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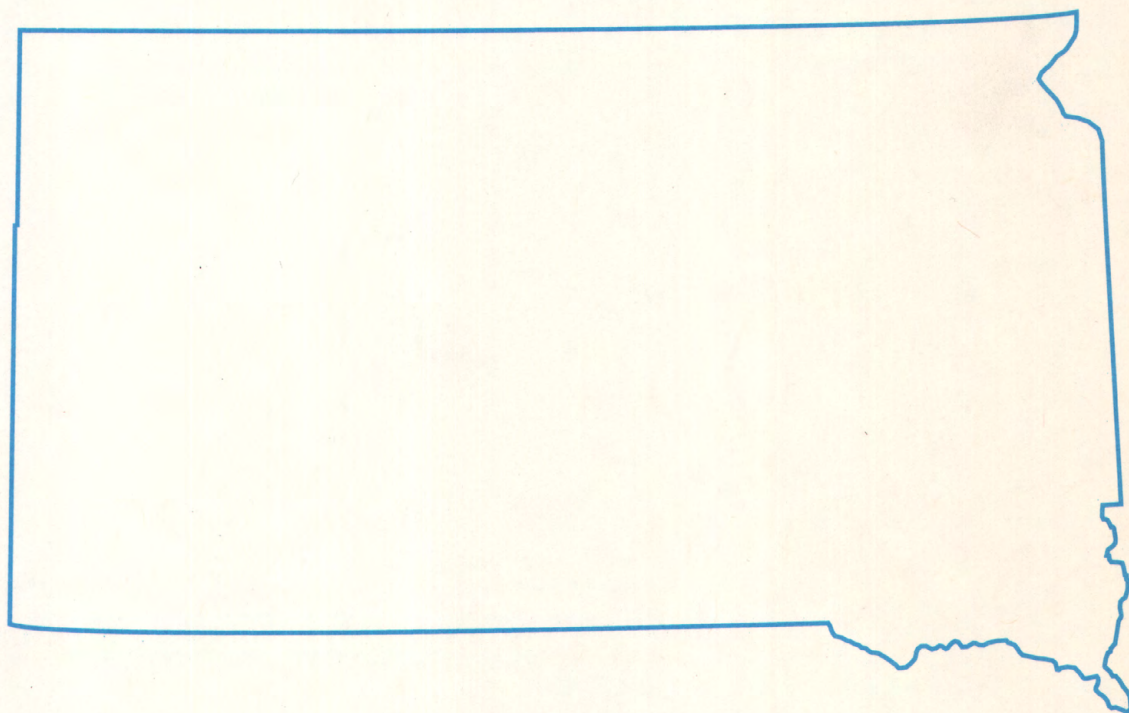


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Water Resources Data South Dakota Water Year 1993



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-93-1
Prepared in cooperation with the State of South Dakota
and with other agencies

CALENDAR FOR WATER YEAR 1993

1992

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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1993

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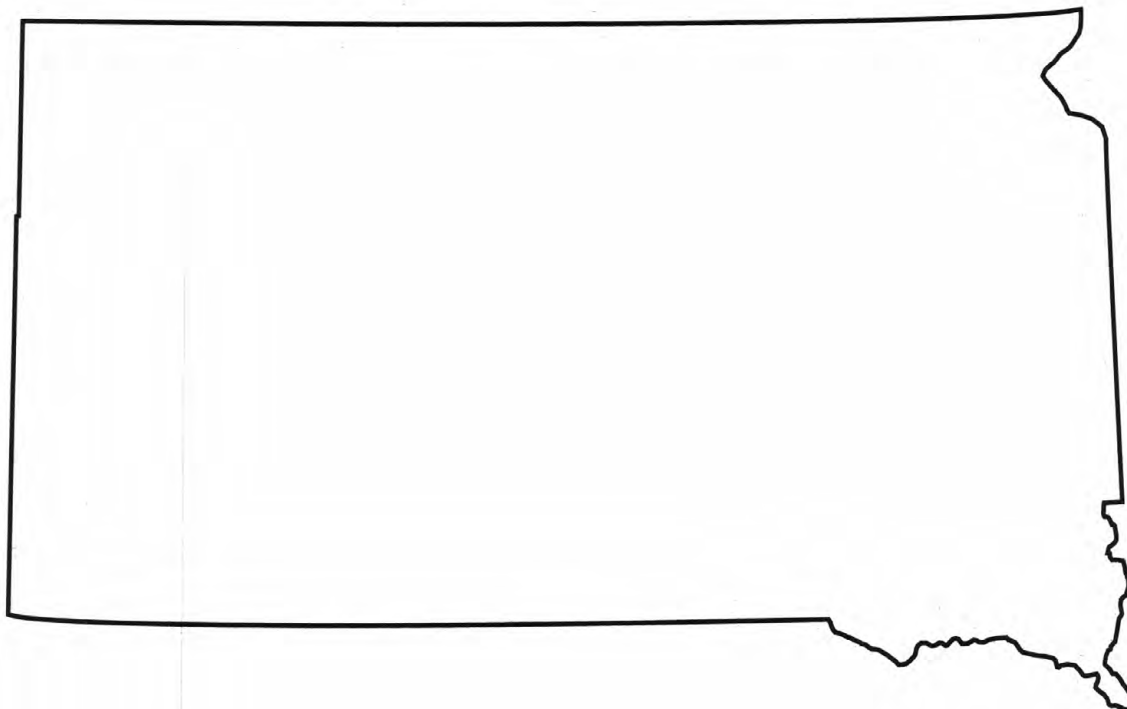
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Water Resources Data South Dakota Water Year 1993

by M.J. Burr, S.K. Sando, R.W. Teller, and K.L. Lindskov



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-93-1
Prepared in cooperation with the State of South Dakota
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

Gordon P. Eaton, Director

For information on the water program in South Dakota write to
District Chief, Water Resources Division
U.S. Geological Survey
1608 Mt. View Road
Rapid City, South Dakota 57702

1994

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.

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 K.L. Lindskov, District Chief, and R.W. Teller, Chief, Hydrologic Data Collection and Analysis Section. South Dakota personnel who contributed significantly to the collecting, processing, and tabulating the data, and typing the manuscript were:

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15. Supplementary Notes Prepared in cooperation with the State of South Dakota and with other agencies.				
16. Abstract (Limit: 200 words) Water resources data for the 1993 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 142 streamflow-gaging stations; stage and contents records for 11 lakes and reservoirs, stage for 6 streams and 4 lakes; water-quality records for 12 streamflow-gaging stations, 4 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 46 sites; and 25 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, *Precipitation, *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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WATER RESOURCES DATA - SOUTH DAKOTA, 1993

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with Federal, State, and local 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 142 streamflow-gaging stations; (2) stage and contents records for 11 lakes and reservoirs, stage for 6 stream sites and 4 lakes; (3) water-quality records for 12 streamflow-gaging stations, 4 daily sediment stations, 3 wells, 9 ungaged streamsites, 7 lakes, 1 sewage lagoon, and 1 precipitation site; (4) water levels for 7 wells; (5) precipitation records at 46 sites; and (6) 25 partial-record crest-stage gage stations. Locations of these sites are shown in figures 5, 6, and 7. Miscellaneous hydrologic data were collected at 25 measuring sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey.

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 the Books and Open-File Reports Section, Federal Center, Box 25425, Denver Colorado 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report SD-93-1." 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. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on back of title page or by telephone (605) 394-1781. A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver Colorado 80225.

COOPERATION

The U.S. Geological Survey and agencies of the State of 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; Stanley County Irrigation District; Belle Fourche Irrigation District; 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 Agriculture, U.S. Forest Service; 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 K. L. Lindskov

Water year 1993 was eventful in terms of hydrologic conditions. Extreme flooding occurred in the east-central and southeastern parts of the State. Streamflow generally was much above normal during March to September; setting new records for some gaging stations, especially in the southeast. The level of Lake Oahe on September 30, 1993, was 29.73 feet higher than the recent low level on October 30, 1989. Precipitation for water year 1993 at the National Weather Service station in Sioux Falls exceeded the previous annual high of 36.02 inches in 1909.

Precipitation

Precipitation for water year 1993 was greater than normal statewide, ranging from 2.29 inches greater than normal in the south-central part of the State to 11.96 inches greater than normal in the southeast (table 1). The south-central part of the State was the only division out of the nine shown in figure 1 that did not have annual precipitation that was 4.8 or more inches greater than normal.

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	2.07	+0.39	4.50	+1.16	14.44	+3.35	22.80	+6.99
North Central	2.31	+.31	3.52	-.31	11.81	+.13	22.17	+4.80
Northeast	2.41	-.07	4.26	-.39	14.88	+2.11	27.77	+7.70
Black Hills	3.03	+.36	5.99	+.56	19.34	+4.05	26.74	+5.05
Southwest	1.87	+.11	4.14	+.58	14.65	+3.18	22.61	+6.04
Central	1.82	-.16	4.29	+.38	14.82	+3.19	22.77	+5.39
East Central	2.70	-.08	5.18	-.10	19.29	+5.31	29.77	+8.27
South Central	1.32	-1.01	3.57	-1.08	14.73	+1.07	22.76	+2.29
Southeast	4.35	+1.40	7.05	+1.44	21.59	+6.52	35.25	+11.96

¹Based on data from 1951 to 1980 for October through December and 1961-90 thereafter.

²Shown in figure 1.

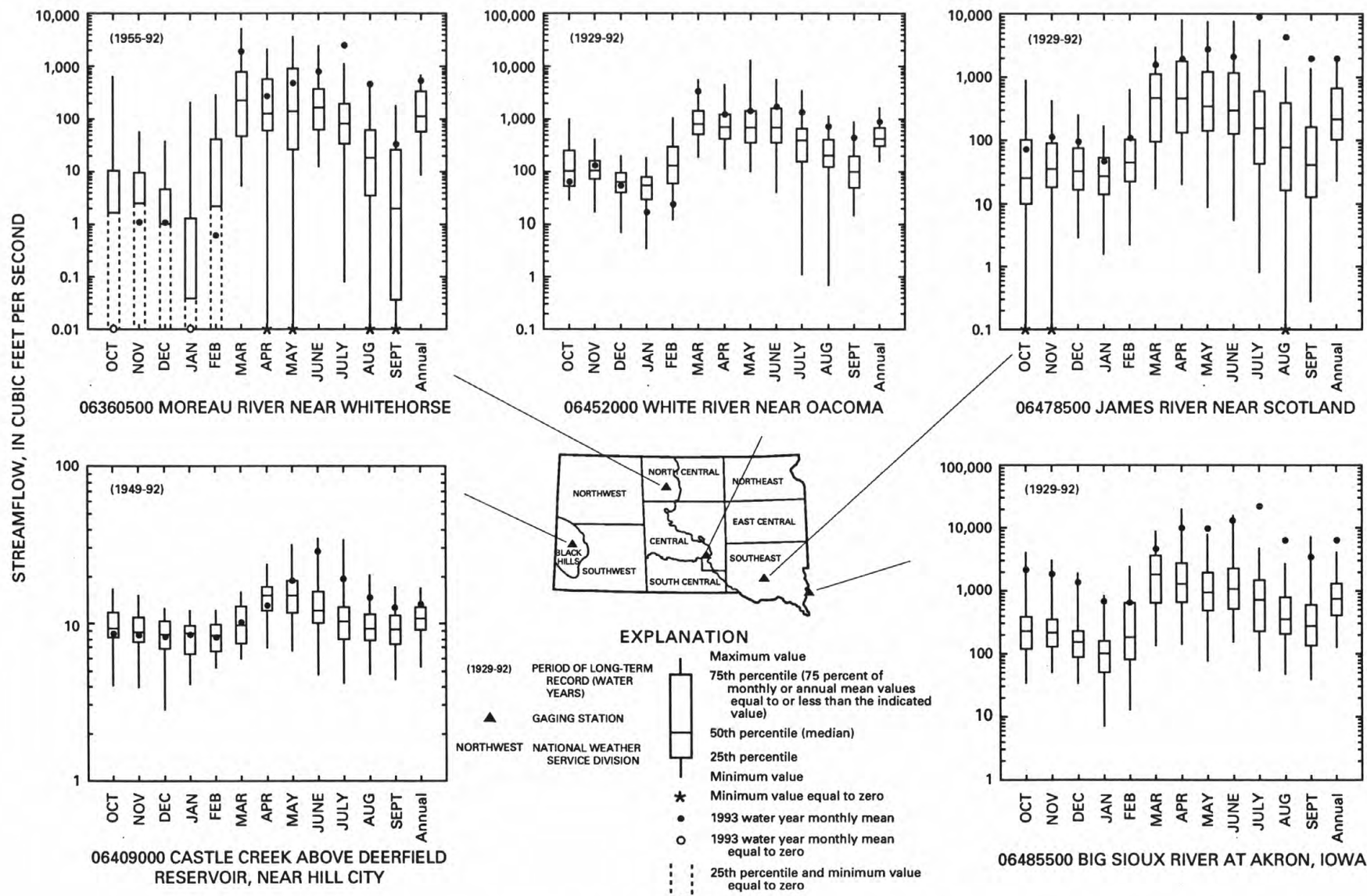


Figure 1.--Comparison of 1993 monthly and annual means to long-term distributions of monthly and annual mean flows at five representative gaging stations.

Precipitation for the first one-half of water year 1993 was within 0.6 inch of normal for six of the State's nine divisions depicted in figure 1. Precipitation for the first one-half of water year 1993 was 1.08 inches less than normal for the south-central division, while corresponding values were 1.44 and 1.16 inches greater for the southeast and northwest divisions. Precipitation was greater than normal statewide for the third and fourth quarters of water year 1993. Annual precipitation in the eastern part of the State for water year 1993 was more than 7 inches greater than normal with a maximum of 11.96 inches greater than the normal of 23.29 inches for the southeast part of the State.

Surface Water

Annual streamflow for water year 1993, as recorded at five representative gaging stations, averaged 640 percent of the long-term median (normal) streamflow. Annual streamflow ranged from 123 percent of median for Castle Creek above Deerfield Reservoir, near Hill City to 933 percent of median for James River at Scotland. Monthly and annual streamflows for water year 1993 are compared with the maximum, minimum, and selected percentiles in figure 1 for the five representative gaging stations.

Streamflow at three of the five representative stations for water year 1993 generally remained near normal through February; indicating near normal conditions for the central, north-central, and southwest parts of the State. In contrast, streamflow at the two stations in the southeastern part of the State generally was between the 75th percentile and maximum of record for October through June. Heavy rains during late June to August, especially in the southeastern part of the State, caused monthly flows at three of the five stations to increase to record levels. For example, the July monthly mean flow for the James River at Scotland station was 58 times the median of the July monthly mean flows, and it was 2.2 times the previous maximum July monthly mean flow in 1962.

Comparisons of peak streamflows (table 2) for the five representative gaging stations with previous peak streamflow of record also shows the degree of flooding in the southeastern part of the State. The recurrence intervals for the 1993 peak flows at the five representative gaging stations ranged from 4 years to 50 years.

Table 2.--Comparison of current-year peak streamflow to peak for long-term period
[ft³/s, cubic feet per second]

Gaging-station number and name	Long-term period used (water years)	Peak discharges					
		1993 Water year			Long-term period		
		Peak (ft ³ /s)	Date	Recurrence interval (years)	Peak (ft ³ /s)	Date	Recurrence interval (years)
06360500 Moreau River near Whitehorse	1955-93	10,700	07-22-93	4	27,700	05-24-82	28
06409000 Castle Creek above Deerfield Reservoir, near Hill City	1949-93	113	06-08-93	5	1,120	05-22-52	>100
06452000 White River near Oacoma	1929-93	17,000	03-08-93	4	51,900	03-30-52	>100
06478500 James River near Scotland	1929-93	17,600	07-06-93	35	29,400	06-23-84	>100
06485500 Big Sioux River at Akron, Iowa	1929-93	66,700	05-10-93	50	80,800	04-09-69	85

The severity of the flooding in the central to southeastern part of the State is further documented by the listing of gaging stations and crest-stage partial-record stations in table 3 with 1993 water year peaks that had recurrence intervals of about 10 years or greater and exceeded the previous peak streamflow or stage of record. These 1993 peaks exceeded previous peaks for 11 of the 142 continuous-record gaging stations and 6 of the 22 crest-stage gages.

Table 3.--Peak streamflow for stations where 1993 peak values had recurrence intervals of about 10 years or greater and exceeded previous peak values
[ft³/s, cubic feet per second]

Gaging-station number and name			Long-term period used (water years)	Peak streamflow					
				1993 Water year			Previous		
				Peak (ft ³ /s)	Date	Recurrence interval (years)	Peak (ft ³ /s)	Date	Recurrence interval (years)
Continuous-record gages									
05051650	La Belle Creek near Veblen	1988-93	450	08/17/93	(¹)	77.0	06/20/91	(¹)	
05290000	Little Minnesota River near Peever	1940-81, 1990-93	8,900	07/25/93	80	4,730	04/08/52	21	
06428500	Belle Fourche River at Wyoming-South Dakota State line	1954-93	4,550	06/30/93	25	4,400	06/18/62	21	
06442718	Campbell Creek near Lee's Corner	1988-93	3,260	07/24/93	(¹)	2,920	05/25/88	(¹)	
06442900	Elm Creek near Gann Valley	1988-93	(²)	07/25/93	(¹)	1,400	06/05/91	(¹)	
06452320	Platte Creek near Platte	1989-93	1,600	06/17/93	(¹)	447	05/24/90	(¹)	
06478540	Little Vermillion River near Salem	1967-93	3,300	07/04/93	50	900	06/20/84	9	
06478690	West Fork Vermillion River near Parker	1962-93	6,300	05/08/93	27	4,800	06/16/84	18	
06479928	Battle Creek near Nunda	1989-93	3,400	07/04/93	(¹)	578	06/17/90	(¹)	
06480400	Spring Creek near Flandreau	1983-93	4,480	07/03/93	30	2,030	06/20/84	9	
06485500	Big Sioux River at Akron, Iowa	1929-93	³ 66,700	05/10/93	50	80,800	04/09/69	85	
Crest-stage gages									
06354860	Spring Creek near Herreid	1962-86, 1989-93	1,570	07/27/93	9	1,340	03/29/78	8	
06439960	Chantier Creek near Hayes	1990-93	8,000	07/13/93	(¹)	(²)	06/05/91	(¹)	
06479980	Medary Creek near Brookings	1981-93	3,710	07/04/93	22	2,590	6/21/84	10	
06480650	Flandreau Creek above Flandreau	1981-93	³ 2,410	07/04/93	9	2,650	06/20/84	10	
06482610	Split Rock Creek at Corson	1951-93	18,900	05/08/93	42	17,800	04/08/69	37	
06482848	Beaver Creek at Canton	1982-93	3,680	06/07/93	15	2,570	06/17/84	8	

¹Period of record insufficient for recurrence analysis.

²Not determined.

³Peak stage for water year 1993 was peak of record.

Combined storage in the four Missouri River reservoirs (Lakes Oahe, Sharpe, Francis Case, and Lewis and Clark) was 25,344,000 acre-ft on September 30, 1993, an increase of 6,006,000 acre-feet during water year 1993. Part of this large increase in storage resulted from the minimal flow releases during May to September to minimize downstream flooding. Inflow to Lake Oahe during 1993, as recorded at station 06348500, Missouri River at Bismarck, North Dakota, was about 10,760,000 acre-feet (68 percent of normal) while outflow from the Missouri River system, as recorded at station 06467500, Missouri River at Yankton was 9,878,000 acre-feet (48 percent of normal for 1969-92.) Monthend contents for water year 1993 for Lake Oahe, which represents about one-third of the total storage in the main-stem system in Montana, North Dakota, and South Dakota, are depicted in figure 2. The monthend contents in figure 2 for water year 1993 are compared to the distribution of the monthend contents since the reservoir first reached its normal maximum pool level in 1968. The reservoir contents were extremely

low until June; less than the 25th percentile of values for 1969-92. The reservoir pool increased during June to September because inflow downstream from Bismarck was above normal and because releases were cutback to reduce downstream flooding. On September 30, the pool level had increased to the 75th percentile range.

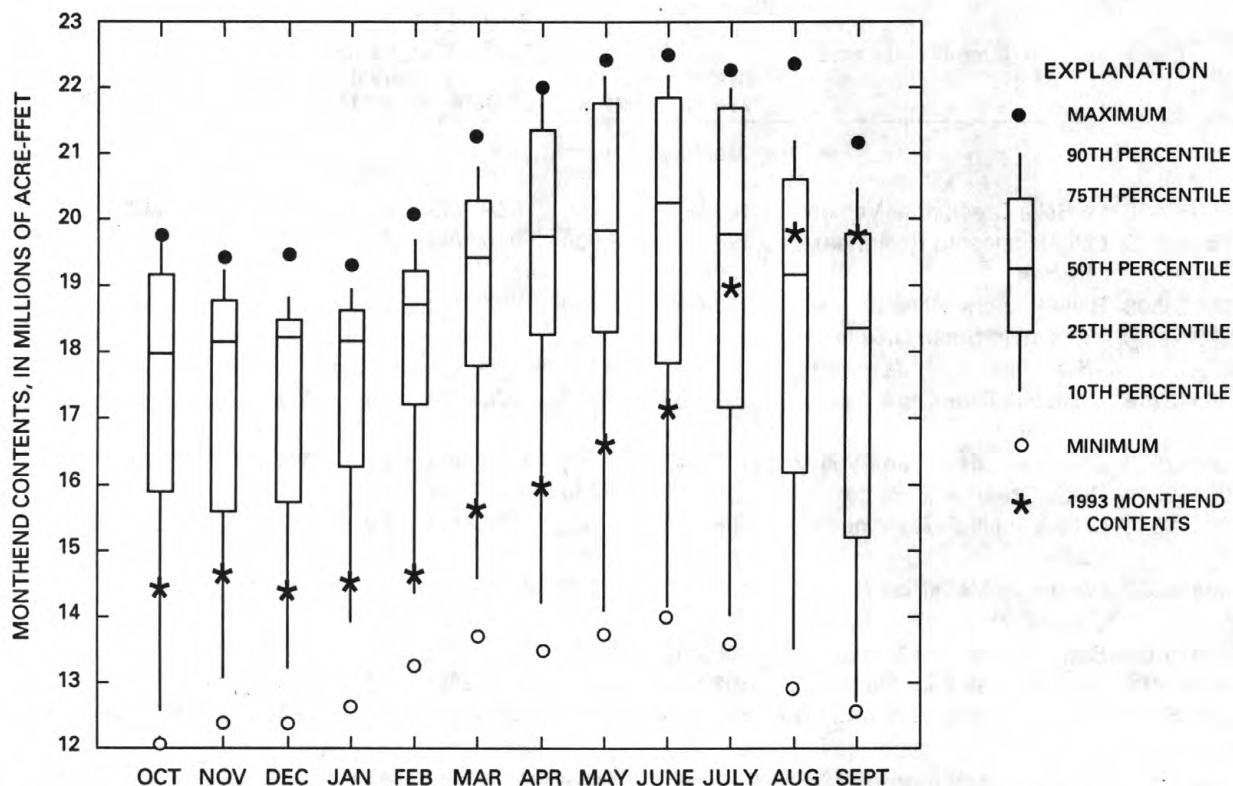


Figure 2.--Comparison of monthend contents of Lake Oahe for water year 1993 with distributions of monthend contents for water years 1969-92.

Water Quality

The dissolved-solids concentrations of surface-water samples collected during water year 1993 are compared to concentrations measured in previous years using boxplots (fig. 3). Of the 10 stations shown in figure 3, 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 benchmark station), and the Little Vermillion River near Salem (also a benchmark station). The boxplots for the Grand River at Little Eagle and the Little Vermillion River near Salem stations 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 1993 values are plotted with a closed circle to show where these data lie with respect to the historic distribution of data.

The boxplots of dissolved-solids concentrations for selected South Dakota stations (fig. 3) 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 249 milligrams per liter in the February sample at the Castle Creek above Deerfield Reservoir station to as much as 2,340 milligrams per liter in the January sample at the Cheyenne River near Cherry Creek station. Dissolved-solids concentrations in water samples collected from the James River at Columbia during the fall and winter months were all greater than the long-term 50th percentiles, and the dissolved-solids concentration for the October sample was the greatest recorded for any October sample at that site. These elevated concentrations were associated with low-flow conditions that existed in the upper James River basin during the fall and winter of water year 1993. Streamflows in the upper James River basin generally increased to above normal in the spring and summer, and correspondingly, dissolved-solids concentrations for the James River at Columbia generally were near or below the long-term 50th percentiles for the spring and summer months. The dissolved-solids concentration in the August sample for the James River at Columbia was less than the previous minimum concentration for any August sample for that station. Dissolved-solids concentrations in water samples collected from the James River near Scotland and the Big Sioux River at Akron, Iowa, were all less than the long-term 75th percentiles and generally were near normal to much below normal reflecting sustained high-flow conditions that existed in the downstream parts of larger rivers in eastern South Dakota throughout water year 1993. Large variability is evident in specific conductance measurements for the Little Vermillion River near Salem. In spring, specific conductance measurements that were less than long-term 50th percentiles were associated with high flows. As flows generally declined to near normal conditions in summer, specific conductance measurements were between the long-term 50th and 75th percentiles. Patterns in specific conductance measurements for the Little Vermillion River near Salem may be typical for some smaller basins in eastern South Dakota for water year 1993.

Dissolved-solids concentration for the Cheyenne River near Cherry Creek station and specific conductance for the Grand River at Little Eagle for the October samples were the greatest for any October samples for those sites and were associated with low-flow conditions that occurred in parts of western South Dakota during the fall of water year 1993. Sites in western South Dakota had dissolved-solids concentrations and specific conductance measurements that were variable in winter and spring with respect to long-term distributions. The March sample for the Grand River at Little Eagle station had a specific conductance measurement that was lower than the previous minimum for any March sample at that site; the June sample for the Belle Fourche River near Elm Springs had a dissolved-solids concentration that was the greatest ever recorded for any June sample at that site. Above normal flows occurred in much of western South Dakota during the summer months of 1993, and correspondingly dissolved-solids concentrations and specific conductance measurements tended to be below long-term 50th percentiles. The dissolved-solids concentration in the July sample for the Cheyenne River near Cherry Creek station and the August sample for the Belle Fourche River near Elm Springs station were less than the previous minimum concentrations recorded during the same respective months for those stations.

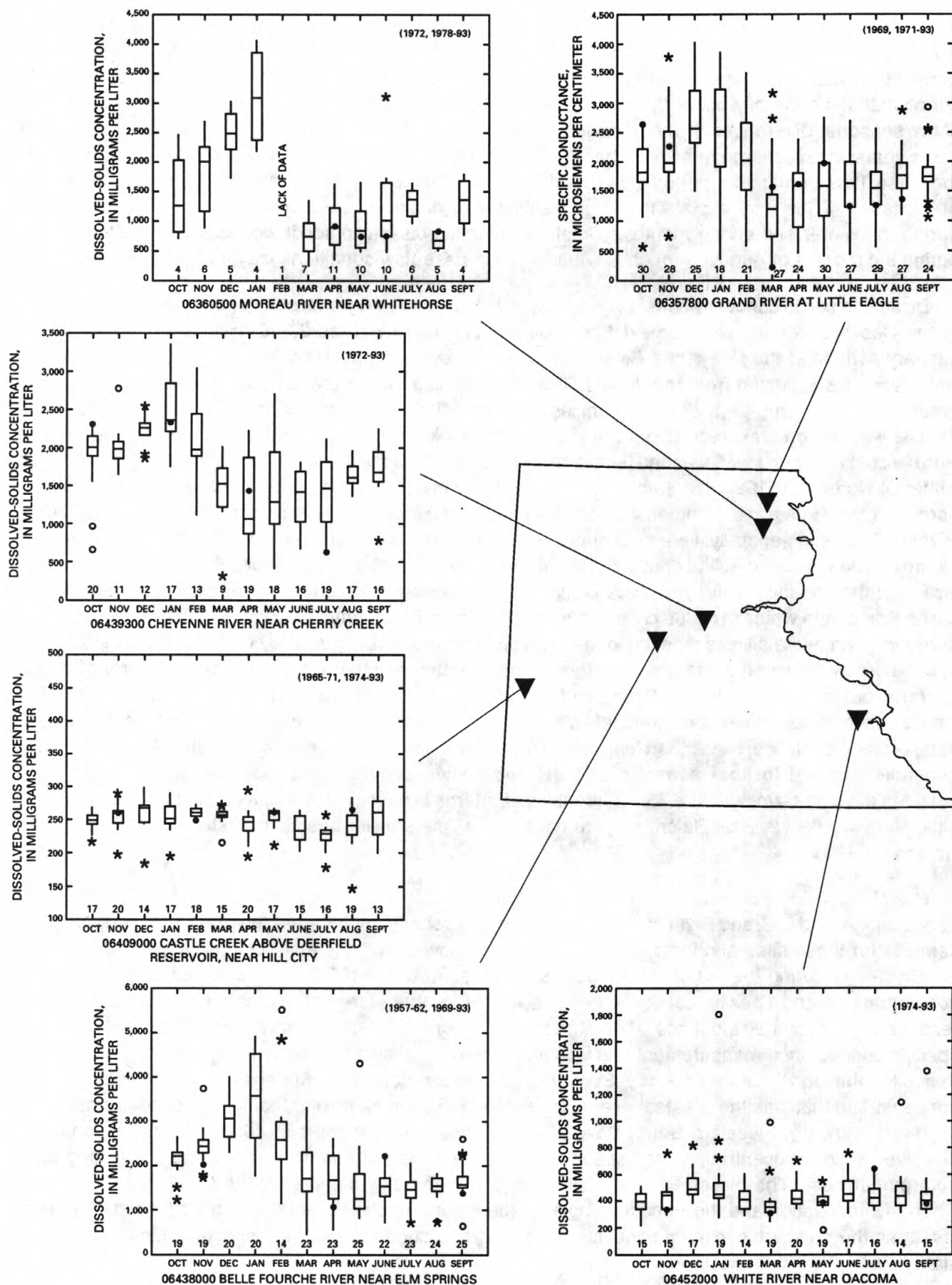


Figure 3.--Comparison of 1993 monthly dissolved-solids concentrations or specific conductance to the distributions of long-term monthly values.

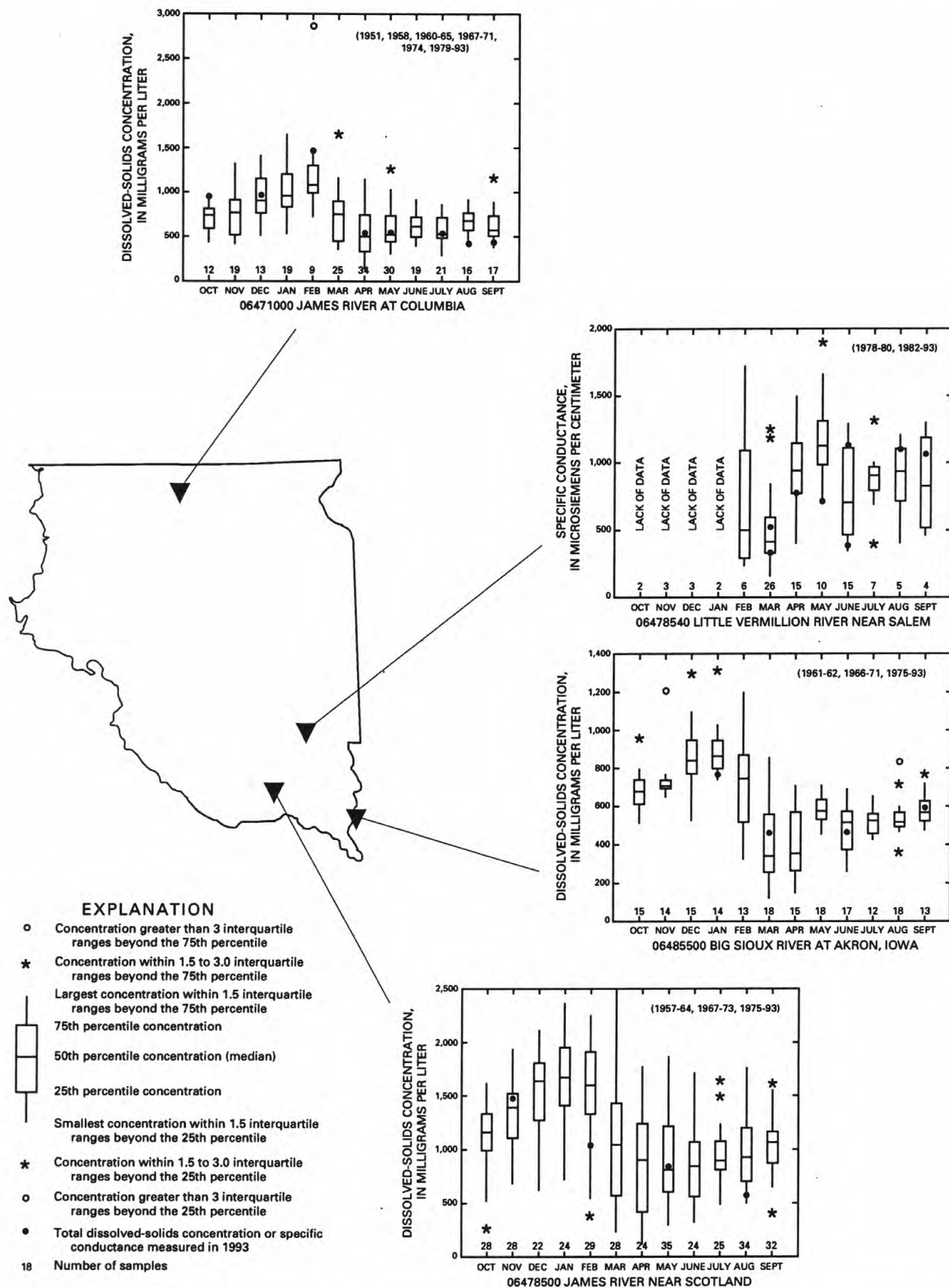


Figure 3.--Comparison of 1993 monthly dissolved-solids concentrations or specific conductance to the distributions of long-term monthly values.--Continued

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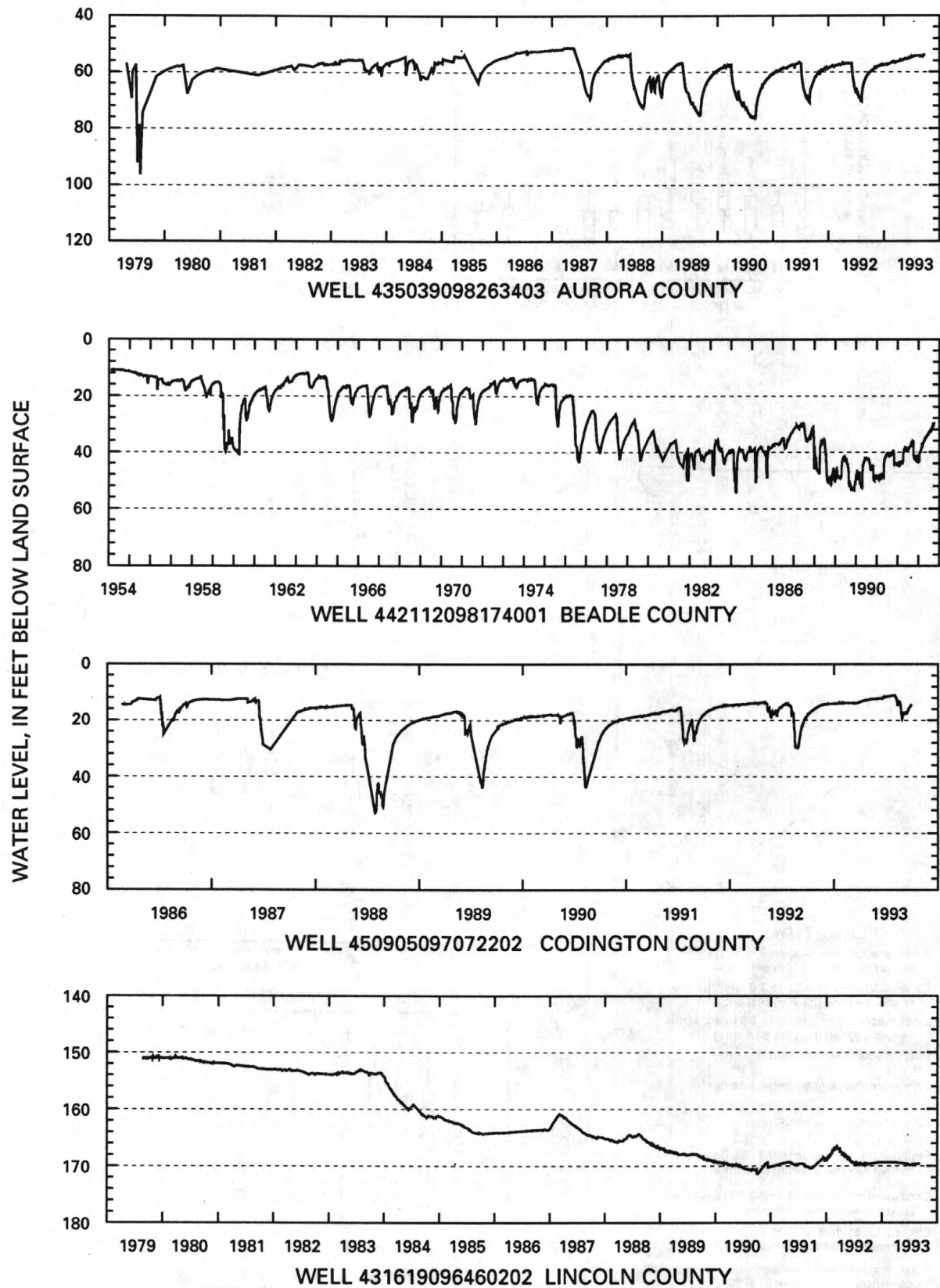
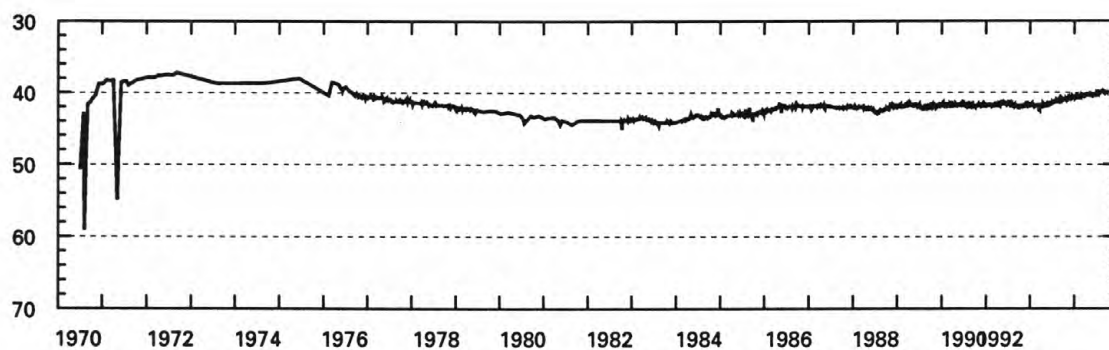
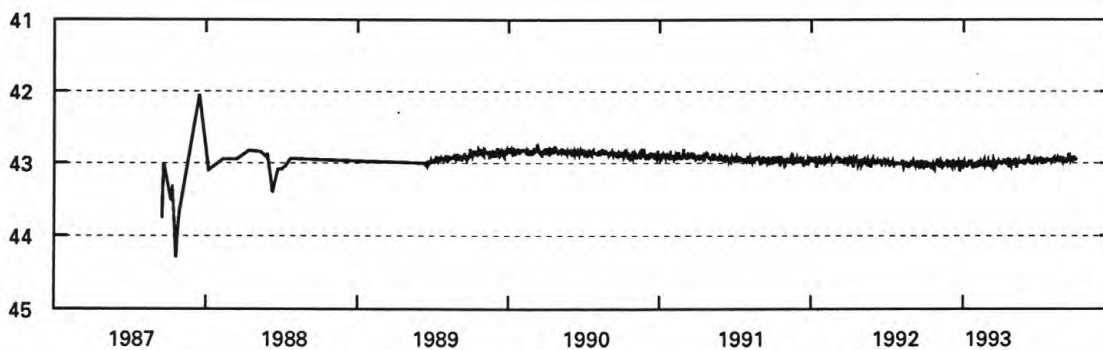


Figure 4.--Water levels from selected observation wells.

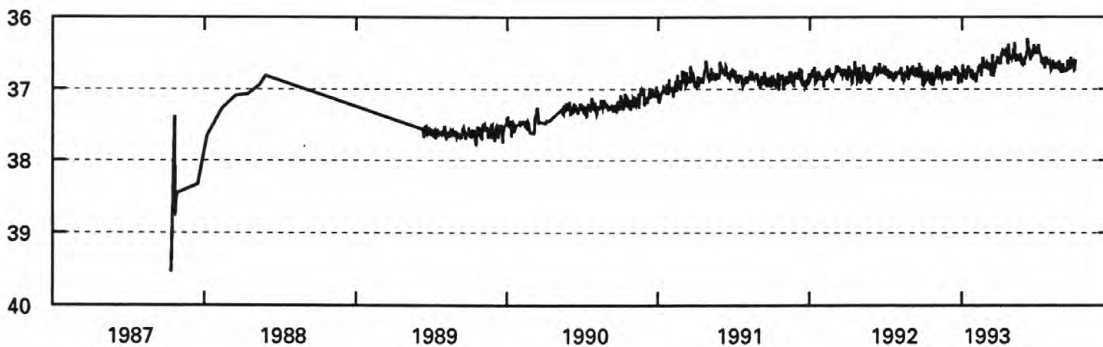
WATER LEVEL, IN FEET BELOW LAND SURFACE



WELL 454745097450401 MARSHALL COUNTY



WELL 430027102311801 SHANNON COUNTY



WELL 430027102311806 SHANNON COUNTY

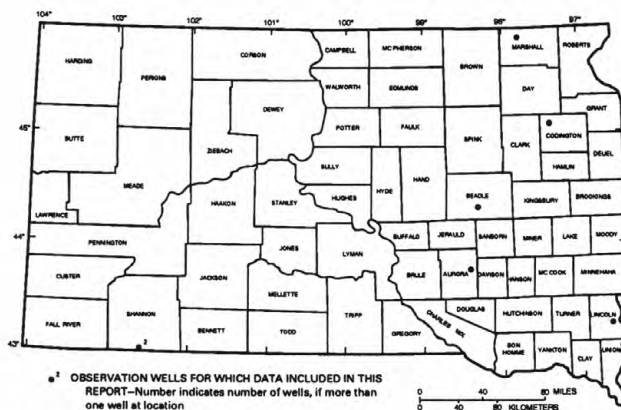


Figure 4.--Water levels from selected observation wells.--Continued

Ground Water

Water levels in wells and the quality of water from wells are key measurements in monitoring ground-water trends. During 1993, the U.S. Geological Survey regularly monitored several observation wells in South Dakota. The hydrographs in figure 4 are from seven of the wells in the observation-well network. Net water-level changes during the water year for four of the seven wells historically have correlated with precipitation in the areas where the wells are located; water year 1993 was similar. The water level in the Aurora County well (southeast part of the State where precipitation was 11.96 inches greater than normal) had a net rise of 6.25 feet. The water level in the Beadle County well (east-central part where precipitation was 8.27 inches greater than normal) had a net rise of 9.31 feet. The water level in the Codington County well (northeast part where precipitation was 7.70 inches greater than normal) had a net rise of 3.83 feet. The water level in the Lincoln County well (southeast part where precipitation was 11.96 inches greater than normal) had a net rise of only 0.11 foot. Water-level fluctuations in the Marshall County well generally do not react directly to precipitation; the water level had a net rise of only 1.06 feet during water year 1993, even though the northeast part of the State ended the year with precipitation being 7.70 inches greater than normal. Water-level fluctuations in the two Shannon County wells historically have not appeared to react directly to precipitation; the water level in the wells averaged a net rise of only 0.18 foot even though precipitation in the southwest area was 6.04 inches greater than normal. Water levels recorded during 1993 for the seven wells shown on the map in figure 4 are presented in the Ground-Water Levels section of this report.

SPECIAL NETWORKS AND PROGRAMS

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

National Stream-Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. 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.

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1993 water year that began October 1, 1992, and ended September 30, 1993. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data; precipitation data; stage and content data for lakes and reservoirs; water-quality data for precipitation, surface water, and ground water; and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 4, 5, 6, and 7. 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

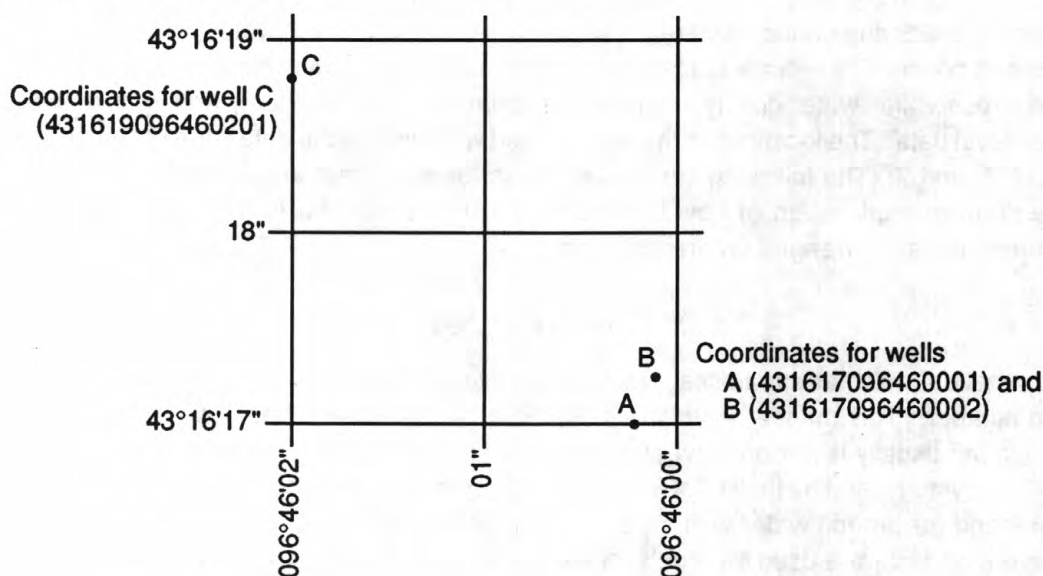
Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream 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.

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 does not necessarily have 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/orifices 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

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1992 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

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

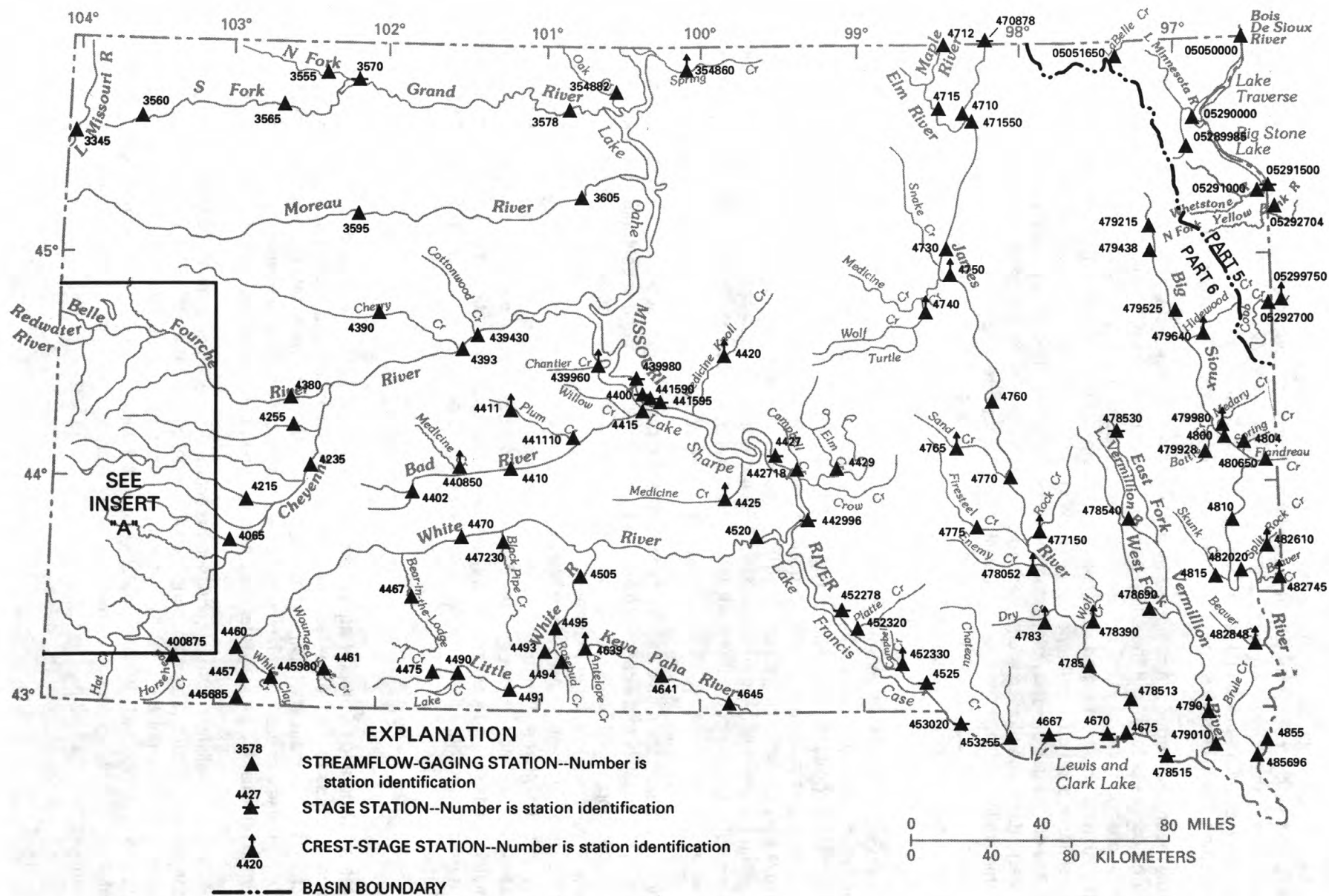


Figure 5.--Location of surface-water gaging stations.

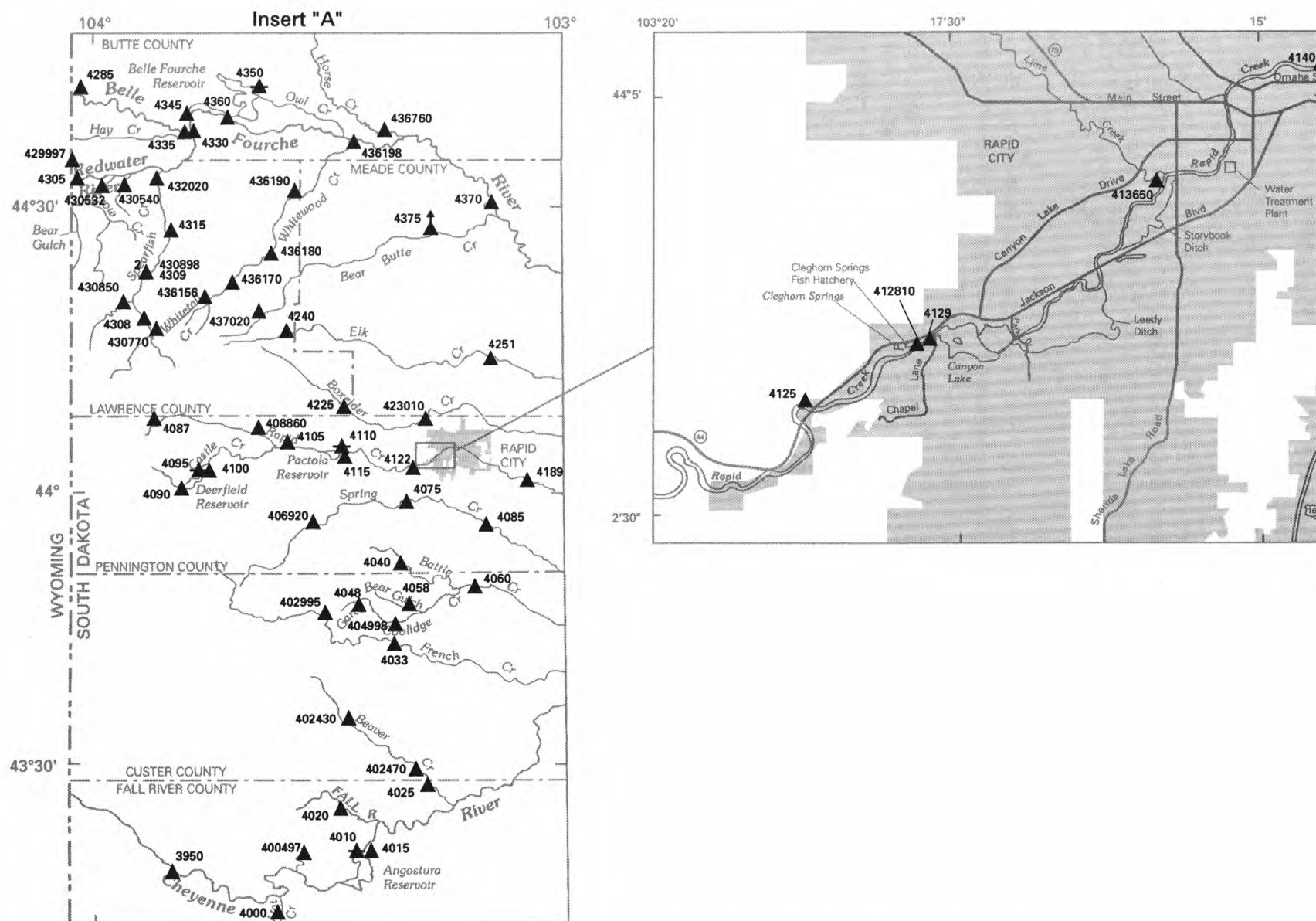


Figure 5.--Location of surface-water gaging stations.--Continued

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

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

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

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

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

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

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

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

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

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

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

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

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

Data table of daily mean values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for each month. Discharge for the month also is usually expressed in acre-feet (line headed "AC-FT"). At some stations monthly and (or) yearly observed discharge are adjusted for reservoir storage or diversion, or diversion data or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

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

Summary statistics

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

of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

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

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

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

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

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

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

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

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

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

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

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

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Annual runoff data are given in acre-feet:

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

10 PERCENT EXCEEDS.--The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that has been exceeded 90 percent of the time for the designated period.

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of 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.

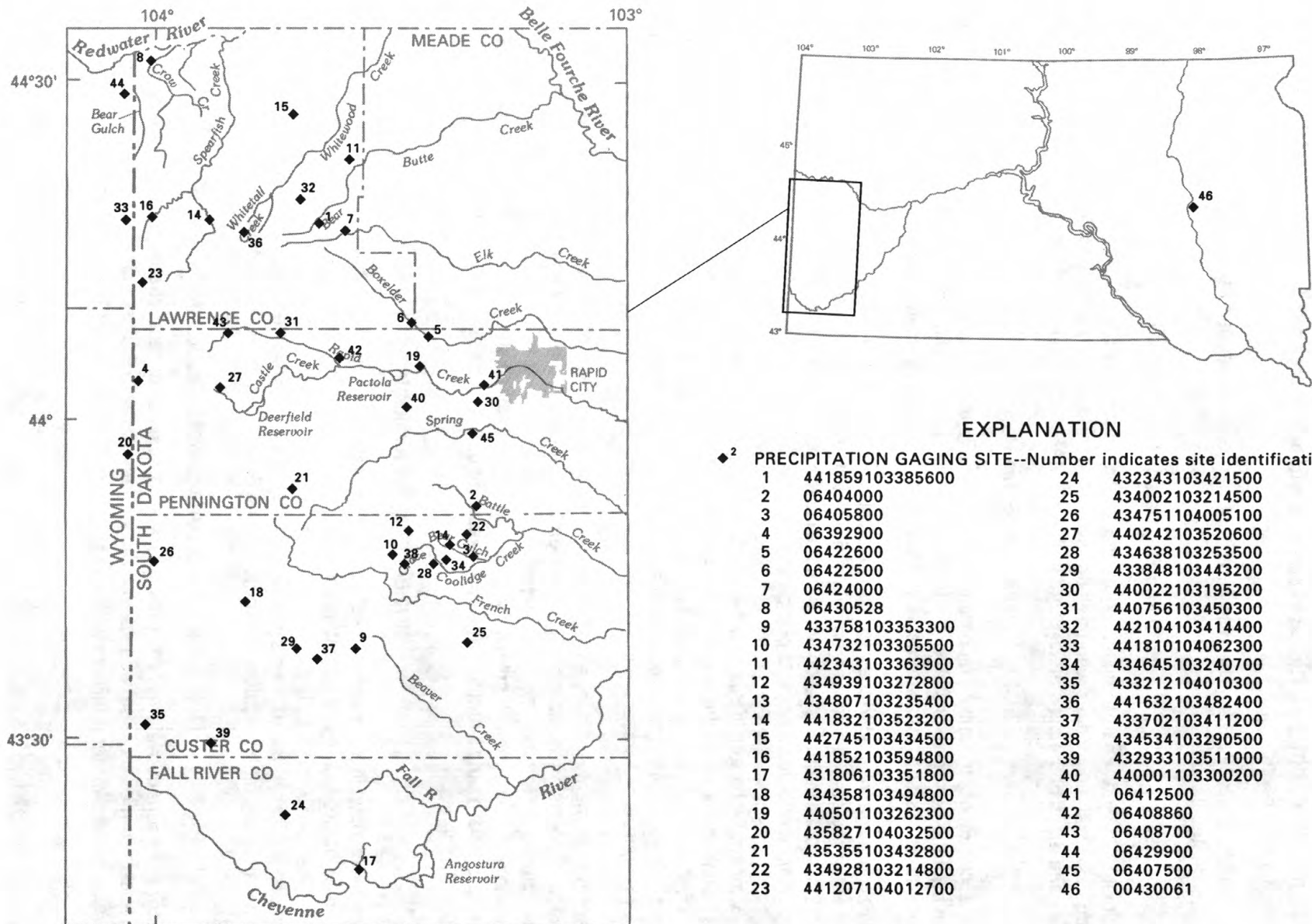


Figure 6.--Location of precipitation stations.

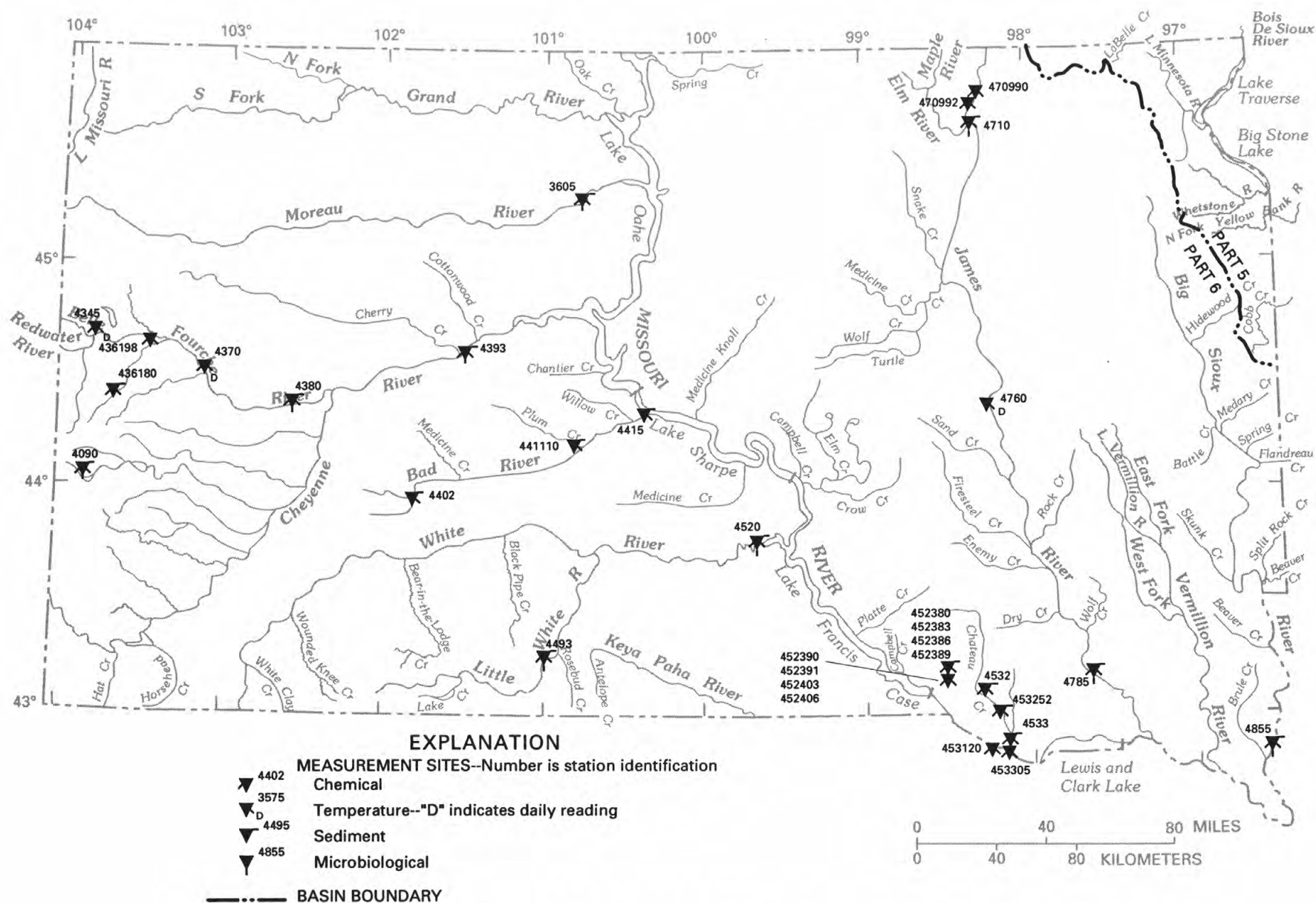


Figure 7.--Location of surface-water quality stations.

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 7.

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 tables of daily precipitation stations.

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 (1993) 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 can be found in the sections titled "MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS" or "MISCELLANEOUS DISCHARGE MEASUREMENTS."

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 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:

PRINTED OUTPUT REMARK

E	Estimated value
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown
K	Actual value is known to be less than the value shown

L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism county equal to or greater than 15 percent (dominant)
TNTC	Too numerous to count

Records for Hydrologic Stations

Data collected at PARTIAL-RECORD STATIONS follow the information for continuous-record sites. Data for partial-record discharge stations contain the annual and period-of-record maximum stage and discharge at crest-stage stations. The table of partial-record stations is followed by the section, "DAILY PRECIPITATION STATIONS," which is a listing of daily-precipitation tables at sites not located with continuous-record stations. The next section is titled, "MISCELLANEOUS WATER QUALITY DATA," and consists of water-quality data from a precipitation site, operated in cooperation with the Acid Rain National Trends Network, water-quality samples obtained at sites not located with continuous-record stations, and sediment samples at two locations not located with continuous-record stations. This section is followed by the section "MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS" which is a listing, obtained at continuous-record or partial-record sites, of air/water temperatures, specific conductance, and discharge for which no other water-quality sample was obtained. Following is a section listing discharge measurements made at sites other than continuous-record or partial-record stations titled, "MISCELLANEOUS DISCHARGE MEASUREMENTS." These measurements are made for a variety of reasons including in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are given in the section, "MISCELLANEOUS DISCHARGE MEASUREMENTS." The final section is titled, "GROUND-WATER LEVELS," for which tables of ground-water levels at selected sites are given.

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 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 (1993) 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 U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National Water Data Storage and Retrieval System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia, and consists of related files and data bases.

- Station Header File - Contains descriptive information on more than 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.
- Daily Values File - Contains more than 220 million daily values of stream flows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.
- Water Quality File - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radio-chemical characteristics of both surface and ground water.
- Ground-Water Site Inventory Data Base - Contains inventory data for more than 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The

system can be accessed either synchronously or asynchronously. The requester will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

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

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

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 $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ 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 $44.5^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ 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 $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ 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.

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

Dissolved refers to that material in a representative water sample which passes through a 0.45 μm 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 [$\text{mg C}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg C}/(\text{m}^3 \cdot \text{time})$] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [$\text{mg O}_2/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}_2/(\text{m}^3 \cdot \text{time})$] 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.

Sea level refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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 (ft³/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 Q₁₀) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

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

Solute is any substance that is dissolved in water.

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

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

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

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

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 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
<u>Genus</u>	<u>Hexagenia</u>
<u>Species</u>	<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 ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. 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. Ficken, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.
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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 SW1/4SW1/4 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 poor. Flow regulated by Lake Traverse-Boise de Sioux Flood Control and Water Conservation project (available capacity for flood control, 137,000 acre-ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.12	e4.5	e5.2	e4.4	e4.1	e90	619	175	717	e1000	1150
2	.06	.50	e4.5	e5.2	e4.4	e4.1	e80	603	202	697	1220	1140
3	.06	2.0	e4.5	e5.1	e4.4	e4.1	e66	528	199	640	1250	1140
4	.05	3.0	e4.5	e5.1	e4.4	e4.1	57	417	176	632	1290	1130
5	.07	1.3	e4.4	e5.1	e4.3	e4.1	159	314	150	617	1280	1120
6	.11	3.6	e4.4	e5.0	e4.3	e4.1	406	264	152	653	1260	1120
7	.14	3.9	e4.4	e5.0	e4.3	e4.2	410	267	152	759	1250	1110
8	.11	3.6	e4.4	e5.0	e4.3	e4.7	410	279	153	823	1240	1110
9	.21	2.8	e4.4	e5.0	e4.2	e4.8	530	286	204	879	1150	1100
10	.29	3.7	e4.4	e4.9	e4.2	e5.0	696	293	273	958	1180	1090
11	.21	4.3	e4.4	e4.9	e4.2	e5.0	700	297	233	997	1180	1090
12	.17	5.4	e4.4	e4.9	e4.2	e5.0	696	302	194	1020	1170	1080
13	.19	5.6	e4.4	e4.9	e4.2	e5.0	689	295	193	1040	1160	1070
14	.05	4.6	e4.4	e4.9	e4.1	e5.0	682	293	190	1050	1170	1070
15	e.04	4.8	e4.5	e4.9	e4.1	e5.0	774	287	182	1060	1170	1070
16	e.03	4.3	e4.5	e4.9	e4.1	e5.0	873	283	144	1070	1160	1060
17	e.03	3.7	e4.6	e4.8	e4.1	e5.0	865	221	89	999	1150	1050
18	e.03	3.7	e4.6	e4.8	e4.1	e7.0	861	154	115	572	1180	1040
19	e.03	3.7	e4.7	e4.8	e4.1	e12	865	130	145	e75	1180	1040
20	e.03	4.3	e4.8	e4.7	e4.1	e23	885	95	142	e200	1180	1040
21	e.03	4.5	e4.8	e4.7	e4.1	e40	872	83	127	e700	1180	1040
22	.24	4.3	e4.9	e4.7	e4.1	e80	858	65	113	e950	1190	1030
23	e.03	4.3	e4.9	e4.6	e4.1	e150	809	67	143	e950	1180	1020
24	e.03	4.4	e5.0	e4.6	e4.1	e220	728	102	304	e1030	1180	1020
25	e.03	4.3	e5.0	e4.6	e4.1	e250	709	146	431	e1050	1170	1010
26	e.03	e4.8	e5.0	e4.6	e4.1	e290	684	147	445	e600	1160	1000
27	e.03	e4.7	e5.1	e4.5	e4.1	e320	675	148	459	e90	1150	997
28	e.03	e4.6	e5.1	e4.5	e4.1	e340	663	147	513	e88	1160	984
29	e.03	e4.6	e5.2	e4.5	---	e250	651	145	576	e86	1160	979
30	e.03	e4.6	e5.2	e4.5	---	e170	637	150	639	e150	1150	970
31	e.03	---	e5.2	e4.5	---	e110	---	150	---	e900	1140	---
TOTAL	2.49	114.02	145.1	149.4	117.3	2340.3	18080	7577	7213	22052	36640	31870
MEAN	.080	3.80	4.68	4.82	4.19	75.5	603	244	240	711	1182	1062
MAX	.29	5.6	5.2	5.2	4.4	340	885	619	639	1070	1290	1150
MIN	.03	.12	4.4	4.5	4.1	4.1	57	65	89	75	1000	970
AC-FT	4.9	226	288	296	233	4640	35860	15030	14310	43740	72680	63210

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1993, BY WATER YEAR (WY)

	MEAN	16.0	11.6	4.84	2.52	3.24	25.5	199	244	230	157	73.7	37.6
MAX	363	258	57.5	36.0	53.0	227	1322	1310	1103	1035	1182	1062	
(WY)	1987	1985	1985	1987	1966	1985	1969	1969	1986	1962	1993	1993	
MIN	.000	.000	.000	.000	.000	.000	.000	.23	.010	.000	.000	.000	
(WY)	1942	1942	1942	1942	1942	1942	1942	1977	1977	1961	1970	1960	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1942 - 1993

ANNUAL TOTAL	4763.94	126300.61	
ANNUAL MEAN	13.0	346	84.0a
HIGHEST ANNUAL MEAN			346
LOWEST ANNUAL MEAN			.38
HIGHEST DAILY MEAN	138	Aug 1	3380
LOWEST DAILY MEAN	.03	Oct 16	.00
ANNUAL SEVEN-DAY MINIMUM	.03	Oct 23	.00
INSTANTANEOUS PEAK FLOW			3770c
INSTANTANEOUS PEAK STAGE			15.07
ANNUAL RUNOFF (AC-FT)	9450	250500	60860
ANNUAL RUNOFF (CFSM)	.011	.30	.072
ANNUAL RUNOFF (INCHES)	.15	4.05	.98
10 PERCENT EXCEEDS	15	1110	249
50 PERCENT EXCEEDS	3.7	89	1.8
90 PERCENT EXCEEDS	.15	2.9	.00

e Estimated

a Median of annual mean discharges, 54 ft³/s.

b Occurred Oct. 16-21, 23-31.

c Occurred during period Apr. 19-21, 1969.

d From floodmark.

RED RIVER OF THE NORTH BASIN

05051650 LA BELLE CREEK NEAR VEBLEN, SD

LOCATION.--Lat 45°53'33", long 97°21'40", in SW1/4SW1/4SW1/4SE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.20	e.10	.00	e.02	.00	25	2.4	4.3	13	7.2	2.7
2	.00	.19	e.10	.00	e.03	.00	23	2.1	4.0	12	6.7	2.6
3	.00	.13	e.10	.00	e.03	e.01	26	1.9	4.1	8.7	5.3	2.6
4	.00	.09	e.08	.00	e.03	e.01	20	1.6	3.7	10	4.9	2.2
5	.00	.10	e.06	.00	e.02	e.01	18	1.2	3.5	7.0	4.8	2.1
6	.00	.08	e.05	.00	e.02	e.03	18	1.1	3.2	5.5	5.2	1.7
7	.00	.09	e.04	.00	e.01	e.20	18	1.2	3.9	5.6	3.7	1.3
8	.00	.12	e.03	.00	e.01	e.10	21	1.9	5.6	6.5	3.6	1.0
9	.00	.17	e.02	.00	e.01	e.07	18	1.7	3.7	9.4	e3.0	.74
10	.00	.41	e.03	.00	.00	e.05	15	1.6	2.8	7.6	e3.5	.53
11	.00	.31	e.02	.00	.00	e.04	17	1.4	2.6	6.7	e3.5	.47
12	.00	.26	e.03	.00	.00	e.03	17	1.4	2.4	5.6	e3.5	.39
13	.00	.19	e.05	.00	.00	e.03	17	1.4	2.1	6.8	e3.0	.39
14	.00	.14	e.06	.00	.00	e.03	15	1.5	1.7	6.2	e25	.41
15	.00	.12	e.06	.00	.00	e.03	13	1.5	1.5	5.3	e7.0	.31
16	.00	.14	e.05	.00	.00	e.10	11	1.4	6.1	16	e5.0	.24
17	.00	.13	e.06	.00	.00	e.03	10	1.4	3.0	81	23	.20
18	.00	.12	e.05	.00	.00	e.04	9.6	1.4	3.2	33	36	.19
19	.00	e.12	e.03	.00	.00	e.05	7.4	1.5	4.8	26	11	.21
20	.00	e.11	e.02	e.01	.00	e.08	5.5	1.3	3.8	20	9.4	.42
21	.00	e.11	e.01	e.02	.00	e.12	4.7	1.2	3.5	16	8.7	.38
22	.00	e.10	e.01	e.03	.00	e.20	4.1	1.5	3.0	13	7.6	.36
23	.00	e.10	e.01	e.03	.00	e.40	3.6	3.2	18	12	6.7	.33
24	.00	e.09	e.01	e.03	.00	e.85	16	9.0	36	10	5.6	.29
25	.00	e.09	e.02	e.02	.00	e1.3	8.2	4.3	12	29	4.8	.27
26	.00	e.08	e.01	e.03	.00	e11	5.6	4.5	11	18	4.5	.21
27	.00	e.08	e.01	e.03	.00	e30	4.4	4.2	7.8	13	4.0	.19
28	.00	e.08	.00	e.03	.00	e20	3.7	3.8	6.4	10	3.5	.14
29	.00	e.08	.00	e.02	---	50	3.5	3.3	13	8.8	3.2	.14
30	.00	e.09	.00	e.01	---	45	2.8	6.3	13	7.4	3.6	.12
31	.07	---	.00	e.01	---	58	---	5.2	---	8.0	3.5	---
TOTAL	0.07	4.12	1.12	0.27	0.18	217.81	381.1	77.4	193.7	437.1	230.0	23.13
MEAN	.002	.14	.036	.009	.006	7.03	12.7	2.50	6.46	14.1	7.42	.77
MAX	.07	.41	.10	.03	.03	58	26	9.0	36	81	36	2.7
MIN	.00	.08	.00	.00	.00	.00	2.8	1.1	1.5	5.3	3.0	.12
AC-FT	.1	8.2	2.2	.5	.4	432	756	154	384	867	456	46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993
MEAN	.000	.023	.006	.002	.15	2.24
MAX	.002	.14	.036	.009	.50	7.03
(WY)	1993	1993	1993	1992	1993	1993
MIN	.000	.000	.000	.000	.000	.22
(WY)	1988	1988	1988	1988	1989	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	265.32	1566.00	
ANNUAL MEAN	.72	4.29	1.13
HIGHEST ANNUAL MEAN			4.29
LOWEST ANNUAL MEAN			.056
HIGHEST DAILY MEAN	13	81	81
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		450	450
INSTANTANEOUS PEAK STAGE		7.29	8.58
ANNUAL RUNOFF (AC-FT)	526	3110	819
10 PERCENT EXCEEDS	2.2	13	2.8
50 PERCENT EXCEEDS	.07	.31	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for many days in each year.

b Gage height, 7.29 ft.

c Backwater from ice.

