	---	---	---	---	---	---	.09	.00	.00	.00	.00
28	---	---	---	---	---	---	---	.72	.36	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.15	.01	.00	.00
30	---	---	---	---	---	---	---	.10	.00	.24	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	3.36	2.92	0.36	0.90	0.40

CHEYENNE RIVER BASIN

315

434358103494800 PRECIP AT JEWEL CAVE NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°43'58", long 103°49'87", in SW¼SE¼NW¼, sec.1, T.4 S., R.2 E., Custer County, Hydrologic Unit 10120107, Jewel Cave National Monument, 11 mi west of Custer, and 18.9 mi southeast of Newcastle, WY.

PERIOD OF RECORD.--October 1990 to September 1991 (seasonal record).

INSTRUMENTATION.--Non-shielded, metal can with 8.0-in. diameter orifice and 24-in. capacity. Elevation of gage is 5,550 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 1300 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.42	.00	---	---	---	---	.00	.90	.00	.15	.00
2	.03	.00	.00	---	---	---	---	.00	.00	.00	.00	.00
3	.00	.00	.00	---	---	---	---	.00	.42	.00	.00	.00
4	.00	.10	.00	---	---	---	---	.00	.46	.00	.06	.00
5	.00	.12	.00	---	---	---	---	.00	.00	.00	.02	.00
6	.19	.00	.00	---	---	---	---	.00	.12	.02	.00	.00
7	.17	.00	.00	---	---	---	---	.70	.13	.00	.50	.00
8	.05	.00	.00	---	---	---	---	.00	.00	.00	.09	.03
9	.00	.00	.00	---	---	---	---	.00	.02	.02	.05	.00
10	.10	.00	.00	---	---	---	---	.00	.00	.00	.04	.00
11	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.15
12	.10	.00	.00	---	---	---	---	.00	.00	.06	.04	.00
13	.08	.00	.08	---	---	---	---	.00	.24	.00	.00	.00
14	.00	.00	.30	---	---	---	---	.00	.13	.00	.00	.00
15	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.00
16	.05	.00	.00	---	---	---	---	.00	.00	.10	1.00	.00
17	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.00
18	.00	.00	.24	---	---	---	---	.00	.00	.00	.00	.00
19	.05	.00	.08	---	---	---	---	.00	.00	.00	.00	.00
20	.00	.00	.10	---	---	---	---	.00	.00	.00	.00	.00
21	.00	.00	.00	---	---	---	---	.00	.00	.01	.00	.00
22	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.00
23	.10	.00	.00	---	---	---	---	.00	.00	.00	.35	.00
24	.00	.00	.00	---	---	---	---	.00	.20	.29	.00	.00
25	.00	.00	.00	---	---	---	---	.00	.03	.05	.00	.00
26	.00	.00	.00	---	---	---	---	1.42	.00	.00	.00	.00
27	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.00
28	.00	.00	.12	---	---	---	---	.00	.00	.00	.00	.00
29	.00	.00	.04	---	---	---	---	.00	.25	.00	.00	.00
30	.00	.00	.00	---	---	---	---	.00	.21	.00	.00	.00
31	.00	---	.00	---	---	---	---	.00	---	.12	.00	---
TOTAL	0.92	0.64	0.96	---	---	---	---	2.12	3.11	0.67	2.30	0.18

CHEYENNE RIVER BASIN

440501103262300 PRECIP AT JOHNSON SIDING NEAR RAPID CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°05'01", long 103°26'23", in NW¼SE¼SW¼SE¼ sec.31, T.2 N., R.6 E., Pennington County, Hydrologic Unit 10120110, 0.1 mi west of U.S. Forest Service Road 166, 0.1 mi east of Rapid Creek, and 100 ft north of State Highway 44 at Johnson Siding, approximately 7.5 mi west of Canyon Lake in Rapid City.

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Non-shielded, metal can with 8.0-in. diameter orifice and 24-in. capacity. Elevation of gage is 4,290 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 1800 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.01	.00	.00	.46	.00	.00	.00
2	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.48	.62	.00	.00	.07
4	.00	.00	.00	.00	.00	.00	.00	.00	1.07	.00	.06	.00
5	.00	.10	.00	.00	.00	.01	.00	.00	.00	.00	.22	.00
6	.02	.00	.00	.00	.00	.00	.00	.00	1.42	.07	.00	.00
7	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	.48
8	.03	.00	.00	.00	.00	.00	.24	.00	.69	.02	.00	.00
9	.00	.00	.00	.00	.00	.00	.04	.00	.36	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.11
11	.24	.00	.00	.00	.00	.00	1.27	.42	.00	.11	.00	.14
12	.00	.00	.00	.00	.00	.19	.55	1.93	.62	.00	.00	.13
13	.19	.00	.00	.00	.00	.00	.01	.00	.27	.00	.00	.04
14	.01	.00	.32	.00	.15	.00	.00	.00	.00	.00	.00	.11
15	.01	.00	.05	.00	.00	.00	.00	.94	.15	.00	.09	.01
16	.00	.00	.00	.01	.00	.00	.00	.76	.00	1.97	.16	.00
17	.02	.00	.00	.00	.47	.02	.00	.71	.00	.32	.00	.00
18	.00	.00	.00	.00	.22	.00	.10	.29	.20	.00	.00	.00
19	.00	.00	.04	.04	.00	.00	.75	.11	.00	.00	.00	.00
20	.00	.00	.06	.03	.00	.00	.00	.00	.00	.00	.04	.00
21	.00	.00	.04	.00	.00	.19	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.13	.01	.39	.00	.00	.00	.00
23	.01	.00	.00	.11	.00	.00	.00	.06	.66	.00	.00	.02
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.01	.00	.07	.00	.11	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.83	.00	.00	.13	.00	.00
27	.00	.00	.00	.00	.00	.00	.03	.40	.42	.10	.00	.00
28	.00	.00	.00	.08	.00	.00	.00	.60	.00	.00	.00	.00
29	.00	.00	.01	.00	---	.01	.00	.67	.00	.04	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.08	.18	.00	.00	.00
31	.00	---	.00	.30	---	.00	---	.05	---	.13	.00	---
TOTAL	0.56	0.17	0.53	0.57	0.91	0.56	3.94	7.89	7.12	2.93	0.78	1.11

CAL YR 1990 TOTAL 16.88
WTR YR 1991 TOTAL 27.07

CHEYENNE RIVER BASIN

317

435355103432800 PRECIP AT MEDICINE MOUNTAIN NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°53'55", long 103°43'28", in SW¼SW¼SE¼ sec.2, T.2 S., R.3 E., Pennington County, Hydrologic Unit 10120109, along Spring Creek, 1.0 mile southwest of Medicine Mountain, and 11 mi northwest of Custer.

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 48 in. tall. Elevation of gage is 6,070 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated periods, which are poor. Precipitation gage is read daily by observer at approximately 0900 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00
2	.00	---	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
3	.00	---	.00	.00	.00	.20	.00	.00	.50	.00	.00	.00
4	.00	---	.00	.00	.10	.00	.00	.00	.70	.00	.00	.00
5	.00	---	.00	.00	.00	.00	.00	.10	.30	.00	.40	.00
6	.00	---	.00	.00	.00	.00	.00	.00	.10	.00	.40	.00
7	.00	---	.00	.00	.00	.50	.30	.00	.40	.00	.20	.00
8	.40	---	.00	.00	.00	.00	.00	.20	.00	.00	.60	.00
9	.00	---	.00	.00	.00	.00	.00	.00	.00	.10	.20	.00
10	.00	---	.00	.00	.00	.00	.00	e.30	.00	.00	.30	.00
11	.00	---	.00	.00	.00	.20	.60	e.90	.20	.00	.00	.10
12	.00	---	.00	.00	.00	.00	.20	e.10	.00	.00	.20	---
13	.00	---	.00	.00	.00	.00	.20	.00	.00	.00	.00	---
14	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	---
15	.00	.00	.50	.00	.00	.10	.00	.00	.00	.00	.00	---
16	.00	.00	.00	.00	.70	.00	.00	.30	.20	.00	.30	---
17	.00	.00	.00	.00	.00	.00	.00	.90	.00	.00	.00	---
18	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	---
19	.00	.00	.00	.00	.00	.00	.50	.30	.00	.00	.00	---
20	.00	.10	.00	.20	.00	.00	.00	.00	.00	.00	.00	---
21	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	---
22	.00	.00	.20	.00	.00	.00	.00	.20	.10	.00	.00	---
23	---	.00	.00	.00	.10	.00	.20	.20	.00	.00	.00	---
24	---	.00	.00	.20	.00	.10	e.00	.60	.00	.00	.20	---
25	---	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00
26	---	.00	.00	.00	.00	.00	e.40	.40	.50	.00	.00	.00
27	---	.00	.00	.20	.00	.00	.60	.20	.00	1.30	.00	.00
28	---	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00
29	---	.00	.00	.00	---	.00	.10	.70	.00	.00	.00	.00
30	---	.00	.00	.00	---	.00	.00	.00	.30	.00	.00	.00
31	---	---	.00	.00	---	.00	---	.70	---	.20	.00	---
TOTAL	---	---	0.80	0.60	1.00	1.20	3.10	6.20	3.40	1.60	3.00	---

e Estimated

CHEYENNE RIVER BASIN

434928103214800 PRECIP AT NORTH FARM AT CUSTER STATE PARK, NEAR HAYWARD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°49'28", long 103°21'48", in NW~~1~~NE~~1~~ sec.2, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, 3.5 mi southwest of Hayward on Spokane Creek, 0.1 mi east of U.S. Highway 16A, and 0.1 mi south of north boundary of Custer State Park.

PERIOD OF RECORD.--May 1989 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,220 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated periods, which are poor. Precipitation gage is read daily by observer at approximately 0700 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.85	.00	.00	.10
2	---	---	---	---	---	---	---	.00	.02	.00	.00	.00
3	---	---	---	---	---	---	---	.42	1.00	.00	.00	.00
4	---	---	---	---	---	---	---	e.00	.02	.00	.00	.00
5	---	---	---	---	---	---	---	e.00	.60	.04	.51	.00
6	---	---	---	---	---	---	---	e.00	.29	.02	.46	.00
7	---	---	---	---	---	---	---	e.00	.04	.00	.00	.00
8	---	---	---	---	---	---	---	e.25	.00	.00	.16	.00
9	---	---	---	---	---	---	---	e.00	.00	.02	.00	.00
10	---	---	---	---	---	---	---	e.00	.00	1.57	.00	1.18
11	---	---	---	---	---	---	---	e.95	.00	.00	.00	.00
12	---	---	---	---	---	---	---	e.25	.00	.00	.00	.00
13	---	---	---	---	---	---	---	e.00	.97	.00	.00	.00
14	---	---	---	---	---	---	---	e.00	.04	.00	.00	.22
15	---	---	---	---	---	---	---	e.00	.00	.14	.00	.00
16	---	---	---	---	---	---	---	e.00	.00	.00	.26	.00
17	---	---	---	---	---	---	---	e.95	.00	e.00	.00	.00
18	---	---	---	---	---	---	---	e.00	.00	e.00	.00	.00
19	---	---	---	---	---	---	---	e.70	.00	e.00	.00	.00
20	---	---	---	---	---	---	---	.00	.07	e.00	.00	.00
21	---	---	---	---	---	---	---	.00	.11	e.00	.00	.00
22	---	---	---	---	---	---	---	.87	.16	e.00	.31	.00
23	---	---	---	---	---	---	---	.07	.63	e.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	e.33	.00	.00
25	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
26	---	---	---	---	---	---	---	.57	.00	e.71	.00	.00
27	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
28	---	---	---	---	---	---	---	.79	.00	e.00	.00	.00
29	---	---	---	---	---	---	---	.00	.00	.23	.00	.00
30	---	---	---	---	---	---	---	.00	.62	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.16	.00	---
TOTAL	---	---	---	---	---	---	---	5.82	5.42	3.22	1.70	1.50

e Estimated

BELLE FOURCHE RIVER BASIN

319

441207104012700 PRECIP AT O'NEIL PASS NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°12'07", long 104°01'27", in NW¼SW¼SE¼ sec.20, T.3 N., R.1 E., Lawrence County, Hydrologic Unit 10120203, 1.0 mi west of O'Neil Pass and 16 mi southwest of Lead on the north side of U.S. Highway 85, approximately 1.5 mi east of the South Dakota-Wyoming State line.

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 6,520 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to May 5, 1989, a non-shielded, 8.0-in. diameter plastic gage, 72 in. tall.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.25	.00	.00	.00	.03	.00	.00	.32	.00	.00	.00
2	.01	.21	.03	.00	.00	.02	.00	.31	.00	.00	.00	.00
3	.02	.00	.00	.00	.00	.02	.00	.00	.75	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	.59	.00
5	.00	.09	.00	.00	.00	.16	.00	.00	.11	.24	.01	.00
6	.21	.00	.00	.00	.00	.02	.00	.00	.00	.09	.00	.00
7	.10	.04	.00	.00	.00	.02	.53	.27	.00	.00	.00	.00
8	.01	.00	.00	.00	.00	.02	.33	.00	.00	.30	1.03	.00
9	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.01	.00	.00	.00	.03	.00	.46	.13	.00	1.63	.00	.00
11	.08	.00	.03	.00	.02	.36	.34	.88	.00	.00	.02	.00
12	.00	.00	.02	.00	.06	.03	.22	.02	.00	.00	.00	.16
13	.26	.00	.00	.00	.04	.00	.05	.00	.00	.00	.02	.04
14	.00	.00	.71	.00	.07	.00	.09	.72	.66	.00	.00	.29
15	.01	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00	.22
16	.17	.00	.00	.16	.00	.00	.00	.20	.00	1.54	.00	.00
17	.15	.00	.00	.00	.65	.00	.00	.06	.00	.00	.00	.04
18	.02	.00	.32	.02	.28	.00	.44	.00	.05	.00	.00	.00
19	.10	.00	.12	.14	.00	.00	.13	.10	.00	.00	.07	.02
20	.01	.09	.05	.11	.04	.02	.01	.00	.00	.00	.01	.00
21	.00	.07	.02	.01	.00	.27	.01	.00	.10	.00	.00	.01
22	.12	.00	.00	.24	.00	.16	.00	.80	.00	.00	.00	.03
23	.07	.00	.09	.19	.07	.00	.00	.02	.02	.13	.00	.04
24	.00	.00	.14	.02	.18	.00	.00	.00	.00	.49	.00	.00
25	.00	.00	.01	.00	.27	.00	.50	.00	.00	.00	.04	.00
26	.00	.00	.03	.00	.00	.00	1.14	.33	.04	.02	.00	.00
27	.00	.01	.00	.11	.00	.04	.60	.58	.00	.00	.00	.00
28	.00	.00	.09	.18	.05	.00	.13	.02	.37	.00	.00	.00
29	.00	.00	.01	.02	---	.00	.19	.13	.07	.08	.00	.00
30	.00	.02	.02	.00	---	.00	.00	.04	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.07	.00	---
TOTAL	1.37	0.78	1.69	1.20	1.76	1.17	5.17	4.85	2.57	4.59	1.79	0.85

CAL YR 1990 TOTAL 18.92
WTR YR 1991 TOTAL 27.79

CHEYENNE RIVER BASIN

432343103421500 PRECIP AT PARKER PEAK NEAR MINNEKAHTA, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°23'43", long 103°42'15", in SW¼NW¼NW¼SE¼, sec.36, T.7 S., R.3 E., Fall River County, Hydrologic Unit 10120106, 0.5 mi east of Fossil Cycad National Monument, 0.75 mi southwest of Parker Peak, and 2.0 mi south of Minnekahta.

PERIOD OF RECORD.--May to September 1991 (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,090 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0800 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.51	.00	.18	.00
2	---	---	---	---	---	---	---	.35	.19	.00	.00	.00
3	---	---	---	---	---	---	---	.00	.20	.00	.00	.00
4	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.42	.00	.00	.00
6	---	---	---	---	---	---	---	.00	.28	.00	.00	.00
7	---	---	---	---	---	---	---	.05	.10	.00	.83	.00
8	---	---	---	---	---	---	---	.00	.07	.00	.00	.00
9	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.23	.00	.20	.00	.00
11	---	---	---	---	---	---	---	.24	.00	.00	.00	.31
12	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
14	---	---	---	---	---	---	---	.10	.12	.00	.00	.10
15	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
16	---	---	---	---	---	---	---	.57	.00	.00	.00	.00
17	---	---	---	---	---	---	---	.25	.00	.00	.00	.00
18	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
22	---	---	---	---	---	---	---	.51	.38	.00	.00	.00
23	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.20	.00	.00
25	---	---	---	---	---	---	---	.20	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.28	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.90	.46	.00	.00	.00
28	---	---	---	---	---	---	---	.00	.10	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.18	.52	.00	.00
30	---	---	---	---	---	---	---	.00	.07	.34	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	3.68	3.08	1.26	1.01	0.41

321

PRECIPITATION RECORDS

REMARKS.--Records fair.

[illegible]

CHEYENNE RIVER BASIN

434751104005100 PRECIP AT REDBIRD CANYON NEAR NEWCASTLE, WY

PRECIPITATION RECORDS

LOCATION.--Lat 43°47'51", long 104°00'51", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$, sec.9, T.3 S., R.1 E., Custer County, Hydrologic Unit 10120107, 5.4 mi north of Elk Mountain, 9.2 mi northwest of Jewel Cave National Monument, and 9.7 mi southeast of Newcastle.

PERIOD OF RECORD.--December 1990 to September 1991.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 4,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	.00	.00	.00	.08	.00	.02	e.66	e.00	e.00	e.00
2	---	---	.00	.00	.00	.02	.00	.33	e.00	e.00	e.00	e.00
3	---	---	.00	.00	.00	.00	.00	.06	e1.11	e.00	e.00	e.00
4	---	---	.07	.00	.00	.00	.00	.02	e.03	e.00	e.00	e.00
5	---	---	.00	.00	.00	.00	.00	.00	e.27	e.14	e.77	e.00
6	---	---	.00	.00	.00	.02	.00	.00	e.16	e.00	e.12	e.00
7	---	---	.00	.00	.00	.00	.33	.08	e.06	e.00	e.18	e.06
8	---	---	.00	.00	.00	.00	.14	.00	e.00	e.31	e.00	e.02
9	---	---	.00	.00	.00	.02	.04	.00	e.00	e.06	e.02	e.00
10	---	---	.00	.00	.00	.00	.31	.16	e.00	e.53	e.00	e.00
11	---	---	.00	.00	.00	.06	.27	1.91	e.00	e.00	e.10	e.00
12	---	---	.00	.00	.00	.06	.10	.08	e.00	e.00	e.00	---
13	---	---	.00	.00	.00	.00	.02	.00	e.69	e.00	e.00	---
14	---	---	.55	.00	.00	.00	.02	.04	e.68	e.00	e.00	---
15	---	---	.03	.00	.00	.00	.00	.08	e.03	e.00	e.06	---
16	---	---	.00	.00	.00	.00	.00	.25	e.00	e.00	e.16	---
17	---	---	.00	.00	.66	.00	.00	.10	e.03	e.00	e.00	.00
18	---	---	.07	.00	.02	.04	.21	.04	e.00	e.00	e.00	.00
19	---	---	.12	.00	.00	.00	.04	.00	e.00	e.00	e.06	.00
20	---	---	.07	.07	.00	.00	.00	.00	e.18	e.00	e.00	.00
21	---	---	.07	.00	.00	.85	.06	.00	e.00	e.00	e.00	.00
22	---	---	.00	.14	.00	.29	.00	.78	e.27	e.00	e.10	.00
23	---	---	.03	.07	.00	.02	.00	e.00	e.00	e.10	e.06	.00
24	---	---	.14	.07	.02	.00	.00	e.00	e.00	e.98	e.00	.00
25	---	---	.03	.03	.06	.00	.06	e.00	e.00	e.04	e.00	.00
26	---	---	.00	.00	.02	.00	.58	e.83	e.00	e.08	e.00	.00
27	---	---	.00	.00	.00	.00	.27	e1.03	e.01	e.00	e.08	.00
28	---	---	.10	.41	.00	.00	.06	e.00	e.40	e.00	e.06	.00
29	---	---	.03	.03	---	.10	.00	e.64	e.07	e.06	e.00	.00
30	---	---	.03	.00	---	.00	.00	e.06	e.00	e.00	e.00	.00
31	---	---	.00	.00	---	.02	---	e.68	---	e.00	e.00	---
TOTAL	---	---	1.34	0.82	0.78	1.58	2.51	7.19	4.65	2.30	1.77	---

e Estimated

323

PRECIPITATION RECORDS

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

CAL YR 1990	TOTAL 15.20
WTR YR 1991	TOTAL 21.45

CHEYENNE RIVER BASIN

434638103253500 PRECIP AT ROAD CAMP AT CUSTER STATE PARK, NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°46'38", long 103°25'35", in NE¼NW¼SW¼NE¼, sec.20, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, 0.1 mi north of U.S. Highway 16A at Road Camp, 2.2 mi northwest of Custer State Park Headquarters, and 8.0 mi east of Custer.

PERIOD OF RECORD.--May 1989 to current year.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 48 in. tall. Elevation of gage is 4,660 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 1100 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00	.05	.00
2	.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.50	.30	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.10	.00
6	.00	.50	.00	.00	.00	.00	.00	.00	.50	.00	.10	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.20	.05
8	.00	.00	.00	.00	.00	.00	.10	.30	.00	.00	.25	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	1.30	1.10	.00	.00	.00	.90
12	.00	.00	.00	.00	.00	.00	.70	.30	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.33
15	.00	.00	.10	.00	.00	.00	.00	.00	.10	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.50	.55	.00
17	.30	.00	.00	.00	.00	.00	.00	1.10	.00	.00	.00	.00
18	.00	.00	.00	.00	.80	.50	.00	.00	.00	.00	.00	.00
19	.00	.00	.10	.00	.00	.00	1.00	.80	.05	.00	.00	.00
20	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.20	.00	.20	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	1.20	.30	.00	.00	.00
24	.00	.00	.00	.00	.00	.20	.00	.10	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.70	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.20	.70	.00	.30	.00	.00
28	.00	.00	.00	.20	.00	.00	.00	.70	.50	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.20	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.20	.25	.00	.00
31	.00	---	.30	.00	---	.10	---	.00	---	.00	.00	---
TOTAL	0.30	0.80	0.60	0.20	0.80	0.80	4.20	7.00	3.95	1.05	1.25	1.28

CAL YR 1990 TOTAL 20.89
WTR YR 1991 TOTAL 22.23

CHEYENNE RIVER BASIN

325

433848103443200 PRECIP AT S & G CANYON NEAR PRINGLE, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°38'48", long 103°44'32", in NW¼SE¼NE¼, sec.3, T.5 S., R.3 E., Custer County, Hydrologic Unit 10120106, 6.2 mi southeast of Jewel Cave National Monument, 8.0 mi west northwest of Pringle, and 9.0 mi south southwest of Custer.

PERIOD OF RECORD.--May to September 1991 (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,880 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0900 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
2	---	---	---	---	---	---	---	.61	.42	.00	.00	.00
3	---	---	---	---	---	---	---	.10	.41	.00	.07	.00
4	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.31	.00	.00	.00
6	---	---	---	---	---	---	---	.00	.30	.06	.60	.00
7	---	---	---	---	---	---	---	.12	.03	.00	.00	.08
8	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
9	---	---	---	---	---	---	---	.00	.00	.00	.23	.00
10	---	---	---	---	---	---	---	.32	.00	.00	.00	.28
11	---	---	---	---	---	---	---	1.18	.00	.00	.05	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.00	.05
13	---	---	---	---	---	---	---	.00	.39	.00	.00	.00
14	---	---	---	---	---	---	---	.00	.65	.00	.00	.08
15	---	---	---	---	---	---	---	.04	.00	.35	.80	.00
16	---	---	---	---	---	---	---	.35	.00	.00	.00	.00
17	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
18	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.00	.05	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
22	---	---	---	---	---	---	---	.65	.30	.00	.00	.00
23	---	---	---	---	---	---	---	.00	.00	.04	.00	.00
24	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
25	---	---	---	---	---	---	---	.06	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.70	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.80	.00	.00	.00	.00
28	---	---	---	---	---	---	---	.07	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.55	.25	.00	.00
30	---	---	---	---	---	---	---	.00	.00	.23	.00	.00
31	---	---	---	---	---	---	---	.93	---	.21	.00	---
TOTAL	---	---	---	---	---	---	---	5.99	3.41	1.14	1.75	0.49

CHEYENNE RIVER BASIN

440022103195200 PRECIP AT SHERIDAN LAKE ROAD NEAR RAPID CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°00'22", long 103°19'52", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.31, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, 0.2 mi south of Sheridan Lake Road, 6.5 mi northeast of Sheridan Lake, and 4.0 mi southwest of Canyon Lake in Rapid City.