MINNESOTA RIVER BASIN

05289985 BIG COULEE CREEK NEAR PEEVER, SD

LOCATION.--Lat 45°29'14", long 96°57'26", in SW1/4SW1/4SW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	e1.0	e1.0	e.02	e.50	e.80	21	e13	4.5	7.5	2.1	3.5
2	.03	e5.0	e1.0	e.03	e.80	e.90	12	e13	4.6	14	2.2	2.5
3	e.03	e4.0	e1.0	e.04	e1.0	e1.0	9.2	e11	4.6	8.3	2.7	2.3
4	.05	e4.0	e.80	e.03	e1.0	e2.0	8.4	e11	4.6	9.5	2.3	1.6
5	.04	e3.0	e.60	e.03	e1.0	e5.0	9.0	e9.8	4.5	5.7	2.1	e.70
6	.03	e3.0	e.50	e.03	e1.0	e20	11	e8.9	4.3	5.0	2.5	e.50
7	.02	e2.0	e.40	e.03	e1.0	e15	12	e10	4.4	5.4	2.3	e.60
8	.07	e2.0	e.30	e.03	e1.0	e10	17	e12	5.2	9.2	2.7	e.50
9	.07	e1.0	e.30	e.03	e1.0	e7.0	14	e14	5.4	35	2.3	e.40
10	.19	e1.0	e.30	e.03	e1.0	e5.0	14	e10	5.5	9.1	2.0	e.30
11	.33	e1.0	e.30	e.04	e.80	e3.0	9.9	e7.0	5.2	6.7	2.0	e.20
12	.33	e1.0	e.40	e.04	e.80	e3.0	12	e5.0	4.5	6.1	2.9	e.20
13	.33	e1.0	e.50	e.04	e.70	e2.0	13	e4.0	4.2	5.9	3.5	e.30
14	.50	e1.0	e.75	e.03	e.70	e2.0	16	3.8	4.1	6.1	5.9	e.40
15	.50	e1.0	e.99	e.03	e.70	e2.0	15	3.4	4.2	5.6	7.4	e.30
16	.50	e1.0	e.99	e.03	e.60	e2.0	18	3.4	7.2	6.2	5.3	e.30
17	e.50	e1.0	e.81	e.03	e.50	e1.5	16	3.4	8.2	101	5.0	e.20
18	e.50	e1.0	e.81	e.03	e.60	e1.5	21	3.3	6.8	14	5.8	e.20
19	e.50	e1.3	e.70	e.04	e.60	e1.5	19	3.3	12	7.0	5.5	e.50
20	e.50	e1.5	e.60	e.04	e.60	e2.0	12	3.4	9.3	4.7	4.9	e1.0
21	e.50	e1.5	e.60	e.05	e.65	e2.5	9.7	3.9	5.9	3.6	4.8	e.90
22	e.50	e1.5	e.60	e.05	e.60	e2.0	9.4	4.0	5.5	3.2	4.6	e.90
23	e.50	e1.5	e.40	e.10	e.50	e2.8	9.3	4.1	5.7	5.4	4.5	e.80
24	e.50	e1.5	e.30	e.09	e.50	e4.0	11	4.8	41	6.7	3.7	e.70
25	e.40	e1.0	e.40	e.07	e.60	e7.0	11	4.1	11	170	2.1	e.70
26	e.50	e.90	e.30	e.07	e.60	e8.0	7.9	3.9	6.3	27	1.4	e.80
27	e.50	e.80	e.40	e.07	e.60	e20	8.3	3.7	5.6	12	2.6	e.80
28	e.50	e.90	e.20	e.09	e.70	66	9.1	3.7	5.2	6.7	3.3	e.85
29	e.50	e1.0	e.10	e.10	---	40	10	3.9	9.0	4.4	4.1	e.90
30	e.50	e.90	e.05	e.20	---	29	12	4.2	13	2.9	6.0	e.90
31	e.50	---	e.03	e.30	---	48	---	4.6	---	2.1	5.9	---
TOTAL	10.55	48.30	16.43	1.84	20.65	316.50	377.2	197.6	221.5	516.0	114.4	24.75
MEAN	.34	1.61	.53	.059	.74	10.2	12.6	6.37	7.38	16.6	3.69	.82
MAX	.50	5.0	1.0	.30	1.0	66	21	14	41	170	7.4	3.5
MIN	.02	.80	.03	.02	.50	.80	7.9	3.3	4.1	2.1	1.4	.20
AC-FT	21	96	33	3.6	41	628	748	392	439	1020	227	49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

MEAN	.36	.40	.17	.12	.76	6.46	5.63	2.79	3.90	4.47	(1.27	1.24
MAX	1.64	1.61	.53	.67	2.90	11.8	12.6	6.37	11.1	16.6	3.69	2.91
(WY)	1992	1993	1993	1992	1992	1989	1993	1993	1991	1993	1993	1992
MIN	.000	.000	.000	.000	.000	1.42	1.52	1.09	.013	.000	.000	.000
(WY)	1988	1988	1988	1988	1989	1991	1990	1988	1988	1988	1988	1988

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	788.57	1865.72	
ANNUAL MEAN	2.15	5.11	2.30
HIGHEST ANNUAL MEAN			5.11 1993
LOWEST ANNUAL MEAN			.63 1990
HIGHEST DAILY MEAN	30 Feb 27	170 Jul 25	170 Jul 25 1993
LOWEST DAILY MEAN	.00 Aug 16	.02 Oct 7, Jan. 1	.00 Oct 1 1987a
ANNUAL SEVEN-DAY MINIMUM	.00 Aug 15	.03 Dec 31	.00 Oct 1 1987
INSTANTANEOUS PEAK FLOW		446 Jul 25	456 Jun 21 1991
INSTANTANEOUS PEAK STAGE		8.13 Jul 25	8.21 Jun 21 1991
ANNUAL RUNOFF (AC-FT)	1560	3700	1670
10 PERCENT EXCEEDS	5.0	12	5.5
50 PERCENT EXCEEDS	.94	2.0	.30
90 PERCENT EXCEEDS	.10	.09	.00

e Estimated

a No flow for many days in most years.

MINNESOTA RIVER BASIN

05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, SD

LOCATION.--Lat 45°36'05", long 96°52'18", in SW1/4 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 sea level. 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. Apr. 13 to Aug. 27, 1940, nonrecording gage at present site and datum.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.66	2.6	e5.7	e.92	e1.7	e2.9	768	134	71	346	695	76
2	.66	4.2	e5.5	e.89	e1.8	e3.0	585	132	64	310	575	71
3	.69	7.0	e5.4	e.87	e1.9	e3.1	452	131	57	324	495	66
4	.69	7.6	e5.3	e.86	e2.0	e3.2	362	118	53	312	430	61
5	.75	6.6	e5.1	e.84	e2.1	e3.3	311	108	49	309	376	57
6	.85	5.3	e5.0	e.83	e2.2	e3.6	275	100	45	255	334	53
7	.85	4.2	e4.8	e.82	e2.3	e3.9	251	96	43	212	300	51
8	1.4	4.2	e4.7	e.81	e2.4	e5.0	264	138	42	213	265	48
9	1.5	5.0	e4.5	e.80	e2.5	e9.0	295	205	50	337	235	44
10	1.2	5.5	e4.3	e.80	e2.6	e9.0	277	255	55	428	207	40
11	1.1	6.1	e4.2	e.80	e2.8	e8.7	288	210	50	492	190	38
12	.96	7.5	e4.0	e.81	e2.9	e8.5	315	164	42	472	175	35
13	.92	9.2	e3.9	e.83	e3.0	e8.3	337	141	36	402	163	34
14	.91	8.2	e3.7	e.86	e3.0	e8.2	355	118	32	374	158	32
15	.99	e8.0	e3.5	e.88	e3.1	e8.0	357	108	29	340	160	32
16	1.0	e7.9	e3.4	e.92	e3.1	e7.9	327	93	31	289	159	31
17	1.0	8.0	e3.2	e.95	e3.1	e7.7	295	86	42	605	148	29
18	1.0	7.7	e3.0	e.98	e3.1	e7.7	262	83	58	841	178	28
19	.95	8.4	e2.8	e1.0	e3.1	e7.6	249	77	58	692	203	28
20	.98	8.5	e2.6	e1.0	e3.1	e7.6	225	73	74	692	254	37
21	1.0	8.5	e2.4	e1.1	e3.1	e7.6	191	71	96	599	280	55
22	1.0	8.6	e2.3	e1.1	e3.0	e7.6	172	70	70	457	235	60
23	1.1	8.3	e2.2	e1.1	e3.0	e10	154	69	72	368	190	52
24	1.0	8.2	e2.1	e1.2	e3.0	e38	156	72	212	350	161	46
25	1.0	7.9	e2.0	e1.2	e3.0	e70	198	80	530	5400	139	41
26	.92	7.4	e1.9	e1.3	e3.0	e110	216	77	498	4630	121	37
27	1.1	6.6	e1.7	e1.3	e3.0	e180	200	69	579	2380	108	33
28	1.2	e6.2	e1.5	e1.4	e2.9	e260	173	63	497	1480	100	30
29	1.5	e6.0	e1.3	e1.4	---	e340	150	61	386	1130	92	28
30	1.4	e5.8	e1.0	e1.5	---	e450	139	61	335	956	86	26
31	1.7	---	e.95	e1.6	---	e560	---	66	---	814	80	---
TOTAL	31.98	205.2	103.95	31.67	75.8	2159.4	8599	3329	4256	26809	7292	1299
MEAN	1.03	6.84	3.35	1.02	2.71	69.7	287	107	142	865	235	43.3
MAX	1.7	9.2	5.7	1.6	3.1	560	768	255	579	5400	695	76
MIN	.66	2.6	.95	.80	1.7	2.9	139	61	29	212	80	26
AC-FT	63	407	206	63	150	4280	17060	6600	8440	53180	14460	2580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
MEAN	3.54	4.48	2.37	1.10	2.37
MAX	40.7	34.7	10.8	4.25	21.8
(WY)	1943	1958	1958	1947	1976
MIN	.21	.25	.10	.000	.000
(WY)	1940	1940	1940	1940	1940

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1940 - 1993

ANNUAL TOTAL	7710.45	54192.00	
ANNUAL MEAN	21.1	148	44.8a
HIGHEST ANNUAL MEAN			153
LOWEST ANNUAL MEAN			1.37
HIGHEST DAILY MEAN	204	5400	5400
LOWEST DAILY MEAN	.55	.66	.00
ANNUAL SEVEN-DAY MINIMUM	.61	.74	.00
INSTANTANEOUS PEAK FLOW		8900	8900
INSTANTANEOUS PEAK STAGE		13.58	13.58
INSTANTANEOUS LOW FLOW		.59	
ANNUAL RUNOFF (AC-FT)	15290	107500	32460
ANNUAL RUNOFF (CFSM)	.047	.33	.10
ANNUAL RUNOFF (INCHES)	.64	4.51	1.36
10 PERCENT EXCEEDS	64	356	96
50 PERCENT EXCEEDS	6.0	31	2.7
90 PERCENT EXCEEDS	1.1	1.0	.30

e Estimated

a Median of annual mean discharges, 32 ft³/s.

b From high-water mark.

MINNESOTA RIVER BASIN

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD

LOCATION.--Lat 45°17'32", long 96°29'14", in SE1/4NW1/4 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 above mean sea level, 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.

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, from dam break.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	13	15	e9.9	e10	e8.6	1250	100	65	403	185	53
2	5.7	19	16	e9.7	e10	e8.7	693	99	65	488	155	51
3	5.5	17	e16	e9.6	e9.9	e8.8	402	102	87	394	147	49
4	5.7	15	e16	e9.5	e9.9	e9.0	296	106	68	1310	130	48
5	6.0	13	e15	e9.3	e9.8	e9.2	258	98	52	2450	119	46
6	5.5	12	e14	e9.1	e9.7	e9.4	233	91	51	1150	110	45
7	5.5	11	e14	e9.0	e9.6	e17	234	93	54	536	102	44
8	5.5	9.7	e14	e8.8	e9.5	e65	292	107	66	351	96	43
9	6.0	11	e14	e8.7	e9.4	e256	469	168	63	573	92	42
10	6.4	12	e13	e8.6	e9.2	e209	386	317	65	738	86	38
11	6.7	13	e13	e8.5	e9.1	e151	421	305	67	557	83	37
12	8.7	15	e13	e8.4	e9.0	e143	553	193	62	403	78	36
13	6.6	15	e13	e8.3	e8.9	e143	472	137	57	314	75	41
14	5.3	15	e13	e8.2	e8.8	e139	448	108	50	245	79	45
15	5.9	16	e13	e8.1	e8.7	e137	659	91	44	208	82	43
16	6.5	16	e14	e8.0	e8.6	124	695	82	47	188	95	41
17	8.6	15	e13	e8.0	e8.6	e113	515	75	56	769	95	39
18	7.0	16	e13	e8.1	e8.5	e102	359	74	68	3440	87	37
19	6.4	18	e12	e8.2	e8.6	91	305	71	91	2460	81	38
20	6.6	19	e12	e8.3	e8.6	82	271	69	161	2030	75	57
21	7.9	18	e12	e8.4	e8.6	79	221	67	444	1040	69	67
22	7.8	18	e12	e8.5	e8.6	75	181	62	268	890	76	83
23	7.0	18	e11	e8.6	e8.6	e79	160	61	183	338	75	81
24	6.9	18	e11	e8.8	e8.6	e117	151	72	156	282	68	71
25	6.1	18	e11	e9.1	e8.6	e176	148	73	157	1150	67	64
26	6.2	e18	e11	e9.3	e8.6	e249	146	75	137	2170	65	56
27	6.4	e18	e11	e9.4	e8.6	e365	133	75	108	1110	61	52
28	6.3	e17	e10	e9.4	e8.6	737	119	68	90	601	59	49
29	7.7	16	e10	e9.4	---	924	110	63	84	358	57	46
30	7.1	16	e10	e9.6	---	608	102	62	131	268	56	44
31	8.5	---	e10	e9.8	---	779	---	66	---	225	55	---
TOTAL	203.5	465.7	395	274.6	253.2	6013.7	10682	3230	3097	27439	2760	1486
MEAN	6.56	15.5	12.7	8.86	9.04	194	356	104	103	885	89.0	49.5
MAX	8.7	19	16	9.9	10	924	1250	317	444	3440	185	83
MIN	5.3	9.7	10	8.0	8.5	8.6	102	61	44	188	55	36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 1993, BY WATER YEAR (WY)

	MEAN	8.92	10.5	7.27	4.80	10.8	145	181	79.4	75.2	48.9	17.1	8.75
MAX	70.5	78.3	43.3	20.5	118	612	1386	491	478	885	327	65.7	
(WY)	1958	1972	1972	1987	1984	1978	1952	1972	1984	1993	1991	1942	
MIN	.60	.40	.20	.000	.000	2.85	3.63	.77	1.42	.035	.000	.36	
(WY)	1932	1935	1935	1934	1934	1969	1934	1934	1936	1934	1934	1935	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1910 - 1993

ANNUAL TOTAL	16653.3	56299.7	
ANNUAL MEAN	45.5	154	51.3a
HIGHEST ANNUAL MEAN			181
LOWEST ANNUAL MEAN			1.52
HIGHEST DAILY MEAN	1280	3440	6090
LOWEST DAILY MEAN	5.3	5.3	.00b
ANNUAL SEVEN-DAY MINIMUM	5.6	5.6	.00
INSTANTANEOUS PEAK FLOW		3890	6870
INSTANTANEOUS PEAK STAGE		11.25	14.32c
INSTANTANEOUS LOW FLOW		5.2	
ANNUAL RUNOFF (AC-FT)	33030	111700	37170
ANNUAL RUNOFF (CFSM)	.12	.40	.13
10 PERCENT EXCEEDS	76	397	90
50 PERCENT EXCEEDS	18	51	7.0
90 PERCENT EXCEEDS	7.2	8.4	1.3

e Estimated

a Median of annual mean discharges, 35.4 ft³/s.

b No flow at times in most years.

c From floodmark.

MINNESOTA RIVER BASIN

05291500 BIG STONE LAKE NEAR BIG STONE CITY, SD
(formerly published as Big Stone Lake at Ortonville)

LOCATION.--Lat 45°18'32", long 96°28'04", in NE1/4NW1/4 sec. 8, T. 121 N., R. 46 W., Grant County, Hydrologic Unit 07020001, at new powerplant intake, 1.2 mi north of Big Stone City, SD, 1.2 mi northwest of concrete dam at outlet, and 1.0 mi west of Ortonville. Prior to January 1989, at old powerplant site at west edge of Ortonville, MN.

PERIOD OF RECORD.--March 1937 to current year.

GAGE.--Nonrecording gage read once a day. Datum of gage is 957.69 ft above mean sea level. Prior to Sept. 17, 1947, nonrecording gage at site 1.2 mi southeast at same datum. Sept. 18, 1947, to June 30, 1963, water-stage recorder at site 1.2 mi southeast at same datum. Sept. 21, 1959, to June 30, 1963, supplementary nonrecording gage read once daily, at site 0.9 mi southeast at same datum. July 1, 1963, to January 1989 nonrecording gage at site 0.9 mi southeast at same datum.

REMARKS.--Natural lake with concrete dam at outlet. Dam was rebuilt and completed in November 1985, with the following changes: Eight 7 ft high by 10 ft wide electrically operated slide gates, one 48 in. by 48 in. gate; and one 18 in. sluice gate; sills of all gates are at 3.0 ft. Silt barrier dam 700 ft upstream in outlet channel of lake completed July 7, 1958; rebuilt and completed Dec. 1986 with the new crest at 7.0 ft (previous crest was at 5.9 ft). Supplementary nonrecording gage readings used for stages below crest of silt barrier to June 30, 1963. Water level subject to fluctuation caused by wind action.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 12.73 ft, Apr. 17, 1952; minimum observed, 3.53 ft, Mar. 2, 1957 (strong upstream wind in channel). Minimum observations of 3.10 ft, Mar. 2, 1940, and 2.20 ft, Nov. 20, 1940, at spillway site are the result of blockage of channel to spillway by ice and snow and do not represent lake elevations.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 9.88 ft, July 28; minimum observed, 6.63 ft, Oct. 21.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Oct. 31	6.85	Feb. 29	7.60	June 30	8.20
Nov. 30	7.14	Mar. 31	8.48	July 31	9.58
Dec. 31	7.30	Apr. 30	8.15	Aug. 31	7.92
Jan. 31	7.48	May 31	8.10	Sept. 28	7.40

NOTE.--Gage-height record other than that shown above is available in the Minnesota District Office.

MINNESOTA RIVER BASIN

05292704 NORTH FORK YELLOW BANK RIVER NEAR ODESSA, MN

LOCATION.--Lat 45°11'21", long 96°24'54", in NW1/4NW1/4SW1/4 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, SD, 6.4 mi southwest of Odessa, and 2.9 mi upstream from mouth.

DRAINAGE AREA.--Undetermined.

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,020 ft above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	5.7	e7.8	e7.3	e7.6	e5.5	909	60	31	518	169	20
2	4.1	8.5	e7.7	e7.4	e7.5	e5.8	535	62	32	393	140	20
3	4.7	10	e7.3	e7.4	e7.4	e6.6	356	65	32	317	129	17
4	4.7	9.2	e6.8	e7.3	e7.3	e9.0	251	66	34	715	111	19
5	4.1	8.3	e6.3	e7.2	e7.0	e16	205	58	32	1170	97	22
6	3.9	6.6	e6.5	e7.1	e6.3	e24	177	53	31	697	85	18
7	4.5	6.6	e6.7	e6.9	e5.8	e27	159	55	31	414	75	16
8	4.9	6.8	e6.6	e6.7	e5.3	e48	197	71	56	314	67	15
9	3.8	8.2	e7.2	e6.2	e4.9	e130	342	136	50	319	61	14
10	3.8	9.7	e7.3	e6.3	e5.5	e120	235	169	49	303	55	13
11	3.6	10	e7.2	e6.3	e5.2	e110	278	123	42	246	49	13
12	3.6	12	e7.1	e6.3	e5.0	e100	517	92	38	180	46	12
13	3.3	11	e7.2	e6.2	e5.4	e90	381	74	35	147	42	13
14	3.3	11	e7.5	e6.2	e5.3	e85	331	63	33	126	51	17
15	3.4	10	e7.9	e6.0	e4.9	e80	447	55	31	112	63	17
16	3.4	10	e8.5	e5.9	e4.8	e80	495	50	32	103	79	16
17	3.5	9.6	e7.6	e5.6	e5.0	e75	301	46	46	473	69	15
18	3.6	9.8	e7.5	e5.5	e5.0	e70	200	44	57	1020	56	14
19	3.6	10	e7.1	e5.3	e5.0	e60	169	41	90	1120	49	14
20	3.6	11	e6.8	e5.2	e5.0	e65	152	38	285	1000	42	25
21	4.7	10	e6.9	e5.1	e5.0	e65	130	36	586	588	38	55
22	6.7	10	e7.1	e5.2	e5.0	e65	112	34	357	392	37	96
23	4.6	10	e6.8	e5.3	e5.0	e70	101	35	227	301	38	82
24	4.1	11	e6.7	e5.6	e5.0	e90	94	38	202	247	34	61
25	4.3	10	e7.2	e5.8	e5.0	e260	86	42	199	797	30	48
26	3.7	9.8	e7.3	e6.1	e5.0	e360	79	43	150	1260	27	36
27	3.7	7.7	e7.1	e6.3	e5.1	e500	74	39	113	865	27	29
28	3.5	7.5	e7.2	e6.6	e5.2	e600	69	37	84	541	24	25
29	3.5	7.4	e7.3	e6.0	---	581	64	34	76	376	22	26
30	3.5	e7.4	e7.0	e7.1	---	316	59	33	145	268	22	22
31	3.7	---	e7.2	e7.3	---	535	---	32	---	210	22	---
TOTAL	123.3	274.8	222.4	194.7	155.5	4648.9	7505	1824	3206	15532	1856	810
MEAN	3.98	9.16	7.17	6.28	5.55	150	250	58.8	107	501	59.9	27.0
MAX	6.7	12	8.5	7.4	7.6	600	909	169	586	1260	169	96
MIN	3.3	5.7	6.3	5.1	4.8	5.5	59	32	31	103	22	12
AC-FT	245	545	441	386	308	9220	14890	3620	6360	30810	3680	1610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1993, BY WATER YEAR (WY)

	MEAN	5.47	7.37	6.48	6.48	12.7	93.4	136	34.0	159	318	36.4	16.6
MAX	6.95	9.16	7.17	6.68	19.7	150	250	58.8	212	501	59.9	27.0	
(WY)	1992	1993	1993	1992	1992	1993	1993	1993	1992	1993	1993	1993	1993
MIN	3.98	5.59	5.79	6.28	5.55	36.9	21.8	9.14	107	135	13.0	6.23	
(WY)	1993	1992	1992	1993	1993	1992	1992	1992	1993	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1992 - 1993

ANNUAL TOTAL	14630.3		36352.6										
ANNUAL MEAN	40.0		99.6							69.7			
HIGHEST ANNUAL MEAN										99.6		1993	
LOWEST ANNUAL MEAN										39.8		1992	
HIGHEST DAILY MEAN	1810	Jun 18				1260	Jul 26			1810	Jun 18 1992		
LOWEST DAILY MEAN	3.3	Oct 13				3.3	Oct 13,14			3.0	Dec 3 1991a		
ANNUAL SEVEN-DAY MINIMUM	3.4	Oct 11				3.4	Oct 11			3.4	Nov 30 1991		
INSTANTANEOUS PEAK FLOW						1480	Jul 26			2020	Jun 18 1992		
INSTANTANEOUS PEAK STAGE						12.02	Jul 26			13.32	Jun 18 1992		
ANNUAL RUNOFF (AC-FT)	29020		72110							50500			
10 PERCENT EXCEEDS	61		315							158			
50 PERCENT EXCEEDS	9.6		25							12			
90 PERCENT EXCEEDS	4.1		5.0							5.0			

e Estimated

a Also Dec. 4, 5, 1991.

MINNESOTA RIVER BASIN

05299700 COBB CREEK NEAR GARY, SD

LOCATION.--Lat 44°44'22", long 96°27'26", in NW1/4NW1/4SW1/4 sec.27, T.115 N., R.47 W., Deuel County, Hydrologic Unit 07020003, on right bank at upstream side of county highway bridge, 2.78 mi downstream from mouth of North Branch Cobb Creek, 0.3 mi upstream from South Dakota-Minnesota State line, and 3.5 mi south of Gary.

DRAINAGE AREA.--70.3 mi².

PERIOD OF RECORD.--May 1992 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,580 ft above sea level, 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 RECORD.--Maximum discharge, 860 ft³/s, June 17, 1992, gage height, 12.09 ft; minimum daily discharge, 1.7 ft³/s, June 4, 13, 1992.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	6.7	7.1	e2.5	e3.5	e4.0	278	50	25	177	77	19
2	4.1	11	6.4	e3.0	e4.0	e4.0	275	74	33	150	73	17
3	4.1	7.1	6.0	e3.0	e4.0	e4.0	235	58	34	158	53	15
4	3.9	5.3	6.9	e2.5	e4.0	e4.0	194	47	30	262	46	14
5	3.7	4.9	e6.5	e2.5	e4.0	e4.0	154	42	26	252	45	13
6	4.1	6.9	e6.0	e2.0	e4.0	e5.0	119	41	24	196	44	12
7	4.9	6.7	e6.0	e1.9	e3.5	e6.0	128	131	30	168	41	12
8	6.9	6.0	e6.0	e2.0	e3.5	e6.0	186	465	53	150	38	11
9	7.6	6.0	e6.5	e2.5	e3.5	e6.0	155	478	54	129	34	9.6
10	6.9	8.7	e6.5	e2.5	e3.0	e5.0	149	373	49	104	30	9.2
11	5.7	11	e6.5	e2.5	e3.0	e4.0	247	247	39	86	27	8.9
12	4.9	11	e6.5	e3.0	e3.0	e4.0	209	179	34	69	25	8.6
13	4.9	11	6.4	e3.5	e3.0	e3.0	178	131	38	57	24	10
14	4.7	10	6.2	e3.0	e3.0	e3.0	171	93	39	51	51	12
15	4.7	9.0	6.4	e2.5	e2.5	e4.0	198	69	34	45	199	10
16	5.5	8.7	6.7	e2.5	e2.0	e4.0	194	57	42	40	226	9.5
17	5.1	9.3	e6.0	e2.5	e2.0	e2.5	146	50	117	43	140	9.3
18	5.1	9.8	e4.0	e3.0	e2.5	e3.0	122	44	255	41	115	9.1
19	4.5	10	e4.0	e3.0	e2.5	e3.0	104	38	576	38	123	12
20	4.3	9.5	e4.0	e3.0	e2.5	e3.5	87	34	703	33	111	36
21	4.3	9.8	e4.0	e3.0	e3.0	e3.5	75	31	619	30	95	34
22	4.3	9.8	e4.0	e3.5	e3.0	e3.5	65	29	444	28	78	35
23	4.1	9.3	e3.0	e3.5	e2.8	e3.5	57	32	331	29	65	28
24	3.9	9.8	e3.0	e3.0	e2.5	e4.0	51	41	251	29	51	25
25	3.9	7.9	e3.0	e2.5	e2.5	e10	44	36	190	44	42	23
26	3.7	8.7	e3.0	e3.0	e2.5	e30	40	30	147	52	37	23
27	3.7	8.2	e3.0	e3.0	e3.0	e200	42	29	120	47	33	25
28	3.6	7.9	e3.0	e3.0	e3.5	e400	40	28	100	33	29	24
29	3.6	7.6	e2.5	e2.5	---	e350	35	26	134	29	25	23
30	3.7	7.4	e2.5	e3.0	---	400	33	26	198	26	24	21
31	3.7	---	e2.5	e3.5	---	425	---	25	---	36	21	---
TOTAL	143.0	255.0	154.1	86.4	85.8	1911.5	4011	3034	4769	2632	2022	518.2
MEAN	4.61	8.50	4.97	2.79	3.06	61.7	134	97.9	159	84.9	65.2	17.3
MAX	7.6	11	7.1	3.5	4.0	425	278	478	703	262	226	36
MIN	3.6	4.9	2.5	1.9	2.0	2.5	33	25	24	26	21	8.6
AC-FT	284	506	306	171	170	3790	7960	6020	9460	5220	4010	1030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

MEAN	4.61	8.50	4.97	2.79	3.06	61.7	134	97.9	159	84.9	65.2	17.3
MAX	4.61	8.50	4.97	2.79	3.06	61.7	134	97.9	159	84.9	65.2	17.3
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	4.61	8.50	4.97	2.79	3.06	61.7	134	97.9	159	84.9	65.2	17.3
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 WATER YEAR

ANNUAL TOTAL	19622.0
ANNUAL MEAN	53.8
HIGHEST DAILY MEAN	703 Jun 20
LOWEST DAILY MEAN	1.9 Jan 7
ANNUAL SEVEN-DAY MINIMUM	2.3 Jan 4
INSTANTANEOUS PEAK FLOW	829 Jun 20a
INSTANTANEOUS PEAK STAGE	11.86 Mar 27b
ANNUAL RUNOFF (AC-FT)	38980
10 PERCENT EXCEEDS	169
50 PERCENT EXCEEDS	11
90 PERCENT EXCEEDS	3.0

e Estimated

a Gage height, 11.81 ft.

b Backwater from ice.

LITTLE MISSOURI RIVER BASIN

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, SD

LOCATION.--Lat 45°32'49", long 103°58'23", in SW1/4 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 sea level. 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 fair 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.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.8	1.9	e1.1	e1.7	e1.3	370	44	16	467	425	24
2	1.1	1.8	1.7	e1.2	e1.8	e1.6	285	40	19	870	386	23
3	.73	1.7	e1.6	e1.3	e1.8	e1.8	271	36	20	898	459	22
4	.60	e1.6	e1.5	e1.3	e1.8	e2.3	241	33	17	824	433	21
5	.57	1.8	e1.5	e1.3	e1.9	e3.0	129	32	14	676	296	20
6	.43	2.3	e1.6	e1.3	e2.0	e4.5	202	58	14	405	198	20
7	.60	2.4	e1.6	e1.3	e2.0	e6.8	232	222	38	314	145	19
8	.54	2.1	e1.7	e1.3	e1.9	e10	162	148	1070	258	111	18
9	.59	2.1	e1.8	e1.3	e1.8	e8.5	93	85	3470	220	94	16
10	.57	2.0	e1.9	e1.3	e1.8	e7.2	103	169	3780	192	92	16
11	.84	2.0	e2.0	e1.3	e1.7	e6.0	190	317	3120	192	113	16
12	.57	2.2	e1.8	e1.3	e1.6	e5.0	112	233	2050	217	92	15
13	.44	1.7	e1.7	e1.3	e1.5	e6.2	72	195	1540	318	78	15
14	.47	1.7	e1.6	e1.3	e1.4	e10	74	141	1120	248	70	15
15	.60	1.8	e1.6	e1.3	e1.3	e24	212	92	676	301	69	14
16	.56	1.6	e1.5	e1.4	e1.2	e50	236	71	458	251	110	14
17	.52	1.6	e1.5	e1.5	e1.1	e62	163	59	380	218	229	12
18	.57	1.6	e1.5	e1.5	e1.1	e80	156	50	249	758	159	10
19	.63	e1.6	e1.5	e1.5	e1.1	e100	198	39	184	725	86	9.9
20	.88	1.6	e1.5	e1.6	e1.1	e160	720	33	161	960	61	11
21	1.0	1.6	e1.5	e1.7	e1.1	e220	528	29	133	1260	52	14
22	1.3	1.4	e1.5	e1.7	e1.1	e340	302	26	141	1090	46	13
23	1.1	1.6	e1.5	e1.6	e1.1	e500	206	23	132	835	42	12
24	1.2	1.6	e1.5	e1.6	e1.1	e1000	142	16	108	781	39	11
25	1.0	1.5	e1.5	e1.7	e1.1	1490	96	19	90	783	36	10
26	1.1	1.5	e1.5	e1.7	e1.1	1720	68	17	78	856	34	9.8
27	1.3	1.5	e1.5	e1.7	e1.2	1660	63	16	69	1050	29	9.9
28	1.5	1.6	e1.4	e1.7	e1.2	1280	57	14	61	993	25	9.6
29	1.3	1.8	e1.3	e1.6	---	1060	57	14	99	1080	23	11
30	1.1	1.8	e1.1	e1.6	---	797	52	26	192	847	26	11
31	1.2	---	e1.0	e1.7	---	512	---	19	---	582	25	---
TOTAL	26.01	52.9	48.3	45.0	40.6	11129.2	5792	2316	19499	19469	4083	442.2
TOTAL	26.01	52.9	48.3	45.0	40.6	11129.2	5792	2316	19499	19469	4083	442.2
MEAN	.84	1.76	1.56	1.45	1.45	359	193	74.7	650	628	132	14.7
MAX	1.5	2.4	2.0	1.7	2.0	1720	720	317	3780	1260	459	24
MIN	.43	1.4	1.0	1.1	1.1	1.3	52	14	14	192	23	9.6
AC-FT	52	105	96	89	81	22070	11490	4590	38680	38620	8100	877

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904-1905, 1957-1992, BY WATER YEAR (WY)

	MEAN	59.9	9.96	6.04	6.96	50.8	318	203	340	271	102	44.6	34.4
MAX	876	103	34.9	59.7	612	2121	1198	1894	1107	961	537	244	
(WY)	1972	1972	1972	1983	1978	1971	1978	1967	1905	1906	1905	1905	
MIN	.29	.000	.000	.000	.000	1.95	1.97	1.12	.11	.000	.000	.61	
(WY)	1905	1905	1905	1905	1969	1992	1981	1992	1961	1961	1904	1958	

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1904-1905, 1957-1992

ANNUAL TOTAL	5253.43	62943.21	121a	
ANNUAL MEAN	14.4	172	492	1978
HIGHEST ANNUAL MEAN			4.68	1961
LOWEST ANNUAL MEAN			8560	Mar 24 1978
HIGHEST DAILY MEAN	548	Jul 15	.43	Oct 6
LOWEST DAILY MEAN	.26	Jun 25	.53	Oct 12
ANNUAL SEVEN-DAY MINIMUM	.31	Jun 22		Jun 10
INSTANTANEOUS PEAK FLOW			3970	Jun 10
INSTANTANEOUS PEAK STAGE			13.31	Jun 10
ANNUAL RUNOFF (AC-FT)	10420	124800	87820	16.90
10 PERCENT EXCEEDS	13	505	230	Mar 24 1978
50 PERCENT EXCEEDS	1.4	14	9.0	
90 PERCENT EXCEEDS	.54	1.1	1.0	

e Estimated

a Median of annual mean discharge, 98 ft³/s.

b No flow at times in some years.

MISSOURI-OAHE RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE1/4NW1/4SE1/4 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 above sea level, revised. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good except those for period 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 OUTSIDE PERIOD OF RECORD.--Maximum stage known, 31.6 ft, Mar. 31, 1881, present site and datum.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11200	11100	12300	e18900	e18900	e12000	e10000	12100	17300	17100	17000	17500
2	11100	11100	14600	e19000	e18000	e11800	e9800	12000	16700	17600	17700	17400
3	10800	11000	17100	e18800	e17000	e11000	e9700	12300	16600	17600	17600	16600
4	11300	10900	18700	e18900	e16000	e10000	e10200	13200	16800	18000	17800	17400
5	11000	10900	19100	e19000	e16200	e10200	e9800	11900	16700	18100	17400	17400
6	10900	10600	19900	e19100	e15500	e10500	e10000	12200	16800	17900	18000	17700
7	10900	11200	19600	e19200	e15000	e11800	e10300	12300	16900	17600	17400	17400
8	10800	10800	19800	e18500	e14500	e12000	e10500	12800	17500	17800	17500	16800
9	11400	11000	19700	e18500	e14200	e11800	10300	12600	17500	17800	17700	13300
10	10900	11400	19500	e18700	e13800	e11000	10200	14000	17000	17800	17600	11300
11	10800	10800	19500	e19200	e14200	e11100	11000	15100	16800	17700	17900	11000
12	11000	10700	19400	e19700	e14500	e11200	10800	17700	17200	17600	17800	11100
13	11000	10900	19500	e19800	e14500	e11000	10700	19200	17000	17300	17400	11100
14	10900	11000	20000	e20000	e14500	e10900	10500	18600	17100	17800	18100	11500
15	11100	10700	e19500	e20200	e15000	e10500	10600	18000	17000	18600	18800	11100
16	10900	11200	e19300	e20000	e14500	e10200	10700	18000	16900	21900	17400	11500
17	10700	11400	e19000	e19500	e14500	e10800	11300	18400	16800	20800	17600	11000
18	11200	10900	e19000	e19000	e14500	e10100	9740	18900	17000	18100	17500	11100
19	10900	11000	e19000	e19200	e13000	e10100	10100	18100	16900	17400	17400	11200
20	11200	11000	e19000	e19200	e13100	e10200	10600	17400	15500	17600	18100	11200
21	10600	10800	e18500	e19500	e12900	e10400	10000	16900	17600	17600	17600	10900
22	11000	10900	e18700	e19800	e12700	e10300	10200	17000	16400	20100	17300	11400
23	10900	10700	e18900	e19900	e12200	e10100	10100	17000	18200	24900	17200	11400
24	10900	10800	e18000	e20000	e11900	e10200	9990	17900	17600	25700	17200	11300
25	10900	10800	e17900	e19500	e12000	e10100	10100	17000	17300	23800	18100	11700
26	10800	10700	e17900	e19800	e12300	e10000	10100	17100	17600	22500	17800	10700
27	11000	11000	e18900	e19900	e12500	e10000	10600	17100	16200	22100	17800	11200
28	11400	10700	e19000	e20000	e11800	e10200	10900	17200	16900	22400	17300	11200
29	10800	11100	e18800	e19500	---	e10300	12100	17300	17600	20800	17600	11300
30	10700	10700	e18900	e19000	---	e10600	11800	17600	17300	18300	17500	11300
31	11000	---	e19000	e18000	---	e10400	---	16900	---	17100	18000	---
TOTAL	340000	327800	578000	599300	399700	330800	312730	493800	510700	597400	547100	387000
MEAN	10970	10930	18650	19330	14270	10670	10420	15930	17020	19270	17650	12900
MAX	11400	11400	20000	20200	18900	12000	12100	19200	18200	25700	18800	17700
MIN	10600	10600	12300	18000	11800	10000	9700	11900	15500	17100	17000	10700
AC-FT	674400	650200	1146000	1189000	792800	656100	620300	979500	1013000	1185000	1085000	767600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1993, BY WATER YEAR (WY)

	MEAN	21010	21170	21000	23170	25570	23310	21870	22690	23940	24880	24420	21250
MAX	35080	35040	31690	32350	34840	34370	40370	42030	43540	64610	57010	39700	
(WY)	1969	1979	1970	1969	1969	1972	1972	1972	1975	1975	1975	1975	
MIN	8399	8155	7890	6519	5883	6317	10420	9234	8445	10840	9271	8121	
(WY)	1963	1963	1955	1955	1956	1955	1993	1963	1960	1960	1962	1962	

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1954 - 1993

ANNUAL TOTAL	6482500	5424330	
ANNUAL MEAN	17710	14860	
HIGHEST ANNUAL MEAN			22840
LOWEST ANNUAL MEAN			35630
HIGHEST DAILY MEAN	24000	Jan 17	14320
LOWEST DAILY MEAN	10200	Sep 25	1960
ANNUAL SEVEN-DAY MINIMUM	10800	Sep 21	68800
INSTANTANEOUS PEAK FLOW			4000
INSTANTANEOUS PEAK STAGE			4860
ANNUAL RUNOFF (AC-FT)	12860000	10760000	500000
10 PERCENT EXCEEDS	21500	19200	27.90
50 PERCENT EXCEEDS	19100	16200	
90 PERCENT EXCEEDS	10900	10500	

e Estimated.

a Backwater from ice.

MISSOURI-OAHE RIVER BASIN

06354882 OAK CREEK NEAR WAKPALA, SD

LOCATION.--Lat 45°42'43", long 100°33'32", in SW1/4SE1/4NW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.52	e.04	e.01	e.01	9.9	9.7	27	60	44	.90
2	.00	.00	e.50	e.03	e.02	e.04	8.0	11	28	32	24	1.0
3	.00	.00	e.48	e.03	e.04	e3.0	6.3	10	28	25	12	.97
4	.00	.00	e.46	e.03	e.06	e18	5.1	11	28	17	5.9	.86
5	.00	.00	e.42	e.02	e.08	95	4.3	13	27	12	3.4	.91
6	.00	.00	e.44	e.02	e.30	296	3.9	13	29	9.5	2.3	.80
7	.00	.00	e.40	e.01	e1.0	403	4.5	14	30	12	1.8	.81
8	.00	.00	e.40	e.00	e1.0	476	4.6	15	32	25	1.9	.73
9	.00	.00	e.40	e.00	e.60	545	5.0	16	34	38	2.7	.70
10	.00	.23	e.42	e.00	e.40	453	5.0	15	39	27	9.0	.67
11	.00	.26	e.42	e.00	e.30	300	5.6	15	39	21	5.3	.51
12	.00	.24	e.42	e.00	e.25	198	6.3	15	36	15	3.4	.41
13	.00	.22	e.44	e.00	e.20	121	6.0	16	38	35	2.9	.38
14	.00	.19	e.46	e.00	e.17	86	6.0	14	25	15	3.4	.30
15	.00	.20	e.42	e.00	e.13	81	5.5	12	20	8.8	2.8	.18
16	.00	.22	e.42	e.00	e.10	67	6.8	12	23	295	5.0	.13
17	.00	.27	e.44	e.00	e.07	43	6.6	14	21	383	5.6	.10
18	.00	.30	e.44	e.00	e.05	70	6.3	15	16	204	4.0	.07
19	.00	.27	e.40	e.00	e.03	89	6.3	16	16	89	2.4	.06
20	.00	.28	e.32	e.00	e.03	65	6.7	17	15	47	1.5	.07
21	.00	.30	e.35	e.00	e.03	46	4.9	18	14	29	1.7	.36
22	.00	.32	e.32	e.00	e.02	43	7.0	22	14	19	2.4	.49
23	.00	.36	e.30	e.00	e.01	54	7.4	23	28	14	2.5	.44
24	.00	.37	e.30	e.00	e.01	48	7.8	23	21	155	1.8	.34
25	.00	.35	e.28	e.00	e.01	50	7.5	23	16	76	1.9	.27
26	.00	.36	e.22	e.00	e.01	44	9.4	24	15	31	1.7	.30
27	.00	.35	e.16	e.00	e.01	40	11	24	16	318	1.5	.30
28	.00	.39	e.09	e.00	e.01	31	11	25	16	657	1.4	.30
29	.00	.43	e.06	e.00	---	22	11	26	66	367	1.1	.23
30	.00	.46	e.04	e.00	---	16	10	26	144	167	.79	.20
31	.00	---	e.04	e.00	---	13	---	27	---	80	.90	---
TOTAL	0.00	6.37	10.78	0.18	4.95	3816.05	205.7	534.7	901	3283.3	160.99	13.79
MEAN	.000	.21	.35	.006	.18	123	6.86	17.2	30.0	106	5.19	.46
MAX	.00	.46	.52	.04	1.0	545	11	27	144	657	.44	1.0
MIN	.00	.00	.04	.00	.01	.01	3.9	9.7	14	8.8	.79	.06
AC-FT	.00	13	21	.4	9.8	7570	408	1060	1790	6510	319	27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1993, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	.092	.37	.55	.70	1.52	148	43.2	20.7	8.58	13.3	1.78	.18
MAX	.62	1.81	1.83	4.23	9.70	568	171	131	36.8	106	5.91	1.07
(WY)	1987	1987	1987	1987	1987	1986	1987	1986	1991	1993	1985	1985
MIN	.000	.000	.000	.000	.000	1.81	.79	.096	.000	.000	.000	.000
(WY)	1985	1989	1989	1989	1985	1992	1992	1992	1992	1985	1987	1987

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1985 - 1993

ANNUAL TOTAL	249.40	8937.81	
ANNUAL MEAN	.68	24.5	
HIGHEST ANNUAL MEAN			20.2
LOWEST ANNUAL MEAN			70.7
HIGHEST DAILY MEAN	94	Aug 4	3200
LOWEST DAILY MEAN	.00	May 15	.00
ANNUAL SEVEN-DAY MINIMUM	.00	May 15	.00
INSTANTANEOUS PEAK FLOW			3780
INSTANTANEOUS PEAK STAGE			18.35
ANNUAL RUNOFF (AC-FT)	495	17730	14610
10 PERCENT EXCEEDS	1.3	43	16
50 PERCENT EXCEEDS	.19	1.0	.28
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for many days in each year.

b Gage height, 17.73 ft.

c Backwater from ice.

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 line.

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 sea level. 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 good except those for periods of estimated daily discharge, which are poor. Flow regulated since August 1966 by Bowman-Haley Lake (station 06354988) 8 mi upstream. There are some small diversions for irrigation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	2.6	e.90	e.52	e.00	e.00	17	8.1	2.0	10	83	7.8
2	e.00	3.2	e.90	e.52	e.00	e.00	16	5.4	2.2	7.1	81	7.5
3	e.00	3.4	e.90	e.50	e.00	e1.0	15	4.6	2.2	3.5	73	7.4
4	e.00	2.0	e.90	e.50	e.00	e25	14	4.7	2.0	2.5	62	7.4
5	e.00	2.6	e.90	e.50	e.00	e35	14	4.4	1.8	3.7	54	7.4
6	e.00	2.6	e.88	e.50	e.00	e50	13	4.4	1.3	9.5	48	7.6
7	e.10	2.4	e.88	e.40	e.00	e60	11	4.8	1.2	9.9	43	7.8
8	e.15	2.4	e.86	e.30	e.00	e38	11	4.8	2.2	6.9	37	7.8
9	e.20	2.4	e.86	e.20	e.00	e10	11	5.3	2.7	3.5	33	7.8
10	e.20	2.4	e.84	e.10	e.00	e7.0	11	8.1	3.3	2.4	29	7.7
11	e.20	2.4	e.84	e.05	e.00	e5.0	11	6.9	3.3	1.9	26	6.8
12	e.20	2.4	e.82	e.02	e.00	e4.0	10	3.6	2.6	2.0	23	5.1
13	e.20	1.6	e.82	e.01	e.00	e10	8.4	2.2	1.7	2.6	21	4.0
14	e.20	1.6	e.74	e.01	e.00	e20	7.4	1.4	.80	3.4	19	3.6
15	e.50	1.6	e.74	e.00	e.00	e35	7.6	1.4	1.9	6.1	17	3.4
16	e1.0	1.3	e.70	e.00	e.00	e35	7.1	1.5	3.0	9.5	15	3.4
17	1.6	e1.2	e.68	e.00	e.00	e40	7.2	1.5	2.4	12	13	3.4
18	1.6	e1.2	e.66	e.00	e.00	e50	6.4	1.9	1.6	30	13	3.6
19	1.7	e1.2	e.64	e.00	e.00	e45	8.1	2.1	.47	33	12	3.7
20	1.8	e1.2	e.64	e.00	e.00	e40	7.8	2.2	.16	29	10	3.7
21	1.6	e1.2	e.62	e.00	e.00	e38	9.2	2.2	.09	31	8.7	3.7
22	1.6	e1.1	e.60	e.00	e.00	e36	9.9	1.9	.12	37	7.3	3.7
23	1.8	e1.1	e.60	e.00	e.00	e40	8.6	1.7	.17	42	6.4	3.2
24	1.9	e1.1	e.58	e.00	e.00	e35	8.4	2.0	.32	45	7.5	2.6
25	1.8	e1.1	e.58	e.00	e.00	e28	9.5	2.6	.69	47	7.7	2.3
26	1.8	e1.1	e.56	e.00	e.00	e22	10	3.2	1.8	49	7.4	2.0
27	2.0	e1.1	e.56	e.00	e.00	20	8.9	2.8	2.9	48	7.4	1.8
28	2.0	e1.0	e.54	e.00	e.00	19	14	2.2	2.9	54	7.4	1.8
29	2.0	e1.0	e.54	e.00	---	18	22	1.9	2.9	68	7.4	1.7
30	2.0	e1.0	e.54	e.00	---	19	15	1.8	6.5	78	7.8	1.6
31	1.9	---	e.54	e.00	---	18	---	2.0	---	83	7.8	---
TOTAL	30.05	52.5	22.36	4.13	0.00	803.00	329.5	103.6	57.22	770.5	794.8	141.3
MEAN	.97	1.75	.72	.13	.000	25.9	11.0	3.34	1.91	24.9	25.6	4.71
MAX	2.0	3.4	.90	.52	.00	60	22	8.1	6.5	83	83	7.8
MIN	.00	1.0	.54	.00	.00	.00	6.4	1.4	.09	1.9	6.4	1.6
AC-FT	60	104	44	8.2	.00	1590	654	205	113	1530	1580	280

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1993, BY WATER YEAR (WY)

	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
MEAN	2.07	2.42	1.50	2.95	8.08	73.7	103	32.9	43.5	19.6	5.75	1.80														
MAX	23.0	32.9	12.3	56.4	97.5	457	1683	266	291	210	49.1	27.0														
(WY)	1983	1983	1983	1973	1947	1972	1952	1982	1953	1915	1914	1951														
MIN	.16	.17	.029	.000	.000	.70	.69	.60	.20	.065	.000	.000														
(WY)	1962	1962	1962	1909	1949	1915	1961	1992	1990	1961	1961	1992														

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1908 - 1993

ANNUAL TOTAL	461.76	3108.96	
ANNUAL MEAN	1.26	8.52	24.7
HIGHEST ANNUAL MEAN			143
LOWEST ANNUAL MEAN			.88
HIGHEST DAILY MEAN	38	Jun 14	13100
LOWEST DAILY MEAN	.00	Aug 26	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 26	.00
INSTANTANEOUS PEAK FLOW			84
INSTANTANEOUS PEAK STAGE			6.38a
ANNUAL RUNOFF (AC-FT)	916	6170	17900
10 PERCENT EXCEEDS	2.5	29	30
50 PERCENT EXCEEDS	.90	2.2	1.5
90 PERCENT EXCEEDS	.00	.00	.20

e Estimated.

a Backwater from ice.

GRAND-MOREAU RIVER BASIN

06355500 NORTH FORK GRAND RIVER NEAR WHITE BUTTE, SD

LOCATION.--Lat 45°48'08", long 102°21'43", in SW1/4NW1/4NW1/4 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 above sea level, 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 poor. Flow regulated by Bowman-Haley Dam, capacity, 93,000 acre-ft, 71 mi upstream, beginning August 1966. Maximum discharge prior to October 1966, 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 most years. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	2.3	e.08	e.23	e.09	e61	e20	e3.9	e100	e200	9.0
2	.00	.00	1.1	e.09	e.18	e.09	e52	e18	e3.8	e50	e180	8.3
3	.00	.00	e.90	e.09	e.15	e7.4	e49	e17	e3.7	e80	e170	7.9
4	.00	.00	e.80	e.09	e.16	e257	e46	e16	e3.6	e70	e200	7.8
5	.00	.00	e.70	e.09	e.18	e647	e43	e15	e3.5	e60	e180	7.6
6	.00	.00	e.60	e.09	e.20	e1880	e40	e14	e3.4	e50	e150	7.8
7	.00	.00	e.50	e.09	e.15	e1130	e38	e15	e4.0	e40	e120	8.0
8	.00	.00	e.50	e.09	e.10	e686	e36	e17	e8.0	e60	e100	7.9
9	.00	.00	e.80	e.09	e.09	e508	e34	e20	e5.0	e90	e90	7.6
10	.00	.00	1.5	e.09	e.08	e257	e33	e17	e4.0	e80	e80	6.8
11	.00	.00	1.1	e.09	e.08	e174	e33	e15	e3.5	e70	e70	6.5
12	.00	.00	1.4	e.09	e.08	e162	e34	e13	e3.4	e60	e60	6.7
13	.00	.00	.57	e.09	e.08	e112	e33	e12	e3.2	e80	e55	6.1
14	.00	.00	e.35	e.09	e.08	e88	e33	e10	e3.0	e70	e50	5.9
15	.00	.00	e.20	e.09	e.07	e82	e33	e9.0	e3.0	e130	e60	5.7
16	.00	.00	e.20	e.09	e.07	e77	e30	e8.0	e3.0	e125	e40	5.7
17	.00	.02	e.20	e.09	e.06	e78	e27	e7.0	e3.0	e180	e30	5.7
18	.00	.06	e.18	e.09	e.07	e78	e24	e6.5	e3.0	e200	28	5.9
19	.00	.12	e.16	e.09	e.07	e90	e20	e6.0	e3.0	e100	23	6.3
20	.00	.15	e.15	e.09	e.07	e105	e20	e5.2	e3.0	e78	21	6.6
21	.00	.19	e.16	e.10	e.07	e92	e20	e4.8	e3.0	e80	18	5.8
22	.00	.26	e.15	e.09	e.06	e80	e20	e4.3	e3.0	e84	16	5.1
23	.00	.33	e.14	e.09	e.06	e72	e40	e4.0	e3.1	e86	15	4.5
24	.00	.38	e.20	e.09	e.06	e60	e35	e4.0	e3.2	e88	14	4.6
25	.00	e.40	e.18	e.10	e.06	e52	e30	e4.0	e3.3	e83	13	4.7
26	.00	e.80	e.15	e.15	e.06	e66	e40	e4.0	e3.4	e126	12	4.8
27	.00	e6.0	e.13	e.20	e.07	e68	e33	e3.9	e3.6	e593	11	4.7
28	.00	e15	e.10	e.15	e.08	e68	e28	e3.9	e3.6	e650	10	4.5
29	.00	e9.0	e.09	e.10	---	e69	e25	e3.8	e5.0	e540	8.8	4.5
30	.00	e4.0	e.08	e.18	---	e69	e23	e4.0	e20	e380	8.6	4.2
31	.00	---	e.07	e.30	---	e69	---	e3.9	---	e280	9.0	---
TOTAL	0.00	36.71	15.66	3.34	2.77	7183.58	1013	305.3	125.2	4763	2042.4	187.2
MEAN	.0000	1.22	.51	.11	.099	232	33.8	9.85	4.17	154	65.9	6.24
MAX	.00	15	2.3	.30	.23	1880	61	20	20	650	200	9.0
MIN	.00	.00	.07	.08	.06	.09	20	3.8	3.0	40	8.6	4.2
AC-FT	.00	73	31	6.6	5.5	14250	2010	606	248	9450	4050	371

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1993, BY WATER YEAR (WY) *

	6.86	7.16	4.38	7.34	12.4	160	116	86.5	58.3	25.1	8.41	3.01
MEAN	72.1	56.9	21.2	61.1	102	964	627	414	229	154	65.9	27.1
MAX	1983	1983	1983	1973	1983	1978	1978	1982	1982	1993	1993	1979
(WY)	.000	.000	.000	.000	.000	2.22	.007	.071	.032	.000	.000	.000
MIN	1969	1989	1989	1991	1969	1975	1981	1981	1981	1980	1968	1968
(WY)												

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1967 - 1993 *

ANNUAL TOTAL	1185.22	15678.16	
ANNUAL MEAN	3.24	43.0	
HIGHEST ANNUAL MEAN			41.5a
LOWEST ANNUAL MEAN			160
HIGHEST DAILY MEAN	145	Jun 17	2.72
LOWEST DAILY MEAN	.00	Jun 6	6030
ANNUAL SEVEN-DAY MINIMUM	.00	Jun 6	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			6710
ANNUAL RUNOFF (AC-FT)	2350	31100	12.08
10 PERCENT EXCEEDS	4.7	88	30070
50 PERCENT EXCEEDS	1.1	4.0	82
90 PERCENT EXCEEDS	.00	.00	4.5
			.00

e Estimated

* Regulated period only (1967-93). See REMARKS.

a Median of annual mean discharges, 32 ft³/s.

b No flow at times in most years.

c Gage height, 11.63 ft.

d Backwater from ice.

GRAND-MOREAU RIVER BASIN

06356000 SOUTH FORK GRAND RIVER AT BUFFALO, SD

LOCATION.--Lat 45°34'34", long 103°32'38", in SW1/4 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 sea level. Prior to May 5, 1970, nonrecording gage at same site and datum.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	e2.0	e.95	e.20	e1.1	e2.0	5.5	2.9	4.9	153	23	2.6
2	1.4	e1.9	e.90	e.23	e1.2	e3.8	4.6	2.9	11	238	13	2.6
3	1.4	e1.8	e.88	e.27	e1.4	e5.0	3.9	2.8	11	536	11	2.5
4	1.4	e1.7	e.83	e.30	e1.6	e10	3.8	2.7	6.2	146	7.8	2.5
5	1.3	e1.5	e.80	e.32	e2.0	e18	3.6	3.1	3.4	23	7.6	2.6
6	1.2	e1.6	e.80	e.35	e2.5	e30	3.5	47	2.8	20	5.5	2.6
7	1.5	e1.8	e.88	e.37	e2.0	e50	3.6	18	30	22	5.9	2.6
8	1.5	2.6	e.94	e.40	e1.9	e80	3.8	179	357	19	5.0	2.7
9	1.6	4.1	e1.0	e.39	e1.7	e120	3.8	108	131	8.3	4.8	2.6
10	1.5	4.0	e1.0	e.37	e1.6	e70	14	13	18	16	4.3	2.5
11	1.7	3.5	e1.0	e.38	e1.5	e30	12	6.7	6.7	25	4.2	2.5
12	1.6	3.0	e.90	e.38	e1.3	e7.0	5.4	4.5	4.6	12	3.9	2.5
13	1.6	2.4	e.80	e.38	e1.2	e5.0	4.2	3.5	3.7	111	3.7	2.4
14	1.5	2.4	e.70	e.38	e1.2	e4.0	3.8	3.4	3.2	42	8.0	2.4
15	1.7	2.2	e.65	e.39	e1.0	e20	3.7	3.1	2.9	7.2	26	2.5
16	1.8	2.1	e.60	e.40	e1.0	e50	3.4	2.8	2.8	78	4.7	2.5
17	2.0	2.0	e.52	e.40	e1.0	e150	3.4	8.6	2.8	184	3.8	2.4
18	2.5	e1.9	e.47	e.40	e1.0	e90	3.6	3.0	2.8	125	3.3	2.5
19	2.3	e1.8	e.40	e.40	e1.0	e55	8.7	3.0	2.8	99	3.1	2.6
20	2.2	e1.7	e.35	e.45	e1.0	e40	16	2.8	2.6	16	3.0	2.6
21	2.3	e1.6	e.33	e.50	e1.0	e20	7.5	2.6	2.3	7.1	3.0	2.6
22	2.2	e1.5	e.32	e.47	e1.0	e21	4.1	3.9	2.2	6.0	3.0	2.5
23	1.9	e1.3	e.30	e.45	e1.0	e18	3.5	3.8	2.7	5.3	2.9	2.4
24	2.0	e1.0	e.30	e.50	e1.0	e21	3.4	3.3	2.7	9.2	2.8	2.4
25	1.9	e.90	e.30	e.60	e1.0	e17	3.7	2.8	3.1	59	2.7	2.4
26	1.8	e.90	e.30	e.70	e1.0	11	3.6	4.0	2.3	164	2.7	2.3
27	1.9	e.95	e.30	e.70	e1.0	8.3	3.0	14	2.1	546	2.8	2.3
28	1.9	e1.0	e.30	e.68	e1.0	5.8	2.7	3.0	1.9	1060	2.8	2.4
29	1.9	e1.0	e.28	e.62	---	5.2	2.6	2.5	180	257	2.7	2.3
30	2.0	e.98	e.26	e.75	---	5.8	2.6	15	546	102	2.8	2.3
31	2.1	---	e.24	e.90	---	5.9	---	12	---	46	2.6	---
TOTAL	55.0	57.13	18.60	14.03	36.2	978.8	151.0	487.7	1355.5	4142.1	182.4	74.6
MEAN	1.77	1.90	.60	.45	1.29	31.6	5.03	15.7	45.2	134	5.88	2.49
MAX	2.5	4.1	1.0	.90	2.5	150	16	179	546	1060	26	2.7
MIN	1.2	.90	.24	.20	1.0	2.0	2.6	2.5	1.9	5.3	2.6	2.3
AC-FT	109	113	37	28	72	1940	300	967	2690	8220	362	148

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1993, BY WATER YEAR (WY)

	MEAN	5.13	2.82	1.96	1.67	4.26	15.6	11.6	18.4	20.2	12.1	4.13	4.06
MAX	41.5	6.02	4.25	5.36	31.4	117	65.6	85.4	113	134	18.1	23.5	
(WY)	1972	1992	1983	1983	1986	1978	1975	1982	1963	1993	1981	1986	
MIN	1.44	1.25	.60	.039	.000	2.45	3.00	1.45	2.15	.98	.93	1.21	
(WY)	1965	1974	1993	1960	1960	1965	1968	1958	1961	1961	1990	1990	

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1956 - 1993

ANNUAL TOTAL	1641.61	7553.06	
ANNUAL MEAN	4.49	20.7	8.53a
HIGHEST ANNUAL MEAN			22.5
LOWEST ANNUAL MEAN			2.59
HIGHEST DAILY MEAN	177	1060	1610
LOWEST DAILY MEAN	.24	.20	.00
ANNUAL SEVEN-DAY MINIMUM	.28	.25	.00
INSTANTANEOUS PEAK FLOW		2160	2780
INSTANTANEOUS PEAK STAGE		8.68	9.01
ANNUAL RUNOFF (AC-FT)	3260	14980	6180
10 PERCENT EXCEEDS	6.1	28	10
50 PERCENT EXCEEDS	2.0	2.6	2.5
90 PERCENT EXCEEDS	.93	.49	1.0

e Estimated

a Median of annual mean discharges, 7.0 ft³/s.

b No flow at times in 1956-58, 1960, 1962, 1965, 1972, 1990.

c From rating curve extended above 550 ft³/s on basis of slope-area measurement of peak flow.

GRAND-MOREAU RIVER BASIN

06356500 SOUTH FORK GRAND RIVER NEAR CASH, SD

LOCATION.--Lat 45°38'56", long 102°38'27", in SE1/4NE1/4SE1/4 (revised) 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	9.3	e9.0	e.30	e.35	e8.5	44	16	13	798	223	21
2	7.5	9.3	e9.0	e.20	e.60	e9.0	41	15	21	498	151	20
3	7.2	e8.8	e7.0	e.10	e1.2	e20	36	14	23	527	110	20
4	7.1	e8.2	e5.5	e.00	e2.0	e45	31	13	18	653	92	20
5	7.3	7.9	3.8	e.00	e3.4	e100	28	13	21	615	82	19
6	6.9	e8.0	e4.0	e.00	e6.0	e220	27	14	21	220	71	19
7	7.2	e8.0	e4.8	e.00	e11	e500	27	15	28	99	64	19
8	7.2	e9.0	5.7	e.00	e20	e1100	24	31	48	74	59	19
9	7.7	e10	6.5	e.00	e18	e950	22	52	69	172	54	18
10	7.7	e10	7.3	e.00	e17	e780	24	169	326	133	49	17
11	8.2	e9.0	8.2	e.00	e16	e600	23	96	142	113	48	17
12	8.1	e8.0	e7.6	e.00	e15	e420	26	44	68	125	45	17
13	8.2	e7.0	e6.8	e.00	e13	e300	36	30	40	491	50	16
14	8.2	e8.0	e6.0	e.00	e12	e200	30	22	25	1010	96	16
15	8.8	e12	e6.5	e.00	e10	e220	24	17	19	635	82	16
16	9.0	e15	e6.8	e.00	e9.0	e250	22	15	17	1120	60	16
17	9.5	e12	e7.0	e.00	e8.0	e170	21	14	14	1390	63	16
18	9.1	10	e6.0	e.00	e8.0	e200	20	13	13	809	46	17
19	8.5	9.3	e5.0	e.00	e8.0	e250	20	14	12	e746	37	17
20	8.1	9.3	e4.5	e.00	e8.0	e300	22	17	11	e515	33	18
21	7.7	9.1	e4.0	e.00	e8.0	e250	29	14	9.4	347	30	17
22	8.2	e8.0	e3.5	e.00	e8.0	e210	38	13	8.6	202	e27	17
23	7.8	e7.0	e3.0	e.00	e7.6	e180	38	12	9.2	230	25	16
24	7.6	e6.0	e2.8	e.00	e7.2	e150	30	11	8.3	186	25	16
25	7.6	e6.0	e2.4	e.00	e7.0	e120	30	11	8.1	451	25	16
26	7.0	e6.5	e2.2	e.10	e7.0	e100	29	12	8.4	631	23	16
27	7.3	e7.0	e2.0	e.20	e7.5	89	24	12	7.7	1740	23	15
28	7.2	e8.0	e1.8	e.15	e8.0	69	21	11	7.1	1930	22	15
29	7.1	e8.0	e1.0	e.10	---	54	18	11	28	933	21	15
30	6.9	e9.0	e.70	e.15	---	49	16	19	135	544	21	15
31	7.8	---	e.50	e.20	---	44	---	14	---	341	21	---
TOTAL	241.3	262.7	150.90	1.50	246.85	7957.5	821	774	1178.8	18278	1778	516
MEAN	7.78	8.76	4.87	.048	8.82	257	27.4	25.0	39.3	590	57.4	17.2
MAX	9.5	15	9.0	.30	20	1100	44	169	326	1930	223	21
MIN	6.9	6.0	.50	.00	.35	8.5	16	11	7.1	74	21	15
AC-FT	479	521	299	3.0	490	15780	1630	1540	2340	36250	3530	1020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1993, BY WATER YEAR (WY)

	MEAN	21.2	11.6	6.42	6.48	20.0	145	168	74.1	75.4	45.5	20.4	14.8
MAX	135	26.6	20.5	64.1	267	807	2446	401	336	590	85.6	62.7	
(WY)	1983	1973	1973	1973	1972	1952	1982	1967	1993	1981	1986		
MIN	6.32	3.57	.000	.000	.000	5.58	10.7	9.39	5.37	2.84	1.16	4.40	
(WY)	1959	1956	1956	1949	1949	1975	1981	1992	1961	1961	1959	1981	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1947 - 1993

ANNUAL TOTAL	5246.80	32206.55	51.3a	
ANNUAL MEAN	14.3	88.2	221	1950
HIGHEST ANNUAL MEAN			10.1	1961
LOWEST ANNUAL MEAN			15600	Apr 16 1950
HIGHEST DAILY MEAN	244	Jun 18	.00	Dec 18 1945b
LOWEST DAILY MEAN	.50	Dec 31	.00	Dec 18 1945
ANNUAL SEVEN-DAY MINIMUM	1.5	Dec 25	.00	Apr 15 1950c
INSTANTANEOUS PEAK FLOW			3030	Jul 27
INSTANTANEOUS PEAK STAGE			7.97	Jul 27
ANNUAL RUNOFF (AC-FT)	10410	63880	37170	
10 PERCENT EXCEEDS	25	220	71	
50 PERCENT EXCEEDS	8.2	15	12	
90 PERCENT EXCEEDS	4.2	1.1	2.0	

e Estimated

a Median of annual mean discharges, 36 ft³/s.

b No flow at times in most years.

c From rating curve extended above 14,000 ft³/s on basis of slope-area measurement of peak flow.

GRAND-MOREAU RIVER BASIN

06357000 SHADEHILL RESERVOIR AT SHADEHILL, SD

LOCATION.--Lat 45°45'12", long 102°12'12", in E1/2 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 sea level. 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, 98,100 acre-ft, July 29, elevation, 2,275.30 ft; minimum, 45,900 acre-ft, Feb. 25, elevation, 2,264.07 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,264.79	48,900	-
Oct. 31	2,264.40	47,200	-1,700
Nov. 30	2,264.32	46,900	-300
Dec. 31	2,264.23	46,500	-400
CAL YR 1992	-	-	-1,300
Jan. 31	2,264.20	46,400	-100
Feb. 28	2,264.07	45,900	-500
Mar. 31	2,271.12	77,200	+31,300
Apr. 30	2,272.13	82,100	+4,900
May 31	2,271.96	81,200	-900
June 30	2,272.16	82,200	+1,000
July 31	2,274.69	94,900	+12,700
Aug. 31	2,271.82	80,600	-14,300
Sept. 30	2,270.61	74,800	-5,800
WTR YR 1993	-	-	+25,900

GRAND-MOREAU RIVER BASIN

06357800 GRAND RIVER AT LITTLE EAGLE, SD

LOCATION.--Lat 45°39'28", long 100°49'04", in NE1/4NE1/4 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 sea level. 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 since July 1, 1950. (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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	e13	e10	e.00	e1.0	e3.7	80	44	32	4560	2210	122
2	8.9	e13	e9.5	e.00	e2.0	e4.0	85	46	33	2040	1890	121
3	9.1	e12	e9.0	e.00	e4.0	e15	81	46	32	1010	1580	120
4	9.0	e12	e8.0	e.00	e10	e50	84	46	58	1540	1300	120
5	8.0	e11	e7.0	e.00	e9.0	e200	86	42	68	2190	1080	121
6	7.5	e16	e6.0	e.00	e8.0	e3000	81	45	58	1180	925	125
7	6.7	e20	e6.0	e.00	e6.8	e7100	86	45	52	778	837	126
8	6.9	27	e6.0	e.00	e5.8	6780	84	56	1670	686	736	124
9	7.7	25	e6.2	e.00	e6.0	3870	85	289	2470	622	653	122
10	8.6	25	e7.0	e.00	e5.5	2050	94	285	1380	690	576	120
11	8.8	24	e6.5	e.00	e5.0	1190	102	296	721	918	514	120
12	9.6	28	e6.0	e.00	e5.0	701	86	232	426	1050	454	122
13	11	26	e5.6	e.00	e4.9	412	70	153	276	917	408	121
14	12	33	e5.4	e.00	e4.5	630	56	105	184	3120	380	121
15	13	36	e5.2	e.00	e4.4	365	49	77	154	2740	356	122
16	16	26	e5.0	e.00	e4.2	464	46	66	162	2240	376	125
17	14	23	e4.6	e.00	e4.1	327	43	64	148	4550	333	126
18	15	19	e4.0	e.00	e4.0	315	40	58	189	4210	287	94
19	15	17	e3.5	e.00	e4.0	275	39	55	185	2280	257	75
20	15	15	e3.0	e.00	e4.0	349	37	52	136	2220	226	75
21	16	14	e2.8	e.00	e4.0	326	33	49	114	2020	202	73
22	16	14	e2.5	e.00	e3.8	247	33	48	95	2590	180	71
23	16	13	e2.0	e.00	e3.6	218	47	43	88	2620	187	71
24	16	9.6	e1.8	e.00	e3.4	166	86	40	138	1810	204	67
25	15	e9.0	e1.7	e.00	e3.3	156	73	38	745	1270	192	66
26	14	e10	e1.6	e.02	e3.3	153	61	35	495	1490	172	65
27	15	e10	e1.4	e.04	e3.4	152	54	34	224	2870	149	66
28	14	e10	e1.0	e.02	e3.6	150	48	34	104	6290	137	66
29	14	e10	e.70	e.01	---	130	48	34	199	5030	130	66
30	13	e9.5	e.30	e.10	---	112	45	34	1340	3130	126	66
31	13	---	e.05	e.50	---	96	---	31	---	2580	124	---
TOTAL	372.0	530.1	139.35	0.69	130.6	30006.7	1942	2522	11976	71241	17181	2999
MEAN	12.0	17.7	4.50	.022	4.66	968	64.7	81.4	399	2298	554	100
MAX	16	36	10	.50	10	7100	102	296	2470	6290	2210	126
MIN	6.7	9.0	.05	.00	1.0	3.7	33	31	32	622	124	65
AC-FT	738	1050	276	1.4	259	59520	3850	5000	23750	141300	34080	5950

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1993, BY WATER YEAR (WY)

	MEAN	78.2	51.0	29.9	47.9	72.9	803	520	449	313	199	104	81.0
MAX	231	204	103	867	782	3866	3183	2292	1045	2298	554	249	
(WY)	1980	1961	1983	1973	1973	1987	1978	1986	1967	1993	1993	1973	
MIN	2.92	2.14	.000	.000	.000	18.2	10.3	5.45	20.5	10.8	.000	2.29	
(WY)	1959	1960	1960	1959	1959	1981	1981	1981	1989	1991	1959	1960	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1959 - 1993

ANNUAL TOTAL	17390.75	139040.44	
ANNUAL MEAN	47.5	381	230a
HIGHEST ANNUAL MEAN			745
LOWEST ANNUAL MEAN			46.3
HIGHEST DAILY MEAN	1280	7100	26500
LOWEST DAILY MEAN	.05	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.96	.00	.00
INSTANTANEOUS PEAK FLOW		8110	31000
INSTANTANEOUS PEAK STAGE		11.20	21.76
ANNUAL RUNOFF (AC-FT)	34490	275800	166700
10 PERCENT EXCEEDS	103	1180	420
50 PERCENT EXCEEDS	15	48	60
90 PERCENT EXCEEDS	3.9	1.2	3.5

e Estimated

a Median of annual mean discharges, 180 ft³/s.

b No flow at times in most years.

c Gage height, 10.72 ft.

d Gage height, 19.16 ft.

f From floodmarks, ice jam, site and datum then in use.

GRAND-MOREAU RIVER BASIN

06359500 MOREAU RIVER NEAR FAITH, SD

LOCATION.--Lat 45°11'52", long 102°09'22", in NW1/4NW1/4 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	23	e10	e1.1	e2.8	e4.0	502	41	28	1120	949	28
2	.27	28	e9.0	e1.2	e2.7	e4.2	366	34	38	3580	1670	28
3	.24	22	e8.5	e1.5	e2.6	e4.5	278	30	32	3630	1870	27
4	.24	e16	e8.0	e1.5	e2.7	e5.0	201	25	27	1680	604	26
5	.26	e13	e7.5	e1.4	e2.9	e10	148	91	24	885	362	26
6	.26	e14	e7.0	e1.4	e3.0	e100	122	75	23	546	251	26
7	.32	18	e7.0	e1.3	e2.9	e1000	121	64	256	361	193	26
8	.31	20	e7.4	e1.3	e2.8	e2000	107	1180	1270	280	155	25
9	.31	21	e7.6	e1.2	e2.7	e3000	105	2050	1460	389	129	23
10	.39	24	e8.0	e1.2	e2.5	e2000	92	2170	2270	1060	110	21
11	.55	24	e8.5	e1.2	e2.4	e1350	79	3310	1890	2010	96	21
12	.70	23	e8.0	e1.2	e2.3	766	68	933	987	1200	84	21
13	.73	18	e7.8	e1.2	e2.1	440	64	430	511	1360	80	19
14	.77	22	e7.4	e1.2	e2.0	288	62	263	304	1310	85	19
15	.88	27	e7.1	e1.3	e2.0	385	61	185	209	1230	156	19
16	4.5	22	e6.9	e1.4	e2.0	626	163	134	160	681	269	18
17	4.0	20	e6.5	e1.5	e2.1	561	269	111	120	905	199	17
18	2.7	21	e6.3	e1.6	e2.2	591	174	94	97	862	130	18
19	2.3	20	e6.0	e1.7	e2.4	487	132	92	85	593	92	21
20	4.1	20	e5.8	e1.8	e2.5	532	107	77	70	1550	73	25
21	3.9	19	e5.5	e1.9	e2.6	610	99	63	57	3910	61	25
22	3.6	e16	e5.2	e2.0	e2.7	711	89	57	48	1420	56	23
23	4.7	e14	e5.0	e2.2	e2.8	777	164	50	54	664	49	22
24	5.9	e12	e4.9	e2.5	e2.9	769	182	47	46	546	44	22
25	6.6	e11	e4.8	e2.7	e3.0	877	131	37	34	831	40	22
26	6.9	e10	e4.2	e3.0	e3.2	1250	101	32	31	1200	38	21
27	8.3	e10	e4.0	e2.8	e3.5	2120	89	32	27	4000	35	20
28	9.5	e10	e3.0	e2.7	e3.8	2060	78	29	24	4490	33	20
29	10	e10	e2.1	e2.6	---	1330	63	32	60	2860	32	19
30	11	e10	e1.5	e2.7	---	1040	51	30	149	1320	31	18
31	14	---	e1.0	e2.8	---	705	---	32	---	947	29	---
TOTAL	108.39	538	191.5	55.1	74.1	26402.7	4268	11830	10391	47420	8005	666
MEAN	3.50	17.9	6.18	1.78	2.65	852	142	382	346	1530	258	22.2
MAX	14	28	10	3.0	3.8	3000	502	3310	2270	4490	1870	28
MIN	.16	10	1.0	1.1	2.0	4.0	51	25	23	280	29	17
AC-FT	215	1070	380	109	147	52370	8470	23460	20610	94060	15880	1320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1993, BY WATER YEAR (WY)

	MEAN	31.0	12.0	5.92	6.70	38.8	365	394	267	283	127	34.5	16.1
MAX	463	90.8	23.4	99.0	606	2757	4355	2203	1850	1530	258	262	
(WY)	1983	1947	1987	1973	1947	1978	1952	1982	1944	1993	1993	1986	
MIN	.000	1.10	.000	.000	.000	.19	5.27	4.60	12.5	.36	.000	.003	
(WY)	1959	1946	1956	1944	1944	1944	1981	1980	1989	1955	1949	1958	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1944 - 1993

ANNUAL TOTAL	9443.67	109949.79		
ANNUAL MEAN	25.8	301		
HIGHEST ANNUAL MEAN			132a	
LOWEST ANNUAL MEAN			485	1944
HIGHEST DAILY MEAN	1250	Jul 14	7.60	1961
LOWEST DAILY MEAN	.16	Oct 1	.00	Dec 15 1943b
ANNUAL SEVEN-DAY MINIMUM	.21	Sep 27	.00	Dec 15 1943
INSTANTANEOUS PEAK FLOW			26000	Apr 9 1944c
INSTANTANEOUS PEAK STAGE			20.90	Apr 9 1944d
ANNUAL RUNOFF (AC-FT)	18730	218100	95650	
10 PERCENT EXCEEDS	46	1050	181	
50 PERCENT EXCEEDS	7.9	26	10	
90 PERCENT EXCEEDS	1.5	1.8	.00	

e Estimated

a Median of annual mean discharges, 91 ft³/s.

b No flow at times in most years.

c From rating curve extended above 12,000 ft³/s on basis of slope-area measurement.

d From floodmarks at site and datum then in use.