PERIOD OF RECORD.--March 1989 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,265 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0700 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	---	---	---	.00	.00	.00	.91	.00	.00	.00
2	.00	.00	---	---	---	.00	.00	.00	.00	.00	.00	.10
3	.00	.36	---	---	---	.00	.00	.65	.00	.00	.00	.00
4	.00	.00	---	---	---	.00	.00	.00	.78	.00	.00	.00
5	.00	.00	---	---	---	.00	.00	.00	.15	.00	.10	.00
6	.00	.00	---	---	---	.00	.00	.00	.40	.07	.20	.00
7	.00	.00	---	---	---	.00	.00	.03	.00	.01	.21	.00
8	.08	.00	---	---	---	.00	.39	.00	.00	.00	.05	.90
9	.18	.00	---	---	---	.00	.08	.00	.45	.17	.00	.50
10	.00	.00	---	---	---	.00	.00	.03	.00	.00	.00	.00
11	.00	.00	---	---	---	.00	1.04	.27	.00	.35	.00	.44
12	.00	.00	---	---	---	.00	.88	1.60	.00	.00	.00	.02
13	.00	.00	---	---	---	.00	.35	.00	.00	.00	.00	.82
14	.22	.00	---	---	---	.00	.00	.00	.41	.00	.00	.00
15	.00	.00	---	---	---	.00	.00	.48	.15	.00	.00	.14
16	.00	.00	---	---	---	.00	.00	1.02	.00	.07	.31	.00
17	.00	.00	---	---	---	.00	.00	.79	.05	.19	.02	.00
18	.00	.00	---	---	---	.00	.00	.24	.07	.00	.00	.00
19	.00	.00	---	---	---	.00	1.08	.17	.00	.00	.00	.00
20	.00	.00	---	---	---	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	---	---	---	.20	.00	.00	.09	.00	.05	.00
22	.00	.00	---	---	---	.00	.05	.00	.22	.00	.00	.00
23	.00	.00	---	---	---	.45	.00	.79	.40	.00	.00	.00
24	.00	.00	---	---	---	.00	.00	.00	.00	.00	.00	.00
25	.06	.00	---	---	---	.00	.00	.00	.00	.14	.00	.00
26	.00	.00	---	---	---	.00	2.15	.00	.00	.00	.00	.00
27	.00	.00	---	---	---	.00	.20	.61	.00	.29	.00	.00
28	.00	.00	---	---	---	.00	.00	.60	.43	.00	.00	.00
29	.00	.00	---	---	---	.00	.00	.29	.00	.00	.00	.00
30	.00	.00	---	---	---	.00	.00	.04	.00	.04	.00	.00
31	.00	---	---	---	---	.00	---	.05	---	.00	.00	---
TOTAL	0.54	0.36	---	---	---	0.65	6.22	7.66	4.51	1.33	0.94	2.92

CHEYENNE RIVER BASIN

327

440756103450300 PRECIP AT TELEGRAPH GULCH ABOVE ROCHFORD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°07'56", long 103°45'03", in SW¼NW¼NE¼SW¼ sec.15, T.2 N., R.3 E., Pennington County, Hydrologic Unit 10120110, 1.0 mi east of Telegraph Gulch and 1.5 mi west of Rochford.

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

INSTRUMENTATION.--Non-shielded, metal can with 8.0-in. diameter orifice and 24-in capacity. Elevation of gage is 5,500 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated period, which are poor. Precipitation gage is read daily by observer at approximately 0730 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.03	.00	.00	.51	.00	.18	e.00
2	.00	.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00
3	.00	.00	.00	.00	.00	.00	.00	.33	.97	.00	.00	e.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.43	.00	.00	e.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.04	e.00
6	.13	.06	.00	.00	.00	.07	.00	.00	.32	.27	.55	e.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.60	.04	.41	e.00
8	.18	.00	.00	.00	.00	.00	.13	.00	.00	.01	.08	e.00
9	.00	.00	.00	.00	.00	.00	.11	.00	.00	.22	.00	e.06
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	e.00
11	.07	.00	.00	.00	.00	.00	.43	.28	.00	1.63	.00	e.00
12	.00	.00	.00	.00	.00	.39	.19	.78	.00	.00	.13	e.85
13	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00	e.00
14	.00	.00	.37	.00	.15	.00	.00	.00	.25	.00	.04	e.14
15	.00	.00	.02	.00	.00	.00	.00	.74	.20	.00	.00	e.18
16	.00	.00	.00	.07	.00	.00	.00	.35	.00	.10	.14	e.00
17	.15	.00	.00	.00	.15	.00	.00	.62	.00	.27	.00	.00
18	.00	.00	.05	.00	.32	.00	.00	.07	.00	.00	.00	.00
19	.00	.00	.08	.00	.07	.00	.37	.01	.00	.00	.00	.00
20	.00	.00	.08	.20	.00	.00	.03	.35	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.04	.00	.00	.10	.07	.00	.00
22	.00	.00	.00	.00	.00	.22	.00	.10	.00	.00	.00	.00
23	.16	.00	.00	.49	.00	.00	.00	.83	.06	.00	.00	.00
24	.00	.00	.00	.03	.00	.00	.00	.00	.00	.40	.00	.00
25	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.32	.00	.66	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.30	.44	.00	.00	.39	.00
28	.00	.00	.00	.10	.00	.00	.06	.67	.48	.00	.00	.00
29	.00	.00	.00	.04	---	.00	.01	.24	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.06	.16	.00	e.06	.00
31	.00	---	.00	.00	---	.00	---	.01	---	.00	e.00	---
TOTAL	0.69	0.41	0.60	0.93	1.06	0.75	2.45	5.88	4.14	3.12	2.02	1.23

CAL YR 1990 TOTAL 15.13

WTR YR 1991 TOTAL 23.28

e Estimated

BELLE FOURCHE RIVER BASIN

442104103414400 PRECIP AT TWO BIT GULCH NEAR DEADWOOD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°21'04", long 103°41'44", in NW¼NE¼NW¼SE¼ sec.36, T.5 N., R.3 E., Lawrence County, Hydrologic Unit 10120202, 0.1 mi west of U.S. Forest Service Road 540 and 2.0 mi southeast of Deadwood.

PERIOD OF RECORD.--October 1988 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 5,140 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated periods, which are poor. Precipitation gage is read daily by observer at approximately 0830 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.31	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
3	---	---	---	---	---	---	---	.27	1.00	.00	.00	.00
4	---	---	---	---	---	---	---	.00	.20	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.16	.00	.00	.00
6	---	---	---	---	---	---	---	.00	2.20	.00	.09	.00
7	---	---	---	---	---	---	---	.00	.00	e.05	.36	.00
8	---	---	---	---	---	---	---	.00	.00	e.09	.02	1.03
9	---	---	---	---	---	---	---	.00	.10	e.12	.00	.02
10	---	---	---	---	---	---	---	.00	.00	e.01	.00	.00
11	---	---	---	---	---	---	---	.13	.00	e.47	.00	.00
12	---	---	---	---	---	---	---	.60	.00	.00	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.00	.00	.25
14	---	---	---	---	---	---	---	.00	.12	.00	.00	.00
15	---	---	---	---	---	---	---	1.10	.32	.00	.00	.25
16	---	---	---	---	---	---	---	.95	.00	.00	.90	.00
17	---	---	---	---	---	---	---	.64	.00	.64	.00	.00
18	---	---	---	---	---	---	---	.15	.08	.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.23	.00	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.04	.00	.00	.00
22	---	---	---	---	---	---	---	.00	.04	.00	.00	.12
23	---	---	---	---	---	---	---	1.32	.00	.00	.09	.00
24	---	---	---	---	---	---	---	e.00	.00	.04	.39	.08
25	---	---	---	---	---	---	---	e.00	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.00	.10	.00	.00	.00
27	---	---	---	---	---	---	---	.38	.00	.75	.00	.00
28	---	---	---	---	---	---	---	.67	.33	.00	.00	.00
29	---	---	---	---	---	---	---	.16	.00	.00	.00	.00
30	---	---	---	---	---	---	---	.05	.10	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	6.65	5.10	2.17	1.85	1.75

e Estimated

329

PRECIPITATION RECORDS

PERIOD OF RECORD.--October 1988 to current year.

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 72 in. tall. Elevation of gage is 5,650 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0900 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

[illegible]

CHEYENNE RIVER BASIN

434645103240700 PRECIP AT WATER TREATMENT PLANT AT CUSTER STATE PARK, NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°46'45", long 103°24'07", in NE¼SW¼NE¼NE¼ sec.21, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, 0.7 mi northwest of Custer State Park Headquarters at Water Treatment Plant, 0.1 mi north of U.S. Highway 16A, and 9.0 mi east of Custer.

PERIOD OF RECORD.--May 1989 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated period, which are poor. Precipitation gage is read daily by observer at approximately 1430 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	.00	.00	.70	.00	.00	.00
2	---	---	---	---	---	---	.00	.35	.04	.00	.00	.04
3	---	---	---	---	---	---	.00	.10	.82	.00	.00	.00
4	---	---	---	---	---	---	.00	.00	.08	.00	.09	.00
5	---	---	---	---	---	---	.00	.00	.92	.00	.13	.00
6	---	---	---	---	---	---	.00	.00	.11	.03	.55	.00
7	---	---	---	---	---	---	.00	.05	.00	.00	.04	.04
8	---	---	---	---	---	---	.30	.08	.00	.11	.00	.00
9	---	---	---	---	---	---	.00	.00	.00	.02	.00	.00
10	---	---	---	---	---	---	.00	.03	.00	.86	.00	1.22
11	---	---	---	---	---	---	1.45	.29	.00	.00	.02	.19
12	---	---	---	---	---	---	.00	.98	.00	.00	.00	.00
13	---	---	---	---	---	---	.00	.00	.07	.00	.00	.03
14	---	---	---	---	---	---	.00	.03	.20	.00	.00	.14
15	---	---	---	---	---	---	.00	.03	.12	.24	.00	.02
16	---	---	---	---	---	---	.00	.77	.03	.25	.44	.02
17	---	---	---	---	---	---	.00	.44	.00	.00	.00	.00
18	---	---	---	---	---	---	.00	.34	.00	.00	.00	.00
19	---	---	---	---	---	---	.35	.40	.03	.00	.06	.00
20	---	---	---	---	---	---	.00	.09	.09	.00	.00	.00
21	---	---	---	---	---	---	.00	.00	.07	.00	.00	.00
22	---	---	---	---	---	---	.00	1.20	.10	.00	.00	.00
23	---	---	---	---	---	---	.00	.05	.62	.00	.00	.00
24	---	---	---	---	---	---	.00	.04	.00	.25	.00	.00
25	---	---	---	---	---	---	.00	.13	.00	.00	.00	.00
26	---	---	---	---	---	---	.25	.00	.00	.00	.00	.00
27	---	---	---	---	---	---	.25	.72	.00	.03	.00	.00
28	---	---	---	---	---	---	.00	.03	.44	.00	.00	.00
29	---	---	---	---	---	---	.00	.00	.03	.00	.00	.00
30	---	---	---	---	---	---	.00	.80	.20	.22	.00	.00
31	---	---	---	---	---	---	---	.00	---	.24	.00	---
TOTAL	---	---	---	---	---	---	2.60	6.95	4.67	2.25	1.33	1.70

e Estimated

CHEYENNE RIVER BASIN

331

440444103215900 PRECIP AT WILD IRISHMAN GULCH NEAR RAPID CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°04'44", long 103°21'59", in SW¹/₄SW¹/₄NE¹/₄ sec.2, T.1 N., R.6 E., Pennington County, Hydrologic Unit 10120110, 0.2 mi south of the intersection of U.S. Forest Service Road 199 and Wild Irishman Gulch and 4.0 mi northwest of Canyon Lake in Rapid City.

PERIOD OF RECORD.--October 1988 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,180 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated periods, which are poor. Precipitation gage is read daily by observer at approximately 0700 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	.00	---	---	---	---	.00	.00	.00	.00	.02	.00
2	---	.27	---	---	---	---	.00	.00	.66	.00	.00	.00
3	.00	.02	---	---	---	---	.00	.38	.17	.00	.00	.10
4	.00	.00	---	---	---	---	.00	.02	.87	.00	.00	.00
5	.00	.00	---	---	---	---	.00	.00	.48	.00	.09	.00
6	.00	.21	---	---	---	---	.00	.00	2.39	.08	.24	.00
7	.00	.00	---	---	---	---	.00	.00	.44	.00	.22	.00
8	.11	.00	---	---	---	---	.27	.03	e.00	.05	.02	.13
9	.00	.00	---	---	---	---	.10	.00	e.47	.37	---	.26
10	.00	.00	---	---	---	---	.00	.01	.27	.00	---	.00
11	.18	.00	---	---	---	---	1.03	.34	.00	.23	---	.36
12	.00	.00	---	---	---	---	.58	2.71	.00	.00	---	.00
13	---	.00	---	---	---	---	.24	.00	.00	.00	---	.09
14	---	.00	---	---	---	---	.00	.00	.10	.00	---	.06
15	---	.00	---	---	---	---	.00	.42	.09	.00	.27	.12
16	---	.00	---	---	---	---	.00	.21	.00	.07	.31	.00
17	---	.00	---	---	---	.00	.00	.90	.02	1.42	---	.00
18	---	.00	---	---	---	.04	.00	.21	.02	.00	---	.01
19	---	.00	---	---	---	.00	.78	.14	e.00	.00	---	.00
20	.02	.00	---	---	---	.00	.02	.02	e.00	.00	---	.00
21	.00	.00	---	---	---	.20	.00	.00	e.20	.00	---	.00
22	.01	.00	---	---	---	.26	.00	.00	e.48	.00	---	.00
23	.00	.00	---	---	---	.03	.00	.59	e.88	.00	---	.00
24	.00	.00	---	---	---	.00	.00	.00	.00	.00	---	.00
25	.00	.00	---	---	---	.00	.00	.00	.00	.29	---	.00
26	.00	.00	---	---	---	.00	1.00	.00	.00	e.00	---	.00
27	.00	.00	---	---	---	.00	.25	.36	.00	e.18	---	.00
28	.00	.00	---	---	---	.00	.00	.61	.41	e.00	---	.00
29	.00	.00	---	---	---	.01	.00	.24	.00	e.00	---	.00
30	.00	.00	---	---	---	.00	.00	.06	.13	e.03	---	.00
31	.00	---	---	---	---	.00	---	.06	---	.18	---	---
TOTAL	---	0.50	---	---	---	---	4.27	7.31	8.08	2.90	---	1.13

e Estimated

CHEYENNE RIVER BASIN

433212104010300 PRECIP NEAR DEWEY, SD, NEAR MULE CREEK JUNCTION, WY

PRECIPITATION RECORDS

LOCATION.--Lat 43°32'12", long 104°01'03", in SE 1/4 SW 1/4 SE 1/4, sec.10, T.6 S., R.1 E., Custer County, Hydrologic Unit 10120107, 0.75 mi northeast of Dewey, SD, 16.3 mi northeast of Mule Creek Junction, WY, and 18.7 mi northwest of Edgemont, SD.

PERIOD OF RECORD.--December 1990 to September 1991.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 3,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	.00	.00	.00	.00	.02	e.59	e.00	e.00	e.00
2	---	---	---	.00	.00	.02	.00	.39	e.00	e.00	e.00	e.00
3	---	---	---	.00	.00	.00	.00	.12	e.48	e.00	e.00	e.00
4	---	---	.10	.00	.00	.00	.00	.00	e.06	e.03	e.00	e.00
5	---	---	.00	.02	.00	.00	.00	.00	e.00	e.00	e.00	e.00
6	---	---	.00	.00	.00	.00	.00	.00	e.32	e.00	e.57	e.00
7	---	---	.00	.00	.00	.00	.16	.12	e.06	e.00	e.00	e.00
8	---	---	.00	.00	.00	.00	.02	.00	e.06	e.00	e.00	e.00
9	---	---	.00	.00	.00	.00	.00	.00	e.07	e.00	e.00	e.00
10	---	---	.00	.00	.00	.00	.40	.06	e.00	e.00	e.00	e.00
11	---	---	.00	.00	.00	.08	.26	2.29	e.00	e.00	e.00	e.00
12	---	---	.00	.00	.08	.06	.44	.10	e.00	e.00	e.00	e.03
13	---	---	.00	.00	.00	.00	.00	.00	e.00	e.00	e.00	.00
14	---	---	.14	.00	.00	.00	.00	.00	e.01	e.00	e.00	.10
15	---	---	.02	.00	.00	.00	.00	.35	e.01	e.214	e.00	.02
16	---	---	.00	.00	.06	.00	.00	.59	e.00	e.50	e.1.00	.00
17	---	---	.00	.00	.52	.00	.00	.02	e.00	e.00	e.00	.00
18	---	---	.00	.00	.04	.00	.32	.00	e.00	e.00	e.00	.02
19	---	---	.18	.08	.00	.00	.12	.00	e.00	e.00	e.00	.00
20	---	---	.04	.02	.00	.00	.00	.00	e.00	e.00	e.00	.00
21	---	---	.04	.02	.00	.04	.12	.00	e.00	e.00	e.00	.00
22	---	---	.00	.00	.02	.22	.00	.76	e.00	e.00	e.00	.00
23	---	---	.02	.00	.00	.00	.00	e.1.41	e.28	e.00	e.00	.00
24	---	---	.00	.04	.00	.00	.00	e.00	e.00	e.00	e.00	.00
25	---	---	.02	.00	.04	.00	.00	e.00	e.00	e.00	e.00	.00
26	---	---	.00	.02	.00	.00	.16	e.08	e.00	e.00	e.00	.00
27	---	---	.00	.00	.00	.02	.06	e.33	e.00	e.00	e.00	.00
28	---	---	.02	.26	.00	.00	.02	e.86	e.82	e.00	e.00	.00
29	---	---	.02	.02	---	.00	.00	e.00	e.32	e.00	e.00	.00
30	---	---	.00	.00	---	.00	.00	e.03	e.19	e.00	e.00	.00
31	---	---	.00	.00	---	.00	---	e.00	---	e.00	e.00	---
TOTAL	---	---	---	0.48	0.76	0.44	2.08	7.53	3.27	2.67	1.57	0.17

e Estimated

BELLE FOURCHE RIVER BASIN

333

441632103482400 PRECIP NEAR ENGLEWOOD NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°16'32", long 103°48'24", in SW¼SE¼NE¼SW¼ sec.30, T.4 N., R.3 E., Lawrence County, Hydrologic Unit 10120202, 0.1 mi west of U.S. Forest Service Road 205, 0.5 mi south of the Englewood Cemetery, and 5.0 mi south of Lead.

PERIOD OF RECORD.--October 1988 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 5,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0830 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.00	.00	.05	.00
2	---	---	---	---	---	---	---	.00	.27	.00	.00	.00
3	---	---	---	---	---	---	---	.00	.45	.00	.00	.00
4	---	---	---	---	---	---	---	.00	.05	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.11	.10	.00	.00
6	---	---	---	---	---	---	---	.06	.33	.00	.05	.00
7	---	---	---	---	---	---	---	.00	.00	.10	.04	.12
8	---	---	---	---	---	---	---	.00	.00	.27	.00	.13
9	---	---	---	---	---	---	---	.00	.00	.11	.00	.00
10	---	---	---	---	---	---	---	.11	.00	.82	.00	.03
11	---	---	---	---	---	---	---	.68	.00	.00	.30	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.00	.44
13	---	---	---	---	---	---	---	.00	.19	.00	.00	.00
14	---	---	---	---	---	---	---	.00	.15	.00	.00	.23
15	---	---	---	---	---	---	---	.90	.00	.00	.04	.10
16	---	---	---	---	---	---	---	.29	.00	.25	.00	.00
17	---	---	---	---	---	---	---	.46	.25	.00	.00	.00
18	---	---	---	---	---	---	---	.10	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.39	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	---	.20	.00	.00	.00	.00
22	---	---	---	---	---	---	---	1.10	.01	.00	.05	.00
23	---	---	---	---	---	---	---	.00	.00	.00	.04	.13
24	---	---	---	---	---	---	---	.00	.00	.25	.00	.00
25	---	---	---	---	---	---	---	.00	.06	.00	.00	.00
26	---	---	---	---	---	---	---	.43	.00	.35	.00	.00
27	---	---	---	---	---	---	---	.70	.33	.00	.00	.00
28	---	---	---	---	---	---	---	.07	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.10	.12	.00	.00	.00
30	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.40	---	.10	.00	---
TOTAL	---	---	---	---	---	---	---	5.99	2.32	2.35	0.57	1.18

CHEYENNE RIVER BASIN

433702103411200 PRECIP NEAR HOPKINS FLATS NEAR PRINGLE, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°37'02", long 103°41'12", in NW 1/4 SW 1/4 NE 1/4, sec.18, T.5 S., R.4 E., Custer County, Hydrologic Unit 10120106, 1.5 mi north of Hopkins Flats, 5.0 mi west of Pringle, and 10.6 mi south southwest of Custer.

PERIOD OF RECORD.--May to September 1991 (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 5,020 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0800 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
3	---	---	---	---	---	---	---	.50	.81	.00	.00	.00
4	---	---	---	---	---	---	---	.00	.00	.00	.04	.00
5	---	---	---	---	---	---	---	.00	.20	.00	.00	.00
6	---	---	---	---	---	---	---	.00	.61	.00	.07	.00
7	---	---	---	---	---	---	---	.00	.07	.00	.00	.00
8	---	---	---	---	---	---	---	.00	.00	.05	.47	.00
9	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.00	.00	.27
11	---	---	---	---	---	---	---	.30	.00	.00	.15	.14
12	---	---	---	---	---	---	---	.70	.44	.00	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.00	.00	.05
14	---	---	---	---	---	---	---	.00	.38	.00	.00	.00
15	---	---	---	---	---	---	---	.08	.00	.20	.00	.00
16	---	---	---	---	---	---	---	.11	.00	.00	.45	.00
17	---	---	---	---	---	---	---	.34	.00	.00	.00	.00
18	---	---	---	---	---	---	---	.07	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.20	.10	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
22	---	---	---	---	---	---	---	.34	.25	.00	.00	.00
23	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
24	---	---	---	---	---	---	---	.18	.00	.04	.00	.00
25	---	---	---	---	---	---	---	.00	.29	.00	.00	.00
26	---	---	---	---	---	---	---	.95	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.73	.63	.00	.00	.00
28	---	---	---	---	---	---	---	.04	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.21	.81	.00	.00
30	---	---	---	---	---	---	---	.00	.00	.40	.00	.00
31	---	---	---	---	---	---	---	.90	---	.71	.00	---
TOTAL	---	---	---	---	---	---	---	5.44	3.99	2.21	1.18	0.46

CHEYENNE RIVER BASIN

335

434534103290500 PRECIP NEAR MT. COOLIDGE NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°45'34", long 103°29'05", in NW¼NE¼NW¼SE¼ sec.26, T.3 S., R.5 E., Custer County, Hydrologic Unit 10120109, 0.3 mi southwest of the intersection of U.S. Highway 16A and State Highway 87, 1 mi north of Mt. Coolidge, and 4.9 mi east of Custer.

PERIOD OF RECORD.--December 1989 to September 1990.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 5,010 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for estimated period, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.26	.00	.00	.00	.00	.00	.00	.81	.00	.00	.00
2	.00	.33	.00	.00	.00	.00	.00	.37	.21	.00	.00	.11
3	.00	.00	.00	.00	.00	.00	.37	.21	.95	.00	.00	.00
4	.00	.00	.00	.00	.00	.05	.00	.00	.33	.00	.04	.00
5	.00	.30	.00	.00	.00	.00	.00	.00	.33	.03	.12	.00
6	.15	.05	.00	.00	.00	.00	.00	.00	.01	.04	.81	.00
7	.17	.00	.00	.00	.00	.00	.14	.08	.01	.00	.00	.10
8	.11	.00	.00	.00	.00	.00	.05	.00	.01	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.02	.00	.00	.04	.01	.00
10	.00	.00	.00	.00	.00	.00	1.05	.47	.00	.91	.00	1.00
11	.06	.00	.00	.00	.00	.01	.67	e1.14	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.14	.25	e.46	.00	.00	.00	.00
13	.15	.00	.00	.00	.00	.00	.00	e.00	.15	.00	.00	.03
14	.00	.00	.23	.00	.00	.00	.03	e.00	.07	.00	.04	.00
15	.00	.00	.00	.00	.00	.00	.00	e.12	.04	.45	.00	.00
16	.01	.00	.00	.02	.05	.00	.00	e.90	.00	.00	.44	.00
17	.00	.00	.00	.00	.60	.00	.00	e.74	.00	.00	.00	.00
18	.00	.00	.00	.00	.15	.00	.43	e.40	.00	.00	.00	.00
19	.04	.00	.21	.03	.00	.00	.48	e.22	.03	.00	.00	.00
20	.00	.00	.02	.00	.00	.08	.00	e.00	.25	.00	.00	.00
21	.00	.00	.07	.00	.00	.10	.02	e.02	.04	.00	.00	.00
22	.00	.00	.00	.00	.00	.08	.00	e.96	.24	.00	.00	.00
23	.07	.00	.00	.00	.00	.00	.00	e.02	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	e.08	.00	.35	.00	.00
25	.00	.00	.00	.00	.00	.00	.26	e.04	.02	.00	.00	.00
26	.00	.03	.00	.00	.00	.00	.56	e.68	.00	.11	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	e.82	.25	.00	.00	.00
28	.00	.00	.02	.15	.00	.00	.00	e.04	.20	.00	.00	.00
29	.00	.00	.02	.02	---	.10	.00	e.02	.16	.28	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.08	---	.14	.00	---
TOTAL	0.76	0.97	0.57	0.22	0.80	0.56	4.33	7.87	4.11	2.35	1.46	1.24

CAL YR 1990 TOTAL 23.45
WTR YR 1991 TOTAL 25.24

e Estimated

CHEYENNE RIVER BASIN

440001103300200 PRECIP NEAR SHERIDAN LAKE NEAR HILL CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°00'01", long 103°30'02", in NE¼SE¼NW¼SE¼ sec.34, T.1 N., R.5 E., Pennington County, Hydrologic Unit 10120109, along Horse Creek, 0.2 mi west of U.S. Highway 385, 2.0 mi northwest of Sheridan Lake, and 5.0 mi northeast of Hill City.

PERIOD OF RECORD.--October 1988 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,790 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Precipitation gage is read daily by observer at approximately 0730 hours. Daily precipitation record is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.40	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
3	---	---	---	---	---	---	---	.00	.30	.00	.00	.06
4	---	---	---	---	---	---	---	.00	.54	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.33	.00	.07	.00
6	---	---	---	---	---	---	---	.00	.33	.09	.17	.00
7	---	---	---	---	---	---	---	.08	.09	.02	.21	.00
8	---	---	---	---	---	---	---	.04	.03	.00	.02	.40
9	---	---	---	---	---	---	---	.00	.00	.05	.00	.00
10	---	---	---	---	---	---	---	.00	.13	.00	.00	.00
11	---	---	---	---	---	---	---	.52	.00	1.04	.00	.25
12	---	---	---	---	---	---	---	1.85	.00	.00	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.00	.00	.81
14	---	---	---	---	---	---	---	.00	.37	.00	.00	.06
15	---	---	---	---	---	---	---	.37	.14	.00	.02	.34
16	---	---	---	---	---	---	---	.19	.00	.66	.38	.00
17	---	---	---	---	---	---	---	1.41	.00	.50	.00	.00
18	---	---	---	---	---	---	---	.33	.10	.00	.00	.00
19	---	---	---	---	---	---	---	.07	.00	.00	.00	.00
20	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.08	.00	.05	.00
22	---	---	---	---	---	---	---	.08	.07	.00	.00	.00
23	---	---	---	---	---	---	---	.67	.09	.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.17	.00	.00
25	---	---	---	---	---	---	---	.00	---	.13	.00	.00
26	---	---	---	---	---	---	---	.00	---	.00	.00	.00
27	---	---	---	---	---	---	---	.44	---	2.35	.00	.00
28	---	---	---	---	---	---	---	.66	.52	.00	.00	.00
29	---	---	---	---	---	---	---	.13	---	.00	.00	.00
30	---	---	---	---	---	---	---	.00	---	.06	.00	.00
31	---	---	---	---	---	---	---	.07	---	.03	.00	---
TOTAL	---	---	---	---	---	---	---	6.91	---	5.10	0.92	1.92

CHEYENNE RIVER BASIN

337

440424103254000 RIMROCK HEIGHTS NEAR RAPID CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°04'24", long 103°25'40", in NE¼NW¼SW¼ sec.5, T.1 N., R.6 E., Pennington County, Hydrologic Unit 10120110, in Rimrock Heights subdivision, 3.0 mi east of Pactola Dam, or 5.9 mi west of city limits of Rapid City.

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

INSTRUMENTATION.--Non-shielded precipitation recorder. Elevation of gage is 4,300 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.08	.00	.00	.00	.00	.00	.00	.52	.00	.00	.00
2	.00	.13	.00	.00	.00	.00	.00	.28	.02	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.14	.65	.00	.00	.06
4	.00	.00	.00	.00	.00	.00	.00	.00	.86	.00	.06	.00
5	.00	.14	.00	.00	.00	.01	.00	.00	1.41	.00	.35	.00
6	.01	.00	.00	.00	.00	.00	.00	.00	.07	.07	.03	.00
7	.01	.00	.00	.00	.00	.00	.18	.01	.00	.00	.03	.27
8	.01	.00	.00	.00	.00	.00	.02	.00	.41	.57	.00	.01
9	.00	.00	.00	.00	.00	.00	.05	.00	.52	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.61	.36	.00	.21	.00	.24
11	.20	.00	.00	.00	.00	.12	.48	1.77	.00	.00	.00	.01
12	.00	.00	.00	.00	.00	.02	.30	.39	.00	.00	.00	.07
13	.16	.00	.00	.00	.07	.00	.00	.00	.33	.00	.00	.04
14	.00	.00	.23	.00	.02	.00	.00	.08	.05	.00	.07	.08
15	.00	.00	.00	.00	.00	.00	.00	.92	.04	.05	.11	.00
16	.00	.00	.00	.00	.00	.00	.00	.65	.03	1.82	.16	.00
17	.01	.00	.00	.00	.33	.03	.00	.47	.00	.00	.00	.00
18	.00	.00	.00	.00	.05	.00	.39	.03	.01	.00	.00	.00
19	.00	.00	.00	.03	.00	.00	.17	.00	.00	.00	.00	.00
20	.00	.00	.03	.00	.00	.07	.00	.00	.00	.00	.04	.00
21	.00	.00	.00	.00	.00	.01	.02	.00	.05	.00	.00	.00
22	.00	.00	.00	.00	.00	.04	.00	.40	.17	.00	.00	.00
23	.00	.00	.00	.05	.00	.00	.00	.00	1.47	.01	.00	.00
24	.00	.00	.01	.00	.00	.00	.00	.00	.00	.23	.00	.00
25	.00	.00	.00	.00	.03	.00	.24	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.72	.37	.00	.30	.00	.00
27	.00	.00	.00	.00	.00	.00	.02	.58	.00	.01	.00	.00
28	.00	.00	.00	.02	.00	.00	.00	.06	.48	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	1.06	.14	.06	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.03	.01	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.16	.00	---
TOTAL	0.40	0.35	0.27	0.10	0.50	0.30	3.20	7.60	7.24	3.49	0.85	0.78

CAL YR 1990 TOTAL 13.81

WTR YR 1991 TOTAL 25.08

MISCELLANEOUS WATER QUALITY DATA

00430061 HURON WELL FIELD
(National Trends Network Acid Precipitation Station)

LOCATION.--Lat 44°21'18", long 98°17'38", 3.0 mi west of the City of Huron at the City of Huron Municipal Well Field.

PRECIPITATION RECORDS

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

INSTRUMENTATION.--The sample collector is a straight-sided polyethylene bucket that is triggered into opening and closing by a precipitation switch, and a shielded weighing-type precipitation recorder. Installation and equipment conforms to guidelines set by National Atmospheric Deposition Program.

REMARKS.--Records good. Field measurements are taken as part of the National Atmospheric Deposition Program (NADP) and National Trends Network.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	1.95	.00	.11	.00
2	.49	.00	.00	.03	.00	.00	.00	<.01	.00	<.01	.40	.15
3	.13	.00	.00	---	.00	.00	.00	1.48	---	<.01	.00	.00
4	.00	.00	.00	---	.00	.00	.00	.00	---	<.01	<.01	.00
5	.00	.00	.00	---	.00	.10	.00	.00	.00	<.01	<.01	.00
6	<.01	.00	.00	---	.00	.00	.00	.00	.00	<.01	.00	<.01
7	.00	.00	.00	---	.00	.00	.00	.00	.00	.09	---	.10
8	.00	.00	.00	---	.00	.00	.00	.00	<.01	<.01	---	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	---	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.05	<.01	---	.01
11	<.01	.00	.00	.00	.00	.00	1.03	.00	.00	.26	---	.11
12	.01	.00	.00	.00	.00	.17	1.00	.00	.00	.00	---	<.01
13	.00	.00	.00	.01	.00	.18	---	.00	.00	.00	---	.62
14	<.01	.00	.11	.00	.00	.00	---	.00	.00	.00	---	<.01
15	<.01	.00	.05	.00	.00	.00	---	.00	.04	.00	---	.00
16	.02	.00	.00	.00	.00	.00	---	.07	.00	.00	---	<.01
17	.26	.00	.00	.00	.35	.00	.00	.84	.00	.00	---	.01
18	.00	.00	.01	.00	.23	.00	<.01	.00	.00	<.01	---	.00
19	<.01	.00	.06	<.01	.00	.00	.00	.00	.00	.00	---	.00
20	.10	.00	.01	.00	.00	.13	.00	.00	.00	.14	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
22	.00	.00	.00	.01	.00	.05	<.01	.38	.00	.00	.00	.00
23	.00	.00	.00	.01	.00	.00	.00	.01	.00	.00	<.01	.44
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06
25	.00	.00	.00	.00	<.01	.00	.00	.00	.00	.00	<.01	.00
26	.00	.00	.00	.00	.02	.00	.90	.00	.00	1.08	.00	.00
27	.00	.00	.00	.00	<.01	.00	<.01	.04	.00	.23	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	1.12	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.92	<.01	.52	.00	.00	<.01
30	.00	.00	.00	.00	---	.00	.05	<.01	.55	<.01	<.01	.00
31	.00	---	.00	.00	---	.00	---	.05	---	<.01	.00	---

< Actual value is known to be less than the value shown

MISCELLANEOUS WATER QUALITY DATA

339

00430061 HURON WELL FIELD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1983 to current year (weekly composite).

REMARKS.--Field measurements are taken and samples collected on a weekly basis as part of the National Atmospheric Deposition Program (NADP) and National Trends Network.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	VOLUME ATM DEP WET (L) (83177)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT (82284)	SPEC. CONduc- TANCE CK.SOL. ATM DEP WET TOT (US/CM) (83152)	SPEC. CONduc- TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONduc- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	PH CK.SOL. ATM DEP WET T (UNITS) (83105)	PH FIELD ATM DEP WET T (UNITS) (83106)	PH LAB ATM DEP WET T (UNITS) (83107)
OCT 1990									
02-09	0.62	1.070	100	21.6	6.5	5.7	4.37	5.34	5.54
OCT 09-16	0.01	0.009	55	--	--	30.4	4.38	--	6.77
OCT 16-23	0.38	0.449	69	21.9	12.4	10.3	4.31	5.17	6.00
OCT 23-30	0.0	0.00	--	--	--	--	--	--	--
OCT 30- NOV 06	0.0	0.00	--	--	--	2.8	4.37	--	5.83
NOV 06-13	0.0	0.00	--	--	--	1.7	4.37	--	5.83
NOV 13-20	0.0	0.00	--	--	--	1.7	4.39	--	5.73
NOV 20-27	0.0	0.00	--	--	--	--	4.38	--	--
NOV 27- DEC 04	0.0	0.001	--	--	--	--	4.35	--	--
DEC 04-11	0.0	0.00	--	--	--	1.6	--	--	5.62
DEC 11-18	0.16	0.231	84	21.5	8.5	6.9	4.38	5.30	5.66
DEC 18-26	0.08	0.00	21	--	--	9.3	4.35	--	6.35
DEC 26 1990- JAN 02 1991	0.03	0.022	42	--	--	8.4	4.37	--	6.67
JAN 02-08	--	0.00	--	--	--	2.3	--	--	5.48
JAN 08-15	0.01	0.011	66	--	--	13.8	4.39	--	6.56
JAN 15-22	0.01	0.010	57	--	--	18.7	4.38	--	6.46
JAN 22-29	0.01	0.037	219	--	--	8.7	4.34	--	6.37
JAN 29- FEB 05	0.0	0.001	--	--	--	--	4.38	--	--
FEB 05-12	0.0	0.00	--	--	--	1.5	4.37	--	5.69
FEB 12-19	0.58	0.176	18	22.0	5.1	4.5	4.38	5.60	6.12
FEB 19-26	0.02	0.00	--	--	--	2.2	4.38	--	6.12
FEB 26- MAR 05	--	0.010	--	--	--	21.6	4.41	--	6.32
MAR 05-12	0.10	0.179	104	21.8	10.0	11.0	4.38	6.16	6.54
MAR 12-19	0.35	0.200	33	21.9	36.4	32.5	4.38	4.43	4.47
MAR 19-26	0.18	0.345	111	21.8	33.5	32.4	4.37	5.47	6.46
MAR 26- APR 02	0.0	0.00	--	--	--	--	4.40	--	--
APR 02-09	0.0	0.00	--	--	--	2.0	4.30	--	5.54
APR 09-16	--	5.270	--	20.4	15.7	14.6	4.36	5.96	6.28
APR 16-23	--	0.007	--	--	--	--	4.38	--	6.76
APR 23-30	1.87	3.141	97	20.6	14.1	12.8	4.37	6.19	6.24
APR 30- MAY 07	1.48	2.551	100	21.3	9.6	7.4	4.39	5.43	5.92
MAY 07-14	0.0	0.00	--	--	--	2.0	4.38	--	5.45
MAY 14-21	0.95	1.625	99	20.8	11.6	11.3	4.36	6.32	6.14
MAY 21-28	1.20	2.080	101	21.1	6.1	7.1	4.37	5.80	6.01
MAY 28- JUN 04	--	0.375	--	21.0	7.6	7.7	4.37	6.32	6.18

MISCELLANEOUS WATER QUALITY DATA

00430061 HURON WELL FIELD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)	SODIUM ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM ATM DEP WET DIS (MG/L) (83120)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L) (83071)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L) (83047)	PHOS- PHORUS ORTHO ATM DEP WET DIS AS PO4 (MG/L) (83111)
OCT 1990									
02-09	0.190	0.042	0.040	0.014	0.81	0.08	0.66	0.200	<0.020
OCT 09-16	0.820	0.190	0.700	0.237	1.90	0.83	2.61	0.950	<0.240
OCT 16-23	0.400	0.061	0.053	0.037	1.37	0.14	1.97	0.670	0.100
OCT 23-30	--	--	--	--	--	--	--	--	--
OCT 30-NOV 06	0.040	0.011	0.063	0.263	0.04	0.33	0.08	0.100	<0.020
NOV 06-13	0.040	0.010	0.081	0.009	0.05	0.12	0.14	0.110	<0.020
NOV 13-20	0.020	0.003	0.050	<0.003	<0.03	0.06	0.13	0.070	<0.020
NOV 20-27	--	--	--	--	--	--	--	--	--
NOV 27-DEC 04	--	--	--	--	--	--	--	--	--
DEC 04-11	<0.010	0.003	0.061	0.013	0.04	<0.03	0.10	0.120	<0.020
DEC 11-18	0.180	0.034	0.114	0.011	0.52	0.11	1.72	0.390	<0.020
DEC 18-26	0.150	0.041	0.280	0.029	0.45	0.35	1.31	0.350	<0.060
DEC 26 1990-JAN 02 1991	0.190	0.067	0.683	0.036	0.36	0.36	0.63	<0.090	<0.090
JAN 02-08	0.020	0.004	0.070	0.031	0.05	0.12	0.18	0.030	<0.020
JAN 08-15	0.090	0.033	0.643	<0.025	0.33	0.66	0.91	<0.160	<0.160
JAN 15-22	--	--	--	--	--	--	--	--	--
JAN 22-29	0.190	0.099	0.487	0.038	0.65	0.53	1.01	0.150	<0.020
JAN 29-FEB 05	--	--	--	--	--	--	--	--	--
FEB 05-12	<0.010	0.003	0.028	0.007	<0.03	0.08	0.14	<0.020	<0.020
FEB 12-19	0.190	0.055	0.074	0.014	0.35	0.10	0.56	0.250	<0.020
FEB 19-26	0.010	<0.003	0.065	0.006	0.03	0.08	0.13	0.170	<0.020
FEB 26-MAR 05	<0.130	<0.045	0.179	<0.045	<0.45	<0.45	0.45	<0.300	<0.300
MAR 05-12	0.780	0.079	0.160	0.030	0.97	0.12	1.35	0.510	<0.020
MAR 12-19	0.250	0.030	0.187	0.028	3.84	0.19	4.13	1.64	<0.020
MAR 19-26	2.24	0.317	0.728	0.078	6.44	0.47	4.04	1.38	<0.020
MAR 26-APR 02	--	--	--	--	--	--	--	--	--
APR 02-09	0.040	0.006	0.053	0.011	<0.03	0.06	0.06	<0.020	<0.020
APR 09-16	0.860	0.180	0.245	0.059	2.59	0.24	1.52	0.690	<0.020
APR 16-23	--	--	--	--	--	--	--	--	--
APR 23-30	0.320	0.047	0.034	0.041	1.83	0.07	1.55	1.13	<0.020
APR 30-MAY 07	0.420	0.028	0.057	0.020	1.07	0.07	1.16	0.510	<0.020
MAY 07-14	0.040	0.007	0.060	0.028	<0.03	0.08	0.14	0.070	<0.020
MAY 14-21	0.270	0.060	0.050	0.047	1.23	0.07	1.77	1.08	<0.020
MAY 21-28	0.140	0.024	0.020	0.010	0.67	0.04	0.87	0.500	<0.020
MAY 28-JUN 04	0.170	0.032	0.033	0.006	0.63	0.08	1.15	0.590	<0.020

MISCELLANEOUS WATER QUALITY DATA

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00430061 HURON WELL FIELD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	VOLUME ATM DEP WET (L) (83177)	VOLUME ATM DEP BULK (L) (83459)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT (82284)	SPEC. CONDUCT- TANCE CK. SOL. ATM DEP WET TOT (US/CM) (83152)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	SPEC. CONDUCT- TANCE CK. SOL. ATM DEP BLK TOT (US/CM) (83434)	SPEC. CONDUCT- TANCE FIELD ATM DEP BLK TOT (US/CM) (83436)	SPEC. CONDUCT- TANCE LAB ATM DEP BLK TOT (US/CM) (83438)	PH CK. SOL. ATM DEP WET T (UNITS) (83105)	PH FIELD ATM DEP WET T (UNITS) (83106)
JUN 1991												
04-11	1.03	1.863	--	105	20.9	7.7	7.1	--	--	--	4.36	5.85
AUG												
06-13	1.15	--	0.526	27	--	--	--	21.2	184.1	239.2	--	--
AUG												
15-20	0.28	--	0.278	58	--	--	--	20.8	33.2	36.2	--	--
AUG												
20-27	--	0.008	--	--	20.8	--	67.1	--	--	--	4.34	--
AUG 27-												
SEP 03	0.15	0.229	--	89	20.5	18.4	15.9	--	--	--	4.33	5.52
SEP												
03-10	0.10	0.182	--	106	21.1	9.0	6.4	--	--	--	4.36	5.12

DATE	PH LAB ATM DEP WET T (UNITS) (83107)	PH CK. SOL. ATM DEP BLK TOT (UNITS) (83387)	PH FIELD ATM DEP BLK TOT (UNITS) (83388)	PH LAB ATM DEP BLK TOT (UNITS) (83389)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	CALCIUM ATM DEP BLK DIS (MG/L) (83214)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)	MAG- NESIUM ATM DEP BLK DIS (MG/L) (83284)	SODIUM ATM DEP WET DIS (MG/L) (83138)	SODIUM ATM DEP BLK DIS (MG/L) (83420)	POTAS- SIUM ATM DEP WET DIS (MG/L) (83120)
JUN 1991											
04-11	5.74	--	--	--	0.160	--	0.015	--	0.049	--	0.022
AUG											
06-13	--	4.37	7.88	7.82	--	3.01	--	0.918	--	1.22	--
AUG											
15-20	--	4.35	7.22	7.00	--	3.14	--	0.840	--	0.132	--
AUG											
20-27	6.33	--	--	--	--	--	--	--	--	--	--
AUG 27-											
SEP 03	6.32	--	--	--	0.710	--	0.151	--	0.090	--	0.100
SEP											
03-10	5.79	--	--	--	0.110	--	0.018	--	0.066	--	0.019

DATE	POTAS- SIUM ATM DEP BLK DIS (MG/L) (83402)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	SULFATE ATM DEP BLK DIS AS SO4 (MG/L) (83442)	CHLO- RIDE ATM DEP WET DIS (MG/L) (82944)	CHLO- RIDE ATM DEP BLK DIS (MG/L) (83226)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L) (83071)	NI- TROGEN NITRATE ATM DEP BLK DIS AS NO3 (MG/L) (83353)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN AMMON. ATM DEP BLK DIS AS NH4 (MG/L) (83329)	PHOS- PHORUS ORTHO ATM DEP WET DIS AS PO4 (MG/L) (83111)	PHOS- PHORUS ORTHO ATM DEP BLK DIS AS PO4 (MG/L) (83393)
JUN 1991											
04-11	--	0.80	--	0.09	--	1.18	--	0.550	--	<0.020	--
AUG											
06-13	5.47	--	8.60	--	2.04	--	4.80	--	31.0	--	10.0
AUG											
15-20	0.323	--	2.06	--	0.25	--	3.76	--	0.560	--	<0.020
AUG											
20-27	--	--	--	--	--	--	--	--	--	--	--
AUG 27-											
SEP 03	--	2.29	--	0.16	--	1.93	--	0.860	--	<0.020	--
SEP											
03-10	--	0.65	--	0.11	--	1.21	--	0.290	--	<0.020	--

MISCELLANEOUS WATER QUALITY DATA

The following water-quality data are for a sewage lagoon and a reservoir at EROS Data Center, and private wells downgradient of EROS Data Center near Garretson, South Dakota. Water samples are routinely collected one time per year as part of a monitoring program with the EROS Data Center. The water samples were collected by USGS personnel and analyzed by the USGS National Water-Quality Laboratory in Arvada, Colorado, during the 1991 water year. In addition to the routine water sampling, depth-profile water sampling and bottom-material sampling in EROS Lake was conducted in mid-summer 1991. Water samples were analyzed by the USGS National Water-Quality Laboratory in Arvada, Colorado. Bottom material samples were analyzed by the USGS Geologic Division in Denver, Colorado. Station names were incorrectly matched with station numbers in the 1990 water year EROS Data Center data table; 1990 water year data are correctly presented below.

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

STATION NAME	STATION NUMBER	DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L) (00608)
LAGOON 1	434415096371501	05-16-90	1100	1720	6.8	14.0	150	974	0.805	36.0
EROS LAKE	434405096365501	05-16-90	1300	1830	8.6	14.0	73	1170	0.045	0.220
103N48W 5CACA	434508096372701	05-17-90	1000	905	7.5	10.5	11	623	0.048	0.010
103N48W 9CCDA	434400096362201	05-17-90	1130	1680	7.3	10.0	42	1140	1.10	0.010
103N48W17ACCC	434332096371501	05-17-90	0830	898	7.5	10.0	27	586	--	0.160

STATION NAME	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L) (AS NH4) (71846)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L) (AS AL) (01105)	BORON, TOTAL RECOV-ERABLE (UG/L) (AS B) (01022)	BROMIDE DIS-SOLVED (MG/L) (AS BR) (71870)	CHRO-MIUM, DIS-SOLVED (UG/L) (AS CR) (01030)	CYANIDE TOTAL (MG/L) (AS CN) (00720)	IRON, TOTAL RECOV-ERABLE (UG/L) (AS FE) (01045)	IODIDE, DIS-SOLVED (MG/L) (AS I) (71865)	SILVER, TOTAL RECOV-ERABLE (UG/L) (AS AG) (01077)	SILVER, DIS-SOLVED (UG/L) (AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L) (AS ZN) (01092)
LAGOON 1	46	130	1900	9.8	30	0.040	1600	0.230	36	3.0	40
EROS LAKE	0.28	750	1200	7.5	6	<0.010	1600	0.130	<1	<1.0	10
103N48W 5CACA	0.01	20	210	0.030	<1	<0.010	370	0.005	<1	<1.0	120
103N48W 9CCDA	0.01	10	70	0.36	<1	0.020	30	0.027	<1	<1.0	20
103N48W17ACCC	0.21	30	300	0.050	<1	<0.010	230	0.008	<1	<1.0	<10

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

STATION NAME	STATION NUMBER	DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L) (AS N) (00613)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L) (AS N) (00618)
LAGOON 1	434415096371501	05-29-91	1100	1630	6.6	22.5	170	984	2.40	1.40
EROS LAKE	434405096365501	05-29-91	1300	1830	8.6	23.0	55	1130	<0.010	--
103N48W 5CACA	434508096372701	05-30-91	1130	1020	7.4	10.5	13	537	<0.010	--
103N48W 9CCDA	434400096362201	05-30-91	1000	2090	7.3	10.0	22	1080	<0.010	--
103N48W17ACCC	434332096371501	05-30-91	0830	1070	7.4	10.0	<10	583	<0.010	--

STATION NAME	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L) (AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L) (AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L) (AS NH4) (71846)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L) (AS P) (00671)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L) (AS AL) (01105)	BORON, TOTAL RECOV-ERABLE (UG/L) (AS B) (01022)	BROMIDE DIS-SOLVED (MG/L) (AS BR) (71870)	CHRO-MIUM, DIS-SOLVED (UG/L) (AS CR) (01030)	CYANIDE TOTAL (MG/L) (AS CN) (00720)	IRON, TOTAL RECOV-ERABLE (UG/L) (AS FE) (01045)
LAGOON 1	3.80	32.0	41	4.60	20	210	9.1	10	0.200	70
EROS LAKE	0.006	<0.010	--	<0.010	50	1300	7.7	3	<0.010	100
103N48W 5CACA	0.077	0.020	0.03	0.030	280	1700	0.040	<1	<0.010	2500
103N48W 9CCDA	49.0	0.030	0.04	0.010	20	140	0.43	<1	0.020	20
103N48W17ACCC	0.102	0.170	0.22	<0.010	<10	290	0.060	<1	<0.010	120

MISCELLANEOUS WATER QUALITY DATA

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EROS Data Center--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

			IODIDE, SILVER, SILVER, ZINC, DIS- TOTAL DIS- TOTAL SOLVED RECOV- SOLVED RECOV- (MG/L (UG/L (UG/L (UG/L AS I) AS AG) AS AG) AS ZN) (71865) (01077) (01075) (01092)			
STATION NAME						
LAGOON 1			0.240	1	<1.0	10
EROS LAKE			0.130	<1	<1.0	<10
103N48W 5CACA			0.005	140	<1.0	10
103N48W 9CCDA			0.055	<1	<1.0	<10
103N48W17ACCC			0.008	<1	<1.0	<10