GRAND-MOREAU RIVER BASIN

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

LOCATION.--Lat 45°15'21", long 100°50'33", in SW1/4SE1/4 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 sea level. 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.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	e4.5	e.00	e.00	e.50	1290	106	34	658	2020	55
2	.00	.00	e4.5	e.00	e.10	e5.0	899	93	39	960	1410	51
3	.00	.00	e4.2	e.00	e1.0	e100	637	83	40	1010	1210	48
4	.00	.00	e4.0	e.00	e2.0	e300	487	69	39	3860	2010	45
5	.00	.00	e3.5	e.00	e3.0	e700	392	63	42	3540	1630	45
6	.00	.00	e3.0	e.00	e2.8	e800	326	272	39	1790	772	43
7	.00	.00	e2.5	e.00	e2.5	e1500	282	262	39	1140	542	42
8	.00	.00	e2.0	e.00	e2.0	e4000	246	235	382	1120	431	40
9	.00	.00	e1.5	e.00	e1.0	6830	211	449	2280	944	496	36
10	.00	.00	e1.0	e.00	e.50	7440	196	1180	2550	604	343	35
11	.00	.00	e.50	e.00	e.50	6320	183	2270	2080	475	284	34
12	.00	.00	e.40	e.00	e.40	4240	166	2990	2730	1080	243	32
13	.00	.00	e.30	e.00	e.30	2400	158	3060	1950	3740	210	29
14	.00	.00	e.30	e.00	e.30	1380	144	1080	1060	4450	192	29
15	.00	.00	e.25	e.00	e.10	805	130	550	648	3130	175	27
16	.00	.00	e.20	e.00	e.00	628	118	355	2930	2240	166	25
17	.00	.00	e.15	e.00	e.00	915	108	265	1880	1770	146	24
18	.00	.00	e.10	e.00	e.00	1740	102	216	812	1250	149	25
19	.00	.00	e.05	e.00	e.00	1170	95	173	509	1550	245	28
20	.00	.00	e.05	e.00	e.00	2380	236	144	367	1440	241	34
21	.00	.00	e.04	e.00	e.00	814	213	122	286	1220	187	33
22	.00	.00	e.03	e.00	e.00	819	177	106	243	6920	152	31
23	.00	e3.0	e.02	e.00	e.00	839	159	98	489	7870	124	29
24	.00	e4.0	e.01	e.00	e.00	867	148	85	369	3000	106	28
25	.00	e4.0	e.01	e.00	e.00	906	137	68	353	1670	93	28
26	.00	e4.2	e.00	e.00	e.00	878	126	62	402	1080	85	26
27	.00	e4.1	e.00	e.00	e.00	1060	195	52	317	1400	79	26
28	.00	e4.2	e.00	e.00	e.00	1370	169	45	221	2040	71	25
29	.00	e4.0	e.00	e.00	---	2230	139	41	208	5010	67	24
30	.00	e4.6	e.00	e.00	---	2150	118	37	418	4950	63	22
31	.00	---	e.00	e.00	---	1570	---	33	---	3680	59	---
TOTAL	0.00	32.10	33.11	0.00	16.50	57156.50	7987	14664	23756	75591	14001	999
MEAN	.0000	1.07	1.07	.0000	.59	1844	266	473	792	2438	452	33.3
MAX	.00	4.6	4.5	.00	3.0	7440	1290	3060	2930	7870	2020	55
MIN	.00	.00	.00	.00	.00	.50	95	33	34	475	59	22
AC-FT	.00	64	66	.00	33	113400	15840	29090	47120	149900	27770	1980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1993, BY WATER YEAR (WY)

	MEAN	41.8	6.85	3.71	7.65	36.7	819	403	577	363	204	60.6	20.7
MAX	642	59.1	38.2	210	291	5239	2135	3759	2433	2438	452	186	
(WY)	1983	1983	1987	1973	1973	1978	1986	1982	1967	1993	1993	1986	
MIN	.000	.000	.000	.000	.000	2.28	.000	.000	12.0	.084	.000	.000	
(WY)	1957	1959	1956	1956	1955	1964	1981	1981	1989	1955	1955	1958	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1955 - 1993

ANNUAL TOTAL	14824.25	194236.21	213a	
ANNUAL MEAN	40.5	532	738	1978
HIGHEST ANNUAL MEAN			8.39	1980
LOWEST ANNUAL MEAN			24900	Mar 24 1978
HIGHEST DAILY MEAN	1010	Aug 1	7870	Jul 23
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1b
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Oct 1
INSTANTANEOUS PEAK FLOW			10700	Jul 22
INSTANTANEOUS PEAK STAGE			18.02	Jul 22
ANNUAL RUNOFF (AC-FT)	29400	385300	154300	26.20
10 PERCENT EXCEEDS	119	1750	381	May 14 1972d
50 PERCENT EXCEEDS	.33	40	7.1	
90 PERCENT EXCEEDS	.00	.00	.00	

e Estimated

a Median of annual discharges, 120 ft³/s.

b No flow at times in each year.

c Gage-height, 26.00 ft.

d Backwater from ice.

GRAND-MOREAU RIVER BASIN

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 September 1993 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 20,300 mg/L, May 9, 1972; minimum daily mean, 17 mg/L, Jan. 21, 1972.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)
APR 20...	1215	255	1290	8.1	207	253	0	10.0	7.0	250	720
MAY 24...	1245	88	1080	8.4	148	168	6	17.0	17.0	200	716
JUN 24...	1500	380	1040	8.2	112	136	0	19.5	19.5	530	710
AUG 24...	1205	108	1270	8.5	230	271	5	30.0	22.5	43	710

DATE	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL 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)
APR 20...	10.2	89	K400	K200	230	54	22	190	64	7.4
MAY 24...	9.1	101	220	230	200	48	19	150	61	7.6
JUN 24...	8.1	95	--	--	230	62	17	120	52	9.0
AUG 24...	7.7	96	K26	K37	210	53	19	190	65	8.9

DATE	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)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)
APR 20...	193	490	8.5	0.30	5.0	902	898	1.22	618	0.020	0.03
MAY 24...	161	370	6.3	0.40	8.4	698	728	0.99	173	0.020	0.03
JUN 24...	129	390	8.3	0.40	9.1	685	736	1.00	755	0.120	0.15
AUG 24...	247	390	11	0.40	10	821	826	1.12	241	0.110	0.14

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
APR 20...	1.4	<0.010	<0.050	0.390	0.020	<0.010	30	35	<3	5	94
MAY 24...	0.30	<0.010	<0.050	0.020	0.020	<0.010	--	--	--	--	--
JUN 24...	1.0	<0.010	0.120	0.370	0.280	0.250	40	74	<3	22	100
AUG 24...	0.60	<0.010	<0.050	0.040	0.040	<0.010	<10	47	<3	5	84

GRAND-MOREAU RIVER BASIN

06360500 MOREAU RIVER NEAR WHITEHORSE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 20...	3	<10	5	2	<1.0	640	<6	--	--
MAY 24...	--	--	--	--	--	--	--	486	115
JUN 24...	3	<10	4	2	<1.0	560	<6	2160	2220
AUG 24...	5	<10	4	1	<1.0	610	<6	111	32

CHEYENNE RIVER BASIN

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

LOCATION.--Lat 44°05'06", long 104°03'36", in SE1/4NE1/4NE1/4 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.

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

REVISED RECORD.--WDR-85-1: 1981, 1982.

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

REMARKS.--Estimated daily discharges: Nov. 4-8, 11, 12, Nov. 21 to Feb. 10, Feb. 16 to Mar. 3, and Mar. 13-18. Records good except those above 5 ft³/s and those for estimated daily discharges, which are poor. No diversion upstream from station.

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)
June 7	2330	*a75	b2.10	No other peak greater than base discharge.			

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.2	.80	.38	1.4	1.2	1.1	.59	.81	1.2	1.3	1.3
2	1.1	1.2	.78	.43	1.4	1.3	1.1	.59	.84	1.2	1.3	1.4
3	1.1	1.0	.71	.38	1.3	1.4	1.1	.57	.86	1.2	1.3	1.3
4	1.1	.93	.64	.34	1.3	1.4	1.2	.56	.87	1.4	1.3	1.3
5	1.0	.81	.62	.32	1.4	1.4	1.1	1.1	.85	1.3	1.3	1.6
6	1.1	.93	.69	.28	1.5	1.3	1.1	.97	.84	1.3	1.3	1.4
7	1.1	1.1	.72	.30	1.6	1.2	1.1	.85	6.6	1.3	1.3	1.3
8	1.1	1.4	.76	.28	1.6	1.1	1.0	1.0	27	1.2	1.3	1.3
9	1.2	1.3	.81	.26	1.6	.97	1.0	.86	4.5	1.2	1.2	1.3
10	1.1	1.2	.84	.24	1.5	.94	1.1	.79	3.3	1.2	1.2	1.3
11	1.1	1.0	.95	.21	1.4	.95	1.0	.75	2.7	1.2	1.2	1.3
12	1.1	1.0	.87	.17	1.3	.85	1.0	.72	2.3	1.2	1.2	1.3
13	1.1	1.1	.81	.14	1.4	.86	.90	.70	2.1	1.1	1.5	1.3
14	1.1	1.2	.76	.14	1.4	.97	.93	.68	1.9	1.2	1.2	1.3
15	1.1	1.2	.83	.15	1.2	1.0	.84	.72	1.7	1.2	1.3	1.3
16	1.1	1.2	.71	.14	1.1	.92	.82	.71	1.8	1.3	1.3	1.3
17	1.1	1.2	.60	.12	.98	.86	.81	.79	1.7	1.3	1.3	1.4
18	1.1	1.2	.53	.11	1.1	.93	.80	.75	1.7	1.2	1.2	1.4
19	1.1	1.2	.46	.11	1.2	.97	.75	.76	1.5	1.1	1.3	1.5
20	1.1	1.2	.55	.10	1.1	.96	.74	.71	1.4	1.3	1.4	1.4
21	1.1	1.1	.62	.15	1.0	.93	.78	.75	1.4	2.9	1.3	1.4
22	1.1	.94	.66	.12	.98	.91	.79	1.2	1.4	1.6	1.3	1.4
23	1.1	.81	.60	.10	.95	.94	.82	1.1	1.4	1.5	1.4	1.4
24	1.1	.70	.69	.12	.91	.98	.74	.90	1.3	1.5	1.3	1.4
25	1.2	.60	.73	.16	.90	1.1	.68	.95	1.3	1.4	1.3	1.4
26	1.1	.68	.77	.49	.95	1.2	.61	.87	1.3	1.3	1.3	1.4
27	1.2	.76	.70	1.2	1.0	1.3	.58	.83	1.3	1.4	1.3	1.4
28	1.2	.81	.57	1.5	1.1	1.3	.57	.84	1.5	1.3	1.3	1.4
29	1.2	.84	.45	1.4	---	1.2	.57	.80	1.3	1.3	1.3	1.4
30	1.2	.88	.35	1.6	---	1.2	.68	.79	1.3	1.3	1.3	1.4
31	1.2	---	.34	1.5	---	1.1	---	.80	---	1.3	1.3	---
TOTAL	34.7	30.69	20.92	12.94	34.57	33.64	26.31	25.00	78.77	41.4	40.1	41.0
MEAN	1.12	1.02	.67	.42	1.23	1.09	.88	.81	2.63	1.34	1.29	1.37
MAX	1.2	1.4	.95	1.6	1.6	1.4	1.2	1.2	27	2.9	1.5	1.6
MIN	1.0	.60	.34	.10	.90	.85	.57	.56	.81	1.1	1.2	1.3
AC-FT	69	61	41	26	69	67	52	50	156	82	80	81

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	1.71	1.57	1.49	1.39	1.65	1.72	2.00	2.10	2.33	2.01	1.86	1.78							
MAX	2.32	2.35	2.23	2.17	2.51	2.70	3.41	3.44	4.05	3.09	2.89	2.78							
(WY)	1979	1981	1980	1979	1979	1979	1979	1978	1980	1979	1978	1978							
MIN	.31	.47	.44	.42	.46	.71	.88	.81	1.38	1.34	.75	.62							
(WY)	1977	1977	1977	1993	1977	1977	1993	1993	1977	1993	1976	1976							

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1975 - 1993

ANNUAL TOTAL	475.31	420.04	--
ANNUAL MEAN	1.30	1.15	1.82
HIGHEST ANNUAL MEAN	--	--	2.59
LOWEST ANNUAL MEAN	--	--	.94
HIGHEST DAILY MEAN	1.9	27	27
LOWEST DAILY MEAN	.34	.10	.10
ANNUAL SEVEN-DAY MINIMUM	.56	.12	.12
INSTANTANEOUS PEAK FLOW	--	75a	75a
INSTANTANEOUS PEAK STAGE	--	2.10b	2.10b
ANNUAL RUNOFF (AC-FT)	943	833	1320
10 PERCENT EXCEEDS	1.6	1.4	2.7
50 PERCENT EXCEEDS	1.3	1.1	1.8
90 PERCENT EXCEEDS	.84	.57	.90

a From rating curve extended above 3.0 ft³/s on basis of critical-depth computations.

b Maximum recorded was probably exceeded during period of missing record in January or February 1993 when ice jams occurred.

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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--4 years, 23.36 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.40	.05	.17	.08	.00	.00	.00	.24	.00	.00	.15
3	.00	.99	.05	.04	.07	.09	.00	.00	.10	.05	.00	.00
4	.00	.22	.00	.00	.00	.00	.00	.37	.00	.37	.00	.00
5	.00	.02	.00	.00	.00	.00	.00	.69	.10	.03	.00	.69
6	.08	.07	.00	.00	.00	.00	.30	.02	.20	.22	.00	.00
7	.09	.00	.02	.00	.00	.00	.24	.35	3.27	.00	.00	.00
8	.12	.12	.00	.25	.00	.00	.00	.35	.82	.00	.00	.00
9	.21	.24	.05	.15	.00	.10	.01	.03	.02	.00	.00	.00
10	.00	.00	.00	.00	.19	.00	.66	.00	.00	.00	.00	.00
11	.00	.04	.00	.00	.15	.09	.00	.00	.00	.00	.10	.00
12	.00	.04	.45	.04	.00	.09	.08	.00	.00	.00	.09	.00
13	.00	.14	.03	.00	.00	.00	.15	.00	.00	.00	.52	.00
14	.00	.00	.00	.00	.11	.00	.29	.00	.00	.37	.00	.00
15	.00	.00	.03	.00	.08	.10	.01	.09	.23	.24	.16	.00
16	.00	.00	.07	.00	.00	.00	.03	.21	.62	.00	.00	.00
17	.00	.00	.01	.00	.00	.00	.00	.02	.00	.22	.00	.16
18	.04	.00	.06	.00	.00	.00	.01	.00	.39	.00	.00	.11
19	.00	.00	.00	.00	.00	.02	.04	.00	.00	.00	.55	.24
20	.00	.00	.00	.00	.00	.00	.02	.00	.00	1.77	.00	.00
21	.00	.00	.00	.08	.07	.11	.00	e.46	.51	.02	.00	.00
22	.00	.02	.04	.03	.00	.00	.00	e.79	.00	.00	.00	.06
23	.00	.09	.04	.04	.00	.00	.24	e.00	.00	.09	.00	.00
24	.00	.02	.09	.00	.03	.00	.00	e.00	.00	.36	.00	.00
25	.00	.00	.00	.03	.00	.00	.01	.02	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.07	.14	.00	.05	.02	.00
27	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00
28	.00	.00	.06	.00	.00	.23	.00	.13	.18	.00	.00	.00
29	.00	.07	.00	.00	---	.29	.02	.03	.00	.00	.00	.00
30	.00	.00	.04	.00	---	.07	.68	.01	.00	.00	.00	.00
31	.05	---	.05	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.59	2.48	1.28	0.83	0.78	1.26	2.86	3.71	6.68	3.79	1.44	1.41

CAL YR 1992 TOTAL 21.64
WTR YR 1993 TOTAL 27.11

e Estimated

CHEYENNE RIVER BASIN

06392950 STOCKADE BEAVER CREEK NEAR NEWCASTLE, WY

LOCATION.--Lat 43°51'32", long 104°06'24", in SW1/4SE1/4 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 1991 to current year.

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

REMARKS.--Estimated daily discharges: Nov. 26, Dec. 4-6, 14, 17-20, Dec. 29 to Jan. 1, Jan. 4-9, 12-14, Feb. 16-19, 22, 23, 26-28, and Mar. 13. Records fair except those for estimated daily discharges, which are poor. A few small diversions upstream from station for irrigation.

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)
July 17	0300	*a776	*12.44	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	12	11	11	11	10	11	7.1	5.2	9.4	10	13
2	9.5	13	11	12	11	10	11	7.0	5.2	9.2	11	13
3	9.5	13	11	11	11	10	11	7.0	5.7	9.4	11	12
4	9.5	13	9.0	9.9	11	10	11	6.9	5.7	10	11	12
5	9.5	12	9.5	8.7	11	10	11	9.4	6.0	9.7	11	13
6	9.7	12	9.8	9.3	11	12	11	7.8	5.9	9.6	11	13
7	9.8	12	10	9.9	11	12	11	7.3	15	9.6	12	13
8	9.8	12	11	10	10	12	11	9.1	14	9.4	11	13
9	9.8	12	10	10	11	11	10	9.7	8.3	9.2	11	13
10	9.8	11	10	10	11	11	11	10	7.5	9.2	11	13
11	9.8	11	10	10	11	11	11	8.1	7.0	9.2	10	12
12	9.8	11	11	9.3	11	10	11	6.5	6.3	9.1	6.7	12
13	9.8	11	11	8.9	11	9.8	11	6.3	6.4	8.7	9.0	12
14	9.6	11	10	9.9	11	10	11	6.3	6.1	8.4	8.3	12
15	9.8	11	11	11	11	11	11	6.8	6.3	6.8	7.6	12
16	9.8	11	11	11	9.0	11	11	6.6	7.1	143	8.4	12
17	10	11	10	10	9.5	10	10	7.3	7.8	9.7	8.2	12
18	11	11	10	11	10	11	10	6.8	8.1	7.9	7.8	12
19	12	12	8.7	11	11	11	10	6.3	7.4	8.9	8.0	13
20	12	12	9.7	11	11	11	10	6.2	6.8	10	9.8	12
21	12	12	11	11	11	11	10	6.0	8.3	9.5	8.8	12
22	12	12	11	11	10	11	8.3	7.3	9.9	9.3	8.3	12
23	12	12	10	11	10	11	6.9	7.4	9.6	10	8.3	11
24	13	12	10	11	10	11	7.0	6.7	9.7	10	7.8	11
25	13	11	10	11	10	11	6.9	6.1	9.7	9.7	7.4	11
26	13	11	10	11	10	11	6.9	6.1	9.6	10	7.8	11
27	13	11	11	11	10	11	6.9	6.2	9.5	10	8.0	11
28	13	11	11	11	10	11	6.8	5.4	9.4	9.8	7.9	11
29	13	11	10	10	---	11	6.8	5.3	9.4	10	10	11
30	13	11	8.5	11	---	11	7.2	5.5	9.2	10	12	11
31	13	---	9.3	11	---	11	---	5.8	---	10	12	---
TOTAL	339.8	348	316.5	324.9	295.5	334.8	288.7	216.3	242.1	424.7	292.1	361
MEAN	11.0	11.6	10.2	10.5	10.6	10.8	9.62	6.98	8.07	13.7	9.42	12.0
MAX	13	13	11	12	11	12	11	10	15	143	12	13
MIN	9.3	11	8.5	8.7	9.0	9.8	6.8	5.3	5.2	6.8	6.7	11
AC-FT	674	690	628	644	586	664	573	429	480	842	579	716

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	12.0	12.5	12.5	12.1	12.5	13.3	12.1	9.00	10.5	10.5	10.4	11.4							
MAX	14.1	14.8	14.4	14.8	14.4	15.7	16.5	12.3	12.5	13.7	13.8	13.5							
(WY)	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MIN	9.40	10.1	10.2	9.52	10.6	10.8	9.53	6.45	5.92	8.24	6.33	8.89							
(WY)	1982	1982	1993	1980	1993	1993	1981	1992	1992	1981	1992	1991							

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1975 - 1993

ANNUAL TOTAL	3513.1	3784.4	--
ANNUAL MEAN	9.60	10.4	11.6
HIGHEST ANNUAL MEAN	--	--	13.0
LOWEST ANNUAL MEAN	--	--	9.80
HIGHEST DAILY MEAN	16	143	143
LOWEST DAILY MEAN	3.9	5.2	3.9
ANNUAL SEVEN-DAY MINIMUM	4.6	5.4	4.6
INSTANTANEOUS PEAK FLOW	--	776a	776a
INSTANTANEOUS PEAK STAGE	--	12.44	12.44
ANNUAL RUNOFF (AC-FT)	6970	7510	8390
10 PERCENT EXCEEDS	12	12	14
50 PERCENT EXCEEDS	11	10	12
90 PERCENT EXCEEDS	5.5	6.9	8.2

a From rating curve extended above 18 ft³/s on basis of culvert-backwater computations.

CHEYENNE RIVER BASIN

06395000 CHEYENNE RIVER AT EDMONT, SD

LOCATION.--Lat 43°18'20", long 103°49'14", in SW1/4SE1/4SE1/4 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 (monthly discharge only), 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 sea level. 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	5.4	e5.0	e2.5	e4.8	e.70	115	34	36	47	104	54
2	.14	6.5	e5.0	e3.0	e5.0	e.90	92	36	36	50	78	49
3	.14	e6.0	e4.0	e5.0	e5.0	e1.0	71	37	38	853	66	43
4	.13	e5.0	e3.0	e5.0	e5.0	e1.0	58	36	45	520	61	38
5	.13	e4.5	e2.5	e5.5	e5.5	e2.0	51	99	85	283	53	33
6	.15	e4.0	e2.5	e6.0	e5.8	e3.0	48	327	229	161	43	31
7	.19	e4.0	e2.5	e5.5	e6.0	e10	83	866	168	118	39	27
8	.15	e5.0	e3.0	e4.8	e6.0	e20	447	1420	353	112	36	26
9	.15	e5.0	e3.5	e4.0	e4.6	e20	218	770	248	75	33	25
10	.14	e5.0	e3.5	e3.5	e2.5	e20	125	404	291	59	29	25
11	.17	e4.0	e4.0	e3.0	e1.5	e18	255	346	703	51	26	24
12	.16	e5.0	e4.0	e2.8	e1.3	e15	173	263	487	49	25	23
13	.20	e6.0	e3.5	e2.5	e1.0	e15	126	189	243	47	25	21
14	.19	e7.0	e3.0	e2.5	e1.4	e20	96	139	137	47	25	20
15	.22	e8.0	e3.0	e2.5	e1.0	e35	100	114	102	43	27	20
16	.26	e9.0	e2.8	e2.5	e.80	e60	121	105	107	37	29	20
17	.39	e8.0	e2.8	e2.5	e.68	e130	163	88	171	83	45	19
18	.42	e8.0	e2.4	e2.2	e.60	226	168	63	314	616	93	18
19	.50	e8.0	e2.0	e2.0	e.59	458	109	55	574	414	73	21
20	.52	e7.0	e2.0	e2.0	e.59	355	93	51	423	175	1680	21
21	.61	e7.0	e3.0	e2.0	e.59	270	72	51	290	85	1050	19
22	.60	e7.0	e4.0	e3.0	e.50	261	62	50	327	61	302	17
23	.57	e6.0	e3.5	e3.3	e.50	387	51	52	290	53	356	17
24	.73	e6.0	e4.5	e3.0	e.50	597	45	52	219	59	435	16
25	.75	e5.0	e5.0	e3.0	e.50	643	43	51	151	230	222	16
26	.71	e4.0	e5.0	e3.8	e.50	650	42	49	108	157	129	15
27	.78	e4.0	e5.8	e4.0	e.60	848	38	46	85	237	130	14
28	.62	e4.0	e5.8	e4.0	e.65	513	35	45	72	283	187	14
29	.69	e4.5	e3.5	e3.5	---	397	34	43	61	243	106	14
30	.79	e4.5	e2.0	e4.0	---	291	34	41	52	152	70	14
31	2.7	---	e2.0	e5.5	---	177	---	38	---	131	60	---
TOTAL	14.04	172.4	108.1	108.4	64.00	6444.60	3168	5960	6445	5531	5637	714
MEAN	.45	5.75	3.49	3.50	2.29	208	106	192	215	178	182	23.8
MAX	2.7	9.0	5.8	6.0	6.0	848	447	1420	703	853	1680	54
MIN	.13	4.0	2.0	2.0	.50	.70	34	34	36	37	25	14
AC-FT	28	342	214	215	127	12780	6280	11820	12780	10970	11180	1420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1993, BY WATER YEAR (WY)

MEAN	15.9	11.3	7.25	6.54	31.8	112	62.6	231	268	135	72.9	28.9
MAX	202	51.0	32.3	34.0	156	379	558	2192	2084	806	388	275
(WY)	1987	1983	1983	1974	1984	1987	1955	1978	1962	1958	1955	1973
MIN	.000	.023	.000	.000	.000	3.39	.22	.27	1.76	.15	.000	.000
(WY)	1961	1962	1960	1950	1960	1961	1961	1960	1966	1985	1960	1956

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1929-1932, 1947-1993
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ANNUAL TOTAL	4106.83		34366.54				
ANNUAL MEAN	11.2		94.2			92.1a	
HIGHEST ANNUAL MEAN						434	1962
LOWEST ANNUAL MEAN						12.0	1988
HIGHEST DAILY MEAN	124	Jul 29	1680	Aug 20		24000	May 20 1978
LOWEST DAILY MEAN	.13	Oct 4	.13	Oct 4, 5		.00	Jun 3 1929b
ANNUAL SEVEN-DAY MINIMUM	.14	Sep 29	.15	Oct 1		.00	Aug 31 1947c
INSTANTANEOUS PEAK FLOW			4350	Aug 20		28000	May 20 1978
INSTANTANEOUS PEAK STAGE			7.56	Aug 20		13.65	May 20 1978
ANNUAL RUNOFF (AC-FT)	8150		68170			66700	
10 PERCENT EXCEEDS	25		286			151c	
50 PERCENT EXCEEDS	7.5		21			10c	
90 PERCENT EXCEEDS	.61		.69			.10c	

e Estimated

a Median of annual mean discharges, 72 ft³/s.

b No flow at times in most years.

c Reflects water years 1947-92 only.

CHEYENNE RIVER BASIN

06400497 CASCADE SPRINGS NEAR HOT SPRINGS, SD

LOCATION.--Lat 43°20'10", long 103°33'07", in SE1/4SW1/4 sec.20, T.8 S., R.5 E., Fall River County, Hydrologic Unit 10120106, on right bank near upstream end of culvert on State Highway 71, 3.3 mi upstream from mouth, and 8.3 mi southwest of Hot Springs.

DRAINAGE AREA.--0.47 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 3,440 ft above sea level, from topographic map.

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

DISCHARGE, IN CUBIC FEET PER SECOND; WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	18	15	15	16	17	15	18	18	e16	15	16
2	18	17	14	15	16	17	15	19	17	e16	16	16
3	18	17	14	15	16	17	15	17	17	e15	16	16
4	18	17	14	15	17	17	15	17	16	e15	16	16
5	18	17	14	16	17	16	15	17	17	e15	16	16
6	17	17	15	16	17	16	15	18	16	e15	16	17
7	17	17	16	16	17	16	15	19	16	e15	16	17
8	18	17	16	17	17	16	15	19	17	e15	17	16
9	18	16	16	17	17	16	16	19	16	e15	17	17
10	18	16	16	17	17	16	18	20	16	e15	17	17
11	18	16	17	16	17	16	18	18	16	e15	16	18
12	18	16	17	16	17	16	17	17	16	e15	16	18
13	18	16	17	15	17	15	17	17	16	e15	16	18
14	18	16	17	16	17	15	17	16	15	15	16	18
15	18	16	18	16	17	16	17	16	16	14	16	17
16	18	17	17	15	16	16	17	17	16	14	16	17
17	19	17	17	15	17	15	18	17	16	14	16	16
18	19	17	16	15	17	15	18	17	16	14	16	18
19	19	17	16	15	16	15	17	17	16	14	16	18
20	19	16	16	15	16	15	17	16	e16	14	16	16
21	19	16	17	15	16	15	17	16	e16	14	16	17
22	19	16	17	15	16	15	18	16	e16	13	16	16
23	19	16	16	15	16	15	17	16	e16	14	16	16
24	19	16	16	15	16	15	17	16	e16	14	16	16
25	19	16	15	16	16	15	17	17	e16	14	17	16
26	19	16	15	16	16	15	17	17	e16	14	17	16
27	19	16	15	16	16	15	16	17	e16	14	17	16
28	19	15	15	16	16	15	e17	16	e16	14	17	16
29	19	15	15	16	---	15	18	16	e16	15	16	16
30	19	15	15	16	---	15	18	16	e16	15	16	16
31	18	---	15	16	---	15	---	17	---	15	16	---
TOTAL	569	490	489	485	462	483	499	531	485	452	502	499
MEAN	18.4	16.3	15.8	15.6	16.5	15.6	16.6	17.1	16.2	14.6	16.2	16.6
MAX	19	18	18	17	17	17	18	20	18	16	17	18
MIN	17	15	14	15	16	15	15	16	15	13	15	16
AC-FT	1130	972	970	962	916	958	990	1050	962	897	996	990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1993, BY WATER YEAR (WY)

	19.5	19.6	19.5	19.4	19.4	19.3	19.5	20.0	20.2	20.1	19.7	19.4
MEAN	19.5	19.6	19.5	19.4	19.4	19.3	19.5	20.0	20.2	20.1	19.7	19.4
MAX	22.0	22.5	23.8	24.8	22.2	23.0	23.0	23.7	23.1	23.2	22.6	22.0
(WY)	1987	1978	1978	1978	1978	1984	1984	1984	1984	1982	1982	1986
MIN	17.6	16.3	15.8	15.6	16.5	15.6	16.6	17.1	16.2	14.6	16.2	16.6
(WY)	1992	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1977 - 1993

ANNUAL TOTAL	6444	5946	
ANNUAL MEAN	17.6	16.3	19.6
HIGHEST ANNUAL MEAN			21.4
LOWEST ANNUAL MEAN			16.3
HIGHEST DAILY MEAN	19	Jan 1	25
LOWEST DAILY MEAN	14	Dec 2	13
ANNUAL SEVEN-DAY MINIMUM	14	Nov 29	14
INSTANTANEOUS PEAK FLOW			49
INSTANTANEOUS PEAK STAGE			6.25
ANNUAL RUNOFF (AC-FT)	12780	11790	14200
10 PERCENT EXCEEDS	19	18	22
50 PERCENT EXCEEDS	18	16	20
90 PERCENT EXCEEDS	16	15	18

e Estimated

a Also Dec. 31, 1977, to Jan. 24, 1978, and July 27 to Aug. 4, 1982.

CHEYENNE RIVER BASIN

06400875 HORSEHEAD CREEK AT OELRICHS, SD

LOCATION.--Lat 43°11'17", long 103°13'34", in SW1/4SW1/4SW1/4 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 sea level, from topographic map.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	.00	.00	.00	.00	e.00	e35	3.2	.73	20	3.7	.00
2	e.00	.00	.00	.00	.00	e.02	29	3.2	.89	14	2.8	.00
3	e.00	.00	.00	.00	.00	e.03	59	3.2	1.4	14	2.4	.00
4	e.00	.00	.00	.00	.00	e.03	40	3.0	3.3	7.8	1.9	.00
5	e.00	.00	.00	.00	.00	e.04	19	2.7	8.7	4.6	1.5	.00
6	e.00	.00	.00	.00	.00	e.05	16	2.9	5.6	2.8	1.2	.00
7	e.00	.00	.00	.00	.00	e.05	15	3.0	105	1.8	1.1	.00
8	.00	.00	.00	.00	e.00	e.40	17	3.7	97	1.1	1.6	.00
9	.00	.00	.00	.00	e.00	e2.6	24	7.1	104	.81	1.1	.00
10	.00	.00	.00	.00	.00	e6.6	28	5.5	87	.52	.65	.00
11	.00	.00	.00	.00	.00	e4.0	33	4.6	76	.37	.47	.00
12	.00	.00	.00	.00	.00	e3.0	35	3.8	51	.29	.34	.00
13	.00	.00	.00	.00	.00	2.1	22	3.4	40	.23	.29	.00
14	.00	.00	.00	.00	.00	1.9	29	2.9	34	.14	.20	.00
15	.00	.00	.00	.00	.00	1.5	78	2.6	32	.17	.11	.00
16	.00	.00	.00	.00	.00	18	249	2.5	29	15	.06	.00
17	.00	.00	.00	.00	.00	7.5	116	2.4	24	344	.01	.00
18	.00	.00	.00	.00	.00	4.3	75	2.1	29	129	.00	.00
19	.00	.00	.00	.00	.00	3.8	64	1.8	21	99	.00	.00
20	.00	.00	.00	.00	.00	8.2	51	1.6	11	87	.01	.00
21	.00	.00	.00	.00	.00	24	38	1.5	6.7	71	.00	.00
22	.00	.00	.00	.00	.00	e100	25	1.5	45	50	.00	.00
23	.00	.00	.00	.00	.00	e70	15	1.3	46	19	.00	.00
24	.00	.00	.00	.00	.00	e80	11	1.2	43	14	.00	.00
25	.00	.00	.00	.00	.00	e90	7.8	1.2	43	16	.00	.00
26	.00	.00	.00	.00	.00	e80	5.4	1.1	42	13	.00	.00
27	.00	.00	.00	.00	.00	e70	4.4	.92	40	13	.00	.00
28	.00	.00	.00	.00	.00	e60	3.9	.86	37	14	.00	.00
29	.00	.00	.00	.00	---	e50	3.4	.78	33	10	.00	.00
30	.00	.00	.00	.00	---	e45	3.3	.79	28	7.1	.00	.00
31	.00	---	.00	.00	---	e40	---	.68	---	5.0	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	773.12	1151.2	77.03	1124.32	974.73	19.44	0.00
MEAN	.000	.000	.000	.000	.000	24.9	38.4	2.48	37.5	31.4	.63	.000
MAX	.00	.00	.00	.00	.00	100	249	7.1	105	344	3.7	.00
MIN	.00	.00	.00	.00	.00	.00	3.3	.68	.73	.14	.00	.00
AC-FT	.00	.00	.00	.00	.00	1530	2280	153	2230	1930	39	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1993, BY WATER YEAR (WY)

	MEAN	.010	.009	.017	.032	.23	10.4	18.6	31.2	29.5	5.05	.17	.001
MAX	.10	.076	.15	.19	1.40	58.9	83.3	246	187	31.4	.74	.008	
(WY)	1987	1987	1987	1987	1986	1986	1986	1991	1986	1993	1986	1986	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1984	1984	1984	1985	1989	1989	1989	1985	1985	1985	1985	1984	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1984 - 1993

ANNUAL TOTAL	78.03	4119.84	
ANNUAL MEAN	.21	11.3	7.94
HIGHEST ANNUAL MEAN			29.3
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	2.5	Feb 26	344
LOWEST DAILY MEAN	.00	May 3	.00
ANNUAL SEVEN-DAY MINIMUM	.00	May 3	.00
INSTANTANEOUS PEAK FLOW			548
INSTANTANEOUS PEAK STAGE			8.48
ANNUAL RUNOFF (AC-FT)	155	8170	5750
10 PERCENT EXCEEDS	.66	40	3.0
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for many days in each year.

CHEYENNE RIVER BASIN

06401000 ANGOSTURA RESERVOIR NEAR HOT SPRINGS, SD

LOCATION.--Lat 43°20'35", long 103°26'16", in SW1/4NW1/4 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 sea level. 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, 121,800 acre-ft, May 8, elevation, 3,187.12 ft; minimum, 73,500 acre-ft, Oct. 2, elevation, 3,174.89 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	3,174.89	73,500	-
Oct. 31	3,175.05	74,000	+500
Nov. 30	3,175.40	75,200	+1,200
Dec. 31	3,175.84	76,700	+1,500
CAL YR 1992	-	-	-19,100
Jan. 31	3,176.31	78,300	+1,600
Feb. 28	3,176.80	80,000	+1,700
Mar. 31	3,183.60	106,300	+26,300
Apr. 30	3,186.97	121,100	+14,800
May 31	3,186.45	118,700	-2,400
June 30	3,186.81	120,400	+1,700
July 31	3,186.58	119,300	-1,100
Aug. 31	3,185.68	115,300	-4,000
Sept. 30	3,184.56	110,400	-4,900
WTR YR 1993	-	-	+36,900

CHEYENNE RIVER BASIN

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, SD

LOCATION.--Lat 43°20'42", long 103°26'12", in NE1/4NW1/4 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 sea level (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 except those for estimated daily discharges, which are fair. 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.--28 years (regulated water years, 1951-78), 67.1 ft³/s, 48,610 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, 1,540 ft³/s at 0615 hours, May 9, gage height, 6.29 ft; minimum daily discharge, 0.60 ft³/s, Feb. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	.60	1.8	1.4	82	1.3	4.3	---	---
2	---	---	---	---	.81	1.8	1.4	45	1.3	22	---	---
3	---	---	---	---	.81	1.7	1.4	45	1.7	588	---	---
4	---	---	---	---	.81	1.8	1.3	47	1.5	1050	---	---
5	---	---	---	---	e.81	1.9	1.4	62	1.4	581	---	---
6	---	---	---	---	e.89	2.3	1.6	75	1.5	162	---	---
7	---	---	---	---	e.89	2.1	1.5	285	2.8	241	---	---
8	---	---	---	---	e.98	1.9	1.3	1110	2.7	221	---	---
9	---	---	---	---	.98	1.9	1.2	1410	17	4.9	---	---
10	---	---	---	---	1.1	1.9	1.2	841	343	4.7	---	---
11	---	---	---	---	1.2	2.0	1.3	420	638	4.6	---	---
12	---	---	---	---	1.4	2.0	1.3	473	698	4.3	---	---
13	---	---	---	---	1.4	2.0	1.7	214	545	4.3	---	---
14	---	---	---	---	1.4	1.9	1.4	189	284	4.2	---	---
15	---	---	---	---	1.5	1.8	1.3	160	213	4.2	---	---
16	---	---	---	---	1.6	2.0	1.3	114	175	4.0	---	---
17	---	---	---	---	1.7	2.0	1.3	64	198	3.8	---	---
18	---	---	---	---	1.6	2.0	1.3	2.8	373	4.1	---	---
19	---	---	---	---	1.5	2.0	1.4	1.8	519	4.1	---	---
20	---	---	---	---	1.6	1.9	2.4	1.5	861	4.3	---	---
21	---	---	---	---	1.6	2.0	1.34	1.9	936	37	---	---
22	---	---	---	---	1.7	2.0	159	1.6	511	63	---	---
23	---	---	---	---	1.7	2.0	119	1.5	562	63	---	---
24	---	---	---	---	1.7	2.0	70	1.3	175	63	---	---
25	---	---	---	---	1.7	2.0	74	1.2	198	62	---	---
26	---	---	---	---	1.7	1.8	75	1.2	89	65	---	---
27	---	---	---	---	1.7	1.5	62	1.2	78	69	---	---
28	---	---	---	---	1.7	1.6	42	1.2	80	66	---	---
29	---	---	---	---	---	1.6	43	1.3	53	66	---	---
30	---	---	---	---	---	1.5	79	1.2	4.8	69	---	---
31	---	---	---	---	---	1.4	---	1.2	---	70	---	---
TOTAL	---	---	---	---	37.08	58.1	885.4	5656.9	7565.0	3613.8	---	---
MEAN	---	---	---	---	1.32	1.87	29.5	182	252	117	---	---
MAX	---	---	---	---	1.7	2.3	159	1410	936	1050	---	---
MIN	---	---	---	---	.60	1.4	1.2	1.2	1.3	3.8	---	---
AC-FT	---	---	---	---	74	115	1760	11220	15010	7170	---	---

e Estimated

CHEYENNE RIVER BASIN

06402000 FALL RIVER AT HOT SPRINGS, SD

LOCATION.--Lat 43°25'50", long 103°28'33", in NW1/4NW1/4 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 sea level. Prior to June 2, 1939, nonrecording gage at site 300 ft upstream at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. 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. Maximum discharge prior to Oct. 1, 1970, 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. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	24	23	22	22	22	23	22	25	23	21	21
2	22	23	23	22	22	22	23	22	24	29	21	21
3	22	23	23	22	22	22	23	22	28	21	21	21
4	22	23	23	22	22	22	23	22	24	20	21	21
5	22	24	23	22	22	22	24	23	24	20	21	21
6	22	23	23	22	21	22	25	22	24	21	21	21
7	22	24	23	22	21	23	24	22	29	21	22	21
8	22	23	23	22	21	22	24	24	22	21	21	22
9	22	23	23	22	21	22	24	22	22	21	20	21
10	22	23	23	22	21	22	23	21	22	21	20	21
11	22	23	23	22	21	22	24	21	22	21	20	21
12	22	23	23	22	21	22	24	22	22	21	20	22
13	22	23	23	22	21	22	25	22	22	21	20	22
14	22	23	23	22	21	22	23	22	22	21	20	21
15	22	23	23	22	21	22	23	22	23	24	23	22
16	22	23	23	21	21	22	23	22	24	21	18	22
17	22	23	23	22	22	22	22	22	23	21	18	22
18	22	23	22	22	22	22	22	21	24	21	18	23
19	22	23	23	22	22	23	22	21	23	21	34	23
20	22	23	23	22	22	22	22	22	22	21	23	22
21	22	23	23	22	22	23	22	22	23	22	22	22
22	22	23	23	23	21	22	22	22	22	21	22	22
23	22	23	22	22	21	22	22	22	23	21	21	23
24	22	23	23	23	21	23	22	22	23	22	21	23
25	23	23	22	22	22	22	22	22	23	21	21	22
26	23	23	23	23	22	23	22	23	23	24	21	22
27	23	23	22	22	22	23	22	24	23	20	21	22
28	23	23	22	23	22	24	22	24	23	20	21	23
29	23	23	22	22	---	23	22	24	23	20	21	23
30	23	23	22	22	---	24	23	25	23	21	21	22
31	25	---	22	22	---	23	---	25	---	21	21	---
TOTAL	691	693	705	685	602	694	687	694	700	664	656	655
MEAN	22.3	23.1	22.7	22.1	21.5	22.4	22.9	22.4	23.3	21.4	21.2	21.8
MAX	25	24	23	23	22	24	25	25	29	29	34	23
MIN	22	23	22	21	21	22	22	21	22	20	18	21
AC-FT	1370	1370	1400	1360	1190	1380	1360	1380	1390	1320	1300	1300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1993, BY WATER YEAR (WY) *

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	21.6	21.6	22.2	21.9	22.1	22.6	21.9	21.9	21.5	20.4	20.8	21.2	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8
MAX	23.0	23.8	26.8	24.4	24.0	26.8	26.8	25.8	24.4	22.6	23.4	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
(WY)	1979	1972	1972	1980	1985	1987	1987	1978	1990	1978	1978	1971	1971	1971	1971	1971	1971	1971	1971	1971	1971	1971	1971
MIN	18.8	18.3	19.0	19.4	19.8	20.0	19.7	19.0	17.9	18.0	18.6	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7
(WY)	1973	1987	1987	1984	1977	1982	1982	1976	1981	1980	1972	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1971 - 1993 *

ANNUAL TOTAL	7986	8126	
ANNUAL MEAN	21.8	22.3	21.6
HIGHEST ANNUAL MEAN			22.8
LOWEST ANNUAL MEAN			20.9
HIGHEST DAILY MEAN	27	Jan 28	34
LOWEST DAILY MEAN	18	Jun 27	18
ANNUAL SEVEN-DAY MINIMUM	19	Jun 27	20
INSTANTANEOUS PEAK FLOW			354
INSTANTANEOUS PEAK STAGE			4.42
ANNUAL RUNOFF (AC-FT)	15840	16120	15650
10 PERCENT EXCEEDS	23	23	24
50 PERCENT EXCEEDS	22	22	22
90 PERCENT EXCEEDS	20	21	19

* Regulated period only (1971-93). See REMARKS.

a Also May 3, 8, 9, 1982, Sept. 16, 17, 28, 1983, and July 23, 1985.

b Gage height, 3.32 ft.

CHEYENNE RIVER BASIN

06402430 BEAVER CREEK NEAR PRINGLE, SD

LOCATION.--Lat 43°34'53", long 103°28'34", in NE1/4SW1/4SW1/4 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 current year. Partial monthly discharge October 1990.

GAGE.--Water-stage recorder. Datum of gage is 4,180 ft above sea level, from topographic map.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.24	.21	.29	e.14	e.21	.35	1.1	.72	.57	.53	1.2	1.2
2	.16	.19	.25	e.14	e.20	.42	1.1	.60	.90	.58	1.2	1.2
3	.12	.15	.25	e.20	e.20	.43	1.0	.60	1.4	.74	1.2	1.0
4	.12	.15	e.25	e.20	e.20	.44	.98	.64	2.0	.63	1.3	.92
5	.12	.15	e.25	e.18	e.20	.44	1.0	.67	1.1	.52	.89	.97
6	.12	.15	e.25	e.16	e.23	.50	1.0	1.1	.80	.46	.84	1.0
7	.12	.16	.25	e.15	e.24	.67	1.1	.88	7.3	.75	.75	1.0
8	.12	.18	.25	e.15	e.25	.84	1.3	.97	16	.45	.66	1.1
9	.15	.20	.25	e.14	e.26	.88	1.2	1.0	16	.33	.56	1.1
10	.14	.21	.25	e.14	e.26	.69	1.1	1.1	8.1	.29	.70	1.0
11	.12	.23	.25	e.14	e.25	.55	.94	1.1	5.9	.39	.69	1.0
12	.12	.23	.26	e.14	e.22	.42	.82	.85	3.6	.46	.67	1.0
13	.12	.24	.25	e.13	e.20	.52	1.0	.85	2.4	.45	.73	1.1
14	.12	.31	e.20	e.13	e.19	.51	1.1	2.2	1.5	.35	.66	1.0
15	.12	.33	e.20	e.13	e.18	.70	1.1	1.3	1.7	.52	.60	1.0
16	.12	.33	e.20	e.13	e.18	.72	1.1	1.1	1.8	1.5	.68	1.0
17	.12	.33	e.19	e.14	e.20	.55	1.2	1.1	2.1	.97	.64	1.0
18	.13	.33	e.17	e.14	e.23	.73	1.1	1.1	3.5	.91	.65	1.2
19	.15	.33	e.16	e.14	e.27	.80	1.1	1.1	3.1	.85	1.1	1.9
20	.15	.34	e.15	e.14	e.30	.87	1.1	.85	1.8	.98	3.4	2.1
21	.15	.37	e.17	e.14	e.35	.81	1.0	.82	1.3	.82	1.8	1.7
22	.15	.30	e.17	e.16	e.38	.78	.95	1.1	1.3	.79	1.1	1.6
23	.15	.43	e.16	e.18	e.40	.87	.92	1.6	1.1	.66	1.5	1.5
24	.12	.38	e.20	e.16	.43	1.0	.84	1.0	.89	.81	1.9	1.5
25	.12	.37	e.22	e.15	.33	1.2	.83	.87	.80	.88	1.3	1.5
26	.11	.29	e.25	e.16	.37	1.3	.86	.73	.70	3.2	1.4	1.4
27	.13	.29	e.28	e.19	.35	1.3	.66	.73	.60	4.2	2.5	1.3
28	.12	.29	e.30	e.19	.31	1.2	.63	.73	.57	1.5	2.2	1.3
29	.12	.29	e.25	e.17	---	1.3	.66	.65	.50	1.3	1.6	1.4
30	.13	.29	e.14	e.18	---	1.3	.74	.63	.46	1.2	1.5	1.4
31	.18	---	e.14	e.19	---	1.3	---	.48	---	1.3	1.6	---
TOTAL	4.16	8.05	6.85	4.83	7.39	24.39	29.53	29.17	89.79	29.32	37.52	37.39
MEAN	.13	.27	.22	.16	.26	.79	.98	.94	2.99	.95	1.21	1.25
MAX	.24	.43	.30	.20	.43	1.3	1.3	2.2	16	4.2	3.4	2.1
MIN	.11	.15	.14	.13	.18	.35	.63	.48	.46	.29	.56	.92
AC-FT	8.3	16	14	9.6	15	48	59	58	178	58	74	74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1993, BY WATER YEAR (WY)

	MEAN	.11	.24	.23	.15	.26	.62	.69	.74	1.79	.75	.72	.71
MAX	.13	.27	.23	.16	.26	.79	.98	.94	2.99	.95	1.21	1.25	
(WY)	1993	1993	1992	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	.095	.20	.22	.14	.25	.45	.39	.54	.59	.55	.23	.18	
(WY)	1992	1992	1993	1992	1992	1992	1992	1992	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1992 - 1993

ANNUAL TOTAL	120.08	308.39	
ANNUAL MEAN	.33	.84	.58
HIGHEST ANNUAL MEAN			.84
LOWEST ANNUAL MEAN			.32
HIGHEST DAILY MEAN	1.0	Jun 1	16
LOWEST DAILY MEAN	.09	Sep 14	.11
ANNUAL SEVEN-DAY MINIMUM	.12	Oct 11	.12
INSTANTANEOUS PEAK FLOW		28	Jun 8
INSTANTANEOUS PEAK STAGE		8.46	Jun 8
ANNUAL RUNOFF (AC-FT)	238	612	420
10 PERCENT EXCEEDS	.61	1.5	1.1
50 PERCENT EXCEEDS	.27	.60	.35
90 PERCENT EXCEEDS	.14	.14	.13

e Estimated

a Also Oct. 2 and 3, 1991.

CHEYENNE RIVER BASIN

06402470 BEAVER CREEK ABOVE BUFFALO GAP, SD

LOCATION.--Lat 43°31'20", long 103°21'23", in SW1/4SE1/4SW1/4 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 current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,400 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	8.8	8.4	8.4	8.8	8.7	9.5	9.2	9.2	9.5	9.8	9.8
2	8.5	8.8	8.4	8.6	8.8	8.9	9.4	9.3	9.1	9.8	9.8	9.8
3	8.5	8.7	8.4	8.8	8.8	9.1	9.4	9.2	9.4	9.8	9.8	9.7
4	8.5	8.7	8.3	8.6	8.8	9.0	9.4	9.3	9.1	9.6	9.8	9.7
5	8.5	8.7	8.4	8.5	8.7	9.1	9.4	9.3	9.1	9.6	9.8	9.6
6	8.5	8.7	8.4	8.5	8.9	11	9.7	9.3	9.1	9.7	9.8	9.2
7	8.5	8.7	8.3	8.5	8.9	11	9.6	9.2	10	9.6	9.8	9.5
8	8.6	8.8	8.4	8.6	8.8	10	9.5	9.6	9.4	9.6	9.8	9.6
9	8.6	8.7	8.4	8.6	8.8	10	9.5	9.2	9.4	9.6	9.7	9.5
10	8.6	8.7	8.4	8.6	8.7	10	9.5	9.2	9.3	9.6	9.7	9.5
11	8.7	8.7	8.4	8.6	8.7	10	9.5	9.3	9.3	9.6	9.7	9.5
12	8.6	8.7	8.4	8.6	8.6	10	9.4	9.3	9.2	9.7	9.7	9.5
13	8.5	8.7	8.4	8.6	8.7	10	9.8	9.2	9.2	9.6	9.7	9.5
14	8.6	8.7	8.4	8.6	8.6	10	9.5	9.1	9.2	9.5	9.7	9.5
15	8.7	8.8	8.5	8.6	8.7	10	9.5	9.0	9.4	10	10	9.5
16	8.7	8.8	8.5	8.7	8.7	10	9.4	9.0	9.6	11	9.9	9.4
17	8.7	8.8	8.5	8.7	8.7	10	9.3	9.0	9.5	9.9	9.8	9.4
18	8.7	8.8	8.5	8.6	8.7	10	9.2	9.0	9.7	9.7	9.8	9.5
19	8.7	8.6	8.5	8.7	8.7	10	9.2	8.9	9.5	9.6	11	9.7
20	8.7	8.4	8.5	8.7	8.7	10	9.1	9.0	9.5	9.7	11	9.5
21	8.7	8.4	8.5	8.8	8.7	10	9.1	8.9	9.6	9.7	10	9.5
22	8.6	8.4	8.5	8.8	8.7	10	9.2	9.0	9.6	9.6	10	9.4
23	8.6	8.4	8.5	8.8	8.0	9.9	9.2	8.9	9.6	9.6	10	9.4
24	8.6	8.4	8.6	8.7	8.6	9.9	9.2	9.0	9.5	10	10	9.4
25	8.6	8.3	8.5	8.8	8.6	9.7	9.1	9.0	9.5	9.9	9.9	9.4
26	8.6	8.3	8.6	8.8	8.7	9.5	9.1	9.0	9.5	11	9.9	9.4
27	8.6	8.4	8.6	8.9	8.7	9.5	9.1	9.0	9.6	10	9.9	9.4
28	8.7	8.4	8.6	8.8	8.7	9.6	9.2	9.1	9.6	10	9.8	9.4
29	8.7	8.4	8.6	8.8	---	9.5	9.2	9.1	9.5	10	9.8	9.4
30	8.7	8.4	8.6	8.9	---	9.5	9.4	9.1	9.5	10	9.8	9.4
31	8.9	---	8.6	8.8	---	9.4	---	9.1	---	9.9	9.7	---
TOTAL	267.2	258.1	262.6	269.0	243.5	303.3	280.6	282.8	282.7	304.4	306.9	285.0
MEAN	8.62	8.60	8.47	8.68	8.70	9.78	9.35	9.12	9.42	9.82	9.90	9.50
MAX	8.9	8.8	8.6	8.9	8.9	11	9.8	9.6	10	11	11	9.8
MIN	8.5	8.3	8.3	8.4	8.0	8.7	9.1	8.9	9.1	9.5	9.7	9.2
AC-FT	530	512	521	534	483	602	557	561	561	604	609	565

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1993, BY WATER YEAR (WY)

	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
MEAN	8.36	8.54	8.40	8.38	8.41	8.73	8.50	8.27	8.38	8.66	8.69	8.56
MAX	8.62	8.60	8.47	8.68	8.70	9.78	9.35	9.12	9.42	9.82	9.90	9.50
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	8.18	8.46	8.29	8.22	8.22	8.12	8.03	7.43	7.24	8.01	7.84	7.79
(WY)	1991	1992	1991	1992	1991	1991	1992	1992	1992	1992	1991	1991

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1991 - 1993

ANNUAL TOTAL	2988.2	3346.1	
ANNUAL MEAN	8.16	9.17	8.49
HIGHEST ANNUAL MEAN			9.17
LOWEST ANNUAL MEAN			8.12
HIGHEST DAILY MEAN	8.9	Mar 7	11
LOWEST DAILY MEAN	7.0	May 20	8.0
ANNUAL SEVEN-DAY MINIMUM	7.1	Jun 6	8.4
INSTANTANEOUS PEAK FLOW			16
INSTANTANEOUS PEAK STAGE			11.35
ANNUAL RUNOFF (AC-FT)	5930	6640	6150
10 PERCENT EXCEEDS	8.6	9.9	9.5
50 PERCENT EXCEEDS	8.3	9.1	8.4
90 PERCENT EXCEEDS	7.4	8.5	7.8

a Several days.

CHEYENNE RIVER BASIN

06402500 BEAVER CREEK NEAR BUFFALO GAP, SD

LOCATION.--Lat 43°28'00", long 103°18'20", in NE1/4SE1/4 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 sea level, 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.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	13	8.4	e7.8	9.1	e9.0	9.1	9.2	.41	3.5	7.5	8.2
2	3.9	12	8.4	e8.0	9.1	e9.3	9.1	8.6	1.6	2.2	7.8	8.3
3	3.9	11	e8.3	e8.2	e9.0	e9.7	9.0	8.6	4.8	2.9	7.8	9.0
4	4.5	11	e8.2	e8.2	e9.0	e10	8.9	8.6	4.5	3.6	6.7	9.1
5	5.1	11	e8.0	e8.0	9.4	e10	8.8	9.0	3.5	5.5	2.9	9.7
6	5.3	10	e8.1	e8.0	10	e12	10	11	3.6	2.0	2.1	9.0
7	5.7	10	e8.3	e8.0	9.9	e13	10	8.9	7.8	3.1	3.0	9.3
8	5.7	10	8.5	e8.0	9.5	e11	9.0	11	6.2	5.8	2.3	9.9
9	5.8	10	8.6	e8.0	9.0	e10	8.7	10	6.6	5.7	2.3	9.7
10	5.9	9.6	8.4	e8.0	e8.9	9.6	8.6	9.0	7.2	5.8	2.4	9.6
11	5.6	9.9	8.4	e8.0	e8.8	9.6	8.6	8.8	7.0	4.0	3.7	9.6
12	5.5	9.8	8.4	e8.0	e8.7	9.3	8.5	8.4	6.4	4.6	5.0	9.4
13	5.5	9.6	e8.4	e8.0	e8.8	9.6	12	8.4	3.6	6.2	4.2	10
14	5.4	9.1	e8.4	e8.0	e9.0	9.5	10	8.4	3.4	6.6	7.1	10
15	7.1	8.7	e8.4	e8.0	e9.0	10	9.2	8.6	3.5	6.7	5.7	10
16	12	8.2	e8.3	e8.0	e8.9	9.4	8.7	8.9	6.3	8.2	9.7	11
17	12	8.2	e8.2	e8.1	e8.7	9.3	8.6	8.6	7.9	7.4	6.3	11
18	12	8.3	e8.1	e8.2	e8.6	9.4	8.6	8.4	10	7.3	1.9	11
19	8.8	8.6	e8.0	e8.4	e8.8	10	8.6	8.4	8.7	7.0	2.9	13
20	5.7	8.6	e8.2	e8.5	e8.9	11	8.8	8.4	7.9	7.0	18	12
21	5.7	8.6	e8.4	e9.0	e9.0	9.4	9.2	8.4	7.8	7.3	10	12
22	5.5	8.8	e8.6	9.3	e9.0	9.1	8.4	8.3	7.9	7.8	10	11
23	5.4	9.2	8.7	9.0	e9.0	9.4	8.4	8.5	9.3	5.4	9.2	11
24	5.6	9.1	e8.9	8.9	e9.0	9.3	8.5	7.3	8.4	3.2	7.0	12
25	8.2	9.0	8.6	9.1	e9.0	9.3	8.6	1.5	8.0	3.8	3.2	12
26	11	e8.8	9.2	e9.3	e9.0	9.0	8.6	.44	8.0	4.1	2.4	12
27	12	e8.6	8.4	e9.5	e9.0	8.9	8.4	.22	7.7	20	3.1	12
28	12	e8.5	8.0	e9.3	e9.0	9.1	8.4	.16	6.8	8.8	7.8	12
29	11	8.4	e7.9	9.1	---	10	8.5	.21	7.4	5.7	8.1	12
30	11	8.4	e7.8	9.1	---	10	12	.31	6.4	2.3	8.2	12
31	13	---	e7.6	9.1	---	10	---	.32	---	2.5	8.2	---
TOTAL	230.3	284.0	258.1	262.1	253.1	304.2	271.8	214.86	188.61	176.0	186.5	316.8
MEAN	7.43	9.47	8.33	8.45	9.04	9.81	9.06	6.93	6.29	5.68	6.02	10.6
MAX	13	13	9.2	9.5	10	13	12	11	10	20	18	13
MIN	3.9	8.2	7.6	7.8	8.6	8.9	8.4	.16	.41	2.0	1.9	8.2
AC-FT	457	563	512	520	502	603	539	426	374	349	370	628

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1993, BY WATER YEAR (WY)

	6.85	8.73	9.54	9.83	9.89	9.10	6.23	4.49	6.40	4.65	3.55	5.92
MEAN	6.85	8.73	9.54	9.83	9.89	9.10	6.23	4.49	6.40	4.65	3.55	5.92
MAX	11.2	12.4	12.5	12.9	13.5	16.1	16.9	11.8	27.9	22.2	18.3	56.6
(WY)	1947	1978	1979	1941	1971	1978	1941	1944	1947	1947	1955	1938
MIN	.67	3.40	5.96	7.10	7.00	4.34	.79	.61	.39	.24	.25	.37
(WY)	1961	1950	1991	1985	1942	1961	1967	1960	1974	1953	1961	1960

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1938 - 1993

ANNUAL TOTAL	2725.66	2946.37	
ANNUAL MEAN	7.45	8.07	7.01
HIGHEST ANNUAL MEAN			11.1
LOWEST ANNUAL MEAN			3.78
HIGHEST DAILY MEAN	15	20	815
LOWEST DAILY MEAN	.41	.16	.00
ANNUAL SEVEN-DAY MINIMUM	.68	.30	.06
INSTANTANEOUS PEAK FLOW		49	11700
INSTANTANEOUS PEAK STAGE		5.01	16.46
ANNUAL RUNOFF (AC-FT)	5410	5840	5080
10 PERCENT EXCEEDS	10	11	11b
50 PERCENT EXCEEDS	8.2	8.6	8.0b
90 PERCENT EXCEEDS	2.3	3.9	.68b

e Estimated

a No flow at times in some years.

b Reflects water years 1938-57, 1959-93 only.

c From rating curve extended above 11 ft³/s on basis of slope-area measurement of peak flow.

d Site and datum then in use.

CHEYENNE RIVER BASIN

06402995 FRENCH CREEK ABOVE STOCKADE LAKE, NEAR CUSTER, SD

LOCATION.--Lat 43°46'10", long 103°32'10", in SE1/4NW1/4SW1/4 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 mouth of Willow Creek, and 2.5 mi east of Custer on Highway 16A.

DRAINAGE AREA.--68.7 mi².

PERIOD OF RECORD.--August 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,190 ft above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	1.3	.26	e.25	e.37	e.32	5.3	9.0	8.7	14	6.4	3.2
2	.30	.78	.23	e.27	e.37	e.33	4.8	8.7	e13	13	5.5	3.2
3	.27	.63	.29	e.28	e.37	e.34	5.0	7.8	e20	17	5.5	3.1
4	.25	.57	.28	e.30	e.37	e.35	4.8	6.5	e31	15	5.6	2.9
5	.25	.49	.22	e.30	e.37	e.35	5.0	20	e18	13	5.6	4.3
6	.26	.52	.29	e.30	e.37	e.50	6.5	40	e19	10	5.6	4.7
7	.40	.50	.29	e.30	e.37	e.66	7.3	24	e170	13	5.5	4.8
8	.38	.64	.31	e.30	e.37	e.62	7.7	53	127	10	4.9	4.5
9	.37	.76	.31	e.30	e.37	e.58	12	40	65	9.1	4.1	4.3
10	.40	.66	.34	e.28	e.37	e.54	15	26	46	8.2	3.7	3.5
11	.34	.65	.33	e.27	e.35	e.50	13	20	38	7.3	3.5	3.2
12	.32	.73	e.32	e.26	e.33	e.46	11	17	32	8.0	3.6	2.9
13	.34	.71	e.32	e.25	e.31	e.42	11	15	27	8.1	6.9	2.4
14	.33	.77	e.33	e.23	e.29	e.75	9.6	14	22	8.0	9.6	2.3
15	.37	.86	e.34	e.24	e.27	e.1.1	9.7	13	20	9.0	7.9	2.4
16	.37	.82	e.35	e.26	e.25	e.85	11	13	21	29	8.4	2.8
17	.38	.83	e.35	e.27	e.24	e.60	10	13	42	64	7.6	2.4
18	.35	.85	e.36	e.28	e.24	e.75	10	13	59	37	5.3	3.3
19	.41	.74	e.37	e.29	e.25	e.1.2	9.3	12	53	18	4.7	7.0
20	.40	.62	e.38	e.30	e.25	e.7.7	8.1	10	36	14	19	7.8
21	.40	.52	e.39	e.30	e.26	e.2.6	7.1	9.4	28	13	23	5.8
22	.41	.44	e.40	e.30	e.27	e.4.1	7.2	11	37	12	14	4.5
23	.45	.44	.41	e.30	e.27	e.7.0	7.2	18	28	11	8.3	3.8
24	.47	.38	.42	e.30	e.28	e.12	6.9	16	22	11	6.2	5.5
25	.53	.34	.42	e.30	e.29	19	5.9	12	18	12	5.1	5.0
26	.52	.28	e.43	e.30	e.29	23	5.6	9.6	17	14	4.4	4.9
27	.48	.30	e.50	e.30	e.30	16	5.2	8.5	15	20	4.8	4.2
28	.47	.27	e.45	e.28	e.31	13	4.8	7.8	16	16	4.6	3.7
29	.50	.30	e.38	e.30	---	11	4.6	7.8	16	11	4.1	3.2
30	.59	.23	e.28	e.32	---	8.8	9.2	6.8	15	8.9	3.5	3.1
31	1.4	---	e.24	e.35	---	6.4	---	6.6	---	7.6	3.2	---
TOTAL	13.00	17.93	10.59	8.88	8.75	141.82	239.8	488.5	1079.7	461.2	210.1	118.7
MEAN	.42	.60	.34	.29	.31	4.57	7.99	15.8	36.0	14.9	6.78	3.96
MAX	1.4	1.3	.50	.35	.37	23	15	53	170	64	23	7.8
MIN	.25	.23	.22	.23	.24	.32	4.6	6.5	8.7	7.3	3.2	2.3
AC-FT	26	36	21	18	17	281	476	969	2140	915	417	235

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1993, BY WATER YEAR (WY)

	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
MEAN	.92	1.44	.76	.32	.72	4.44	5.94	16.6	27.0	8.57	6.31	1.98
MAX	1.76	2.66	1.63	.48	1.46	5.72	7.99	31.7	40.3	14.9	10.3	3.96
(WY)	1992	1992	1992	1992	1992	1992	1991	1991	1991	1993	1991	1993
MIN	.42	.60	.30	.19	.31	3.03	3.70	2.31	4.74	4.76	1.89	.50
(WY)	1993	1993	1991	1991	1993	1991	1992	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1991 - 1993

ANNUAL TOTAL	821.48	2798.97	
ANNUAL MEAN	2.24	7.67	
HIGHEST ANNUAL MEAN			6.26
LOWEST ANNUAL MEAN			8.48
HIGHEST DAILY MEAN	22	Jun 20	170
LOWEST DAILY MEAN	.22	Dec 5	.15
ANNUAL SEVEN-DAY MINIMUM	.26	Nov 30	.18
INSTANTANEOUS PEAK FLOW			320
INSTANTANEOUS PEAK STAGE			7.31
ANNUAL RUNOFF (AC-FT)	1630	5550	4540
10 PERCENT EXCEEDS	5.1	18	14
50 PERCENT EXCEEDS	.94	3.2	2.0
90 PERCENT EXCEEDS	.32	.29	.30

e Estimated

a Also Aug. 6, 1991.

CHEYENNE RIVER BASIN

06403300 FRENCH CREEK ABOVE FAIRBURN, SD

LOCATION.--Lat 43°43'02", long 103°22'03", in SW1/4SW1/4NE1/4 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 sea level, 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, 12 mi upstream. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.7	e.85	e.90	e1.1	e.76	13	16	8.8	22	14	6.9
2	1.6	2.8	e.80	e1.0	e1.2	e.77	10	16	10	22	11	6.7
3	1.6	2.5	e.70	e1.1	e1.2	e.78	8.5	15	16	21	10	6.7
4	1.6	2.2	e.60	e1.0	e1.2	e.80	7.8	13	23	19	10	6.6
5	1.5	2.1	e.52	e1.0	e1.2	e.81	7.6	13	36	19	9.9	6.7
6	1.5	2.0	e.60	e.90	e1.2	e1.0	8.1	28	30	21	11	8.1
7	1.6	2.0	e.65	e.90	e1.3	e1.3	13	57	33	20	11	9.8
8	1.6	2.2	e.70	e.90	e1.3	e1.2	13	44	211	18	11	8.5
9	1.6	2.2	e.75	e.90	e1.3	e1.1	12	70	201	17	9.7	8.2
10	1.7	2.2	e.80	e.90	e1.3	e1.0	16	60	113	17	9.1	8.0
11	1.7	2.2	e.90	e.85	e1.2	e.90	19	43	76	16	8.3	7.2
12	1.6	2.1	e1.0	e.80	e1.1	e.80	17	33	62	e14	8.0	6.7
13	1.5	2.0	e.95	e.70	e1.0	e.70	17	28	48	e16	8.8	6.6
14	1.3	2.1	e.90	e.75	e.92	e1.9	17	25	42	e17	11	6.5
15	1.3	2.2	e.92	e.80	e.83	e4.6	14	22	37	e19	13	5.9
16	1.3	2.2	e.95	e.85	e.74	3.7	14	21	36	e35	14	5.6
17	1.4	2.1	e.97	e.90	e.64	6.6	16	20	43	e80	15	5.3
18	1.4	2.1	e.99	e.95	e.55	4.9	15	20	57	e45	12	5.5
19	1.5	2.0	e1.0	e1.0	e.60	5.9	14	18	66	e27	11	6.7
20	1.8	e2.0	e1.0	e1.0	e.64	6.0	14	17	56	e25	23	10
21	1.7	e1.9	e1.1	e1.0	e.69	9.5	12	16	44	23	27	11
22	1.9	e1.8	e1.1	e1.0	e.73	9.4	11	14	43	22	24	10
23	2.0	e1.7	e1.1	e1.0	e.78	10	10	15	43	20	20	8.3
24	2.1	e1.6	e1.1	e1.0	e.78	16	9.9	19	36	19	15	7.1
25	2.2	e1.5	e1.2	e1.0	e.79	22	9.3	20	30	18	12	7.0
26	2.2	e1.4	e1.2	e1.0	e.80	29	8.7	19	27	19	9.7	8.0
27	2.2	e1.3	e1.2	e1.0	e.73	30	8.1	15	25	20	8.9	7.4
28	2.1	e1.2	e1.1	e1.0	e.74	25	7.7	13	27	23	8.6	7.3
29	2.1	e1.0	e1.0	e.90	---	25	7.3	11	24	22	8.2	6.5
30	2.3	e.90	e.90	e1.0	---	22	9.2	10	24	18	8.0	6.1
31	2.7	---	e.80	e1.0	---	18	---	9.6	---	16	7.5	---
TOTAL	54.2	58.20	28.35	29.00	26.56	261.42	359.2	740.6	1527.8	710	379.7	220.9
MEAN	1.75	1.94	.91	.94	.95	8.43	12.0	23.9	50.9	22.9	12.2	7.36
MAX	2.7	2.8	1.2	1.1	1.3	30	19	70	211	80	27	11
MIN	1.3	.90	.52	.70	.55	.70	7.3	9.6	8.8	14	7.5	5.3
AC-FT	108	115	56	58	53	519	712	1470	3030	1410	753	438

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

MEAN	4.05	3.12	1.50	1.35	1.59	7.17	7.36	15.6	19.2	9.41	4.58	2.93
MAX	12.6	8.63	2.93	3.90	4.08	24.8	12.0	54.8	64.8	24.2	12.2	7.36
(WY)	1983	1983	1987	1985	1983	1987	1993	1991	1991	1984	1993	1993
MIN	.84	1.07	.69	.39	.19	1.59	1.63	1.00	.46	.44	.53	.65
(WY)	1988	1986	1990	1989	1989	1988	1989	1989	1989	1985	1985	1987

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	1534.15	4395.93	6.50a
ANNUAL MEAN	4.19	12.0	13.7
HIGHEST ANNUAL MEAN			1.01
LOWEST ANNUAL MEAN			252
HIGHEST DAILY MEAN	24 Mar 6	211 Jun 8	.02 Jun 4 1991
LOWEST DAILY MEAN	.52 Dec 5	.52 Dec 5	.03 Feb 3 1989b
ANNUAL SEVEN-DAY MINIMUM	.65 Dec 3	.65 Dec 3	.03 Feb 2 1989
INSTANTANEOUS PEAK FLOW		266 Jun 8	329 Mar 7 1987
INSTANTANEOUS PEAK STAGE		2.58 Jun 8	2.73 Mar 7 1987
ANNUAL RUNOFF (AC-FT)	3040	8720	4710
10 PERCENT EXCEEDS	8.4	27	15
50 PERCENT EXCEEDS	2.5	6.7	2.4
90 PERCENT EXCEEDS	1.2	.85	.60

e Estimated

a Median of annual mean discharges, 4.9 ft³/s.

b Also Feb. 4-5, 1989.

CHEYENNE RIVER BASIN

06404000 BATTLE CREEK NEAR KEYSTONE, SD

LOCATION.--Lat 43°52'21", long 103°20'10", in SW1/4SW1/4 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 southeast 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.41	1.6	1.7	e.80	e1.7	e1.4	7.5	17	28	14	13	4.1
2	.34	1.6	1.5	e.80	e1.6	e1.4	7.4	19	31	13	12	4.0
3	.26	1.7	1.5	e.80	e1.3	e1.0	6.4	17	59	13	13	3.6
4	.29	1.8	e1.6	e1.0	e1.4	e1.0	6.0	15	108	11	13	3.1
5	.31	1.7	e1.4	e1.0	e1.4	e1.0	5.5	42	79	10	12	3.8
6	.31	1.8	e1.4	e1.5	e1.7	e1.5	6.5	239	68	9.4	12	5.9
7	.41	1.5	e1.4	e1.8	e1.7	e2.0	9.5	107	521	12	12	5.1
8	.48	1.5	e1.7	e1.8	e1.7	e2.5	10	252	200	9.6	11	4.4
9	.50	1.5	e2.0	e1.5	e1.4	e2.5	13	151	119	9.1	10	3.8
10	.50	2.4	e2.0	e1.6	e1.0	e2.3	17	104	94	8.0	9.3	3.2
11	.46	2.2	e2.1	e1.6	e.80	e2.0	17	81	75	7.8	9.4	3.1
12	.43	1.7	e2.2	e1.6	e.90	e1.8	16	67	63	7.9	8.8	3.1
13	.47	1.5	e1.9	e1.5	e.90	e1.8	17	56	50	8.0	13	2.9
14	.73	1.6	e1.7	e1.5	e.90	e2.5	17	47	41	7.3	13	2.8
15	.90	1.6	e1.7	e1.5	e.80	e4.0	16	42	37	8.4	10	2.9
16	.69	1.6	e1.7	e1.5	e.70	e4.0	18	38	35	31	12	2.9
17	.65	1.6	e1.5	e1.0	e.60	e4.0	19	36	51	69	9.5	2.7
18	.73	1.6	e1.5	e1.3	e.70	e5.0	18	31	54	43	7.5	3.5
19	.81	1.6	e1.7	e1.3	e.80	e5.0	17	28	53	28	7.3	10
20	.81	1.6	e2.0	e1.6	e.80	6.4	15	25	41	22	21	9.7
21	.80	1.6	e2.0	e1.8	e.70	6.9	14	27	35	22	20	7.1
22	.73	1.5	e2.0	e1.5	e.70	6.9	13	69	33	20	12	5.3
23	.73	1.6	e1.8	e1.4	e.70	6.9	12	52	29	18	8.7	4.2
24	.73	1.5	e1.8	e1.4	e.70	7.3	11	39	26	19	7.2	4.0
25	.69	1.5	e1.8	e1.9	e.70	7.8	11	34	22	18	6.0	3.9
26	.65	1.4	e1.8	e1.9	e.80	8.6	9.9	30	20	17	5.6	3.6
27	.65	1.3	e2.0	e1.8	e.90	9.2	9.5	28	18	22	5.8	3.3
28	.65	1.4	e1.4	e1.4	e1.4	9.6	8.9	26	17	17	5.6	3.1
29	.65	1.4	e1.0	e1.2	---	11	8.2	28	17	14	5.3	2.9
30	.65	1.5	e.90	e1.8	---	11	14	27	15	14	4.6	2.9
31	1.0	---	e.80	e2.0	---	9.0	---	23	---	14	4.4	---
TOTAL	18.42	48.4	51.50	45.10	29.40	147.3	370.3	1797	2039	536.5	314.0	124.9
MEAN	.59	1.61	1.66	1.45	1.05	4.75	12.3	58.0	68.0	17.3	10.1	4.16
MAX	1.0	2.4	2.2	2.0	1.7	11	19	252	521	69	21	10
MIN	.26	1.3	.80	.80	.60	1.0	5.5	15	15	7.3	4.4	2.7
AC-FT	37	96	102	89	58	292	734	3560	4040	1060	623	248

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1993, BY WATER YEAR (WY)

	MEAN	2.13	1.82	1.40	1.05	1.27	3.23	8.64	23.9	37.0	12.1	4.15	1.94
MAX	12.7	5.24	4.25	2.64	3.03	12.8	38.8	89.8	199	46.3	15.6	6.20	
(WY)	1987	1987	1987	1987	1987	1987	1971	1978	1972	1962	1979	1989	
MIN	.000	.000	.000	.000	.000	.46	1.49	1.24	.22	.039	.000	.000	
(WY)	1962	1989	1989	1962	1989	1962	1981	1985	1985	1989	1989	1975	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1962 - 1993

ANNUAL TOTAL	1204.28	5521.82	
ANNUAL MEAN	3.29	15.1	8.23a
HIGHEST ANNUAL MEAN			21.1
LOWEST ANNUAL MEAN			.69
HIGHEST DAILY MEAN	27	Jun 22	2400
LOWEST DAILY MEAN	.23	Sep 28	.00
ANNUAL SEVEN-DAY MINIMUM	.26	Sep 23	.00
INSTANTANEOUS PEAK FLOW			26200
INSTANTANEOUS PEAK STAGE			14.50
ANNUAL RUNOFF (AC-FT)	2390	10950	5970
10 PERCENT EXCEEDS	6.6	35	15
50 PERCENT EXCEEDS	2.4	3.8	2.1
90 PERCENT EXCEEDS	.66	.80	.20

e Estimated

a Median of annual mean discharges, 6.6 ft³/s.

b No flow for some days in 1961, 1962, 1970, 1974, 1976, 1980-89.

c From floodmarks, site then in use, from rating curve extended above 550 ft³/s on basis of slope-area measurement of peak flow.

CHEYENNE RIVER BASIN

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 sea level, from topographic map.

REMARKS.--Records poor. 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	---	.00	.00	.20	e.00	.00	.00
2	.00	.00	.00	.00	.02	---	.00	.00	e.00	e.00	.00	.00
3	.00	.00	.00	.00	.25	---	.00	.00	e1.23	e.22	.00	.00
4	.00	.00	.00	.00	.00	---	.00	.00	e.09	.00	.00	.00
5	.00	.00	.00	.00	.00	---	.00	1.65	.00	.00	.00	.40
6	.00	.00	.00	.00	.00	---	.00	.08	e.00	.00	.00	.00
7	.16	.00	.00	.00	.00	---	.00	.05	e2.00	.27	.00	.00
8	.00	.08	.00	.00	.00	---	.10	.98	e.00	.00	.00	.00
9	.00	.01	.00	e.37	.00	---	.00	.00	.00	.00	.00	.00
10	.08	.00	.00	e.03	e.14	---	.00	.00	.20	.00	.00	.00
11	.00	.00	.00	e.15	e.04	---	.00	.00	.80	.17	.00	.00
12	.00	.00	e.52	.00	e.02	---	.07	.00	.00	.00	.10	.00
13	.00	.00	e.08	.00	.00	---	.48	.00	.00	.00	.28	.24
14	.00	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	---	.00	.00	.10	.68	.10	.00
16	.00	.00	.00	.00	.00	---	.00	.11	.00	.00	.28	.00
17	.00	.00	.00	.00	.00	---	.00	.00	.70	1.22	.00	.00
18	.00	.00	.00	.00	.00	---	.81	.00	.50	.00	.00	e.00
19	.00	.00	.00	.00	.00	---	.00	.00	.00	.00	.92	e.81
20	.00	.00	.00	.00	.00	---	.14	.00	.10	.03	.45	e.00
21	.00	.00	.00	.00	.00	---	.00	1.35	.00	.00	.00	.00
22	.00	.00	.00	.00	e.10	---	.00	.38	.00	.00	.00	.00
23	.00	.01	.00	.00	e.00	---	.00	.00	.00	.00	.00	.00
24	.00	.02	.00	.00	e.10	---	.00	.00	.00	.30	.00	.00
25	.00	.00	.00	.00	.00	---	.00	.00	.00	.87	.00	.00
26	.00	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	---	.00	.00	.10	.00	.00	.00
28	.00	.00	.02	.00	.00	---	.00	.00	.02	.00	.00	.00
29	.04	.00	.03	.00	---	---	.00	.92	.00	.00	.00	.00
30	.00	.00	.00	.00	---	---	1.40	.17	.04	.00	.00	.00
31	.55	---	.05	.00	---	---	---	.08	---	.00	.00	---
TOTAL	0.83	0.12	0.70	0.55	0.67	---	3.00	5.77	6.08	3.76	2.13	1.45

e Estimated

CHEYENNE RIVER BASIN

06404800 GRACE COOLIDGE CREEK NEAR HAYWARD, SD

LOCATION.--Lat 43°48'07", long 103°26'03", in NE1/4NW1/4SW1/4 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. Elevation of gage is 4,780 ft above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.78	.49	.21	.19	.20	.23	1.9	4.8	2.4	3.7	1.8	1.1
2	.79	.38	.18	.21	.20	.24	1.8	5.6	2.5	3.5	1.7	1.1
3	.78	.35	.27	.20	.20	.25	1.7	4.5	6.6	3.6	1.7	1.1
4	.75	.33	.28	.20	.22	.23	1.6	3.9	8.8	3.2	1.7	1.0
5	.67	.31	.23	.19	.22	.23	1.6	11	5.7	2.9	1.6	1.2
6	.67	.33	.23	.18	.21	.28	1.9	28	4.5	2.9	1.6	1.2
7	.72	.30	.23	.18	.20	.40	2.1	17	78	3.6	1.5	1.0
8	.72	.31	.23	.19	.20	.51	2.3	27	41	2.8	1.4	1.0
9	.72	.30	.24	e.22	.20	.57	3.9	21	28	2.7	1.3	.94
10	.72	.28	.24	.25	.21	.50	5.7	16	20	2.4	1.2	.89
11	.72	.28	.23	.25	.20	.41	4.9	13	16	2.4	1.2	.89
12	.72	.28	.21	.24	.20	.39	4.4	11	13	2.4	1.2	.85
13	.57	.27	.22	.24	.20	.38	4.8	9.8	11	2.3	1.7	.86
14	.36	.30	.23	.23	.20	.40	4.5	8.5	9.8	2.1	1.4	.83
15	.36	.29	.23	.23	.20	.51	5.0	7.6	9.0	2.1	1.3	.83
16	.36	.27	.23	.23	e.19	.59	6.5	6.6	8.8	4.3	1.4	.78
17	.36	.26	.22	.21	e.17	.48	6.6	6.2	10	11	1.2	.83
18	.36	.25	e.22	.18	e.18	.54	6.4	5.2	11	6.3	1.1	.91
19	.36	.27	e.22	.20	e.19	.65	5.6	4.7	9.4	4.6	1.6	1.2
20	.35	.26	e.21	.20	e.20	.70	5.0	4.2	8.0	4.0	4.5	.93
21	.33	.24	e.21	.20	e.21	.86	4.7	3.7	7.1	3.7	2.3	.81
22	.33	.25	e.20	.20	e.22	.85	4.5	3.9	7.2	3.3	1.8	.76
23	.33	.27	e.20	.20	e.23	1.1	4.2	3.9	6.0	3.0	1.6	.72
24	.33	.24	e.20	.19	e.24	1.3	3.8	3.0	5.5	3.1	1.4	.72
25	.32	.22	.18	.19	.24	1.8	3.6	2.7	5.2	2.9	1.3	.71
26	.30	.18	.18	.20	.23	1.9	3.4	2.4	4.7	3.0	1.2	.67
27	.30	.21	.19	.21	.23	2.1	3.0	2.1	4.3	2.9	1.2	.67
28	.30	.23	.19	.23	.23	2.4	2.9	2.1	5.5	2.4	1.2	.67
29	.30	.22	.20	.21	---	3.7	2.8	2.0	4.3	2.2	1.1	.70
30	.33	.17	.20	.20	---	2.9	4.5	1.6	3.7	2.0	1.1	.72
31	.45	---	.18	.20	---	2.3	---	1.8	---	1.9	1.1	---
TOTAL	15.46	8.34	6.69	6.45	5.82	29.70	115.6	244.8	357.0	103.2	47.4	26.59
MEAN	.50	.28	.22	.21	.21	.96	3.85	7.90	11.9	3.33	1.53	.89
MAX	.79	.49	.28	.25	.24	3.7	6.6	28	78	11	4.5	1.2
MIN	.30	.17	.18	.18	.17	.23	1.6	1.6	2.4	1.9	1.1	.67
AC-FT	31	17	13	13	12	59	229	486	708	205	94	53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1993, BY WATER YEAR (WY)

	1990	1991	1992	1993
MEAN	.59	.39	.24	.19
MAX	1.15	.62	.34	.26
(WY)	1990	1990	1990	1993
MIN	.24	.24	.17	.12
(WY)	1991	1991	1991	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1990 - 1993

ANNUAL TOTAL	294.76	967.05	
ANNUAL MEAN	.81	2.65	
HIGHEST ANNUAL MEAN			2.26
LOWEST ANNUAL MEAN			3.57
HIGHEST DAILY MEAN	8.7	Jun 22	102
LOWEST DAILY MEAN	.07	Feb 12	.02
ANNUAL SEVEN-DAY MINIMUM	.10	Feb 8	.04
INSTANTANEOUS PEAK FLOW		141	210
INSTANTANEOUS PEAK STAGE		6.43	7.23
ANNUAL RUNOFF (AC-FT)	585	1920	1640
10 PERCENT EXCEEDS	2.2	6.1	4.3
50 PERCENT EXCEEDS	.36	.83	.50
90 PERCENT EXCEEDS	.18	.20	.18

e Estimated

a Also Dec. 26, 1990.

CHEYENNE RIVER BASIN

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

LOCATION.--Lat 43°45'40", long 103°21'49", in SW1/4NE1/4 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 sea level, 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	3.9	e2.1	e1.4	1.5	1.9	5.0	12	15	16	7.5	6.7
2	2.0	3.3	e2.2	e1.5	1.5	2.1	4.8	12	17	15	7.3	6.7
3	1.9	3.2	e2.2	e1.6	1.7	1.9	4.5	11	26	15	7.7	6.2
4	2.0	3.2	e2.1	e1.6	1.6	2.0	4.5	11	38	14	7.5	6.0
5	2.0	2.2	2.0	e1.7	1.7	2.1	4.5	18	33	13	7.3	7.1
6	2.0	2.1	2.2	e1.8	1.7	2.2	5.7	49	29	12	7.2	7.8
7	2.3	2.2	1.9	e1.8	1.6	2.6	6.4	42	179	14	7.0	6.7
8	2.6	2.5	2.1	e1.7	1.6	2.8	5.8	57	117	12	6.4	6.3
9	2.5	2.7	1.9	e1.7	1.7	2.7	7.0	56	73	12	6.1	5.8
10	2.6	2.6	1.9	e1.7	1.6	2.3	9.1	47	57	11	5.9	5.6
11	2.3	2.4	1.7	e1.7	e1.5	2.2	9.2	39	49	11	6.0	5.6
12	2.3	2.3	1.8	e1.8	e1.5	2.4	8.9	35	42	11	6.1	5.4
13	2.2	2.4	e1.7	e1.8	1.6	2.9	11	31	37	11	8.2	6.0
14	2.4	2.4	e1.7	e1.7	1.6	2.5	9.6	28	32	10	8.0	5.5
15	2.2	2.1	e1.7	e1.7	1.5	2.7	9.6	26	30	10	6.8	5.5
16	2.4	2.2	e1.6	e1.6	1.2	2.6	11	24	29	15	7.4	5.2
17	2.4	2.2	e1.5	e1.6	.96	3.1	13	22	33	23	6.3	5.3
18	2.4	2.2	e1.5	e1.6	1.8	2.7	13	20	34	18	5.7	6.1
19	2.5	2.3	e1.5	e1.5	2.6	3.0	12	19	30	14	9.6	8.8
20	2.4	2.3	e1.6	e1.5	2.5	3.7	11	18	26	13	23	7.2
21	2.2	2.1	e1.6	e1.5	2.2	3.5	11	17	23	13	13	6.0
22	2.2	2.0	e1.6	e1.4	2.1	3.3	10	18	23	12	10	5.6
23	2.2	2.2	e1.7	e1.4	1.8	3.7	9.6	18	21	11	9.3	5.4
24	2.1	2.1	e1.7	1.4	1.8	4.1	8.9	16	19	11	8.5	5.4
25	2.3	e2.2	e1.7	1.3	2.0	4.6	8.3	15	18	11	8.1	5.4
26	2.5	2.4	e1.7	1.6	1.9	4.9	8.0	14	17	11	7.8	5.3
27	2.1	2.7	e1.6	1.6	1.9	5.2	7.4	14	16	11	7.8	4.9
28	2.3	2.4	e1.6	1.4	1.8	5.5	7.0	13	20	9.7	7.5	4.8
29	2.3	e2.2	e1.5	1.8	---	7.9	6.8	13	18	8.9	7.3	4.9
30	2.8	e2.2	e1.5	1.5	---	6.6	13	12	16	8.5	7.0	4.8
31	3.5	---	e1.4	1.5	---	5.6	---	12	---	8.1	6.7	---
TOTAL	71.9	73.2	54.5	49.4	48.46	105.3	255.6	739	1117	385.2	250.0	178.0
MEAN	2.32	2.44	1.76	1.59	1.73	3.40	8.52	23.8	37.2	12.4	8.06	5.93
MAX	3.5	3.9	2.2	1.8	2.6	7.9	13	57	179	23	23	8.8
MIN	1.9	2.0	1.4	1.3	.96	1.9	4.5	11	15	8.1	5.7	4.8
AC-FT	143	145	108	98	96	209	507	1470	2220	764	496	353

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1993, BY WATER YEAR (WY)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	1.87	1.48	1.18	.98	.95	1.81	2.66	11.5	10.3	5.11	3.05	2.04					
MAX	5.92	3.33	2.50	1.95	2.20	5.54	8.52	40.4	43.9	22.3	11.9	5.93					
(WY)	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987
MIN	.36	.41	.32	.45	.004	.61	.63	.67	.25	.097	.26	.13					
(WY)	1989	1986	1986	1988	1989	1981	1981	1977	1988	1988	1985	1988					

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1977 - 1993

ANNUAL TOTAL	1058.7	3327.56	
ANNUAL MEAN	2.89	9.12	3.59
HIGHEST ANNUAL MEAN			9.12
LOWEST ANNUAL MEAN			.61
HIGHEST DAILY MEAN	12	Jun 22	254
LOWEST DAILY MEAN	1.2	May 8	.00
ANNUAL SEVEN-DAY MINIMUM	1.4	Jan 16	.00
INSTANTANEOUS PEAK FLOW			1030
INSTANTANEOUS PEAK STAGE			12.76
ANNUAL RUNOFF (AC-FT)	2100	6600	2600
10 PERCENT EXCEEDS	6.1	20	7.0
50 PERCENT EXCEEDS	2.2	4.9	1.3
90 PERCENT EXCEEDS	1.5	1.6	.45

e Estimated

a No flow some days in 1977, part of day June 14, 1979, 1985, 1988, and 1989.

b Gage height, 10.84 ft, from floodmarks, from rating curve extended above 709 ft³/s on basis of slope-area measurement of peak flow.

c Backwater from ice.

CHEYENNE RIVER BASIN

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 compound weir. Elevation of gage is 4,110 ft above sea level, from topographic map.

REMARKS.--Records good 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.08	.00	.00	.00	.00	e.70	3.6	2.5	2.3	.77	e.70
2	.00	.05	.00	.00	.00	.00	e.68	4.7	2.8	2.1	.76	e.70
3	.00	.04	.00	.00	.00	.00	e.02	e.64	4.7	8.0	2.0	.79
4	.00	.03	.00	.00	.00	.00	e.03	e.60	4.4	14	1.7	.68
5	.00	.04	.00	.00	.00	.00	e.05	e.60	7.7	11	1.6	.61
6	.01	.03	.00	.00	.00	.00	e.10	e.10	32	9.1	1.5	.59
7	.02	.03	.00	.00	.00	.00	e.11	e.12	23	48	1.7	.53
8	.02	.03	.00	.00	.00	.00	e.16	e.18	39	29	1.4	.45
9	.02	.02	.00	.00	.00	.00	e.20	2.4	25	18	1.3	.42
10	.02	.02	.00	.00	.00	.00	e.18	2.6	17	14	1.2	.39
11	.02	.03	.00	.00	.00	.00	e.15	2.7	12	11	1.2	.33
12	.01	.02	.00	.00	.00	.00	e.15	2.6	9.7	8.7	1.2	.37
13	.01	.04	.00	.00	.00	.00	e.15	3.0	7.9	7.1	1.1	.67
14	.02	.02	.00	.00	.00	.00	e.15	3.2	6.7	6.0	1.0	.50
15	.04	.01	.00	.00	.00	.00	e.17	3.9	5.7	5.2	.97	.45
16	.05	.01	.00	.00	.00	.00	e.19	5.4	5.1	4.9	1.3	.47
17	.05	.01	.00	.00	.00	.00	e.18	5.4	4.6	5.2	2.2	.36
18	.04	.01	.00	.00	.00	.00	e.20	4.9	4.1	5.7	1.6	.33
19	.04	.01	.00	.00	.00	.00	e.21	4.5	3.7	5.0	1.4	.93
20	.03	.01	.00	.00	.00	.00	e.25	3.9	3.3	4.4	1.4	2.2
21	.02	.02	.00	.00	.00	.00	e.30	3.5	3.0	4.2	1.3	1.3
22	.02	.02	.00	.00	.00	.00	e.36	3.2	3.1	4.0	1.2	1.2
23	.03	.01	.00	.00	.00	.00	e.40	2.9	2.9	3.6	1.1	1.1
24	.02	e.02	.00	.00	.00	.00	e.48	2.6	2.5	3.3	1.2	.95
25	.02	e.02	.00	.00	.00	.00	e.54	2.4	2.3	3.0	1.1	.93
26	.02	.02	.00	.00	.00	.00	e.64	2.2	2.1	2.7	1.1	.80
27	.02	e.02	.00	.00	.00	.00	e.75	2.1	2.0	2.5	.96	.81
28	.02	e.02	.00	.00	.00	.00	e.87	1.9	1.9	3.6	.80	.77
29	.02	.01	.00	.00	---	---	e.10	1.8	1.8	2.7	.71	.69
30	.02	.00	.00	.00	---	---	e.90	2.9	1.6	2.3	.80	e.70
31	.06	---	.00	.00	---	---	e.80	---	1.8	---	.83	e.70
TOTAL	0.67	0.70	0.00	0.00	0.00	9.69	77.22	248.9	251.5	41.27	22.55	16.62
MEAN	.022	.023	.000	.000	.000	.31	2.57	8.03	8.38	1.33	.73	.55
MAX	.06	.08	.00	.00	.00	1.0	5.4	39	48	2.3	2.2	.94
MIN	.00	.00	.00	.00	.00	.00	.60	1.6	2.3	.71	.33	.34
AC-FT	1.3	1.4	.00	.00	.00	19	153	494	499	82	45	33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1993, BY WATER YEAR (WY)

	1990	1991	1992	1993
MEAN	.17	.033	.001	.000
MAX	.60	.11	.004	.000
(WY)	1990	1990	1990	1992
MIN	.000	.000	.000	.000
(WY)	1991	1991	1991	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1990 - 1993

ANNUAL TOTAL	157.26	669.12		
ANNUAL MEAN	.43	1.83		1.12
HIGHEST ANNUAL MEAN				1.83
LOWEST ANNUAL MEAN				.43
HIGHEST DAILY MEAN	3.4	Jun 22	48	Jun 7
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1a
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Nov 30
INSTANTANEOUS PEAK FLOW			115	Jun 7
INSTANTANEOUS PEAK STAGE			7.46	Jun 7
ANNUAL RUNOFF (AC-FT)	312		1330	
10 PERCENT EXCEEDS	1.5		4.4	2.8
50 PERCENT EXCEEDS	.06		.40	.08
90 PERCENT EXCEEDS	.00		.00	.00

e Estimated

a No flow for many days in each year.

b Based on slope-area measurement of peak flow.

c From floodmarks.

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.

AVERAGE ANNUAL PRECIPITATION.--4 years, 22.90 in.

REMARKS.--Records fair except those for estimated periods, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.02	.00	e.85	.33	e.00	e.00
2	.00	.04	.19	.02	.14	.00	.00	.00	e.28	.20	e.03	.00
3	.00	.05	.12	.02	.13	.00	.00	.00	.87	.00	e.00	.00
4	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	e.00	.00
5	.00	.00	.00	.00	.00	.00	.00	1.52	.02	.00	e.00	.40
6	.01	.00	.00	.00	.00	.00	.97	.13	.57	.40	e.00	.00
7	.08	.00	.00	.00	.00	.00	.16	.13	1.18	.00	e.03	.00
8	.00	.08	.00	.65	.00	.00	.01	.95	.00	.07	e.02	.00
9	.04	.00	.00	.29	.00	.00	.04	.00	.00	.00	e.03	.00
10	.00	.00	.00	.02	.38	.15	.07	.00	.00	.00	e.03	.00
11	.00	.00	.00	.12	.12	.08	.25	.00	.09	.00	e.02	.00
12	.00	.00	.38	.00	.05	.00	.10	.00	.00	.33	e.07	.19
13	.00	.00	.06	.00	.00	.00	.90	.00	.00	e.00	e.42	.00
14	.00	.00	.00	.00	.01	.00	.01	.00	.00	e.00	e.00	.00
15	.00	.00	.04	.00	.09	.00	.00	.00	.04	e.52	e.18	.03
16	.00	.00	.00	.00	.00	.05	.00	.00	.50	e1.00	e.00	.00
17	.00	.00	.00	.00	.00	.05	.00	.08	.30	e.65	e.00	.01
18	.00	.00	.01	.00	.00	.00	.00	.00	.35	e.00	e.00	.40
19	.00	.00	.00	.00	.00	.36	.00	.00	.00	e.00	e.87	.32
20	.00	.00	.00	.00	.00	.02	.05	.00	.00	e.00	e.34	.05
21	.00	.00	.00	.00	.12	.01	.00	.03	.08	e.00	e.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.24	.00	e.00	e.00	.00
23	.00	.07	.00	.00	.00	.00	.00	.03	.00	e.00	e.00	.00
24	.00	.10	.00	.00	.12	.00	.00	.02	.00	e.15	e.00	.00
25	.00	.00	.00	.00	.02	.00	.00	.00	.06	e.00	e.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.27	e.00	.00
27	.00	.00	.00	.06	.00	.00	.00	.00	.16	e.00	e.00	.00
28	.00	.00	.07	.00	.04	.53	.00	.02	.17	e.00	e.00	.00
29	.04	.00	.00	.00	---	.08	.00	.00	.00	e.00	e.00	.00
30	.00	.00	.06	.00	---	.06	1.42	.00	.09	e.00	e.00	.00
31	.42	---	.05	.00	---	.00	---	.18	---	e.00	e.00	---
TOTAL	0.59	0.34	0.98	1.18	1.26	1.39	4.00	3.33	5.61	3.92	2.04	1.40

e Estimated

CHEYENNE RIVER BASIN

06406500 BATTLE CREEK BELOW HERMOSA, SD

LOCATION.--Lat 43°43'30", long 102°54'15", in NE1/4SW1/4SE1/4 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. Elevation of gage is 2,810 ft above sea level, 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	5.3	e3.6	e2.3	3.8	e2.6	8.8	14	e49	47	23	17
2	1.5	4.9	e3.5	e2.8	3.8	e2.9	8.7	10	e52	56	21	17
3	1.7	4.8	e3.0	e2.8	3.7	e3.0	8.5	8.8	e56	47	21	17
4	1.7	4.7	e2.9	e2.7	4.5	e3.0	8.3	8.0	e62	41	21	16
5	1.7	4.4	e2.9	e2.6	4.9	e3.2	8.0	7.9	e148	39	20	17
6	1.7	4.3	e3.0	e2.4	5.0	e3.8	8.3	10	e135	37	21	17
7	1.8	4.3	e3.2	e2.4	4.9	e3.8	9.2	e221	e239	36	21	18
8	1.9	4.3	e3.6	e2.4	4.5	e3.9	9.3	e54	464	34	21	18
9	2.0	4.3	e3.6	e2.5	4.8	e4.0	9.2	e325	499	33	20	18
10	2.2	4.3	e3.5	e2.7	5.5	e3.8	8.9	e305	339	31	19	18
11	2.4	4.3	e3.5	e2.9	5.0	e3.5	8.7	e209	275	29	18	18
12	2.5	4.3	e3.4	e3.0	5.6	e3.1	8.2	e162	213	28	18	18
13	2.6	4.2	e3.0	e3.1	e5.0	e3.0	9.2	e102	182	27	20	18
14	2.7	4.1	e2.9	e3.2	e4.5	e3.5	9.5	e89	156	27	20	18
15	2.8	4.2	e2.8	e3.2	e4.0	e4.0	9.3	e39	129	26	21	19
16	3.0	4.3	e2.5	e3.2	e3.5	e3.5	9.1	e70	112	33	22	20
17	3.0	4.3	e2.2	e3.2	e3.2	e3.5	9.0	e68	105	29	20	20
18	3.1	4.3	e1.8	e3.0	e3.1	e4.5	8.6	e60	121	48	19	20
19	3.4	4.3	e1.8	3.1	e3.0	e5.8	8.5	e57	125	61	20	23
20	3.6	4.3	e2.0	3.2	e2.9	e6.9	8.4	e52	129	47	22	22
21	3.6	4.3	e2.6	3.3	e2.8	e7.0	7.7	e47	105	40	25	20
22	3.6	4.6	e2.8	3.4	e2.5	e7.6	6.5	e49	92	36	21	19
23	3.6	4.5	e2.7	3.5	e2.6	8.0	6.4	e60	85	34	19	18
24	3.6	4.1	e2.8	3.7	e2.6	8.2	6.4	e67	77	36	19	18
25	3.6	e3.9	e3.0	3.7	e2.5	7.6	6.3	e62	70	33	18	18
26	3.6	e3.3	e3.4	3.8	e2.3	7.6	6.2	e56	64	33	18	17
27	3.6	e3.3	e3.8	3.9	e2.2	7.5	6.1	e52	59	31	18	17
28	3.6	e3.6	e3.0	3.8	e2.4	8.2	6.1	e48	55	29	18	17
29	3.6	e3.4	e2.7	3.8	---	10	5.9	e45	52	29	17	17
30	3.6	e3.1	e2.4	3.8	---	9.3	8.7	e51	50	27	17	17
31	4.7	---	e2.2	3.8	---	9.3	---	e52	---	25	17	---
TOTAL	87.6	126.3	90.1	97.2	105.1	165.6	242.0	2460.7	4299	1109	615	547
MEAN	2.83	4.21	2.91	3.14	3.75	5.34	8.07	79.4	143	35.8	19.8	18.2
MAX	4.7	5.3	3.8	3.9	5.6	10	9.5	325	499	61	25	23
MIN	1.5	3.1	1.8	2.3	2.2	2.6	5.9	7.9	49	25	17	16
AC-FT	174	251	179	193	208	328	480	4880	8530	2200	1220	1080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1953, 1989 - 1993, BY WATER YEAR (WY)

	1951	1952	1953	1989	1990	1991	1992	1993
MEAN	1.31	2.42	2.28	2.13	2.75	4.16	2.87	44.2
MAX	4.39	7.31	8.22	5.78	4.74	6.19	8.07	188
(WY)	1992	1992	1992	1992	1992	1993	1993	1993
MIN	.000	.000	.000	.000	.000	.44	.59	.71
(WY)	1953	1989	1989	1989	1989	1990	1990	1989

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1951-1953, 1989-1993

ANNUAL TOTAL	1368.56	9944.6	
ANNUAL MEAN	3.74	27.2	11.0
HIGHEST ANNUAL MEAN			27.2
LOWEST ANNUAL MEAN			.40
HIGHEST DAILY MEAN	7.9	Jan 1	499 Jun 9
LOWEST DAILY MEAN	.97	Sep 18	1.5 Oct 2
ANNUAL SEVEN-DAY MINIMUM	1.1	Aug 16	1.7 Oct 1
INSTANTANEOUS PEAK FLOW			714 Jun 8
INSTANTANEOUS PEAK STAGE			8.57 Jun 8
ANNUAL RUNOFF (AC-FT)	2710	19730	7970
10 PERCENT EXCEEDS	5.9	60	17
50 PERCENT EXCEEDS	3.8	7.6	2.3
90 PERCENT EXCEEDS	1.5	2.7	.00

e Estimated

a No flow for many days in most years.

b From rating curve extended above 110 ft³/s.

CHEYENNE RIVER BASIN

06406920 SPRING CREEK ABOVE SHERIDAN LAKE, NEAR KEYSTONE, SD

LOCATION.--Lat 43°57'39", long 103°29'18", in SE1/4NE1/4SW1/4 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.--127 mi² (revised).

REVISED RECORDS.--WDR SD-93-1: Drainage area.

PERIOD OF RECORD.--August 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,650 ft above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	4.6	e1.6	e1.5	e1.9	e2.8	12	30	52	54	26	14
2	2.7	e4.5	e1.5	e1.6	e2.2	e2.9	12	34	53	51	25	14
3	2.8	e4.0	e1.2	e1.7	e2.2	e2.9	11	31	59	54	25	14
4	2.5	e3.5	e1.3	e1.7	e2.2	e2.9	11	29	73	48	26	13
5	2.5	e3.4	e1.4	e1.7	e2.2	e3.0	11	54	62	45	26	14
6	2.4	e3.4	e1.5	e1.7	e2.2	e3.1	13	161	58	43	25	17
7	2.9	e3.0	e1.6	e1.9	e2.2	e3.3	12	117	245	45	24	15
8	3.3	e2.9	e1.7	e1.8	e2.2	e3.9	11	174	306	42	23	14
9	3.4	e2.7	e1.6	e1.8	e2.2	e4.2	16	160	216	41	21	13
10	3.6	e2.6	e1.4	e1.8	e2.3	e5.0	21	130	178	38	20	12
11	3.6	e2.4	e1.4	e1.7	e2.3	e5.2	20	110	150	36	20	12
12	3.3	e2.1	e1.5	e1.6	e2.4	e5.0	18	96	137	35	20	12
13	3.3	e2.1	e1.7	e1.8	e2.3	e5.0	18	81	115	34	29	11
14	2.9	e1.8	e1.7	e1.8	e2.0	e5.6	18	70	103	32	27	11
15	2.9	e1.7	e1.7	e1.9	e1.6	e5.7	17	65	93	35	22	11
16	3.1	e1.7	e1.7	e1.9	e1.2	e5.7	18	61	92	125	27	11
17	2.9	e1.7	e1.7	e1.9	e1.2	e5.7	19	59	126	70	22	11
18	3.0	e1.7	e1.6	e1.9	e1.4	e5.6	20	52	126	60	19	12
19	3.3	e1.7	e1.6	e1.9	e2.0	e6.3	21	48	126	48	19	18
20	3.3	e1.7	e1.7	e1.9	e3.0	e7.0	20	46	106	46	44	18
21	3.2	e1.8	e1.8	e2.0	e3.2	e8.0	17	46	97	44	35	14
22	3.1	e2.1	e1.8	e2.0	e3.1	e9.2	20	67	103	43	26	13
23	3.0	e2.0	e1.8	e2.0	e3.0	11	20	75	88	41	23	12
24	2.9	e2.2	e1.8	e1.9	e2.9	13	22	62	79	39	20	12
25	2.8	e2.0	e1.8	e1.7	e2.8	21	21	58	76	38	18	12
26	2.8	e1.8	e1.8	e1.8	e2.7	28	21	54	69	38	17	11
27	2.8	e1.6	e1.8	e1.8	e2.7	30	21	50	65	45	17	11
28	2.7	e1.5	e1.8	e1.8	e2.8	27	20	49	62	37	17	10
29	2.8	e1.3	e1.7	e1.8	---	22	20	49	59	34	16	10
30	2.9	e1.6	e1.6	e1.8	---	19	27	47	57	31	15	10
31	3.7	---	e1.5	e1.8	---	15	---	46	---	29	14	---
TOTAL	93.1	71.1	50.3	55.9	64.4	294.0	528	2211	3231	1401	708	382
MEAN	3.00	2.37	1.62	1.80	2.30	9.48	17.6	71.3	108	45.2	22.8	12.7
MAX	3.7	4.6	1.8	2.0	3.2	30	27	174	306	125	44	18
MIN	2.4	1.3	1.2	1.5	1.2	2.8	11	29	52	29	14	10
AC-FT	185	141	100	111	128	583	1050	4390	6410	2780	1400	758

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1993, BY WATER YEAR (WY)

	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
MEAN	3.65	4.10	2.95	2.24	2.57	7.35	11.7	50.2	79.0	27.8	14.3	7.52
MAX	5.35	6.60	4.94	2.50	3.22	9.48	17.6	73.7	121	45.2	22.8	12.7
(WY)	1992	1992	1992	1992	1992	1993	1993	1991	1991	1993	1993	1993
MIN	2.61	2.37	1.62	1.80	2.16	5.56	7.20	5.64	8.14	11.2	7.05	3.70
(WY)	1991	1993	1993	1993	1991	1991	1992	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1991 - 1993

ANNUAL TOTAL	1915.2	9089.8	
ANNUAL MEAN	5.23	24.9	17.8
HIGHEST ANNUAL MEAN			24.9
LOWEST ANNUAL MEAN			6.06
HIGHEST DAILY MEAN	22	Jun 21	311
LOWEST DAILY MEAN	1.2	Dec 3	1.2
			Mar. 16, 17, 1993
ANNUAL SEVEN-DAY MINIMUM	1.4	Nov 29	1.4
INSTANTANEOUS PEAK FLOW			455
INSTANTANEOUS PEAK STAGE			10.77
ANNUAL RUNOFF (AC-FT)	3800	18030	12900
10 PERCENT EXCEEDS	9.5	63	47
50 PERCENT EXCEEDS	4.6	11	5.7
90 PERCENT EXCEEDS	1.8	1.7	2.0

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 SW1/4NE1/4 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 sea level, from topographic map. Prior to October 1986, nonrecording gage 0.2 mi 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 OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1972, reached a stage of about 14 ft, present datum.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	3.7	2.3	e2.7	e3.4	e4.0	e14	35	81	75	25	16
2	.61	4.0	2.4	e2.8	e3.3	e4.2	e14	36	82	75	27	17
3	.58	4.1	1.8	e2.9	e3.8	e4.3	e13	37	89	77	29	19
4	.56	4.2	1.6	e3.0	e4.2	e4.2	e13	36	100	78	34	19
5	.55	3.8	1.9	e3.1	e4.2	e4.3	e14	55	101	73	41	20
6	.58	3.5	2.3	e3.2	e4.1	e4.6	e15	118	99	70	45	22
7	.75	3.2	2.4	e3.3	e4.3	e5.1	e15	128	202	68	45	21
8	.79	3.3	2.4	e3.1	e4.5	e5.5	e16	153	266	67	40	21
9	.73	3.4	2.6	e3.2	e4.6	e6.0	e18	168	267	62	37	20
10	1.1	3.9	2.5	e3.2	e4.7	e6.9	e22	165	248	51	35	19
11	1.6	3.8	2.5	e3.2	e5.1	e7.3	e23	154	228	52	34	18
12	1.7	3.6	2.6	e3.0	e3.5	e7.3	e24	143	214	52	32	18
13	1.7	3.1	2.9	e2.9	e4.0	e7.1	e28	127	203	52	35	17
14	1.7	3.2	e3.0	e3.2	e4.1	e7.3	28	112	191	50	34	15
15	1.7	2.9	e2.9	e3.2	e3.2	e8.3	27	104	183	50	36	14
16	1.6	2.9	e2.9	e3.2	e2.2	e7.3	27	98	170	91	37	14
17	1.6	2.9	e2.9	e3.2	e2.0	e7.0	27	94	134	118	35	14
18	1.6	2.9	e2.8	e3.2	e1.8	e6.5	26	89	140	113	34	15
19	1.6	2.9	e2.7	e3.1	e2.8	e7.0	26	84	143	99	34	20
20	1.7	3.0	e2.8	e3.1	e3.0	e8.8	25	82	140	85	40	21
21	1.8	3.1	e3.0	e3.1	e3.4	e9.2	24	94	134	81	43	21
22	2.0	2.8	e3.1	e3.2	e3.5	e11	23	100	129	77	44	19
23	2.1	3.5	e3.1	e3.3	e3.5	e13	24	103	126	74	40	18
24	2.0	2.6	e3.1	e3.4	e3.6	e18	24	100	118	70	37	17
25	2.1	e3.2	e3.2	e3.3	e3.7	e22	24	95	112	66	34	16
26	2.0	e3.0	e3.2	e3.0	e3.7	e26	24	90	105	64	33	16
27	2.0	e2.6	e3.1	e3.3	e3.8	e30	24	81	101	65	29	15
28	2.0	2.4	e3.0	e3.1	e3.8	e30	23	78	97	64	6.8	14
29	2.1	2.4	e2.9	e3.1	---	e30	23	84	93	62	6.0	14
30	2.1	1.9	e2.8	e3.2	---	e21	30	87	85	59	11	14
31	2.7	---	e2.7	e3.3	---	e18	---	82	---	53	14	---
TOTAL	46.25	95.8	83.4	97.1	101.8	351.2	658	3012	4381	2193	1006.8	524
MEAN	1.49	3.19	2.69	3.13	3.64	11.3	21.9	97.2	146	70.7	32.5	17.5
MAX	2.7	4.2	3.2	3.4	5.1	30	30	168	267	118	45	22
MIN	.55	1.9	1.6	2.7	1.8	4.0	13	35	81	50	6.0	14
AC-FT	92	190	165	193	202	697	1310	5970	8690	4350	2000	1040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)*

	1987	1988	1989	1990	1991	1992	1993
MEAN	3.71	3.32	2.43	2.11	2.63	8.73	12.8
MAX	15.7	8.10	5.85	4.57	5.40	24.0	24.0
(WY)	1987	1987	1992	1992	1992	1987	1987
MIN	.000	.006	.076	.10	.010	.74	3.47
(WY)	1989	1989	1989	1989	1989	1989	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1987 - 1993*

ANNUAL TOTAL	2360.02	12550.35	
ANNUAL MEAN	6.45	34.4	
HIGHEST ANNUAL MEAN			13.4
LOWEST ANNUAL MEAN			34.4
HIGHEST DAILY MEAN	23	Jun 24	.98
LOWEST DAILY MEAN	.55	Oct 5	.00
ANNUAL SEVEN-DAY MINIMUM	.60	Oct 1	.00
INSTANTANEOUS PEAK FLOW		286	865
INSTANTANEOUS PEAK STAGE		6.94	6.94
ANNUAL RUNOFF (AC-FT)	4680	24890	9710
10 PERCENT EXCEEDS	13	100	30
50 PERCENT EXCEEDS	4.9	14	4.1
90 PERCENT EXCEEDS	1.9	2.2	.06

e Estimated

* Period using present site and datum only (1987-93). See GAGE.

a No flow for many days in 1988-89.

b Peak occurred during partial year.

CHEYENNE RIVER BASIN

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

SUMMATION VALUES

[illegible]

CHEYENNE RIVER BASIN

06408500 SPRING CREEK NEAR HERMOSA, SD

LOCATION.--Lat 43°56'31", long 103°09'32", in SE1/4SE1/4SE1/4 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 sea level. 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 except those for estimated daily discharges, which are poor. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.37	.31	e.17	e.28	e.20	.66	4.7	30	45	16	5.1
2	.10	.37	.31	e.18	e.29	e.22	.70	3.5	30	42	9.7	4.9
3	.11	.34	e.26	e.17	e.28	e.22	.72	3.4	32	42	7.9	4.6
4	.12	.34	e.20	e.16	e.28	e.24	.72	3.5	41	42	6.7	4.8
5	.13	.34	e.18	e.15	e.28	e.30	.95	3.6	47	40	6.1	5.1
6	.11	.34	e.18	e.15	e.30	e.40	1.1	7.3	46	37	58	5.2
7	.13	.34	e.20	e.14	e.34	e.45	1.5	2.6	116	37	35	4.8
8	.17	.34	e.30	e.14	e.35	e.46	1.5	12	237	34	20	4.5
9	.17	.34	e.30	e.13	e.30	e.46	1.4	73	286	33	17	4.3
10	.18	.30	e.28	e.12	e.28	e.45	1.3	95	250	27	13	3.6
11	.20	.35	e.30	e.12	e.25	e.44	1.2	93	216	23	12	3.5
12	.21	.31	e.27	e.11	e.25	e.40	1.2	76	190	23	9.9	3.3
13	.21	.31	e.25	e.11	e.24	e.40	1.5	59	168	22	9.1	3.0
14	.19	.28	e.25	e.11	e.21	e.60	1.7	49	149	20	8.7	3.0
15	.19	.27	e.27	e.18	e.18	e.70	1.7	40	133	20	7.9	3.1
16	.20	.31	e.25	e.18	e.16	e.70	1.6	36	116	34	7.7	3.2
17	.22	.31	e.22	e.17	e.15	e.70	1.6	33	119	60	8.1	3.0
18	.23	.31	e.20	e.16	e.15	e.80	1.7	30	135	66	7.3	3.1
19	.23	.30	e.18	e.15	e.15	e.90	1.8	28	144	58	7.1	3.8
20	.26	.31	e.20	e.15	e.15	.90	2.0	25	141	47	10	3.5
21	.25	.31	e.25	e.20	e.14	.80	2.1	29	127	40	9.8	3.4
22	.26	.31	e.25	e.20	e.14	.67	2.2	37	116	36	10	3.3
23	.27	.31	e.22	e.15	e.13	.66	2.1	41	109	33	10	3.3
24	.28	.27	e.30	e.14	e.13	.72	2.1	42	99	31	9.4	3.3
25	.28	.28	e.30	e.20	e.13	.72	2.2	40	87	29	8.1	3.3
26	.28	.28	e.32	e.23	e.14	.72	2.5	37	77	27	6.8	3.1
27	.28	.28	e.32	e.23	e.14	.63	2.4	32	70	26	6.2	3.0
28	.28	.28	e.25	e.22	e.18	.66	2.3	27	63	25	5.9	3.0
29	.28	.28	e.22	e.21	---	.85	2.3	28	60	24	5.5	3.2
30	.25	.30	e.18	e.25	---	.68	4.0	34	56	22	5.2	3.4
31	.31	---	e.17	e.26	---	.66	---	31	---	21	5.0	---
TOTAL	6.48	9.38	7.69	5.24	6.00	17.71	50.75	1055.6	3490	1066	359.1	111.7
MEAN	.21	.31	.25	.17	.21	.57	1.69	34.1	116	34.4	11.6	3.72
MAX	.31	.37	.32	.26	.35	.90	4.0	95	286	66	58	5.2
MIN	.10	.27	.17	.11	.13	.20	.66	2.6	30	20	5.0	3.0
AC-FT	13	19	15	10	12	35	101	2090	6920	2110	712	222

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1993, BY WATER YEAR (WY)

	MEAN	1.07	.92	.81	1.27	.97	.98	9.73	29.9	8.90	2.04	.97
MAX	3.19	6.54	2.97	2.48	20.8	4.22	5.24	78.5	271	73.2	16.4	3.72
(WY)	1985	1972	1972	1964	1971	1985	1971	1965	1972	1962	1962	1993
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1956	1956	1957	1957	1957	1957	1961	1960	1956	1954	1951	1954

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1950 - 1993

ANNUAL TOTAL	251.45	6185.65	
ANNUAL MEAN	.69	16.9	4.87a
HIGHEST ANNUAL MEAN			27.5
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	2.0	Jan 1	3300
LOWEST DAILY MEAN	.00	Aug 21	.00
ANNUAL SEVEN-DAY MINIMUM	.00	sep 15	.00
INSTANTANEOUS PEAK FLOW			366
INSTANTANEOUS PEAK STAGE			5.40
ANNUAL RUNOFF (AC-FT)	499	12270	3530
10 PERCENT EXCEEDS	1.5	46	3.0
50 PERCENT EXCEEDS	.46	.80	.54
90 PERCENT EXCEEDS	.15	.17	.00

e Estimated

a Median of annual mean discharges, 1.5 ft³/s.

b No flow for many days in most years.

c From rating curve extended above 350 ft³/s on basis of contracted-opening measurement of peak flow.

d From floodmarks, site and datum then in use.

CHEYENNE RIVER BASIN

06408700 RHOADS FORK NEAR ROCHFORD, SD

LOCATION.--Lat 44°08'12", long 103°51'29", in NW1/4SE1/4NE1/4 sec.15, T.2 N., R.2 E., Pennington County, Hydrologic Unit 10120110, Black Hills National Forest, 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 sea level, from topographic map. Prior to Oct. 1, 1992, at site 35 ft downstream at datum 1.82 ft lower.

REMARKS.--No estimated daily discharges. Records good. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	3.8	3.8	3.8	3.7	3.4	3.7	3.8	4.1	4.4	4.4	4.2
2	3.8	3.9	3.8	3.8	3.7	3.4	3.7	3.8	4.1	4.4	4.4	4.3
3	3.8	4.0	3.8	3.8	3.6	3.4	3.8	3.8	4.2	4.4	4.4	4.2
4	3.8	3.8	3.7	3.8	3.6	3.4	3.7	3.7	4.2	4.5	4.4	4.2
5	3.8	3.8	3.7	3.8	3.6	3.4	3.8	4.2	4.1	4.5	4.4	4.3
6	3.9	3.8	3.7	3.7	3.6	3.5	3.9	4.4	4.1	4.5	4.4	4.3
7	3.8	3.8	3.8	3.7	3.6	3.5	3.8	4.2	4.9	4.4	4.4	4.3
8	3.8	3.8	3.8	3.8	3.6	3.5	3.8	4.4	5.2	4.4	4.4	4.3
9	3.9	3.9	3.8	3.8	3.6	3.6	3.8	4.2	5.2	4.4	4.4	4.3
10	3.9	3.8	3.8	3.8	3.7	3.5	3.9	4.1	5.1	4.4	4.3	4.3
11	3.8	3.8	3.7	3.8	3.6	3.5	3.8	4.0	5.0	4.5	4.3	4.3
12	3.8	3.8	3.8	3.8	3.6	3.5	3.8	4.0	4.9	4.5	4.3	4.3
13	3.8	3.8	3.7	3.8	3.6	3.4	3.8	4.0	4.9	4.5	4.4	4.3
14	3.9	3.8	3.7	3.8	3.6	3.5	3.8	4.0	4.8	4.5	4.3	4.3
15	3.9	3.8	3.7	3.8	3.6	3.6	3.7	4.0	4.8	4.5	4.3	4.3
16	3.9	3.8	3.8	3.8	3.6	3.5	3.8	3.9	4.8	4.5	4.3	4.3
17	3.9	3.8	3.7	3.8	3.5	3.5	3.8	4.0	4.8	4.6	4.3	4.3
18	3.9	3.8	3.7	3.8	3.5	3.6	3.8	3.9	4.8	4.5	4.3	4.4
19	3.9	3.8	3.7	3.8	3.6	3.6	3.8	3.9	4.8	4.5	4.4	4.4
20	3.9	3.8	3.7	3.8	3.6	3.6	3.8	3.9	4.6	4.6	4.4	4.3
21	3.8	3.8	3.7	3.7	3.6	3.6	3.7	4.0	4.5	5.0	4.3	4.3
22	3.9	3.8	3.7	3.7	3.6	3.6	3.7	4.6	4.5	4.7	4.3	4.3
23	3.8	3.8	3.7	3.8	3.5	3.7	3.8	4.5	4.5	4.6	4.3	4.3
24	3.8	3.8	3.7	3.7	3.5	3.7	3.8	4.3	4.5	4.5	4.3	4.3
25	3.8	3.8	3.8	3.7	3.5	3.8	3.8	4.2	4.5	4.4	4.3	4.3
26	3.8	3.7	3.8	3.7	3.5	3.9	3.7	4.1	4.5	4.5	4.3	4.3
27	3.8	3.8	3.8	3.7	3.4	3.9	3.6	4.1	4.4	4.5	4.2	4.2
28	3.8	3.8	3.8	3.7	3.4	3.9	3.7	4.1	4.4	4.4	4.2	4.2
29	3.8	3.8	3.8	3.7	---	3.9	3.7	4.1	4.4	4.4	4.2	4.2
30	3.8	3.8	3.8	3.7	---	3.8	3.8	4.1	4.4	4.4	4.2	4.2
31	3.9	---	3.8	3.7	---	3.8	---	4.1	---	4.4	4.2	---
TOTAL	119.0	114.3	116.3	116.6	100.1	111.5	113.1	126.4	138.0	139.3	134.0	128.5
MEAN	3.84	3.81	3.75	3.76	3.57	3.60	3.77	4.08	4.60	4.49	4.32	4.28
MAX	3.9	4.0	3.8	3.8	3.7	3.9	3.9	4.6	5.2	5.0	4.4	4.4
MIN	3.8	3.7	3.7	3.7	3.4	3.4	3.6	3.7	4.1	4.4	4.2	4.2
AC-FT	236	227	231	231	199	221	224	251	274	276	266	255

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

	MEAN	5.21	5.08	4.86	4.75	4.79	4.86	4.92	5.08	5.12	5.12	5.01	4.99
MAX	7.74	7.43	6.59	6.54	7.22	7.27	6.97	7.15	6.72	6.88	6.90	6.49	
(WY)	1984	1984	1985	1984	1984	1985	1984	1984	1984	1984	1984	1984	
MIN	3.66	3.42	3.30	3.25	3.57	3.60	3.77	3.92	3.79	3.82	3.74	3.78	
(WY)	1991	1991	1991	1991	1993	1993	1993	1992	1992	1992	1992	1992	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	1379.1	1457.1	
ANNUAL MEAN	3.77	3.99	4.98
HIGHEST ANNUAL MEAN			6.95
LOWEST ANNUAL MEAN			3.69
HIGHEST DAILY MEAN	4.3	May 21	8.5
LOWEST DAILY MEAN	3.4	Mar 23	3.1
ANNUAL SEVEN-DAY MINIMUM	3.5	Mar 18	3.1
INSTANTANEOUS PEAK FLOW			9.7
INSTANTANEOUS PEAK STAGE			2.19
ANNUAL RUNOFF (AC-FT)	2740	2890	3610
10 PERCENT EXCEEDS	3.9	4.5	6.7
50 PERCENT EXCEEDS	3.8	3.8	5.0
90 PERCENT EXCEEDS	3.6	3.6	3.7

a Also Feb. 28, Mar. 1-5, 13.

b Also Jan. 20-22, 1991.

c Gage height, 2.00 ft, site and datum then in use.

d Backwater from vegetation, site and datum then in use.

CHEYENNE RIVER BASIN

06408700 RHOADS FORK NEAR ROCKFORD, 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 ANNUAL PRECIPITATION.--10 years, 20.87 in.

REMARKS.--Records fair except those for estimated periods, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.12	.00	.00	.00	.00	e.00	.21	.00	.00	.00
2	.00	.27	.04	.18	.13	.00	.00	e.00	.08	.07	.00	.14
3	.00	.58	.10	.03	.13	.10	.00	e.00	.46	.00	.00	.00
4	.00	.19	.01	.02	.00	.00	.00	e.00	.04	.20	.00	.00
5	.00	.02	.00	.00	.00	.00	.00	e1.19	.02	.06	.00	.41
6	.18	.01	.00	.01	.00	.00	.66	e.01	.05	.36	.00	.00
7	.08	.03	.00	.00	.00	.00	.36	e.62	2.61	.00	.00	.00
8	.00	.00	.00	.38	.00	.00	.01	e.43	.74	.00	.00	.00
9	.28	.19	.00	.17	.00	.10	.04	e.12	.00	.15	.00	.02
10	.03	.00	.00	.03	.22	.00	.47	e.00	.00	.02	.06	.00
11	.00	.03	.00	.00	.17	.14	.00	e.00	.00	.00	.02	.00
12	.00	.10	.61	.02	.02	.13	.08	e.03	.00	.12	.13	.00
13	.00	.05	.08	.00	.02	.00	.29	.00	.00	.00	.46	.00
14	.00	.00	.00	.02	.04	.00	.28	.00	.00	.22	.00	.00
15	.00	.04	.03	.00	.08	.03	.04	.00	.35	.06	.18	.00
16	.00	.00	.03	.00	.00	.02	.03	.00	.63	.16	.00	.00
17	.00	.00	.02	.00	.00	.00	.00	.00	.02	.40	.00	.26
18	.00	.00	.04	.00	.00	.00	.00	.00	.48	.00	.00	.22
19	.00	.00	.00	.00	.00	.04	.05	.00	.02	.00	.71	.34
20	.00	.00	.03	.00	.00	.00	.02	.00	.03	1.06	.00	.00
21	.00	.00	.00	.10	.00	.02	.02	2.02	.18	.58	.00	.00
22	.00	.00	.05	.13	.04	.00	.00	.45	.00	.04	.00	.10
23	.00	.07	.06	.07	.00	.00	.17	.12	.00	.08	.00	.00
24	.00	.02	.10	.00	.00	.00	.02	.00	.00	.00	.00	.00
25	.00	.00	.02	.00	.00	.00	.04	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	e.04	.00	.00	.15	.00	.04
27	.01	.02	.00	.00	.00	.00	e.03	.00	.00	.04	.00	.00
28	.01	.01	.05	.00	.00	.06	e.00	.03	.00	.00	.00	.00
29	.00	.03	.00	.00	---	.22	e.00	.02	.07	.00	.00	.00
30	.02	.01	.02	.00	---	.07	e1.00	.00	.00	.00	.00	.00
31	.15	---	.05	.00	---	.00	---	.05	---	.00	.00	---
TOTAL	0.76	1.67	1.46	1.16	0.85	0.93	3.65	5.09	5.99	3.77	1.56	1.53

CAL YR 1992 TOTAL 24.49

WTR YR 1993 TOTAL 28.42

e Estimated

CHEYENNE RIVER BASIN

06408860 RAPID CREEK NEAR ROCHFORD, SD

LOCATION.--Lat 44°06'17", long 103°38'35", in SW1/4NE1/4 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 sea level, from topographic map.

REMARKS.--Records good except those for Nov. 5 to Mar. 17, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	9.6	e9.0	e5.5	8.9	e9.0	19	27	40	51	24	16
2	7.9	9.6	e9.0	e8.0	8.7	10	19	32	42	48	24	16
3	7.9	8.7	10	e8.0	8.5	10	20	29	44	47	24	16
4	7.7	4.9	e9.0	e8.0	e7.5	9.2	19	26	46	44	23	15
5	7.9	e4.5	e9.0	e7.5	e8.5	9.6	20	37	38	43	22	17
6	8.0	e5.0	10	e7.5	e8.5	10	21	79	35	42	22	21
7	8.5	e7.0	11	e8.0	9.7	12	21	65	100	51	23	18
8	8.5	e9.0	11	e8.0	9.6	13	20	109	196	40	21	17
9	10	e9.0	10	e8.0	9.4	13	25	104	221	37	20	17
10	11	e9.0	10	e9.0	9.4	11	30	97	203	36	19	16
11	9.5	8.8	9.5	e9.0	10	10	28	85	174	34	19	16
12	8.7	e9.0	9.6	e8.5	e9.0	e9.0	26	77	158	33	19	15
13	8.4	9.3	9.8	e7.5	9.2	e8.0	26	69	132	32	25	15
14	8.3	12	e9.0	e7.5	e7.5	e9.0	25	61	112	32	22	16
15	8.4	11	10	e7.5	e6.0	e10	25	56	99	35	20	16
16	7.6	11	9.7	e7.5	e5.5	e10	25	54	110	36	22	15
17	8.9	11	e9.0	e7.5	e5.0	e11	25	50	127	34	19	16
18	8.6	11	9.0	e8.0	e5.5	13	26	47	109	31	19	18
19	9.0	11	e9.0	e8.0	e6.5	13	25	44	104	28	22	24
20	8.7	9.8	9.3	e9.0	e7.0	13	24	40	89	26	40	21
21	8.7	9.3	9.5	7.9	e7.0	14	22	40	88	81	25	18
22	8.3	9.0	9.4	8.2	e6.0	14	24	94	94	41	21	18
23	8.5	e8.0	9.3	8.2	e5.5	17	24	65	82	37	20	18
24	8.9	e8.0	9.2	e7.0	e5.5	21	26	58	76	35	19	17
25	8.5	e8.0	8.9	9.3	e6.0	24	25	54	72	34	18	17
26	8.3	e8.0	9.0	8.7	e6.0	29	25	51	67	32	18	17
27	8.5	9.4	9.2	8.5	e7.0	34	25	47	62	31	17	17
28	8.7	e9.0	9.2	9.3	e8.0	33	24	45	59	30	17	16
29	8.7	e9.0	e7.0	e8.0	---	27	23	43	56	28	17	16
30	8.7	e9.0	e5.5	e9.0	---	23	27	42	54	26	16	16
31	9.1	---	e4.0	9.0	---	21	---	40	---	25	17	---
TOTAL	266.3	266.9	282.1	250.6	210.9	469.8	714	1767	2889	1160	654	511
MEAN	8.59	8.90	9.10	8.08	7.53	15.2	23.8	57.0	96.3	37.4	21.1	17.0
MAX	11	12	11	9.3	10	34	30	109	221	81	40	24
MIN	7.6	4.5	4.0	5.5	5.0	8.0	19	26	35	25	16	15
AC-FT	528	529	560	497	418	932	1420	3500	5730	2300	1300	1010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	9.53	9.50	8.80	9.43	9.18
MAX	11.5	11.7	10.9	11.9	12.2
(WY)	1992	1992	1992	1991	1992
MIN	8.45	7.91	7.15	7.39	7.04
(WY)	1991	1991	1990	1990	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	4491.4	9441.6	
ANNUAL MEAN	12.3	25.9	16.2
HIGHEST ANNUAL MEAN			25.9
LOWEST ANNUAL MEAN			11.5
HIGHEST DAILY MEAN	28	221	221
LOWEST DAILY MEAN	4.0	4.0	3.8
ANNUAL SEVEN-DAY MINIMUM	6.9	6.1	4.3
INSTANTANEOUS PEAK FLOW		240	240
INSTANTANEOUS PEAK STAGE		6.00	6.00
ANNUAL RUNOFF (AC-FT)	8910	18730	11730
10 PERCENT EXCEEDS	17	56	26
50 PERCENT EXCEEDS	12	16	11
90 PERCENT EXCEEDS	8.2	7.9	7.5

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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--5 years, 20.44 in.

REMARKS.--Records fair except those for estimated periods, which are poor. 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00
2	.00	.20	.00	.00	.05	.00	e.00	.00	.40	.00	.00	.00
3	.00	.20	.10	.00	.15	.00	e.00	.00	.20	.00	.00	.00
4	.00	.30	.00	.00	.00	.00	e.00	.00	.40	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	e.00	.40	.00	.00	.00	.30
6	.00	.00	.00	.00	.00	.00	e.85	1.90	.00	.00	.00	.00
7	.10	.00	.00	.00	.00	.00	e.61	.60	1.90	.10	.00	.00
8	.00	.00	.00	.00	.00	.00	e.00	1.20	.60	.00	.00	.00
9	.00	.00	.00	.30	.00	.00	e.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	e.06	.00	.00	.10	.00	.00
11	.00	.00	.00	.00	.10	.00	e.00	.00	.00	.00	.00	.00
12	e.00	.00	.00	.00	.00	.00	e.24	.00	.00	.00	.00	.00
13	e.00	.00	.50	.00	.00	.00	e.59	.00	.00	.00	.40	.00
14	e.00	.20	.00	.00	.00	.00	e.00	.00	.00	.40	.50	.00
15	e.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.00
16	e.00	.00	.00	.00	.10	.00	e.00	.00	.30	.00	.00	.00
17	e.00	.00	.00	.30	.00	.00	e.00	.00	.90	.00	.00	.10
18	e.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	.10
19	e.00	.00	.00	.00	.00	.10	e.05	.20	.30	.00	.00	.00
20	e.00	.00	.00	.00	.00	.10	e.00	.00	.00	.50	.50	.00
21	e.00	.00	.00	.00	.00	.00	e.00	.00	.00	.80	.00	.00
22	e.00	.00	.10	.20	.20	.00	e.00	1.30	.00	.40	.00	.00
23	e.00	.00	.00	.00	.00	.00	.00	.60	.40	.00	.00	.00
24	e.00	.00	.00	.00	.00	.00	.10	.00	.00	.70	.00	.90
25	e.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	e.00	.00	.00	.00	.30	.00	.00	.00	.00	.00	.00	.00
27	e.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
28	e.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	e.00	.00	.20	.00	---	.00	.00	e.00	.10	.00	.00	.00
30	e.00	.00	.00	.00	---	.00	.70	e.00	.00	.00	.00	.00
31	e.30	---	.10	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.40	1.20	1.00	0.80	0.90	0.20	3.30	6.20	5.50	3.00	1.40	1.40

CAL YR 1992 TOTAL 18.39

WTR YR 1993 TOTAL 25.30

e Estimated

CHEYENNE RIVER BASIN

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 NE1/4SW1/4 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 above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	7.8	e8.2	8.3	9.3	e8.5	11	14	18	22	14	13
2	8.8	7.7	e8.0	8.8	9.3	e8.8	12	15	19	20	14	12
3	8.8	6.9	e8.0	8.8	9.2	e9.0	12	14	19	20	14	12
4	8.8	7.5	e7.6	7.1	8.7	9.4	12	14	19	21	14	12
5	8.8	7.7	e7.8	8.3	e8.7	9.2	12	20	18	20	15	14
6	8.8	e8.0	e8.0	7.8	e8.7	9.3	12	23	18	19	14	13
7	8.8	e8.3	e8.4	7.8	e8.9	9.7	12	18	45	21	15	12
8	11	e8.3	e8.4	7.6	9.1	9.9	14	22	71	19	14	12
9	9.9	8.1	e8.4	7.8	8.9	8.7	13	21	37	17	13	12
10	8.9	e8.1	e8.4	8.0	8.9	e7.4	15	19	31	17	14	12
11	7.9	e8.1	e8.6	8.3	8.8	e7.1	14	17	30	17	14	12
12	7.8	e8.3	e9.0	8.0	9.4	e7.1	14	18	30	17	14	12
13	7.8	e8.3	e9.0	8.5	7.3	e7.3	14	18	29	16	18	12
14	7.8	e8.5	8.7	8.8	e7.2	e7.5	12	18	27	16	15	12
15	7.7	8.7	9.7	8.8	e7.2	e8.0	13	18	28	18	15	12
16	11	7.9	9.1	8.6	e7.0	e8.3	13	18	33	27	16	12
17	9.7	8.3	7.5	8.3	e6.6	9.2	13	17	33	21	14	12
18	9.3	8.3	8.0	8.3	e6.6	9.4	13	16	32	18	14	12
19	8.2	7.9	7.5	8.3	e6.6	9.2	13	15	32	16	14	15
20	7.8	e8.0	7.2	8.3	e6.8	9.1	13	15	30	15	17	14
21	7.8	e8.2	7.5	8.1	e7.2	9.3	13	16	29	34	15	13
22	7.8	e9.0	7.8	8.1	e7.2	9.2	13	29	30	20	14	12
23	7.8	9.4	7.8	7.5	e7.2	11	13	23	28	19	14	12
24	7.8	e9.5	7.6	8.3	e7.2	13	13	21	27	18	14	12
25	7.8	e8.7	5.6	8.3	e7.4	14	12	20	26	18	14	12
26	7.8	8.2	6.9	8.3	e7.4	15	12	20	25	17	14	12
27	7.8	e8.2	8.0	8.3	e7.4	15	12	19	26	17	14	12
28	7.8	e8.2	8.3	8.4	e7.8	14	12	19	24	16	14	12
29	7.8	e8.5	8.3	e8.0	---	13	12	18	23	16	14	12
30	7.8	e8.5	8.2	8.8	---	12	13	18	22	15	13	12
31	7.8	---	7.8	9.3	---	11	---	18	---	15	13	---
TOTAL	262.6	247.1	249.3	255.9	222.0	308.6	382	571	859	582	445	370
MEAN	8.47	8.24	8.04	8.25	7.93	9.95	12.7	18.4	28.6	18.8	14.4	12.3
MAX	11	9.5	9.7	9.3	9.4	15	15	29	71	34	18	15
MIN	7.7	6.9	5.6	7.1	6.6	7.1	11	14	18	15	13	12
AC-FT	521	490	494	508	440	612	758	1130	1700	1150	883	734

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1993, BY WATER YEAR (WY)

	MEAN	9.53	9.07	8.49	8.11	8.28	10.0	14.6	16.0	13.9	11.0	9.64	9.27
MAX	16.6	14.9	12.4	12.0	12.1	15.9	23.7	31.9	34.8	33.9	20.5	17.2	
(WY)	1966	1966	1966	1983	1979	1983	1971	1965	1984	1965	1965	1965	
MIN	3.93	3.85	2.74	3.98	5.06	5.81	6.83	6.56	4.69	4.05	4.63	4.36	
(WY)	1961	1962	1962	1962	1962	1961	1961	1961	1961	1961	1960	1961	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1949 - 1993

ANNUAL TOTAL	3622.7	4754.5	
ANNUAL MEAN	9.90	13.0	10.7
HIGHEST ANNUAL MEAN			16.9
LOWEST ANNUAL MEAN			5.13
HIGHEST DAILY MEAN	18	May 22	232
LOWEST DAILY MEAN	5.4	Apr 20	2.0
ANNUAL SEVEN-DAY MINIMUM	7.2	Dec 20	2.2
INSTANTANEOUS PEAK FLOW			113
INSTANTANEOUS PEAK STAGE			3.89
ANNUAL RUNOFF (AC-FT)	7190	9430	7750
10 PERCENT EXCEEDS	12	20	16
50 PERCENT EXCEEDS	9.7	12	9.6
90 PERCENT EXCEEDS	7.9	7.8	6.0

e Estimated

a Gage height, 3.45 ft.

b From rating curve extended on basis of slope-area measurement.

c Backwater from ice.

CHEYENNE RIVER BASIN

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.

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 1992 TO SEPTEMBER 1993

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD) (00400)	ALKA-LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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) (00300)	
NOV 23...	1030	9.9	472	8.3	277	338	0	-7.0	0.0	4.3	608	11.8	
FEB 10...	0845	9.0	467	8.7	272	298	16	-7.0	0.5	4.7	612	16.3	
MAY 26...	0915	20	469	8.5	257	296	9	22.0	8.5	6.4	612	9.8	
AUG 04...	0815	15	490	8.5	279	313	13	10.0	7.0	2.7	620	10.2	
DATE		OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCHI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	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)	
NOV 23...	101	K2	K15	250	55	28	1.3	1	0.0	1.2	256	5.6	
FEB 10...	141	K3	K12	260	57	28	1.3	1	0.0	1.1	260	5.5	
MAY 26...	105	21	31	250	54	27	1.6	1	0.0	1.3	254	8.2	
AUG 04...	104	57	28	280	60	32	1.6	1	0.0	1.2	260	7.0	
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, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + DIS-ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
NOV 23...	1.0	0.10	8.6	268	260	0.35	6.95	0.010	0.01	<0.20	<0.010	0.170	
FEB 10...	1.1	0.10	9.0	267	249	0.34	6.05	0.020	0.03	<0.20	0.030	0.210	
MAY 26...	1.9	0.20	8.5	258	262	0.36	13.9	0.020	0.03	0.20	<0.010	0.090	
AUG 04...	1.2	0.20	9.0	280	266	0.36	10.5	0.030	0.04	0.20	<0.010	0.110	
DATE		NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)
NOV 23...	--	0.030	0.010	<0.010	<10	58	<3	8	<4	6	<10	<1	
FEB 10...	0.180	0.030	<0.010	0.010	10	61	<3	4	<4	4	<10	<1	
MAY 26...	--	0.020	<0.010	<0.010	<10	55	<3	9	<4	12	<10	<1	
AUG 04...	--	0.020	<0.010	<0.010	<10	59	<3	5	<4	9	<10	<1	

CHEYENNE RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	ALPHA, COUNT, 2 SIGMA WAT DIS AS NAT U (UG/L) (75986)	ALPHA RADIO. WATER DISS AS TH-230 (PCI/L) (04126)	ALPHA COUNT, 2 SIGMA WAT DIS AS TH-230 (PCI/L) (75987)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	BETA, 2 SIGMA WATER, DISS, AS CS-137 (75989)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)
NOV 23...	<1	<1.0	66	<6	--	--	--	--	--	--	--	--
FEB 10...	<1	<1.0	67	<6	1.0	0.93	0.7	0.67	<0.6	1.5	0.80	0.7
MAY 26...	<1	<1.0	70	<6	--	--	--	--	--	--	--	--
AUG 04...	<1	<1.0	71	<6	1.1	1.1	0.8	0.80	<0.6	2.0	0.91	0.8

DATE	BETA, 2 SIGMA SED, SUSP, TOT DRY SR90Y90 (PCI/L) (76005)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	BETA, 2 SIGMA WATER, DISS, AS SR90 /Y90 (PCI/L YT-90) (75988)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	RA-226 2 SIGMA WATER, DISS, (PCI/L) (76001)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	URANIUM NATURAL 2 SIGMA WATER, DISS, (UG/L) (75990)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 23...	--	--	--	--	--	--	--	--	72	1.9	90
FEB 10...	0.57	1.2	0.61	0.6	0.07	0.020	0.97	<1.0	41	1.0	80
MAY 26...	--	--	--	--	--	--	--	--	94	5.0	88
AUG 04...	0.55	1.5	0.68	0.7	0.07	0.020	1.1	<1.0	40	1.6	80

CHEYENNE RIVER BASIN

06409500 DEERFIELD RESERVOIR NEAR HILL CITY, SD

LOCATION.--Lat 44°01'41", long 103°47'09", in NE1/4SW1/4 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 sea level (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, 151 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, 15,400 acre-ft, June 22, elevation, 5,907.76 ft; minimum, 12,900 acre-ft, Sept. 30, elevation, 5,901.58 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	5,902.30	13,200	-
Oct. 31	5,902.49	13,200	0
Nov. 30	5,903.30	13,500	+300
Dec. 31	5,904.37	14,000	+500
CAL YR 1992	-	-	-300
Jan. 31	5,905.39	14,400	+400
Feb. 28	5,906.33	14,800	+400
Mar. 31	5,906.90	15,000	+200
Apr. 30	5,906.54	14,900	-100
May 31	5,906.55	14,900	0
June 30	5,907.22	15,100	+200
July 31	5,905.92	14,600	-500
Aug. 31	5,904.17	13,900	-700
Sept. 30	5,901.58	12,900	-1,000
WTR YR 1993	-	-	-300

CHEYENNE RIVER BASIN

06410000 CASTLE CREEK BELOW DEERFIELD DAM, SD

LOCATION.--Lat 44°01'45", long 103°46'53", in NW1/4SE1/4 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 sea level (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.--No estimated daily discharges. Records good. 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 1947 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, 53 ft³/s, June 10; minimum daily discharge, 2.1 ft³/s, Mar. 10-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	2.2	21	14	29	46	23	25
2	---	---	---	---	---	2.2	21	14	29	47	23	25
3	---	---	---	---	---	2.2	21	14	29	46	23	25
4	---	---	---	---	---	2.2	21	14	29	46	23	25
5	---	---	---	---	---	2.2	21	15	29	46	23	25
6	---	---	---	---	---	2.2	21	15	29	46	23	24
7	---	---	---	---	---	2.2	21	19	31	45	22	25
8	---	---	---	---	---	2.2	20	26	36	36	22	25
9	---	---	---	---	---	2.2	20	26	39	28	22	25
10	---	---	---	---	---	2.1	20	26	53	28	22	25
11	---	---	---	---	---	2.1	20	26	52	27	22	25
12	---	---	---	---	---	2.1	17	26	51	27	22	25
13	---	---	---	---	---	2.1	15	26	50	23	22	25
14	---	---	---	---	---	2.1	15	25	49	20	22	25
15	---	---	---	---	---	2.1	15	25	40	20	22	25
16	---	---	---	---	---	2.1	15	25	32	20	23	26
17	---	---	---	---	---	2.2	14	25	33	20	24	26
18	---	---	---	---	---	2.3	14	24	32	20	25	26
19	---	---	---	---	---	2.3	14	25	32	20	24	26
20	---	---	---	---	---	2.3	14	16	32	20	25	26
21	---	---	---	---	---	2.3	14	15	32	22	25	28
22	---	---	---	---	---	2.3	14	17	31	23	25	30
23	---	---	---	---	---	3.7	15	16	31	23	25	30
24	---	---	---	---	---	15	14	16	39	23	24	30
25	---	---	---	---	---	21	14	16	48	23	25	30
26	---	---	---	---	---	21	14	21	47	23	25	30
27	---	---	---	---	---	21	14	25	47	23	25	30
28	---	---	---	---	---	21	14	26	47	23	24	30
29	---	---	---	---	---	21	14	29	47	23	24	28
30	---	---	---	---	---	21	14	30	46	23	25	28
31	---	---	---	---	---	21	---	30	---	23	25	---
TOTAL	---	---	---	---	---	213.9	501	667	1151	883	729	798
MEAN	---	---	---	---	---	6.90	16.7	21.5	38.4	28.5	23.5	26.6
MAX	---	---	---	---	---	21	21	30	53	47	25	30
MIN	---	---	---	---	---	2.1	14	14	29	20	22	24
AC-FT	---	---	---	---	---	424	994	1320	2280	1750	1450	1580

CHEYENNE RIVER BASIN

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

LOCATION.--Lat 44°05'05", long 103°34'48", in SW1/4SE1/4 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 sea level (Bureau of Reclamation bench mark).