STATION NUMBER	DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PERCENT SATURATION) (00301)
434405096365501	07-16-91	1150	2.00	1850	9.0	35.0	25.0	720	8.9	115
	07-16-91	1205	8.00	1850	9.0	35.0	25.0	720	8.8	113
	07-16-91	1220	15.0	1830	8.8	35.0	22.5	720	1.1	13

STATION NUMBER	DATE	SAMPLING DEPTH (FEET) (00003)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITROGEN, NITRITE DIS-SOLVED (MG/L) (00613)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L) (00608)	NITROGEN, AMMONIA DIS-SOLVED (MG/L) (71846)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L) (00671)	ALUMINUM, TOTAL RECOVERABLE (UG/L) (01105)
434405096365501	07-16-91	2.00	66	1120	<0.010	<0.011	<0.010	--	0.250	50
	07-16-91	8.00	66	1140	<0.010	<0.008	<0.010	--	0.250	50
	07-16-91	15.0	68	1110	<0.010	<0.005	0.020	0.03	0.350	80

STATION NUMBER	DATE	SAMPLING DEPTH (FEET) (00003)	BORON, TOTAL RECOVERABLE (UG/L) (01022)	BROMIDE DIS-SOLVED (MG/L) (71870)	CHROMIUM, DIS-SOLVED (UG/L) (01030)	CYANIDE TOTAL (MG/L) (00720)	IRON, TOTAL RECOVERABLE (UG/L) (01045)	IODIDE, DIS-SOLVED (MG/L) (71865)	SILVER, TOTAL RECOVERABLE (UG/L) (01077)	SILVER, DIS-SOLVED (UG/L) (01075)	ZINC, TOTAL RECOVERABLE (UG/L) (01092)
434405096365501	07-16-91	2.00	1300	6.7	<1	<0.010	100	0.130	<1	<1.0	20
	07-16-91	8.00	1300	6.6	<1	<0.010	100	0.100	<1	<1.0	10
	07-16-91	15.0	1300	6.7	<1	<0.010	140	0.130	<1	<1.0	<10

MISCELLANEOUS WATER QUALITY DATA

EROS Data Center--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

STATION NAME	DATE	TIME	CALCIUM, TOTAL IN BOTTOM MATERIAL (MG/G)	MAGNE- SIUM, TOTAL IN BOTTOM MATERIAL (MG/G)	SODIUM, TOTAL IN BOTTOM MATERIAL (MG/G)	POTAS- SIUM, TOTAL IN BOTTOM MATERIAL (MG/G)	PHOS- PHORUS, TOTAL IN BOTTOM MATERIAL (MG/G)	ALUM- INUM, TOTAL IN BOTTOM MATERIAL (UG/G)	ARSENIC, TOTAL IN BOTTOM MATERIAL (UG/G)
EROS LAKE (SOUTHWEST PART NEAR REVERSE OSMOSSIS BERN)	07-16-91	1100	32	14	10	17	1.0	56000	<10
EROS LAKE NEAR LAKE INLET	07-16-91	1120	27	11	9.2	16	1.0	57000	10
EROS LAKE (NORTHEAST PART NEAR DAM)	07-16-91	1300	26	10	9.2	16	0.9	56000	10

STATION NAME	BARIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	BERYL- LIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	BISMUTH, TOTAL IN BOTTOM MATERIAL (UG/G)	CADMIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	CERIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	CHRO- MIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	COBALT, TOTAL IN BOTTOM MATERIAL (UG/G)	COPPER, TOTAL IN BOTTOM MATERIAL (UG/G)
EROS LAKE (SOUTHWEST PART NEAR REVERSE OSMOSSIS BERN)	660	1	<10	2	52	58	14	20
EROS LAKE NEAR LAKE INLET	460	1	<10	3	54	62	14	22
EROS LAKE (NORTHEAST PART NEAR DAM)	660	1	<10	<2	53	55	14	20

STATION NAME	EURO- PIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	GALLIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	GOLD, TOTAL IN BOTTOM MATERIAL (UG/G)	HOLMIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	IRON, TOTAL IN BOTTOM MATERIAL (UG/G)	LANTH- ANUM, TOTAL IN BOTTOM MATERIAL (UG/G)	LEAD, TOTAL IN BOTTOM MATERIAL (UG/G)	LITHIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
EROS LAKE (SOUTHWEST PART NEAR REVERSE OSMOSSIS BERN)	<2	13	<8	<4	26000	30	18	27
EROS LAKE NEAR LAKE INLET	<2	12	<8	<4	28000	30	17	29
EROS LAKE (NORTHEAST PART NEAR DAM)	<2	12	<8	<4	25000	30	16	27

STATION NAME	MANGA- NESE, TOTAL IN BOTTOM MATERIAL (UG/G)	MOLYB- DENUM, TOTAL IN BOTTOM MATERIAL (UG/G)	NEODY- MIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	NICKEL, TOTAL IN BOTTOM MATERIAL (UG/G)	NIOBIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SCAN- DIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
EROS LAKE (SOUTHWEST PART NEAR REVERSE OSMOSSIS BERN)	920	<2	26	28	6	8	<10	180
EROS LAKE NEAR LAKE INLET	910	<2	28	31	6	8	10	170
EROS LAKE (NORTHEAST PART NEAR DAM)	820	<2	27	29	7	8	10	170

STATION NAME	TAN- TALUM, TOTAL IN BOTTOM MATERIAL (UG/G)	THORIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	TIN, TOTAL IN BOTTOM MATERIAL (UG/G)	TITAN- IUM, TOTAL IN BOTTOM MATERIAL (UG/G)	URAN- IUM, TOTAL IN BOTTOM MATERIAL (UG/G)	VANA- DIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	YTTER- BIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	YTTRIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	ZINC, TOTAL IN BOTTOM MATERIAL (UG/G)
EROS LAKE (SOUTHWEST PART NEAR REVERSE OSMOSSIS BERN)	<40	10	<5	2300	<100	86	2	18	71
EROS LAKE NEAR LAKE INLET	<40	10	<5	2400	<100	88	2	18	76
EROS LAKE (NORTHEAST PART NEAR DAM)	<40	10	<5	2400	<100	82	2	18	69

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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05051650 LA BELLE CR NEAR VEBLEN SD (LAT 45 53 33N LONG 097 11 56W)

MAR 1991					
26...	1030	0.53	6.0	2.5	1010
APR					
15...	1145	1.1	2.0	2.0	1160
MAY					
06...	1120	0.63	4.0	6.0	1160
JUN					
11...	1155	0.27	26.5	27.0	1230
20...	1215	31	18.5	25.0	440
20...	2100	12	19.0	22.0	570
JUL					
16...	1035	1.7	24.5	34.5	730
AUG					
20...	1130	0.16	21.0	26.0	990

05289985 BIG COULEE CR NEAR PEEVER SD (LAT 45 29 14N LONG 097 57 34W)

OCT 1990					
29...	1215	E0.01	6.0	23.0	1580
DEC					
10...	1210	0.10	0.0	8.0	1770
FEB 1991					
19...	1625	<0.01	0.5	--	2690
MAR					
26...	1330	5.4	4.0	13.0	1080
APR					
15...	1430	7.3	2.5	6.5	1340
MAY					
06...	1400	5.1	6.0	7.5	1270
JUN					
06...	1315	11	18.0	23.0	1100
11...	1635	2.0	25.0	28.5	1340
20...	1545	39	19.0	28.0	590
JUL					
16...	1310	0.23	24.0	34.0	1480
AUG					
20...	1400	1.6	20.5	25.0	1310

05292704 NORTH FORK YELLOW BANK RIVER NEAR ODESSA MN (LAT 45 11 21N LONG 096 24 54W)

MAR 1991					
26...	1535	12	2.0	17.0	670
APR					
15...	1650	13	3.0	2.0	830
MAY					
01...	1900	13	9.0	9.0	960
06...	1625	16	7.0	9.0	1020
JUN					
04...	1330	521	20.0	16.0	380
05...	1850	517	17.5	19.5	440
12...	0910	50	23.0	25.5	940
JUL					
02...	0915	675	22.0	22.0	500
17...	0855	22	26.5	27.0	940
AUG					
20...	1615	45	23.5	27.5	930

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06334500 LITTLE MISSOURI R AT CAMP CROOK SD (LAT 45 32 49N LONG 103 58 23W)					
OCT 1990					
31...	0925	2.2	5.0	9.5	1750
DEC					
05...	1610	2.6	1.0	1.5	1820
JAN 1991					
16...	1715	1.6	0.0	0.0	1800
MAR					
06...	0920	4.5	0.0	-3.5	1520
APR					
11...	0930	8.2	4.5	1.0	1720
MAY					
15...	0915	24	15.0	12.0	1060
JUN					
19...	0855	17	19.0	15.0	1560
JUL					
24...	0800	0.37	18.5	10.0	1830
AUG					
28...	0810	0.13	22.0	23.0	1640
06354882 OAK CR NEAR WAKPALA SD (LAT 45 42 43N LONG 100 33 32W)					
MAR 1991					
05...	1005	3.6	0.0	0.0	767
APR					
09...	1750	0.78	13.5	12.5	506
MAY					
14...	1130	0.27	19.5	26.5	619
JUN					
18...	0900	10	21.5	17.0	498
06355500 NORTH FORK GRAND R NEAR WHITE BUTTE SD (LAT 45 48 10N LONG 102 21 45W)					
MAR 1991					
20...	1055	8.7	4.5	11.0	--
APR					
10...	1445	1.9	12.0	17.0	2610
MAY					
14...	1810	2.6	23.0	25.5	3180
JUN					
18...	1710	2.1	28.5	22.0	2970
JUL					
23...	1600	0.04	27.0	23.0	2970
AUG					
27...	1455	0.05	29.0	37.0	3750
06356000 SOUTH FORK GRAND R AT BUFFALO SD (LAT 45 34 34N LONG 103 32 38W)					
OCT 1990					
31...	1245	1.8	6.5	19.5	1860
DEC					
06...	0840	1.9	0.0	-9.0	2050
JAN 1991					
16...	1325	0.44	0.0	2.5	2190
MAR					
06...	1200	3.8	0.0	0.0	1480
19...	1710	3.5	5.0	11.5	1230
APR					
10...	1925	8.2	10.5	12.5	2190
MAY					
15...	1155	43	14.5	15.0	1530
JUN					
19...	1100	2.2	18.0	16.0	1810
JUL					
24...	0940	1.2	19.0	22.0	2050
AUG					
28...	1050	1.2	22.5	26.5	1990

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06356500 SOUTH FORK GRAND R NEAR CASH SD (LAT 45 38 56N LONG 102 38 27W)					
OCT 1990					
30...	1640	7.9	7.5	14.5	2470
DEC					
05...	1235	5.9	0.0	7.5	3330
MAR 1991					
05...	1620	16	0.0	-4.5	1860
APR					
10...	1625	12	12.5	15.0	2410
MAY					
15...	1505	25	17.0	17.0	1800
JUN					
19...	1455	11	22.5	20.5	1760
JUL					
23...	1825	4.5	27.0	27.5	3080
AUG					
27...	1640	3.8	29.5	40.0	2700
06357500 GRAND R AT SHADEHILL SD (LAT 45 45 23N LONG 102 11 44W)					
MAR 1991					
20...	1445	15	9.0	11.0	2090
APR					
10...	1315	17	11.0	13.0	2000
MAY					
14...	1620	15	17.5	28.0	1970
JUN					
18...	1525	15	26.0	22.5	1930
JUL					
23...	1405	26	25.0	24.0	1950
AUG					
27...	1325	22	25.0	37.0	1990
06357800 GRAND R AT LITTLE EAGLE SD (LAT 45 39 28N LONG 100 49 04W)					
OCT 1990					
03...	1220	5.3	12.0	14.0	2600
DEC					
04...	1420	4.6	0.0	3.5	3190
MAR 1991					
04...	1600	27	0.0	18.0	1560
APR					
10...	0955	22	7.0	10.5	1830
MAY					
14...	1240	35	22.0	27.5	1590
23...	1600	61	23.0	26.5	968
JUN					
18...	1135	20	23.5	20.5	1450
JUL					
22...	1655	4.0	29.5	24.0	2400
AUG					
27...	1000	5.7	23.0	29.0	2870
06359500 MOREAU R NEAR FAITH SD (LAT 45 11 52N LONG 102 09 22W)					
OCT 1990					
30...	1210	2.8	9.0	15.0	3260
DEC					
06...	1230	3.5	0.0	4.0	4470
MAR 1991					
16...	1625	15	0.0	0.0	2030
APR					
11...	1335	13	2.5	1.5	1560
MAY					
15...	1750	196	16.5	15.5	1390
JUN					
19...	1815	15	26.0	25.0	1500
JUL					
24...	1305	24	25.0	20.5	1560
AUG					
28...	1335	0.01	26.5	33.5	1910

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06360500 MOREAU R NEAR WHITEHORSE SD (LAT 45 15 21N LONG 100 50 33W)					
MAY 1991					
13...	1725	65	23.0	23.5	1680
23...	1250	2700	18.0	23.0	1360
JUL					
22...	1230	43	26.0	23.0	1230
06395000 CHEYENNE R AT EDMONT SD (LAT 43 18 20N LONG 103 49 14W)					
OCT 1990					
31...	0815	7.0	3.0	2.0	5800
DEC					
10...	1020	10	0.0	7.0	6000
MAR 1991					
20...	1515	35	14.0	13.0	4050
APR					
17...	0800	12	7.0	7.0	6550
MAY					
13...	1440	2390	--	--	--
21...	0945	396	19.0	-21.0	1020
29...	1230	3140	--	--	--
JUN					
02...	1700	6260	19.0	22.0	564
20...	1040	211	22.0	22.0	2420
JUL					
31...	0830	25	21.0	25.0	4190
SEP					
09...	1250	3.5	22.0	20.0	6570
06400000 HAT CR NEAR EDMONT SD (LAT 43 14 24N LONG 103 35 16W)					
MAR 1991					
20...	1250	0.29	11.0	16.0	2300
APR					
17...	0950	0.12	9.0	9.0	2450
MAY					
13...	1900	468	17.5	23.0	305
21...	1630	307	21.0	23.0	706
JUN					
20...	0815	36	20.5	22.0	1950
JUL					
31...	1050	1.2	25.0	30.0	3000
06400497 CASCADE SPRINGS NEAR HOT SPRINGS SD (LAT 43 20 10N LONG 103 33 07W)					
OCT 1990					
31...	1035	20	19.0	18.0	2980
DEC					
10...	1310	19	20.0	19.0	2490
JAN 1991					
24...	0945	20	19.0	-9.0	2600
MAR					
20...	1040	20	20.0	15.0	1950
APR					
17...	1130	18	20.0	10.0	2600
MAY					
23...	1445	18	21.0	21.0	2610
JUN					
17...	1555	18	21.0	27.0	2650
JUL					
31...	1230	17	21.0	31.0	2600
SEP					
09...	0945	17	20.0	19.0	2600

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06400875 HORSEHEAD CR AT OELRICHS SD (LAT 43 11 17N LONG 103 13 34W)

MAY 1991					
11...	1205	6200	--	--	--
12...	1241	770	--	23.5	--
20...	1500	70	19.5	26.0	315
JUN					
03...	1330	100	20.0	22.0	--
04...	1010	910	19.0	23.0	208
19...	1300	7.0	22.0	21.0	712

06401500 CHEYENNE R BELOW ANGOSTURA DAM SD (LAT 43 20 42N LONG 103 26 12W)

MAR 1991					
20...	0850	0.68	8.0	8.0	1950
APR					
15...	1500	1.0	17.0	15.5	2010
MAY					
23...	1045	13	17.0	16.0	2650
24...	1345	606	--	--	--
29...	1800	3740	--	--	--
JUN					
03...	1050	7090	17.0	22.0	--
19...	1600	544	21.0	22.0	1080
JUL					
31...	1515	2.9	27.0	26.0	1600
SEP					
12...	1030	2.6	20.0	22.0	1780

06402000 FALL R AT HOT SPRINGS SD (LAT 43 25 50N LONG 103 28 33W)

OCT 1990					
30...	1715	19	22.0	13.0	1300
DEC					
10...	1440	21	23.0	19.0	1230
JAN 1991					
24...	1510	22	19.0	-6.0	1290
MAR					
21...	0730	24	21.0	5.0	1310
APR					
15...	1245	23	23.0	12.0	1250
MAY					
23...	1250	24	25.0	22.0	1270
JUN					
17...	1345	21	27.0	23.0	1310
JUL					
29...	1425	19	27.0	24.0	1360
SEP					
13...	0745	20	25.0	17.0	1360

06402430 BEAVER CREEK NEAR PRINGLE SD (LAT 43 34 53N LONG 103 28 34W)

DEC 1990					
11...	1315	0.08	4.5	17.0	529
JAN 1991					
25...	0900	0.03	0.0	-16.0	600
MAR					
21...	0900	0.35	6.0	5.0	515
APR					
15...	1055	0.36	9.0	12.0	500
MAY					
28...	1425	2.2	15.0	19.0	475
JUN					
17...	0925	0.47	14.0	21.0	599
JUL					
29...	0935	0.24	14.0	26.5	624
SEP					
04...	0930	0.02	11.0	21.0	600

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06402470 BEAVER CREEK ABOVE BUFFALO GAP SD (LAT 43 31 20N LONG 103 21 23W)					
DEC 1990					
11...	1125	9.1	13.0	12.0	2290
SEP 1991					
04...	1245	8.8	18.5	29.0	2000
06402500 BEAVER CR NEAR BUFFALO GAP SD (LAT 43 27 56N LONG 103 18 22W)					
OCT 1990					
31...	1420	6.9	11.5	24.0	2050
DEC					
11...	0900	7.7	6.0	13.5	2380
JAN 1991					
25...	1240	12	0.0	-4.0	2510
MAR					
21...	1140	9.0	10.0	13.0	1580
APR					
18...	0830	8.1	9.0	8.0	1920
MAY					
28...	1145	30	15.0	17.0	2160
JUN					
17...	1200	10	20.0	25.0	2480
JUL					
29...	1230	5.1	21.5	29.0	2530
SEP					
05...	1136	1.5	18.0	27.0	2580
06402990 FRENCH CREEK BELOW CUSTER SD (LAT 43 46 14N LONG 103 33 04W)					
NOV 1990					
15...	1420	1.4	3.0	5.0	510
DEC					
13...	1005	0.25	0.0	-4.0	800
JAN 1991					
14...	0845	0.15	0.0	1.0	900
FEB					
27...	0945	0.35	0.0	1.0	900
MAR					
25...	1145	4.5	5.5	16.0	410
APR					
23...	1415	5.7	9.0	14.0	420
MAY					
15...	1400	7.9	13.0	17.5	306
24...	1345	18	14.0	14.0	400
JUN					
04...	1525	80	14.0	16.5	265
18...	1200	12	17.5	13.0	378
JUL					
29...	1135	2.0	19.5	23.0	472
AUG					
29...	1230	1.1	19.0	23.0	564

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06402995 FRENCH CREEK ABOVE STOCKADE LAKE NEAR CUSTER SD (LAT 43 46 10N LONG 103 32 10W)					
NOV 1990					
15...	1315	1.3	3.0	5.0	460
JAN 1991					
14...	1255	0.13	0.0	3.0	870
FEB					
25...	1305	0.42	0.0	0.0	530
MAR					
25...	1015	5.3	4.0	13.5	345
APR					
23...	1300	8.5	9.0	13.0	335
26...	1130	13	11.0	12.0	344
MAY					
15...	1228	17	13.0	17.5	300
24...	1550	35	13.0	15.0	265
29...	1150	70	13.0	16.0	205
JUN					
04...	1255	132	12.5	18.0	220
18...	1420	20	17.5	15.0	303
JUL					
30...	1200	5.0	18.5	24.5	415
AUG					
07...	0120	292	--	--	--
SEP					
05...	1345	1.3	19.0	26.0	500
06403300 FRENCH CR ABOVE FAIRBURN SD (LAT 43 43 02N LONG 103 22 03W)					
NOV 1990					
15...	1105	1.5	5.5	7.0	300
FEB 1991					
25...	1025	1.9	0.0	1.0	285
MAR					
26...	1200	8.0	6.5	14.0	260
APR					
23...	1110	16	8.0	15.0	290
MAY					
16...	1145	21	13.0	10.0	--
JUN					
05...	1340	158	17.0	24.0	221
12...	1250	54	19.0	24.0	232
27...	1450	16	22.5	25.5	260
JUL					
25...	1000	6.9	18.0	21.0	288
AUG					
28...	1115	3.1	21.0	28.0	306
06404000 BATTLE CR NEAR KEYSTONE SD (LAT 43 52 21N LONG 103 20 10W)					
OCT 1990					
31...	1400	0.94	9.5	24.5	349
DEC					
14...	1150	1.2	0.0	-1.0	376
JAN 1991					
25...	1220	0.76	0.0	-8.0	380
MAR					
18...	1300	2.6	5.0	9.0	293
APR					
19...	1300	12	5.0	3.0	187
MAY					
14...	1610	43	15.5	27.0	--
JUN					
12...	0950	66	14.0	25.0	259
AUG					
01...	1250	6.0	22.0	27.0	338
SEP					
05...	1450	1.2	22.0	23.0	393

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06404800 GRACE COOLIDGE CREEK NEAR HAYWARD SD (LAT 43 48 07N LONG 103 26 03W)					
JAN 1991					
03...	1150	0.06	--	--	--
FEB					
20...	1145	0.21	2.0	11.0	98
MAR					
26...	1015	0.28	4.0	11.0	90
APR					
10...	0945	0.36	3.0	7.0	97
22...	1305	3.6	8.0	14.0	62
MAY					
13...	1624	12	--	--	--
17...	1350	28	9.0	11.0	56
23...	1100	22	10.5	20.0	58
JUN					
18...	1625	6.1	15.5	18.0	81
JUL					
30...	1415	1.3	18.0	23.0	104
AUG					
29...	1040	0.71	15.0	24.0	104
06404998 GRACE COOLIDGE CR NR GAME LODGE NR CUSTER SD (LAT 43 45 40N LONG 103 21 49W)					
NOV 1990					
07...	1245	1.47	2.0	2.5	200
JAN 1991					
07...	1250	0.56	0.0	5.0	230
FEB					
20...	1015	1.2	0.0	10.0	215
MAR					
26...	1315	1.2	11.0	18.0	205
APR					
22...	1115	7.8	9.0	15.0	150
MAY					
15...	0940	2.0	15.0	--	280
15...	1040	16	13.5	18.0	300
29...	1030	94	13.0	18.5	120
JUN					
12...	1045	40	16.0	23.0	153
AUG					
07...	0900	9.5	18.0	17.0	190
28...	1330	2.3	23.0	34.0	227
06405800 BEAR GULCH NEAR HAYWARD SD (LAT 43 47 30N LONG 103 20 47W)					
APR 1991					
22...	1500	4.1	12.0	20.0	116
MAY					
23...	1305	10	14.0	24.0	141
JUN					
12...	1650	5.3	20.0	25.0	189
AUG					
06...	1405	0.69	23.0	31.5	176
29...	0845	0.10	18.0	19.0	195

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06406000 BATTLE CR AT HERMOSA SD (LAT 43 49 41N LONG 103 11 44W)					
OCT 1990					
31...	1145	2.9	9.5	23.0	661
DEC					
14...	0950	3.0	1.0	-1.5	655
JAN 1991					
22...	1215	2.7	1.5	4.0	675
MAR					
18...	1115	2.4	8.0	11.0	683
APR					
18...	1050	2.7	9.0	8.0	669
MAY					
14...	1415	35	16.0	27.0	--
JUN					
06...	1315	516	16.0	19.0	252
12...	1345	128	19.0	23.0	324
AUG					
01...	1115	7.7	19.5	25.0	651
SEP					
13...	1015	7.1	18.0	23.0	676

06406500 BATTLE CR BELOW HERMOSA SD (LAT 43 43 30N LONG 102 54 15W)

DEC 1990					
06...	0835	2.0	0.0	-6.5	1000
JAN 1991					
22...	1025	0.77	0.0	4.5	1070
MAR					
18...	0930	2.5	5.0	8.0	892
APR					
19...	1030	4.5	6.0	4.0	--
MAY					
14...	1220	51	18.5	28.0	--
18...	1330	36	14.0	14.5	490
24...	1005	102	17.5	20.0	267
JUN					
05...	0900	453	16.5	--	280
05...	1211	437	--	--	280
07...	1033	525	17.5	24.0	285
21...	0915	71	21.0	19.0	542
JUL					
15...	0945	20	23.0	29.0	565
SEP					
13...	1300	4.9	21.0	24.0	846

06406920 SPRING CREEK ABOVE SHERIDAN LAKE NEAR KEYSTONE SD (LAT 43 57 39N LONG 103 29 18W)

NOV 1990					
06...	1310	4.8	0.0	0.0	365
DEC					
12...	1430	2.1	0.0	-1.5	395
FEB 1991					
11...	1255	1.8	0.0	10.0	400
MAR					
26...	1400	7.0	8.0	10.0	308
APR					
14...	1120	--	2.0	7.0	400
16...	1109	8.2	3.5	2.0	354
18...	0830	--	1.5	4.0	400
25...	1410	13.6	14.0	21.5	300
26...	1130	20	9.5	11.5	310
MAY					
12...	1110	--	12.5	20.0	200
13...	1400	50	14.5	22.0	300
13...	1915	47	13.5	18.0	300
19...	1400	--	15.0	24.5	200
28...	1905	185	13.0	14.0	180