REMARKS.--Records good except those for Nov. 5, Nov. 26 to Mar. 21, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	15	e10	e10	e9.0	19	43	65	138	147	69	51
2	23	15	e10	e14	9.4	19	43	70	142	140	69	51
3	22	15	e10	e14	6.5	16	44	69	143	136	69	51
4	22	11	e12	e12	6.9	13	45	66	155	132	67	51
5	22	e10	e12	e10	e9.0	12	47	80	140	132	64	53
6	22	13	e12	e9.0	12	12	51	188	135	131	64	57
7	22	19	e12	e10	12	16	54	186	285	139	64	55
8	23	17	e12	e11	8.5	22	51	235	434	130	59	53
9	23	17	e12	e13	9.8	14	56	267	414	114	57	50
10	23	15	e12	e13	7.4	11	63	202	395	108	55	48
11	23	18	e12	e13	e6.5	6.6	64	200	345	104	54	48
12	22	17	e12	e12	e7.0	e6.0	62	185	313	102	53	48
13	22	15	e11	e11	e8.0	e7.0	63	171	286	97	60	48
14	23	15	e10	e10	e7.0	e8.0	60	159	266	84	60	47
15	23	15	e10	e9.0	e6.0	e10	58	153	248	88	60	47
16	17	15	e10	e10	e5.5	e10	57	148	245	94	61	47
17	14	15	e10	e10	e5.0	e8.0	57	145	248	92	59	47
18	14	14	e10	e10	e6.5	e8.5	58	139	231	86	58	48
19	14	14	e10	e10	e8.0	e9.5	59	132	227	76	60	58
20	14	13	e12	e10	e9.0	e10	59	129	207	73	91	58
21	14	12	e14	e10	e9.0	e12	55	117	196	136	72	54
22	14	15	e14	e10	e8.0	14	57	184	194	102	64	54
23	14	14	e13	e9.5	e8.0	17	57	186	179	96	60	55
24	14	12	e13	e9.0	e8.0	21	58	168	170	86	56	55
25	14	19	e13	e10	e8.5	33	59	157	173	86	56	55
26	13	e10	e12	e10	e9.0	48	59	154	168	82	55	55
27	13	e9.0	e10	e10	e10	55	59	151	162	82	55	54
28	13	e10	e10	9.0	e14	59	57	144	158	78	54	54
29	13	e10	e9.0	e9.0	---	52	58	145	153	73	53	52
30	13	e10	e8.0	e8.5	---	49	63	143	149	71	52	51
31	14	---	e8.0	e8.0	---	45	---	137	---	70	52	---
TOTAL	561	419.0	345.0	324.0	233.5	642.6	1676	4675	6699	3167	1882	1555
MEAN	18.1	14.0	11.1	10.5	8.34	20.7	55.9	151	223	102	60.7	51.8
MAX	24	19	14	14	14	59	64	267	434	147	91	58
MIN	13	9.0	8.0	8.0	5.0	6.0	43	65	135	70	52	47
AC-FT	1110	831	684	643	463	1270	3320	9270	13290	6280	3730	3080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1993, BY WATER YEAR (WY)

	MEAN	28.7	19.0	15.4	14.7	16.9	27.5	56.6	83.0	85.3	50.2	40.1	36.8
MAX	73.5	36.6	24.3	25.0	34.4	57.3	172	274	291	156	101	73.7	
(WY)	1966	1987	1965	1965	1979	1966	1971	1965	1965	1965	1982	1982	
MIN	10.2	10.3	7.77	8.61	8.34	12.1	16.5	14.5	14.7	15.2	11.5	10.5	
(WY)	1962	1962	1962	1962	1993	1962	1961	1961	1961	1961	1961	1961	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1954 - 1993

ANNUAL TOTAL	9630.0	22179.1	
ANNUAL MEAN	26.3	60.8	39.6
HIGHEST ANNUAL MEAN			91.7
LOWEST ANNUAL MEAN			15.1
HIGHEST DAILY MEAN	52	Jul 13	434
LOWEST DAILY MEAN	8.0	Dec 30	5.0
ANNUAL SEVEN-DAY MINIMUM	9.9	Nov 26	6.4
INSTANTANEOUS PEAK FLOW			867
INSTANTANEOUS PEAK STAGE			7.91
ANNUAL RUNOFF (AC-FT)	19100	43990	28690
10 PERCENT EXCEEDS	41	154	73
50 PERCENT EXCEEDS	28	47	26
90 PERCENT EXCEEDS	12	9.0	12

e Estimated

a From rating curve extended above 1,000 ft³/s on basis of slope-area measurement of peak flow.

CHEYENNE RIVER BASIN

06411000 PACTOLA RESERVOIR NEAR SILVER CITY, SD

LOCATION.--Lat 44°04'20", long 103°29'17", in NE1/4SW1/4 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 sea level (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, 1965, 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, 56,500 acre-ft, June 19, elevation, 4,581.97 ft; minimum, 38,300 acre-ft, Mar. 14, elevation, 4,558.18 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	4,560.47	39,900	-
Oct. 31	4,559.83	39,400	-500
Nov. 30	4,559.53	39,200	-200
Dec. 31	4,559.06	38,900	-300
CAL YR 1992	-	-	-3,700
Jan. 31	4,558.63	38,600	-300
Feb. 28	4,558.28	38,400	-200
Mar. 31	4,559.36	39,100	+700
Apr. 30	4,563.05	41,600	+2,500
May 31	4,574.50	50,200	+8,600
June 30	4,580.56	55,300	+5,100
July 31	4,579.54	54,400	-900
Aug. 31	4,579.52	54,400	0
Sept. 30	4,578.52	53,500	-900
WTR YR 1993	-	-	+13,600

CHEYENNE RIVER BASIN

06412200 RAPID CREEK ABOVE VICTORIA CREEK, NEAR RAPID CITY, SD

LOCATION.--Lat 44°02'48", long 103°21'06", in SW1/4NW1/4 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 sea level, 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 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	18	e17	e15	e20	e19	19	24	31	316	100	61
2	48	17	e11	e17	e20	e21	19	23	30	285	99	61
3	38	18	e13	e20	e20	e21	19	23	36	223	91	62
4	37	18	e8.0	e17	e19	e20	20	22	41	218	63	62
5	37	18	e5.0	e17	e18	e21	20	32	36	217	59	65
6	43	18	e9.0	e16	e18	e22	22	60	33	201	54	64
7	38	17	e15	e15	e19	e23	24	39	102	160	53	62
8	21	18	e17	e15	e19	e22	22	60	89	159	52	62
9	18	18	e18	e16	e18	e21	22	54	151	157	51	64
10	19	18	e17	e18	e17	e18	22	42	227	130	50	62
11	18	18	e16	e20	e11	e13	22	36	257	127	50	62
12	18	17	e17	e21	e16	e10	22	35	248	126	50	62
13	18	18	e11	e21	e17	e13	25	33	241	127	52	62
14	18	18	e8.0	e20	e15	e19	23	32	240	120	53	61
15	18	18	e19	e20	e12	e22	23	31	243	106	54	61
16	18	17	e20	e20	e9.0	e21	23	31	250	113	55	61
17	18	17	e18	e18	e7.0	e20	23	30	128	111	62	61
18	18	17	e15	e17	e11	e24	22	29	243	109	62	62
19	18	17	e13	e17	e17	22	22	28	267	106	64	66
20	16	17	e16	e18	e19	23	21	28	320	103	71	67
21	16	17	e21	e18	e18	22	21	28	315	117	81	79
22	16	19	e20	e19	e14	22	21	33	244	125	80	79
23	16	18	e19	e17	e13	22	21	32	257	162	79	79
24	16	e15	e19	e12	e14	23	21	29	319	138	79	80
25	16	e10	e18	e15	e17	22	20	29	320	134	79	81
26	16	e5.0	e18	e19	e16	22	21	30	315	136	79	81
27	16	e11	e20	e19	e16	21	20	29	318	136	78	79
28	16	e16	e17	e17	e17	21	20	27	317	126	71	68
29	16	e18	e12	e13	---	22	20	34	319	104	65	64
30	16	e10	e12	e16	---	20	25	37	317	102	63	61
31	18	---	e13	e19	---	20	---	32	---	102	61	---
TOTAL	714	491.0	472.0	542	447.0	632	645	1032	6254	4596	2060	2001
MEAN	23.0	16.4	15.2	17.5	16.0	20.4	21.5	33.3	208	148	66.5	66.7
MAX	59	19	21	21	20	24	25	60	320	316	100	81
MIN	16	5.0	5.0	12	7.0	10	19	22	30	102	50	61
AC-FT	1420	974	936	1080	887	1250	1280	2050	12400	9120	4090	3970

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	16.6	15.0	14.8	15.3	14.2
MAX	23.0	19.5	19.1	21.2	24.7
(WY)	1993	1992	1992	1992	1992
MIN	10.7	10.8	12.5	10.2	8.57
(WY)	1991	1991	1989	1991	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	12297.0	19886.0	
ANNUAL MEAN	33.6	54.5	35.5
HIGHEST ANNUAL MEAN			54.5
LOWEST ANNUAL MEAN			26.4
HIGHEST DAILY MEAN	120	May 21	320
LOWEST DAILY MEAN	5.0	Nov 26	5.0
ANNUAL SEVEN-DAY MINIMUM	10	Nov 30	10
INSTANTANEOUS PEAK FLOW			335
INSTANTANEOUS PEAK STAGE		6.66	6.66
ANNUAL RUNOFF (AC-FT)	24390	39440	25720
10 PERCENT EXCEEDS	72	129	80
50 PERCENT EXCEEDS	24	22	20
90 PERCENT EXCEEDS	17	16	11

e Estimated

CHEYENNE RIVER BASIN

06412500 RAPID CREEK ABOVE CANYON LAKE, NEAR RAPID CITY, SD

LOCATION.--Lat 44°03'10", long 103°18'41", in NW1/4NW1/4NW1/4 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.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete broad-crested, V-notch weir. Datum of gage is 3,398.17 ft above sea level. 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 9.25 ft higher. Nov. 3, 1967, to Sept. 30, 1968, nonrecording gage at site 0.1 mi downstream at datum 6.13 ft higher. Oct. 1, 1968, to Oct. 1, 1989, at datum 7.22 ft higher. Prior to Oct. 1, 1991, at site 0.1 mi upstream at datum 7.25 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Deerfield Reservoir since December 1945 and by Pactola Dam 21.0 mi upstream since August 1956. Maximum discharge prior to Sept. 30, 1956, 2,600 ft³/s, May 23, 1952, gage height, 10.08 ft, site and datum then in use; no flow at times in 1950-51. Gage located in loss zone and analysis of low-flow data would be unreliable due to differences in respective gage locations. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	6.8	6.8	6.0	11	11	11	15	33	300	96	60
2	39	5.6	3.5	7.8	11	13	11	14	35	275	96	60
3	27	6.6	5.3	9.8	11	13	10	13	44	217	91	59
4	26	6.7	1.4	9.1	11	11	9.9	13	55	212	59	58
5	25	5.6	.96	7.0	10	13	10	20	50	211	54	63
6	30	6.6	2.8	6.6	10	13	12	76	44	197	48	61
7	28	6.0	6.2	6.2	11	14	15	47	175	153	47	60
8	16	6.0	6.4	6.4	11	13	13	80	170	151	45	60
9	11	6.0	8.7	6.8	10	12	12	74	191	149	44	59
10	10	5.7	8.2	7.6	9.6	11	12	50	251	121	44	60
11	9.3	5.8	7.3	8.7	6.8	10	12	40	285	117	43	59
12	9.0	5.7	7.9	9.3	9.7	7.6	12	35	275	117	42	58
13	8.6	5.4	4.7	8.7	11	6.1	14	32	264	116	44	58
14	8.6	6.0	2.6	8.4	8.7	13	13	28	257	112	46	58
15	8.9	5.7	5.5	8.7	7.9	15	13	27	252	97	46	58
16	9.0	5.6	10	9.8	5.4	11	12	25	255	108	48	58
17	9.0	5.4	8.7	9.9	3.9	9.9	12	24	145	106	55	58
18	9.0	5.4	7.0	9.5	6.6	13	12	22	248	103	55	59
19	8.8	5.4	7.1	9.7	9.7	12	12	22	266	100	57	63
20	7.1	5.3	4.7	10	12	13	12	21	315	98	64	60
21	5.7	5.5	9.0	10	11	12	11	21	314	113	72	73
22	5.1	5.5	10	10	8.4	11	11	26	238	119	72	73
23	4.9	6.6	9.0	10	7.3	12	11	27	246	162	72	73
24	4.9	4.7	7.8	8.9	7.8	12	10	24	299	135	73	73
25	4.9	3.8	8.6	9.9	10	12	10	23	302	132	73	73
26	4.8	.66	7.3	11	8.9	11	10	24	300	133	73	73
27	5.1	4.2	8.7	11	9.2	11	10	22	300	133	72	72
28	5.1	6.4	8.9	10	9.8	11	10	21	298	124	66	63
29	5.1	7.0	6.0	7.9	---	12	10	27	298	101	60	58
30	5.4	3.0	5.9	9.9	---	11	15	39	297	98	59	56
31	6.8	---	5.7	11	---	11	---	34	---	97	60	---
TOTAL	403.1	164.66	202.66	275.6	259.7	360.6	347.9	966	6502	4407	1876	1876
MEAN	13.0	5.49	6.54	8.89	9.27	11.6	11.6	31.2	217	142	60.5	62.5
MAX	46	7.0	10	11	12	15	15	80	315	300	96	73
MIN	4.8	.66	.96	6.0	3.9	6.1	9.9	13	33	97	42	56
AC-FT	800	327	402	547	515	715	690	1920	12900	8740	3720	3720

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY)*

	MEAN	18.6	12.3	9.55	9.44	10.2	15.6	31.6	77.3	98.7	78.5	52.7	35.2
MAX	89.7	44.2	24.2	26.7	27.8	62.4	157	266	445	186	107	77.4	
(WY)	1966	1987	1966	1985	1979	1966	1971	1978	1965	1965	1982	1982	
MIN	1.38	.71	.12	.094	.094	.29	1.36	22.0	20.7	23.1	23.9	14.1	
(WY)	1991	1982	1991	1991	1991	1991	1957	1986	1990	1957	1961	1989	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1957 - 1993*

ANNUAL TOTAL	7678.82	17641.22	37.6a	1965
ANNUAL MEAN	21.0	48.3	104	1958
HIGHEST ANNUAL MEAN			14.7	1972
LOWEST ANNUAL MEAN			2600	Jun 10 1972
HIGHEST DAILY MEAN	91	315	.00	Jan 6 1959b
LOWEST DAILY MEAN	.66	.66	.00	Dec 20 1990
ANNUAL SEVEN-DAY MINIMUM	3.4	3.4	17.77	Jun 9 1972
INSTANTANEOUS PEAK FLOW		328	31200	Jun 9 1972
INSTANTANEOUS PEAK STAGE		3.62	17.77	Jun 9 1972
ANNUAL RUNOFF (AC-FT)	15230	34990	27240	
10 PERCENT EXCEEDS	53	133	83	
50 PERCENT EXCEEDS	11	12	20	
90 PERCENT EXCEEDS	5.7	5.7	3.6	

* Regulated period only (1957-93). See REMARKS.

a Median of annual mean discharges, 34 ft³/s.

b No flow at times in 1957-60, 1962-63, 1981, 1991.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00
2	.00	.05	.02	.04	.03	.00	.00	.00	.33	.26	.00	.00
3	.00	.08	.09	.00	.07	.00	.00	.00	.23	.01	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	2.28	.01	.00	.00	.67
6	.02	.00	.00	.00	.00	.00	.88	.02	.47	.15	1.65	.00
7	.05	.00	.00	.00	.00	.00	.25	.23	1.15	.00	.00	.00
8	.00	.01	.00	.36	.00	.00	.00	.83	.00	.07	.00	.00
9	.00	.01	.00	.05	.00	.00	.02	.00	.00	.08	.00	.00
10	.00	.00	.00	.00	.04	.00	.06	.00	.00	.01	.00	.00
11	.00	.00	.00	.01	.06	.00	.02	.00	.08	.00	.01	.00
12	.00	.00	.31	.03	.00	.00	.00	.00	.00	.07	.01	.00
13	.00	.00	.03	.00	.00	.00	.55	.00	.00	.00	.17	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.05	.39	.14	.00
16	.00	.00	.00	.00	.00	.00	.02	.00	.52	.46	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.01	.16	.48	.00	.04
18	.00	.00	.00	.00	.00	.00	.00	.00	.37	.00	.00	.20
19	.00	.00	.00	.00	.00	.05	.01	.00	.00	.00	.95	.50
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.03	.00
21	.00	.00	.00	.00	.04	.00	.00	.00	.02	.93	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00
25	.00	.00	.00	.00	.00	.00	.08	e.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.16	.00	.00	.03	.00	.00	.00
29	.00	.00	.00	.00	---	.09	.00	.64	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	1.04	.00	.01	.00	.00	.00
31	.36	---	.00	.00	---	.00	---	.00	---	.02	.00	---
TOTAL	0.43	0.15	0.45	0.49	0.24	0.30	2.93	4.01	3.54	3.54	2.96	1.41

WTR YR 1993 TOTAL 20.45

e Estimated

CHEYENNE RIVER BASIN

06412810 CLEGHORN SPRINGS AT RAPID CITY, SD

LOCATION.--Lat 44°03'32", long 103°17'49", in SE1/4NW1/4SE1/4 sec.8, T.1 N, R.7 E., Pennington County, Hydrologic Unit 10120110, on left bank of the outflow of Cleghorn Springs, within Cleghorn Springs Fish Hatchery, and 0.2 mi west of Canyon Lake on State Highway 44.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1992 to September 1993.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 3,369.1 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Discharges are the result of three springs routed into one. Flows may vary depending on operational activities of fish hatchery. From October 1987 to September 1992, Cleghorn Springs was published as three gaging stations: 06412600, 06412700, and 06412800. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	9.8	10	11	9.9	10	11	e12	14	12	11
2	10	11	9.7	10	11	10	10	11	e12	13	12	11
3	10	11	9.7	10	11	10	10	11	e12	13	12	12
4	10	9.5	9.5	10	10	9.9	10	11	e12	13	11	11
5	10	9.5	9.3	9.9	10	9.9	10	11	e12	13	11	11
6	10	9.5	9.4	9.9	10	10	10	11	e12	13	11	12
7	11	9.4	9.6	9.8	10	10	12	11	e13	12	12	12
8	11	9.5	9.6	9.9	11	10	12	12	e13	12	12	12
9	11	9.5	9.8	11	10	10	12	11	14	12	11	12
10	11	9.5	9.8	11	10	10	12	11	14	11	10	12
11	11	9.5	10	11	10	10	12	11	14	11	10	12
12	11	9.5	10	10	10	9.8	12	11	14	11	11	11
13	11	9.5	9.9	10	10	9.8	12	e11	14	12	12	12
14	11	9.5	9.7	11	11	10	12	e11	14	11	12	12
15	11	9.5	9.4	10	11	10	12	e11	14	11	12	12
16	11	9.6	9.9	10	10	10	12	e11	14	12	11	11
17	11	9.6	10	11	10	9.9	12	e11	14	12	11	12
18	11	9.6	9.9	11	11	10	12	e11	14	12	11	12
19	11	9.6	9.9	10	11	10	12	e11	14	13	10	12
20	11	9.6	9.8	10	11	11	12	e11	14	12	11	12
21	11	10	9.9	10	11	15	11	e11	14	13	12	13
22	11	11	10	10	10	11	11	e11	14	13	12	13
23	11	9.9	10	10	10	10	11	e11	14	13	12	13
24	11	9.7	10	10	10	10	11	e11	14	13	11	13
25	11	9.6	11	10	10	10	11	e11	14	13	11	13
26	11	9.4	11	10	10	10	11	e11	14	13	11	13
27	11	9.4	10	11	9.9	10	11	e11	14	12	11	13
28	11	9.7	10	11	9.9	10	11	e11	14	12	11	12
29	11	11	10	11	---	10	11	e12	14	12	12	12
30	11	9.8	10	10	---	10	11	e12	14	12	12	12
31	11	---	9.9	10	---	11	---	e12	---	12	11	---
TOTAL	335	294.4	306.5	318.5	289.8	317.2	338	345	406	381	351	361
MEAN	10.8	9.81	9.89	10.3	10.3	10.2	11.3	11.1	13.5	12.3	11.3	12.0
MAX	11	11	11	11	11	15	12	12	14	14	12	13
MIN	10	9.4	9.3	9.8	9.9	9.8	10	11	12	11	10	11
AC-FT	664	584	608	632	575	629	670	684	805	756	696	716

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 1993, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	10.8	9.81	9.89	10.3	10.3	10.2	11.3	11.1	13.5	12.3	11.3	12.0
MAX	10.8	9.81	9.89	10.3	10.3	10.2	11.3	11.1	13.5	12.3	11.3	12.0
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	10.8	9.81	9.89	10.3	10.3	10.2	11.3	11.1	13.5	12.3	11.3	12.0
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 WATER YEAR

ANNUAL TOTAL	4043.4
ANNUAL MEAN	11.1
HIGHEST DAILY MEAN	15 Mar 21
LOWEST DAILY MEAN	9.3 Dec 5
ANNUAL SEVEN-DAY MINIMUM	9.5 Nov 4
ANNUAL RUNOFF (AC-FT)	8020
10 PERCENT EXCEEDS	13
50 PERCENT EXCEEDS	11
90 PERCENT EXCEEDS	9.8

e Estimated

CHEYENNE RIVER BASIN

06412900 RAPID CREEK BELOW CLEGHORN SPRINGS, AT RAPID CITY, SD

LOCATION.--Lat 44°03'33", long 103°17'49", in NW1/4NE1/4SE1/4 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 sea level.

REMARKS.--No estimated daily discharges. 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. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	22	19	18	26	22	22	35	59	319	109	76
2	55	21	16	19	26	23	22	34	63	292	108	77
3	43	21	17	20	26	24	21	33	74	226	103	77
4	41	19	14	20	24	22	21	32	87	221	73	75
5	41	18	13	18	23	23	21	42	81	218	69	79
6	48	19	14	18	23	23	24	100	74	204	67	80
7	46	18	18	18	24	24	30	71	212	160	66	79
8	33	18	18	18	24	24	32	102	202	157	64	78
9	26	18	19	20	23	23	31	98	219	155	59	77
10	25	18	19	21	22	22	31	75	287	130	57	77
11	24	18	18	21	18	21	31	63	324	126	57	77
12	24	18	20	21	21	18	31	57	312	126	58	74
13	24	18	17	20	23	17	34	54	302	127	64	76
14	24	18	14	20	22	23	33	51	294	121	66	78
15	24	18	16	20	21	26	32	49	289	108	65	77
16	24	18	20	22	17	22	31	47	292	119	66	75
17	24	18	19	23	15	20	31	47	174	116	73	76
18	24	18	18	23	21	23	31	44	280	113	73	78
19	25	18	18	22	23	23	31	43	302	112	74	83
20	23	18	16	22	25	23	31	42	356	111	82	80
21	21	19	20	22	25	24	31	42	355	125	92	91
22	21	20	21	23	20	22	30	49	270	128	92	92
23	20	19	20	23	18	22	30	50	275	165	91	92
24	21	17	19	21	19	22	30	46	329	143	89	92
25	21	16	21	22	21	22	30	45	333	139	88	92
26	21	13	20	24	20	22	30	45	331	139	90	92
27	21	15	20	24	20	22	29	44	330	139	88	91
28	21	18	20	24	21	22	29	43	329	132	82	82
29	22	20	18	21	---	23	30	50	327	110	78	78
30	22	16	18	22	---	22	36	65	323	110	78	76
31	22	---	17	24	---	23	---	60	---	109	76	---
TOTAL	892	545	557	654	611	692	876	1658	7485	4700	2397	2427
MEAN	28.8	18.2	18.0	21.1	21.8	22.3	29.2	53.5	249	152	77.3	80.9
MAX	61	22	21	24	26	26	36	102	356	319	109	92
MIN	20	13	13	18	15	17	21	32	59	108	57	74
AC-FT	1770	1080	1100	1300	1210	1370	1740	3290	14850	9320	4750	4810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993
MEAN	21.9	20.0	19.4	19.6	20.2	20.3
MAX	28.8	23.8	21.4	21.8	23.8	24.7
(WY)	1993	1988	1992	1988	1992	1992
MIN	15.9	15.1	15.9	15.7	17.0	15.3
(WY)	1991	1991	1991	1991	1991	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	13015	23494	
ANNUAL MEAN	35.6	64.4	43.0
HIGHEST ANNUAL MEAN			64.4
LOWEST ANNUAL MEAN			33.4
HIGHEST DAILY MEAN	91	May 21	356
LOWEST DAILY MEAN	13	Nov 26	12
ANNUAL SEVEN-DAY MINIMUM	16	Nov 30	13
INSTANTANEOUS PEAK FLOW		368	694
INSTANTANEOUS PEAK STAGE		6.86	7.76
ANNUAL RUNOFF (AC-FT)	25820	46600	31150
10 PERCENT EXCEEDS	65	139	87
50 PERCENT EXCEEDS	26	30	24
90 PERCENT EXCEEDS	18	18	16

CHEYENNE RIVER BASIN

06413650 LIME CREEK AT MOUTH, AT RAPID CITY, SD

LOCATION (REVISED).--Lat 44°04'30", long 103°16'00", in SE1/4SW1/4NW1/4 sec.3, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on left bank, 1,500 ft above mouth, and 75 ft downstream from Canyon Lake Drive.

DRAINAGE AREA.--10.0 mi², approximately.

PERIOD OF RECORD.--April 24, 1981, to July 21, 1982 (seasonal records only), October 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,286 ft above sea level, from topographic map. Prior to June 22, 1993, gage located about 1,000 ft downstream, at different datum.

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 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.28	.31	e.16	e.40	1.5	.71	1.6	2.5	1.7	2.7	2.1
2	.13	.28	.36	e.24	e.36	2.5	.52	1.5	3.2	2.2	2.6	2.3
3	.13	.26	.43	e.24	e.30	.78	.52	1.1	3.4	2.1	2.6	2.2
4	.14	.28	e.20	e.26	e.34	1.1	.52	1.3	2.2	2.0	2.5	2.2
5	.17	.28	e.20	e.20	e.34	1.1	.52	11	2.0	2.0	2.5	4.6
6	.17	.28	e.24	e.18	e.34	1.7	1.6	3.4	2.6	2.4	7.8	2.4
7	.18	.28	e.26	e.18	e.34	1.1	2.8	2.9	11	2.0	3.3	2.2
8	.20	.28	e.28	e.18	e.32	.63	1.0	11	2.9	2.0	2.6	2.1
9	.25	.28	.28	e.16	e.30	.56	1.9	3.9	2.6	2.5	2.7	2.0
10	.28	.28	.28	e.18	e.30	.52	1.9	3.3	2.5	2.1	2.6	2.1
11	.21	.22	.31	e.18	e.25	.52	.90	3.3	2.8	2.2	2.6	2.1
12	.17	.22	.38	e.18	e.25	.50	.94	3.3	2.6	3.3	2.4	2.2
13	.17	.17	e.27	e.18	e.25	.48	2.8	3.2	3.7	2.3	3.3	2.2
14	.17	.17	e.20	e.16	e.24	.48	1.2	3.0	4.7	2.0	2.3	2.1
15	.17	.17	e.25	e.18	e.20	.52	1.2	2.9	2.5	2.0	2.9	2.0
16	.17	.17	e.25	e.25	e.17	.45	1.1	2.8	4.5	5.2	2.6	2.0
17	.17	.17	e.22	e.25	e.15	.46	1.1	2.6	3.5	4.9	2.4	2.1
18	.17	.17	e.17	e.25	e.15	.45	1.2	2.4	5.1	2.5	2.2	2.8
19	.18	.17	e.17	e.27	e.17	.50	1.6	2.4	3.2	2.5	4.9	4.1
20	.17	.24	e.22	e.30	e.17	.52	1.5	2.4	2.8	2.3	4.6	2.2
21	.19	.22	e.27	e.34	e.17	.47	1.5	2.8	2.6	11	2.6	2.2
22	.20	.22	e.27	e.34	e.17	.48	1.5	3.4	2.2	3.6	2.5	1.9
23	.17	.20	e.18	e.30	e.17	.52	1.4	2.3	2.1	3.3	2.5	1.9
24	.20	.22	e.26	e.27	e.17	.46	1.4	2.1	2.0	3.9	2.4	1.9
25	.19	.22	e.26	e.30	e.17	.45	1.5	2.1	1.9	3.2	2.3	1.9
26	.20	.23	e.28	e.35	e.22	.52	1.6	2.0	1.9	4.3	2.4	1.8
27	.20	.22	e.28	e.40	e.26	.57	1.6	1.9	2.3	3.4	2.5	1.8
28	.20	.22	e.20	e.40	e.30	.53	1.6	1.9	2.3	3.1	2.3	1.8
29	.22	.22	e.18	e.28	---	1.1	1.4	2.9	1.9	3.1	2.4	1.9
30	.22	.22	e.16	e.32	---	.82	5.5	2.3	1.9	3.0	2.4	2.0
31	.33	---	e.16	e.37	---	.53	---	2.9	---	2.7	2.2	---
TOTAL	5.85	6.84	7.78	7.85	6.97	22.82	44.53	95.9	91.4	94.8	88.6	67.1
MEAN	.19	.23	.25	.25	.25	.74	1.48	3.09	3.05	3.06	2.86	2.24
MAX	.33	.28	.43	.40	.40	2.5	5.5	11	11	11	7.8	4.6
MIN	.13	.17	.16	.16	.15	.45	.52	1.1	1.9	1.7	2.2	1.8
AC-FT	12	14	15	16	14	45	88	190	181	188	176	133

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)*

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	.82	.89	.85	.84	.90	.98	1.22	1.86	1.54	1.48	1.43	.89
MAX	1.76	2.15	2.15	1.91	1.96	1.99	1.60	3.24	3.05	3.06	2.86	2.24
(WY)	1988	1988	1988	1988	1988	1988	1988	1991	1993	1993	1993	1993
MIN	.19	.23	.25	.23	.25	.40	.63	.74	.71	.80	.31	.20
(WY)	1993	1993	1993	1991	1993	1991	1992	1992	1992	1989	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993*

ANNUAL TOTAL	180.66	540.44	
ANNUAL MEAN	.49	1.48	
HIGHEST ANNUAL MEAN			1.14
LOWEST ANNUAL MEAN			1.65
HIGHEST DAILY MEAN	3.5	Jul 3	.62
LOWEST DAILY MEAN	.13	Sep 25	.10
ANNUAL SEVEN-DAY MINIMUM	.14	Sep 22	.13
INSTANTANEOUS PEAK FLOW			210
INSTANTANEOUS PEAK STAGE			3.65
ANNUAL RUNOFF (AC-FT)	358	1070	826
10 PERCENT EXCEEDS	.71	3.1	2.2
50 PERCENT EXCEEDS	.48	1.0	.81
90 PERCENT EXCEEDS	.17	.17	.28

e Estimated

* Period reflects only complete water years.

a Also June 7 and July 21.

b Based on extension of rating curve.

c Gage height, 3.04 ft, at site and datum then in use.

CHEYENNE RIVER BASIN

06414000 RAPID CREEK AT RAPID CITY, SD

LOCATION.--Lat 44°05'09", long 103°14'31", in NE1/4SE1/4SW1/4 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 sea level. 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 poor. 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. Maximum discharge prior to regulation, 2,540 ft³/s, May 23, 1952, gage height, 6.20 ft, datum then in use; minimum daily discharge, 18 ft³/s, Jan. 20, 25, 1953. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 12, 13, 1920, reached a stage of 14.4 ft present datum, from floodmarks.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	26	e20	e20	27	e31	30	49	59	324	103	69
2	51	23	e21	e20	25	e33	29	45	65	307	100	70
3	41	24	e21	e22	25	e32	30	42	75	240	96	81
4	37	22	e20	e23	27	e31	30	41	82	232	67	81
5	37	22	e19	e25	26	e30	30	80	78	231	62	97
6	44	23	e18	e27	27	e31	37	123	73	225	98	86
7	47	23	20	e25	27	e34	45	82	252	175	63	85
8	39	23	21	e24	28	e31	42	156	229	170	60	81
9	31	22	23	e25	28	e30	40	119	228	165	62	76
10	30	22	23	e26	e28	e28	39	87	288	142	58	77
11	29	22	21	e26	e26	28	38	72	335	128	58	75
12	28	22	23	e26	e29	28	39	65	327	132	63	73
13	28	22	e22	e27	e28	25	48	61	317	130	64	74
14	27	23	e20	e26	e27	27	41	59	308	125	65	75
15	29	23	e19	e26	e23	31	42	56	302	110	66	77
16	28	22	21	e24	e22	29	43	54	316	140	70	75
17	29	22	23	e23	e22	27	43	54	212	132	70	75
18	29	22	e21	e24	e23	30	42	49	299	117	71	79
19	27	22	e21	23	e25	29	43	48	318	113	110	91
20	26	22	e20	23	e28	29	42	46	363	111	91	80
21	25	22	20	25	e26	30	42	46	376	165	92	90
22	24	22	e21	25	e24	28	41	55	302	140	91	92
23	24	23	e21	23	e25	28	41	54	276	172	88	92
24	25	21	e21	27	e25	29	39	50	332	153	86	94
25	26	20	21	24	e26	29	40	47	341	144	88	92
26	26	19	22	26	e27	29	40	45	341	145	88	90
27	26	e18	21	26	e28	29	39	43	339	144	83	89
28	25	e18	e24	25	e30	29	39	43	343	133	77	81
29	24	e19	e21	24	---	33	39	51	335	110	77	77
30	24	e19	e18	24	---	30	66	64	333	106	74	72
31	29	---	e19	25	---	30	---	59	---	105	75	---
TOTAL	971	653	646	759	732	918	1199	1945	7844	4966	2416	2446
MEAN	31.3	21.8	20.8	24.5	26.1	29.6	40.0	62.7	261	160	77.9	81.5
MAX	56	26	24	27	30	34	66	156	376	324	110	97
MIN	24	18	18	20	22	25	29	41	59	105	58	69
AC-FT	1930	1300	1280	1510	1450	1820	2380	3860	15560	9850	4790	4850

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY)*

	34.8	30.8	27.8	26.3	27.3	32.5	48.6	93.5	117	87.5	61.2	48.0
MEAN	34.8	30.8	27.8	26.3	27.3	32.5	48.6	93.5	117	87.5	61.2	48.0
MAX	98.4	65.9	45.8	44.8	48.9	75.7	182	321	487	198	126	95.5
(WY)	1966	1967	1966	1966	1979	1966	1971	1965	1965	1965	1982	1982
MIN	15.4	13.6	11.7	10.5	13.5	15.1	13.0	38.1	28.0	43.2	18.9	24.6
(WY)	1989	1960	1962	1962	1962	1957	1962	1958	1990	1957	1961	1961

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1957 - 1993*

ANNUAL TOTAL	14018	25495	53.0
ANNUAL MEAN	38.3	69.8	124
HIGHEST ANNUAL MEAN			29.3
LOWEST ANNUAL MEAN			5600
HIGHEST DAILY MEAN	104	May 21	376
LOWEST DAILY MEAN	18	Nov 27	18
ANNUAL SEVEN-DAY MINIMUM	19	Nov 25	19
INSTANTANEOUS PEAK FLOW			500
INSTANTANEOUS PEAK STAGE			5.64
ANNUAL RUNOFF (AC-FT)	27800	50570	38420
10 PERCENT EXCEEDS	65	154	94
50 PERCENT EXCEEDS	32	38	36
90 PERCENT EXCEEDS	22	22	20

e Estimated

* Regulated period only (1957-93). See REMARKS.

a For several days.

b On basis of slope-area measurement of peak flow.

c From floodmarks.

CHEYENNE RIVER BASIN

06418900 RAPID CREEK BELOW SEWAGE PLANT, NEAR RAPID CITY, SD

LOCATION.--Lat 44°01'24", long 103°05'43", in NW1/4NE1/4NE1/4 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 sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. 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. Gage-height telemeter at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	34	31	32	49	51	49	87	85	334	151	76
2	45	23	34	34	51	61	48	63	99	318	154	77
3	25	28	32	35	48	80	47	59	117	262	156	80
4	18	28	29	36	48	62	47	56	117	224	120	71
5	21	22	28	34	50	68	47	91	116	217	91	127
6	19	19	31	31	49	84	69	227	112	215	109	107
7	44	19	29	32	51	105	103	112	380	188	201	94
8	43	19	32	34	51	92	81	293	318	164	90	91
9	25	29	33	34	49	73	65	162	241	162	80	89
10	24	25	35	34	48	59	64	116	273	151	73	87
11	24	24	34	35	42	55	58	98	331	131	71	84
12	30	24	34	36	43	51	59	86	331	137	74	79
13	27	24	33	36	48	49	100	78	322	149	93	83
14	26	26	30	34	46	47	81	74	312	125	76	91
15	27	25	33	35	42	56	69	69	314	114	76	93
16	25	26	33	38	39	52	63	70	331	212	89	91
17	30	26	34	38	37	63	61	68	342	167	80	86
18	32	27	34	39	37	49	59	64	310	127	81	95
19	33	28	31	39	41	50	70	61	357	121	82	175
20	32	28	32	39	45	51	62	60	381	120	239	110
21	34	29	34	41	44	50	58	57	401	355	132	112
22	34	30	35	43	43	49	59	88	370	171	122	118
23	34	32	34	42	39	49	56	72	320	225	113	119
24	32	31	35	39	39	50	55	69	345	254	103	121
25	27	29	33	41	42	48	53	65	371	248	96	118
26	21	27	35	43	43	47	55	63	361	201	99	118
27	22	28	36	46	42	47	48	62	357	217	107	120
28	21	30	35	48	45	48	47	60	359	201	99	106
29	22	31	32	45	---	74	49	72	356	169	86	97
30	22	36	31	44	---	51	157	92	352	155	85	89
31	37	---	30	46	---	50	---	83	---	154	76	---
TOTAL	885	807	1012	1183	1251	1821	1939	2777	8781	5988	3304	3004
MEAN	28.5	26.9	32.6	38.2	44.7	58.7	64.6	89.6	293	193	107	100
MAX	45	36	36	48	51	105	157	293	401	355	239	175
MIN	18	19	28	31	37	47	47	56	85	114	71	71
AC-FT	1760	1600	2010	2350	2480	3610	3850	5510	17420	11880	6550	5960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	MEAN	40.5	43.3	42.1	43.7	43.9	51.9	63.3	85.5	86.5	70.8	55.0	43.2
MAX	99.3	91.3	60.7	55.5	54.6	75.5	120	237	293	193	153	100	
(WY)	1983	1987	1983	1984	1985	1985	1983	1983	1993	1993	1982	1993	
MIN	18.7	23.7	31.5	28.8	32.7	32.3	31.1	30.5	32.7	32.3	33.4	22.2	
(WY)	1991	1982	1991	1991	1991	1991	1988	1989	1985	1991	1986	1990	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	14405	32752	
ANNUAL MEAN	39.4	89.7	55.8
HIGHEST ANNUAL MEAN			89.7
LOWEST ANNUAL MEAN			35.5
HIGHEST DAILY MEAN	223	401	636
LOWEST DAILY MEAN	11	18	11
ANNUAL SEVEN-DAY MINIMUM	15	22	13
INSTANTANEOUS PEAK FLOW		879	1680
INSTANTANEOUS PEAK STAGE		6.62	9.12
ANNUAL RUNOFF (AC-FT)	28570	64960	40430
10 PERCENT EXCEEDS	57	217	100
50 PERCENT EXCEEDS	36	56	42
90 PERCENT EXCEEDS	20	28	24

a Also Sept. 27, 1992.

CHEYENNE RIVER BASIN

06421500 RAPID CREEK NEAR FARMINGDALE, SD

LOCATION.--Lat 43°56'31", long 102°51'12", in SW1/4SW1/4SW1/4 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 sea level, 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. Maximum discharge prior to regulation, 2,640 ft³/s, June 21, 1947, gage height, 8.40 ft; no flow at times in 1949, 1952-56. 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. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	37	52	e28	e35	e40	45	311	74	294	119	61
2	14	41	38	e30	e37	e47	42	117	79	277	113	66
3	14	34	e37	e29	e40	e55	42	82	92	268	113	62
4	17	32	e36	e28	e39	e70	40	72	104	213	110	61
5	9.9	34	e35	e27	e42	e70	39	71	102	195	87	63
6	8.6	32	e35	e26	e45	e79	43	238	101	191	84	97
7	12	35	e36	e26	e50	e90	82	215	199	196	120	79
8	19	35	e40	e27	e48	e80	122	482	390	164	90	73
9	25	34	e45	e27	e46	e70	75	494	237	158	74	71
10	19	36	e50	e28	e40	e63	63	220	207	149	68	70
11	17	35	56	e28	e36	e60	62	155	243	130	62	71
12	17	34	52	e27	e35	e55	58	126	280	123	60	69
13	18	33	41	e27	e36	e50	71	107	273	132	56	69
14	18	34	e37	e27	e35	e52	143	94	263	109	66	71
15	14	35	e40	e27	e32	e58	92	85	256	102	59	75
16	17	35	e39	e26	e30	e65	74	78	265	118	60	76
17	19	35	e38	e25	e30	e60	65	76	293	146	62	75
18	19	36	e36	e27	e32	e67	61	70	218	144	55	74
19	21	37	e34	e28	e34	e80	59	67	286	120	52	88
20	23	38	e35	e30	e35	e90	69	64	288	101	95	114
21	23	38	e37	e30	e35	e80	60	62	319	138	114	85
22	20	38	e38	e29	e33	e70	57	67	327	232	94	88
23	15	40	e39	e28	e30	e70	59	90	276	162	85	90
24	16	40	e40	e27	e30	e64	60	74	260	179	80	89
25	18	42	e39	e28	e30	56	58	71	301	206	75	91
26	16	43	e39	e30	e32	54	57	65	311	165	71	90
27	17	49	e38	e31	e35	52	58	63	309	164	71	90
28	15	52	e34	e32	e38	50	50	58	310	155	69	84
29	18	45	e30	e30	---	84	52	59	303	147	64	81
30	20	51	e28	e30	---	81	199	75	286	125	63	78
31	24	---	e27	e32	---	49	---	82	---	119	62	---
TOTAL	537.5	1140	1201	875	1020	2011	2057	3990	7252	5122	2453	2351
MEAN	17.3	38.0	38.7	28.2	36.4	64.9	68.6	129	242	165	79.1	78.4
MAX	25	52	56	32	50	90	199	494	390	294	120	114
MIN	8.6	32	27	25	30	40	39	58	74	101	52	61
AC-FT	1070	2260	2380	1740	2020	3990	4080	7910	14380	10160	4870	4660

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY) *

	37.4	43.6	39.1	37.2	43.1	61.6	71.9	97.2	118	63.1	31.9	33.8
MEAN	37.4	43.6	39.1	37.2	43.1	61.6	71.9	97.2	118	63.1	31.9	33.8
MAX	134	100	68.9	72.5	128	134	230	338	543	221	151	99.0
(WY)	1983	1987	1983	1984	1986	1988	1971	1965	1967	1967	1982	1982
MIN	1.07	16.5	15.4	11.7	15.0	18.2	1.33	4.31	7.76	4.17	2.95	2.11
(WY)	1961	1961	1962	1962	1988	1961	1961	1961	1960	1960	1961	1958

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1957 - 1993 *

ANNUAL TOTAL	12916.20	30009.5	
ANNUAL MEAN	35.3	82.2	56.5
HIGHEST ANNUAL MEAN			127
LOWEST ANNUAL MEAN			12.5
HIGHEST DAILY MEAN	115	Jul 14	2860
LOWEST DAILY MEAN	.85	Sep 27	.00
ANNUAL SEVEN-DAY MINIMUM	4.1	Sep 23	.00
INSTANTANEOUS PEAK FLOW			7320
INSTANTANEOUS PEAK STAGE			11.85
ANNUAL RUNOFF (AC-FT)	25620	59520	40930
10 PERCENT EXCEEDS	51	199	108
50 PERCENT EXCEEDS	36	59	38
90 PERCENT EXCEEDS	13	27	11

e Estimated

* Regulated period only (1957-93). See REMARKS.

a No flow at times in 1958-63 and 1969-71.

b From floodmarks, from rating curve extended above 400 ft³/s on basis of contracted-opening and flow-over-road measurement of peak flow.

CHEYENNE RIVER BASIN

06422500 BOXELDER CREEK NEAR NEMO, SD

LOCATION.--Lat 44°08'38", long 103°27'16", in SE1/4SE1/4 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 sea level. 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. 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 OUTSIDE PERIOD OF RECORD.--Flood of 1911 reached a stage of about 16 ft, present datum.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	3.0	e3.2	e2.2	e3.9	e5.6	13	18	24	60	30	13
2	2.9	3.0	e3.1	e2.3	e3.8	e6.0	12	25	26	56	28	13
3	2.7	2.7	e2.9	e2.4	e3.6	e5.7	12	25	31	55	28	13
4	2.7	2.2	e2.7	e2.5	e3.6	e5.0	12	18	37	52	28	13
5	2.8	2.5	e2.5	e2.7	e3.6	e5.4	11	34	26	50	27	14
6	2.7	2.6	e2.3	e2.9	e3.6	e8.9	13	154	23	49	29	18
7	3.4	3.2	e2.8	e2.9	e3.6	e13	15	100	150	69	38	16
8	3.9	3.3	e3.0	e2.9	e3.6	e9.5	12	188	179	53	32	14
9	3.6	3.9	e3.1	e2.9	e3.6	e8.1	20	176	154	48	26	13
10	4.1	3.8	e3.1	e2.9	e3.7	e7.9	30	150	130	46	24	13
11	4.3	5.4	e3.1	e2.9	e3.6	e7.6	33	126	117	45	24	13
12	3.9	4.7	e3.1	e2.8	e3.9	e7.4	28	105	106	46	21	12
13	3.5	5.1	e3.0	e2.7	e4.0	e7.1	27	89	95	46	24	11
14	3.3	4.4	e2.9	e2.6	e4.3	e6.8	26	75	82	43	23	12
15	3.3	4.3	e2.8	e2.5	e4.3	e5.8	24	67	76	51	21	12
16	2.9	4.7	e2.7	e2.7	e3.0	e7.1	23	62	101	50	21	11
17	2.8	4.4	e2.6	e2.9	e2.0	e6.6	22	57	157	51	19	11
18	2.8	4.8	e2.5	e3.0	e2.8	e6.4	21	50	118	51	17	13
19	2.9	4.4	e2.5	e3.0	e3.5	6.3	22	45	139	42	17	20
20	2.8	3.6	e2.4	e3.0	e3.4	7.5	21	42	110	39	33	22
21	2.8	3.8	e2.4	e3.0	e3.5	9.4	19	37	104	109	25	16
22	2.8	5.2	e2.4	e3.1	e3.8	9.4	18	57	108	62	19	14
23	2.7	4.3	e2.5	e3.2	e4.0	12	17	50	94	54	18	13
24	2.7	4.4	e2.4	e3.4	e4.2	18	18	41	85	48	15	13
25	2.5	3.7	e2.4	e3.5	e4.7	25	19	33	79	49	14	12
26	2.6	4.4	e2.3	e3.7	e5.0	33	18	29	74	42	14	12
27	2.6	3.8	e2.3	e3.7	e5.1	33	15	27	78	40	15	11
28	2.5	3.8	e2.2	e4.2	e5.4	30	13	26	70	38	15	11
29	2.6	e3.8	e2.2	e4.0	---	21	12	29	65	34	14	11
30	2.8	e3.3	e2.2	e4.0	---	18	16	31	63	33	13	11
31	2.8	---	e2.2	e4.0	---	15	---	24	---	31	13	---
TOTAL	93.7	116.5	81.8	94.5	107.1	367.5	562	1990	2701	1542	685	401
MEAN	3.02	3.88	2.64	3.05	3.82	11.9	18.7	64.2	90.0	49.7	22.1	13.4
MAX	4.3	5.4	3.2	4.2	5.4	33	33	188	179	109	38	22
MIN	2.5	2.2	2.2	2.2	2.0	5.0	11	18	23	31	13	11
AC-FT	186	231	162	187	212	729	1110	3950	5360	3060	1360	795

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1993, BY WATER YEAR (WY)

	6.97	6.36	4.75	4.09	4.95	9.72	22.7	37.0	51.7	17.4	9.67	6.74
MEAN	6.97	6.36	4.75	4.09	4.95	9.72	22.7	37.0	51.7	17.4	9.67	6.74
MAX	26.8	22.3	10.5	8.50	10.0	17.6	86.7	126	489	57.5	29.2	14.0
(WY)	1983	1983	1983	1983	1971	1983	1977	1978	1972	1972	1972	1972
MIN	1.85	1.66	1.65	1.42	1.36	2.66	3.03	6.20	3.92	1.70	.76	1.17
(WY)	1989	1989	1989	1982	1989	1981	1981	1974	1988	1988	1989	1988

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1946, 1967 - 1993

ANNUAL TOTAL	2116.3	8742.1	
ANNUAL MEAN	5.78	24.0	15.3
HIGHEST ANNUAL MEAN			55.1
LOWEST ANNUAL MEAN			3.81
HIGHEST DAILY MEAN	24	Jul 13	6700
LOWEST DAILY MEAN	2.2	Nov 4	.10
ANNUAL SEVEN-DAY MINIMUM	2.3	Dec 25	.14
INSTANTANEOUS PEAK FLOW		293	30100
INSTANTANEOUS PEAK STAGE		3.70	20.40
ANNUAL RUNOFF (AC-FT)	4200	17340	11080
10 PERCENT EXCEEDS	9.2	62	30a
50 PERCENT EXCEEDS	5.5	12	7.2a
90 PERCENT EXCEEDS	2.7	2.7	2.3a

e Estimated

a Reflects water years 1967-93 only.

b From rating curve extended above 600 ft³/s on basis of slope-area measurement of peak flow.

c Site and datum then in use (22.0 ft, present site and datum, from floodmarks).

CHEYENNE RIVER BASIN

06422500 BOXELDER CREEK NEAR NEMO, SD--Continued

PRECIPITATION RECORDS

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

INSTRUMENTATION.--Precipitation recorder.

AVERAGE ANNUAL PRECIPITATION.--4 years (water years 1989, 1991-93), 16.86 in.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00
2	.00	.16	.01	.08	.05	.00	.00	.00	.16	.00	.00	.00
3	.00	.10	.10	.00	.06	.00	.00	.00	.24	.29	.00	.00
4	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	2.26	.01	.01	.00	.50
6	.06	.00	.00	.00	.00	.00	.50	.03	.51	.31	.42	.00
7	.09	.00	.00	.00	.00	.00	.12	.26	1.35	.04	.00	.00
8	.00	.02	.00	.18	.00	.00	.00	.88	.08	.05	.00	.00
9	.03	.00	.00	.10	.01	.00	.00	.02	.01	.03	.00	.00
10	.00	.00	.00	.00	.11	.00	.22	.00	.00	.02	.00	.00
11	.00	.00	.00	.00	.04	.03	.18	.00	.00	.03	.01	.00
12	.00	.00	.37	.01	.01	.00	.04	.00	.00	.48	.00	.00
13	.00	.00	.03	.00	.00	.00	.32	.00	.00	.00	.37	.00
14	.00	.00	.00	.00	.01	.00	.01	.00	.00	.00	.00	.00
15	.00	.00	.01	.00	.00	.00	.00	.02	.13	.05	.23	.00
16	.00	.00	.00	.00	.00	.00	.01	.01	.87	.13	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.01	.08	.32	.00	.05
18	.00	.00	.00	.00	.00	.00	.00	.00	.27	.00	.00	.11
19	.00	.00	.00	.00	.00	.08	.01	.00	.00	.00	1.05	.38
20	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.07	.00
21	.00	.00	.00	.00	.03	.00	.01	.28	.04	1.13	.00	.00
22	.01	.01	.00	.00	.00	.00	.00	.36	.01	.28	.00	.00
23	.00	.00	.01	.00	.00	.00	.01	.02	.00	.03	.00	.00
24	.00	.01	.00	.00	.00	.00	.03	.00	.00	.14	.00	.00
25	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.01	.00	.00	.07	.00	.00
27	.01	.00	.00	.00	.00	.03	.00	.00	.28	.00	.00	.00
28	.00	.00	.00	.00	.00	.17	.00	.00	.01	.00	.00	.00
29	.04	.00	.00	.00	---	.09	.00	.43	.01	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.58	.00	.05	.00	.00	.00
31	.21	---	.01	.00	---	.00	---	.01	---	.00	.00	---
TOTAL	0.45	0.33	0.54	0.37	0.32	0.40	2.11	4.60	4.36	3.41	2.15	1.04

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 SE1/4NW1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.04	.00	.00	---
2	---	---	---	---	---	---	---	.00	.36	.00	.00	---
3	---	---	---	---	---	---	---	.00	.32	.11	.00	---
4	---	---	---	---	---	---	---	.00	.35	.00	.00	---
5	---	---	---	---	---	---	---	.70	.00	.00	.00	---
6	---	---	---	---	---	---	---	2.36	.02	.00	.00	---
7	---	---	---	---	---	---	---	.03	2.00	.17	.32	---
8	---	---	---	---	---	---	---	1.15	.10	.01	.00	---
9	---	---	---	---	---	---	---	.00	.10	.16	.00	---
10	---	---	---	---	---	---	---	.00	.00	.00	.00	---
11	---	---	---	---	---	---	---	.00	.00	.04	.00	---
12	---	---	---	---	---	---	---	.00	.00	.58	.02	---
13	---	---	---	---	---	---	---	.00	.00	.00	.27	---
14	---	---	---	---	---	---	---	.00	.00	.03	.00	---
15	---	---	---	---	---	---	---	.00	.00	.00	.00	---
16	---	---	---	---	---	---	---	.00	.12	.20	.26	---
17	---	---	---	---	---	---	---	.06	1.02	.36	.00	---
18	---	---	---	---	---	---	---	.00	.25	.00	.00	---
19	---	---	---	---	---	---	---	.00	.25	.00	.00	---
20	---	---	---	---	---	---	---	.00	.00	.00	.81	---
21	---	---	---	---	---	---	---	.00	.00	.97	.00	---
22	---	---	---	---	---	---	---	.40	.04	.02	.00	---
23	---	---	---	---	---	---	---	.33	.00	.65	.00	---
24	---	---	---	---	---	---	---	.00	.00	.00	.00	---
25	---	---	---	---	---	---	---	.00	.00	.20	.00	---
26	---	---	---	---	---	---	---	.00	.00	.00	.00	---
27	---	---	---	---	---	---	---	.00	.32	.00	.00	---
28	---	---	---	---	---	---	---	.00	.04	.00	.00	---
29	---	---	---	---	---	---	---	.00	.01	.00	.00	---
30	---	---	---	---	---	---	---	.37	.07	.00	.00	---
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	5.40	5.41	3.50	1.68	---

CHEYENNE RIVER BASIN

06423010 BOXELDER CREEK NEAR RAPID CITY, SD

LOCATION.--Lat 44°07'54", long 103°17'54", in NW1/4SE1/4 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 sea level, from topographic map.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
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	6.1	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.1	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.3	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.41	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	72	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	102	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	12	84	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	18	74	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	16	63	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	9.0	49	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	1.4	43	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	48	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	64	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	92	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	81	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	89	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	72	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	58	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	48	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	41	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	32	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	27	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	21	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	17	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	15	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	10	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	7.7	.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	56.40	1209.70	11.03	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	1.82	40.3	.36	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	18	102	6.1	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	112	2400	22	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	.000	.000	.000	.000	.000	.000	.31	3.56	6.27	.57	.25	.022			
MAX	.000	.000	.000	.000	.000	.000	4.67	34.7	40.3	7.06	3.82	.33			
(WY)	1979	1979	1979	1979	1979	1979	1983	1983	1993	1984	1984	1984			
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000			
(WY)	1979	1979	1979	1979	1979	1979	1979	1979	1979	1979	1979	1979			

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL		1277.13		
ANNUAL MEAN		3.50		
HIGHEST ANNUAL MEAN			.91	
LOWEST ANNUAL MEAN			4.06	1984
HIGHEST DAILY MEAN			.000	1979a
LOWEST DAILY MEAN	.00	Jan 1	102	Jun 9
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Oct 1b
INSTANTANEOUS PEAK FLOW			.00	Oct 1
INSTANTANEOUS PEAK STAGE			121	Jun 9c
ANNUAL RUNOFF (AC-FT)			31.65	Jun 17
10 PERCENT EXCEEDS	.00		2530	659
50 PERCENT EXCEEDS	.00		.00	.00
90 PERCENT EXCEEDS	.00		.00	.00

a Also 1980, 1981, 1985-90, 1992.

b For most months in most years.

c Gage height, 31.49 ft.

CHEYENNE RIVER BASIN

06423500 CHEYENNE RIVER NEAR WASTA, SD

LOCATION.--Lat 44°04'52", long 102°24'03", in NE1/4NE1/4NW1/4 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 sea level. 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. Prior to October 1956, 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, 0.8 ft³/s, July 17, 1954. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1920 reached a stage of 18 ft, present datum, from information by local residents.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	95	e199	e68	e130	e100	424	3280	208	862	342	147
2	57	180	e130	e70	e130	e120	362	1110	318	1040	337	150
3	61	141	e100	e68	e130	e150	323	664	273	760	304	150
4	57	93	e65	e71	e130	e250	300	448	464	727	302	148
5	60	107	e60	e50	e130	e200	281	370	394	742	273	153
6	55	97	e71	e50	e140	e170	279	8640	312	1040	213	166
7	53	91	e80	e60	e140	e180	771	2750	2090	905	322	221
8	55	95	e83	e70	e140	e300	939	6050	2340	729	290	190
9	65	96	e91	e70	e150	e600	570	4140	1310	617	211	179
10	82	106	e93	e70	e110	e350	439	2170	1090	571	183	165
11	80	97	e83	e70	e88	e280	466	1750	967	444	177	165
12	76	96	e81	e67	e72	e260	338	1190	1060	365	157	165
13	74	84	e78	e59	e63	e290	314	859	1240	416	151	171
14	71	95	e71	e66	e53	e310	1460	828	1210	348	153	284
15	76	90	e72	e72	e49	448	753	620	1120	294	151	195
16	76	90	e73	e64	e43	978	510	525	993	421	829	183
17	76	90	e71	e60	e41	457	417	491	1550	653	517	180
18	74	89	e70	e59	e40	343	359	415	1200	433	281	177
19	74	88	e70	e60	e48	500	328	363	1510	362	189	1920
20	74	90	e81	e66	e59	683	335	297	1110	329	672	1380
21	72	90	e83	e72	e61	731	741	268	1180	654	1630	383
22	74	87	e83	e80	e52	503	547	283	1430	500	1020	247
23	71	94	e81	e89	e49	420	358	249	1410	440	410	221
24	64	72	e81	e99	e54	399	464	229	1070	420	261	219
25	62	55	e88	e110	e62	385	410	228	1060	2010	211	222
26	62	e60	e90	e120	e71	390	362	225	881	758	199	229
27	63	e63	e90	e120	e80	389	324	209	839	1940	190	207
28	64	e80	e82	e120	e90	368	311	199	755	797	179	199
29	66	e105	e71	e125	---	1160	280	191	695	572	171	192
30	68	e130	e61	e125	---	854	648	193	661	443	156	187
31	78	---	e62	e130	---	574	---	218	---	373	143	---
TOTAL	2089	2846	2594	2480	2405	13142	14413	39452	30740	20965	10624	8795
MEAN	67.4	94.9	83.7	80.0	85.9	424	480	1273	1025	676	343	293
MAX	82	180	199	130	150	1160	1460	8640	2340	2010	1630	1920
MIN	49	55	60	50	40	100	279	191	208	294	143	147
AC-FT	4140	5650	5150	4920	4770	26070	28590	78250	60970	41580	21070	17440

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY)*

MEAN	140	127	97.2	93.4	141	344	378	697	920	342	156	126
MAX	639	232	176	448	669	1199	1595	2527	5270	1739	363	305
(WY)	1983	1987	1987	1974	1974	1978	1978	1967	1967	1962	1979	1986
MIN	44.8	57.7	31.2	5.04	25.1	90.8	54.8	65.8	36.9	34.7	25.4	33.4
(WY)	1961	1961	1962	1991	1991	1981	1961	1989	1989	1960	1989	1961

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1957 - 1993*

ANNUAL TOTAL	48822	150545	297a
ANNUAL MEAN	133	412	735
HIGHEST ANNUAL MEAN			76.8
LOWEST ANNUAL MEAN			1920b
HIGHEST DAILY MEAN	1660	Jul 22	8640
LOWEST DAILY MEAN	38	May 21	40
ANNUAL SEVEN-DAY MINIMUM	47	Aug 11	48
INSTANTANEOUS PEAK FLOW			15900
INSTANTANEOUS PEAK STAGE			9.89
ANNUAL RUNOFF (AC-FT)	96840	298600	215200
10 PERCENT EXCEEDS	209	1000	511
50 PERCENT EXCEEDS	93	190	112
90 PERCENT EXCEEDS	60	63	50

e Estimated

* Regulated period only (1957-93). See REMARKS.

a Median of annual mean discharges, 260 ft³/s.

b Minimum discharge, 0.60 ft³/s, July 27, 1961.

c Gage height, 12.42 ft.

d Backwater from ice.

CHEYENNE RIVER BASIN

06424000 ELK CREEK NEAR ROUBAIX, SD

LOCATION.--Lat 44°17'41", long 103°35'47", in SE1/4NE1/4 sec.23, T.4 N., R.4 E., Lawrence County, Hydrologic Unit 10120111, on right bank approximately 2.5 mi upstream from mouth of Meadow Creek, 3.0 mi east of Roubaix, and 9.0 mi southwest of Sturgis.

DRAINAGE AREA.--21.5 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1945 to July 1947, October 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,881 ft above sea level, from topographic map. Prior to July 1947, nonrecording gage at site 0.5 mi upstream at different 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.97	1.4	e1.3	.84	1.2	.87	5.4	19	16	16	6.4	3.3
2	.82	1.5	e1.2	.93	1.1	1.0	5.5	19	17	15	6.1	3.3
3	.76	.77	e1.1	.90	1.0	.99	5.7	17	20	14	6.0	3.2
4	.75	.96	1.3	.96	1.0	.91	5.9	16	18	14	5.8	3.1
5	.78	1.4	1.6	.84	1.0	1.0	6.8	32	15	13	5.6	4.5
6	.81	2.6	1.5	.90	1.1	2.1	8.1	47	15	14	5.7	4.4
7	1.1	2.6	1.2	.90	1.1	19	7.7	38	54	16	7.4	3.6
8	1.0	2.6	1.1	.79	1.0	26	12	69	94	12	5.3	3.4
9	1.5	2.3	1.4	.79	1.0	9.6	13	56	60	12	4.7	3.2
10	1.5	1.8	1.1	.87	.91	3.5	16	49	55	13	4.8	3.1
11	1.1	2.0	1.1	.84	.86	1.9	13	43	45	12	4.7	3.1
12	1.0	1.7	1.1	.79	.92	2.2	12	38	39	12	5.1	3.0
13	1.0	2.0	.96	.90	1.8	1.7	11	34	34	12	6.0	3.2
14	.97	2.0	1.1	.90	.93	1.8	11	31	29	14	4.8	3.3
15	.98	2.1	1.1	.92	.79	4.5	10	32	27	12	4.6	3.2
16	.88	2.0	1.1	.94	.74	2.5	10	29	37	12	4.8	3.1
17	1.1	1.8	.96	.92	.79	1.7	10	28	37	12	4.2	3.4
18	1.1	1.9	.96	.92	.79	2.8	11	25	40	10	4.2	3.7
19	1.1	1.6	.90	1.1	.81	2.5	11	23	32	9.0	4.5	5.7
20	1.1	1.5	.96	1.0	.84	2.8	11	22	28	9.1	7.0	4.0
21	1.1	1.3	1.0	1.0	.74	2.6	11	20	29	26	4.3	3.4
22	1.1	1.7	1.0	1.0	.84	3.0	11	27	28	10	4.0	3.3
23	1.0	1.5	.97	1.0	.79	5.1	13	24	25	9.7	3.7	3.1
24	1.0	1.8	1.1	.94	.64	7.2	14	21	23	9.9	3.5	3.1
25	1.1	2.0	.88	1.0	.43	8.7	15	19	20	9.2	3.5	3.2
26	1.0	e1.8	1.0	1.3	.67	10	13	18	20	8.5	3.6	3.1
27	1.1	e1.5	1.0	1.1	.74	13	13	17	20	8.4	3.6	3.0
28	1.3	e1.4	.91	.97	.79	12	13	17	19	7.5	3.5	2.8
29	1.2	e1.3	.90	1.2	---	8.0	12	17	18	6.9	3.3	2.8
30	1.1	e1.4	.74	1.2	---	6.6	16	17	17	6.5	3.7	2.7
31	1.2	---	.84	1.2	---	5.8	---	16	---	7.2	3.4	---
TOTAL	32.52	52.23	33.38	29.86	25.32	171.37	327.1	880	931	362.9	147.8	101.3
MEAN	1.05	1.74	1.08	.96	.90	5.53	10.9	28.4	31.0	11.7	4.77	3.38
MAX	1.5	2.6	1.6	1.3	1.8	26	16	69	94	26	7.4	5.7
MIN	.75	.77	.74	.79	.43	.87	5.4	16	15	6.5	3.3	2.7
AC-FT	65	104	66	59	50	340	649	1750	1850	720	293	201

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1993, BY WATER YEAR (WY)

	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993
MEAN	1.61	1.83	1.62	1.50	1.65	4.49	7.85	16.6	18.0	7.72	3.38	2.39
MAX	2.17	1.92	2.16	2.04	2.37	5.53	10.9	28.4	31.0	11.7	4.77	3.38
(WY)	1992	1992	1992	1992	1992	1993	1993	1993	1993	1993	1993	1993
MIN	1.05	1.74	1.08	.96	.90	3.45	4.79	4.78	5.04	3.74	2.00	1.40
(WY)	1993	1993	1993	1993	1993	1992	1992	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1992 - 1993

ANNUAL TOTAL	1020.29	3094.78	
ANNUAL MEAN	2.79	8.48	5.73
HIGHEST ANNUAL MEAN			8.48 1993
LOWEST ANNUAL MEAN			2.99 1992
HIGHEST DAILY MEAN	10 May 10	94 Jun 8	94 Jun 8 1993
LOWEST DAILY MEAN	.44 Jan 15	.43 Feb 25	.43 Feb 25 1993
ANNUAL SEVEN-DAY MINIMUM	.83 Sep 30	.69 Feb 21	.69 Feb 21 1993
INSTANTANEOUS PEAK FLOW		154 Jun 8	154 Jun 8 1993
INSTANTANEOUS PEAK STAGE		7.87 Jun 8	7.87 Jun 8 1993
ANNUAL RUNOFF (AC-FT)	2020	6140	4150
10 PERCENT EXCEEDS	5.0	23	14
50 PERCENT EXCEEDS	2.3	3.2	2.6
90 PERCENT EXCEEDS	1.0	.90	.99

e Estimated

CHEYENNE RIVER BASIN

06424000 ELK CREEK NEAR ROUBAIX, SD--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--May 1992 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 5,010 ft above sea level, 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 is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.13	e.00	.00	.00
3	---	---	---	---	---	---	---	.00	.14	e.00	.02	.07
4	---	---	---	---	---	---	---	.00	.25	e.08	.00	.00
5	---	---	---	---	---	---	---	.41	.00	e.09	.00	.20
6	---	---	---	---	---	---	---	1.28	.04	e.48	.00	.38
7	---	---	---	---	---	---	---	.04	1.85	e.00	.09	.00
8	---	---	---	---	---	---	---	1.23	1.37	e.01	.00	.00
9	---	---	---	---	---	---	---	.41	.14	e.02	.00	.00
10	---	---	---	---	---	---	---	.00	.00	e.01	.00	.00
11	---	---	---	---	---	---	---	.00	.03	e.11	.03	.00
12	---	---	---	---	---	---	---	.00	.03	e.00	.11	.00
13	---	---	---	---	---	---	---	.00	.00	e.00	.27	.03
14	---	---	---	---	---	---	---	.00	.00	e.29	.08	.00
15	---	---	---	---	---	---	---	.05	.00	e.10	.00	.00
16	---	---	---	---	---	---	---	.06	.39	.18	.09	.00
17	---	---	---	---	---	---	---	.12	1.12	.20	.00	.00
18	---	---	---	---	---	---	---	.00	.18	.00	.00	.12
19	---	---	---	---	---	---	---	.02	.56	.03	.00	.48
20	---	---	---	---	---	---	---	.00	.00	.82	.67	.17
21	---	---	---	---	---	---	---	.00	.09	.02	.00	.00
22	---	---	---	---	---	---	---	.47	.12	.07	.00	.00
23	---	---	---	---	---	---	---	.14	.00	.00	.00	.05
24	---	---	---	---	---	---	---	.10	.00	.13	.00	.00
25	---	---	---	---	---	---	---	.00	.03	.11	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.00	.08	.06	.04	.00
28	---	---	---	---	---	---	---	.00	.03	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
30	---	---	---	---	---	---	---	.10	.06	.00	.05	.00
31	---	---	---	---	---	---	---	.00	---	.33	.00	---
TOTAL	---	---	---	---	---	---	---	4.43	6.64	3.14	1.45	1.50

e Estimated

CHEYENNE RIVER BASIN

06425100 ELK CREEK NEAR RAPID CITY, SD

LOCATION.--Lat 44°14'25", long 103°09'03", in NE1/4NE1/4 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 sea level, from topographic map.

REMARKS.--Records fair 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.00	.09	.23	.16	1.2	.76	.00
2	.00	.00	.00	.00	.00	e.00	.00	16	.16	.94	.59	.00
3	.00	.00	.00	.00	.00	e.00	.00	6.7	.15	.90	.43	.00
4	.00	.00	.00	.00	.00	e.00	.00	2.2	.13	.85	.35	.00
5	.00	.00	.00	.00	.00	e.00	.00	.83	.11	.70	.25	.00
6	.00	.00	.00	.00	.00	e.00	.00	41	.14	.47	.20	.00
7	.00	.00	.00	.00	.00	e7.6	.00	96	1.5	.47	.21	.00
8	.00	.00	.00	.00	.00	e139	.38	272	41	.37	.18	.00
9	.00	.00	.00	.00	.00	e109	4.6	333	52	.36	.14	.00
10	.00	.00	.00	.00	.00	e26	2.4	83	21	.24	.10	.00
11	.00	.00	.00	.00	.00	e18	2.3	51	8.2	.18	.07	.00
12	.00	.00	.00	.00	.00	e9.8	1.1	23	4.3	.41	.03	.00
13	.00	.00	.00	.00	.00	e2.7	.93	11	2.3	.30	.03	.00
14	.00	.00	.00	.00	.00	e2.3	2.2	6.8	1.4	.15	.00	.00
15	.00	.00	.00	.00	.00	3.6	14	5.3	1.2	.21	.00	.00
16	.00	.00	.00	.00	.00	2.9	4.4	4.3	1.3	.37	.00	.00
17	.00	.00	.00	.00	.00	2.2	1.5	4.0	1.7	2.2	.00	.00
18	.00	.00	.00	.00	.00	1.2	.60	3.3	2.2	5.3	.00	.00
19	.00	.00	.00	.00	.00	.81	.31	2.6	11	2.0	.00	.00
20	.00	.00	.00	.00	.00	.65	.11	2.3	37	1.1	.00	.00
21	.00	.00	.00	.00	.00	2.4	.00	1.9	15	1.8	.00	.00
22	.00	.00	.00	.00	.00	2.1	1.3	1.7	7.4	5.3	.00	.00
23	.00	.00	.00	.00	.00	1.2	1.3	1.4	5.0	20	.00	.00
24	.00	.00	.00	.00	.00	2.9	.44	1.0	3.4	9.3	.00	.00
25	.00	.00	.00	.00	.00	3.4	.10	.80	2.7	5.2	.00	.00
26	.00	.00	.00	.00	.00	3.1	.01	.73	2.4	3.4	.00	.00
27	.00	.00	.00	.00	.00	2.2	.00	.61	2.3	2.5	.00	.00
28	.00	.00	.00	.00	.00	1.6	.00	.38	2.0	1.9	.00	.00
29	.00	.00	.00	.00	---	1.6	.00	.32	1.7	1.6	.00	.00
30	.00	.00	.00	.00	---	.90	.00	.24	1.4	1.3	.00	.00
31	.00	---	.00	.00	---	.33	---	.18	---	1.0	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	347.49	38.07	973.82	230.25	72.02	3.34	0.00
MEAN	.000	.000	.000	.000	.000	11.2	1.27	31.4	7.67	2.32	.11	.000
MAX	.00	.00	.00	.00	.00	139	14	333	52	20	.76	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.18	.11	.15	.00	.00
AC-FT	.00	.00	.00	.00	.00	689	76	1930	457	143	6.6	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1993, BY WATER YEAR (WY)

	3.39	1.41	1.24	1.45	5.15	5.11	5.45	20.0	9.30	2.47	.84	.68
MEAN	31.9	7.46	5.72	6.78	51.8	14.7	31.4	90.5	89.2	17.4	8.75	5.88
MAX	1983	1985	1985	1983	1986	1985	1986	1982	1984	1984	1984	1984
(WY)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MIN	1980	1981	1981	1981	1981	1981	1981	1981	1981	1988	1980	1980
(WY)												

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1980 - 1993

ANNUAL TOTAL		1664.99	
ANNUAL MEAN		4.56	4.71
HIGHEST ANNUAL MEAN			16.3
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN		333	May 9
LOWEST DAILY MEAN	.00	.00	Oct 1a
ANNUAL SEVEN-DAY MINIMUM	.00	.00	Oct 1
INSTANTANEOUS PEAK FLOW		1070	May 8
INSTANTANEOUS PEAK STAGE		10.04	May 8
ANNUAL RUNOFF (AC-FT)		3300	3410
10 PERCENT EXCEEDS	.00	4.3	7.4
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for many days in each year.

b Gage height, 10.79 ft.

c Backwater from ice.

CHEYENNE RIVER BASIN

06425500 ELK CREEK NEAR ELM SPRINGS, SD

LOCATION.--Lat 44°14'54", long 102°30'10", in SW1/4NW1/4 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 sea level. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 17 ft, at former site, in May 1920, from information by local residents.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	37	229	9.3	3.2	2.4	.47
2	.00	.00	.00	.00	.00	.00	26	165	9.2	3.0	2.3	.03
3	.00	.00	.00	.00	.00	.00	21	79	9.4	2.9	2.9	.02
4	.00	.00	.00	.00	.00	.00	15	40	8.9	2.3	4.2	.01
5	.00	.00	.00	.00	.00	.00	12	158	8.7	2.1	2.3	.05
6	.00	.00	.00	.00	.00	e.20	12	816	8.5	1.8	1.6	.14
7	.00	.00	.00	.00	.00	e.50	50	649	86	1.9	1.7	.15
8	.00	.00	.00	.00	.00	e1.0	69	2170	111	1.7	1.6	.06
9	.00	.00	.00	.00	.00	e.10	50	1540	65	1.5	.72	.11
10	.00	.00	.00	.00	.00	e.30	39	715	31	1.3	1.9	.20
11	.00	.00	.00	.00	.00	.00	32	257	31	1.2	1.7	.09
12	.00	.00	.00	.00	.00	.00	28	110	22	1.1	.83	.04
13	.00	.00	.00	.00	.00	e2.0	40	61	14	1.3	.67	.01
14	.00	.00	.00	.00	.00	e4.0	78	38	10	1.1	.75	.05
15	.00	.00	.00	.00	.00	e5.0	78	30	8.2	1.1	.88	.11
16	.00	.00	.00	.00	.00	.00	47	25	7.2	1.1	.78	.05
17	.00	.00	.00	.00	.00	e1.4	31	21	6.3	1.0	.78	.09
18	.00	.00	.00	.00	.00	e27	22	17	6.0	5.6	.96	.22
19	.00	.00	.00	.00	.00	e8.3	20	16	6.0	13	1.3	1.3
20	.00	.00	.00	.00	.00	e13	34	14	5.2	8.0	3.5	.91
21	.00	.00	.00	.00	.00	e1.8	83	15	4.5	9.5	5.4	.28
22	.00	.00	.00	.00	.00	e3.6	68	15	3.9	9.1	7.5	.11
23	.00	.00	.00	.00	.00	e63	36	14	3.4	8.0	7.0	.06
24	.00	.00	.00	.00	.00	e78	28	13	2.8	19	6.4	.11
25	.00	.00	.00	.00	.00	e71	19	12	4.3	27	4.8	.02
26	.00	.00	.00	.00	.00	e52	15	12	4.4	23	4.7	.02
27	.00	.00	.00	.00	.00	56	13	12	3.6	13	4.9	.02
28	.00	.00	.00	.00	.00	42	10	11	3.2	8.2	5.1	.02
29	.00	.00	.00	.00	---	91	8.8	11	2.9	6.5	4.8	.02
30	.00	.00	.00	.00	---	81	40	10	2.5	5.1	4.5	.03
31	.00	---	.00	.00	---	50	---	9.7	---	3.7	3.0	---
TOTAL	0.00	0.00	0.00	0.00	0.00	652.20	1061.8	7284.7	498.4	188.3	91.87	4.80
MEAN	.000	.000	.000	.000	.000	21.0	35.4	235	16.6	6.07	2.96	.16
MAX	.00	.00	.00	.00	.00	91	83	2170	111	27	7.5	1.3
MIN	.00	.00	.00	.00	.00	.00	8.8	9.7	2.5	1.0	.67	.01
AC-FT	.00	.00	.00	.00	.00	1290	2110	14450	989	373	182	9.5

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
MEAN	4.10	1.42	1.11	.85	7.53
MAX	152	10.5	9.60	6.14	130
(WY)	1983	1972	1968	1968	1971
MIN	.000	.000	.000	.000	.000
(WY)	1950	1950	1950	1950	1950

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1950 - 1993

ANNUAL TOTAL	98.59	9782.07	21.2
ANNUAL MEAN	.27	26.8	96.4
HIGHEST ANNUAL MEAN			.000
LOWEST ANNUAL MEAN			1967
HIGHEST DAILY MEAN	21	2170	3880
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		3660	8540
INSTANTANEOUS PEAK STAGE		12.80	13.25
ANNUAL RUNOFF (AC-FT)	196	19400	15360
10 PERCENT EXCEEDS	.00	38	24
50 PERCENT EXCEEDS	.00	.14	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for long periods in each year.

b Gage height, 10.61 ft, from floodmarks, site and datum then in use, from rating curve extended above 5,100 ft³/s.

c Backwater from ice.

BELLE FOURCHE RIVER BASIN

06427000 KEYHOLE RESERVOIR NEAR MOORCROFT, WY

LOCATION.--Lat 44°22'55", long 104°46'45", in NW1/4NW1/4 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 sea level (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, 70,600 acre-ft, Aug. 24, elevation, 4,080.37 ft; minimum, 17,900 acre-ft, Nov. 1, elevation, 4,060.32 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	4,060.58	18,200	-
Oct. 31	4,060.33	17,900	-300
Nov. 30	4,060.32	17,900	0
Dec. 31	4,060.33	17,900	0
CAL YR 1992	-	-	-11,300
Jan. 31	4,060.38	17,900	0
Feb. 28	4,060.40	18,000	+100
Mar. 31	4,064.14	24,500	+6,500
Apr. 30	4,067.51	31,300	+6,800
May 31	4,074.71	50,200	+18,900
June 30	4,079.47	67,000	+16,800
July 31	4,079.91	68,800	+1,800
Aug. 31	4,080.13	69,600	+800
Sept. 30	4,079.58	67,500	-2,100
WTR YR 1993	-	-	+49,300

BELLE FOURCHE RIVER BASIN

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°44'59", long 104°02'49", in NE1/4NW1/4NW1/4 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 sea level.

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. Maximum discharge prior to regulation, 3,620 ft³/s, June 23, 1947, gage height, 12.51 ft; maximum gage height, 14.33 ft, Mar. 22, 1949, backwater from ice; no flow at times some years. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	8.0	e4.0	e1.0	e.90	e.70	96	46	51	466	187	80
2	6.0	8.2	e4.0	e1.0	e1.0	e1.0	81	46	53	508	102	80
3	5.8	8.8	e3.5	e1.3	e2.0	e2.0	70	200	52	306	83	79
4	5.3	9.1	e2.8	e1.0	e1.5	e3.0	60	142	48	221	74	81
5	4.9	8.2	e2.5	e1.0	e1.5	e4.0	53	98	46	154	71	83
6	5.4	8.8	e2.5	e.20	e1.5	e6.0	48	94	46	123	68	88
7	6.6	9.3	e2.8	e.40	e2.0	e20	56	118	171	110	93	88
8	7.8	10	e3.0	e.80	e2.5	e90	74	322	1330	110	82	87
9	7.6	9.5	e3.5	e.80	e3.0	e170	52	215	771	142	62	98
10	7.7	12	e3.5	e.60	e3.5	e120	70	194	1110	112	56	87
11	8.0	12	e3.5	e.60	e2.5	e55	75	232	1100	109	52	69
12	7.8	12	e3.0	e.60	e1.5	e50	116	153	648	209	48	63
13	7.6	10	e3.0	e.40	e1.0	e35	139	113	398	175	47	58
14	7.3	11	e2.3	e.20	e.90	e30	143	94	262	132	47	56
15	7.3	12	e2.3	e.20	e.80	e40	102	82	202	112	45	56
16	7.7	13	e3.0	e.30	e.35	e60	81	74	172	141	43	56
17	7.4	11	e2.8	e.26	e.20	e30	112	70	195	118	43	56
18	8.2	11	e2.5	e.26	e.20	e45	95	64	203	309	43	53
19	7.9	11	e2.0	e.26	e.25	e150	92	58	289	265	42	45
20	7.9	10	e2.0	e.30	e.40	310	83	54	255	140	42	40
21	7.8	9.6	e1.5	e.35	e.42	331	69	51	304	105	48	36
22	7.6	8.9	e2.0	e.50	e.30	349	64	48	263	164	60	35
23	7.5	13	e2.0	e.50	e.25	362	57	46	192	142	82	35
24	7.5	14	e1.5	e.40	e.25	313	55	44	140	366	80	33
25	7.5	9.2	e2.0	e.35	e.30	215	52	43	105	784	74	31
26	7.7	e7.0	e2.0	e.50	e.25	173	50	76	100	224	69	29
27	7.7	e6.0	e2.4	e.70	e.35	167	51	86	74	328	66	29
28	7.8	e5.5	e2.0	e.80	e.40	147	50	71	53	160	66	27
29	8.0	e5.5	e1.8	e.60	---	135	46	63	554	100	66	27
30	7.8	e4.0	e1.5	e.70	---	127	45	57	1690	84	80	26
31	7.8	---	e1.2	e.80	---	117	---	54	---	434	81	---
TOTAL	225.0	287.6	78.4	17.68	30.02	3657.70	2237	3108	10877	6853	2102	1711
MEAN	7.26	9.59	2.53	.57	1.07	118	74.6	100	363	221	67.8	57.0
MAX	8.2	14	4.0	1.3	3.5	362	143	322	1690	784	187	98
MIN	4.9	4.0	1.2	.20	.20	.70	45	43	46	84	42	26
AC-FT	446	570	156	35	60	7260	4440	6160	21570	13590	4170	3390

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1993, BY WATER YEAR (WY)*

	MEAN	24.2	19.9	15.3	13.7	27.1	137	149	208	185	96.2	75.2	34.1
MAX	118	65.9	41.0	59.4	117	931	823	1104	812	303	271	109	
(WY)	1972	1972	1974	1974	1962	1972	1971	1978	1984	1981	1980	1955	
MIN	.000	.000	.000	.000	.000	.20	15.7	15.1	3.10	11.9	2.94	.10	.000
AC-FT	446	570	156	35	60	7260	4440	6160	21570	13590	4170	3390	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1954 - 1993*

ANNUAL TOTAL	7801.6	31184.40		
ANNUAL MEAN	21.3	85.4		
HIGHEST ANNUAL MEAN			82.3	
LOWEST ANNUAL MEAN			229	1978
HIGHEST DAILY MEAN	86	Aug 26	7.69	1961
LOWEST DAILY MEAN	1.2	Dec 31	.00	Jul 30 1954b
ANNUAL SEVEN-DAY MINIMUM	1.8	Dec 25	.00	Jul 30 1954
INSTANTANEOUS PEAK FLOW			4550	Jun 30 1993
INSTANTANEOUS PEAK STAGE			14.03	Jun 30 1962
ANNUAL RUNOFF (AC-FT)	15470	61850	59600	
10 PERCENT EXCEEDS	58	201	175	
50 PERCENT EXCEEDS	12	45	32	
90 PERCENT EXCEEDS	4.0	.76	4.0	

e Estimated

* Regulated period only (1954-93). See REMARKS.

a For several days.

b No flow at times in some years.

BELLE FOURCHE RIVER BASIN

06429500 COLD SPRINGS CREEK AT BUCKHORN, WY

LOCATION.--Lat 44°09'15", long 104°04'37", in NW1/4NW1/4SW1/4 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 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,050 ft above sea level, from topographic map. October 1974 to September 1982, 200 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Oct. 8, 16, Nov. 10-12, 14, 17, 20-28, Nov. 30 to Feb. 6, Feb. 13 to Mar. 9, and Mar. 13, 14. Records excellent except those for estimated daily discharges which are poor. No diversion upstream from station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	3.0	2.8	2.6	2.5	2.7	3.0	3.1	3.2	3.1	3.3	3.5
2	3.0	2.8	2.5	2.8	2.5	2.7	3.0	3.0	3.2	3.1	3.3	3.5
3	3.0	.93	2.0	2.7	2.5	2.7	3.1	3.0	3.1	3.1	3.3	3.5
4	2.9	.36	1.5	2.6	2.6	2.7	3.1	3.0	3.1	3.3	3.3	3.5
5	2.8	.60	1.0	2.5	2.6	2.7	3.1	3.2	3.1	3.3	3.3	3.6
6	2.9	.77	1.2	2.5	2.7	2.9	3.1	3.1	3.1	3.3	3.3	3.6
7	3.0	1.0	1.1	2.6	2.8	3.0	3.1	3.1	3.9	3.3	3.3	3.4
8	2.9	1.6	1.2	2.7	2.9	3.0	2.9	3.2	4.0	3.1	3.3	3.3
9	3.1	3.8	1.4	2.6	2.8	2.9	3.2	3.1	3.6	3.2	3.3	3.3
10	3.1	2.9	1.5	2.6	2.8	2.8	3.2	3.1	3.5	3.2	3.3	3.3
11	3.1	2.0	1.9	2.6	2.8	2.8	3.1	3.0	3.5	3.1	3.3	3.3
12	3.1	1.6	2.2	2.6	2.7	2.2	3.1	3.0	3.5	3.2	3.3	3.3
13	3.0	1.9	2.1	2.6	2.8	2.6	3.1	3.0	3.5	3.1	3.5	3.3
14	3.0	3.0	2.0	2.7	2.7	3.0	3.1	3.0	3.5	3.4	3.4	3.4
15	3.0	2.9	2.3	2.9	2.6	3.0	3.0	3.0	3.6	3.4	3.3	3.5
16	2.9	2.9	2.1	2.9	2.5	3.0	3.0	3.0	3.6	3.3	3.3	3.5
17	3.0	2.8	1.9	2.8	2.5	2.8	3.0	3.1	3.5	3.4	3.3	3.5
18	3.0	2.8	1.7	2.8	2.7	2.9	3.0	3.0	3.5	3.3	3.3	3.5
19	3.0	2.8	1.9	2.7	2.6	2.8	3.0	3.0	3.5	3.3	3.4	3.5
20	3.0	2.5	2.2	2.8	2.5	2.8	3.0	3.0	3.4	3.4	3.5	3.5
21	3.0	2.3	2.5	2.9	2.5	2.8	3.1	3.2	3.4	3.7	3.5	3.5
22	3.0	2.1	2.4	2.6	2.4	2.8	3.2	3.5	3.4	3.5	3.5	3.5
23	3.0	1.9	2.4	2.5	2.4	3.0	3.2	3.3	3.3	3.5	3.5	3.5
24	3.0	1.6	2.7	2.4	2.4	3.1	3.1	3.2	3.4	3.5	3.5	3.5
25	3.0	1.3	2.5	2.6	2.4	3.3	3.1	3.1	3.4	3.5	3.5	3.5
26	3.0	1.6	2.8	2.7	2.5	3.4	3.1	3.1	3.3	3.5	3.5	3.5
27	3.0	1.9	2.6	2.9	2.6	3.4	3.0	3.1	3.2	3.5	3.5	3.5
28	3.0	2.1	2.4	2.8	2.7	3.3	3.0	3.2	3.3	3.4	3.5	3.5
29	3.0	2.3	2.3	2.6	---	3.2	3.0	3.1	3.2	3.3	3.5	3.5
30	3.0	2.6	2.3	2.8	---	3.0	3.2	3.1	3.1	3.3	3.5	3.5
31	3.0	---	2.4	2.6	---	3.0	---	3.1	---	3.3	3.5	---
TOTAL	92.8	62.66	63.8	83.0	73.0	90.3	92.2	96.0	101.9	102.9	105.1	103.8
MEAN	2.99	2.09	2.06	2.68	2.61	2.91	3.07	3.10	3.40	3.32	3.39	3.46
MAX	3.1	3.8	2.8	2.9	2.9	3.4	3.2	3.5	4.0	3.7	3.5	3.6
MIN	2.8	.36	1.0	2.4	2.4	2.2	2.9	3.0	3.1	3.1	3.3	3.3
AC-FT	184	124	127	165	145	179	183	190	202	204	208	206

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY)

	4.34	4.16	4.18	4.04	4.16	4.33	4.61	4.37	4.56	4.46	4.63	4.48
MEAN	4.34	4.16	4.18	4.04	4.16	4.33	4.61	4.37	4.56	4.46	4.63	4.48
MAX	5.58	5.48	5.59	5.09	5.43	5.54	6.17	5.37	5.55	5.90	5.84	5.63
(WY)	1978	1977	1977	1981	1976	1976	1976	1976	1978	1976	1980	1975
MIN	2.53	2.09	2.06	2.68	2.61	2.91	3.07	3.10	3.40	3.15	3.08	3.11
(WY)	1975	1993	1993	1993	1993	1993	1993	1993	1993	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1975 - 1993

ANNUAL TOTAL	1135.06	1067.46	--
ANNUAL MEAN	3.10	2.92	4.39
HIGHEST ANNUAL MEAN	--	--	5.37 1976
LOWEST ANNUAL MEAN	--	--	2.92 1993
HIGHEST DAILY MEAN	3.8 Jan 30	4.0 Jun 8	9.5 Apr 22 1980
LOWEST DAILY MEAN	.36 Nov 4	.36 Nov 4	.36 Nov 4 1992
ANNUAL SEVEN-DAY MINIMUM	1.2 Nov 2	1.2 Nov 2	1.2 Nov 2 1992
INSTANTANEOUS PEAK FLOW	--	6.1a Apr 8	13b Apr 1 1981
INSTANTANEOUS PEAK STAGE	--	2.70c Mar 14	8.61c Jan 12 1978
ANNUAL RUNOFF (AC-FT)	2250	2120	3180
10 PERCENT EXCEEDS	3.6	3.5	5.6
50 PERCENT EXCEEDS	3.2	3.0	4.4
90 PERCENT EXCEEDS	2.3	2.3	3.1

a Gage height, 2.29 ft, release of anchor ice.

b Gage height, 4.98 ft, site and datum then in use.

c Backwater from ice, site and datum then in use.

BELLE FOURCHE RIVER BASIN

06429905 SAND CREEK NEAR RANCH A, NEAR BEULAH, WY

LOCATION.--Lat 44°31'07", long 104°04'57", in SE1/4SE1/4SW1/4 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 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft above sea level, from topographic map. October 1976 to September 1983, at site 500 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 28 to Jan. 2, Jan. 5, 6, 10, 13-15, and Feb. 16-18, 26. Records good except those for estimated daily discharges, which are poor.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	16	16	16	15	15	15	16	18	18	18	17
2	15	16	16	16	15	15	15	16	18	18	18	17
3	15	16	16	16	15	15	15	16	18	18	18	17
4	15	16	16	16	15	15	15	16	18	18	18	17
5	15	16	16	15	15	15	15	16	18	18	18	18
6	16	16	16	14	15	15	16	17	18	18	18	18
7	16	16	16	16	15	15	16	17	20	18	18	17
8	16	16	16	16	15	15	15	18	21	18	18	17
9	15	16	16	16	15	15	15	17	30	18	18	17
10	15	16	16	14	16	15	16	17	19	18	18	17
11	15	16	16	16	16	15	15	17	18	18	18	17
12	15	16	16	16	15	15	16	17	18	18	18	17
13	15	16	16	14	15	15	16	17	18	18	19	17
14	16	16	16	15	16	15	16	17	17	18	19	17
15	16	15	16	16	15	15	15	17	17	18	18	17
16	16	16	16	16	14	15	16	17	18	18	18	17
17	16	16	16	16	13	15	15	17	18	18	18	17
18	16	16	16	16	14	15	15	17	18	19	17	17
19	15	16	16	16	15	15	16	17	18	18	18	18
20	15	16	16	16	15	15	15	17	18	18	18	17
21	15	16	16	16	15	15	16	18	18	18	18	17
22	15	16	16	16	15	15	16	18	19	18	18	17
23	15	16	16	16	15	15	16	18	18	18	18	17
24	15	16	16	16	15	15	16	18	18	19	17	17
25	15	16	16	16	15	15	16	18	18	18	17	17
26	15	16	16	16	14	15	16	18	18	18	17	17
27	15	16	16	16	15	15	16	18	17	19	17	17
28	15	16	15	16	15	15	16	18	17	18	17	17
29	15	16	12	15	---	15	16	18	18	18	17	17
30	15	16	14	15	---	15	17	18	18	18	17	17
31	16	---	15	15	---	15	---	18	---	18	17	---
TOTAL	474	479	488	485	418	465	469	534	555	561	551	513
MEAN	15.3	16.0	15.7	15.6	14.9	15.0	15.6	17.2	18.5	18.1	17.8	17.1
MAX	16	16	16	16	16	15	17	18	30	19	19	18
MIN	15	15	12	14	13	15	15	16	17	18	17	17
AC-FT	940	950	968	962	829	922	930	1060	1100	1110	1090	1020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1993, BY WATER YEAR (WY)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	21.7	21.7	21.2	20.5	19.4	19.9	21.0	28.7	24.8	23.1	21.1	20.7					
MAX	28.5	28.2	26.3	25.9	25.0	27.0	30.8	53.9	36.3	31.2	28.5	28.3					
(WY)	1978	1978	1979	1979	1977	1978	1978	1982	1978	1978	1978	1978					
MIN	15.3	16.0	15.7	15.6	14.9	14.7	15.3	15.5	15.5	15.2	14.4	15.1					
(WY)	1993	1993	1993	1993	1993	1992	1992	1992	1992	1992	1992	1992					

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1977 - 1993

ANNUAL TOTAL	5656	5992	--	
ANNUAL MEAN	15.5	16.4	22.3	
HIGHEST ANNUAL MEAN	--	--	29.5	1978
LOWEST ANNUAL MEAN	--	--	15.7	1992
HIGHEST DAILY MEAN	18	Jan 24	322	May 16 1982
LOWEST DAILY MEAN	12	Mar 10	12	Mar 10 1992,
				Dec 29 1992
ANNUAL SEVEN-DAY MINIMUM	13	Mar 8	13	Mar 8 1992
INSTANTANEOUS PEAK FLOW	--	--	514	May 16 1982
INSTANTANEOUS PEAK STAGE	--	--	7.35c	May 16 1982
ANNUAL RUNOFF (AC-FT)	11220	11890	16190	
10 PERCENT EXCEEDS	16	18	29	
50 PERCENT EXCEEDS	15	16	21	
90 PERCENT EXCEEDS	15	15	15	

a Gage height, 1.56 ft.

b Backwater from ice.

c Site and datum then in use.

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 SW1/4SW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	e.00	e.00	e.00	e.00	e.00	.00	.00	1.9	.62	4.0	3.6
2	7.7	e.00	e.00	e.00	e.00	e.00	.00	.00	.00	.56	4.0	3.5
3	8.2	e.00	e.00	e.00	e.00	e.00	.00	.00	.00	.50	4.0	.23
4	8.0	e.00	e.00	e.00	e.00	e.00	.00	.00	3.6	.50	3.9	.00
5	7.3	e.00	e.00	e.00	e.00	e.00	.00	.00	7.8	.44	3.8	.00
6	7.1	e.00	e.00	e.00	e.00	e.00	.00	.00	7.8	.42	3.7	.00
7	.65	e.00	e.00	e.00	e.00	e.00	.00	.00	8.5	.35	3.7	.00
8	.00	e.00	e.00	e.00	e.00	e.00	.00	.00	9.2	.22	3.6	1.2
9	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	10	.16	3.6	1.0
10	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	7.4	.17	3.6	.89
11	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	6.6	.18	3.6	.93
12	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	4.2	.76	3.6	.56
13	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	2.3	.07	3.6	.31
14	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	2.2	.08	3.8	.29
15	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	2.1	.13	3.8	.28
16	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	2.0	.13	3.7	.39
17	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	1.9	.26	3.8	1.2
18	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	1.9	.53	3.8	1.2
19	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	1.9	.21	3.9	1.2
20	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	1.8	3.2	3.8	1.1
21	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	1.5	4.8	3.7	.98
22	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	1.2	4.4	3.6	.96
23	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	.86	4.2	3.6	.96
24	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	.77	4.4	3.6	.85
25	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	.74	4.2	3.6	.78
26	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	.78	4.6	3.6	.75
27	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	.78	4.1	3.6	.29
28	e.00	e.00	e.00	e.00	e.00	e.00	.00	.00	.76	4.0	3.6	.19
29	e.00	e.00	e.00	e.00	---	e.00	.00	.00	1.5	4.0	3.6	.17
30	e.00	e.00	e.00	e.00	---	e.00	.00	.00	.69	4.5	3.6	.14
31	e.00	---	e.00	e.00	---	e.00	---	.00	---	4.2	3.6	---
TOTAL	46.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.68	56.89	115.0	23.95
MEAN	1.49	.000	.000	.000	.000	.000	.000	.000	3.09	1.84	3.71	.80
MAX	8.2	.00	.00	.00	.00	.00	.00	.00	10	4.8	4.0	3.6
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	3.6	.00
AC-FT	91	.00	.00	.00	.00	.00	.00	.00	184	113	228	48

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1988	6.87	20.6	1991	.000	1988
1989	.12	.58	1989	.000	1988
1990	.000	.000	1990	.000	1988
1991	.000	.000	1991	.000	1988
1992	.000	.000	1992	.000	1988
1993	.000	.000	1993	.000	1988
1994	.000	.000	1994	.000	1988
1995	.000	.000	1995	.000	1988
1996	.000	.000	1996	.000	1988
1997	.000	.000	1997	.000	1988
1998	.000	.000	1998	.000	1988
1999	.000	.000	1999	.000	1988
2000	.000	.000	2000	.000	1988
2001	.000	.000	2001	.000	1988
2002	.000	.000	2002	.000	1988
2003	.000	.000	2003	.000	1988
2004	.000	.000	2004	.000	1988
2005	.000	.000	2005	.000	1988
2006	.000	.000	2006	.000	1988
2007	.000	.000	2007	.000	1988
2008	.000	.000	2008	.000	1988
2009	.000	.000	2009	.000	1988
2010	.000	.000	2010	.000	1988
2011	.000	.000	2011	.000	1988
2012	.000	.000	2012	.000	1988
2013	.000	.000	2013	.000	1988
2014	.000	.000	2014	.000	1988
2015	.000	.000	2015	.000	1988
2016	.000	.000	2016	.000	1988
2017	.000	.000	2017	.000	1988
2018	.000	.000	2018	.000	1988
2019	.000	.000	2019	.000	1988
2020	.000	.000	2020	.000	1988
2021	.000	.000	2021	.000	1988
2022	.000	.000	2022	.000	1988
2023	.000	.000	2023	.000	1988
2024	.000	.000	2024	.000	1988
2025	.000	.000	2025	.000	1988
2026	.000	.000	2026	.000	1988
2027	.000	.000	2027	.000	1988
2028	.000	.000	2028	.000	1988
2029	.000	.000	2029	.000	1988
2030	.000	.000	2030	.000	1988
2031	.000	.000	2031	.000	1988

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	1218.31	334.57	
ANNUAL MEAN	3.33	.92	3.69
HIGHEST ANNUAL MEAN			4.83
LOWEST ANNUAL MEAN			.92
HIGHEST DAILY MEAN	20	10	46
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	2420	664	2670
10 PERCENT EXCEEDS	9.1	3.7	13
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for many days in each year.

BELLE FOURCHE RIVER BASIN

06430500 REDWATER CREEK AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°34'26", long 104°02'54", in NW1/4NW1/4 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 southwest 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	23	22	e18	23	25	24	23	22	37	24	21
2	14	23	22	e18	23	27	24	22	25	37	26	21
3	14	23	22	e23	23	24	24	22	25	36	26	23
4	17	23	e20	e21	22	24	24	22	21	32	26	22
5	19	23	e20	e20	22	24	24	22	16	31	25	24
6	20	23	e20	e19	22	24	24	22	16	29	24	24
7	23	23	23	e17	22	24	25	22	21	31	24	24
8	23	23	23	e16	22	24	25	24	57	30	23	23
9	23	23	23	e17	22	24	25	22	138	29	23	23
10	23	22	23	e19	22	23	25	22	47	28	22	23
11	23	22	23	e20	22	23	25	22	38	29	22	24
12	23	22	23	e20	22	23	26	22	33	30	22	23
13	23	22	23	e20	23	23	25	22	32	28	23	23
14	23	22	e20	e20	23	23	25	22	24	28	25	23
15	23	22	23	e19	22	24	25	22	23	27	23	24
16	23	22	22	e20	e20	23	25	22	24	27	23	23
17	23	22	22	e20	e17	23	25	23	25	27	22	23
18	23	22	e21	e20	e18	23	25	23	26	30	21	24
19	23	22	e20	e20	e19	24	26	23	31	25	21	26
20	23	22	e20	e20	e20	24	26	23	33	21	22	25
21	23	22	e20	e20	e20	24	25	23	30	19	22	25
22	23	22	22	22	e20	23	25	25	29	19	22	25
23	23	22	22	22	e19	23	24	24	29	20	22	25
24	23	22	22	22	e20	24	24	24	30	23	22	25
25	23	22	22	23	22	23	23	24	28	24	22	25
26	23	22	22	29	e20	23	23	23	28	23	22	25
27	23	22	22	27	22	23	22	24	28	23	22	25
28	23	22	e20	23	22	23	21	24	28	22	22	25
29	23	22	e20	22	---	23	21	24	30	22	21	25
30	23	22	e20	23	---	24	23	24	27	24	21	25
31	23	---	e18	23	---	24	---	24	---	25	21	---
TOTAL	673	669	665	643	594	733	728	710	964	836	706	716
MEAN	21.7	22.3	21.5	20.7	21.2	23.6	24.3	22.9	32.1	27.0	22.8	23.9
MAX	23	23	23	29	23	27	26	25	138	37	26	26
MIN	14	22	18	16	17	23	21	22	16	19	21	21
AC-FT	1330	1330	1320	1280	1180	1450	1440	1410	1910	1660	1400	1420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1993, BY WATER YEAR (WY)*

	MEAN	28.0	32.1	31.9	31.2	32.2	33.4	36.2	50.8	45.9	22.3	21.4	24.8
MAX	45.0	47.9	47.1	46.1	57.8	58.9	60.9	132	128	54.9	58.9	50.4	
(WY)	1973	1974	1974	1974	1971	1978	1971	1965	1976	1976	1973	1973	
MIN	14.2	20.8	21.5	20.7	21.2	22.1	18.8	7.44	6.29	7.62	6.78	11.8	
(WY)	1991	1961	1993	1993	1993	1962	1981	1985	1961	1990	1985	1985	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1955 - 1993*

ANNUAL TOTAL	7047.7	8637	
ANNUAL MEAN	19.3	23.7	32.5
HIGHEST ANNUAL MEAN			56.0
LOWEST ANNUAL MEAN			17.9
HIGHEST DAILY MEAN	27	Jan 2	732
LOWEST DAILY MEAN	4.7	Jun 3	1.3
ANNUAL SEVEN-DAY MINIMUM	4.9	May 30	1.9
INSTANTANEOUS PEAK FLOW			2440
INSTANTANEOUS PEAK STAGE		4.87	12.19
ANNUAL RUNOFF (AC-FT)	13980	17130	23530
10 PERCENT EXCEEDS	25	27	45
50 PERCENT EXCEEDS	22	23	30
90 PERCENT EXCEEDS	10	20	15

e Estimated

* Period using present site and datum only (1955-93). See GAGE.

a No flow Aug. 13-15, 1929, during partial year.

b From rating curve extended above 1,000 ft³/s, on basis of slope-area measurement at gage height, 11.95 ft.

BELLE FOURCHE RIVER BASIN

06430528 MCNENNY STATE FISH HATCHERY VIEWING POND OUTLET NEAR BEULAH, WY

PRECIPITATION RECORDS

LOCATION.--Lat 44°33'31", long 104°00'36", in SW1/4NW1/4NW1/4, T.7 N., R.1 E., Lawrence County, Hydrologic Unit 10120203, 0.75 mi north of Interstate 90, 1.8 mi northeast of Beulah, and 3.6 mi northwest of Spearfish, SD.

PERIOD OF RECORD.--May 1992 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 3,395 ft above sea level, 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 is for the previous 24 hours.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	---	---	.00	.32	.04	.00	.00
2	.00	---	---	---	---	---	---	.00	.05	.13	.00	.00
3	.00	---	---	---	---	---	---	.00	.00	.00	.00	.00
4	.00	---	---	---	---	---	---	.00	.00	.00	.00	.00
5	.00	---	---	---	---	---	---	.34	.00	.07	.00	.00
6	.00	---	---	---	---	---	---	.04	.00	.47	.00	.00
7	.54	---	---	---	---	---	---	.00	1.41	.03	.00	.00
8	.00	---	---	---	---	---	---	.86	1.07	.09	.00	.55
9	.00	---	---	---	---	---	---	.00	.00	.00	.00	.00
10	.00	---	---	---	---	---	---	.00	.00	.00	.00	.00
11	.00	---	---	---	---	---	---	.00	.00	.00	.00	.00
12	.00	---	---	---	---	---	---	.00	.00	.51	.35	.00
13	.00	---	---	---	---	---	---	.00	.00	.18	.10	.00
14	.00	---	---	---	---	---	---	.00	.00	.00	.03	.00
15	.10	---	---	---	---	---	---	.05	.34	.09	.00	.00
16	---	---	---	---	---	---	---	.00	.40	.00	.00	.00
17	---	---	---	---	---	---	---	.06	.12	.03	.00	.00
18	---	---	---	---	---	---	---	.00	.30	.55	.00	.46
19	---	---	---	---	---	---	---	.00	.00	.00	.42	.12
20	---	---	---	---	---	---	---	.00	.00	.03	.00	.00
21	---	---	---	---	---	---	---	.50	.05	.00	.00	.00
22	---	---	---	---	---	---	---	.09	.59	.00	.00	.00
23	---	---	---	---	---	---	---	.07	.05	.03	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.52	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.36	e.04	.00
27	---	---	---	---	---	---	---	.24	.03	.00	.01	.00
28	---	---	---	---	---	---	---	.09	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.31	.70	.00	.00	.00
30	---	---	---	---	---	---	---	.00	.03	.90	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	2.65	5.46	4.03	0.95	1.13

e Estimated

BELLE FOURCHE RIVER BASIN

06430540 COX LAKE OUTLET NEAR BEULAH, WY

LOCATION.--Lat 44°33'56", long 103°59'37", in SE1/4NE1/4SE1/4 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 current year.

REVISED RECORDS.--WDR SD-92-1: 1991 daily discharges.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 3,415 ft above sea level, from topographic map.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	4.0	4.1	4.2	4.3	4.2	4.2	4.3	4.3	4.3	4.3	4.3
2	4.0	4.0	4.1	4.2	4.2	4.2	4.1	4.3	4.4	4.4	4.3	4.3
3	4.0	4.0	4.1	4.2	4.2	4.2	4.1	4.3	4.3	4.3	4.3	4.3
4	4.0	4.0	4.1	4.1	4.2	4.1	4.1	4.3	4.3	4.3	4.3	4.3
5	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.3	4.3	4.3	4.3	4.4
6	4.1	4.0	4.1	4.2	4.2	4.2	4.2	4.4	4.3	4.3	4.3	4.3
7	4.1	4.0	4.1	4.1	4.2	4.2	4.4	4.3	4.9	4.4	4.3	4.3
8	4.0	4.0	4.1	4.2	4.1	4.1	4.3	4.5	4.7	4.4	4.3	4.3
9	4.0	4.0	4.1	4.3	4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.3
10	4.0	4.0	4.0	4.2	4.2	4.1	4.3	4.3	4.3	4.3	4.3	4.3
11	4.0	4.0	4.1	4.1	4.1	4.1	4.3	4.3	4.3	4.4	4.3	4.3
12	4.0	4.0	4.1	4.1	4.1	4.1	4.3	4.3	4.3	4.5	4.3	4.3
13	3.9	4.0	4.1	4.1	4.1	4.1	4.3	4.3	4.3	4.4	4.3	4.3
14	4.0	4.0	4.0	4.2	4.2	4.1	4.3	4.3	4.3	4.3	4.3	4.3
15	4.0	4.0	4.1	4.2	4.1	4.2	4.3	4.3	4.3	4.3	4.3	4.3
16	4.0	4.0	4.1	4.2	4.1	4.1	4.3	4.3	4.5	4.4	4.3	4.3
17	4.0	4.0	4.1	4.2	4.1	4.1	4.3	4.3	4.5	4.3	4.3	4.3
18	4.0	4.0	4.1	4.2	4.1	4.1	4.3	4.3	4.5	4.5	4.3	4.3
19	4.0	4.0	4.1	4.3	4.1	4.1	4.3	4.3	4.4	4.3	4.3	4.4
20	4.0	4.0	4.2	e4.1	4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.3
21	4.0	4.0	4.1	e4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3
22	4.0	4.1	4.1	e4.1	4.1	4.3	4.3	4.4	4.4	4.3	4.3	4.3
23	4.0	4.1	4.1	e4.1	4.1	4.1	4.3	4.3	4.4	4.3	4.3	4.3
24	4.0	4.1	4.2	e4.1	4.1	4.1	4.3	4.3	4.4	4.4	4.3	4.3
25	4.0	4.0	4.1	e4.1	4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.3
26	4.0	4.0	4.2	e4.1	4.1	4.1	4.3	4.2	4.3	4.4	4.3	4.2
27	4.0	4.1	4.1	e4.1	4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.1
28	4.0	4.1	4.1	e4.1	4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.1
29	4.0	4.1	4.2	e4.1	---	4.2	4.3	4.3	4.5	4.3	4.3	4.1
30	4.0	4.1	4.1	4.2	---	4.2	4.4	4.3	4.4	4.4	4.3	4.1
31	4.0	---	4.1	4.3	---	4.2	---	4.3	---	4.6	4.3	---
TOTAL	124.1	120.7	127.3	128.9	115.7	128.4	128.3	133.6	131.4	134.9	133.3	128.3
MEAN	4.00	4.02	4.11	4.16	4.13	4.14	4.28	4.31	4.38	4.35	4.30	4.28
MAX	4.1	4.1	4.2	4.3	4.3	4.3	4.4	4.5	4.9	4.6	4.3	4.4
MIN	3.9	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.3	4.3	4.3	4.1
AC-FT	246	239	252	256	229	255	254	265	261	268	264	254

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1993, BY WATER YEAR (WY)

	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
MEAN	4.09	4.17	4.24	4.25	4.27	4.28	4.31	4.25	4.27	4.20	4.13	4.12
MAX	4.14	4.30	4.30	4.30	4.37	4.40	4.38	4.34	4.38	4.35	4.30	4.28
(WY)	1992	1992	1991	1991	1991	1991	1991	1991	1991	1993	1993	1993
MIN	4.00	4.02	4.11	4.16	4.13	4.14	4.28	4.10	4.06	4.07	3.97	3.98
(WY)	1993	1993	1993	1993	1993	1993	1993	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1991 - 1993

ANNUAL TOTAL	1510.0	1534.9	
ANNUAL MEAN	4.13	4.21	4.22
HIGHEST ANNUAL MEAN			4.26
LOWEST ANNUAL MEAN			4.18
HIGHEST DAILY MEAN	4.4 Mar 5	4.9 Jun 7	4.9 Jun 7 1993
LOWEST DAILY MEAN	3.9 Aug 15	3.9 Oct 13	3.9 Aug 15 1992
ANNUAL SEVEN-DAY MINIMUM	3.9 Aug 14	4.0 Oct 8	3.9 Aug 14 1992
ANNUAL RUNOFF (AC-FT)	3000	3040	3060
10 PERCENT EXCEEDS	4.3	4.3	4.4
50 PERCENT EXCEEDS	4.1	4.2	4.3
90 PERCENT EXCEEDS	4.0	4.0	4.0

e Estimated

BELLE FOURCHE RIVER BASIN

06430770 SPEARFISH CREEK NEAR LEAD, SD

LOCATION.--Lat 44°17'56", long 103°52'02", in NE1/4NW1/4 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 sea level, 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. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	16	17	16	14	11	16	22	18	23	18	22
2	13	16	16	16	14	11	16	22	17	23	19	23
3	14	15	18	14	15	11	18	21	19	23	19	21
4	13	14	14	15	15	12	18	20	20	22	20	24
5	14	12	12	12	14	12	19	24	18	23	19	26
6	13	17	15	13	15	12	19	30	18	23	20	23
7	14	17	16	14	15	12	14	29	27	22	20	22
8	13	17	16	15	14	13	18	34	44	20	19	18
9	15	18	15	17	15	13	19	33	37	20	16	18
10	15	18	15	17	14	13	19	31	35	19	17	18
11	15	17	15	16	14	13	19	29	35	19	17	20
12	14	17	15	15	14	13	18	26	32	21	21	18
13	14	17	15	14	15	13	17	27	30	20	22	17
14	14	17	11	15	14	13	18	25	29	20	21	17
15	14	17	16	14	13	14	17	24	28	21	20	16
16	13	17	15	15	e12	13	16	23	28	20	18	17
17	14	17	13	15	e12	13	18	23	30	20	18	21
18	14	17	15	15	11	14	18	21	28	21	18	27
19	14	17	13	16	13	13	18	20	29	19	17	24
20	14	17	14	15	16	14	17	17	28	20	21	21
21	14	17	15	15	15	12	16	18	27	24	19	22
22	14	17	15	15	14	13	16	23	27	21	24	21
23	14	16	16	15	13	14	20	20	26	20	24	21
24	14	16	16	e15	13	15	20	20	26	19	22	23
25	16	16	15	e15	13	16	20	19	26	19	24	24
26	16	15	16	15	12	17	20	18	26	20	21	21
27	15	16	15	15	12	19	21	18	25	20	27	17
28	15	17	15	14	12	20	20	18	25	19	20	20
29	15	18	13	14	---	20	20	18	24	20	21	21
30	15	16	13	15	---	18	21	18	24	19	20	21
31	16	---	15	15	---	16	---	18	---	19	21	---
TOTAL	441	494	460	462	383	433	546	709	806	639	623	624
MEAN	14.2	16.5	14.8	14.9	13.7	14.0	18.2	22.9	26.9	20.6	20.1	20.8
MAX	16	18	18	17	16	20	21	34	44	24	27	27
MIN	13	12	11	12	11	11	14	17	17	19	16	16
AC-FT	875	980	912	916	760	859	1080	1410	1600	1270	1240	1240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	14.4	15.1	13.9	13.3	13.0
MAX	15.0	16.7	15.5	14.9	13.8
(WY)	1989	1990	1989	1993	1992
MIN	13.0	13.3	11.9	12.2	11.4
(WY)	1991	1991	1991	1990	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	5628	6620		
ANNUAL MEAN	15.4	18.1		15.6
HIGHEST ANNUAL MEAN				18.1
LOWEST ANNUAL MEAN				14.2
HIGHEST DAILY MEAN	23	Apr 19	44	Jun 8 1993
LOWEST DAILY MEAN	11	Dec 14	11	Dec 22 1990
ANNUAL SEVEN-DAY MINIMUM	12	Jan 7	12	Feb 26 1990
INSTANTANEOUS PEAK FLOW			51	Jun 8 1993a
INSTANTANEOUS PEAK STAGE			7.64	Jun 8 1993b
ANNUAL RUNOFF (AC-FT)	11160	13130		11300
10 PERCENT EXCEEDS	18	24		21
50 PERCENT EXCEEDS	15	17		15
90 PERCENT EXCEEDS	13	13		12

e Estimated

a Gage height, 7.64 ft.

b Backwater from ice.

BELLE FOURCHE RIVER BASIN
06430800 ANNIE CREEK NEAR LEAD, SD

LOCATION.--Lat 44°19'37", long 103°53'38", in NW1/4NW1/4NW1/4 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 5,125 ft above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.04	.33	e.08	e.00	e.00	.99	3.9	1.3	2.5	.94	.47
2	.04	.04	.16	e.06	e.00	e.00	1.0	3.7	1.3	2.5	.80	.46
3	.03	.09	.21	e.04	e.00	e.00	1.1	3.9	1.2	2.3	.75	.46
4	.03	.07	.16	e.02	e.00	e.00	1.2	4.7	1.2	2.2	.72	.46
5	.03	.08	.14	e.10	e.00	e.00	1.3	6.5	1.1	2.0	.78	.56
6	.03	.08	.21	e.00	e.00	e.00	1.3	10	1.0	2.1	.80	.49
7	.06	.09	.20	e.00	e.00	e.00	1.3	9.6	2.4	2.0	.96	.45
8	.08	.08	.31	e.00	e.00	e.00	1.2	11	12	1.8	.71	.42
9	.05	e.09	.45	e.00	e.00	e.00	1.5	11	15	1.8	.70	.42
10	.05	e.08	.41	e.00	e.00	e.00	2.0	8.8	11	1.5	.71	.41
11	.04	e.09	.48	e.00	e.00	e.00	2.1	7.5	8.2	1.4	.80	.39
12	.04	e.09	.41	e.00	e.00	e.00	2.1	6.4	6.4	1.5	.83	.38
13	.04	e.09	.23	e.00	e.00	e.00	2.0	5.8	5.4	1.3	.86	.38
14	.05	e.09	.13	e.00	e.00	e.00	1.8	5.1	4.7	1.4	.84	.40
15	.07	e.09	.13	e.00	e.00	e.00	1.6	4.5	4.5	1.3	.73	.42
16	.06	e.09	.10	e.00	e.00	e.00	1.5	4.1	4.2	1.4	.87	.42
17	.06	.09	.08	e.00	e.00	e.01	1.6	3.6	4.3	1.3	.62	.42
18	.05	.09	.08	e.00	e.00	e.04	1.8	3.1	4.6	1.2	.66	.42
19	.05	.09	.08	e.00	e.00	e.07	1.9	2.7	5.8	1.1	.81	.52
20	.04	.09	.08	e.00	e.00	e.10	1.9	2.6	6.3	1.2	1.3	.43
21	.04	.08	.08	e.00	e.00	e.15	2.0	2.5	5.7	1.5	.83	.42
22	.04	.10	.08	e.00	e.00	e.20	2.0	2.5	5.4	1.0	.73	.42
23	.05	.07	.08	e.00	e.00	e.35	2.4	2.3	4.5	.99	.74	.42
24	.04	.07	.08	e.00	e.00	e.50	2.6	2.0	4.0	1.3	.91	.41
25	.06	.09	.08	e.00	e.00	e.60	3.1	1.9	3.8	1.1	1.2	.38
26	.07	.13	.09	e.00	e.00	.80	3.5	1.9	3.2	1.1	.86	.38
27	.07	.13	.09	e.00	e.00	e.20	4.3	1.7	3.2	1.1	.78	.38
28	.07	.21	.09	e.00	e.00	e.20	4.8	1.7	2.8	1.0	.70	.39
29	.07	.25	e.07	e.00	---	e1.5	4.4	1.5	2.6	.95	.63	.38
30	.08	.34	e.08	e.00	---	1.3	4.3	1.5	2.4	.96	.56	.39
31	.09	---	e.08	e.00	---	1.1	---	1.4	---	1.2	.50	---
TOTAL	1.61	3.11	5.28	0.30	0.00	10.72	64.59	139.4	139.5	46.00	24.63	12.75
MEAN	.052	.10	.17	.010	.000	.35	2.15	4.50	4.65	1.48	.79	.42
MAX	.09	.34	.48	.10	.00	2.0	4.8	11	15	2.5	1.3	.56
MIN	.03	.04	.07	.00	.00	.00	.99	1.4	1.0	.95	.50	.38
AC-FT	3.2	6.2	10	.6	.00	21	128	276	277	91	49	25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1991	1992	1993	1992	1993	1992	1993
MEAN	.12	.16	.14	.097	.12	.30	1.51	4.27	1.87	.59	.29	.18
MAX	.17	.28	.19	.16	.19	.58	2.40	5.68	4.65	1.48	.79	.42
(WY)	1991	1990	1990	1992	1992	1990	1990	1991	1993	1993	1993	1993
MIN	.052	.10	.045	.010	.000	.082	.75	1.63	.60	.27	.10	.061
(WY)	1993	1993	1989	1993	1993	1991	1991	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	138.02	447.89	
ANNUAL MEAN	.38	1.23	.81
HIGHEST ANNUAL MEAN			1.23
LOWEST ANNUAL MEAN			.38
HIGHEST DAILY MEAN	8.2	Apr 30	15
LOWEST DAILY MEAN	.03	Sep 24	.00
ANNUAL SEVEN-DAY MINIMUM	.03	Sep 29	.00
INSTANTANEOUS PEAK FLOW			19
INSTANTANEOUS PEAK STAGE			5.18
ANNUAL RUNOFF (AC-FT)	274	888	586
10 PERCENT EXCEEDS	.65	3.8	2.1
50 PERCENT EXCEEDS	.18	.41	.19
90 PERCENT EXCEEDS	.05	.00	.05

e Estimated

a Also Jan. 7 to Mar. 16.

b Also Mar. 3-7, 1989, and Jan. 6 to Mar. 16, 1993.

c Gage height, 4.96 ft.

d Backwater from ice, observed.

BELLE FOURCHE RIVER BASIN

06430850 LITTLE SPEARFISH CREEK NEAR LEAD, SD

LOCATION.--Lat 44°20'58", long 103°56'08", in NE1/4NW1/4SE1/4 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 sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	12	11	9.8	11	12	12	13	14	15	14	13
2	13	12	11	9.7	11	12	12	13	14	15	14	13
3	13	11	11	9.8	11	12	12	13	14	15	14	13
4	13	11	11	9.7	11	12	12	13	14	15	14	13
5	13	11	11	9.7	11	12	12	13	14	15	14	14
6	13	11	11	9.9	11	12	12	13	14	15	14	14
7	13	11	11	9.8	11	12	12	13	15	15	14	14
8	13	12	11	9.8	11	12	12	14	18	15	14	13
9	13	12	11	9.8	11	12	12	14	17	15	14	13
10	12	12	11	9.9	11	12	12	14	17	15	14	13
11	12	11	11	10	11	12	12	14	16	15	14	13
12	12	11	10	10	11	12	12	14	16	15	14	13
13	12	11	10	10	11	12	12	13	16	15	14	13
14	12	11	10	10	11	12	12	13	15	15	14	13
15	12	11	10	10	11	12	12	14	15	15	14	13
16	12	11	10	10	11	12	12	14	15	15	14	13
17	12	11	10	10	11	12	12	14	15	15	14	13
18	12	11	10	10	11	13	12	14	16	15	13	13
19	12	11	10	10	11	13	12	13	16	15	14	13
20	12	11	10	10	11	13	12	13	15	15	14	13
21	12	11	10	10	11	13	12	14	15	15	14	13
22	12	11	10	10	11	13	12	14	15	15	14	13
23	12	11	10	10	11	12	12	14	15	15	13	13
24	12	11	10	10	11	12	12	14	15	15	13	13
25	12	11	9.8	10	11	13	12	13	15	15	13	13
26	12	11	9.9	10	11	13	12	14	15	15	13	13
27	12	10	10	11	11	13	12	13	15	15	13	13
28	12	10	9.9	10	12	13	12	14	15	15	13	13
29	12	11	9.8	10	---	13	12	14	15	14	13	13
30	12	11	9.8	10	---	13	13	14	15	14	13	13
31	12	---	9.8	10	---	12	---	14	---	15	13	---
TOTAL	381	333	320.0	308.9	309	383	361	421	456	463	424	393
MEAN	12.3	11.1	10.3	9.96	11.0	12.4	12.0	13.6	15.2	14.9	13.7	13.1
MAX	13	12	11	11	12	13	13	14	18	15	14	14
MIN	12	10	9.8	9.7	11	12	12	13	14	14	13	13
AC-FT	756	661	635	613	613	760	716	835	904	918	841	780

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	13.3	12.7	12.4	12.1	12.2
MAX	14.8	14.3	14.1	14.0	13.7
(WY)	1989	1989	1989	1989	1989
MIN	12.2	11.1	10.3	9.96	11.0
(WY)	1992	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	4561.0	4552.9	
ANNUAL MEAN	12.5	12.5	13.1
HIGHEST ANNUAL MEAN			14.0
LOWEST ANNUAL MEAN			12.5
HIGHEST DAILY MEAN	14	May 22	18
LOWEST DAILY MEAN	9.8	Dec 25	9.7
ANNUAL SEVEN-DAY MINIMUM	9.9	Dec 25	9.8
ANNUAL RUNOFF (AC-FT)	9050	9030	9490
10 PERCENT EXCEEDS	13	15	15
50 PERCENT EXCEEDS	13	12	13
90 PERCENT EXCEEDS	11	10	12

a Also June 8, 1993.

BELLE FOURCHE RIVER BASIN

06430898 SQUAW CREEK NEAR SPEARFISH, SD

LOCATION.--Lat 44°24'04", long 103°53'35", in NE1/4NE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.28	.44	e.50	.34	.71	e.50	3.0	12	3.4	3.6	1.5	1.1
2	.28	.41	.47	.37	.65	e.50	2.9	11	3.5	3.4	1.5	1.1
3	.28	.35	.43	.34	.49	e.50	3.0	11	3.4	3.2	1.4	1.1
4	.28	.54	.36	.29	.42	e.45	3.4	13	3.2	3.0	1.4	1.0
5	.26	e.50	.33	.28	.39	e.47	4.3	19	3.1	3.0	1.4	1.4
6	.30	.46	.35	.28	.39	.52	5.1	27	3.0	3.6	1.3	1.3
7	.53	.40	.32	.28	.41	.60	4.9	22	6.5	4.2	1.3	1.2
8	.40	.53	.33	.28	.43	e.72	4.7	30	57	3.3	1.2	1.1
9	.55	.60	.35	.28	.43	.66	4.9	36	43	3.0	1.2	1.0
10	.55	.47	.33	.31	.43	.56	7.5	27	20	3.0	1.1	1.0
11	.44	e.48	.33	.31	.43	.48	8.1	21	12	2.9	1.1	.96
12	.35	.49	.34	.29	.43	.43	7.8	17	9.0	2.9	1.1	.94
13	.34	e.45	.32	.28	.41	.43	6.9	15	7.2	2.6	1.9	.97
14	.31	.44	.33	.28	.39	.42	6.0	12	6.0	2.4	1.9	.94
15	.34	.47	.35	.30	.39	.50	5.4	11	5.6	2.3	1.4	.94
16	.34	.47	.34	.31	.40	e.53	5.2	9.5	5.4	2.2	1.2	.87
17	.36	.47	.31	.31	e.28	.55	5.2	8.3	6.9	2.1	1.2	.94
18	.35	.47	.31	.31	e.32	.57	6.2	7.3	7.6	2.0	1.1	.98
19	.35	.47	.29	.31	e.40	.65	7.6	6.2	11	1.9	1.3	1.4
20	.35	e.45	.30	.31	e.38	.70	7.6	5.4	12	1.9	2.6	1.1
21	.35	e.45	.31	.32	e.38	.90	7.0	4.9	11	2.3	1.8	1.0
22	.32	e.50	.31	e.30	e.38	1.8	6.7	5.3	9.2	1.9	1.6	.94
23	.31	e.48	.27	e.30	e.40	1.6	8.7	4.4	8.1	1.8	1.5	.94
24	.31	e.45	.27	.35	e.42	2.2	12	4.1	7.0	1.9	1.4	.94
25	.31	.44	.26	.39	e.40	2.6	13	3.7	6.2	1.9	1.3	.92
26	.31	.53	.27	.39	e.38	5.0	13	3.4	5.4	2.1	1.3	.87
27	.31	e.45	.28	.39	e.40	6.7	16	3.3	4.9	2.1	1.3	.87
28	.31	e.50	.27	.37	e.42	7.0	16	3.3	4.6	1.9	1.2	.87
29	.31	e.50	.25	.41	---	5.4	14	3.6	4.3	1.8	1.2	.81
30	.31	e.45	.25	.59	---	4.3	14	3.7	4.0	1.7	1.2	.80
31	.35	---	.27	.69	---	3.5	---	3.5	---	1.8	1.2	---
TOTAL	10.74	14.11	10.00	10.56	11.76	51.74	230.1	363.9	293.5	77.7	43.1	30.30
MEAN	.35	.47	.32	.34	.42	1.67	7.67	11.7	9.78	2.51	1.39	1.01
MAX	.55	.60	.50	.69	.71	7.0	16	36	57	4.2	2.6	1.4
MIN	.26	.35	.25	.28	.28	.42	2.9	3.3	3.0	1.7	1.1	.80
AC-FT	21	28	20	21	23	103	456	722	582	154	85	60

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	.55	.62	.48	.40	.46
MAX	1.02	.94	.74	.52	.62
(WY)	1989	1990	1990	1989	1990
MIN	.35	.39	.32	.34	.32
(WY)	1993	1991	1993	1993	1991

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	357.34	1147.51	
ANNUAL MEAN	.98	3.14	
HIGHEST ANNUAL MEAN			2.08
LOWEST ANNUAL MEAN			3.14
HIGHEST DAILY MEAN	17	Apr 29	.99
LOWEST DAILY MEAN	.20	Jan 15	.20
ANNUAL SEVEN-DAY MINIMUM	.25	Aug 10	.24
INSTANTANEOUS PEAK FLOW		96	Jun 8 1993
INSTANTANEOUS PEAK STAGE		5.37	Jun 8 1993
ANNUAL RUNOFF (AC-FT)	709	2280	1510
10 PERCENT EXCEEDS	1.7	7.9	5.2
50 PERCENT EXCEEDS	.47	.94	.66
90 PERCENT EXCEEDS	.28	.31	.31

e Estimated

a Also Dec. 29, 1988, Jan. 2, 3, 8-10, Feb. 4, 1989, Jan. 15, 1992.

BELLE FOURCHE RIVER BASIN

06430900 SPEARFISH CREEK ABOVE SPEARFISH, SD

LOCATION.--Lat 44°24'06", long 103°53'40", in NW1/4NE1/4NE1/4 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.

DRAINAGE AREA.--139 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 4,440 ft above sea level, from topographic map.

REMARKS.--Records good except those for Nov. 5, Nov. 26 to Mar. 26, 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. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	37	e39	e38	36	e39	43	77	52	76	44	41
2	34	37	e39	43	37	39	43	76	52	76	45	43
3	35	36	40	e40	36	40	45	71	54	69	44	40
4	34	35	e37	e40	35	e36	45	77	51	58	44	42
5	34	e33	e34	e40	35	e35	48	85	55	65	43	42
6	35	33	e39	e32	e37	37	53	108	53	65	42	43
7	37	34	e39	e33	38	37	52	108	75	68	46	41
8	35	40	40	e35	38	37	52	118	206	62	44	42
9	37	40	40	e39	37	37	53	128	207	54	42	43
10	37	39	39	38	37	37	63	119	175	53	44	41
11	36	38	38	41	37	e37	62	112	153	51	42	41
12	36	38	39	e36	e39	e35	61	104	133	50	45	42
13	36	37	e38	e36	37	e30	58	97	123	53	48	43
14	36	38	e34	e35	e36	e35	55	89	113	48	48	43
15	36	38	41	41	e34	e37	54	88	107	49	45	43
16	35	39	40	39	e31	e30	52	81	107	49	43	43
17	37	38	e40	e38	e31	e35	53	76	113	48	44	44
18	36	38	e39	e37	e32	e35	55	71	113	49	45	46
19	36	38	e35	37	37	e35	60	64	119	47	43	49
20	36	38	e38	37	40	e40	56	60	114	46	51	45
21	36	37	42	35	e38	e40	55	59	106	54	45	46
22	34	37	40	35	e36	e40	54	69	102	47	44	45
23	35	38	e40	36	e41	e40	62	62	93	48	43	43
24	35	37	40	e39	e39	e45	75	59	86	47	43	42
25	36	36	e39	e35	40	e45	78	56	92	47	41	44
26	35	e35	e38	e36	e40	e45	80	56	100	49	43	41
27	36	e37	39	35	e42	52	87	54	95	47	42	39
28	35	e38	e35	36	e41	53	89	55	85	46	41	42
29	35	e38	e39	e40	---	50	84	55	82	46	43	40
30	36	e41	e34	e37	---	47	85	53	82	44	43	41
31	37	---	e32	35	---	44	---	53	---	49	42	---
TOTAL	1102	1118	1186	1154	1037	1224	1812	2440	3098	1660	1362	1280
MEAN	35.5	37.3	38.3	37.2	37.0	39.5	60.4	78.7	103	53.5	43.9	42.7
MAX	37	41	42	43	42	53	89	128	207	76	51	49
MIN	34	33	32	32	31	30	43	53	51	44	41	39
AC-FT	2190	2220	2350	2290	2060	2430	3590	4840	6140	3290	2700	2540

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	38.2	38.8	36.5	37.2	37.9
MAX	43.3	41.7	41.4	41.2	39.2
(WY)	1989	1989	1989	1989	1989
MIN	35.5	37.2	29.8	31.8	37.0
(WY)	1993	1991	1992	1992	1993

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	14129	18473	
ANNUAL MEAN	38.6	50.6	44.3
HIGHEST ANNUAL MEAN			50.6
LOWEST ANNUAL MEAN			38.1
HIGHEST DAILY MEAN	74	207	207
LOWEST DAILY MEAN	18	30	18
ANNUAL SEVEN-DAY MINIMUM	26	34	26
INSTANTANEOUS PEAK FLOW		299	299
INSTANTANEOUS PEAK STAGE		5.14	5.14
ANNUAL RUNOFF (AC-FT)	28020	36640	32100
10 PERCENT EXCEEDS	43	83	58
50 PERCENT EXCEEDS	38	42	40
90 PERCENT EXCEEDS	34	35	35

e Estimated

BELLE FOURCHE RIVER BASIN

06431500 SPEARFISH CREEK AT SPEARFISH, SD

LOCATION.--Lat 44°28'57", long 103°51'40", in SE1/4NW1/4 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 sea level, 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 fair. 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	33	35	29	33	33	39	71	54	62	42	41
2	29	33	31	36	34	33	41	68	48	60	42	44
3	30	31	36	36	32	34	41	68	49	57	42	39
4	29	30	33	24	32	33	42	65	49	56	42	40
5	28	24	24	28	32	31	42	74	48	55	42	39
6	28	29	33	e28	32	34	44	83	48	53	39	43
7	29	29	35	27	31	34	44	87	58	54	45	40
8	31	32	36	29	31	34	45	94	94	51	42	40
9	34	34	34	32	32	34	47	96	100	48	43	39
10	37	36	34	31	32	34	53	98	100	48	42	39
11	36	34	33	34	33	35	55	98	100	49	40	38
12	36	33	35	31	32	34	53	94	100	50	39	38
13	34	31	36	e33	34	30	51	87	93	51	45	40
14	32	30	24	32	33	34	50	85	85	50	46	40
15	32	30	36	35	29	35	49	80	82	50	45	41
16	33	32	36	34	e25	36	46	77	79	50	43	43
17	33	33	29	33	e24	33	45	69	81	50	42	42
18	33	33	32	32	e25	36	48	64	80	49	45	43
19	32	32	26	31	31	37	50	61	82	46	45	48
20	32	30	29	32	34	38	51	57	84	45	51	48
21	34	30	37	32	33	38	50	55	84	50	47	47
22	32	30	39	31	31	35	50	59	82	48	45	46
23	32	32	35	32	30	34	53	61	79	46	42	48
24	33	32	38	30	32	38	64	58	75	45	41	49
25	33	32	35	32	34	41	64	57	75	46	42	51
26	33	23	33	33	33	43	64	56	71	49	43	50
27	33	31	35	33	31	44	70	55	67	49	43	49
28	33	34	31	32	33	48	70	57	64	47	43	52
29	31	35	29	30	---	46	69	57	65	46	42	50
30	32	29	e27	30	---	43	72	56	65	46	41	48
31	32	---	e28	30	---	41	---	53	---	46	40	---
TOTAL	995	937	1014	972	878	1133	1562	2200	2241	1552	1331	1315
MEAN	32.1	31.2	32.7	31.4	31.4	36.5	52.1	71.0	74.7	50.1	42.9	43.8
MAX	37	36	39	36	34	48	72	98	100	62	51	52
MIN	28	23	24	24	24	30	39	53	48	45	39	38
AC-FT	1970	1860	2010	1930	1740	2250	3100	4360	4450	3080	2640	2610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1993, BY WATER YEAR (WY)

	MEAN	42.9	42.7	40.0	39.3	40.0	42.3	60.9	96.5	74.3	48.8	42.8	41.4
	MAX	63.3	65.0	61.1	60.1	64.3	68.8	109	505	185	70.2	71.2	64.4
	(WY)	1984	1966	1966	1972	1979	1972	1963	1982	1976	1972	1972	1965
	MIN	25.1	24.4	24.1	22.7	26.5	25.2	31.1	28.9	29.1	24.6	23.6	24.1
	(WY)	1962	1962	1982	1962	1962	1962	1961	1961	1961	1961	1961	1961

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1947 - 1993
ANNUAL TOTAL	13541	16130	
ANNUAL MEAN	37.0	44.2	51.0
HIGHEST ANNUAL MEAN			84.5
LOWEST ANNUAL MEAN			27.1
HIGHEST DAILY MEAN	64	100	1880
LOWEST DAILY MEAN	23	23	9.0
ANNUAL SEVEN-DAY MINIMUM	29	28	18
INSTANTANEOUS PEAK FLOW			4240
INSTANTANEOUS PEAK STAGE			10.54
ANNUAL RUNOFF (AC-FT)	26860	31990	36950
10 PERCENT EXCEEDS	43	69	71
50 PERCENT EXCEEDS	37	39	44
90 PERCENT EXCEEDS	30	30	31

e Estimated

a No flow for part of Oct. 18, 1970.

b From rating curve extended above 520 ft³/s on basis of slope-area measurement of peak flow; gage height, 10.53 ft.

BELLE FOURCHE RIVER BASIN

06432020 SPEARFISH CREEK BELOW SPEARFISH, SD

LOCATION.--Lat 44°34'48", long 103°53'37", in SW1/4NE1/4SE1/4 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 sea level, 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. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	49	48	e25	50	e45	e50	77	57	69	52	37
2	23	49	41	26	45	e50	47	76	58	69	52	44
3	26	49	49	28	46	e48	47	72	57	67	52	42
4	26	47	42	34	44	e48	48	72	59	63	53	40
5	27	43	e40	27	44	e48	51	77	58	64	53	47
6	28	46	39	e25	46	e48	53	92	56	63	47	49
7	38	45	40	30	45	e48	55	93	80	71	52	48
8	34	50	43	26	46	e48	53	103	102	62	50	45
9	34	49	44	e30	42	e50	54	97	99	60	43	42
10	40	49	44	34	43	e50	56	96	98	59	35	38
11	40	48	44	34	45	e50	56	96	96	57	34	38
12	40	47	44	36	51	e50	56	91	99	59	33	42
13	40	46	43	e35	48	e48	56	89	90	57	40	42
14	40	47	e40	e37	44	e48	56	85	86	56	46	42
15	45	46	42	e30	44	e50	56	83	82	55	42	42
16	45	47	e40	22	e35	e55	56	82	86	55	41	46
17	44	46	40	21	e25	e45	56	77	91	55	36	42
18	41	47	40	26	e30	e50	57	73	86	59	40	46
19	41	45	e35	31	e35	e50	59	69	89	54	39	51
20	41	45	35	36	e40	e50	60	67	87	53	50	51
21	41	45	37	41	e38	e50	59	66	88	57	45	49
22	42	46	43	44	e37	e48	60	71	92	54	45	48
23	43	45	e40	46	e37	e50	61	66	91	55	45	47
24	44	44	e38	41	e37	e55	69	64	83	57	38	46
25	46	45	e36	48	e38	e55	70	63	81	54	29	46
26	45	38	42	51	e37	e55	73	62	80	56	31	46
27	46	40	e40	51	e37	e55	76	60	79	56	34	44
28	43	46	e37	52	e40	e60	77	58	71	53	31	46
29	45	46	e34	45	---	e55	74	62	76	53	31	45
30	48	40	e30	48	---	e50	80	58	71	53	32	45
31	48	---	e25	45	---	e50	---	58	---	59	32	---
TOTAL	1207	1375	1235	1105	1149	1562	1781	2355	2428	1814	1283	1336
MEAN	38.9	45.8	39.8	35.6	41.0	50.4	59.4	76.0	80.9	58.5	41.4	44.5
MAX	48	50	49	52	51	60	80	103	102	71	53	51
MIN	23	38	25	21	25	45	47	58	56	53	29	37
AC-FT	2390	2730	2450	2190	2280	3100	3530	4670	4820	3600	2540	2650

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	43.0	50.4	41.3	39.7	42.3
MAX	49.5	56.5	49.5	48.7	47.2
(WY)	1989	1989	1989	1990	1990
MIN	36.8	45.8	32.5	28.0	37.1
(WY)	1991	1993	1991	1991	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	12292.6	18630	
ANNUAL MEAN	33.6	51.0	41.1
HIGHEST ANNUAL MEAN			51.0
LOWEST ANNUAL MEAN			35.0
HIGHEST DAILY MEAN	62	Apr 19	122
LOWEST DAILY MEAN	5.1	Aug 16	1.0
ANNUAL SEVEN-DAY MINIMUM	5.5	Aug 12	1.3
INSTANTANEOUS PEAK FLOW		127	163
INSTANTANEOUS PEAK STAGE		5.35	5.86
ANNUAL RUNOFF (AC-FT)	24380	36950	29780
10 PERCENT EXCEEDS	49	77	61
50 PERCENT EXCEEDS	40	47	44
90 PERCENT EXCEEDS	14	34	10

e Estimated

a Also July 4, 1990.

b Gage height, 5.31 ft.

c Backwater from ice.

BELLE FOURCHE RIVER BASIN

06433000 REDWATER RIVER ABOVE BELLE FOURCHE, SD

LOCATION.--Lat 44°40'02", long 103°50'20", in NW1/4SE1/4 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. Daily discharges for October 1946 estimated; yearly discharge published in WSP 1309 does not include October. 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	154	149	e100	e108	e100	141	164	119	136	114	14
2	72	134	137	e90	e107	e115	138	157	115	139	106	31
3	e64	134	145	e94	e107	e130	134	162	112	140	102	35
4	70	128	151	e100	e107	e140	132	164	106	135	98	45
5	72	133	121	e94	105	e150	131	169	98	129	96	51
6	73	130	e125	e90	109	e165	131	308	90	131	90	65
7	91	132	e128	e84	115	e175	155	220	134	146	85	67
8	100	136	e135	e84	117	182	155	349	371	154	81	66
9	92	136	e152	e84	109	180	143	411	654	149	77	68
10	112	137	e152	e80	108	168	152	267	527	142	71	68
11	130	140	e135	e86	108	164	154	217	301	143	62	70
12	129	144	e130	e90	112	159	155	194	228	141	59	71
13	129	145	e128	e86	109	150	154	184	185	136	56	71
14	132	139	128	e86	107	158	152	179	169	135	56	74
15	133	139	140	e86	109	164	144	174	153	135	53	85
16	133	133	147	e88	91	168	140	173	160	135	52	88
17	139	131	135	e90	78	158	136	171	180	135	50	85
18	141	129	117	e90	e60	159	134	164	214	145	47	90
19	137	131	110	e96	e66	157	138	159	283	145	45	99
20	134	131	e110	e100	e70	162	140	154	236	132	46	106
21	131	133	e112	e104	e70	171	137	152	186	128	41	101
22	132	132	e125	e110	e66	169	135	158	178	127	38	100
23	129	136	138	e105	e66	168	131	155	187	119	36	98
24	134	137	e114	e105	e60	167	141	149	171	123	32	98
25	144	137	e125	e105	e64	167	140	147	164	131	21	97
26	152	136	e125	e110	e70	167	142	144	160	120	17	95
27	148	133	e125	e115	e80	154	144	146	153	120	17	94
28	139	146	e120	e110	e90	144	143	142	143	116	14	95
29	152	140	e115	e108	---	143	148	143	147	109	14	98
30	152	141	e115	e105	---	143	156	147	154	104	14	97
31	151	---	e110	e108	---	147	---	138	---	125	15	---
TOTAL	3724	4087	3999	2983	2568	4844	4276	5761	6078	4105	1705	2322
MEAN	120	136	129	96.2	91.7	156	143	186	203	132	55.0	77.4
MAX	152	154	152	115	117	182	156	411	654	154	114	106
MIN	64	128	110	80	60	100	131	138	90	104	14	14
AC-FT	7390	8110	7930	5920	5090	9610	8480	11430	12060	8140	3380	4610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1993, BY WATER YEAR (WY)

MEAN	125	138	137	130	139	152	170	224	184	54.2	38.7	82.8
MAX	283	209	205	207	219	273	277	966	834	263	135	192
(WY)	1983	1947	1947	1947	1947	1949	1973	1982	1946	1946	1972	1946
MIN	50.6	82.7	69.9	83.5	91.7	105	62.9	20.0	4.07	2.13	2.72	19.3
(WY)	1961	1961	1962	1957	1993	1961	1981	1992	1988	1960	1959	1959

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1946 - 1993
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ANNUAL TOTAL	30312.8		46452				
ANNUAL MEAN	82.8		127			131	
HIGHEST ANNUAL MEAN						227	1946
LOWEST ANNUAL MEAN						57.1	1961
HIGHEST DAILY MEAN	154	Nov 1	654	Jun 9		5790	May 20 1982
LOWEST DAILY MEAN	3.0	May 30	14	Aug 28-30, Sept. 1		.00	May 1 1981a
ANNUAL SEVEN-DAY MINIMUM	3.3	May 26	15	Aug 26		.56	Jul 30 1960
INSTANTANEOUS PEAK FLOW			735	Jun 9b		16400	Jun 16 1962c
INSTANTANEOUS PEAK STAGE			4.18	Jan 27d		11.69	Jun 16 1962
ANNUAL RUNOFF (AC-FT)	60130		92140			94910	
10 PERCENT EXCEEDS	135		167			201	
50 PERCENT EXCEEDS	107		131			125	
90 PERCENT EXCEEDS	8.0		68			17	

e Estimated

a No flow at times in 1960, 1968-69, 1981-82, and 1988.

b Gage height, 3.97 ft.

c From rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow.

d Backwater from ice.

BELLE FOURCHE RIVER BASIN

06433500 HAY CREEK AT BELLE FOURCHE, SD

LOCATION.--Lat 44°40'01", long 103°50'46", in NW1/4SW1/4 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 sea level (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, and those for May 5 to June 23, which are fair. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.14	.00	e.00	e.04	6.0	2.0	.70	2.5	10	2.5	.00
2	.00	.06	.00	e.00	e.03	13	1.9	e.35	2.9	14	1.8	.00
3	.00	.01	.00	.00	e.03	16	1.8	e.25	2.8	9.1	1.4	.00
4	.00	.00	.00	.00	e.03	24	1.7	e.25	2.7	4.8	1.0	.00
5	.00	.00	.00	.00	e.02	26	1.5	.46	2.7	3.2	.77	.65
6	.00	.00	.00	.00	e.02	28	1.2	1.3	2.8	3.4	.70	.02
7	.00	.00	.00	.00	e.03	28	1.8	e.72	13	3.9	.60	.00
8	.00	.00	.00	.00	e.03	27	2.0	e1.8	72	2.4	.55	.00
9	.00	.00	.00	.00	e.03	25	2.1	4.7	88	1.9	.59	.00
10	.00	.00	.00	.00	e.02	17	2.2	e2.0	62	1.5	.31	.00
11	.00	.00	.00	.00	e.02	8.9	2.1	e1.0	30	1.3	.20	.00
12	.00	.00	.00	.00	e.01	5.8	2.3	e.92	14	2.1	.17	.00
13	.00	.00	.00	.00	e.01	4.4	2.2	.73	9.0	1.2	.50	.00
14	2.7	.00	.00	.00	e.00	3.2	2.2	.64	6.7	1.1	.58	.00
15	.25	.00	.00	.00	e.00	2.5	2.2	.59	5.1	.89	.14	.00
16	.00	.00	.00	.00	e.00	2.6	2.0	.61	4.6	.99	.07	.00
17	.00	.00	.00	.00	e.00	3.1	1.8	.65	4.0	1.1	.04	.00
18	.00	.00	.00	.00	e.00	2.3	1.6	.45	3.5	4.1	.03	.11
19	.00	.00	.00	.00	e.00	1.8	1.5	.35	3.4	2.6	.04	.77
20	.50	.00	.00	.00	e.00	1.6	1.4	.35	3.6	1.3	.25	.03
21	1.7	.00	.00	.00	e.00	2.2	1.2	.35	3.1	1.1	.05	.00
22	1.5	.00	.00	.00	e.00	2.8	1.1	.41	2.2	.96	.02	.00
23	.37	.00	.00	.00	e.00	3.0	1.0	.47	1.7	.88	.01	.00
24	.01	.00	.00	.00	e.00	3.0	.96	.52	1.4	4.2	.00	.00
25	.00	.00	.00	.00	e.01	2.9	.90	.54	1.4	2.2	.00	.00
26	.00	.00	e.00	e.04	e.02	2.7	.82	.61	1.2	1.7	.00	.00
27	.00	.00	e.00	e.04	e.10	2.6	.75	.67	.84	1.9	.00	.00
28	.00	.00	e.00	e.03	.27	2.4	.69	.75	.84	1.7	.00	.00
29	.00	.00	e.00	e.02	---	2.3	.63	1.0	3.3	1.6	.00	.00
30	.00	.00	e.00	e.03	---	2.2	.63	2.2	30	2.1	.00	.00
31	.00	---	e.00	e.03	---	2.1	---	2.0	---	2.3	.00	---
TOTAL	7.03	0.21	0.00	0.19	0.72	274.4	46.18	28.34	381.28	91.52	12.32	1.58
MEAN	.23	.007	.000	.006	.026	8.85	1.54	.91	12.7	2.95	.40	.053
MAX	2.7	.14	.00	.04	.27	28	2.3	4.7	88	14	2.5	.77
MIN	.00	.00	.00	.00	.00	1.6	.63	.25	.84	.88	.00	.00
AC-FT	14	.4	.00	.4	1.4	544	92	56	756	182	24	3.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1993, BY WATER YEAR (WY)

	MEAN	.44	.15	.094	.16	.77	1.92	2.25	4.89	5.34	.58	.17	.20
MAX	7.99	1.23	.94	1.52	17.4	23.1	14.6	50.0	45.8	4.55	1.51	2.23	
(WY)	1983	1987	1973	1974	1971	1978	1973	1982	1972	1962	1984	1957	
MIN	.000	.000	.000	.000	.000	.019	.030	.013	.000	.000	.000	.000	
(WY)	1959	1955	1957	1957	1956	1961	1959	1959	1956	1960	1954	1958	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1954 - 1993

ANNUAL TOTAL	39.45	843.77	
ANNUAL MEAN	.11	2.31	1.41a
HIGHEST ANNUAL MEAN			5.50
LOWEST ANNUAL MEAN			.012
HIGHEST DAILY MEAN	2.7	Oct 14	88
LOWEST DAILY MEAN	.00	Jan 8	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Apr 3	.00
INSTANTANEOUS PEAK FLOW			96
INSTANTANEOUS PEAK STAGE			6.28
ANNUAL RUNOFF (AC-FT)	78	1670	1020
10 PERCENT EXCEEDS	.28	3.4	2.2
50 PERCENT EXCEEDS	.00	.06	.02
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a Median of annual mean discharges, 0.82 ft³/s.

b No flow for many days in each year.