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06406920 SPRING CREEK ABOVE SHERIDAN LAKE NEAR KEYSTONE SD (LAT 43 57 39N LONG 103 29 18W)--Continued					
JUN					
04...	1500	279	10.0	22.0	--
07...	1450	302	15.0	19.0	247
20...	1300	50	20.0	26.5	200
26...	1040	--	19.0	37.0	300
JUL					
16...	0830	--	18.0	26.0	300
17...	1330	27	24.5	--	335
AUG					
16...	1300	--	20.0	28.0	300
20...	1243	10	20.0	28.0	328
SEP					
03...	1415	6.0	19.0	23.0	400
10...	1100	--	15.0	18.5	400
06407500 SPRING CR NEAR KEYSTONE SD (LAT 43 58 45N LONG 103 20 25W)					
NOV 1990					
02...	1025	3.7	5.5	3.5	306
DEC					
14...	1400	1.7	0.0	-2.0	345
JAN 1991					
25...	1010	1.7	0.0	-4.0	352
MAR					
21...	1400	8.1	3.0	5.0	188
APR					
25...	1050	17	11.0	26.5	300
26...	1007	28	11.0	13.0	300
MAY					
13...	1532	89	13.5	20.0	300
JUN					
13...	0900	164	--	22.0	307
15...	1429	157	--	--	--
SEP					
03...	1145	6.1	19.0	18.5	300
06408500 SPRING CR NEAR HERMOSA SD (LAT 43 56 30N LONG 103 09 33W)					
MAY 1991					
24...	1313	72	16.0	22.0	425
30...	1215	194	16.0	22.0	--
JUN					
04...	1710	190	--	--	--
04...	1825	230	--	--	--
04...	2105	342	--	--	--
06...	1005	184	16.0	20.0	365
13...	0930	158	17.0	25.0	378
14...	1150	126	--	--	--
JUL					
26...	1110	2.5	20.0	21.0	1040
SEP					
18...	0900	1.6	9.0	3.0	1090
06408700 RHOADS FORK NEAR ROCHFORD SD (LAT 44 08 12N LONG 103 51 29W)					
OCT 1990					
01...	1240	3.8	9.5	15.0	500
NOV					
20...	1020	3.8	5.0	9.0	450
JAN 1991					
18...	1625	3.3	4.5	0.5	441
MAR					
15...	1510	3.6	6.0	-2.5	454
APR					
24...	1015	4.1	9.0	14.0	420
MAY					
15...	1620	3.9	7.0	14.0	454
JUN					
24...	1420	3.8	14.0	--	442
JUL					
31...	1305	3.7	14.0	27.5	445
SEP					
05...	0945	3.9	7.5	18.0	500

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06408860 RAPID CREEK NEAR ROCHFORD SD (LAT 44 06 17N LONG 103 38 35W)

OCT 1990					
01...	1450	7.1	12.0	22.0	400
NOV					
21...	1015	9.4	0.5	1.5	400
JAN 1991					
08...	0950	12	0.0	-7.5	440
FEB					
21...	0905	11	0.0	0.0	427
MAR					
28...	0845	10	1.5	11.0	367
APR					
24...	1200	22	8.0	17.0	355
MAY					
15...	1350	50	11.0	12.0	351
30...	1210	66	13.0	22.0	292
JUN					
04...	1500	91	10.5	20.0	210
24...	1630	34	19.5	27.0	324
JUL					
31...	1605	12	21.5	27.5	382
AUG					
27...	1300	8.8	20.0	34.0	400

06409000 CASTLE CR ABOVE DEERFIELD RES NEAR HILL CITY SD (LAT 44 00 49N LONG 103 49 48W)

DEC 1990					
12...	1115	7.4	0.0	-3.0	415
MAR 1991					
26...	1200	10	4.0	8.0	456
MAY					
30...	1625	23	15.0	17.0	461
31...	1400	24	13.0	16.5	466
JUN					
01...	2035	33	12.0	11.0	445
JUL					
12...	1315	13	15.5	22.0	471
SEP					
19...	1415	10	7.5	16.0	472

06410000 CASTLE CR BELOW DEERFIELD DAM SD (LAT 44 01 45N LONG 103 46 53W)

MAR 1991					
26...	1000	2.2	5.0	8.5	423
MAY					
01...	1050	17	4.5	6.5	421
01...	1300	37	4.5	6.0	421
31...	1610	44	7.0	15.0	392
JUN					
04...	1600	66	7.0	21.5	392
05...	1350	84	7.5	20.5	390
JUL					
12...	1115	15	9.0	25.0	392
AUG					
16...	1345	21	9.5	17.0	397
SEP					
19...	1200	13	10.0	13.0	401

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06410500 RAPID CR ABOVE PACTOLA RES AT SILVER CITY SD (LAT 44 05 05N LONG 103 34 48W)					
JAN 1991					
02...	1230	8.8	--	-11.0	--
FEB					
15...	1115	8.6	5.0	0.0	430
MAR					
28...	1100	19	3.0	8.0	366
APR					
25...	0900	52	5.0	14.0	405
MAY					
22...	1340	121	10.0	13.0	303
JUN					
04...	1130	349	11.0	20.0	247
19...	1455	141	15.5	25.0	315
AUG					
01...	1255	38	15.5	23.0	362
SEP					
03...	1140	34	14.0	17.0	384
06411500 RAPID CR BELOW PACTOLA DAM SD (LAT 44 04 36N LONG 103 28 54W)					
OCT 1990					
02...	1225	12	10.5	28.0	400
NOV					
20...	1440	9.7	8.0	11.0	390
JAN 1991					
02...	1435	9.1	--	--	--
FEB					
15...	1315	10	4.5	10.0	410
MAR					
28...	1300	11	6.0	7.0	404
29...	1145	11	--	--	--
APR					
25...	1120	16	9.0	17.0	390
MAY					
22...	1610	11	8.0	15.0	412
JUN					
28...	1435	19	11.5	27.0	402
AUG					
01...	1615	58	8.0	24.5	394
SEP					
03...	1410	67	10.0	22.0	390
06412200 RAPID CREEK AB VICTORIA CR NR RAPID CITY SD (LAT 44 02 48N LONG 103 21 06W)					
NOV 1990					
05...	1500	11	4.0	3.0	400
DEC					
03...	1615	13	0.0	-4.0	400
11...	1410	15	0.0	6.0	410
14...	0930	15	0.0	-2.0	400
JAN 1991					
16...	0915	10	0.0	2.0	400
FEB					
28...	0900	6.9	0.0	4.5	400
MAR					
27...	1230	11	6.0	6.5	403
APR					
29...	1418	15	9.5	10.5	300
MAY					
16...	1005	29	12.0	16.0	400
JUL					
01...	1345	28	20.5	25.0	439
AUG					
28...	0900	88	15.5	31.0	400

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06412500 RAPID CR ABOVE CANYON LAKE NEAR RAPID CITY SD (LAT 44 03 04N LONG 103 18 47W)					
OCT 1990					
29...	1045	1.2	10.0	20.0	400
29...	1055	0.80	8.5	19.5	400
NOV					
06...	1145	1.8	3.5	0.0	400
MAR 1991					
27...	1435	0.73	6.0	9.0	384
MAY					
07...	1042	2.9	13.0	18.0	--
JUL					
17...	1010	68	17.0	32.0	334
AUG					
30...	1015	75	17.0	--	400
06412510 RAPID CREEK ABOVE RAPID CITY SD (LAT 44 03 10N LONG 103 18 41W)					
DEC 1990					
13...	1035	0.45	3.0	3.0	435
FEB 1991					
12...	1300	0.54	7.0	12.0	410
MAR					
27...	1600	1.1	6.5	9.5	392
MAY					
07...	1100	3.2	10.0	15.0	366
16...	1240	35	11.0	15.0	300
JUL					
02...	1130	24	--	--	--
17...	1315	64	19.5	32.5	326
AUG					
30...	1136	75	17.0	--	400
06412600 CLEGHORN SPGS MAIN CH AT FISH HATCH AT RC SD (LAT 44 03 32N LONG 103 17 54W)					
OCT 1989					
16...	1030	10	12.0	14.5	370
NOV					
06...	1230	10	10.0	7.0	375
06...	1255	11	--	--	--
28...	1230	12	12.0	0.5	385
29...	1100	12	--	--	--
DEC					
29...	1300	10	10.5	-2.0	383
MAR 1990					
08...	1305	7.1	10.0	1.0	378
08...	1325	12	10.0	1.0	--
AUG					
24...	0735	9.3	--	--	--
JAN 1991					
30...	1350	9.1	10.5	-1.0	400
FEB					
13...	1136	6.8	--	7.0	--
13...	1313	8.0	--	--	--
JUN					
26...	1030	9.0	--	21.0	--
26...	1110	4.9	--	26.5	--
26...	1230	6.1	--	--	--
26...	1330	7.4	--	29.5	--

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06412700 CLEGHORN SPGS S CHANNEL AT FISH HATCH AT RC SD (LAT 44 03 31N LONG 103 17 56W)					
OCT 1989					
16...	1245	1.4	11.5	12.5	370
NOV					
06...	1435	1.7	10.0	9.5	365
28...	1110	1.4	12.0	4.5	380
DEC					
29...	1220	1.3	11.0	-1.0	381
MAR 1990					
08...	1145	1.2	10.0	10.0	367
21...	1555	0.94	--	10.0	--
21...	1600	0.91	--	--	--
APR					
03...	1100	0.93	--	--	378
AUG					
20...	1210	1.2	12.0	24.0	395
06412800 CLEGHORN SPGS N CHANNEL AT FISH HATCH AT RC SD (LAT 44 03 32N LONG 103 17 54W)					
OCT 1990					
03...	1120	1.4	11.5	20.0	400
06412900 RAPID CREEK BLW CLEGHORN SPGS AT RAPID CITY SD (LAT 44 03 33N LONG 103 17 49W)					
NOV 1990					
06...	1445	15	10.5	0.0	400
DEC					
13...	1330	14	8.0	2.0	400
FEB 1991					
12...	1415	16	11.0	19.0	390
MAR					
28...	0905	14	10.5	8.0	386
MAY					
02...	1025	17	9.5	6.5	394
16...	1500	49	11.0	12.0	400
JUL					
30...	1330	72	16.0	28.0	400
AUG					
15...	1100	--	--	29.0	400
26...	1050	95	--	--	--
SEP					
12...	1540	50	14.5	23.5	300
06413650 LIME CREEK AT MOUTH AT RAPID CITY SD (LAT 44 04 27N LONG 103 15 53W)					
FEB 1991					
19...	0905	0.29	0.0	-5.0	1670
MAR					
25...	1400	0.37	13.0	18.0	1700
APR					
26...	0823	27	--	--	--
JUN					
28...	1625	1.6	19.5	27.0	1190
06414000 RAPID CR AT RAPID CITY SD (LAT 44 05 09N LONG 103 14 31W)					
NOV 1990					
09...	1050	19	6.0	7.5	600
DEC					
14...	1415	19	0.0	-2.0	580
FEB 1991					
14...	1315	19	5.0	-3.0	610
MAR					
28...	1040	15	8.0	8.5	602
MAY					
21...	0935	66	15.5	22.0	300
JUL					
18...	0920	63	19.5	27.0	550
AUG					
29...	1440	70	21.0	--	400

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06418900 RAPID CR BL SEWAGE TREATMENT PL NR RAPID CITY SD (LAT 44 01 24N LONG 103 05 43W)					
NOV 1990					
06...	0955	38	3.0	-5.0	1000
DEC					
14...	1220	37	3.0	-4.0	1100
FEB 1991					
14...	1115	36	5.0	-6.0	1200
MAR					
28...	1300	34	10.5	8.5	1200
MAY					
16...	1250	82	13.0	13.5	920
JUN					
18...	1336	81	17.5	25.0	935
JUL					
18...	1120	44	22.5	26.0	945
AUG					
29...	1200	45	27.0	--	1000
06421500 RAPID CR NEAR FARMINGDALE SD (LAT 43 56 31N LONG 102 51 12W)					
NOV 1990					
05...	1325	24	3.0	4.0	1310
20...	1245	26	5.5	16.0	1000
DEC					
14...	0945	25	0.0	-4.0	980
MAR 1991					
12...	1240	39	1.0	6.0	1040
25...	1120	25	9.0	17.0	1080
MAY					
28...	1324	217	--	--	--
JUN					
18...	1100	77	16.5	26.0	902
JUL					
18...	1340	44	26.5	29.5	1080
AUG					
28...	1300	14	27.0	36.0	1000
06422500 BOXELDER CR NEAR NEMO SD (LAT 44 08 38N LONG 103 27 16W)					
NOV 1990					
05...	1250	2.4	3.5	4.5	400
21...	1400	2.3	3.0	4.0	400
DEC					
11...	1200	1.6	1.0	16.0	380
FEB 1991					
12...	0835	1.1	0.0	0.0	400
MAR					
27...	1040	4.3	5.0	9.0	285
APR					
26...	1410	14	11.5	7.0	302
MAY					
24...	1150	53	14.0	19.5	200
JUN					
04...	1255	106	13.5	22.0	190
07...	1335	145	17.0	23.0	172
JUL					
18...	0952	17	20.5	--	310
AUG					
20...	1002	8.0	19.0	29.0	317
06423010 BOXELDER CR NEAR RAPID CITY SD (LAT 44 07 54N LONG 103 17 54W)					
JUN 1991					
04...	1000	43	15.0	20.5	245
07...	1050	115	17.0	22.0	220
17...	0950	8.3	16.5	19.0	365

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06423500 CHEYENNE RIVER NEAR WASTA SD (LAT 44 04 52N LONG 102 24 03W)					
OCT 1990					
02...	1055	52	12.5	16.5	2360
DEC					
10...	1600	76	1.0	9.0	--
JAN 1991					
22...	1535	3.5	0.0	2.0	1490
MAR					
18...	1345	129	3.5	13.5	1840
APR					
17...	1130	105	9.0	11.0	1790
MAY					
11...	1820	15800	16.5	25.0	--
24...	0905	368	18.0	15.5	1140
JUN					
25...	0920	512	23.0	26.5	1420
AUG					
02...	0830	56	21.5	20.5	2390
SEP					
05...	0910	61	18.0	16.0	2300
06425100 ELK CR NR RAPID CITY SD (LAT 44 14 25N LONG 103 09 03W)					
MAY 1991					
24...	1115	21	18.5	23.0	1030
30...	0745	21	18.0	18.0	805
06425500 ELK CR NEAR ELM SPRINGS SD (LAT 44 14 54N LONG 102 30 10W)					
MAY 1991					
16...	1400	E25	--	--	--
24...	1120	34	19.5	20.5	951
JUN					
25...	1200	0.32	28.0	30.5	3850
06428500 BELLE FOURCHE R AT WY-SD STATE LINE (LAT 44 44 59N LONG 104 02 49W)					
OCT 1990					
12...	1440	9.3	9.5	18.0	2170
NOV					
23...	1325	8.0	4.0	13.5	2110
JAN 1991					
09...	1140	0.63	0.0	-15.0	2920
MAR					
07...	1045	13	0.0	7.0	1800
APR					
04...	1230	12	13.0	24.0	2110
MAY					
02...	1020	39	8.0	10.0	1670
14...	1240	171	18.0	24.0	947
30...	0930	136	17.0	17.0	1190
JUL					
08...	1230	49	24.0	29.0	1900
AUG					
05...	1435	104	23.0	25.0	1390
SEP					
10...	0940	81	17.0	19.0	1440
06429997 MURRAY DITCH AB HEADGATE AT WY-SD STATE LINE (LAT 44 34 35N LONG 104 03 20W)					
OCT 1990					
19...	1400	19	10.0	10.5	1000
JUL 1991					
25...	1410	12	19.0	28.0	1600

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06430500 REDWATER CR AT WY-SD STATE LINE (LAT 44 34 26N LONG 104 02 54W)					
OCT 1990					
19...	1245	10	8.0	15.0	2000
DEC					
03...	1530	27	3.0	-2.0	1420
JAN 1991					
10...	1135	24	0.0	-1.0	1390
MAR					
14...	1315	28	8.0	11.0	1400
APR					
24...	1025	28	11.5	19.0	1410
MAY					
22...	1235	22	17.0	16.5	1690
JUN					
26...	1205	30	19.0	26.0	1440
JUL					
25...	1535	4.8	23.5	30.5	2000
SEP					
17...	1500	27	12.5	11.0	1470
06430540 COX LAKE OUTLET NEAR BEULAH WY (LAT 44 33 56N LONG 103 59 37W)					
OCT 1990					
19...	1115	4.1	9.5	15.5	1180
SEP 1991					
06...	1145	4.6	15.0	26.5	1000
06430770 SPEARFISH CREEK NEAR LEAD SD (LAT 44 17 56N LONG 103 52 02W)					
OCT 1990					
17...	1055	13	3.5	-3.0	400
NOV					
28...	1045	13	1.0	-3.0	400
JAN 1991					
10...	0930	13	0.0	-17.0	450
MAR					
11...	1200	12	5.0	10.0	474
APR					
29...	1145	17	3.0	-1.0	430
MAY					
15...	1200	27	8.5	12.5	430
JUN					
28...	1205	22	13.0	20.5	416
JUL					
29...	1235	18	11.5	28.5	450
SEP					
09...	1530	13	10.0	18.5	450
06430800 ANNIE CREEK NEAR LEAD SD (LAT 44 19 37N LONG 103 53 38W)					
OCT 1990					
17...	1245	0.15	1.5	0.0	342
NOV					
28...	1400	0.06	0.0	-3.0	400
DEC					
18...	1000	0.06	0.0	-3.0	400
JAN 1991					
15...	0915	0.06	0.0	-3.5	400
FEB					
25...	0930	0.02	0.0	-4.0	400
MAR					
13...	1130	0.01	0.5	4.0	400
MAY					
02...	1000	1.4	2.5	3.0	210
10...	1155	5.6	7.0	16.5	162
15...	1430	8.1	7.5	11.5	135
JUN					
20...	0845	1.6	11.0	17.0	200
SEP					
05...	1145	0.15	13.0	24.0	400

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06430850 LITTLE SPEARFISH CREEK NEAR LEAD SD (LAT 44 20 58N LONG 103 56 08W)					
OCT 1990					
18...	1015	13	5.5	-2.0	470
NOV					
29...	1030	11	5.0	6.0	400
JAN 1991					
10...	1145	12	0.0	-5.0	460
MAR					
11...	1500	12	8.0	7.0	458
MAY					
02...	1145	13	7.0	5.0	460
16...	1210	18	7.5	10.0	467
JUN					
28...	1410	15	14.0	27.0	435
JUL					
29...	1510	13	11.5	26.0	440
SEP					
11...	1055	12	9.5	28.5	473
06430898 SQUAW CREEK NEAR SPEARFISH SD (LAT 44 24 04N LONG 103 53 35W)					
OCT 1990					
18...	1125	0.37	3.0	2.5	300
NOV					
30...	0945	0.69	0.0	6.5	300
JAN 1991					
10...	1300	0.38	0.0	-3.0	330
MAR					
13...	1500	0.49	0.0	3.5	300
APR					
25...	1055	6.2	5.0	12.0	175
MAY					
16...	1510	31	6.5	10.0	123
JUN					
20...	1100	3.3	14.5	20.0	200
JUL					
31...	1515	0.59	19.5	33.5	340
SEP					
05...	1445	0.35	16.0	25.0	400
06430900 SPEARFISH CREEK ABOVE SPEARFISH SD (LAT 44 24 06N LONG 103 53 40W)					
OCT 1990					
18...	1335	37	6.0	12.0	400
NOV					
30...	1230	38	3.0	1.0	400
JAN 1991					
10...	1410	37	0.0	1.0	435
MAR					
13...	0950	35	2.0	2.0	461
APR					
25...	1220	49	7.0	28.0	400
MAY					
16...	1350	119	8.0	10.0	356
JUN					
25...	1440	51	15.0	26.0	401
JUL					
31...	1615	42	15.0	27.5	440
SEP					
11...	1225	35	10.5	25.0	440

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06431500 SPEARFISH CR AT SPEARFISH SD (LAT 44 28 57N LONG 103 51 40W)

OCT 1990					
18...	1515	34	5.0	9.0	422
NOV					
26...	1535	37	3.0	-7.0	405
JAN 1991					
11...	0935	32	1.0	-4.0	427
MAR					
08...	1515	37	3.0	2.5	430
APR					
25...	0920	49	6.5	17.0	415
MAY					
23...	1015	101	9.0	17.5	328
JUN					
26...	0820	49	12.0	16.0	423
JUL					
31...	1400	50	13.0	30.0	440
SEP					
11...	1420	32	11.5	24.5	434

06432020 SPEARFISH CREEK BELOW SPEARFISH SD (LAT 44 34 48N LONG 103 53 37W)

OCT 1990					
19...	0940	42	8.5	18.0	700
NOV					
26...	1145	49	2.0	-5.0	600
JAN 1991					
10...	1435	21	0.5	3.0	860
MAR					
14...	1010	41	4.0	4.0	655
APR					
24...	1315	52	13.0	27.0	573
MAY					
17...	1125	103	10.5	15.0	456
JUN					
26...	1015	32	14.5	22.5	637
JUL					
25...	1105	3.6	11.0	26.5	920
SEP					
17...	1300	38	11.5	13.0	722

06433000 REDWATER RIVER ABOVE BELLE FOURCHE SD (LAT 44 40 02N LONG 103 50 20W)

OCT 1990					
15...	1700	110	9.0	8.0	1250
NOV					
23...	1630	124	6.0	1.0	1160
JAN 1991					
08...	1310	85	0.0	-12.0	1360
MAR					
08...	1300	128	5.0	5.0	1240
APR					
15...	1020	132	6.0	8.0	1200
MAY					
02...	1320	135	8.0	18.0	1130
JUN					
12...	1335	148	22.0	23.0	1010
JUL					
16...	0940	3.2	24.0	21.0	1650
AUG					
07...	1130	3.2	23.0	23.0	1640
SEP					
10...	1505	37	18.5	25.0	1470

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06433500 HAY CR AT BELLE FOURCHE SD (LAT 44 40 01N LONG 103 50 46W)					
OCT 1990					
15...	1815	0.03	--	--	--
NOV					
23...	1445	0.02	6.0	16.0	2740
MAR 1991					
08...	1400	0.08	--	--	1000
APR					
04...	1420	0.05	14.5	22.5	3130
MAY					
03...	0840	0.32	4.0	6.0	--
29...	1420	2.0	21.0	22.0	2360
JUL					
16...	0810	0.02	20.0	30.0	3340
06434500 INLET CANAL NEAR BELLE FOURCHE SD (LAT 44 42 14N LONG 103 49 23W)					
JUL 1991					
16...	1145	79	26.5	28.0	1460
SEP					
10...	1235	119	17.0	21.0	1480
06436000 BELLE FOURCHE R NEAR FRUITDALE SD (LAT 44 41 27N LONG 103 44 14W)					
OCT 1990					
15...	1330	7.2	9.0	16.5	2200
NOV					
23...	1445	8.1	4.5	16.0	1770
JAN 1991					
07...	1355	3.9	0.0	-12.0	2270
MAR					
07...	1310	4.4	0.0	4.0	1800
APR					
15...	1215	4.3	9.0	6.0	1960
MAY					
08...	1600	4.8	19.5	25.0	2420
JUN					
12...	1125	2.0	26.0	22.5	2000
JUL					
09...	1245	5.8	24.0	--	1930
AUG					
07...	1325	13	25.0	27.5	1760
SEP					
17...	1145	9.5	13.5	11.0	1980
06436156 WHITETAIL CREEK AT LEAD SD (LAT 44 20 36N LONG 103 45 57W)					
OCT 1990					
16...	1135	0.76	5.0	14.5	400
NOV					
27...	1245	0.68	0.5	-5.0	400
JAN 1991					
09...	1215	0.60	0.0	-7.0	425
MAR					
12...	1415	1.1	1.5	0.0	500
APR					
26...	1200	5.8	6.0	5.5	468
MAY					
15...	1010	12	9.0	14.5	351
JUN					
24...	1115	4.1	14.0	21.0	400
JUL					
29...	1115	1.8	15.5	30.5	435
SEP					
04...	1430	0.78	15.0	25.0	400