BELLE FOURCHE RIVER BASIN

06434500 INLET CANAL NEAR BELLE FOURCHE, SD

LOCATION.--Lat 44°42'14", long 103°49'23", in NE1/4NW1/4 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 sea level. 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 fair. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	120	119	e85	e105	e135	260	205	148	.00	95	85
2	46	118	120	e80	e105	e170	228	191	141	23	83	90
3	41	125	119	e90	e105	e200	209	204	138	101	95	97
4	44	120	128	e95	e105	e230	196	369	129	572	95	97
5	41	119	103	e90	e105	e300	182	281	120	399	94	97
6	58	118	115	e80	e105	371	180	e225	111	.00	92	98
7	61	120	e118	e75	e105	502	200	e205	268	.00	88	97
8	74	123	e120	e75	e105	576	216	e290	1150	.00	84	95
9	71	128	e122	e80	104	474	199	e470	1340	3.8	83	96
10	81	129	e120	e80	105	318	200	e530	1320	7.9	85	98
11	95	128	e118	e84	e105	242	237	477	1280	37	85	98
12	95	127	117	e84	e105	168	246	431	1190	76	91	97
13	97	124	108	e80	e105	164	342	339	871	34	91	94
14	103	128	107	e80	e105	166	341	285	606	32	84	97
15	106	126	121	e75	e105	188	322	255	462	61	86	97
16	108	125	132	e80	e100	199	264	237	427	74	92	96
17	110	125	109	e84	e90	160	253	227	442	90	93	97
18	111	126	e105	e84	e85	184	266	210	479	88	90	97
19	105	126	e102	e88	e90	214	248	195	557	120	87	97
20	105	126	e100	e92	e96	219	259	181	566	58	86	97
21	101	126	e100	e94	e100	248	239	171	468	68	84	97
22	96	126	e102	e100	e100	300	211	178	1020	87	78	94
23	93	130	e110	e100	e95	329	198	176	1060	92	84	90
24	94	125	e100	e102	e93	367	197	166	652	94	96	87
25	97	125	e110	e102	e98	406	192	159	452	94	99	84
26	101	122	e110	e110	e98	370	188	154	364	87	98	82
27	103	120	e110	e116	e102	348	187	203	326	88	93	70
28	102	126	e108	e110	e102	331	184	193	77	95	87	84
29	111	123	101	e105	---	315	182	181	.01	95	80	85
30	114	122	e100	e105	---	297	195	183	103	95	76	87
31	115	---	e90	e105	---	287	---	164	---	83	81	---
TOTAL	2727	3726	3444	2810	2823	8778	6821	7735	16267.01	2754.70	2735	2777
MEAN	88.0	124	111	90.6	101	283	227	250	542	88.9	88.2	92.6
MAX	115	130	132	116	105	576	342	530	1340	572	99	98
MIN	41	118	90	75	85	135	180	154	.01	.00	76	70
AC-FT	5410	7390	6830	5570	5600	17410	13530	15340	32270	5460	5420	5510

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1993, BY WATER YEAR (WY)

MEAN	144	151	148	140	155	227	243	222	198	114	104	114
MAX	389	235	212	221	337	693	711	704	669	288	281	243
(WY)	1983	1973	1974	1974	1971	1978	1950	1982	1962	1981	1980	1951
MIN	22.4	7.23	8.32	86.1	16.5	.000	.000	1.55	2.66	3.82	2.68	17.9
(WY)	1947	1947	1947	1949	1973	1966	1947	1972	1965	1960	1961	1959

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1946 - 1993

ANNUAL TOTAL	32354.14	63397.71	
ANNUAL MEAN	88.4	174	163
HIGHEST ANNUAL MEAN			240
LOWEST ANNUAL MEAN			69.7
HIGHEST DAILY MEAN	173	Jul 26	1410
LOWEST DAILY MEAN	.00	May 8	.00
ANNUAL SEVEN-DAY MINIMUM	.00	May 8	.00
INSTANTANEOUS PEAK FLOW			1440
INSTANTANEOUS PEAK STAGE		11.48	11.48
ANNUAL RUNOFF (AC-FT)	64170	125700	118100
10 PERCENT EXCEEDS	130	340	288
50 PERCENT EXCEEDS	106	106	140
90 PERCENT EXCEEDS	20	80	27

e Estimated

a Also 1978 water year.

b No flow at times in most years.

BELLE FOURCHE RIVER BASIN

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), 1,840 microsiemens, Aug. 23; minimum observed daily (more than 20 percent missing record), 390 microsiemens, July 25.

WATER TEMPERATURE: Maximum observed daily (more than 20 percent missing record), 28.0°C, Aug. 10; minimum observed daily (more than 20 percent missing record), 0.0°C on many days during winter.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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											
06...	0930	159	1440	8.0	7.5	9.5	760	220	52	27	7
NOV											
04...	0945	118	1310	8.2	0.0	3.0	720	210	47	21	6
DEC											
15...	1015	129	1320	8.2	2.0	0.5	740	220	47	13	4
JAN											
20...	1045	92	1320	8.0	-11.0	0.0	770	230	47	11	3
MAR											
09...	1300	493	794	8.5	5.0	2.5	340	96	25	31	16
APR											
05...	1130	176	1290	8.3	16.5	10.5	630	180	43	32	10
MAY											
21...	1145	175	1210	8.3	23.5	16.0	600	170	43	29	9
JUN											
22...	0830	879	856	8.0	25.0	19.5	330	91	26	45	22
AUG											
16...	1015	93	1620	8.2	22.5	21.0	790	220	57	73	17

DATE	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)	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, AMMONIA TOTAL (MG/L AS N) (00610)
OCT											
06...	0.4	4.4	188	590	8.6	0.40	9.8	1030	1.39	440	<0.010
NOV											
04...	0.3	2.8	196	550	6.4	0.30	10	965	1.31	307	0.010
DEC											
15...	0.2	2.5	176	540	5.4	0.30	10	944	1.28	329	0.020
JAN											
20...	0.2	2.3	226	520	4.8	0.40	11	964	1.31	240	--
MAR											
09...	0.7	5.2	96	310	4.7	0.30	6.2	540	0.73	718	--
APR											
05...	0.6	4.0	170	530	7.5	0.30	8.2	908	1.23	431	--
MAY											
21...	0.5	3.5	183	500	6.0	0.40	8.9	871	1.18	411	--
JUN											
22...	1	7.1	113	340	5.1	0.50	8.3	592	0.80	1400	--
AUG											
16...	1	6.8	180	770	9.9	0.40	10	1260	1.71	316	--

BELLE FOURCHE RIVER BASIN

06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	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)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
OCT 06...	--	--	<0.010	--	<0.050	--	--	--	0.050	0.020
NOV 04...	--	--	<0.010	--	0.220	--	0.220	--	0.040	0.020
DEC 15...	--	--	0.020	--	0.440	--	0.420	--	0.030	0.040
JAN 20...	0.040	0.05	--	0.010	--	0.450	0.440	0.440	0.050	0.030
MAR 09...	0.160	0.21	--	0.030	--	0.410	0.380	0.380	0.540	0.080
APR 05...	0.020	0.03	--	<0.010	--	0.170	0.170	--	<0.010	<0.010
MAY 21...	<0.010	--	--	<0.010	--	<0.050	--	--	0.090	<0.010
JUN 22...	0.030	0.04	--	<0.010	--	0.180	0.180	--	1.50	0.050
AUG 16...	0.020	0.03	--	<0.010	--	<0.050	--	--	0.060	<0.010

DATE	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)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
OCT 06...	--	--	110	--	--	--	--	--	--	--
NOV 04...	--	--	80	--	--	--	--	--	--	--
DEC 15...	--	--	80	--	--	--	--	--	--	--
JAN 20...	0.040	--	60	--	--	--	--	--	--	--
MAR 09...	0.060	1	80	<1.0	<1	<1	3	34	<1	30
APR 05...	0.010	--	100	--	--	--	--	--	--	--
MAY 21...	0.010	--	100	--	--	--	--	--	--	--
JUN 22...	0.040	--	140	--	--	--	--	--	--	--
AUG 16...	0.020	2	180	<1.0	<1	<1	<1	<3	<1	62

DATE	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)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 06...	--	--	--	--	--	--	--	--	--	--
NOV 04...	--	--	--	--	--	--	--	--	--	--
DEC 15...	--	--	--	--	--	--	--	--	--	--
JAN 20...	--	--	--	--	--	--	--	--	--	--
MAR 09...	190	0.10	3	5	<1	<1.0	1100	3	4	<0.010
APR 05...	--	--	--	--	--	--	--	--	--	--
MAY 21...	--	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	--	--	--	--	--	--
AUG 16...	110	<0.10	4	3	2	<1.0	2900	3	<3	--

BELLE FOURCHE RIVER BASIN

06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	1180	1140	---	1240	---	610	1520
2	---	---	1270	---	---	1190	1210	---	1240	820	---	1500
3	---	1280	---	---	---	1150	---	1190	1270	---	980	1420
4	---	---	---	1290	---	1180	---	1270	---	880	1080	1380
5	1390	1270	---	---	---	1120	1260	1000	---	910	1140	---
6	---	1330	---	1380	---	---	1270	1040	---	---	1180	---
7	1360	---	1200	1430	---	---	1280	---	1290	---	1240	1340
8	1320	---	1150	1430	1260	780	1290	---	920	---	---	1310
9	1370	1270	1100	---	---	850	---	1010	590	---	1310	1310
10	---	1300	---	---	1270	1030	---	960	930	---	1240	1310
11	---	---	---	1350	1280	1090	---	900	870	730	1310	1310
12	1330	1300	---	---	1280	1090	1290	910	680	930	1410	---
13	1350	1270	---	1340	---	---	---	1000	860	570	1470	1310
14	1330	---	1100	1430	---	---	1300	---	930	660	1570	1340
15	1290	---	1340	1180	---	1250	1160	---	1030	920	---	1330
16	1250	1310	1240	---	1320	1180	---	---	1070	920	1600	---
17	---	1290	1260	---	1320	---	---	1090	1110	1280	1570	---
18	---	1300	1230	---	---	1340	---	1090	---	680	1630	1370
19	1250	1300	---	1350	1510	1290	---	1140	---	430	1670	---
20	1260	1290	---	1320	---	---	---	---	---	560	1630	1340
21	1320	---	1330	1290	---	---	---	1190	1000	660	1640	1360
22	1330	---	1340	1260	1260	1200	1250	---	---	1040	1720	1370
23	1310	---	1240	---	---	1200	---	---	950	1380	1840	1400
24	---	---	1300	---	1280	1170	---	1170	930	1230	1780	1390
25	---	---	---	1300	---	1170	---	1170	1000	390	1840	---
26	1240	---	---	---	---	1070	1240	1200	---	440	1830	1360
27	1240	---	---	1340	---	---	1220	1330	---	650	1750	1390
28	1240	---	1200	1180	---	---	---	---	1180	630	1590	1410
29	1290	---	---	---	---	1050	1190	---	---	670	---	1410
30	---	---	---	---	---	1090	---	---	480	860	1550	1420
31	---	---	---	---	---	1090	---	---	---	680	1540	---

WATER TEMPERATURE, IN DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.0	4.5	---	16.5	---	21.0	17.5
2	---	---	.0	---	---	.0	4.0	---	12.5	19.0	21.5	16.0
3	---	3.0	---	---	---	.0	---	6.0	11.5	---	19.5	17.5
4	---	---	---	.0	---	.0	---	5.0	---	18.0	19.5	18.0
5	---	1.0	---	---	---	---	9.5	5.0	---	16.5	19.5	---
6	---	3.0	---	.0	---	---	9.0	12.5	---	---	18.5	---
7	6.5	---	.0	.0	---	---	6.0	---	14.5	---	24.0	16.5
8	4.0	---	.0	.0	1.0	1.5	4.5	---	11.5	---	---	19.5
9	8.5	4.5	---	---	---	2.0	---	11.5	11.0	---	21.5	17.5
10	---	3.5	---	---	.5	1.0	---	11.5	14.5	---	28.0	17.0
11	---	---	---	.0	---	.5	---	13.5	17.5	16.5	25.0	18.0
12	10.0	2.0	---	---	---	.0	6.0	14.5	18.0	18.5	19.5	---
13	8.5	5.0	---	.0	---	---	---	16.5	16.5	16.0	20.0	10.5
14	7.0	---	.0	.0	---	---	5.5	---	16.0	16.0	24.0	10.5
15	5.5	---	.0	.0	---	3.5	5.0	---	16.5	17.5	---	11.5
16	2.5	4.5	.0	---	.0	1.0	---	---	18.0	20.0	20.0	---
17	---	3.0	.0	---	.0	---	---	19.0	16.0	17.0	23.0	---
18	---	3.5	.0	---	---	1.0	---	17.0	---	19.5	22.5	11.5
19	5.5	3.5	---	.0	.0	4.5	---	14.5	---	17.5	22.0	---
20	6.5	4.0	---	.0	---	---	---	---	---	18.0	22.5	19.0
21	8.0	---	.0	.0	---	---	---	15.5	20.0	20.0	21.5	14.0
22	9.0	---	.0	.0	.0	1.5	8.0	---	---	21.5	19.5	12.0
23	10.5	---	.0	---	---	3.0	---	---	18.0	22.0	21.5	10.5
24	---	---	.0	---	.0	4.5	---	12.0	14.5	21.5	23.5	11.0
25	---	---	---	.0	---	6.0	---	14.0	16.0	17.5	21.0	---
26	7.0	---	---	---	---	7.0	10.5	15.5	---	19.0	21.0	12.0
27	7.5	---	---	.0	---	---	13.5	20.0	---	18.0	20.0	14.0
28	7.0	---	.0	.0	---	---	---	---	20.0	17.0	18.5	13.0
29	7.0	---	---	---	---	7.5	9.5	---	---	19.5	---	11.0
30	---	---	---	---	---	6.5	---	---	19.5	23.0	16.0	11.5
31	---	---	---	---	---	4.5	---	---	---	22.0	17.0	---

BELLE FOURCHE RIVER BASIN

06435000 BELLE FOURCHE RESERVOIR NEAR BELLE FOURCHE, SD

LOCATION.--Lat 44°44'12", long 103°40'27", in SW1/4SE1/4 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 sea level, 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, 152,200 acre-ft, July 30, elevation, 2,970.71 ft; minimum, 10,700 acre-ft, Oct. 1, elevation, 2,936.52 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,936.48	10,600	-
Oct. 31	2,940.54	17,500	+6,900
Nov. 30	2,944.82	26,500	+9,000
Dec. 31	2,947.52	33,500	+7,000
CAL YR 1992	-	-	-14,100
Jan. 31	2,949.93	40,800	+7,300
Feb. 28	2,952.01	48,200	+7,400
Mar. 31	2,957.22	70,400	+22,200
Apr. 30	2,960.25	85,800	+15,400
May 31	2,963.53	104,300	+18,500
June 30	2,969.19	141,200	+36,900
July 31	2,970.71	152,200	+11,000
Aug. 31	2,967.22	127,600	-24,600
Sept. 30	2,965.20	114,500	-13,100
WTR YR 1993	-	-	+103,900

BELLE FOURCHE RIVER BASIN

06436000 BELLE FOURCHE RIVER NEAR FRUITDALE, SD

LOCATION.--Lat 44°41'27", long 103°44'14", in NW1/4NE1/4 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 sea level, 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 fair. Flow regulated by Keyhole Dam since Feb. 12, 1952, usable capacity, 191,600 acre-ft, 180 mi upstream. Maximum discharge prior to Sept. 30, 1952, 7,460 ft³/s, June 23, 1947, gage height, 11.03 ft; no flow at times in 1945 and 1948. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	9.0	2.7	e5.6	e10	e7.6	3.8	22	e15	1690	743	23
2	8.5	8.9	2.6	e5.0	e12	e8.4	3.5	20	e17	1170	346	23
3	8.4	8.6	2.4	e6.0	e12	e9.0	3.4	19	18	860	224	24
4	8.2	8.5	3.5	e5.6	e12	e9.0	3.3	19	18	158	181	34
5	7.3	8.5	3.6	e5.6	e10	e10	3.4	23	21	61	156	45
6	6.8	8.4	3.9	e4.4	e10	e12	3.5	46	20	446	137	63
7	11	8.1	4.3	e4.6	e10	e14	8.6	22	24	439	118	73
8	15	8.4	4.6	e6.0	e12	e12	9.2	20	504	386	155	65
9	12	8.6	4.6	e6.0	e10	e10	9.0	36	1210	403	115	65
10	8.2	7.9	5.5	e5.4	e10	e9.0	9.4	32	707	372	79	76
11	7.9	6.1	6.8	e5.4	e9.4	8.3	9.2	18	547	280	60	64
12	7.7	4.6	7.2	e5.0	e9.0	7.1	9.8	13	234	581	37	52
13	7.5	3.9	7.5	e5.0	e8.4	6.2	10	11	93	731	34	42
14	7.4	3.7	6.9	e5.0	e8.4	5.0	11	9.0	85	353	31	41
15	7.5	3.3	6.9	e5.0	e7.4	6.1	10	8.9	81	263	28	50
16	7.9	3.1	7.3	e6.0	e6.6	7.0	9.7	9.2	77	253	19	53
17	7.5	2.8	7.7	e6.0	e4.6	5.0	8.1	9.5	40	256	14	54
18	7.3	3.8	8.0	e6.0	e5.0	4.4	7.5	9.6	37	315	13	59
19	7.3	4.6	e7.4	e6.4	e6.0	4.8	7.1	9.8	36	878	14	69
20	6.9	3.8	e7.8	e7.0	e6.4	5.0	7.3	9.9	33	412	14	69
21	7.0	3.3	e8.0	e8.0	e7.0	6.6	7.3	11	35	276	15	59
22	5.9	3.1	e8.0	e8.0	e6.4	5.3	8.2	10	283	189	18	51
23	8.7	3.4	e8.0	e10	e6.4	5.1	7.9	10	348	251	19	63
24	8.6	3.3	e7.5	e10	e6.4	5.9	8.9	10	68	221	19	59
25	8.1	3.1	e7.8	e11	e7.0	5.7	9.1	11	65	1450	22	54
26	8.0	2.8	e7.4	e13	e6.4	5.6	15	12	55	919	19	52
27	7.8	2.8	e7.8	e13	e6.4	5.0	16	12	53	806	20	100
28	7.6	2.8	e7.4	e11	e7.0	4.4	20	e13	205	707	20	52
29	7.5	2.7	e7.0	e10	---	4.1	22	e13	504	401	20	50
30	7.8	2.7	e6.4	e9.4	---	4.4	22	e13	2980	288	18	48
31	8.3	---	e6.0	e10	---	4.1	---	e13	---	453	20	---
TOTAL	253.6	154.6	192.5	226.4	232.2	216.1	283.2	494.9	8413	16268	2728	1632
MEAN	8.18	5.15	6.21	7.30	8.29	6.97	9.44	16.0	280	525	88.0	54.4
MAX	15	9.0	8.0	13	12	14	22	46	2980	1690	743	100
MIN	5.9	2.7	2.4	4.4	4.6	4.1	3.3	8.9	15	61	13	23
AC-FT	503	307	382	449	461	429	562	982	16690	32270	5410	3240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993, BY WATER YEAR (WY)*

	MEAN	9.66	8.88	5.43	4.16	17.2	60.5	102	266	206	42.1	17.0	9.90
MAX	44.1	55.8	26.0	12.6	222	973	953	1717	1149	525	142	54.4	
(WY)	1983	1988	1965	1965	1973	1972	1971	1978	1976	1993	1953	1993	
MIN	3.82	3.33	3.23	1.97	1.32	2.46	2.30	3.12	.33	.22	.30	2.24	
(WY)	1961	1979	1968	1957	1955	1977	1981	1985	1961	1960	1960	1959	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1953 - 1993*

ANNUAL TOTAL	2935.7	31094.5	62.5a	
ANNUAL MEAN	8.02	85.2	263	1972
HIGHEST ANNUAL MEAN			3.00	1961
LOWEST ANNUAL MEAN			9110	Jun 15 1976
HIGHEST DAILY MEAN	21	Jul 15	.00	Sep 10 1959b
LOWEST DAILY MEAN	2.4	Dec 3	.00	Jun 4 1961
ANNUAL SEVEN-DAY MINIMUM	2.7	Nov 27		May 20 1982
INSTANTANEOUS PEAK FLOW		3890	12700	May 20 1982
INSTANTANEOUS PEAK STAGE		9.72	14.32	
ANNUAL RUNOFF (AC-FT)	5820	61680	45280	
10 PERCENT EXCEEDS	13	252	31	
50 PERCENT EXCEEDS	7.5	9.8	5.5	
90 PERCENT EXCEEDS	4.2	4.5	3.0	

e Estimated

* Regulated period only (1953-93). See REMARKS.

a Median of annual mean discharges, 27 ft³/s.

b No flow at times in 1959-62, 1977.

BELLE FOURCHE RIVER BASIN

06436156 WHITETAIL CREEK AT LEAD, SD

LOCATION.--Lat 44°20'36", long 103°45'57", in NE1/4NE1/4NW1/4 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 sea level, 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 Miscellaneous Temperature Measurements and Field Determination section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	.78	.97	e.95	.65	e.75	2.4	8.4	4.7	6.0	3.5	1.8
2	.74	.80	.92	e.90	.65	e.80	2.4	8.5	7.6	5.6	3.3	1.8
3	.77	e.75	.92	e.75	.65	e.75	2.4	8.2	4.5	5.2	3.1	1.7
4	.76	e.75	.92	e.75	.65	e.80	2.5	8.2	4.4	4.8	3.0	1.7
5	.74	.97	.92	e.75	.64	e.85	2.9	13	4.3	4.6	2.9	2.5
6	.80	.88	.96	e.70	.65	e.90	3.2	22	3.1	5.8	3.0	2.0
7	.83	.88	.88	e.75	.68	e.90	2.9	22	8.4	5.6	3.1	1.8
8	.83	.92	.88	e.80	.69	e.90	3.3	25	24	4.7	2.8	1.7
9	.87	.89	.88	e.90	.66	e.90	4.3	25	22	4.5	2.6	1.7
10	.83	.88	.87	e.90	.62	e.80	5.9	24	18	4.3	2.4	1.6
11	.83	e.85	.86	e.80	.61	e.75	5.7	22	14	4.1	2.4	1.6
12	.83	.92	.79	e.60	.60	e.70	5.3	20	12	4.6	2.6	1.7
13	.83	e.85	e.75	e.65	.62	e.80	4.7	18	8.3	4.3	2.9	1.7
14	.83	.89	e.80	e.75	.62	e.90	4.7	16	8.7	4.1	2.6	1.6
15	.83	.92	.88	e.80	.60	e1.0	4.5	15	9.8	4.0	2.4	1.7
16	.81	.97	.83	e.75	.40	e.80	4.5	13	10	4.0	2.3	1.6
17	.83	.97	.90	e.70	e.35	e.95	4.6	12	11	3.9	2.2	1.6
18	.83	.97	.83	e.70	e.50	e1.1	5.0	10	12	3.7	2.1	1.6
19	.87	.97	e.80	.74	e.65	1.2	5.1	9.1	15	3.6	3.1	2.2
20	.83	.94	e.80	.74	e.70	1.2	4.8	8.1	14	5.2	3.7	1.8
21	.78	.94	e.85	.76	e.60	1.3	4.7	7.7	14	7.3	2.7	1.6
22	.78	e.85	.85	.74	e.65	1.3	4.7	8.4	13	4.7	2.4	1.6
23	.78	e.85	.83	.77	e.65	1.6	5.7	7.3	12	4.5	2.2	1.6
24	.78	e.80	.83	e.78	e.70	2.1	7.0	6.3	10	4.2	2.0	1.5
25	.78	e.70	.77	e.70	e.70	2.5	7.5	5.7	8.9	4.0	2.0	1.5
26	.78	e.75	.78	.76	e.70	3.0	7.7	5.4	8.0	4.0	2.0	1.5
27	.78	e.80	.78	.78	e.70	3.6	8.1	5.1	7.4	3.9	2.0	1.4
28	.78	e.90	e.75	.74	e.70	3.7	8.2	4.9	7.1	3.6	2.0	1.4
29	.78	e.90	e.70	.81	---	3.2	7.7	4.9	6.4	3.3	2.0	1.5
30	.78	e.85	e.80	e.60	---	2.8	8.4	4.6	6.2	3.6	1.9	1.5
31	.78	---	e.90	.65	---	2.6	---	4.5	---	4.5	1.8	---
TOTAL	24.81	26.09	26.20	23.47	17.59	45.45	150.8	372.3	308.8	140.2	79.0	50.5
MEAN	.80	.87	.85	.76	.63	1.47	5.03	12.0	10.3	4.52	2.55	1.68
MAX	.87	.97	.97	.95	.70	3.7	8.4	25	24	7.3	3.7	2.5
MIN	.74	.70	.70	.60	.35	.70	2.4	4.5	3.1	3.3	1.8	1.4
AC-FT	49	52	52	47	35	90	299	738	613	278	157	100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1989	1989	1992	1990	1990	1993	1993	1993	1993	1993
MEAN	.93	.95	.82	.79	.82	1.54	4.03	9.92	5.38	2.50	1.43	1.05
MAX	1.21	1.12	1.04	.97	1.00	1.89	5.41	12.0	10.3	4.52	2.55	1.68
(WY)	1989	1990	1989	1989	1992	1990	1990	1993	1993	1993	1993	1993
MIN	.74	.74	.43	.50	.63	1.15	2.87	4.81	2.68	1.53	.97	.74
(WY)	1991	1991	1991	1991	1993	1991	1991	1992	1992	1990	1990	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	618.52	1265.21	
ANNUAL MEAN	1.69	3.47	
HIGHEST ANNUAL MEAN			2.52
LOWEST ANNUAL MEAN			3.47
HIGHEST DAILY MEAN	11	25	1.71
LOWEST DAILY MEAN	.45	.35	1.71
ANNUAL SEVEN-DAY MINIMUM	.51	.53	1.71
INSTANTANEOUS PEAK FLOW		39	1.71
INSTANTANEOUS PEAK STAGE		3.56	1.71
ANNUAL RUNOFF (AC-FT)	1230	2510	1.71
10 PERCENT EXCEEDS	3.1	8.4	1.71
50 PERCENT EXCEEDS	1.0	1.6	1.71
90 PERCENT EXCEEDS	.78	.70	1.71

e Estimated

a Gage height, 3.56 ft.

BELLE FOURCHE RIVER BASIN

06436170 WHITEWOOD CREEK AT DEADWOOD, SD

LOCATION.--Lat 44°22'48", long 103°43'25", in NW1/4NE1/4SW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e7.5	e10	8.9	9.5	10	9.4	19	42	32	34	22	13
2	e8.0	e10	e9.5	9.2	11	9.6	19	42	33	34	21	14
3	e8.0	e9.0	e9.0	9.1	11	9.4	20	41	31	32	21	13
4	e9.0	e9.0	e9.0	8.9	11	9.2	21	41	31	31	20	14
5	e9.0	e10	8.6	8.8	11	9.0	23	87	31	31	19	19
6	e8.0	e10	8.8	9.0	11	9.8	27	149	29	46	20	15
7	e15	e10	9.4	9.4	e11	11	26	135	88	35	21	14
8	e12	10	8.9	9.0	e11	11	27	260	584	29	19	13
9	e10	11	9.1	9.1	11	11	31	250	413	28	18	13
10	e10	11	9.4	8.8	11	9.8	46	185	243	27	18	13
11	e9.0	9.0	9.6	8.9	10	9.4	41	144	167	26	17	13
12	e8.0	9.6	9.8	9.3	10	8.5	37	115	124	31	18	13
13	e8.0	9.8	9.5	9.2	10	9.0	35	93	94	25	19	14
14	e8.0	9.9	8.6	9.3	9.5	9.4	33	76	74	26	18	12
15	e9.0	9.9	9.4	10	9.1	10	31	66	80	25	17	13
16	e9.5	10	9.4	9.2	9.0	9.3	31	57	86	24	16	13
17	e9.5	10	9.3	9.1	8.8	9.0	31	52	93	24	15	13
18	e9.0	10	8.5	9.2	9.5	9.8	33	45	102	22	15	14
19	e8.5	10	9.1	9.1	9.7	10	33	41	123	21	27	18
20	e8.5	10	8.0	9.3	9.6	11	33	40	114	82	25	15
21	e8.5	9.8	9.4	10	9.0	11	33	40	97	64	17	14
22	e8.5	9.9	9.2	11	9.5	11	33	48	82	28	16	13
23	e8.5	9.7	9.7	10	9.0	13	38	39	68	28	15	13
24	e8.5	10	9.3	11	9.0	16	41	36	60	27	14	14
25	e8.5	9.9	9.3	11	9.2	20	43	35	53	25	14	14
26	e8.5	9.9	9.3	10	9.0	25	42	34	47	25	14	14
27	e8.5	9.4	8.9	10	8.6	31	46	33	43	24	16	15
28	e8.0	9.9	9.1	9.7	9.0	34	45	34	41	22	15	13
29	e8.0	9.5	8.4	10	---	26	42	38	37	20	14	13
30	e8.0	9.8	8.6	10	---	23	49	33	35	23	14	13
31	e9.0	---	9.0	10	---	20	---	32	---	26	13	---
TOTAL	276.0	296.0	282.0	296.1	276.5	424.6	1009	2363	3135	945	548	415
MEAN	8.90	9.87	9.10	9.55	9.87	13.7	33.6	76.2	104	30.5	17.7	13.8
MAX	15	11	9.8	11	11	34	49	260	584	82	27	19
MIN	7.5	9.0	8.0	8.8	8.6	8.5	19	32	29	20	13	12
AC-FT	547	587	559	587	548	842	2000	4690	6220	1870	1090	823

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983
MEAN	14.9	13.6	10.9	10.9	11.8	17.8	39.5	91.2	41.0	18.8	14.8	13.1
MAX	44.0	34.7	20.2	17.1	16.0	38.6	101	311	104	30.5	24.3	18.2
(WY)	1983	1983	1983	1983	1983	1983	1983	1982	1993	1993	1983	1983
MIN	8.57	8.22	6.51	4.80	8.54	12.2	20.2	14.7	13.9	10.4	10.3	9.64
(WY)	1982	1982	1982	1982	1982	1985	1992	1985	1985	1985	1992	1992

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	4726.0	10266.2	
ANNUAL MEAN	12.9	28.1	
HIGHEST ANNUAL MEAN			24.9a
LOWEST ANNUAL MEAN			43.8
HIGHEST DAILY MEAN	53	Apr 28	12.5
LOWEST DAILY MEAN	7.5	Oct 1	1960
ANNUAL SEVEN-DAY MINIMUM	8.3	Oct 24	3.5
INSTANTANEOUS PEAK FLOW			4.4
INSTANTANEOUS PEAK STAGE			2660
ANNUAL RUNOFF (AC-FT)	9370	6.09	7.54
10 PERCENT EXCEEDS	19	47	18040
50 PERCENT EXCEEDS	10	13	40
90 PERCENT EXCEEDS	8.9	9.0	14
			9.5

e Estimated

a Median of annual mean discharges, 20 ft³/s.

b Present datum.

OBELLE FOURCHE RIVER BASIN

06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD

LOCATION.--Lat 44°26'32", long 103°37'44", in SE1/4SE1/4NE1/4 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 sea level, 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1962, discharge, 8,460 ft³/s, by contracted-opening measurement, 1.8 mi downstream from gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12	e8.5	e5.0	12	e7.5	23	61	37	38	24	16
2	11	12	e8.5	e5.0	11	e9.0	23	63	41	38	22	16
3	12	11	e8.5	e6.0	12	e10	23	61	33	34	22	16
4	12	11	e8.0	e6.5	12	e10	24	60	34	34	21	16
5	11	18	e7.5	e7.0	12	e11	26	79	34	34	21	21
6	11	13	e7.5	e7.0	12	e13	34	149	31	37	21	19
7	12	12	e7.5	e7.0	12	14	35	130	72	43	22	17
8	13	13	e9.0	e7.0	12	14	33	202	291	32	21	16
9	12	12	e15	e6.5	12	14	42	189	213	30	20	15
10	12	11	e15	e6.5	11	13	59	149	143	29	19	14
11	11	11	e15	e6.0	e10	13	58	123	112	30	19	14
12	11	12	e13	e6.0	e8.0	12	54	105	93	33	20	14
13	11	12	e10	e6.0	e8.0	e13	50	93	79	30	22	15
14	11	12	e8.0	e5.5	e8.5	e15	45	82	69	29	21	15
15	11	12	e7.0	e5.5	e8.0	14	40	76	73	29	19	14
16	12	12	e8.0	e6.5	e7.5	13	40	69	77	29	19	14
17	12	12	e8.0	e6.5	e6.5	14	39	65	93	28	18	14
18	12	12	e7.5	e6.0	e5.5	13	41	59	93	27	17	15
19	11	12	e7.0	e7.0	e5.5	14	44	56	105	25	19	19
20	11	12	e7.0	e7.5	e6.0	14	42	53	94	25	33	17
21	11	12	e8.0	e8.5	e7.0	15	41	50	82	73	21	15
22	11	11	e9.0	e10	e6.5	14	42	59	74	29	19	15
23	11	13	e8.5	e10	e5.5	16	49	51	66	30	18	14
24	11	e10	e7.5	e9.5	e5.0	19	56	48	59	29	17	15
25	11	e9.5	e7.5	e9.0	e6.5	23	60	44	54	27	17	15
26	11	e8.5	e8.0	e10	e5.5	30	59	43	50	26	17	14
27	11	e8.5	e8.0	e11	e5.5	35	61	40	47	26	18	15
28	11	e8.5	e7.5	12	e7.0	40	61	39	46	24	17	15
29	10	e8.5	e6.0	12	---	34	60	42	43	23	17	14
30	11	e8.5	e5.5	e11	---	30	68	40	40	23	17	14
31	11	---	e5.0	12	---	26	---	38	---	29	16	---
TOTAL	350	342.0	266.0	241.0	240.0	532.5	1332	2418	2378	973	614	463
MEAN	11.3	11.4	8.58	7.77	8.57	17.2	44.4	78.0	79.3	31.4	19.8	15.4
MAX	13	18	15	12	12	40	68	202	291	73	33	21
MIN	10	8.5	5.0	5.0	5.0	7.5	23	38	31	23	16	14
AC-FT	694	678	528	478	476	1060	2640	4800	4720	1930	1220	918

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

MEAN	14.6	16.6	12.4	12.0	13.8	21.8	43.9	67.2	40.3	19.4	15.1	14.0
MAX	19.5	41.6	20.3	14.5	18.0	47.4	108	150	101	31.4	24.9	19.5
(WY)	1984	1983	1983	1992	1983	1983	1983	1983	1984	1993	1983	1983
MIN	11.3	9.85	7.63	7.77	8.57	15.5	22.2	15.0	13.4	10.6	9.45	10.9
(WY)	1993	1986	1991	1993	1993	1992	1985	1985	1985	1985	1985	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	5692.0	10149.5	
ANNUAL MEAN	15.6	27.8	22.4
HIGHEST ANNUAL MEAN			35.7
LOWEST ANNUAL MEAN			13.8
HIGHEST DAILY MEAN	54	Apr 29	291
LOWEST DAILY MEAN	5.0	Dec 31	5.0
ANNUAL SEVEN-DAY MINIMUM	6.8	Dec 25	5.6
INSTANTANEOUS PEAK FLOW			722
INSTANTANEOUS PEAK STAGE			4.64
ANNUAL RUNOFF (AC-FT)	11290	20130	16230
10 PERCENT EXCEEDS	22	61	46
50 PERCENT EXCEEDS	14	15	16
90 PERCENT EXCEEDS	10	7.0	10

e Estimated

a For many days.

b Gage height, 4.41 ft, July 21.

c Backwater from ice.

BELLE FOURCHE RIVER BASIN
06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Concentrations of major cations for the Jan. 6 sample deviated from typical relations for this site; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
13...	1115	11	1350	8.7	16.0	9.0	657	12.3	124	540	120
NOV											
16...	1030	12	1420	8.8	13.5	4.5	667	14.7	131	560	120
DEC											
09...	0920	25	1460	8.3	5.0	0.0	656	13.7	110	560	120
JAN											
06...	1145	6.8	1550	8.3	-2.0	0.0	665	15.3	121	320	66
FEB											
18...	1045	5.5	1410	8.5	1.0	0.5	665	13.0	104	580	120
MAR											
17...	0945	11	1370	8.6	-5.0	0.5	671	13.5	107	530	110
APR											
14...	0930	44	658	8.8	5.5	5.0	665	11.8	106	260	58
MAY											
06...	1315	135	411	8.1	18.0	10.5	671	--	--	170	43
10...	1030	157	398	8.6	15.5	7.5	677	13.6	128	160	38
JUN											
15...	0930	64	610	8.7	20.0	12.0	665	9.8	105	260	59
JUL											
14...	0915	29	935	8.7	17.5	13.0	669	11.4	124	370	79
AUG											
a18...	1030	17	1130	8.7	18.5	16.0	671	9.8	113	490	110
SEP											
09...	0745	15	1200	8.5	14.5	12.0	670	9.5	101	490	110

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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	
OCT 13...	57	84	25	2	13	168	480	26	0.90	3.9	886
NOV 16...	63	90	25	2	13	156	490	33	0.60	6.0	954
DEC 09...	62	89	25	2	15	158	540	32	1.4	8.2	1010
JAN 06...	37	55	26	1	16	121	--	--	1.0	6.9	--
FEB 18...	67	88	24	2	15	212	470	32	1.0	14	978
MAR 17...	63	86	25	2	13	191	410	58	1.4	9.4	892
APR 14...	29	28	18	0.7	5.2	127	170	21	0.50	9.7	405
MAY 06...	16	13	14	0.4	3.6	100	86	12	0.40	12	251
10...	16	12	14	0.4	3.2	91	84	13	0.40	12	238
JUN 15...	28	21	15	0.6	4.3	132	150	17	0.40	12	379
JUL 14...	43	40	18	0.9	7.6	158	300	17	0.90	7.7	608
AUG a18...	52	58	20	1	9.2	161	390	23	1.1	11	782
SEP 09...	52	64	22	1	9.4	160	430	27	1.0	8.3	833

a A field equipment blank was also collected on this date for quality-control purposes.

BELLE FOURCHE RIVER BASIN

06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 13...	924	1.26	26.4	--	0.030	0.04	--	0.220	<10	7	28
NOV 16...	1020	1.39	31.9	--	<0.010	--	10.0	0.188	10	6	32
DEC 09...	1040	1.41	70.5	--	0.030	0.04	11.0	0.195	<10	6	27
JAN 06...	1140	--	--	--	0.110	0.14	10.0	0.250	10	7	23
FEB 18...	1020	1.39	15.1	--	0.090	0.12	9.40	0.261	<10	6	47
MAR 17...	946	1.29	27.6	--	0.060	0.08	5.80	0.023	10	9	25
APR 14...	430	0.58	50.5	--	0.020	0.03	1.60	0.029	20	4	20
MAY 06...	252	0.34	92.1	644	0.050	0.06	0.975	0.040	20	7	17
10...	248	0.34	105	--	0.030	0.04	1.10	0.044	20	5	52
JUN 15...	392	0.53	68.2	--	0.030	0.04	1.70	0.038	10	6	26
JUL 14...	632	0.86	49.3	--	0.030	0.04	3.90	0.070	60	5	150
AUG a18...	798	1.09	37.7	--	0.020	0.03	6.90	0.077	20	5	34
SEP 09...	816	1.11	34.1	--	0.020	0.03	7.90	0.073	<10	4	22

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 CR) (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)
OCT 13...	28	64	<0.5	130	<1	<1.0	<1	<5	20	<10	10
NOV 16...	25	62	<0.5	120	<1	<1.0	2	<5	10	<10	<10
DEC 09...	27	57	<0.5	140	<1	<1.0	6	<5	10	<10	<10
JAN 06...	24	32	<0.5	140	<1	<1.0	10	<5	6	<10	<10
FEB 18...	45	64	<0.5	130	<1	<1.0	12	<5	8	20	10
MAR 17...	20	59	<0.5	130	<1	<1.0	9	<5	6	10	<10
APR 14...	11	53	<0.5	50	<1	<1.0	<1	<5	<3	20	<10
MAY 06...	16	48	<0.5	30	<1	<1.0	5	<5	<3	30	<10
10...	11	49	<0.5	30	<1	<1.0	<1	<5	<3	10	<10
JUN 15...	16	66	<0.5	50	<1	<1.0	<1	<5	<3	<10	<10
JUL 14...	18	64	<0.5	20	<1	<1.0	3	<5	6	10	<10
AUG a18...	27	75	<0.5	130	<1	<1.0	<1	<5	9	<10	<10
SEP 09...	25	72	<0.5	120	<1	<1.0	<1	<5	9	<10	<10

a A field equipment blank was also collected on this date for quality-control purposes.

BELLE FOURCHE RIVER BASIN

06436180 WHITEWOOD CREEK ABOVE WHITEWOOD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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											
13...	80	16	<1	10	31	10	3	<0.10	<0.1	30	<10
NOV											
16...	290	13	<1	<10	34	50	19	<0.10	<0.1	20	<10
DEC											
09...	260	25	14	<10	35	130	72	<0.10	<0.1	40	<10
JAN											
06...	590	160	<1	<10	19	150	76	<0.10	<0.1	20	10
FEB											
18...	650	570	<1	<10	33	190	190	<0.10	<0.1	20	<10
MAR											
17...	350	39	<1	10	30	150	110	<0.10	0.1	30	<10
APR											
14...	910	26	<1	<10	16	110	71	0.10	<0.1	20	<10
MAY											
06...	10000	25	21	<10	9	620	67	<0.10	<0.1	<10	<10
10...	3800	19	7	<10	7	250	60	<0.10	<0.1	<10	<10
JUN											
15...	750	14	1	<10	12	80	50	<0.10	<0.1	<10	<10
JUL											
14...	7900	4	4	<10	17	180	44	0.20	<0.1	20	<10
AUG											
a18...	380	28	<1	<10	22	30	11	<0.10	<0.1	30	<10
SEP											
09...	370	11	<1	<10	24	30	12	<0.10	<0.1	<10	<10

DATE	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)	CYANIDE SOLVED (MG/L AS CN) (00723)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT											
13...	4	5	<1	<1.0	520	<6	<10	10	0.04	4	0.11
NOV											
16...	5	4	<1	<1.0	570	<6	<10	6	0.04	2	0.06
DEC											
09...	7	6	<1	<1.0	560	<6	20	5	0.09	3	0.23
JAN											
06...	5	5	<1	<1.0	330	<6	10	<3	0.14	6	0.11
FEB											
18...	4	3	<1	<1.0	640	<6	20	8	0.14	9	0.13
MAR											
17...	3	3	<1	<1.0	490	<6	10	7	0.08	7	0.21
APR											
14...	2	2	<1	<1.0	300	<6	20	<3	0.07	15	1.8
MAY											
06...	2	<1	1	<1.0	190	<6	80	<3	0.03	--	--
10...	1	1	<1	<1.0	180	<6	30	10	0.03	102	43
JUN											
15...	1	1	<1	<1.0	270	<6	<10	6	0.02	13	2.3
JUL											
14...	2	2	<1	2.0	380	<6	20	<3	0.02	151	12
AUG											
a18...	2	2	<1	<1.0	450	<6	<10	7	0.03	5	0.25
SEP											
09...	2	1	<1	<1.0	490	<6	<10	7	0.04	5	0.21

a A field equipment blank was also collected on this date for quality-control purposes.

BELLE FOURCHE RIVER BASIN

06436190 WHITEWOOD CREEK NEAR WHITEWOOD, SD

LOCATION.--Lat 44°32'30", long 103°34'16", in SE1/4NW1/4SE1/4NE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	11	11	6.9	15	16	24	48	28	44	21	18
2	5.3	11	9.1	7.2	14	17	23	49	32	45	18	18
3	6.8	12	10	8.4	14	16	23	45	25	38	17	18
4	7.3	9.9	7.6	8.7	14	15	23	44	25	35	16	18
5	7.1	10	6.1	e7.6	14	18	24	122	24	35	16	26
6	6.2	13	6.8	e6.2	14	25	30	209	21	35	14	23
7	9.3	11	7.9	9.7	14	27	34	131	56	66	14	19
8	8.9	12	9.3	9.2	14	24	31	306	281	34	13	20
9	8.7	12	10	e8.4	15	20	37	286	341	30	14	19
10	9.7	11	11	e8.0	14	16	57	210	269	28	13	22
11	9.1	9.9	11	e9.0	11	16	57	161	152	29	16	22
12	8.5	11	11	e9.6	e9.0	13	52	125	115	34	21	22
13	9.1	11	9.3	10	e9.6	13	53	104	93	32	29	23
14	8.9	11	7.9	10	e10	16	48	87	80	27	30	24
15	9.4	11	10	11	e9.6	18	43	78	77	27	24	24
16	11	11	11	12	e8.2	16	41	70	101	26	26	25
17	11	11	8.4	11	e7.2	13	39	64	137	23	27	23
18	11	11	7.7	12	e8.2	16	40	57	143	25	26	26
19	10	11	7.6	13	e9.0	17	42	52	200	21	28	32
20	9.6	10	8.1	14	e10	17	39	49	157	20	43	28
21	9.7	11	11	14	e9.0	17	36	44	125	143	21	21
22	10	11	11	13	e8.0	16	36	54	111	40	20	15
23	9.9	12	9.3	13	e8.0	18	41	44	94	39	20	13
24	9.8	9.4	11	13	e8.0	22	48	41	87	39	21	15
25	9.5	9.4	11	15	e10	25	50	36	80	34	20	15
26	9.8	7.2	10	15	e12	30	49	34	68	41	19	13
27	10	9.7	11	15	14	34	51	30	62	35	19	14
28	10	9.5	8.5	14	16	39	51	30	57	29	20	15
29	9.6	10	6.5	11	---	36	47	29	54	24	20	14
30	9.3	8.9	7.3	14	---	30	58	34	49	23	21	14
31	10	---	8.2	15	---	28	---	29	---	29	21	---
TOTAL	279.9	318.9	285.6	343.9	318.8	644	1227	2702	3144	1130	648	599
MEAN	9.03	10.6	9.21	11.1	11.4	20.8	40.9	87.2	105	36.5	20.9	20.0
MAX	11	13	11	15	16	39	58	306	341	143	43	32
MIN	5.3	7.2	6.1	6.2	7.2	13	23	29	21	20	13	13
AC-FT	555	633	566	682	632	1280	2430	5360	6240	2240	1290	1190

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	18.1	17.6	13.0	13.3	15.3	22.0	46.6	86.2	42.2	19.3	12.4	13.0
MAX	57.8	44.6	26.7	23.9	20.2	35.1	120	258	105	36.5	27.0	24.5
(WY)	1983	1983	1983	1983	1983	1983	1983	1982	1993	1993	1983	1986
MIN	9.03	10.6	6.57	5.95	11.4	16.2	21.9	18.7	11.1	4.24	4.74	6.70
(WY)	1993	1993	1991	1991	1993	1991	1985	1985	1985	1985	1985	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	5238.3	11641.1	
ANNUAL MEAN	14.3	31.9	
HIGHEST ANNUAL MEAN			26.6a
LOWEST ANNUAL MEAN			48.1
HIGHEST DAILY MEAN	62	Apr 29	1840
LOWEST DAILY MEAN	4.1	Aug 20	2.9
ANNUAL SEVEN-DAY MINIMUM	4.6	Aug 10	3.3
INSTANTANEOUS PEAK FLOW			3050
INSTANTANEOUS PEAK STAGE			4.52
ANNUAL RUNOFF (AC-FT)	10390	23090	19270
10 PERCENT EXCEEDS	23	57	49
50 PERCENT EXCEEDS	12	17	17
90 PERCENT EXCEEDS	6.2	8.8	8.2

e Estimated

a Median of annual mean discharges, 23 ft³/s.

BELLE FOURCHE RIVER BASIN

06436198 WHITEWOOD CREEK ABOVE VALE, SD

LOCATION.--Lat 44°37'04", long 103°28'52", in SE1/4NW1/4NE1/4NW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	12	12	e4.6	e14	e25	31	57	e28	45	32	13
2	4.3	11	11	e5.0	e15	e26	29	56	e36	44	26	13
3	4.8	12	13	e6.4	e15	e25	30	52	e23	40	24	13
4	6.5	11	13	e6.0	e15	e24	27	49	e23	37	24	12
5	6.9	9.0	e5.6	e6.0	e15	e20	29	110	e22	37	23	14
6	6.2	12	e6.4	e6.0	e15	e70	32	409	e20	53	23	22
7	7.7	12	e8.0	e6.0	e16	e100	44	137	e66	72	24	17
8	9.5	13	e9.0	e6.6	e16	e56	40	407	e350	45	23	15
9	8.4	13	e9.3	e7.6	e14	e40	39	228	e490	38	21	13
10	10	13	e10	e7.6	e10	e30	56	e178	e250	35	20	13
11	9.9	11	e12	e7.6	e9.0	23	64	e150	e146	35	19	13
12	9.1	11	e12	e7.6	e8.4	18	58	e123	e106	37	18	12
13	9.5	11	e10	e7.0	e10	17	60	e100	e90	43	22	12
14	9.4	13	e7.6	e6.6	e14	19	56	e86	e78	36	24	14
15	9.7	12	e8.6	e7.6	e14	24	48	e75	e74	35	19	13
16	11	12	e9.6	e9.0	e11	23	43	e70	e91	33	18	13
17	12	11	e9.0	e9.0	e10	18	44	e64	120	32	16	13
18	12	10	e8.0	e10	e12	21	45	e56	115	35	15	14
19	12	10	e7.0	e12	e13	20	50	e52	168	29	15	18
20	11	10	e6.6	e13	e14	21	51	e48	122	27	32	18
21	11	9.7	e6.6	e13	e14	24	45	e40	105	78	20	15
22	11	10	e8.4	e13	e12	22	44	e62	95	42	16	14
23	11	11	e9.4	e13	e11	24	44	e42	84	36	15	13
24	10	9.3	e7.6	e13	e11	26	53	e36	74	37	14	13
25	10	10	e10	e13	e11	28	54	e35	68	35	13	13
26	10	10	e10	e13	e14	32	56	e33	59	55	13	13
27	10	9.3	e10	e10	e18	36	57	e30	55	44	14	13
28	10	12	e7.0	e10	e24	40	54	e28	52	31	14	14
29	10	11	e5.0	e8.6	---	39	52	e27	50	27	13	12
30	9.7	13	e4.6	e10	---	35	60	e38	47	26	14	12
31	9.9	---	e4.6	e13	---	33	---	e28	---	54	14	---
TOTAL	286.9	334.3	270.9	280.8	375.4	969	1395	2906	3107	1253	598	417
MEAN	9.25	11.1	8.74	9.06	13.4	31.3	46.5	93.7	104	40.4	19.3	13.9
MAX	12	13	13	13	24	100	64	409	490	78	32	22
MIN	4.3	9.0	4.6	4.6	8.4	17	27	27	20	26	13	12
AC-FT	569	663	537	557	745	1920	2770	5760	6160	2490	1190	827

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1993, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	14.4	14.6	11.8	12.1	15.8	24.2	42.6	67.5	49.0	17.2
MAX	28.3	22.2	17.2	17.1	24.0	31.3	84.3	150	156	40.4
(WY)	1984	1987	1987	1987	1986	1993	1986	1984	1984	1993
MIN	9.25	9.86	8.01	8.15	10.0	15.4	21.0	15.9	8.64	2.12
(WY)	1993	1986	1991	1991	1992	1992	1985	1985	1985	1985

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1984 - 1993

ANNUAL TOTAL	4516.9	12193.3	
ANNUAL MEAN	12.3	33.4	24.2
HIGHEST ANNUAL MEAN			45.3
LOWEST ANNUAL MEAN			11.8
HIGHEST DAILY MEAN	52	Apr 29	604
LOWEST DAILY MEAN	2.2	Aug 20	.00
ANNUAL SEVEN-DAY MINIMUM	3.3	Sep 10	.79
INSTANTANEOUS PEAK FLOW			3680
INSTANTANEOUS PEAK STAGE			5.06
ANNUAL RUNOFF (AC-FT)	8960	24190	17530
10 PERCENT EXCEEDS	20	64	47
50 PERCENT EXCEEDS	11	15	15
90 PERCENT EXCEEDS	4.4	8.4	6.3

e Estimated

a Also July 22 and Aug. 19, 1985.

b From slope-area measurement of peak flow.

c From rating curve extended above 1,300 ft³/s on basis of slope-area estimate of peak flow; gage height, 4.32 ft.

BELLE FOURCHE RIVER BASIN

06436198 WHITEWOOD CREEK ABOVE VALE, SD--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Concentrations of major cations for the Jan. 7 sample deviated from typical relations for this site; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
14...	0845	9.1	1360	8.2	2.0	6.5	690	10.4	94	570	130
NOV											
17...	1115	11	1430	8.2	1.0	4.0	689	12.6	107	590	130
DEC											
09...	1230	11	1520	8.1	4.0	0.5	679	13.4	105	640	150
JAN											
07...	1100	5.9	1590	7.9	-7.0	0.0	690	12.1	92	510	120
FEB											
19...	1000	13	1550	8.5	-4.5	0.0	687	12.6	96	690	160
MAR											
18...	0930	20	1450	8.5	1.0	0.5	684	13.4	104	650	150
APR											
15...	0900	45	905	8.5	5.0	4.5	688	11.6	100	380	86
MAY											
06...	1550	--	654	8.1	18.0	14.0	688	--	--	290	76
10...	1530	178	603	8.3	21.0	15.0	696	9.1	99	250	62
JUN											
16...	0915	97	725	8.1	18.5	15.5	685	8.6	96	310	73
JUL											
15...	0930	37	1190	8.4	24.0	15.5	687	11.3	126	500	110
AUG											
a19...	1000	15	1330	8.3	21.0	18.0	693	11.8	138	630	140
SEP											
09...	1030	13	1380	8.2	18.0	14.5	693	9.7	105	630	140

DATE	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)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT											
14...	60	67	20	1	11	161	510	28	0.70	3.5	920
NOV											
17...	64	76	22	1	12	159	530	30	0.50	1.7	964
DEC											
09...	65	71	19	1	12	185	570	29	0.90	6.1	1040
JAN											
07...	50	57	19	1	13	149	--	--	0.80	7.2	--
FEB											
19...	71	74	19	1	12	209	540	34	0.70	11	1050
MAR											
18...	66	69	19	1	11	198	490	37	0.90	8.9	989
APR											
15...	39	37	17	0.8	6.8	154	270	24	0.70	8.0	571
MAY											
06...	24	20	13	0.5	6.3	105	200	11	0.40	9.1	414
10...	24	20	14	0.5	4.6	106	170	14	0.50	11	375
JUN											
16...	30	25	15	0.6	4.9	131	210	22	0.40	8.0	458
JUL											
15...	54	45	16	0.9	8.8	179	430	17	0.80	8.0	794
AUG											
a19...	67	58	17	1	10	152	540	26	0.80	6.7	951
SEP											
09...	69	61	17	1	11	160	550	28	0.80	6.0	976

a A field equipment blank was also collected on this date for quality-control purposes.

BELLE FOURCHE RIVER BASIN

06436198 WHITEWOOD CREEK ABOVE VALE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER (AC-FT) (70303)	SOLIDS, DIS- SOLVED PER (TONS DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT											
14...	950	1.29	23.3	--	0.050	0.06	2.80	0.001	20	7	63
NOV											
17...	1030	1.40	30.6	--	<0.010	--	5.20	0.004	<10	6	50
DEC											
09...	1090	1.48	32.1	--	0.030	0.04	5.60	0.005	<10	7	51
JAN											
07...	1200	--	--	--	0.090	0.12	5.40	0.005	<10	4	40
FEB											
19...	1150	1.56	40.4	--	0.090	0.12	5.50	0.016	<10	5	57
MAR											
18...	1040	1.41	55.0	--	0.030	0.04	8.10	0.150	<10	10	83
APR											
15...	596	0.81	72.4	--	0.020	0.03	1.50	0.014	40	8	340
MAY											
06...	434	0.59	--	1850	0.090	0.12	0.763	0.023	10	10	380
10...	392	0.53	188	--	0.030	0.04	0.960	0.027	<10	11	170
JUN											
16...	468	0.64	123	--	0.030	0.04	1.20	0.019	<10	9	210
JUL											
15...	846	1.15	84.1	--	0.030	0.04	2.70	0.029	40	7	81
AUG											
a19...	974	1.32	40.5	--	0.020	0.03	2.40	0.002	<10	6	52
SEP											
09...	968	1.32	35.3	--	0.020	0.03	2.90	<0.001	<10	5	79

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, 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)
OCT											
14...	33	31	<0.5	130	<1	<1.0	1	<5	5	<10	<10
NOV											
17...	26	34	<0.5	120	<1	<1.0	1	<5	7	<10	<10
DEC											
09...	27	31	<0.5	120	<1	<1.0	10	<5	5	<10	<10
JAN											
07...	25	23	<0.5	120	<1	<1.0	13	<5	5	<10	<10
FEB											
19...	32	32	<0.5	130	<1	<1.0	15	<5	6	10	<10
MAR											
18...	31	33	<0.5	110	<1	<1.0	2	<5	5	10	<10
APR											
15...	25	38	<0.5	70	<1	<1.0	3	<5	<3	40	<10
MAY											
06...	27	31	<0.5	60	<1	<1.0	12	<5	<6	60	<10
10...	32	32	<0.5	60	<1	<1.0	2	<5	<3	20	<10
JUN											
16...	23	52	<0.5	70	<1	<1.0	12	<5	<3	60	<10
JUL											
15...	33	50	<0.5	100	<1	<1.0	7	<5	4	20	<10
AUG											
a19...	33	41	<0.5	110	<1	<1.0	<1	<5	6	<10	<10
SEP											
09...	29	41	<0.5	130	<1	<1.0	<1	<5	<3	10	<10

a A field equipment blank was also collected on this date for quality-control purposes.

BELLE FOURCHE RIVER BASIN

06436198 WHITEWOOD CREEK ABOVE VALE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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 14...	610	4	<1	<10	28	110	82	<0.10	<0.1	10	<10
NOV 17...	360	5	<1	<10	30	90	70	<0.10	<0.1	<10	<10
DEC 09...	680	<3	<1	<10	26	150	100	<0.10	<0.1	20	<10
JAN 07...	660	50	<1	<10	19	230	150	<0.10	0.1	10	<10
FEB 19...	570	11	<1	10	26	250	220	<0.10	<0.1	10	<10
MAR 18...	2300	5	1	<10	25	320	210	0.10	0.1	10	<10
APR 15...	24000	15	11	10	21	930	140	0.10	<0.1	10	<10
MAY 06...	30000	14	36	<10	18	1400	130	<0.10	<0.1	<10	<10
10...	8800	7	7	<10	12	500	130	<0.10	<0.1	<10	<10
JUN 16...	20000	43	52	<10	15	970	91	0.30	<0.1	<10	10
JUL 15...	2500	<3	3	<10	21	280	150	0.10	<0.1	<10	<10
AUG a19...	360	3	<1	<10	26	70	59	<0.10	<0.1	<10	<10
SEP 09...	1600	3	1	<10	28	200	78	0.10	<0.1	<10	<10

DATE	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)	CYANIDE DIS- SOLVED (UG/L AS CN) (00723)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 14...	2	2	<1	<1.0	790	<6	<10	6	0.02	38	0.93
NOV 17...	2	2	<1	<1.0	820	<6	<10	5	0.02	8	0.24
DEC 09...	4	3	<1	<1.0	890	<6	20	<3	0.02	36	1.1
JAN 07...	2	2	<1	<1.0	700	<6	10	3	0.03	82	1.3
FEB 19...	3	3	<1	<1.0	970	<6	10	4	0.03	42	1.5
MAR 18...	3	2	<1	<1.0	850	<6	10	<3	0.02	101	5.3
APR 15...	1	2	<1	<1.0	500	<6	60	<3	0.01	74	8.9
MAY 06...	<1	1	1	<1.0	370	<6	140	<3	0.02	--	--
10...	1	1	<1	<1.0	330	<6	30	7	0.02	288	138
JUN 16...	<1	1	2	<1.0	390	<6	140	20	0.01	838	220
JUL 15...	2	2	<1	<1.0	670	<6	10	4	0.01	988	98
AUG a19...	1	1	<1	<1.0	790	<6	<10	6	0.01	13	0.56
SEP 09...	2	1	<1	<1.0	860	<6	<10	<3	<0.01	4	0.13

a A field equipment blank was also collected on this date for quality-control purposes.

BELLE FOURCHE RIVER BASIN

06436760 HORSE CREEK ABOVE VALE, SD

LOCATION.--Lat 44°39'08", long 103°21'59", in SE1/4NE1/4SE1/4 sec.14, 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.

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

GAGE.--Water-stage recorder. Elevation of gage is 2,710 ft above sea level, from topographic map. April 1962 to September 1980, water-stage recorder, at site 2.7 mi downstream, at different datum.

REMARKS.--No estimated daily discharges. Records good except those for winter period, Dec. 5 to Mar. 1, which are fair. Natural flow of stream affected by diversions for irrigation upstream from station and by return flow from Belle Fourche Irrigation Project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	2.2	1.6	.37	1.5	6.5	82	7.1	3.7	1990	121	53
2	1.2	2.0	1.7	.82	1.6	8.7	56	6.3	3.7	1820	.466	51
3	1.1	2.1	1.5	1.2	1.6	9.7	40	5.3	3.7	596	344	47
4	.94	1.8	1.3	.73	1.6	10	30	5.0	3.6	210	128	46
5	.90	1.6	.84	.79	1.8	12	24	4.9	3.2	109	71	49
6	.84	1.3	1.1	.64	2.2	15	19	193	3.1	73	57	58
7	1.0	2.4	1.1	1.4	2.6	37	21	988	14	118	45	52
8	1.6	.93	1.0	1.4	2.5	41	20	546	97	122	39	43
9	2.4	.94	1.1	1.3	2.5	64	17	1270	308	116	31	32
10	3.0	1.1	.99	1.2	2.2	242	14	613	910	322	28	29
11	3.3	.97	.99	1.1	2.7	207	12	271	870	421	30	34
12	3.4	1.1	.84	1.3	2.5	101	11	114	289	179	20	39
13	4.2	.94	.77	.77	3.1	71	13	65	108	133	23	34
14	4.0	.86	.57	.56	3.2	66	63	44	59	94	28	38
15	4.5	.90	.87	1.1	3.7	48	91	33	41	62	18	42
16	3.8	1.4	.90	1.1	1.3	29	86	23	36	47	21	45
17	2.8	2.4	1.0	.75	1.4	37	67	17	24	49	34	44
18	2.4	2.5	1.4	.85	2.3	46	48	13	17	150	27	50
19	2.4	3.8	.80	1.1	4.4	55	37	10	18	1590	21	55
20	2.5	5.8	1.0	1.2	4.6	49	39	8.0	12	1710	21	58
21	2.8	6.1	1.7	1.3	4.2	57	191	6.6	9.6	907	26	45
22	3.0	4.1	1.7	1.4	2.3	64	203	6.3	9.1	452	34	31
23	2.9	3.3	1.7	1.4	2.2	83	93	5.8	15	199	41	23
24	3.0	3.4	1.7	1.0	3.6	116	50	5.3	13	132	46	14
25	2.9	2.6	1.7	1.3	4.5	317	31	4.7	18	265	53	9.2
26	2.7	2.2	1.6	1.3	3.9	473	22	7.7	13	634	45	7.6
27	2.7	2.2	1.6	.87	3.7	454	16	7.4	9.9	645	43	6.5
28	2.6	2.1	1.5	.91	4.8	510	12	5.8	6.5	645	43	5.8
29	2.2	1.9	.58	1.0	---	363	9.3	5.0	5.1	319	42	5.5
30	2.4	1.8	.27	1.3	---	228	8.1	4.8	244	153	46	4.6
31	2.1	---	.19	1.5	---	132	---	3.9	---	117	44	---
TOTAL	76.88	66.74	35.61	32.96	78.5	3951.9	1425.4	4299.9	3167.2	14379	2036	1051.2
MEAN	2.48	2.22	1.15	1.06	2.80	127	47.5	139	106	464	65.7	35.0
MAX	4.5	6.1	1.7	1.5	4.8	510	203	1270	910	1990	.466	58
MIN	.84	.86	.19	.37	1.3	6.5	8.1	3.9	3.1	47	18	4.6
AC-FT	152	132	71	65	156	7840	2830	8530	6280	28520	4040	2090

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1993, BY WATER YEAR (WY)

	MEAN	21.0	4.28	3.13	5.00	8.15	51.4	43.1	145	66.5	94.2	54.4	57.1
MAX	169	12.4	8.50	31.7	34.2	251	229	901	252	464	82.6	311	
(WY)	1983	1987	1983	1983	1983	1986	1987	1982	1984	1993	1987	1986	
MIN	1.46	1.82	1.15	.96	1.24	1.30	.75	6.48	11.3	35.8	25.7	11.3	
(WY)	1992	1991	1993	1992	1992	1992	1992	1981	1991	1991	1992	1992	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1981 - 1993

ANNUAL TOTAL	3808.93	30601.29	46.4a
ANNUAL MEAN	10.4	83.8	113
HIGHEST ANNUAL MEAN			10.4
LOWEST ANNUAL MEAN			1982
HIGHEST DAILY MEAN	315	1990	14000
LOWEST DAILY MEAN	.19	.19	.07
ANNUAL SEVEN-DAY MINIMUM	.31	.59	.28
INSTANTANEOUS PEAK FLOW		2670	17700
INSTANTANEOUS PEAK STAGE		13.76	24.80
ANNUAL RUNOFF (AC-FT)	7560	60700	33620
10 PERCENT EXCEEDS	24	201	72
50 PERCENT EXCEEDS	1.9	8.1	7.6
90 PERCENT EXCEEDS	.72	1.0	1.5

a Median of annual mean discharges, 32 ft³/s.

BELLE FOURCHE RIVER BASIN

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD

LOCATION.--Lat 44°30'47", long 103°08'11", in SE1/4NW1/4 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 sea level. 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. Maximum discharge prior to Sept. 30, 1952, 17,900 ft³/s, May 24, 1946, gage height, 13.86 ft; no flow for many days in 1945 and 1950. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	42	e27	e26	e37	e37	301	149	75	4490	1030	273
2	30	43	e27	e26	e37	e39	223	152	75	3940	1120	272
3	28	45	e27	e27	e40	e40	173	145	77	2390	1010	266
4	27	46	e25	e27	e38	e40	145	140	78	1420	596	265
5	27	44	e26	e26	e37	e40	132	146	72	668	408	264
6	26	27	e25	e24	e37	e50	133	1250	74	461	340	294
7	27	28	e28	e24	e37	e60	166	2240	284	940	309	330
8	30	30	e28	e27	e38	e70	274	2520	2140	1440	274	346
9	37	28	e30	e27	e40	e100	219	6070	3260	954	273	318
10	43	28	e30	e27	e38	e90	172	1790	1940	906	258	284
11	47	28	e30	e27	e37	e120	153	1020	1800	1090	229	284
12	44	28	e30	e27	e35	e150	162	650	1090	846	214	294
13	37	31	e28	e30	e35	e180	367	463	590	1070	246	284
14	37	31	e28	e30	e37	e200	493	374	354	1020	270	273
15	37	27	e28	e30	e37	e290	338	318	278	654	283	274
16	39	24	e27	e33	e36	e500	252	277	265	490	299	274
17	39	24	e27	e33	e30	e450	216	237	266	456	283	271
18	41	25	e26	e33	e30	e500	183	197	267	949	246	274
19	45	26	e24	e33	e33	e700	168	168	276	4070	207	308
20	43	26	e26	e34	e38	e900	179	146	309	2950	193	351
21	43	26	e26	e34	e38	e1020	240	129	242	2070	211	340
22	42	e26	e30	e35	e35	e1000	350	114	212	1230	198	257
23	39	e26	e26	e35	e35	e1200	274	106	264	754	217	194
24	39	e25	e24	e34	e35	e1400	198	92	484	608	235	154
25	36	e26	e30	e34	e37	1100	173	90	248	541	245	142
26	33	e25	e33	e36	e34	2080	166	86	214	2370	237	128
27	35	e27	e33	e36	e34	2190	156	88	200	1860	252	117
28	36	e27	e33	e35	e37	1420	145	82	191	2100	255	112
29	36	e27	e30	e33	---	822	138	78	206	1320	260	149
30	38	e27	e33	e33	---	557	143	78	667	795	272	107
31	39	---	e26	e37	---	409	---	81	---	825	283	---
TOTAL	1131	893	865	953	1012	17754	6432	19476	16498	45677	10753	7499
MEAN	36.5	29.8	27.9	30.7	36.1	573	214	628	550	1473	347	250
MAX	47	46	33	37	40	2190	493	6070	3260	4490	1120	351
MIN	26	24	24	24	30	37	132	78	72	456	193	107
AC-FT	2240	1770	1720	1890	2010	35220	12760	38630	32720	90600	21330	14870

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993, BY WATER YEAR (WY)*

	MEAN	99.9	57.7	37.7	29.3	72.5	259	261	620	585	338	286	223
MAX	529	111	79.5	137	511	1715	1134	3478	2499	1473	625	723	
(WY)	1983	1972	1987	1983	1971	1978	1971	1982	1976	1993	1976	1986	
MIN	16.2	20.1	11.5	4.71	6.62	30.3	21.2	15.8	80.7	52.4	2.39	10.2	
(WY)	1962	1960	1962	1979	1979	1961	1981	1961	1961	1960	1961	1961	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1953 - 1993*

ANNUAL TOTAL	24294	128943	240a	1978
ANNUAL MEAN	66.4	353	566	1961
HIGHEST ANNUAL MEAN			27.4	1961
LOWEST ANNUAL MEAN			29700	May 21 1982
HIGHEST DAILY MEAN	1090	Jul 12	24	Nov 16b
LOWEST DAILY MEAN	15	May 16	25	Nov 16
ANNUAL SEVEN-DAY MINIMUM	24	Jan 13	9980	May 9
INSTANTANEOUS PEAK FLOW			12.18	May 9
INSTANTANEOUS PEAK STAGE			173900	May 21 1982
ANNUAL RUNOFF (AC-FT)	48190	255800	456	82
10 PERCENT EXCEEDS	131	1010	56	24
50 PERCENT EXCEEDS	40	129		
90 PERCENT EXCEEDS	26	27		

e Estimated

* Regulated period only (1953-93). See REMARKS.

a Median of annual mean discharges, 216 ft³/s.

b Also Nov. 17, Dec. 19, 24, and Jan. 6, 7.

BELLE FOURCHE RIVER BASIN

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.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 7,000 microsiemens, May 16, 1981; minimum daily, 310 microsiemens, Mar. 7, 1993.

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, 3,210 microsiemens, Dec. 9; minimum observed daily, 310 microsiemens, Mar. 7.