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06436170 WHITEWOOD CREEK AT DEADWOOD SD (LAT 44 22 48N LONG 103 43 25W)					
OCT 1990					
16...	1335	11	11.5	10.0	1410
DEC					
03...	1145	8.6	5.0	-2.5	1460
JAN 1991					
09...	1350	11	0.0	-4.0	1250
MAR					
13...	1315	15	7.0	7.0	1060
APR					
26...	1320	39	9.0	9.0	659
MAY					
23...	0755	112	10.0	13.0	437
JUN					
05...	2042	428	--	--	--
28...	0830	27	16.0	16.0	820
JUL					
31...	1220	10	20.0	28.5	1240
SEP					
09...	1225	8.4	18.0	21.0	1490
06436180 WHITEWOOD CR ABOVE WHITEWOOD SD (LAT 44 26 32N LONG 103 37 44W)					
JUN 1991					
05...	2125	640	--	--	--
06436190 WHITEWOOD CREEK NEAR WHITEWOOD SD (LAT 44 32 30N LONG 103 34 16W)					
OCT 1990					
15...	0945	11.3	6.5	6.0	1000
NOV					
23...	1125	11	5.0	15.5	1260
JAN 1991					
07...	1010	4.1	0.0	-17.5	1320
MAR					
08...	1340	15	6.5	4.0	1240
APR					
11...	0855	29	5.0	5.0	1020
MAY					
03...	1230	37	7.5	4.0	--
JUN					
05...	0025	651	--	--	--
12...	0925	62	16.0	21.0	717
JUL					
15...	1435	14	28.0	35.0	1140
AUG					
14...	1335	9.2	23.0	25.0	1260
SEP					
16...	1325	10	12.5	19.5	1330
06436198 WHITEWOOD CR ABOVE VALE SD (LAT 44 37 04N LONG 103 28 52W)					
JUN 1991					
06...	1440	279	18.0	26.0	440
06436760 HORSE CR ABOVE VALE SD (LAT 44 39 08N LONG 103 21 59W)					
SEP 1991					
16...	1100	32	12.5	19.0	1970
06437000 BELLE FOURCHE R NEAR STURGIS SD (LAT 44 30 47N LONG 103 08 11W)					
SEP 1991					
09...	1500	155	23.0	23.0	2130

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06437020 BEAR BUTTE CREEK NEAR DEADWOOD SD (LAT 44 20 08N LONG 103 38 06W)					
OCT 1990					
16...	1010	1.1	3.5	7.5	292
NOV					
27...	0915	0.66	0.0	-5.0	300
JAN 1991					
08...	1200	0.70	0.0	-13.0	325
MAR					
12...	1000	2.2	0.0	2.5	300
APR					
26...	1020	16	5.0	6.0	233
MAY					
15...	0845	38	10.0	12.0	182
JUN					
05...	1915	938	--	--	--
07...	0945	165	10.0	25.0	132
24...	0845	10	14.5	19.5	200
JUL					
22...	1200	2.9	19.5	29.0	330
SEP					
04...	1100	1.2	13.5	21.0	400
06437500 BEAR BUTTE CR NEAR STURGIS SD (LAT 44 28 53N LONG 103 16 31W)					
MAY 1991					
17...	0900	25	14.5	13.5	1060
24...	0810	1.6	19.0	18.0	844
JUN					
07...	0945	200	16.0	24.0	316
06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS SD (LAT 44 22 11N LONG 102 33 56W)					
OCT 1990					
02...	1450	29	16.0	18.0	2400
DEC					
10...	1110	27	0.5	9.0	3000
MAR 1991					
11...	1415	111	0.5	22.0	2000
APR					
16...	1700	349	11.5	13.0	1780
MAY					
16...	1310	1920	15.0	14.0	919
23...	1315	182	22.5	23.5	2000
JUN					
25...	1600	117	31.0	31.0	1600
AUG					
01...	1615	144	23.5	28.5	2000
SEP					
04...	1515	136	24.5	28.0	2000
06439000 CHERRY CR NEAR PLAINVIEW SD (LAT 44 44 35N LONG 102 03 11W)					
MAY 1991					
16...	1005	219	15.5	13.0	3410
JUN					
20...	0940	2.2	21.0	20.5	1850
JUL					
24...	1545	4.2	24.0	29.0	393

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06439300 CHEYENNE RIVER AT CHERRY CREEK SD (LAT 44 36 10N LONG 101 29 24W)					
DEC 1990					
06...	1610	98	0.0	7.5	2710
MAR 1991					
07...	1120	239	0.0	3.0	1800
MAY					
13...	1345	3790	18.5	24.5	934
29...	1600	13500	19.0	25.0	1020
JUN					
07...	1535	15800	21.5	25.0	1260
20...	1350	1210	22.5	29.5	1450
AUG					
29...	1145	177	26.0	29.5	2390
06439430 COTTONWOOD CR NR CHERRY CR SD (LAT 44 40 28N LONG 101 24 16W)					
MAY 1991					
29...	1110	13	19.0	22.0	841
06440200 SOUTH FORK BAD R NEAR COTTONWOOD SD (LAT 43 58 31N LONG 101 45 39W)					
MAR 1991					
11...	1125	0.71	5.0	11.0	289
APR					
16...	1200	10	7.0	12.0	363
MAY					
13...	1445	14	18.0	28.0	429
16...	1450	1810	13.0	13.5	172
17...	1300	666	13.5	15.0	221
31...	1900	4790	15.5	22.5	190
JUN					
24...	1605	1.6	26.0	32.5	1030
AUG					
02...	1135	0.02	23.5	21.0	2560
06441000 BAD R NEAR MIDLAND SD (LAT 44 04 01N LONG 101 09 36W)					
APR 1991					
17...	1510	34	14.0	15.0	1570
MAY					
17...	1900	604	17.0	17.5	816
JUN					
01...	1540	1280	20.0	21.0	340
24...	1310	18	25.5	24.5	1190
AUG					
02...	1320	0.12	27.0	26.0	1990
06441110 PLUM CREEK BELOW HAYES SD (LAT 44 12 38N LONG 100 43 34W)					
APR 1991					
15...	1045	7.1	8.0	7.0	2580
MAY					
28...	1200	359	16.0	25.0	2250
30...	1505	578	16.5	27.5	1540
JUN					
24...	1045	0.14	22.0	28.5	2200

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06441500 BAD R NEAR FORT PIERRE SD (LAT 44 19 36N LONG 100 23 02W)					
MAR 1991					
26...	1030	0.16	8.0	9.0	3460
APR					
15...	1345	111	10.0	10.0	2510
26...	1700	1.6	15.0	14.0	3310
MAY					
01...	0915	0.04	6.0	6.0	3410
20...	1515	531	20.0	27.0	598
28...	1430	1650	17.0	20.0	2050
29...	1200	2340	19.5	25.0	1770
30...	1235	5460	16.0	25.0	1360
JUL					
01...	1005	148	24.5	19.5	2800
AUG					
01...	0955	2.4	24.0	27.0	1930
06442000 MEDICINE KNOLL CR NEAR BLUNT SD (LAT 44 33 46N LONG 099 54 50W)					
MAY 1991					
31...	1220	11	20.0	21.0	1050
JUN					
05...	1430	6370	--	--	153
06442500 MEDICINE CR AT KENNEBEC SD (LAT 43 54 17N LONG 099 52 35W)					
JUN 1991					
01...	1950	370	21.0	21.5	356
04...	1300	9680	19.0	20.5	284
06442718 CAMPBELL C NR LEE'S CORNER SD (LAT 44 04 39N LONG 099 22 51W)					
NOV 1990					
29...	1800	0.02	1.0	3.0	3970
MAR 1991					
04...	1500	0.20	0.0	17.5	2690
APR					
01...	1040	0.14	6.0	16.0	3230
MAY					
10...	1140	0.16	19.5	26.0	2520
15...	1310	0.05	23.0	29.0	3130
16...	1410	123	17.0	18.0	745
21...	1445	5.2	25.0	27.0	1210
23...	1250	155	20.0	23.5	360
JUN					
01...	1415	289	19.5	20.5	623
04...	1210	341	19.5	24.0	337
06442900 ELM CR NEAR GANN VALLEY SD (LAT 44 04 38N LONG 099 09 03W)					
OCT 1990					
01...	1115	0.02	13.0	16.0	1330
MAR 1991					
04...	1555	0.32	4.0	--	1220
APR					
01...	1140	0.04	16.0	17.5	1420
MAY					
10...	1015	5.3	16.0	24.0	1410
15...	1225	0.29	22.5	29.0	1480
16...	1115	22	17.0	16.5	977
JUN					
01...	1250	102	21.5	19.5	537
04...	1430	388	20.5	22.0	496
04...	1735	508	20.5	19.5	439
05...	1040	1390	18.5	19.0	308
JUL					
19...	1350	0.16	29.0	31.5	1300
AUG					
23...	1445	0.02	29.0	31.5	1700

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06445685 WHITE R NR NE-SD STATE LINE (LAT 43 00 53N LONG 102 50 07W)

OCT 1990					
30...	1400	2.2	10.0	22.0	1000
DEC					
07...	0925	3.7	0.5	6.5	997
JAN 1991					
23...	0915	1.4	0.0	-4.0	910
MAR					
19...	1705	5.7	9.0	15.0	730
APR					
16...	0915	9.1	7.0	15.0	910
MAY					
22...	1130	300	20.0	16.0	584
JUN					
18...	0900	100	20.0	21.5	794
JUL					
30...	0915	85	22.0	28.0	1270
SEP					
10...	0930	12	20.0	17.0	1060

06445700 WHITE RIVER NEAR SLIM BUTTE SD (LAT 43 05 23N LONG 102 47 52W)

OCT 1990					
30...	1215	1.4	8.0	20.0	920
DEC					
07...	1125	2.5	0.5	10.0	1010
JAN 1991					
23...	1050	1.1	0.0	-2.0	1700
MAR					
19...	1550	24	8.0	21.0	730
APR					
16...	1200	8.7	10.0	11.0	1010
MAY					
12...	1935	560	--	23.5	--
13...	1200	1000	16.0	23.0	335
JUN					
18...	1115	120	22.0	24.0	889
JUL					
30...	1105	120	24.0	29.0	1040
SEP					
10...	1115	10	20.0	18.0	945

06445980 WHITE CLAY CR NEAR OGLALA SD (LAT 43 08 46N LONG 102 40 58W)

OCT 1990					
30...	1050	4.2	5.5	16.0	530
DEC					
06...	1245	5.7	0.5	6.0	580
JAN 1991					
22...	1230	2.8	0.0	3.0	600
MAR					
19...	1245	7.4	3.0	20.0	430
APR					
16...	1445	9.2	10.0	13.0	460
MAY					
22...	1520	12	20.0	19.0	502
JUN					
18...	1420	15	23.0	25.0	478
JUL					
30...	1345	9.1	23.5	33.0	421
SEP					
10...	1300	3.0	17.0	17.0	514

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06446000 WHITE R NEAR OGLALA SD (LAT 43 15 17N LONG 102 49 29W)					
OCT 1990					
30...	0920	0.03	6.0	9.0	1110
DEC					
06...	1055	4.6	0.5	5.0	1100
JAN 1991					
22...	0930	0.80	0.0	1.0	1550
MAR					
19...	1040	31	4.5	16.5	690
APR					
16...	1645	17	10.0	12.0	890
MAY					
14...	1730	1200	--	--	--
14...	1820	840	19.0	23.0	400
15...	1515	1000	17.5	18.0	400
JUN					
03...	1420	490	--	23.0	--
19...	1020	140	22.0	23.0	838
JUL					
30...	1525	19	24.5	34.0	818
SEP					
11...	1020	16	19.0	23.0	888
06447000 WHITE R NEAR KADOKA SD (LAT 43 45 09N LONG 101 31 28W)					
OCT 1990					
03...	1500	2.6	14.5	14.5	618
DEC					
06...	1345	11	0.5	9.0	868
MAR 1991					
11...	1350	129	6.5	11.0	462
APR					
09...	1355	14	13.0	13.0	638
MAY					
13...	1500	2030	20.0	28.0	449
21...	1815	374	24.0	26.0	504
JUN					
03...	1400	2250	19.5	22.5	500
13...	1400	569	27.0	32.0	497
AUG					
02...	1110	59	23.0	24.0	1040
SEP					
05...	1245	5.3	26.0	27.5	924
06447500 LITTLE WHITE R NEAR MARTIN SD (LAT 43 10 00N LONG 101 37 47W)					
OCT 1990					
31...	0930	12	8.0	15.0	221
DEC					
05...	1740	19	1.0	2.5	249
JAN 1991					
11...	1045	3.1	0.0	-10.0	320
FEB					
26...	1000	36	0.0	-3.5	209
APR					
10...	0940	19	7.0	9.0	258
MAY					
08...	0915	29	10.0	9.0	362
JUN					
12...	1740	54	26.0	28.5	371
JUL					
17...	0940	8.7	24.0	25.5	339
AUG					
19...	1920	12	25.0	26.5	347

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06449000 LAKE CR BELOW REFUGE NEAR TUTHILL SD (LAT 43 08 46N LONG 101 30 38W)					
OCT 1990					
30...	1550	2.5	14.0	23.0	564
DEC					
06...	1000	25	0.5	-1.0	576
JAN 1991					
10...	1730	20	0.5	-6.0	620
FEB					
26...	1130	8.4	1.0	0.0	221
APR					
09...	1645	34	10.0	14.5	309
MAY					
07...	1730	18	10.5	11.0	380
16...	1835	88	16.0	12.0	370
21...	0915	125	18.0	19.0	382
JUN					
13...	1000	171	23.5	25.0	375
JUL					
16...	1655	5.6	31.0	33.5	479
AUG					
19...	1710	54	24.5	27.5	458
06449100 LITTLE WHITE R NEAR VETAL SD (LAT 43 06 03N LONG 101 13 49W)					
OCT 1990					
30...	1355	30	12.5	21.0	310
DEC					
05...	1440	43	3.0	8.5	456
JAN 1991					
10...	1530	40	0.0	2.0	459
FEB					
26...	1350	56	1.5	5.0	256
APR					
10...	1220	70	8.5	16.0	294
MAY					
07...	1510	65	12.5	16.0	328
16...	1530	992	13.0	16.0	117
21...	1210	171	19.5	26.5	367
JUN					
12...	1430	274	24.0	29.0	368
JUL					
17...	1340	39	28.0	38.5	399
AUG					
19...	1430	97	24.0	34.0	390
06449300 LITTLE WHITE R ABV ROSEBUD SD (LAT 43 15 47N LONG 100 55 02W)					
FEB 1991					
27...	1040	115	1.0	6.0	286
MAY					
16...	1930	997	12.5	14.0	248
16...	2115	1550	12.5	14.0	222
17...	1430	646	13.0	16.0	--
21...	1745	209	24.0	30.0	360
JUL					
16...	1410	77	29.0	34.0	348

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06449400 ROSEBUD CR AT ROSEBUD SD (LAT 43 14 09N LONG 100 51 12W)					
OCT 1990					
10...	1440	6.5	10.5	18.5	353
DEC					
05...	1200	6.5	3.5	9.0	364
JAN 1991					
09...	1030	7.1	0.0	--	364
FEB					
25...	1600	9.6	3.0	0.0	355
APR					
10...	1700	7.3	11.0	17.0	332
MAY					
08...	1440	7.9	15.0	21.0	321
JUN					
11...	1550	7.7	25.0	28.5	344
JUL					
16...	1130	4.8	23.0	31.5	355
AUG					
21...	1420	4.6	24.5	29.5	324

06449500 LITTLE WHITE R NEAR ROSEBUD SD (LAT 43 19 32N LONG 100 53 00W)

OCT 1990					
10...	1245	70	8.0	18.0	302
DEC					
05...	1000	94	0.5	8.5	354
JAN 1991					
10...	1300	79	0.0	3.0	377
FEB					
26...	1645	121	2.0	0.0	301
APR					
10...	1515	122	11.0	17.5	295
MAY					
08...	1230	139	13.0	17.0	330
17...	1100	1010	13.0	14.0	213
20...	1605	272	21.0	23.0	272
JUN					
11...	1320	386	23.0	30.0	368
JUL					
16...	0930	90	24.0	29.0	361
AUG					
21...	1215	129	23.0	28.0	359

06450500 LITTLE WHITE R BELOW WHITE RIVER SD (LAT 43 36 05N LONG 100 44 58W)

OCT 1990					
10...	1045	68	7.5	10.5	310
DEC					
04...	1115	62	0.5	4.0	364
JAN 1991					
10...	1045	81	0.0	-2.0	--
FEB					
25...	1330	117	0.5	10.5	298
APR					
11...	1145	153	5.0	2.0	312
MAY					
08...	1700	144	18.0	25.0	353
17...	1005	1160	14.0	13.5	321
17...	1310	1820	14.0	13.5	325
20...	1310	312	21.0	25.5	340
JUN					
11...	0910	581	21.0	22.0	378
JUL					
15...	1620	83	32.0	38.0	368
AUG					
21...	1000	124	22.5	27.0	360

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06452000 WHITE R NEAR OACOMA SD (LAT 43 44 54N LONG 099 33 22W)					
OCT 1990					
02...	1130	73	16.0	25.0	563
JAN 1991					
14...	1420	0.38	0.0	2.0	2000
APR					
03...	1445	153	17.5	24.0	471
MAY					
20...	1430	4210	18.0	27.0	546
JUN					
01...	1700	4140	21.5	25.0	613
04...	1730	13200	19.0	15.0	569
06...	1700	8820	21.0	26.5	532
AUG					
23...	1215	178	23.0	31.0	487
06452320 PLATTE CREEK NEAR PLATTE SD (LAT 43 19 38N LONG 098 58 13W)					
JAN 1991					
08...	0900	0.01	0.0	-10.0	2120
FEB					
28...	1550	0.48	0.5	--	2830
APR					
01...	1540	0.49	14.0	23.5	2120
MAY					
09...	1620	0.89	20.0	25.0	2690
JUN					
06...	1150	97	22.0	30.0	860
06452330 CAMPBELL CREEK NEAR GEDDES SD (LAT 43 11 08N LONG 098 48 19W)					
MAY 1991					
09...	1745	0.58	--	--	3160
JUN					
06...	0845	0.94	19.0	20.5	2230
06453255 CHOTEAU CR NR AVON SD (LAT 42 55 24N LONG 098 06 21W)					
OCT 1990					
31...	0910	0.81	8.0	9.0	1510
DEC					
04...	1420	0.90	3.0	10.0	1550
FEB 1991					
07...	1035	0.64	1.0	5.5	1480
MAR					
21...	0920	0.70	8.0	8.0	1360
APR					
17...	1000	0.95	9.5	10.0	1360
MAY					
16...	1105	0.37	24.5	29.0	1430
JUN					
10...	1515	0.52	28.0	25.0	1350
JUL					
24...	1115	0.25	24.0	23.0	1450
AUG					
22...	0950	0.01	19.0	28.0	1620
06463900 ANTELOPE CR NEAR MISSION SD (LAT 43 16 26N LONG 100 40 56W)					
APR 1991					
11...	0845	3.9	5.5	2.0	429
MAY					
21...	1120	11	20.0	23.0	418
JUL					
15...	1740	0.11	31.0	33.5	498
AUG					
21...	1515	0.05	26.0	29.5	415

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06464100 KEYA PAHA R NEAR KEYAPAHA SD (LAT 43 07 45N LONG 100 06 24W)					
OCT 1990					
10...	1115	11	7.5	11.0	420
NOV					
28...	1100	9.6	0.5	3.0	523
JAN 1991					
08...	1430	3.0	0.0	-11.0	411
FEB					
27...	1600	40	0.0	5.5	287
APR					
05...	1310	28	17.5	23.5	459
MAY					
09...	0940	42	13.5	17.0	491
21...	0855	110	19.0	22.0	459
JUN					
05...	1050	615	19.5	21.0	266
JUL					
17...	1610	15	32.0	38.5	457
AUG					
21...	1745	11	30.0	31.0	382
06464500 KEYA PAHA R AT WEWELA SD (LAT 43 01 44N LONG 099 46 49W)					
OCT 1990					
10...	1315	33	8.0	14.0	409
NOV					
28...	1315	14	1.0	2.0	520
JAN 1991					
08...	1230	4.3	0.0	-10.0	414
FEB					
28...	1100	78	0.0	14.0	437
APR					
05...	1245	66	16.0	29.0	463
MAY					
09...	1200	95	15.5	20.5	482
20...	1840	210	20.0	23.0	436
JUN					
05...	1410	229	21.0	20.5	480
10...	1410	225	23.0	23.0	454
JUL					
17...	1830	27	33.0	38.0	455
AUG					
22...	0940	16	21.0	25.0	432
06467500 MISSOURI R AT YANKTON SD (LAT 42 51 58N LONG 097 23 37W)					
OCT 1990					
30...	1125	11400	13.0	18.5	900
DEC					
05...	1145	9250	5.0	8.5	750
JAN 1991					
14...	1235	13400	1.0	7.0	820
FEB					
06...	1030	10100	3.0	8.0	770
MAR					
20...	1115	7800	4.5	8.5	620
APR					
16...	1120	23600	11.5	14.0	760
MAY					
15...	1110	30700	18.0	28.0	750
JUN					
12...	1410	28900	23.0	34.0	670
JUL					
23...	1050	27000	27.0	24.0	740
AUG					
21...	1100	28800	25.0	29.0	760

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06471000 JAMES R AT COLUMBIA SD (LAT 45 36 13N LONG 098 18 36W)

JUL 1991					
01...	1350	34	25.5	26.0	1050
05...	1400	81	23.0	28.0	1150
11...	1550	115	25.0	30.0	1180
17...	1415	106	30.0	35.0	1220

06471200 MAPLE R AT ND-SD STATE LINE (LAT 45 56 20N LONG 098 27 08W)

JUN 1991					
13...	1115	2.6	26.0	30.5	600
JUL					
10...	1450	30	26.0	31.0	570
AUG					
07...	1745	0.58	21.5	23.0	750

06471500 ELM R AT WESTPORT SD (LAT 45 39 22N LONG 098 29 48W)

NOV 1990					
01...	0830	1.4	10.0	13.0	830
DEC					
13...	1030	1.6	1.0	-3.0	1040
FEB 1991					
06...	1410	3.2	2.0	9.0	970
MAR					
21...	0840	0.28	2.0	4.5	550
APR					
15...	1215	3.8	7.0	9.0	740
MAY					
14...	1255	8.3	23.0	31.0	640
JUN					
13...	0810	2.7	23.0	23.0	680
JUL					
10...	1115	48	26.0	27.0	620
AUG					
08...	0845	8.3	20.0	19.0	750
SEP					
03...	1010	10	20.5	22.0	940

06471550 JAMES RIVER BELOW COLUMBIA SD (LAT 45 36 17N LONG 098 18 18W)

OCT 1990					
31...	1035	0.16	8.0	18.0	1340
DEC					
12...	1030	0.56	1.0	1.0	1510
FEB 1991					
07...	1130	0.82	1.0	9.0	2400
MAR					
21...	1305	3.4	0.5	5.0	650
APR					
17...	1035	2.4	10.0	14.0	970
MAY					
15...	0950	4.8	20.0	21.0	1180
JUN					
12...	1050	7.7	25.0	33.0	1040
JUL					
01...	1640	210	26.0	25.5	720
05...	1105	172	23.0	29.0	820
11...	0920	164	24.0	29.0	1080
17...	1030	122	28.0	28.0	1150
AUG					
08...	1215	17	21.0	25.0	1200

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06473000 JAMES R AT ASHTON SD (LAT 45 00 02N LONG 098 28 57W)					
DEC 1990					
10...	1200	0.02	4.0	10.0	2100
FEB 1991					
06...	1000	0.07	1.0	6.0	2550
MAR					
20...	1210	1.5	3.0	5.0	1790
APR					
18...	1440	17	11.0	16.0	1490
MAY					
15...	1445	119	23.0	25.0	1420
JUN					
10...	1010	121	24.0	25.0	1380
14...	1135	154	23.0	28.0	1480
18...	1055	117	25.0	27.0	1440
25...	0905	87	22.5	24.5	1740
JUL					
12...	0950	106	24.0	21.0	1420
AUG					
09...	1400	102	23.0	26.0	1340
SEP					
06...	1115	0.90	20.0	22.0	1430
06474000 TURTLE CR NEAR TULARE SD (LAT 44 44 06N LONG 098 35 09W)					
MAR 1991					
20...	0845	0.26	3.0	8.0	1000
APR					
18...	1730	0.70	13.0	16.0	1600
MAY					
22...	0930	0.90	21.0	21.0	970
JUN					
03...	0925	25	23.0	31.0	580
05...	1405	67	18.0	22.0	350
10...	1715	361	26.0	28.0	430
JUL					
10...	0845	7.9	23.0	26.0	740
AUG					
09...	0955	1.5	22.0	25.0	840
06475000 JAMES R NEAR REDFIELD SD (LAT 44 54 33N LONG 098 27 34W)					
OCT 1990					
17...	0830	<0.05	--	--	--
MAR 1991					
20...	0955	<10	5.0	10.0	1950
APR					
18...	1550	E50	13.0	18.0	1610
MAY					
22...	1445	168	23.5	27.5	1340
JUN					
10...	1340	1810	25.0	27.0	630
JUL					
12...	1230	175	24.0	25.0	1250
AUG					
09...	1135	<150	22.0	27.0	1340
SEP					
06...	1230	<10	20.0	21.0	1320

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06476000 JAMES R AT HURON SD (LAT 44 21 49N LONG 098 11 56W)

MAY 1991					
20...	1145	211	17.0	25.0	1570
JUN					
03...	1415	934	21.0	23.0	740
05...	1745	1350	19.0	20.0	720
07...	1005	1550	20.0	20.0	530
10...	1235	1460	24.0	23.0	610
12...	1115	1500	24.0	24.5	680
14...	1125	1260	25.5	25.0	600
18...	1510	777	25.5	31.5	680
AUG					
29...	0940	32	25.5	25.0	1300

06476500 SAND CR NEAR ALPENA SD (LAT 44 09 15N LONG 098 26 06W)

MAR 1991					
19...	0945	<1.0	6.0	12.0	2320
APR					
26...	0730	<3.0	14.0	23.0	2000
MAY					
08...	0810	12	12.0	8.5	1730
JUN					
03...	1010	30	25.0	29.0	860
JUL					
08...	0850	<3.0	21.0	23.0	1190

06477000 JAMES R NEAR FORESTBURG SD (LAT 43 58 26N LONG 098 04 14W)

OCT 1990					
29...	1400	1.6	12.0	24.0	1780
DEC					
11...	1325	2.6	5.0	14.0	2210
FEB 1991					
04...	0930	3.9	1.0	5.0	2500
MAR					
19...	1515	10	9.0	17.0	2100
APR					
26...	1200	36	14.0	13.0	1680
MAY					
08...	1540	252	11.0	21.0	1510
JUN					
03...	1625	1550	25.0	31.0	960
07...	1030	2390	22.0	26.0	600
10...	1105	2480	21.0	26.0	630
JUL					
08...	1520	248	24.0	29.0	920
AUG					
05...	1350	141	24.0	23.0	1230
SEP					
05...	1345	22	24.0	30.0	1360

06477150 ROCK CR NEAR FULTON SD (LAT 43 45 39N LONG 097 54 25W)

FEB 1991					
05...	0750	<0.01	0.0	0.0	2760
MAR					
19...	0705	E1.0	--	--	1490
APR					
15...	0740	0.24	6.0	4.5	1910
MAY					
31...	1750	6.2	28.0	28.0	2000
JUN					
14...	1340	28	25.0	32.0	640

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06477500 FIRESTEEL CR NEAR MOUNT VERNON SD (LAT 43 46 30N LONG 098 14 33W)					
OCT 1990					
29...	1130	0.02	11.0	16.0	2070
DEC					
11...	1040	0.03	3.0	4.0	2690
FEB 1991					
04...	1215	0.11	2.0	14.0	4500
MAR					
19...	1310	0.10	12.0	20.0	1680
APR					
26...	1000	0.06	13.0	12.0	1800
MAY					
08...	1125	0.36	12.0	13.5	1910
JUN					
03...	1245	53	26.0	30.5	810
JUL					
08...	1145	1.1	22.0	17.0	1120
AUG					
05...	1020	0.03	23.0	20.5	1600
06478052 ENEMY CR NEAR MITCHELL SD (LAT 43 38 33N LONG 097 59 09W)					
APR 1991					
15...	0845	<1.0	7.5	7.0	1110
MAY					
31...	1625	241	25.0	29.0	420
06478390 WOLF CR NEAR CLAYTON SD (LAT 43 22 18N LONG 097 36 12W)					
FEB 1991					
05...	1100	E0.10	0.5	11.0	3090
APR					
15...	0945	<3.0	--	--	--
JUN					
13...	1500	E15	--	--	--
06478500 JAMES R NEAR SCOTLAND SD (LAT 43 11 09N LONG 097 38 07W)					
DEC 1990					
06...	1535	19	1.0	8.0	2040
MAR 1991					
19...	1040	48	4.5	8.5	1730
APR					
15...	1135	37	8.5	10.5	1990
JUN					
04...	1215	1620	25.0	27.0	640
13...	1100	1840	25.5	27.0	860
JUL					
22...	1020	184	27.0	27.0	1120
06478513 JAMES RIVER NR YANKTON SD (LAT 42 59 45N LONG 097 22 10W)					
OCT 1990					
29...	1520	20	12.0	11.0	1580
DEC					
05...	1610	24	1.0	5.0	1850
FEB 1991					
05...	1435	25	0.0	17.0	2330
MAR					
19...	1310	46	7.0	7.0	1700
APR					
15...	1405	30	12.0	15.0	1780
MAY					
14...	1915	204	25.5	30.0	2000
JUN					
04...	1430	1560	25.0	20.0	760
12...	0925	1640	25.0	29.5	890
JUL					
22...	1255	309	28.0	32.0	1000
AUG					
21...	1400	125	28.5	29.5	1340

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06478540 LITTLE VERMILLION R NEAR SALEM SD (LAT 43 47 39N LONG 097 22 02W)					
MAY 1991					
09...	1135	0.13	16.0	20.0	1660
JUN					
18...	1140	3.0	23.5	26.0	680
21...	1145	8.8	22.5	22.5	330
JUL					
16...	0925	E0.01	24.0	28.0	--
06478690 WEST FORK VERMILLION R NEAR PARKER SD (LAT 43 24 55N LONG 097 12 18W)					
MAR 1991					
27...	1210	0.02	0.0	-2.0	1250
APR					
17...	0825	E0.01	7.0	10.0	1100
MAY					
09...	1000	E0.01	12.5	10.5	1350
JUN					
21...	0915	384	22.5	22.0	330
JUL					
16...	1115	6.8	26.0	30.5	--
06479000 VERMILLION R NEAR WAKONDA SD (LAT 42 59 27N LONG 096 57 49W)					
APR 1991					
16...	1535	3.8	15.5	14.0	1110
JUN					
11...	1540	327	25.0	32.0	630
06479010 VERMILLION RIVER NR VERMILLION SD (LAT 42 49 02N LONG 096 55 26W)					
OCT 1990					
30...	1415	7.0	12.0	17.0	1850
DEC					
06...	1130	8.5	1.0	8.0	1790
FEB 1991					
06...	1415	8.8	0.5	20.0	1450
MAR					
20...	1355	16	9.0	14.0	1240
APR					
16...	1355	13	13.0	12.0	1490
MAY					
15...	1740	17	29.0	32.0	1580
JUN					
11...	1815	231	26.0	35.0	730
JUL					
23...	1430	39	25.5	32.0	1100
AUG					
21...	1845	9.6	31.5	33.5	1530
06479215 BIG SIOUX RIVER NR FLORENCE SD (LAT 45 10 51N LONG 097 11 09W)					
OCT 1990					
29...	1425	0.09	19.0	24.0	740
DEC					
10...	1335	0.09	3.0	10.0	720
MAR 1991					
26...	1730	1.0	4.0	11.5	460
APR					
15...	1835	8.8	1.5	2.0	710
MAY					
07...	0850	18	5.0	7.0	660
JUN					
12...	1335	16	25.5	30.5	650
JUL					
01...	1800	103	24.0	26.0	390
16...	1635	11	28.0	33.0	590
AUG					
21...	0725	15	21.0	19.0	630

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06479438 BIG SIOUX R NEAR WATERTOWN SD (LAT 45 00 22N LONG 097 09 53W)					
OCT 1990					
29...	1655	0.94	9.0	15.5	660
DEC					
10...	1525	1.2	2.5	5.0	740
MAR 1991					
27...	1050	5.2	0.5	0.0	380
APR					
16...	0805	23	1.0	0.5	690
MAY					
07...	1115	61	7.5	9.5	720
JUN					
13...	0900	28	25.5	24.0	640
21...	1025	2450	17.0	20.0	160
JUL					
01...	1450	917	23.0	25.0	300
17...	1305	29	28.0	35.0	590
AUG					
21...	0930	38	21.0	22.0	640
06479525 BIG SIOUX R NEAR CASTLEWOOD SD (LAT 44 43 54N LONG 097 02 39W)					
OCT 1990					
30...	1300	5.0	11.0	19.0	1250
DEC					
11...	0835	5.6	0.0	-1.0	1260
MAR 1991					
27...	1230	20	0.5	0.0	840
APR					
16...	1105	19	2.0	3.0	1030
MAY					
07...	1335	26	13.0	25.0	1130
JUN					
13...	1145	18	25.5	29.5	1030
21...	1655	540	20.0	20.0	280
JUL					
17...	1515	91	30.5	35.0	740
AUG					
21...	1110	166	22.5	25.0	640
06479640 HIDEWOOD CR NEAR ESTELLINE SD (LAT 44 36 42N LONG 096 54 17W)					
MAR 1991					
27...	1345	E20	3.5	-5.0	780
APR					
16...	1215	30	3.0	30.0	1200
MAY					
07...	1435	<25	12.0	18.0	1130
JUL					
01...	1115	E60	23.0	25.0	1000
06479928 BATTLE CR NEAR NUNDA SD (LAT 44 09 10N LONG 096 53 18W)					
OCT 1990					
31...	1600	E0.01	14.0	24.0	1510
MAR 1991					
28...	1300	1.2	4.0	--	1040
APR					
17...	1055	3.4	10.0	10.0	1370
MAY					
07...	1720	6.1	12.0	14.0	1710
JUN					
14...	1420	26	28.0	31.0	1150
JUL					
18...	1615	1.4	30.5	35.5	1200
AUG					
22...	0820	0.04	20.0	23.0	1150

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06479980 MEDARY CR NEAR BROOKINGS SD (LAT 44 13 27N LONG 096 46 06W)					
OCT 1990					
30...	1640	5.2	11.0	13.0	710
DEC					
11...	1125	6.6	0.0	3.0	840
MAR 1991					
27...	1645	E40	4.0	3.0	690
APR					
17...	0915	38	6.0	7.0	950
MAY					
07...	1555	<50	12.0	20.0	1000
JUN					
05...	0925	124	18.0	19.0	820
06480000 BIG SIOUX RIVER NEAR BROOKINGS SD (LAT 44 10 48N LONG 096 44 55W)					
OCT 1990					
31...	0820	52	7.0	10.0	950
DEC					
11...	1310	45	2.0	1.5	960
FEB 1991					
21...	1100	22	0.5	6.0	1010
MAR					
27...	1545	92	6.0	2.0	830
APR					
16...	1800	235	10.0	14.0	1110
MAY					
08...	0930	351	10.5	9.5	1080
JUN					
04...	1920	761	23.0	20.0	740
13...	1430	417	25.0	25.0	960
24...	1500	1380	20.5	22.0	520
JUL					
18...	0920	389	26.0	33.0	880
AUG					
21...	1730	229	26.0	29.0	800
06480400 SPRING CR NEAR FLANDREAU SD (LAT 44 07 18N LONG 096 35 19W)					
OCT 1990					
31...	1020	2.3	7.0	13.0	640
DEC					
12...	0845	3.0	0.0	-1.0	680
FEB 1991					
21...	1455	0.57	0.0	10.0	730
MAR					
28...	1135	17	0.0	0.0	750
APR					
16...	1615	8.4	10.0	11.0	730
MAY					
08...	1130	7.9	11.0	13.0	800
JUN					
14...	1225	3.5	25.5	28.0	750
JUL					
18...	1150	1.8	27.0	32.0	680
AUG					
21...	1545	1.3	27.0	27.5	520

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06480650 FLANDREAU CR ABOVE FLANDREAU SD (LAT 44 03 45N LONG 096 29 14W)					
OCT 1990					
31...	1245	2.3	11.0	19.0	910
DEC					
12...	1030	2.7	0.0	1.0	1000
FEB 1991					
21...	1700	0.76	--	--	1210
MAR					
28...	0930	14	1.0	-1.0	770
APR					
16...	1500	25	9.0	14.0	930
MAY					
08...	1330	17	11.5	15.5	870
JUN					
14...	1040	25	23.5	23.5	750
JUL					
18...	1345	3.3	30.0	34.0	770
AUG					
21...	1405	1.7	26.5	28.0	730
06481000 BIG SIOUX R NEAR DELL RAPIDS SD (LAT 43 47 25N LONG 096 44 42W)					
NOV 1990					
07...	1115	60	2.0	5.0	910
DEC					
13...	1500	58	0.5	5.0	1030
FEB 1991					
05...	0940	14	0.0	-1.0	1360
MAR					
25...	1150	107	7.5	17.5	670
APR					
15...	1040	146	8.0	8.0	850
MAY					
07...	1030	450	9.0	9.0	1240
JUN					
20...	1315	389	25.0	27.5	880
JUL					
16...	1650	803	28.0	34.0	--
AUG					
14...	1030	362	24.0	24.0	750
06481500 SKUNK CR AT SIOUX FALLS SD (LAT 43 32 01N LONG 096 47 26W)					
NOV 1990					
07...	1700	2.9	4.0	0.0	1050
DEC					
13...	0855	3.8	0.0	-7.0	1230
JAN 1991					
15...	1425	0.73	0.0	0.5	1700
FEB					
05...	1335	2.0	0.5	7.0	1080
MAR					
25...	1555	7.4	13.0	18.0	810
APR					
15...	1740	14	12.0	11.0	950
MAY					
07...	1805	16	14.0	15.0	1340
JUN					
20...	0740	7.6	22.5	24.0	1000
JUL					
17...	1700	11	32.0	37.5	--
AUG					
12...	1615	4.6	27.5	26.0	1000

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

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WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06482020 BIG SIOUX R AT NORTH CLIFF AVE AT SIOUX FALLS SD (LAT 43 34 01N LONG 096 42 39W)

NOV 1990					
07...	1435	73	5.0	3.0	1420
DEC					
12...	1435	67	4.0	4.0	1590
FEB 1991					
05...	1220	20	5.5	9.5	2310
MAR					
27...	0915	117	7.0	-3.0	1020
APR					
15...	1505	120	11.0	8.0	1170
MAY					
07...	1330	439	11.5	18.0	1280
JUN					
20...	1035	406	24.5	27.0	900
JUL					
19...	1320	528	27.0	31.0	820
AUG					
12...	1355	292	24.5	31.5	930

06482610 SPLIT ROCK CR AT CORSON SD (LAT 43 36 59N LONG 096 33 54W)

MAR 1991					
25...	1400	25	13.0	18.0	470
APR					
15...	1300	27	10.0	10.0	600

06482848 BEAVER CR AT CANTON SD (LAT 43 17 12N LONG 096 35 46W)

MAR 1991					
26...	1655	6.3	13.0	22.0	2520
APR					
16...	0925	5.3	--	--	2650
JUN					
14...	1000	37	30.0	24.0	630

06485500 BIG SIOUX R AT AKRON IA (LAT 42 50 14N LONG 096 33 41W)

NOV 1990					
08...	1200	191	3.0	6.5	1220
JAN 1991					
15...	1110	66	0.0	1.0	1520
FEB					
04...	1450	67	0.0	7.0	1460
APR					
16...	1420	736	13.0	13.0	1020
MAY					
08...	1420	801	--	25.5	1100
JUN					
11...	1225	1890	25.0	34.0	790
JUL					
17...	1240	777	30.0	38.0	--
AUG					
13...	1555	401	26.5	33.0	820

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06485696 BRULE CREEK NR ELK POINT SD (LAT 42 48 32N LONG 096 41 11W)

NOV 1990					
08...	1455	4.9	2.0	10.0	1200
DEC					
12...	0900	7.0	--	--	1240
FEB 1991					
04...	1140	12	0.0	6.0	900
MAR					
26...	0825	12	8.0	13.0	1050
APR					
16...	1700	21	15.0	--	1120
MAY					
08...	1720	20	17.5	22.5	1260
JUN					
19...	1520	9.8	29.5	33.0	830
JUL					
17...	1430	2.1	33.0	34.0	--
AUG					
13...	1335	5.0	24.0	29.0	750

MISCELLANEOUS DISCHARGE MEASUREMENTS

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The following miscellaneous discharge measurements were made in the state. Sites are listed in downstream order.

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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06405400 GRACE COOLIDGE CR NEAR FAIRBURN SD (LAT 43 46 13N LONG 103 20 28W)

JUN 1991					
12...	1200	35	18.0	24.0	153

06408000 SPRING CR NEAR RAPID CITY SD (LAT 43 59.20N LONG 103 15 55W)

MAY 1991					
12...	1305	36	--	21.0	--
13...	1300	38	--	24.0	--
17...	1223	--	14.5	20.0	276
24...	1030	98	14.0	18.0	285
29...	0655	147	--	--	--
29...	1610	155	18.0	20.0	265
JUN					
13...	1220	133	15.0	24.0	315
15...	1607	131	--	--	--

06412300 TITTLE SPRINGS AT RAPID CITY SD (LAT 44 02 42N LONG 103 19 37W)

APR 1991					
29...	1400	2.0	--	--	--
JUL					
01...	1530	2.3	--	--	--
AUG					
30...	0910	2.5	--	--	--

434244103205400 FRENCH CREEK (LAT 43 42 44N LONG 103 20 54W)

MAY 1991					
29...	1250	128	15.0	20.0	236
JUN					
05...	1810	144	18.0	22.0	214
12...	1510	44	22.0	25.0	233
27...	1640	10	24.5	26.5	264

434843103153000 GRACE COOLIDGE CREEK 3.5 MILES SW OF HERMOSA SD (LAT 43 48 43N LONG 103 15 30W)

NOV 1990					
07...	1350	0.69	2.0	7.0	960
JAN 1991					
03...	0830	0.30	--	--	--
JUL					
30...	1620	4.6	20.0	29.0	623
AUG					
29...	0730	2.7	17.0	15.0	683

06406950 HORSE CREEK AT HIGHWAY 385 NEAR HILL CITY SD (LAT 43 59 05N LONG 103 29 13W)

APR 1991					
14...	1230	0.14	6.5	2.5	260
25...	1820	0.16	6.0	15.0	228
MAY					
12...	1530	--	13.0	17.0	286
18...	1200	--	10.5	16.0	287
29...	1430	--	16.0	26.0	226
JUN					
21...	1240	--	13.5	18.0	229
26...	1633	--	18.0	30.5	230
JUL					
17...	0945	--	18.0	33.0	248

MISCELLANEOUS DISCHARGE MEASUREMENTS

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06430765 EAST SPEARFISH CREEK NEAR LEAD SD (LAT 44 17 44N LONG 103 52 10W)					
OCT 1990					
17...	0915	6.0	2.0	-3.0	435
NOV					
28...	1020	5.5	0.0	-4.0	430
JAN 1991					
09...	0955	3.7	0.0	-18.0	435
MAR					
11...	0910	4.4	2.0	0.0	454
APR					
29...	1300	8.0	3.0	-1.0	445
MAY					
15...	1300	15	9.0	11.5	418
JUN					
28...	1030	10	12.0	18.0	408
JUL					
22...	1400	6.8	15.0	23.0	420
SEP					
09...	1415	4.3	11.5	15.5	426
06406994 SPRING CR BLW SHERIDAN LAKE NR KEYSTONE SD (LAT 43 58 43N LONG 103 26 54W)					
JUL 1991					
16...	1600	--	20.5	31.0	247
06407000 SPRING CR NEAR HILL CITY SD (LAT 43 59 00N LONG 103 26 00W)					
APR 1991					
25...	1650	13	11.0	11.0	312
MAY					
12...	1440	--	11.5	18.0	304
JUN					
20...	0940	--	13.0	27.0	271
26...	1420	--	13.0	32.0	276

GROUND-WATER LEVELS

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The ground-water observation well network in South Dakota is used to monitor quantitative and at times qualitative changes in the glacial and bedrock aquifers. Federal, state, and local agencies monitor approximately 2,000 wells throughout the state. These wells are a sample of the South Dakota observation well network. All measurements are in feet above or below land-surface datum.

AURORA COUNTY

435039098263403.

LOCATION.--Lat 43°50'39", long 98°26'34", in SW¼SW¼SW¼NW¼ sec.6, T.104 N., R.63 W., Hydrologic Unit 10160011, 8.5 mi north-northeast of Plankinton. Owner: South Dakota Department of Water and Natural Resources.

AQUIFER.--Niobrara.

WELL CHARACTERISTICS.--Drilled artesian observation well, diameter 6 in., depth 134 ft, perforated 114 to 134 ft.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch.

DATUM.--Elevation of land-surface datum is 1,418 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing 2.0 ft above land-surface datum.

REMARKS.--Water levels affected by pumping of nearby well.

PERIOD OF RECORD.--April 1979 to current year.

EXTREMES.--Jan. 1, 1981, to current year: Maximum water level, 76.59 ft below land surface datum, Sept. 8, 1990; minimum water level, 51.21 ft below land surface datum, Apr. 17, 18, 1987.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67.79	64.05	62.04	60.58	59.58	58.80	58.46	57.65	57.13	56.81	67.84	67.78
2	67.59	64.00	62.03	60.60	59.57	58.88	58.38	57.67	57.12	56.82	68.04	67.25
3	67.32	64.01	61.94	60.59	59.50	58.88	58.35	57.63	57.11	56.83	68.24	66.81
4	67.20	63.95	61.90	60.54	59.55	58.79	58.34	57.52	57.06	56.82	68.38	66.56
5	67.06	63.79	61.69	60.42	59.55	58.68	58.31	57.52	57.04	57.13	68.63	66.15
6	66.90	63.71	61.64	60.46	59.56	58.79	58.22	57.47	57.05	58.73	68.88	---
7	66.90	63.70	61.57	60.45	59.57	58.79	58.19	57.43	57.05	59.76	68.99	---
8	66.79	63.54	61.49	60.31	59.49	58.78	58.22	---	57.01	60.59	69.13	---
9	66.66	63.41	61.44	60.31	59.45	58.80	58.24	57.35	56.95	61.23	69.23	---
10	66.48	63.33	61.42	60.28	59.45	58.75	58.24	57.31	56.98	61.82	69.36	---
11	66.24	63.31	61.29	60.18	59.41	58.63	58.20	57.32	56.96	62.38	69.48	---
12	66.21	63.29	61.30	60.17	59.37	58.61	58.12	57.29	56.89	62.89	69.56	---
13	66.00	63.20	61.32	60.04	59.23	58.63	58.02	57.24	56.86	63.31	68.99	---
14	65.86	63.03	61.25	59.99	59.34	58.63	57.99	57.21	56.83	63.59	68.00	---
15	65.80	62.96	61.12	59.99	59.37	58.63	57.92	57.22	56.87	63.93	68.65	---
16	65.69	62.99	61.12	59.98	59.25	58.60	57.96	57.22	56.88	64.28	69.12	---
17	65.49	62.96	61.04	59.97	59.17	58.57	57.96	57.21	56.85	64.56	69.47	---
18	65.50	62.76	60.96	59.94	59.13	58.52	57.93	57.22	56.90	64.80	69.71	---
19	65.35	62.70	60.97	59.83	59.12	58.52	57.96	57.21	56.90	65.17	69.86	---
20	65.15	62.60	60.97	59.92	59.06	58.48	57.96	57.16	56.86	65.54	69.89	---
21	65.15	62.46	60.97	59.92	59.10	58.50	57.91	57.58	56.87	65.87	68.97	---
22	65.02	62.46	60.91	59.77	59.12	58.50	57.81	58.67	56.89	66.16	69.51	---
23	64.90	62.39	60.87	59.78	59.06	58.60	57.79	58.49	56.87	66.35	69.93	---
24	64.91	62.31	60.79	59.79	59.10	58.63	57.79	57.99	56.84	66.53	70.21	---
25	64.81	62.29	60.80	59.80	59.10	58.60	57.75	57.77	56.81	66.75	70.39	---
26	64.63	62.20	60.79	59.75	59.02	58.52	57.69	57.56	56.75	66.90	70.54	---
27	64.58	62.13	60.72	59.60	58.95	58.51	57.63	57.44	56.80	67.02	70.68	---
28	64.56	62.19	60.61	59.67	58.87	58.51	57.67	57.40	56.80	67.22	70.78	---
29	64.35	62.20	60.67	59.69	---	58.53	57.66	57.31	56.81	67.35	70.13	---
30	64.26	62.06	60.67	59.60	---	58.53	57.64	57.20	56.79	67.47	69.09	---
31	64.21	---	60.59	59.62	---	58.47	---	57.12	---	67.56	68.35	---
MAX	67.79	64.05	62.04	60.60	59.58	58.88	58.46	---	57.13	67.56	70.78	---

GROUND-WATER LEVELS

BEADLE COUNTY

442112098174001.

LOCATION.--Lat 44°21'12", long 98°17'40", in SW¼SW¼SW¼NW¼ sec.9, T.110 N., R.62 W., Hydrologic Unit 10160006, at southwest corner of city well field, 3.5 mi west of Huron. Owner: City of Huron.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Drilled unused public supply artesian well, diameter 12 in., depth 74 ft, perforated 38 to 74 ft.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch.

DATUM.--Elevation of land-surface datum is 1,306.93 ft above National Geodetic Vertical Datum of 1929.

Measuring point: Top of platform 2.00 ft above land-surface datum.

REMARKS.--Water levels affected by pumping of nearby city wells.

PERIOD OF RECORD.--February 1954 to current year.

EXTREMES.--Jan. 1, 1981, to current year: Maximum water level, 53.40 ft below land surface datum, Nov. 6, 1989; minimum water level, 29.49 ft below land surface datum, June 28, 1987.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.43	49.80	48.50	48.67	49.37	48.16	48.31	44.58	41.48	40.29	41.06	40.76
2	45.18	50.02	48.54	48.74	49.39	47.78	48.15	44.29	41.40	40.36	41.03	40.68
3	45.04	50.10	48.49	48.73	49.24	47.89	48.25	43.98	41.36	40.32	41.15	40.95
4	45.06	50.11	48.49	48.65	49.35	47.88	48.33	43.71	41.21	40.27	41.17	40.90
5	44.91	49.84	48.33	48.59	49.57	48.14	48.34	43.64	41.28	40.18	41.07	40.76
6	45.24	50.08	48.40	48.67	49.93	48.45	48.17	43.41	41.31	40.21	41.11	40.76
7	45.36	50.16	48.20	48.68	49.99	48.76	48.48	43.34	41.28	40.32	41.08	40.65
8	45.40	49.84	48.20	48.51	49.68	49.81	48.85	43.25	41.17	40.35	41.11	40.49
9	45.44	49.85	48.20	48.60	49.67	49.89	49.02	42.94	41.10	40.18	41.12	40.71
10	45.37	49.84	48.25	48.50	49.75	49.65	49.28	42.87	41.15	40.16	41.10	40.75
11	45.41	50.04	48.02	48.33	49.72	49.36	49.49	42.87	41.06	40.09	41.11	40.61
12	45.40	50.12	48.36	48.36	48.58	48.68	49.50	42.70	40.91	40.16	41.11	40.55
13	45.02	50.03	48.47	48.03	49.10	49.04	48.02	42.60	40.82	40.21	41.10	40.49
14	45.12	49.70	48.28	49.10	49.59	49.17	48.09	42.46	40.78	40.16	40.99	40.27
15	45.13	50.02	48.27	49.22	49.70	49.27	48.25	42.40	40.95	40.10	40.82	40.38
16	45.03	50.14	48.30	49.34	47.55	49.32	48.38	42.38	40.99	40.14	40.72	40.43
17	45.20	50.06	48.30	49.38	47.91	49.35	48.49	42.43	40.90	40.03	40.72	40.48
18	45.20	49.78	48.11	49.38	48.24	49.25	48.66	42.49	41.06	39.98	40.77	40.59
19	44.92	49.75	48.11	49.38	48.35	49.29	48.83	42.44	41.03	40.03	40.73	40.65
20	45.03	49.82	48.82	49.64	48.37	48.10	48.89	42.31	40.87	40.12	40.55	40.50
21	45.00	49.14	49.16	49.67	48.47	48.62	48.77	42.10	40.84	40.17	40.59	40.25
22	44.80	49.14	49.20	49.25	47.95	48.67	48.56	41.98	40.86	40.55	40.58	40.39
23	44.99	48.88	48.96	49.54	48.26	49.03	48.66	41.94	40.81	40.65	40.58	40.39
24	44.98	48.64	48.69	49.69	48.56	49.11	48.73	41.97	40.72	40.75	40.57	40.35
25	46.75	48.70	48.81	49.54	48.61	49.04	48.66	41.91	40.56	40.91	40.47	40.20
26	47.52	48.41	48.79	49.36	48.57	47.40	49.45	41.72	40.49	40.95	40.47	40.21
27	48.83	48.43	48.56	49.03	48.43	47.62	48.69	41.82	40.49	41.01	40.47	40.15
28	48.91	48.74	48.48	49.47	48.35	47.91	46.70	41.75	40.46	41.12	40.58	40.17
29	49.29	48.77	48.61	49.70	---	48.13	45.61	41.64	40.45	41.14	40.65	40.06
30	49.52	48.40	48.65	49.45	---	48.19	---	41.48	40.30	41.04	40.72	40.22
31	49.63	---	48.46	49.49	---	48.22	---	41.45	---	41.17	40.80	---
MAX	49.63	50.16	49.20	49.70	49.99	49.89	---	44.58	41.48	41.17	41.17	40.95

GROUND-WATER LEVELS

389

CODINGTON COUNTY

450905097072202.

LOCATION.--Lat 45°09'05", long 97°07'22", in NW¼NW¼NW¼ sec.25, T.120 N., R.52 W., Hydrologic Unit 10170201, 10 mi north-northeast of Florence. Owner: U.S. Geological Survey.

AQUIFER.--Prairie Coteau.

WELL CHARACTERISTICS.--Drilled observation well, diameter 40 ft of 4 in., 40 ft of 3 in., 80 ft of 2 in., and 15 ft sand point, depth 172 ft.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch, driven by a manometer.

DATUM.--Elevation of land-surface datum is 1,828 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing 3.6 ft above land-surface datum.

REMARKS.--Water levels affected by pumping of nearby well.

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

EXTREMES.--Feb. 21, 1986, to current year: Maximum water level, 52.98 ft below land surface datum, July 29, 1988; minimum water level, 11.88 ft below land surface datum, July 4, 1986.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.32	21.63	20.10	---	---	18.25	17.58	17.05	16.37	15.68	27.84	24.18
2	26.03	21.61	20.09	---	---	18.39	17.54	17.08	16.35	15.65	27.61	23.58
3	25.67	21.61	20.01	---	---	18.31	17.53	17.08	16.33	15.60	27.10	24.10
4	25.48	21.60	19.98	---	---	18.18	17.57	16.95	16.28	15.54	26.21	24.83
5	25.24	21.46	19.89	---	---	18.15	17.51	16.95	16.26	15.49	25.44	23.93
6	25.00	21.40	19.93	---	---	18.24	17.45	16.89	16.24	15.45	24.72	23.18
7	24.94	21.40	19.79	---	---	18.24	17.45	16.87	16.21	15.42	24.15	22.63
8	24.74	21.24	19.79	---	---	18.21	17.56	16.86	16.17	15.42	23.58	22.15
9	24.59	21.16	19.75	---	---	18.24	17.63	16.80	16.12	15.34	23.13	21.79
10	24.36	21.08	19.71	---	---	18.15	17.64	16.76	16.11	15.29	22.70	21.54
11	24.13	21.02	19.66	---	---	18.09	17.60	16.77	16.11	15.29	22.32	21.27
12	24.06	21.01	19.66	---	---	18.10	17.56	16.74	16.20	15.58	21.98	20.95
13	23.80	20.95	19.72	---	---	18.13	17.44	16.73	16.28	16.07	21.64	20.69
14	23.65	20.78	19.60	---	---	18.14	17.42	16.70	16.31	17.23	21.30	20.39
15	23.59	20.76	19.58	---	---	18.11	17.39	16.70	16.31	18.52	20.98	20.16
16	23.42	20.77	19.58	---	---	18.08	17.46	16.67	16.32	19.17	20.76	19.97
17	23.22	20.75	---	---	---	18.05	17.49	16.70	16.27	20.33	20.52	19.81
18	23.19	20.62	---	---	---	18.02	17.43	16.72	16.39	21.62	20.31	19.62
19	23.04	20.57	---	---	---	18.02	17.45	16.73	16.47	23.75	20.10	19.49
20	22.84	20.45	---	---	18.32	17.93	17.48	16.69	16.52	24.58	19.92	19.30
21	22.81	20.41	---	---	18.36	17.91	17.43	16.65	16.47	26.91	19.99	19.08
22	22.66	20.41	---	---	18.38	17.91	17.36	16.63	16.46	26.87	20.80	18.89
23	22.55	20.33	---	---	18.41	17.93	17.39	16.63	16.39	26.40	22.31	18.84
24	22.50	20.29	---	---	18.52	17.94	17.40	16.66	16.29	27.15	23.32	18.68
25	22.40	20.31	---	---	18.50	17.91	17.27	16.67	16.22	27.83	24.29	18.48
26	22.21	20.26	---	---	18.36	17.83	17.27	16.62	16.10	27.46	24.28	18.39
27	22.15	20.20	---	---	18.29	17.55	17.34	16.60	16.08	27.83	26.90	18.26
28	22.15	20.22	---	---	18.25	17.59	17.35	16.60	16.08	26.86	27.44	18.16
29	21.94	20.22	---	---	---	17.61	17.36	16.52	15.98	26.42	26.91	18.03
30	21.89	20.09	---	---	---	17.61	17.04	16.46	15.91	27.75	25.89	17.93
31	21.80	---	---	---	---	17.56	---	16.42	---	---	24.90	---
MAX	26.32	21.63	---	---	---	18.39	17.64	17.08	16.52	---	27.84	24.83

GROUND-WATER LEVELS

LINCOLN COUNTY

431619096460202.

LOCATION.--Lat 43°16'19", long 96°46'02", in NE¼NE¼NE¼NE¼ sec.32, T.98 N., R.50 W., Hydrologic Unit 10170102, 4 mi south of Worthing. Owner: South Dakota Department of Water and Natural Resources.

AQUIFER.--Dakota Sandstone.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in, depth 383 ft, screened 363 to 383 ft.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch.

DATUM.--Elevation of land-surface datum is 1,320 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder platform 3.0 ft above land-surface datum.

PERIOD OF RECORD.--August 1979 to current year.

EXTREMES.--Jan. 1, 1981, to current year: Maximum water level, 170.73 ft below land surface datum, Sept. 29, 30, 1990; minimum water level, 151.81 ft below land surface datum, Feb. 21-23, 1981.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	169.57	---	---	---	---	169.27	169.70	169.62	169.63	170.11
2	171.44	---	169.58	---	---	---	---	169.27	169.70	169.62	169.63	170.13
3	171.39	---	169.57	---	---	---	---	169.27	169.70	169.62	169.63	170.13
4	171.36	---	169.56	---	---	---	---	169.28	169.70	169.62	169.63	170.13
5	171.36	---	169.52	---	---	---	---	169.28	169.70	169.62	169.63	170.14
6	171.35	---	169.46	---	---	---	---	169.29	169.70	169.62	169.65	170.15
7	171.36	---	169.45	---	---	---	---	169.30	169.70	169.62	169.67	170.16
8	---	---	169.41	---	---	---	---	169.31	169.70	169.61	169.68	170.18
9	---	170.21	169.37	---	---	---	---	169.31	169.70	169.60	169.70	170.20
10	---	170.16	169.34	---	---	---	---	169.34	169.70	169.59	169.76	170.22
11	---	170.13	169.31	---	---	---	---	169.37	169.70	169.58	169.84	170.25
12	---	170.12	170.22	---	---	---	---	169.40	169.70	169.58	169.94	170.27
13	---	170.11	170.26	---	---	---	---	169.41	169.70	169.58	169.98	170.29
14	---	170.06	---	---	---	---	---	169.41	169.70	169.58	169.98	170.32
15	---	169.98	---	---	---	---	---	169.43	169.70	169.58	169.98	170.33
16	---	169.98	---	---	---	---	---	169.43	169.70	169.58	169.99	170.34
17	---	169.99	---	---	---	---	169.33	169.45	169.70	169.58	170.00	170.35
18	---	169.94	---	---	---	---	169.32	169.47	169.69	169.58	170.02	170.35
19	---	169.89	---	---	---	---	169.31	169.50	169.68	169.58	170.04	170.36
20	---	169.84	---	---	---	---	169.30	169.55	169.67	169.58	170.08	170.37
21	---	169.75	---	---	---	---	169.30	169.58	169.65	169.58	170.10	170.38
22	---	169.70	---	---	---	---	169.30	169.59	169.64	169.58	170.11	170.38
23	---	169.68	---	---	---	---	169.29	169.60	169.64	169.58	170.12	170.39
24	---	169.65	---	---	---	---	169.28	169.60	169.64	169.58	170.12	170.40
25	---	169.61	---	---	---	---	169.27	169.61	169.64	169.58	170.12	170.40
26	---	169.61	---	---	---	---	169.28	169.61	169.64	169.58	170.12	170.40
27	---	169.55	---	---	---	---	169.28	169.64	169.64	169.58	170.12	170.40
28	---	169.58	---	---	---	---	169.28	169.64	169.64	169.59	170.12	170.40
29	---	169.60	---	---	---	---	169.28	169.66	169.64	169.60	170.12	170.40
30	---	169.60	---	---	---	---	169.28	169.68	169.64	169.61	170.12	170.40
31	---	---	---	---	---	---	---	169.68	---	169.63	170.12	---
MAX	---	---	---	---	---	---	---	169.68	169.70	169.63	170.12	170.40

GROUND-WATER LEVELS

391

MARSHALL COUNTY

454745097450401.

LOCATION.--Lat 45°47'45", long 97°45'04", in SE¼NE¼SE¼ sec.23, T.127 N., R.58 W., Hydrologic Unit 09020105, within city limits of Britton. Owner: City of Britton.

AQUIFER.--Dakota Sandstone.

WELL CHARACTERISTICS.--Drilled unused public supply artesian well, diameter 8 in, depth 1,060 ft.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch.

DATUM.--Elevation of land-surface datum is 1,360 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder platform 2.50 ft above land-surface datum.

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

EXTREMES.--Jan. 1, 1981, to current year: Maximum water level, 44.98 ft below land surface datum, Aug. 4, 1982; minimum water level, 41.23 ft below land surface datum, Mar. 5, 1991.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41.88	41.82	41.90	41.90	41.68	41.63	41.85	41.62	41.52	41.44	41.65	41.86
2	41.78	41.96	41.91	41.91	41.69	41.73	41.78	41.72	41.54	41.47	41.62	41.75
3	41.76	41.96	41.92	41.89	41.64	41.70	41.78	41.66	41.53	41.48	41.74	41.92
4	41.76	41.94	41.90	41.83	41.75	41.53	41.77	41.61	41.55	41.47	41.79	41.89
5	41.74	41.80	41.81	41.84	41.75	41.50	41.70	41.59	41.59	41.44	41.73	41.85
6	41.94	41.90	41.84	41.92	41.85	41.67	41.63	41.56	41.60	41.48	41.74	41.85
7	42.01	41.90	41.72	41.89	41.84	41.65	41.80	41.63	41.56	41.61	41.77	41.81
8	42.05	41.70	41.72	41.83	41.74	41.73	41.81	41.61	41.51	41.67	41.79	41.74
9	42.05	41.75	41.80	41.87	41.80	41.73	41.84	41.50	41.47	41.58	41.79	41.87
10	41.90	41.80	41.79	41.82	41.81	41.67	41.83	41.59	41.54	41.59	41.77	41.89
11	41.86	41.93	41.57	41.73	41.81	41.57	41.88	41.62	41.57	41.54	41.81	41.84
12	41.85	41.92	41.73	41.71	41.70	41.68	41.88	41.56	41.53	41.56	41.85	41.78
13	41.68	41.88	41.76	41.53	41.60	41.73	41.79	41.59	41.51	41.65	41.82	41.78
14	41.78	41.66	41.64	41.61	41.78	41.73	41.71	41.57	41.53	41.59	41.74	41.67
15	41.79	41.87	41.66	41.64	41.81	41.73	41.67	41.51	41.61	41.52	41.66	41.72
16	41.77	41.93	41.65	41.66	41.58	41.73	41.77	41.53	41.62	41.56	41.66	41.81
17	41.83	41.88	41.66	41.68	41.63	41.72	41.79	41.65	41.59	41.55	41.73	41.92
18	41.84	41.75	41.57	41.65	41.64	41.65	41.81	41.71	41.71	41.52	41.79	42.05
19	41.71	41.75	41.71	41.65	41.68	41.62	41.85	41.68	41.71	41.59	41.77	42.07
20	41.79	41.66	41.76	41.80	41.60	41.50	41.84	41.63	41.56	41.62	41.71	41.97
21	41.81	41.64	41.78	41.80	41.76	41.54	41.78	41.54	41.63	41.64	41.73	41.78
22	41.70	41.64	41.71	41.50	41.82	41.52	41.65	41.53	41.67	41.65	41.75	41.92
23	41.82	41.67	41.71	41.72	41.76	41.68	41.71	41.55	41.65	41.72	41.78	41.93
24	41.84	41.69	41.70	41.81	41.87	41.75	41.70	41.62	41.63	41.67	41.77	41.94
25	41.83	41.74	41.80	41.81	41.85	41.71	41.67	41.60	41.57	41.71	41.72	41.85
26	41.71	41.65	41.80	41.64	41.77	41.55	41.61	41.52	41.57	41.70	41.69	41.86
27	41.91	41.67	41.69	41.46	41.62	41.57	41.53	41.64	41.68	41.68	41.71	41.87
28	41.90	41.87	41.72	41.76	41.56	41.70	41.61	41.63	41.68	41.70	41.73	41.89
29	41.78	41.85	41.84	41.78	---	41.78	41.60	41.53	41.63	41.67	41.82	41.86
30	41.82	41.77	41.82	41.70	---	41.76	41.56	41.47	41.56	41.62	41.89	41.96
31	41.77	---	41.73	41.71	---	41.84	---	41.46	---	41.68	41.91	---
MAX	42.05	41.96	41.92	41.92	41.87	41.84	41.88	41.72	41.71	41.72	41.91	42.07

GROUND-WATER LEVELS

SHANNON COUNTY

430027102311801.

LOCATION.--Lat 43°00'27", long 102°03'18", in SW 1/4 sec.17, T.35 N., R.44 W., Hydrologic Unit 10140201, 2.5 mi southeast of Pine Ridge. Owner: Oglala Sioux Tribe.

AQUIFER.--Arikaree.

WELL CHARACTERISTICS.--Drilled artesian production well, diameter 16 in, depth 180 ft, slotted from 60 to 180 ft. Inside is a 12-in steel liner from -2.00 to 60 ft with a 12-in diameter wire-wrapped screen from 60 to 140 ft. Annular space is filled with Luther Mattox Type C well gravel.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch.

DATUM.--Elevation of land-surface datum is 3,296 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of steel casing 2.00 ft above land-surface datum.

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

EXTREMES.--June 9, 1989, to current year: Maximum water level, 43.02 ft below land surface datum, Sept. 3, 1991; minimum water level, 42.74 ft below land surface datum, Mar. 11, 1990.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42.86	42.88	42.93	42.93	42.91	42.91	42.89	42.93	42.97	42.97	42.91	42.93
2	42.85	42.92	42.92	42.96	42.88	42.90	42.91	42.93	42.92	42.96	42.97	42.96
3	42.85	42.92	42.93	42.95	42.92	42.89	42.93	42.93	42.92	42.94	42.97	43.02
4	42.88	42.87	42.87	42.86	42.94	42.88	42.92	42.95	42.94	42.92	42.94	42.95
5	42.89	42.88	42.93	42.92	42.92	42.91	42.90	42.94	42.99	42.91	42.93	42.94
6	42.92	42.94	42.93	42.95	42.96	42.92	42.88	42.92	42.94	42.94	43.01	42.92
7	42.91	42.90	42.87	42.87	42.92	42.90	42.95	42.93	42.92	42.99	42.97	42.92
8	42.89	42.89	42.88	42.90	42.89	42.95	42.95	42.90	42.94	42.94	42.97	42.96
9	42.89	42.88	42.89	42.88	42.91	42.93	42.96	42.87	42.96	42.93	42.94	42.99
10	42.81	42.90	42.85	42.90	42.89	42.85	42.88	42.96	42.95	42.94	42.94	42.96
11	42.90	42.90	42.87	42.91	42.89	42.89	42.92	42.93	42.89	42.97	42.96	42.94
12	42.86	42.90	42.92	42.86	42.85	42.92	42.92	42.93	42.91	42.97	42.98	42.95
13	42.85	42.85	42.90	42.86	42.89	42.92	42.91	42.91	42.96	42.95	42.95	42.92
14	42.88	42.84	42.89	42.89	42.93	42.89	42.90	42.87	42.94	42.91	42.92	42.97
15	42.86	42.95	42.90	42.89	42.92	42.89	42.93	42.93	42.97	42.95	42.92	42.96
16	42.84	42.95	42.88	42.92	42.84	42.90	42.93	42.93	42.92	42.94	42.95	42.97
17	42.95	42.84	42.86	42.90	42.88	42.91	42.91	42.95	42.98	42.93	42.95	43.00
18	42.89	42.86	42.91	42.89	42.93	42.93	42.94	42.95	42.97	42.98	42.96	42.99
19	42.88	42.82	42.93	42.91	42.93	42.88	42.95	42.92	42.96	42.94	42.93	42.97
20	42.91	42.80	42.92	42.93	42.89	42.85	42.92	42.91	42.94	42.94	42.93	42.91
21	42.89	42.90	42.91	42.89	42.94	42.88	42.88	42.90	42.94	42.94	42.95	43.00
22	42.87	42.90	42.88	42.87	42.94	42.91	42.88	42.93	42.96	42.99	42.95	43.01
23	42.92	42.89	42.89	42.91	42.91	42.94	42.89	42.94	42.93	42.98	42.95	42.99
24	42.91	42.86	42.92	42.94	42.95	42.91	42.88	42.93	42.91	42.96	42.93	42.98
25	42.86	42.85	42.94	42.94	42.92	42.86	42.86	42.91	42.92	42.94	42.93	42.96
26	42.94	42.88	42.91	42.88	42.91	42.88	42.87	42.93	42.93	42.96	42.93	42.95
27	42.95	42.89	42.83	42.83	42.85	42.91	42.88	42.96	42.94	42.95	42.92	42.95
28	42.83	42.95	42.92	42.94	42.81	42.91	42.92	42.92	42.92	42.95	42.96	42.92
29	42.87	42.92	42.93	42.92	---	42.95	42.93	42.92	42.92	42.97	42.98	43.01
30	42.88	42.92	42.90	42.90	---	42.94	42.95	42.88	42.95	42.95	42.98	43.01
31	42.84	---	42.88	42.91	---	42.94	---	42.94	---	42.97	42.96	---
MAX	42.95	42.95	42.94	42.96	42.96	42.95	42.96	42.96	42.99	42.99	43.01	43.02

GROUND-WATER LEVELS

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SHANNON COUNTY--Continued

430027102311806.

LOCATION.--Lat 43°00'27", long 102°31'18" in SW¼NW¼SE¼ sec.17, T.35 N., R.44 W., Hydrologic Unit 10140201,
2.5 mi southeast of Pine Ridge. Owner: Oglala Sioux Tribe.

AQUIFER.--Arikaree.

WELL CHARACTERISTICS.--Drilled artesian production well, diameter 12 in., depth 835 ft, 12-in steel casing from
0 to 505 ft. Alternating 8-in screen and casing from 505 to 835 ft.

INSTRUMENTATION.--Digital water-level recorder -- 60-minute punch.

DATUM.--Elevation of land-surface datum is 3,296 ft above National Geodetic Vertical Datum of 1929. Measuring
point: Top of steel casing 2.09 ft above land-surface datum.

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

EXTREMES.--June 9, 1989, to current year: Maximum water level, 37.80 ft below land surface datum, Oct. 18,
1990; minimum water level, 36.52 ft below land surface datum, Apr. 26, 1991.

DEPTH, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37.21	37.13	37.18	37.14	37.00	36.81	36.93	36.84	36.74	36.81	36.82	36.88
2	37.08	37.25	37.16	37.18	36.99	36.84	36.88	36.83	36.74	36.84	36.87	36.85
3	37.13	37.24	37.19	37.18	37.00	36.83	36.94	36.78	36.71	36.85	36.92	37.00
4	37.16	37.24	37.16	37.13	37.04	36.78	36.95	36.88	36.73	36.80	36.90	36.94
5	37.14	37.10	37.16	37.10	36.99	36.75	36.89	36.87	36.77	36.74	36.81	36.88
6	37.27	37.23	37.20	37.15	37.11	36.85	36.81	36.84	36.77	36.78	36.84	36.85
7	37.28	37.24	37.12	37.05	37.09	36.84	36.89	36.82	36.76	36.88	36.81	36.81
8	37.27	37.11	37.09	37.07	36.99	36.95	36.94	36.80	36.73	36.87	36.87	36.83
9	37.27	37.13	37.11	37.05	37.01	36.94	36.97	36.70	36.76	36.82	36.83	36.92
10	37.14	37.13	37.05	37.03	37.00	36.82	36.87	36.81	36.81	36.80	36.80	36.92
11	37.20	37.19	36.98	37.05	36.94	36.76	36.85	36.83	36.73	36.84	36.82	36.82
12	37.19	37.19	37.13	37.01	36.88	36.87	36.86	36.81	36.73	36.91	36.86	36.81
13	37.06	37.15	37.11	36.94	36.90	36.89	36.87	36.83	36.68	36.89	36.86	36.79
14	37.13	37.05	37.02	36.98	37.02	36.87	36.83	36.75	36.69	36.83	36.79	36.76
15	37.13	37.26	37.03	36.99	37.02	36.86	36.87	36.81	36.82	36.79	36.75	36.84
16	37.08	37.27	37.01	37.03	36.81	36.87	36.91	36.84	36.77	36.81	36.80	36.88
17	37.25	37.15	37.01	37.04	36.80	36.88	36.89	36.85	36.78	36.81	36.84	36.93
18	37.24	37.08	36.99	37.04	36.91	36.91	36.89	36.88	36.85	36.81	36.87	36.95
19	37.11	37.05	37.05	37.02	36.92	36.87	36.90	36.84	36.84	36.81	36.83	36.95
20	37.22	36.98	37.10	37.07	36.87	36.68	36.87	36.81	36.79	36.81	36.81	36.85
21	37.23	37.04	37.11	37.06	36.97	36.74	36.77	36.77	36.84	36.83	36.85	36.86
22	37.14	37.06	37.07	36.92	36.98	36.80	36.74	36.79	36.85	36.93	36.84	36.95
23	37.25	37.08	37.05	37.02	36.94	36.90	36.76	36.83	36.82	36.96	36.84	36.93
24	37.27	36.99	37.05	37.05	37.02	36.88	36.75	36.86	36.79	36.94	36.81	36.94
25	37.19	37.00	37.11	37.07	36.98	36.79	36.70	36.83	36.73	36.89	36.82	36.90
26	37.21	37.00	37.06	37.00	36.97	36.75	36.60	36.79	36.77	36.85	36.80	36.91
27	37.30	37.05	36.96	36.86	36.86	36.81	36.65	36.85	36.82	36.88	36.78	36.85
28	37.19	37.23	37.05	37.02	36.74	36.84	36.72	36.79	36.78	36.90	36.83	36.86
29	37.15	37.21	37.10	37.02	---	36.94	36.76	36.76	36.73	36.88	36.90	36.92
30	37.17	37.15	37.07	36.98	---	36.96	36.83	36.62	36.74	36.82	36.93	36.97
31	37.12	---	37.06	36.98	---	36.98	---	36.71	---	36.85	36.93	---
MAX	37.30	37.27	37.20	37.18	37.11	36.98	36.97	36.88	36.85	36.96	36.93	37.00

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons



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