WATER TEMPERATURE: Maximum observed daily, 22.0°C, July 23-24, Aug. 10-11; minimum observed daily, 0.0°C, Nov. 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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											
07...	0845	27	2350	8.3	3.0	6.5	1200	260	130	140	20
NOV											
05...	0845	61	2420	8.2	-3.0	0.5	1100	260	120	150	22
DEC											
16...	1015	26	2810	8.0	-0.5	0.0	1400	310	140	180	22
JAN											
21...	1045	34	2610	7.8	4.5	0.0	1200	300	120	150	21
MAR											
26...	0900	1710	1110	8.2	13.0	6.0	290	64	31	110	45
APR											
06...	0900	131	2140	8.4	7.5	8.0	840	180	94	190	33
MAY											
24...	0900	94	2150	8.4	14.0	12.5	890	190	100	150	27
JUN											
22...	1330	214	1620	8.6	27.0	24.0	650	140	72	110	27
JUL											
28...	1245	2080	860	8.1	24.5	19.5	260	63	24	77	39

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, AMMONIA TOTAL (MG/L AS N) (00610)
OCT											
07...	2	10	160	1200	24	0.50	2.8	1870	2.54	136	--
NOV											
05...	2	10	202	1100	28	3.0	4.6	1800	2.44	298	0.150
DEC											
16...	2	10	262	1400	38	0.70	6.7	2240	3.05	156	0.150
JAN											
21...	2	9.8	311	1200	31	0.50	11	2020	2.75	185	--
MAR											
26...	3	7.0	93	420	14	0.30	5.0	718	0.98	3310	--
APR											
06...	3	9.0	165	920	29	0.50	6.1	1540	2.09	545	--
MAY											
24...	2	10	189	1000	40	0.60	3.9	1610	2.19	409	--
JUN											
22...	2	8.7	146	740	20	0.60	10	1200	1.63	691	--
JUL											
28...	2	6.6	81	320	18	0.40	8.6	568	0.77	3190	--

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

[illegible]

BELLE FOURCHE RIVER BASIN

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2310	2240	2710	2670	2300	2190	1530	1790	2200	1260	1090	1650
2	2320	2200	2860	2660	2300	2150	1710	1720	2220	800	1320	1660
3	2320	2200	2790	2630	2370	2140	1870	1750	2190	860	1220	1720
4	2320	2290	2820	2690	2330	2100	1940	1800	2130	930	990	1710
5	2310	2260	2830	2770	2280	1890	2030	1800	2250	1160	1220	1710
6	2340	2230	3140	2770	2200	1870	2100	1650	2220	1430	1390	1680
7	2320	2290	2950	2810	2240	310	2190	1430	1970	1570	1520	1710
8	2330	2300	3090	2810	2150	420	2200	970	1340	1370	1570	1680
9	2350	2280	3210	2770	2170	1050	2150	930	1080	1300	1590	1700
10	2370	2320	3120	2730	2160	1030	2180	920	1140	1250	1580	1690
11	2340	2320	3140	2660	2190	1350	2320	920	920	1600	1660	1670
12	2280	2220	3040	2650	2130	1330	2160	460	940	1060	1720	1690
13	2250	2240	2950	2640	2210	1110	1900	460	930	1230	1780	1680
14	2350	2240	2830	2740	2260	1310	1350	1600	1130	1290	1610	1670
15	2290	2270	2860	2820	2270	1450	1670	1700	1240	1110	1650	1680
16	2220	2330	2790	2810	2340	1570	1850	1750	1320	1300	1660	1690
17	2140	2420	2650	2830	2240	1660	1800	1780	1380	1410	1770	1690
18	2250	2410	2710	2830	2330	1870	1780	1880	1430	1440	1720	1730
19	2350	2310	2760	2630	2380	2070	1830	1910	1420	820	1800	1700
20	2330	2330	2830	2640	2460	1930	1940	1950	1510	910	1760	1680
21	2320	2370	2770	2640	2530	1660	2050	2020	1520	790	1790	1690
22	2300	2470	2820	2550	2560	1530	2160	2040	1640	1220	1810	1680
23	2290	2390	2770	2540	2540	2080	1670	2060	1670	1330	1730	1690
24	2280	2470	2770	2540	2450	1750	1620	2050	1550	1510	1800	1810
25	2340	2440	2790	2380	2460	1610	1760	2040	1140	1600	1710	1820
26	2390	2630	2840	2410	2330	1150	1890	2060	1430	2010	1760	1860
27	2370	2770	2800	2430	2370	960	1990	2030	1580	950	1780	1890
28	2350	2760	2610	2350	2430	980	1890	2110	1590	950	1690	1910
29	2390	2600	2670	2430	---	1040	1870	2140	1670	1100	1700	1930
30	2350	2930	2660	2410	---	1190	1850	2180	1500	1090	1680	1930
31	2290	---	2640	---	---	1340	---	2200	---	1160	1680	---

WATER TEMPERATURE, IN DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	4.0	1.5	---	.5	.5	3.5	8.5	16.0	18.5	21.0	15.5
2	12.0	4.5	1.0	---	.5	.5	2.0	9.0	14.0	19.5	21.0	16.0
3	12.5	1.0	1.0	---	.5	.5	4.0	12.0	13.0	21.0	20.0	14.0
4	12.0	.5	1.0	---	.5	.5	5.0	14.0	11.5	18.0	18.0	15.5
5	11.5	.5	.5	---	.5	.5	7.0	14.0	13.0	16.5	19.0	16.5
6	8.5	.5	1.0	---	.5	.5	8.5	13.5	16.0	16.5	19.0	14.0
7	7.5	.5	1.0	---	.5	.5	5.5	13.0	16.0	16.5	18.0	15.5
8	3.0	2.0	1.0	---	.5	.5	9.0	14.0	13.0	19.0	20.5	15.0
9	8.5	3.5	1.0	---	.5	.5	7.0	11.0	13.0	18.5	21.0	16.0
10	6.5	1.0	1.0	---	.5	.5	9.0	11.5	16.0	19.5	22.0	14.0
11	7.0	.5	1.0	---	.5	.5	8.0	14.0	17.0	19.0	22.0	15.5
12	9.5	.5	1.0	---	.5	.5	7.0	13.0	19.0	18.0	20.5	16.0
13	6.5	.5	1.0	---	.5	.5	6.0	13.0	15.0	19.0	19.0	11.5
14	5.5	1.5	1.0	---	.5	1.0	5.0	12.5	17.0	17.0	20.0	8.5
15	3.5	1.0	1.0	---	.5	1.0	5.0	17.0	17.0	18.0	21.0	10.0
16	2.0	2.0	1.0	---	.5	1.0	6.5	15.0	18.0	20.0	20.0	11.0
17	3.5	2.5	1.0	---	.5	.5	7.5	17.0	17.0	19.0	20.5	13.0
18	1.5	2.5	.5	---	.5	1.0	10.5	15.0	15.5	20.0	21.0	11.0
19	4.0	3.0	.5	---	.5	1.0	8.0	15.0	14.5	17.0	20.5	12.0
20	5.5	3.0	.5	---	.5	1.0	4.5	13.5	17.0	19.0	20.0	11.0
21	7.0	2.0	.5	---	.5	1.0	4.0	15.0	20.5	20.0	20.5	13.0
22	8.5	.5	.5	---	.5	1.0	8.0	17.0	20.5	21.0	20.5	12.0
23	9.5	.5	.5	---	.5	.5	12.5	14.5	19.5	22.0	18.5	10.5
24	7.0	.0	.5	---	.5	1.5	9.5	12.0	16.0	22.0	20.0	11.5
25	8.5	.5	.5	---	.5	1.0	10.0	13.0	15.0	19.0	19.2	12.0
26	5.5	.5	.5	---	.5	3.5	10.5	16.5	16.0	21.5	20.0	10.0
27	6.0	1.0	.5	---	.5	8.0	12.0	17.5	20.0	19.0	18.0	9.5
28	6.0	1.0	.5	---	.5	8.5	12.0	16.5	21.0	20.0	18.5	13.0
29	5.5	.5	.5	---	---	7.5	10.0	14.0	20.0	21.5	19.0	11.0
30	5.5	.5	.5	---	---	6.5	11.0	15.5	18.5	21.5	16.0	12.0
31	6.0	---	.5	---	---	5.2	---	15.5	---	21.5	14.5	---

BELLE FOURCHE RIVER BASIN

06437020 BEAR BUTTE CREEK NEAR DEADWOOD, SD

LOCATION.--Lat 44°20'08", long 103°38'06", in NE1/4SE1/4 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 sea level, 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 Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	.64	e.70	e.80	e.85	.64	7.7	15	6.9	13	6.1	2.3
2	.40	.79	e.70	e.90	e.85	e.70	7.2	15	7.3	12	5.5	2.2
3	.45	e.80	e.65	e.85	e.85	e.80	7.2	14	7.9	11	5.2	2.3
4	.40	e.65	e.60	e.75	e.85	.82	7.5	12	7.6	9.9	5.1	2.1
5	.40	e.75	e.65	e.70	e.85	.85	8.2	27	6.7	9.8	4.9	3.6
6	.43	.94	e.65	e.65	.84	e1.5	8.9	58	6.5	10	4.8	3.3
7	.78	1.3	e.68	e.60	.75	e2.3	8.7	48	32	12	5.4	2.7
8	.90	1.1	e.70	e.60	.82	e3.0	9.8	74	81	9.2	4.5	2.4
9	1.4	1.2	e.75	e.70	.87	e2.8	12	71	69	8.6	4.0	2.1
10	1.1	e1.0	e.75	e.80	.87	e2.7	18	59	65	8.3	3.6	2.1
11	.72	e.85	e.70	e.75	.87	2.5	16	49	56	8.2	3.5	2.1
12	.62	e.85	e.65	e.70	.87	2.1	15	41	49	8.0	3.8	2.0
13	.56	e.80	e.60	.64	.76	1.9	14	35	41	7.6	4.6	2.0
14	.57	.68	e.55	.91	.75	1.7	13	30	35	8.4	3.6	2.0
15	.72	.82	e.70	.92	.75	e1.7	12	27	33	7.7	3.3	2.1
16	1.1	.93	e.75	.87	.72	e1.8	12	22	37	7.6	3.1	2.1
17	.71	e.80	e.75	.82	.54	1.9	12	20	38	7.3	2.6	2.1
18	.68	.78	e.80	.87	.56	2.0	12	16	41	6.5	2.5	2.4
19	.71	.78	e.80	.87	.56	e2.0	13	14	47	5.4	2.8	4.5
20	.61	e.80	e.80	.87	.56	e2.5	12	13	44	5.1	5.7	3.3
21	.61	e.80	e.80	.82	.56	2.7	12	11	39	19	3.2	2.6
22	.56	e.80	e.80	.81	.56	e4.5	12	16	36	7.4	2.7	2.3
23	.73	e.75	e.80	.87	.56	e5.5	14	12	32	7.2	2.5	2.2
24	1.0	e.70	e.80	.87	.57	e7.0	15	11	28	7.3	2.3	2.2
25	1.2	e.60	e.80	.87	.64	8.7	16	9.4	25	7.1	2.3	2.1
26	.99	e.65	e.80	.87	.64	10	14	8.9	22	6.7	2.4	2.0
27	.54	e.70	e.80	.87	.64	12	14	8.3	21	6.8	2.5	1.9
28	.48	e.80	e.80	.86	.64	12	13	8.0	18	6.6	2.5	1.8
29	.48	e.80	e.80	e.85	---	9.3	12	8.3	17	6.6	2.5	1.8
30	.48	e.75	.48	e.85	---	8.6	14	8.1	14	6.2	2.5	1.8
31	.54	---	.73	e.85	---	8.1	---	7.2	---	8.6	2.4	---
TOTAL	21.37	24.61	22.34	24.96	20.15	124.61	362.2	768.2	962.9	265.1	112.4	70.4
MEAN	.69	.82	.72	.81	.72	4.02	12.1	24.8	32.1	8.55	3.63	2.35
MAX	1.4	1.3	.80	.92	.87	12	18	74	81	19	6.1	4.5
MIN	.40	.60	.48	.60	.54	.64	7.2	7.2	6.5	5.1	2.3	1.8
AC-FT	42	49	44	50	40	247	718	1520	1910	526	223	140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	1.05	1.25	.91	.86	.98
MAX	1.25	2.12	1.37	1.31	1.72
(WY)	1990	1990	1990	1992	1993
MIN	.69	.82	.28	.30	.45
(WY)	1993	1993	1991	1991	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	783.24	2779.24	
ANNUAL MEAN	2.14	7.61	4.61
HIGHEST ANNUAL MEAN			7.61
LOWEST ANNUAL MEAN			2.29
HIGHEST DAILY MEAN	13	81	188
LOWEST DAILY MEAN	.38	.40	.00
ANNUAL SEVEN-DAY MINIMUM	.44	.48	.05
INSTANTANEOUS PEAK FLOW		119	938
INSTANTANEOUS PEAK STAGE		5.20	7.70
ANNUAL RUNOFF (AC-FT)	1550	5510	3340
10 PERCENT EXCEEDS	4.7	18	10
50 PERCENT EXCEEDS	1.3	2.2	1.5
90 PERCENT EXCEEDS	.54	.64	.54

e Estimated

a Also Sept. 2-4, 1990.

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.

REMARKS.--Concentrations of major cations and anions for the Nov. 12 sample deviated from typical relations for this site; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)
NOV 12...	1200	28	2220	8.3	159	194	0	8.0	3.0	7.1	620
APR 02...	1145	413	--	6.8	75	91	0	16.5	10.5	550	695
JUN 03...	1400	87	2570	8.2	162	197	0	14.5	14.0	4.7	700
AUG 04...	1300	897	1170	7.0	84	102	0	23.0	20.5	940	706
SEP 03...	1200	273	1710	8.3	147	165	7	21.0	17.5	2.0	703
DATE	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML) (31673)	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)	
NOV 12...	12.5	115	K5	K22	1100	250	120	160	24	2	9.7
APR 02...	12.2	--	K210	810	440	99	46	140	41	3	7.4
JUN 03...	9.6	102	64	85	1000	220	120	210	30	3	11
AUG 04...	7.8	93	--	--	330	84	29	95	38	2	7.1
SEP 03...	9.8	112	36	K15	750	180	73	100	22	2	9.4
DATE	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, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)
NOV 12...	165	1200	160	0.50	2.8	2010	2000	2.72	151	0.090	0.12
APR 02...	80	640	32	0.30	6.5	1020	1060	1.44	1180	0.170	0.22
JUN 03...	147	1100	50	0.80	0.70	1810	2220	3.02	524	0.020	0.03
AUG 04...	93	400	33	0.40	8.0	709	732	1.0	1770	0.080	0.10
SEP 03...	144	820	16	0.40	3.4	1290	1380	1.88	1020	0.030	0.04

BELLE FOURCHE RIVER BASIN

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 12...	0.40	0.020	0.880	0.860	0.020	0.020	0.020	30	<100	2	<10
APR 02...	1.5	0.030	1.70	1.67	0.440	0.050	0.040	--	--	--	--
JUN 03...	0.30	0.010	0.150	0.140	0.010	<0.010	<0.010	<10	<100	<1	<10
AUG 04...	2.7	<0.010	0.330	--	1.30	0.130	0.020	<10	34	<3	6
SEP 03...	0.40	<0.010	0.280	--	0.020	<0.010	<0.010	<10	47	<3	7

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	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)
NOV 12...	120	30	4	3	3	<1.0	3000	<1	65	4.9	91
APR 02...	--	--	--	--	--	--	--	--	964	1070	100
JUN 03...	140	40	3	4	3	<1.0	2800	<1	74	17	99
AUG 04...	62	2	<10	<1	2	<1.0	920	<6	2370	5740	100
SEP 03...	78	8	10	3	3	<1.0	2100	<6	54	40	99

CHEYENNE RIVER BASIN

06439000 CHERRY CREEK NEAR PLAINVIEW, SD

LOCATION.--Lat 44°44'35", long 102°03'11", in SW1/4NE1/4 sec.16, T.9 N., R.17 E., Meade County, Hydrologic Unit 10120113, on right 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e.00	e429	50	16	295	396	14
2	.00	.00	.00	.00	.00	e.00	e305	44	17	341	333	13
3	.00	.00	.00	.00	.00	e.00	e249	39	16	290	277	12
4	.00	.00	.00	.00	.00	e2.0	e246	34	15	211	321	11
5	.00	.00	.00	.00	.00	e3.0	e158	37	15	182	244	11
6	.00	.00	.00	.00	.00	e5.0	e122	42	16	142	175	11
7	.00	.00	.00	e.00	.00	146	e128	89	109	137	140	11
8	.00	.00	.00	e.00	.00	804	e323	692	730	89	117	11
9	.00	.00	.00	e.00	.00	1520	e323	1380	1320	76	100	9.8
10	.00	.00	e.00	e.00	.00	1410	e213	1580	1220	231	85	8.7
11	.00	.00	e.00	.00	.00	1260	e145	1710	768	318	72	8.0
12	.00	.00	e.00	.00	.00	860	e114	1320	569	441	62	7.4
13	.00	.00	e.00	.00	.00	644	e109	405	355	380	56	6.1
14	.00	.00	e.00	.00	.00	432	e206	234	191	176	62	5.6
15	.00	.00	e.00	.00	.00	283	e295	164	153	120	49	5.8
16	.00	.00	e.00	.00	.00	394	e143	123	1230	159	45	5.8
17	.00	.00	e.00	.00	.00	469	e88	99	489	96	40	5.5
18	.00	.00	e.00	.00	.00	472	e70	79	180	746	37	5.5
19	.00	.00	e.00	.00	.00	508	e99	65	118	1120	34	7.5
20	.00	.00	e.00	.00	.00	526	e119	56	82	740	31	10
21	.00	.00	e.00	.00	.00	e637	e112	48	59	2350	30	9.3
22	.00	.00	e.00	.00	.00	e602	137	43	49	3450	27	8.2
23	.00	.00	e.00	.00	.00	e592	130	37	214	2940	24	7.6
24	.00	.00	e.00	.00	e.00	e602	187	32	329	2580	26	7.2
25	.00	.00	e.00	.00	e.00	e622	140	28	415	1120	24	6.7
26	.00	.00	e.00	.00	e.00	e835	110	25	152	684	21	5.8
27	.00	.00	e.00	.00	e.00	e1550	95	24	74	513	20	5.5
28	.00	.00	e.00	.00	e.00	e1480	80	22	275	382	19	5.3
29	.00	.00	e.00	.00	---	e1060	68	20	647	287	18	5.0
30	.00	.00	.00	.00	---	e769	56	20	350	266	17	4.9
31	.00	---	.00	.00	---	e586	---	18	---	388	15	---
TOTAL	0.00	0.00	0.00	0.00	0.00	19073.00	4999	8559	10173	21250	2917	245.2
MEAN	.000	.000	.000	.000	.000	615	167	276	339	685	94.1	8.17
MAX	.00	.00	.00	.00	.00	1550	429	1710	1320	3450	396	14
MIN	.00	.00	.00	.00	.00	.00	56	18	15	76	15	4.9
AC-FT	.00	.00	.00	.00	.00	37830	9920	16980	20180	42150	5790	486

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1993, BY WATER YEAR (WY)

	MEAN	3.30	.23	.20	.49	6.06	138	141	116	113	29.2	9.07	.80
MAX	109	5.18	5.44	16.5	131	1062	2221	1215	793	685	175	16.6	
(WY)	1983	1987	1987	1947	1947	1978	1952	1982	1953	1993	1953	1986	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1946	1946	1946	1946	1946	1957	1957	1955	1955	1949	1946	1946	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1946 - 1993

ANNUAL TOTAL	1902.90	67216.20	
ANNUAL MEAN	5.20	184	46.6a
HIGHEST ANNUAL MEAN			193
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	315	Jun 17	13800
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
INSTANTANEOUS PEAK FLOW			4050
INSTANTANEOUS PEAK STAGE			16.59
ANNUAL RUNOFF (AC-FT)	3770	133300	33760
10 PERCENT EXCEEDS	8.5	588	44
50 PERCENT EXCEEDS	.00	11	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a Median of annual mean discharges, 22 ft³/s.

b No flow for long periods in each year.

CHEYENNE RIVER BASIN

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD
(National stream-quality accounting network station)

LOCATION.--Lat 44°35'59", long 101°29'51", in SW1/4NW1/4 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 sea level. 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 fair 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	133	e115	e69	e140	e125	2260	430	397	1810	2600	445
2	79	144	e105	e66	e148	e160	1460	2920	421	4140	2570	438
3	80	150	e100	e64	e155	e180	1060	1480	403	6890	2650	440
4	81	192	e90	e61	e160	e200	992	883	452	4640	2540	430
5	85	163	e80	e60	e170	e450	623	2250	414	3310	2290	431
6	85	138	e85	e58	e175	e1050	518	4510	541	2290	1850	425
7	84	156	e90	e57	e180	e2500	504	e9490	575	2050	1480	432
8	77	e160	e100	e55	e185	e6000	616	10400	3120	2030	1240	449
9	77	e158	e110	e53	e186	e12000	1370	20300	6870	2150	1240	497
10	77	e155	e115	e52	e190	e9000	1020	24500	8640	2870	1080	491
11	85	e150	e108	e50	e180	6910	697	9080	6220	2340	949	482
12	85	e145	e100	e50	e175	e5060	626	6130	4150	3190	877	452
13	92	e140	e99	e49	e170	e4000	553	4340	e2700	4120	780	436
14	91	e135	e98	e48	e155	e3000	530	e2650	e2000	e3400	719	431
15	93	e130	e99	e49	e145	e2400	2110	e1830	e2050	e2500	669	452
16	98	e130	e100	e50	e135	1820	1690	e1450	e2000	e2000	655	491
17	102	e125	e100	e52	e130	1620	1030	e1210	e1900	1790	716	438
18	105	e124	e100	e54	e120	1550	980	e1030	e2500	3740	1100	434
19	98	e124	e98	e56	e100	1400	779	869	e2100	5180	764	454
20	94	e125	e95	e58	e100	1780	e600	e773	2410	8470	627	1110
21	95	e124	e90	e60	e100	2140	e635	e678	1850	9010	572	1620
22	94	e122	e90	e70	e100	3280	e1500	e626	1940	11400	1570	778
23	91	e120	e90	e80	e100	3640	e1100	e576	2390	10900	1010	648
24	93	e115	e88	e90	e100	3750	813	e536	2640	e8000	839	582
25	97	e105	e85	e95	e101	4160	707	e502	2300	e5000	578	519
26	93	e90	e83	e100	e110	4370	689	476	2510	e7000	526	476
27	93	e95	e82	e110	e115	4780	575	465	1800	e6000	501	440
28	90	e100	e80	e120	e120	5670	511	449	1470	5680	486	423
29	96	e105	e78	e125	---	4800	468	430	1560	4390	470	395
30	100	e110	e75	e130	---	4880	439	424	2180	3880	467	373
31	107	---	e71	e135	---	3680	---	407	---	3120	454	---
TOTAL	2795	3963	2899	2226	3945	106355	27455	112094	70503	143290	34869	15912
MEAN	90.2	132	93.5	71.8	141	3431	915	3616	2350	4622	1125	530
MAX	107	192	115	135	190	12000	2260	24500	8640	11400	2650	1620
MIN	77	90	71	48	100	125	439	407	397	1790	454	373
AC-FT	5540	7860	5750	4420	7820	211000	54460	222300	139800	284200	69160	31560

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

MEAN	318	194	127	109	276	1387	1123	2187	2175	867	472	363
MAX	2362	522	388	435	1617	7645	4296	9947	10210	4622	1125	930
(WY)	1983	1987	1987	1974	1971	1978	1986	1982	1967	1993	1993	1986
MIN	32.5	91.2	16.3	.16	34.3	163	77.0	90.8	131	167	55.8	13.0
(WY)	1962	1961	1962	1962	1991	1981	1981	1961	1989	1989	1961	1961

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1961 - 1993

ANNUAL TOTAL	78630	526306	
ANNUAL MEAN	215	1442	
HIGHEST ANNUAL MEAN			802a
LOWEST ANNUAL MEAN			1748
HIGHEST DAILY MEAN	1830	Jul 14	24500
LOWEST DAILY MEAN	47	May 21	48
ANNUAL SEVEN-DAY MINIMUM	79	Dec 25	50
INSTANTANEOUS PEAK FLOW			39200
INSTANTANEOUS PEAK STAGE			14.63
ANNUAL RUNOFF (AC-FT)	156000	1044000	581000
10 PERCENT EXCEEDS	421	4140	1580
50 PERCENT EXCEEDS	148	452	261
90 PERCENT EXCEEDS	88	83	72

e Estimated

a Median of annual mean discharges, 700 ft³/s.

b Also Jan. 7 to Feb. 2, 1962.

c From high-water marks.

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.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD) (00400)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	
OCT 22...	1120	94	2630	7.2	122	149	0	17.5	18.0	6.7	714	
JAN 11...	1315	50	2760	7.9	326	398	0	-5.0	0.0	3.6	713	
APR 21...	1330	635	1860	8.2	135	165	0	15.0	8.5	240	720	
JUL 27...	1325	3960	911	7.7	135	164	0	26.5	21.5	6700	702	
DATE		OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (MG/L) (00300)	COLIFORM, FECCAL, 0.7 UM-MF (COLS./100 ML) (00301)	STREPTOCOCCI, FECCAL, KF AGAR (COLS. PER 100 ML) (00302)	HARDNESS TOTAL (MG/L AS CAC03) (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)	SODIUM AD-SORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)		
OCT 22...	9.5	108	K5	K2	990	240	95	240	34	3	14	
JAN 11...	11.1	82	K140	27	1100	280	99	250	33	3	14	
APR 21...	10.2	93	K150	K200	540	130	53	190	43	4	9.1	
JUL 27...	7.4	91	K1700	1000	180	53	12	110	55	4	9.2	
DATE		ALKALINITY LAB (MG/L AS CAC03) (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, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C, DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)
OCT 22...	125	1200	130	0.50	5.5	2000	2320	3.16	589	0.040	0.05	
JAN 11...	292	1200	120	0.60	13	2190	2340	3.18	316	0.030	0.04	
APR 21...	149	810	43	0.40	8.1	1330	1430	1.94	2450	0.010	0.01	
JUL 27...	146	270	15	0.40	16	571	620	0.84	6630	0.120	0.15	

CHEYENNE RIVER BASIN

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 22...	0.30	<0.010	0.052	--	0.030	0.010	0.010	<10	<100	<1	20
JAN 11...	0.40	0.040	2.50	2.46	0.290	0.260	0.290	<10	<100	<1	10
APR 21...	1.5	0.010	0.760	0.750	0.600	0.030	0.020	30	60	<3	3
JUL 27...	0.40	0.010	0.510	0.500	0.320	0.200	0.190	840	54	<3	410

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, DIS- SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 22...	140	40	4	4	2	<1.0	3100	2	79	20	99
JAN 11...	140	70	6	5	3	<1.0	3300	3	--	--	--
APR 21...	120	5	<10	3	3	<1.0	1500	<6	690	1180	98
JUL 27...	53	24	<10	7	2	<1.0	630	<6	--	--	--

CHEYENNE RIVER BASIN

06439430 COTTONWOOD CREEK NEAR CHERRY CREEK, SD

LOCATION.--Lat 44°40'28", long 101°24'16", in NW1/4NW1/4NE1/4 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 sea level, 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 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	17	.00	.00	68	.58	.00
2	.00	.00	.00	.00	e1.0	e10	9.0	.00	.00	19	.36	.00
3	.00	.00	.00	.00	e10	e50	5.0	.00	.00	12	.26	.00
4	.00	.00	.00	.00	e15	e150	3.0	.00	.00	6.5	.18	.00
5	.00	.00	.00	.00	e25	e180	2.3	.00	.00	3.5	.12	.00
6	.00	.00	.00	.00	e20	e380	1.7	91	.00	2.2	.08	.00
7	.00	.00	.00	.00	e15	e490	1.8	162	.00	1.7	.06	.00
8	.00	.00	.00	.00	e10	e570	1.7	279	.00	1.3	.04	.00
9	.00	.00	.00	.00	e7.0	322	1.6	267	114	1.1	.01	.00
10	.00	.00	.00	.00	e4.0	148	1.5	64	35	26	.00	.00
11	.00	.00	.00	.00	e2.0	73	1.4	27	18	16	.00	.00
12	.00	.00	.00	.00	e1.0	28	6.8	15	9.7	4.4	.00	.00
13	.00	.00	.00	.00	e.50	22	6.2	8.9	6.1	11	.00	.00
14	.00	.00	.00	.00	e.20	26	13	5.7	4.0	5.7	.00	.00
15	.00	.00	.00	.00	e.10	17	9.9	3.7	2.4	1.6	.00	.00
16	.00	.00	.00	.00	e.05	11	5.0	2.4	1.7	.80	.00	.00
17	.00	.00	.00	.00	e.00	17	2.8	1.8	5.1	.46	.00	.00
18	.00	.00	.00	.00	.00	19	1.9	1.1	5.5	25	.00	.00
19	.00	.00	.00	.00	.00	17	4.2	.78	3.6	62	.00	.00
20	.00	.00	.00	.00	.00	12	2.8	.54	2.9	10	.00	.00
21	.00	.00	.00	.00	.00	12	2.5	.38	2.2	28	.00	.00
22	.00	.00	.00	.00	.00	16	3.2	.32	1.7	105	.00	.00
23	.00	.00	.00	.00	.00	15	4.7	.35	1.2	19	.00	.00
24	.00	.00	.00	.00	.00	31	2.4	.33	44	5.4	.00	.00
25	.00	.00	.00	.00	.00	79	1.5	.00	33	21	.00	.00
26	.00	.00	.00	.00	.00	42	1.0	.00	13	11	.00	.00
27	.00	.00	.00	.00	.00	24	.71	.00	6.8	106	.00	.00
28	.00	.00	.00	.00	.00	18	.39	.00	2.6	52	.00	.00
29	.00	.00	.00	.00	---	19	.26	.00	2.9	6.4	.00	.00
30	.00	.00	.00	.00	---	31	.25	.00	10	2.5	.00	.00
31	.00	---	.00	.00	---	33	---	.00	---	1.2	.00	---
TOTAL	0.00	0.00	0.00	0.00	110.85	2862.00	115.51	931.30	325.40	635.76	1.69	0.00
MEAN	.000	.000	.000	.000	3.96	92.3	3.85	30.0	10.8	20.5	.055	.000
MAX	.00	.00	.00	.00	25	570	17	279	114	106	.58	.00
MIN	.00	.00	.00	.00	.00	.00	.25	.00	.00	.46	.00	.00
AC-FT	.00	.00	.00	.00	220	5680	229	1850	645	1260	3.4	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1983	.25	2.63	1983	.000	1984
1984	.000	.001	1984	.000	1985
1985	.000	.000	1985	.000	1986
1986	.011	.12	1986	.000	1987
1987	1.82	9.29	1987	.000	1988
1988	54.1	362	1988	.000	1989
1989	17.9	123	1989	.000	1990
1990	14.0	113	1990	.000	1991
1991	7.88	65.5	1991	.000	1992
1992	2.66	20.5	1992	.000	1993
1993	1.96	17.1	1993	.000	1994
1994	.010	.11	1994	.000	1995

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	183.05	4982.51	8.46a
ANNUAL MEAN	.50	13.7	38.6
HIGHEST ANNUAL MEAN			.000
LOWEST ANNUAL MEAN			1987
HIGHEST DAILY MEAN	102	570	2450
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		756	3640
INSTANTANEOUS PEAK STAGE		7.56	12.58
ANNUAL RUNOFF (AC-FT)	363	9880	6130
10 PERCENT EXCEEDS	.00	23	2.4
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a Median of annual mean discharges, 0.60 ft³/s.

b No flow for long periods in each year.

MISSOURI-OAHE RIVER BASIN

06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE1/4 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 above sea level. 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, 19,988,000 acre-ft, Sept. 9; minimum contents, 14,354,000 acre-ft, Oct. 17.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,591.37	14,531,000	-
Oct. 31	1,591.00	14,427,000	-104,000
Nov. 30	1,591.80	14,680,000	+253,000
Dec. 31	1,591.56	¹ 14,405,000	¹ -275,000
CAL YR 1992	-	-	² +762,000
Jan. 31	1,592.23	14,554,000	+149,000
Feb. 28	1,592.70	14,672,000	+118,000
Mar. 31	1,596.37	15,623,000	+951,000
Apr. 30	1,597.86	16,014,000	+391,000
May 31	1,600.17	16,656,000	+642,000
June 30	1,601.87	17,139,000	+483,000
July 31	1,608.02	18,994,000	+1,855,000
Aug. 31	1,610.35	19,803,000	+809,000
Sept. 30	1,610.74	19,802,000	-1,000
WTR YR 1993	-	-	³ +5,271,000

NOTE.--Lake frozen over Jan. 7 to Mar. 31.

¹Based on a new area-capacity table that became effective Dec. 1, 1992, the change in contents during December was -56,000 acre-ft.

²The change in contents for calendar year 1992 was +543,000 acre-ft (see footnote 1).

³The change in contents for water year 1993 was +5,052,000 acre-ft (see footnote 1).

MISSOURI-FORT RANDALL RIVER BASIN
06440000 MISSOURI RIVER AT PIERRE, SD

LOCATION (REVISED).--Lat 44°22'23", long 100°22'03" in NW1/4SW1/4 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 sea level. 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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.32	6.51	6.13	7.21	6.77	8.12	6.53	7.34	7.99	6.49	5.87	6.06
2	7.54	7.21	6.60	7.05	6.71	6.84	6.97	7.01	7.80	6.28	6.18	5.65
3	7.45	6.12	6.55	6.78	6.50	7.08	6.56	7.22	8.01	6.93	6.16	5.90
4	8.00	6.32	6.28	7.49	6.69	7.05	6.76	7.15	7.16	6.42	6.34	5.76
5	7.28	6.69	6.54	---	6.56	7.64	7.35	7.37	7.22	6.49	6.30	5.77
6	7.17	6.55	6.50	---	6.59	6.78	6.74	7.29	7.10	6.92	6.43	5.81
7	6.85	6.54	7.47	---	6.66	6.46	6.52	7.41	7.94	6.75	6.56	6.00
8	6.91	6.64	7.73	8.90	7.57	6.82	6.43	7.38	7.83	6.56	6.41	6.57
9	6.78	6.63	7.48	7.74	7.58	5.94	6.51	6.50	7.82	6.26	6.52	6.17
10	7.01	6.40	7.11	7.80	7.81	6.74	6.30	6.88	7.47	6.45	6.53	6.33
11	7.11	6.58	7.13	8.63	7.08	6.73	6.45	6.94	8.06	6.40	6.50	6.48
12	7.16	6.18	6.49	8.48	6.93	6.41	6.64	6.92	7.94	7.15	5.94	6.46
13	7.24	6.64	6.39	9.82	6.20	6.63	6.80	7.04	6.91	6.54	6.23	6.68
14	6.79	6.35	7.98	8.77	6.16	6.77	6.55	6.80	7.76	6.72	6.03	6.79
15	7.16	6.70	7.89	8.08	7.09	6.73	6.36	6.82	8.24	7.00	6.04	7.44
16	7.11	6.63	7.94	7.46	7.23	6.25	6.47	6.73	7.28	6.90	6.54	6.81
17	6.63	6.72	8.00	7.67	7.93	6.93	6.31	6.77	7.56	6.45	6.74	6.74
18	6.57	7.01	7.74	7.71	7.86	6.90	6.45	6.78	7.62	6.51	6.26	6.37
19	7.18	6.67	7.46	7.83	7.68	6.29	6.53	6.71	7.00	6.34	6.61	6.19
20	6.42	6.57	7.74	7.24	7.61	6.52	6.51	6.60	7.49	6.69	6.43	6.80
21	6.43	6.37	7.48	7.14	7.25	6.74	6.54	6.98	8.07	7.24	6.36	7.15
22	6.28	7.38	7.60	7.11	8.21	6.70	6.66	6.94	7.99	6.93	5.86	6.87
23	6.18	7.12	7.08	6.87	8.08	7.06	6.86	6.16	6.92	6.83	5.90	8.03
24	6.24	6.58	7.16	7.12	8.94	6.97	6.54	6.45	6.59	6.51	7.14	7.48
25	6.01	6.47	6.30	8.22	7.45	7.12	6.88	6.92	5.77	6.16	6.90	6.67
26	6.63	6.02	7.20	7.19	7.74	7.02	7.44	6.92	6.03	6.79	6.34	5.86
27	6.67	6.30	7.22	7.11	7.96	6.71	6.96	6.90	6.48	6.05	6.03	6.97
28	6.48	6.37	7.82	7.24	7.55	6.76	7.41	7.37	6.91	6.24	6.10	7.25
29	6.85	6.19	8.03	7.36	---	7.16	7.31	7.25	7.11	6.60	5.98	6.93
30	7.50	7.01	7.92	6.46	---	6.80	7.54	7.35	6.53	6.48	5.76	6.74
31	6.58	---	7.82	6.30	---	6.77	---	7.54	---	6.38	6.10	---
MEAN	6.89	6.58	7.25	---	7.30	6.82	6.73	6.98	7.35	6.60	6.29	6.56
MAX	8.00	7.38	8.03	---	8.94	8.12	7.54	7.54	8.24	7.24	7.14	8.03
MIN	6.01	6.02	6.13	---	6.16	5.94	6.30	6.16	5.77	6.05	5.76	5.65

MISSOURI-FORT RANDALL RIVER BASIN

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 NE1/4SW1/4SE1/4 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	e2.0	e.40	3.3	79	.04	.99	5.8	1.4
2	.00	.00	.00	.00	e1.7	e34	1.8	386	.04	24	3.3	.93
3	.00	.00	.00	.00	e1.4	71	.84	94	.03	163	2.1	.54
4	.00	.00	.00	.00	e2.0	62	.50	32	.02	43	1.3	.36
5	.00	.00	.00	.00	e3.0	253	.34	16	.01	48	.87	.25
6	.00	.00	.00	.00	e4.8	e727	.24	29	.00	10	.47	.22
7	.00	.00	.00	.00	e4.8	e1100	.37	395	34	4.8	.29	.09
8	.00	.00	.00	.00	e4.0	e579	.27	487	111	7.9	.21	.07
9	.00	.00	.00	.00	e3.6	212	33	612	215	17	.15	.05
10	.00	.00	.00	.00	e3.0	74	11	233	93	8.5	.09	.10
11	.00	.00	.00	.00	e2.9	36	4.6	68	17	3.8	.08	.05
12	.00	.00	.00	.00	e2.0	19	11	32	6.5	2.1	.04	.02
13	.00	.00	.00	.00	e1.5	20	11	20	2.7	1.6	.05	.03
14	.00	.00	.00	.00	e.95	11	18	13	1.0	117	.03	.01
15	.00	.00	.00	.00	e.70	8.6	124	7.8	.61	46	.03	2.3
16	.00	.00	.00	.00	e.60	6.6	27	5.2	27	14	4.2	5.7
17	.00	.00	.00	.00	e.50	4.2	10	4.1	22	7.3	73	1.7
18	.00	.00	.00	.00	e.40	4.0	5.2	3.6	125	9.4	39	.64
19	.00	.00	.00	.00	e.34	6.8	4.3	2.7	175	7.8	16	1.1
20	.00	.00	.00	.00	e.29	7.0	3.9	2.1	201	3.4	12	87
21	.00	.00	.00	.00	e.24	3.9	26	2.1	60	2.9	303	206
22	.00	.00	.00	.00	e.20	4.8	186	1.3	24	9.7	626	21
23	.00	.00	.00	.00	e.18	5.1	175	.79	13	64	165	8.1
24	.00	.00	.00	.00	e.18	4.3	56	.47	7.9	11	50	3.7
25	.00	.00	.00	e.00	e.20	3.7	23	.35	4.4	4.8	29	1.6
26	.00	.00	.00	e.00	e.25	2.7	12	.26	2.7	66	19	.52
27	.00	.00	.00	e.02	e.30	3.4	6.9	.24	1.7	42	13	.21
28	.00	.00	.00	e.05	e.35	2.4	4.2	.09	.98	153	9.5	.11
29	.00	.00	.00	e.12	---	1.8	2.9	.06	.62	55	6.5	.19
30	.00	.00	.00	e.30	---	1.4	3.1	.05	.41	18	3.8	.13
31	.00	---	.00	e.70	---	.82	---	.06	---	10	2.3	---
TOTAL	0.00	0.00	0.00	1.19	42.38	3269.92	765.76	2527.27	1146.66	975.99	1386.11	344.12
MEAN	.000	.000	.000	.038	1.51	105	25.5	81.5	38.2	31.5	44.7	11.5
MAX	.00	.00	.00	.70	4.8	1100	186	612	215	163	626	206
MIN	.00	.00	.00	.00	.18	.40	.24	.05	.00	.99	.03	.01
AC-FT	.00	.00	.00	2.4	84	6490	1520	5010	2270	1940	2750	683

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1989	.22	1.05	1992	.000	1991
1990	1.05	5.23	1992	.000	1990
1991	.11	.55	1992	.000	1991
1992	.45	1.20	1992	.000	1989
1993	1.91	7.35	1993	.000	1989
1994	25.9	105	1993	.64	1991
1995	6.62	25.5	1991	.017	1990
1996	71.7	258	1991	1.39	1989
1997	85.7	347	1991	.015	1989
1998	14.6	31.5	1993	.21	1989
1999	10.5	44.7	1993	.000	1989
2000	4.61	11.5	1993	.013	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	2397.16	10459.40	
ANNUAL MEAN	6.55	28.7	18.7
HIGHEST ANNUAL MEAN			53.0
LOWEST ANNUAL MEAN			1.98
HIGHEST DAILY MEAN	563	1100	3990
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		1190	15200
INSTANTANEOUS PEAK STAGE		10.87	17.89
ANNUAL RUNOFF (AC-FT)	4750	20750	13530
10 PERCENT EXCEEDS	14	61	14
50 PERCENT EXCEEDS	.01	.60	.03
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a No flow for many days in each year.

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. No flow for many days.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 39,800 mg/L, Aug. 24, 1990; minimum daily mean, 1 mg/L, Feb. 22, 1992.

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, 26,800 mg/L, Apr. 9; minimum daily mean, 2 mg/L, Feb. 24, 25.

SEDIMENT LOAD: Maximum daily, 20,700 tons, May 9; minimum daily, 0 ton on many days.

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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

MISSOURI-FORT RANDALL RIVER BASIN

06440200 SOUTH FORK BAD RIVER NEAR COTTONWOOD, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	.00	0	.00	e2.0	e0	.00	e.40	e20	.02
2	.00	0	.00	e1.7	e0	.00	e34	e120	11
3	.00	0	.00	e1.4	e0	.00	71	e260	50
4	.00	0	.00	e2.0	e50	.27	62	e325	54
5	.00	0	.00	e3.0	e150	1.2	253	e1210	827
6	.00	0	.00	e4.8	e270	3.5	e727	1610	3160
7	.00	0	.00	e4.8	e430	5.6	e1100	1800	5350
8	.00	0	.00	e4.0	720	7.8	e579	2050	3200
9	.00	0	.00	e3.6	1020	9.9	212	e2250	1290
10	.00	0	.00	e3.0	1090	8.8	74	2250	450
11	.00	0	.00	e2.9	e990	7.8	36	e1800	175
12	.00	0	.00	e2.0	e790	4.3	19	1160	60
13	.00	0	.00	e1.5	e545	2.2	20	700	38
14	.00	0	.00	e.95	e280	.72	11	e500	15
15	.00	0	.00	e.70	e70	.13	8.6	e445	10
16	.00	0	.00	e.60	e20	.03	6.6	e398	7.1
17	.00	0	.00	e.50	e18	.02	4.2	e345	3.9
18	.00	0	.00	e.40	e16	.02	4.0	e300	3.2
19	.00	0	.00	e.34	e10	.01	6.8	e350	6.4
20	.00	0	.00	e.29	e8	.01	7.0	305	5.8
21	.00	0	.00	e.24	e5	.00	3.9	190	2.0
22	.00	0	.00	e.20	e4	.00	4.8	116	1.5
23	.00	0	.00	e.18	e3	.00	5.1	76	1.0
24	.00	0	.00	e.18	e2	.00	4.3	e71	.82
25	e.00	0	.00	e.20	e2	.00	3.7	68	.68
26	e.00	0	.00	e.25	e4	.00	2.7	e65	.47
27	e.02	e0	.00	e.30	e5	.00	3.4	e61	.56
28	e.05	e0	.00	e.35	e5	.00	2.4	e56	.36
29	e.12	e0	.00	---	---	---	1.8	e53	.26
30	e.30	e0	.00	---	---	---	1.4	51	.19
31	e.70	e0	.00	---	---	---	.82	48	.11
TOTAL	1.19	---	0.00	42.38	---	52.31	3269.92	---	14724.37
APRIL			MAY			JUNE			
1	3.3	62	.55	79	1580	682	.04	e38	.00
2	1.8	e62	.30	386	4700	4900	.04	e35	.00
3	.84	e54	.12	94	e3120	792	.03	e32	.00
4	.50	e46	.06	32	e1400	121	.02	e30	.00
5	.34	e38	.03	16	e510	22	.01	22	.00
6	.24	e32	.02	29	e1200	94	.00	0	.00
7	.37	e27	.03	395	e6800	7250	34	e8500	780
8	.27	e22	.02	487	e12500	16400	111	11800	4020
9	33	26800	2390	612	e12500	20700	215	17300	10000
10	11	e21000	624	233	6600	5770	93	17500	4390
11	4.6	e15700	195	68	e710	130	17	e13300	610
12	11	e14100	419	32	e575	50	6.5	9900	174
13	11	14000	416	20	e487	26	2.7	2480	22
14	18	e12800	622	13	e415	15	1.0	e150	.40
15	124	e15300	5120	7.8	e348	7.3	.61	e100	.16
16	27	e6000	437	5.2	280	3.9	27	e950	69
17	10	e1980	53	4.1	e178	2.0	22	1050	62
18	5.2	e800	11	3.6	115	1.1	125	e1430	483
19	4.3	e500	5.8	2.7	98	.71	175	e1460	690
20	3.9	e500	5.3	2.1	e92	.52	201	e1410	765
21	26	e2900	204	2.1	e88	.50	60	e840	136
22	186	e7000	3520	1.3	e82	.29	24	530	34
23	175	6900	3260	.79	e79	.17	13	e385	14
24	56	e3800	575	.47	e72	.09	7.9	325	6.9
25	23	e2000	124	.35	e69	.07	4.4	e240	2.9
26	12	e1150	37	.26	e63	.04	2.7	e182	1.3
27	6.9	e670	12	.24	e58	.04	1.7	e130	.60
28	4.2	350	4.0	.09	50	.01	.98	e95	.25
29	2.9	150	1.2	.06	e46	.01	.62	e70	.12
30	3.1	150	1.3	.05	e42	.01	.41	e52	.06
31	---	---	---	.06	e40	.01	---	---	---
TOTAL	765.76	---	18037.73	2527.27	---	56968.77	1146.66	---	22261.69

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 1992 TO SEPTEMBER 1993

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	.99	e120	.32	5.8	e410	6.4	1.4	e197	.74
2	24	e5600	363	3.3	e250	2.2	.93	187	.47
3	163	21300	10000	2.1	120	.68	.54	172	.25
4	43	15500	1800	1.2	e117	.41	.36	e156	.15
5	48	e23000	2980	.87	e109	.26	.25	e137	.09
6	10	22100	597	.47	e98	.12	.22	109	.06
7	4.8	e17500	227	.29	e89	.07	.09	74	.02
8	7.9	15400	328	.21	e81	.05	.07	e58	.01
9	17	e15500	711	.15	e74	.03	.05	53	.01
10	8.5	e10100	232	.09	e71	.02	.10	e50	.01
11	3.8	2700	28	.08	e67	.01	.05	e30	.00
12	2.1	e380	2.2	.04	e63	.01	.02	0	.00
13	1.6	200	.86	.05	e60	.01	.03	0	.00
14	117	e4250	1340	.03	e56	.00	.01	0	.00
15	46	3870	535	.03	e52	.00	2.3	e40	.25
16	14	1200	45	4.2	e730	8.3	5.7	186	2.9
17	7.3	e630	12	73	e3260	643	1.7	136	.62
18	9.4	e700	18	39	e2250	237	.64	e113	.20
19	7.8	e950	20	16	e1340	58	1.1	121	.36
20	3.4	e500	4.6	12	e640	21	87	e20800	9950
21	2.9	e495	3.9	303	e1510	1240	206	19700	13600
22	9.7	e890	23	626	e2200	3720	21	e5000	283
23	64	e3420	591	165	e1550	691	8.1	e900	20
24	11	e2200	65	50	e650	88	3.7	e434	4.3
25	4.8	e1450	19	29	e590	46	1.6	e324	1.4
26	66	9270	2800	19	e520	27	.52	e254	.36
27	42	e9400	1070	13	e470	16	.21	e195	.11
28	153	e11400	4710	9.5	e405	10	.11	e140	.04
29	55	e8700	1290	6.5	e355	6.2	.19	90	.05
30	18	e2500	121	3.8	e290	3.0	.13	e50	.02
31	10	e900	24	2.3	225	1.4	---	---	---
TOTAL	975.99	---	29960.88	1386.11	---	6826.17	344.12	---	23865.42
YEAR	10459.40		172697.34						
e Estimated									

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB								
10...	1000	3.2	276	-8.0	0.0	825	7.2	100
MAR								
08...	1700	450	167	8.0	0.0	1770	2150	98
25...	1645	3.2	479	7.0	0.5	55	0.48	99
MAY								
10...	1305	191	372	22.0	16.0	2780	1430	86
JUN								
09...	1505	182	333	23.5	15.5	18000	8850	100
JUL								
08...	1415	4.6	570	22.0	20.0	15200	189	100
AUG								
03...	1100	2.0	490	20.0	22.0	122	0.65	--
31...	1425	2.3	330	25.0	18.5	204	1.3	100

MISSOURI-FORT RANDALL RIVER BASIN

06441000 BAD RIVER NEAR MIDLAND, SD

LOCATION.--Lat 44°04'01", long 101°09'36", in NE1/4NW1/4 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 sea level. 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 poor. 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.--Maximum discharge, 1,900 ft³/s at 1200 hours, Mar. 8, 13.41 ft; maximum gage height, 15.22 ft, from ice dam, Mar. 7; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

Daily discharges, in cubic feet per second, above 100 ft³/s are given herewith:

Mar. 6	e393	May 9	1,570	June 16	115	July 7	226
Mar. 7	e1,500	May 10	1,530	June 17	290	July 8	120
Mar. 8	e1,060	May 11	966	June 18	429	July 16	107
Mar. 9	e1,590	May 12	349	June 19	e500	July 21	308
Mar. 10	e884	May 13	190	June 20	e550	July 22	141
Mar. 11	e315	May 14	108	June 21	e600	July 28	123
Apr. 23	131	June 7	230	June 22	e300	July 29	159
Apr. 24	211	June 8	521	June 23	162	July 30	166
Apr. 25	102	June 9	440	July 3	110	Aug. 22	131
May 3	448	June 10	325	July 4	370	Aug. 23	345
May 4	206	June 11	234	July 5	454	Aug. 24	298
May 7	142	June 12	137	July 6	338	Aug. 25	100
May 8	831						

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN
06441110 PLUM CREEK BELOW HAYES, SD

LOCATION.--Lat 44°12'38", long 100°43'34", in NW1/4NW1/4NW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	e.01	e1.0	5.6	50	.00	1.3	.26	.00
2	.00	.00	.00	.00	e.20	e5.0	4.2	5.5	17	1.6	.00	.00
3	.00	.00	.00	.00	e13	e10	2.6	1.2	8.6	13	.00	.00
4	.00	.00	.00	.00	e8.0	e60	1.5	.76	2.1	5.9	.00	.00
5	.00	.00	.00	.00	e10	e500	.91	.06	.84	1.7	.00	.00
6	.00	.00	.00	.00	e9.0	e700	.75	4.1	.46	.80	.00	.00
7	.00	.00	.00	.00	e10	e500	17	41	571	.53	.00	.00
8	.00	.00	.00	.00	e11	e400	33	25	453	.70	.00	.00
9	.00	.00	.00	.00	e11	e300	5.1	28	144	1.3	.00	.00
10	.00	.00	.00	.00	e5.0	e200	2.1	37	52	.72	.00	.00
11	.00	.00	.00	.00	e3.0	e150	1.6	25	25	.33	.00	.00
12	.00	.00	.00	.00	e3.0	e125	4.0	13	14	.36	.00	.00
13	.00	.00	.00	.00	e3.0	e100	30	1.5	8.6	282	.00	.00
14	.00	.00	.00	.00	e2.0	e80	89	.62	4.8	212	.00	.00
15	.00	.00	.00	.00	e1.5	e65	12	.24	2.8	77	.00	.00
16	.00	.00	.00	.00	e1.4	e55	4.2	.11	24	36	.00	.00
17	.00	.00	.00	.00	e1.3	e45	3.3	.00	9.7	19	.00	.00
18	.00	.00	.00	.00	e1.2	e35	2.5	.00	4.5	11	.00	.00
19	.00	.00	.00	.00	e1.0	e25	11	.00	20	7.1	.00	.00
20	.00	.00	.00	.00	e.50	e18	11	.00	7.0	6.2	.00	.00
21	.00	.00	.00	.00	e.30	e12	3.7	.00	8.8	34	.00	.00
22	.00	.00	.00	.00	e.30	e8.0	2.5	.00	2.6	19	.00	.00
23	.00	.00	.00	.00	e.20	e5.0	1.5	.00	1.6	4.8	.00	.00
24	.00	.00	.00	.00	e.10	e3.0	.96	.00	3.9	3.9	.00	.00
25	.00	.00	.00	.00	e.00	e2.5	.95	.00	1.6	3.6	.00	.00
26	.00	.00	.00	e.03	e.00	e2.2	.78	.00	.72	2.4	.00	.00
27	.00	.00	.00	e.02	e.00	2.9	.47	.00	.43	2.1	.00	.00
28	.00	.00	.00	.00	e.00	1.9	.20	.00	.46	1.3	.00	.00
29	.00	.00	.00	.00	---	42	.07	.00	.55	.82	.00	.00
30	.00	.00	.00	.00	---	39	.12	.00	.52	.56	.00	.00
31	.00	---	.00	e.01	---	8.8	---	.00	---	.43	.00	---
TOTAL	0.00	0.00	0.00	0.06	96.01	3501.3	252.61	233.09	1390.58	751.45	0.26	0.00
MEAN	.000	.000	.000	.002	3.43	113	8.42	7.52	46.4	24.2	.008	.000
MAX	.00	.00	.00	.03	13	700	89	50	571	282	.26	.00
MIN	.00	.00	.00	.00	.00	1.0	.07	.00	.00	.33	.00	.00
AC-FT	.00	.00	.00	.1	190	6940	501	462	2760	1490	.5	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1993, BY WATER YEAR (WY)

	1990	1991	1992	1993
MEAN	.000	.007	.000	.29
MAX	.000	.026	.002	1.06
(WY)	1990	1990	1990	1990
MIN	.000	.000	.000	.000
(WY)	1990	1991	1991	1991

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1990 - 1993
ANNUAL TOTAL	775.94	6225.36	
ANNUAL MEAN	2.12	17.1	10.4
HIGHEST ANNUAL MEAN			19.6
LOWEST ANNUAL MEAN			2.12
HIGHEST DAILY MEAN	239	700	3370
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		1840	13500
INSTANTANEOUS PEAK STAGE		15.30	23.74
ANNUAL RUNOFF (AC-FT)	1540	12350	7530
10 PERCENT EXCEEDS	2.3	25	5.7
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a Backwater from ice.

b No flow for many days in each year.

MISSOURI-FORT RANDALL RIVER BASIN
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.

EXTREMES FOR PERIOD OF DAILY RECORD.

SEDIMENT CONCENTRATION: Maximum daily mean, 57,000 mg/L, June 16, 1990; minimum daily mean, 2 mg/L, May 15, 16, 1993.

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, 19,000 mg/L, July 21; minimum daily mean, 2 mg/L, May 15, 16.

SEDIMENT LOAD: Maximum daily, 52,000 tons, June 7; minimum daily, 0 ton on many days.

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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

MISSOURI-FORT RANDALL RIVER BASIN

06441110 PLUM CREEK BELOW HAYES, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	.00	0	.00	e.01	e0	.00	e1.0	e10	.03
2	.00	0	.00	e.20	e10	.01	e5.0	e100	1.3
3	.00	0	.00	e13	e90	3.2	e10	e500	13
4	.00	0	.00	e8.0	e140	3.0	e60	1000	162
5	.00	0	.00	e10	e200	5.4	e500	7500	10100
6	.00	0	.00	e9.0	e240	5.8	e700	12200	23100
7	.00	0	.00	e10	e260	7.0	e500	11900	16100
8	.00	0	.00	e11	e500	15	e400	10700	11600
9	.00	0	.00	e11	e550	16	e300	e6490	5260
10	.00	0	.00	e5.0	e300	4.0	e200	e2490	1340
11	.00	0	.00	e3.0	e200	1.6	e150	e750	304
12	.00	0	.00	e3.0	e60	.49	e125	e600	202
13	.00	0	.00	e3.0	e50	.40	e100	e300	81
14	.00	0	.00	e2.0	e50	.27	e80	e280	60
15	.00	0	.00	e1.5	e50	.20	e65	e250	44
16	.00	0	.00	e1.4	e45	.17	e55	e200	30
17	.00	0	.00	e1.3	e45	.16	e45	e200	24
18	.00	0	.00	e1.2	e40	.13	e35	e200	19
19	.00	0	.00	e1.0	e40	.11	e25	e150	10
20	.00	0	.00	e.50	e25	.03	e18	e100	4.9
21	.00	0	.00	e.30	e20	.02	e12	e50	1.6
22	.00	0	.00	e.30	e15	.01	e8.0	e10	.22
23	.00	0	.00	e.20	e10	.01	e5.0	e10	.13
24	.00	0	.00	e.10	e5	.00	e3.0	e10	.08
25	.00	0	.00	e.00	0	.00	e2.5	e10	.07
26	e.03	0	.00	e.00	0	.00	e2.2	e50	.30
27	e.02	0	.00	e.00	0	.00	2.9	e130	1.0
28	.00	0	.00	e.00	0	.00	1.9	e80	.41
29	.00	0	.00	---	---	---	42	10800	2570
30	.00	0	.00	---	---	---	39	17000	2100
31	e.01	e0	.00	---	---	---	8.8	5200	124
TOTAL	0.06	---	0.00	96.01	---	63.01	3501.3	---	73253.04
APRIL			MAY			JUNE			
1	5.6	1000	15	50	e8500	1150	.00	0	.00
2	4.2	e200	2.3	5.5	e2800	42	17	e11800	542
3	2.6	e50	.35	1.2	e600	1.9	8.6	e9200	214
4	1.5	e20	.08	.76	e600	1.2	2.1	e3000	17
5	.91	e10	.02	.06	e200	.03	.84	e600	1.4
6	.75	e50	.10	4.1	950	11	.46	e200	.25
7	17	e4500	207	41	e3340	370	571	18100	52000
8	33	e8000	713	25	e800	54	453	10000	12200
9	5.1	e3200	44	28	e850	64	144	4500	1750
10	2.1	e1000	5.7	37	e2000	200	52	e2300	323
11	1.6	e450	1.9	25	600	40	25	e1200	81
12	4.0	e1250	13	13	e190	6.7	14	e400	15
13	30	5180	1260	1.5	e40	.16	8.6	e100	2.3
14	89	17700	4920	.62	e8	.01	4.8	e50	.65
15	12	e6000	194	.24	e2	.00	2.8	e20	.15
16	4.2	e2000	23	.11	e2	.00	24	e10700	693
17	3.3	e2100	19	.00	0	.00	9.7	e7800	204
18	2.5	e1500	10	.00	0	.00	4.5	e3700	45
19	11	e3400	101	.00	0	.00	20	4750	256
20	11	e3400	101	.00	0	.00	7.0	e3700	70
21	3.7	e700	7.0	.00	0	.00	8.8	e2500	59
22	2.5	e200	1.3	.00	0	.00	2.6	e500	3.5
23	1.5	e190	.77	.00	0	.00	1.6	e200	.86
24	.96	e170	.44	.00	0	.00	3.9	300	3.2
25	.95	130	.33	.00	0	.00	1.6	e200	.86
26	.78	e120	.25	.00	0	.00	.72	e180	.35
27	.47	e100	.13	.00	0	.00	.43	e170	.20
28	.20	e80	.04	.00	0	.00	.46	e160	.20
29	.07	e40	.01	.00	0	.00	.55	e150	.22
30	.12	e400	.13	.00	0	.00	.52	140	.20
31	---	---	---	.00	0	.00	---	---	---
TOTAL	252.61	---	7640.85	233.09	---	1941.00	1390.58	---	68483.34
e Estimated									

e Estimated

MISSOURI-FORT RANDALL RIVER BASIN

06441110 PLUM CREEK BELOW HAYES, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	1.3	e160	.56	.26	e10	.01	.00	0	.00
2	1.6	148	.64	.00	0	.00	.00	0	.00
3	13	e290	10	.00	0	.00	.00	0	.00
4	5.9	212	3.4	.00	0	.00	.00	0	.00
5	1.7	128	.59	.00	0	.00	.00	0	.00
6	.80	110	.24	.00	0	.00	.00	0	.00
7	.53	e104	.15	.00	0	.00	.00	0	.00
8	.70	e102	.19	.00	0	.00	.00	0	.00
9	1.3	e126	.44	.00	0	.00	.00	0	.00
10	.72	e100	.19	.00	0	.00	.00	0	.00
11	.33	e55	.05	.00	0	.00	.00	0	.00
12	.36	e38	.04	.00	0	.00	.00	0	.00
13	282	3660	5700	.00	0	.00	.00	0	.00
14	212	3420	2270	.00	0	.00	.00	0	.00
15	77	1800	374	.00	0	.00	.00	0	.00
16	36	e900	87	.00	0	.00	.00	0	.00
17	19	e450	23	.00	0	.00	.00	0	.00
18	11	e350	10	.00	0	.00	.00	0	.00
19	7.1	e300	5.8	.00	0	.00	.00	0	.00
20	6.2	e260	4.4	.00	0	.00	.00	0	.00
21	34	19000	3130	.00	0	.00	.00	0	.00
22	19	16300	1180	.00	0	.00	.00	0	.00
23	4.8	e3000	39	.00	0	.00	.00	0	.00
24	3.9	e1000	11	.00	0	.00	.00	0	.00
25	3.6	250	2.4	.00	0	.00	.00	0	.00
26	2.4	e200	1.3	.00	0	.00	.00	0	.00
27	2.1	e150	.85	.00	0	.00	.00	0	.00
28	1.3	e100	.35	.00	0	.00	.00	0	.00
29	.82	e80	.18	.00	0	.00	.00	0	.00
30	.56	e40	.06	.00	0	.00	.00	0	.00
31	.43	e10	.01	.00	0	.00	---	---	---
TOTAL	751.45	---	12855.84	0.26	---	0.01	0.00	---	0.00
YEAR	6225.36		164237.09						
e Estimated									

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB								
08...	1130	13	1980	-2.5	0.0	540	19	100
MAR								
30...	1130	27	3170	5.0	6.0	17700	1300	100
MAY								
11...	1200	20	3680	23.0	16.0	317	17	--
JUN								
08...	1100	456	3280	20.0	15.0	9540	11700	96
JUL								
06...	1200	0.75	4140	29.0	20.0	109	0.22	100

MISSOURI-FORT RANDALL RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD

LOCATION.--Lat 44°19'36", long 100°23'02", in NW1/4NW1/4 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 sea level. Prior to July 10, 1951, nonrecording gage at same site and datum.

REMARKS.--Records fair 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	e2.0	e2.0	114	313	9.9	90	e112	21
2	.00	.00	.00	.00	e10	e2.5	73	460	67	111	104	16
3	.00	.00	.00	.00	e50	e5.0	57	342	66	151	65	12
4	.00	.00	.00	.00	e45	e500	44	329	35	213	41	9.7
5	.00	.00	.00	.00	e50	e2500	35	417	19	269	35	7.6
6	.00	.00	.00	.00	e45	e3500	30	193	16	317	29	5.9
7	.00	.00	.00	.00	e40	4300	95	217	476	356	25	4.6
8	.00	.00	.00	.00	e35	3630	251	295	1410	313	26	3.5
9	.00	.00	.00	.00	e30	2930	138	552	1110	170	25	2.7
10	.00	.00	.00	.00	e40	2170	72	1100	883	161	24	2.1
11	.00	.00	.00	.00	e35	1290	52	1320	471	346	25	1.8
12	.00	.00	.00	.00	e30	.727	154	1110	317	1770	24	1.6
13	.00	.00	.00	.00	e25	458	203	477	182	2440	23	1.6
14	.00	.00	.00	.00	e20	312	724	237	107	819	19	1.6
15	.00	.00	.00	.00	e16	266	333	117	65	367	16	1.5
16	.00	.00	.00	.00	e12	233	167	75	54	181	12	1.3
17	.00	.00	.00	.00	e10	152	120	54	61	120	6.4	1.2
18	.00	.00	.00	.00	e9.0	135	132	41	148	126	5.0	1.2
19	.00	.00	.00	.00	e8.0	104	191	31	343	119	3.8	1.2
20	.00	.00	.00	.00	e7.0	100	259	26	484	103	3.6	1.4
21	.00	.00	.00	.00	e6.0	80	122	21	570	396	2.8	2.1
22	.00	.00	.00	.00	e5.0	74	90	16	597	341	2.4	1.6
23	.00	.00	.00	.00	e4.0	77	78	13	383	567	3.8	.82
24	.00	.00	.00	.00	e3.0	92	77	12	209	232	71	64
25	.00	.00	.00	.00	e2.5	86	150	12	129	145	280	63
26	.00	.00	.00	.00	e2.0	73	190	10	83	123	120	33
27	.00	.00	.00	.00	e2.0	56	113	9.7	62	109	107	22
28	.00	.00	.00	.00	e2.0	47	77	8.9	39	114	68	15
29	.00	.00	.00	.00	---	310	57	7.9	32	112	44	11
30	.00	.00	.00	.00	---	354	47	9.0	92	111	36	7.0
31	.00	---	.00	.00	---	160	---	8.9	---	114	28	---
TOTAL	0.00	0.00	0.00	0.00	545.5	24725.5	4245	7834.4	8519.9	10906	1386.8	319.02
MEAN	.0000	.0000	.0000	.0000	19.5	798	141	253	284	352	44.7	10.6
MAX	.00	.00	.00	.00	50	4300	724	1320	1410	2440	280	64
MIN	.00	.00	.00	.00	2.0	2.0	30	7.9	9.9	90	2.4	.82
AC-FT	.00	.00	.00	.00	1080	49040	8420	15540	16900	21630	2750	63

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1993, BY WATER YEAR (WY)

MEAN	16.3	1.19	.56	5.41	54.3	457	400	354	336	72.8	40.9	22.9
MAX	295	18.1	15.8	254	534	3607	7306	6663	2567	561	706	394
(WY)	1983	1987	1987	1931	1971	1978	1952	1942	1967	1937	1930	1938
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1929	1929	1929	1929	1936	1934	1934	1980	1930	1930	1929	1929

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1929 - 1993

ANNUAL TOTAL	15473.26			58482.12					
ANNUAL MEAN	42.3			160				147a	
HIGHEST ANNUAL MEAN								800	1942
LOWEST ANNUAL MEAN								6.07	1980
HIGHEST DAILY MEAN	1470	Jul 14		4300	Mar 7		27200		May 1 1942
LOWEST DAILY MEAN	.00	Jan 1		.00	Oct 1b		.00		Sep 1 1928b
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1		.00	Oct 1		.00		Sep 1 1928
INSTANTANEOUS PEAK FLOW				6160	Jul 12c		43800		Jun 18 1967
INSTANTANEOUS PEAK STAGE				21.22	Mar 6d		29.55		Jun 18 1967
ANNUAL RUNOFF (AC-FT)	30690			116000			106500		
10 PERCENT EXCEEDS	89			344			180		
50 PERCENT EXCEEDS	.00			15			.30		
90 PERCENT EXCEEDS	.00			.00			.00		

e Estimated

a Median of annual mean discharges, 99 ft³/s.

b No flow for long periods in each year.

c Gage height, 17.87 ft.

d Ice jam.

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 poor. Observer collects samples on a daily basis. Flow affected by ice Feb. 1 to Mar. 6. 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, estimated, on many days some years.

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, 27,500 mg/L, Mar. 30; minimum daily mean, 10 mg/L, Feb. 1.

SEDIMENT LOAD: Maximum daily, 114,000 tons, Mar. 7; minimum daily, 0 ton on many days.

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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

MISSOURI-FORT RANDALL RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	.00	0	.00	e2.0	e10	.05	e2.0	e21	.11
2	.00	0	.00	e10	430	12	e2.5	e35	.24
3	.00	0	.00	e50	1290	174	e5.0	e460	6.2
4	.00	0	.00	e45	1190	145	e500	2300	3100
5	.00	0	.00	e50	1410	190	e2500	9000	60700
6	.00	0	.00	e45	e1260	153	e3500	10500	99200
7	.00	0	.00	e40	e630	68	4300	e9800	114000
8	.00	0	.00	e35	200	19	3630	7800	76400
9	.00	0	.00	e30	180	15	2930	4100	32400
10	.00	0	.00	e40	e178	19	2170	e2700	15800
11	.00	0	.00	e35	e175	17	1290	e2300	8010
12	.00	0	.00	e30	e172	14	727	e2200	4320
13	.00	0	.00	e25	e171	12	458	e2200	2720
14	.00	0	.00	e20	e158	8.5	312	2400	2020
15	.00	0	.00	e16	e145	6.3	266	2700	1940
16	.00	0	.00	e12	e131	4.2	233	3000	1890
17	.00	0	.00	e10	e118	3.2	152	2100	862
18	.00	0	.00	e9.0	e109	2.6	135	1700	620
19	.00	0	.00	e8.0	e99	2.1	104	900	253
20	.00	0	.00	e7.0	e87	1.6	100	500	135
21	.00	0	.00	e6.0	e75	1.2	80	440	95
22	.00	0	.00	e5.0	e70	.94	74	500	100
23	.00	0	.00	e4.0	e63	.68	77	1300	270
24	.00	0	.00	e3.0	e54	.44	92	1200	298
25	.00	0	.00	e2.5	e47	.32	86	900	209
26	.00	0	.00	e2.0	e40	.22	73	400	79
27	.00	0	.00	e2.0	e37	.20	56	340	51
28	.00	0	.00	e2.0	e30	.16	47	e200	25
29	.00	0	.00	---	---	---	310	e22000	18400
30	.00	0	.00	---	---	---	354	27500	26300
31	.00	0	.00	---	---	---	160	13700	5920
TOTAL	0.00	---	0.00	545.5	---	870.71	24725.5	---	476123.55
APRIL			MAY			JUNE			
1	114	4300	1320	313	e6650	5620	9.9	85	2.3
2	73	e490	97	460	6700	8320	67	3850	696
3	57	380	58	342	4100	3790	66	4400	784
4	44	280	33	329	5420	5840	35	4090	387
5	35	210	20	417	e11800	13300	19	e3750	192
6	30	240	19	193	e9900	5160	16	e3410	147
7	95	2510	1170	217	11900	6970	476	e6320	8120
8	251	14700	9960	295	11200	8920	1410	e13300	50600
9	138	e8700	3240	552	e9000	13400	1110	e13900	41700
10	72	e3300	642	1100	8000	23800	883	e12800	30500
11	52	650	91	1320	6200	22100	471	e8300	10600
12	154	7340	3050	1110	e4100	12300	317	e4500	3850
13	203	10800	5920	477	e2300	2960	182	2200	1080
14	724	18800	36800	237	900	576	107	e1200	347
15	333	11800	10600	117	e400	126	65	e700	123
16	167	4200	1890	75	e270	55	54	e450	66
17	120	1400	454	54	e220	32	61	e2150	354
18	132	1600	570	41	e185	20	148	e5200	2080
19	191	4400	2270	31	e160	13	343	e9200	8520
20	259	e9600	6710	26	e145	10	484	e12400	16200
21	122	e3800	1250	21	130	7.4	570	e12500	19200
22	90	900	219	16	e110	4.8	597	e12800	20600
23	78	500	105	13	e95	3.3	383	e7200	7450
24	77	1100	229	12	e80	2.6	209	e3400	1920
25	150	e4900	1980	12	65	2.1	129	e2800	975
26	190	e8900	4570	10	e65	1.8	83	e2300	515
27	113	e5200	1590	9.7	e70	1.8	62	e1800	301
28	77	e2200	457	8.9	e65	1.6	39	e1400	147
29	57	e1100	169	7.9	e70	1.5	32	e900	78
30	47	e800	102	9.0	100	2.4	92	e1200	298
31	---	---	---	8.9	e115	2.8	---	---	---
TOTAL	4245	---	95585	7834.4	---	133344.1	8519.9	---	227832.3

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 1992 TO SEPTEMBER 1993

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	90	e800	194	e112	e1600	484	21	300	17
2	111	e800	240	104	e500	140	16	e200	8.6
3	151	e805	328	65	188	33	12	106	3.4
4	213	e2000	1150	41	164	18	9.7	72	1.9
5	269	e2200	1600	35	e141	13	7.6	70	1.4
6	317	e2000	1710	29	117	9.2	5.9	69	1.1
7	356	e2000	1920	25	e99	6.7	4.6	63	.78
8	313	e1850	1560	26	90	6.3	3.5	51	.48
9	170	700	321	25	86	5.8	2.7	49	.36
10	161	4400	3210	24	84	5.4	2.1	54	.31
11	346	e15300	14300	25	82	5.5	1.8	63	.31
12	1770	14500	112000	24	81	5.2	1.6	70	.30
13	2440	e16800	111000	23	85	5.3	1.6	69	.30
14	819	e11700	25900	19	94	4.8	1.6	63	.27
15	367	4800	4760	16	97	4.2	1.5	66	.27
16	181	e2430	1190	12	97	3.1	1.3	69	.24
17	120	e1780	577	6.4	96	1.7	1.2	68	.22
18	126	e1280	435	5.0	96	1.3	1.2	68	.22
19	119	880	283	3.8	96	.98	1.2	67	.22
20	103	930	259	3.6	95	.92	1.4	66	.25
21	396	e9390	10000	2.8	95	.72	2.1	65	.37
22	341	e14300	13200	2.4	94	.61	1.6	64	.28
23	567	e12800	19600	3.8	97	1.0	.82	63	.14
24	232	e8200	5140	71	e980	188	64	123	21
25	145	e4200	1640	280	e1900	1440	63	e140	24
26	123	e1100	365	120	e1080	350	33	e89	7.9
27	109	e450	132	107	e790	228	22	e62	3.7
28	114	e300	92	68	e675	124	15	50	2.0
29	112	e200	60	44	e580	69	11	44	1.3
30	111	e250	75	36	e485	47	7.0	38	.72
31	114	e1400	431	28	e391	30	---	---	---
TOTAL	10906	---	333672	1386.8	---	3232.73	319.02	---	99.34
YEAR	58482.12		1270759.73						

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
FEB								
04...	1115	50	1530	3.0	5.0	830	112	100
APR								
01...	1120	121	2910	3.0	4.0	5000	1630	100
MAY								
03...	1110	337	2170	23.0	16.0	4620	4200	84
11...	1645	1300	2180	23.0	16.0	5660	19900	100
JUN								
01...	1250	10	2050	13.0	16.0	80	2.2	87
JUL								
02...	1200	101	2560	29.0	19.0	12900	3520	87
12...	2025	5990	847	18.5	16.0	24200	391000	99
19...	1205	120	1680	22.0	21.0	1540	499	69
AUG								
02...	1200	106	1100	27.0	22.0	9400	2690	100
SEP								
01...	1150	20	646	21.0	17.5	304	16	--
30...	0930	7.8	--	--	10.5	41	0.86	99

MISSOURI-FORT RANDALL RIVER BASIN

06441590 MISSOURI RIVER AT LA FRAMBOISE ISLAND, AT PIERRE, SD

LOCATION.--Lat 44°21'07", long 100°21'31", in NW1/4SW1/4NE1/4 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 above sea level.

REMARKS.--Records poor. 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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.05	21.44	20.78	21.90	21.52	22.70	22.64	23.30	24.00	22.64	22.15	19.80
2	22.24	21.98	21.35	21.76	21.46	21.61	23.07	23.07	23.74	22.34	22.51	19.42
3	22.21	21.21	21.32	21.53	21.26	21.79	22.80	23.27	23.89	22.93	22.36	19.78
4	22.80	21.35	21.03	22.36	21.41	21.76	23.00	23.25	23.13	22.39	22.46	19.71
5	22.11	---	21.30	22.21	21.31	22.27	23.47	23.54	23.64	22.56	22.44	19.78
6	22.06	---	21.30	22.60	21.37	21.66	22.77	23.37	24.22	22.80	22.58	19.83
7	21.72	---	22.13	22.99	21.46	21.66	22.65	23.39	24.02	22.65	22.68	19.99
8	21.71	---	22.39	23.33	22.25	21.81	22.41	23.30	24.11	22.59	22.53	20.41
9	21.65	---	22.14	22.34	22.23	21.21	22.52	22.63	24.05	22.35	22.56	20.05
10	21.85	21.20	21.75	22.39	22.41	22.73	---	22.92	22.71	22.42	21.61	20.28
11	21.99	21.38	21.77	23.16	21.78	22.74	---	23.06	24.08	22.49	20.78	20.44
12	22.05	20.94	21.21	22.99	21.63	22.42	---	23.06	24.32	23.15	20.34	20.48
13	22.16	21.40	21.15	24.21	21.05	22.64	---	22.84	23.16	22.50	20.27	20.45
14	21.73	21.21	22.50	23.29	21.02	22.71	---	22.90	23.75	22.72	20.36	20.60
15	22.00	21.54	22.41	22.64	21.78	22.73	22.60	22.81	24.68	23.02	20.33	21.23
16	21.95	21.44	22.43	22.06	21.90	22.31	22.63	23.11	24.26	22.81	20.64	20.58
17	21.50	21.53	22.48	22.30	22.53	23.00	22.47	22.79	23.69	22.58	20.67	20.50
18	21.57	21.76	22.24	22.33	22.49	23.00	---	23.01	24.11	22.70	20.20	20.17
19	22.08	21.44	22.03	22.44	22.33	22.46	---	22.78	23.72	22.54	20.39	20.00
20	21.45	21.33	22.37	21.92	22.28	22.72	---	22.82	23.83	22.91	20.26	20.48
21	21.48	21.15	22.16	21.79	22.02	22.86	22.68	23.16	24.17	23.46	20.23	21.15
22	21.34	22.13	22.24	21.75	22.86	22.80	22.82	22.94	23.96	23.03	19.80	20.89
23	21.24	21.88	21.73	21.55	22.70	23.11	22.97	---	23.44	22.99	19.77	21.93
24	21.34	21.40	21.78	21.85	23.44	23.06	22.69	---	23.09	22.75	20.76	21.53
25	21.11	21.28	20.97	22.85	22.13	23.19	23.01	---	21.97	22.44	20.57	20.88
26	21.60	20.87	21.83	21.93	22.33	23.09	23.48	---	21.92	23.02	19.99	20.22
27	21.63	21.12	21.93	21.82	22.53	22.86	22.91	---	22.76	22.18	19.77	21.18
28	21.53	21.19	22.48	21.87	22.22	22.84	23.31	23.39	23.11	22.48	19.94	21.34
29	21.76	20.99	22.64	21.99	---	23.15	23.32	23.32	23.27	22.80	19.87	21.11
30	22.49	21.75	22.51	21.17	---	22.81	23.54	23.36	22.75	22.75	19.60	20.93
31	21.54	---	22.45	21.12	---	22.78	---	23.51	---	22.63	19.86	---
MEAN	21.80	---	21.90	22.27	21.99	22.53	---	---	23.58	22.70	20.91	20.50
MAX	22.80	---	22.64	24.21	23.44	23.19	---	---	24.68	23.46	22.68	21.93
MIN	21.11	---	20.78	21.12	21.02	21.21	---	---	21.92	22.18	19.60	19.42

MISSOURI-FORT RANDALL RIVER BASIN

06441595 MISSOURI RIVER AT FARM ISLAND, NEAR PIERRE, SD

LOCATION.--Lat 44°20'03", long 100°15'54", in NW1/4SW1/4NE1/4 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 above sea level.

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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.79	20.49	19.85	---	20.78	21.30	20.42	21.03	21.51	20.46	20.08	20.07
2	21.05	20.73	20.47	---	20.71	20.61	20.82	21.03	21.20	20.29	20.32	19.63
3	21.47	20.17	20.49	---	20.55	20.80	20.66	20.89	21.20	20.64	20.28	19.91
4	20.83	20.27	20.13	---	20.59	20.77	20.87	21.12	20.73	20.29	20.46	19.80
5	20.93	20.51	20.39	---	20.55	20.99	21.24	21.36	20.97	20.50	20.40	19.84
6	20.95	20.42	20.52	---	20.70	20.66	20.81	21.22	21.05	20.64	20.49	19.87
7	20.70	20.49	20.94	---	20.77	20.64	20.63	21.14	21.61	20.57	20.61	19.98
8	20.59	20.62	21.26	---	21.32	20.69	20.54	21.01	21.01	20.49	20.50	20.10
9	20.48	20.66	20.99	---	21.19	19.77	20.64	20.60	21.03	20.32	20.43	19.79
10	20.47	20.41	20.59	---	21.25	20.57	20.49	20.83	21.02	20.51	20.43	20.10
11	20.68	20.56	20.60	---	20.85	20.47	20.62	20.94	21.25	20.52	20.45	20.28
12	20.84	20.16	20.22	---	20.78	20.16	20.76	20.93	21.23	21.11	20.00	20.44
13	20.85	20.50	20.28	---	20.52	20.51	20.91	21.03	20.80	20.60	20.27	20.21
14	20.50	20.51	21.15	---	20.49	20.72	20.71	20.90	21.13	20.80	20.11	20.41
15	20.62	20.77	20.94	---	20.86	20.68	20.56	20.89	21.70	21.02	20.17	20.77
16	20.57	20.68	20.88	---	20.93	19.95	20.61	20.87	21.01	20.93	20.34	20.28
17	20.41	20.72	20.95	---	---	20.60	20.50	20.80	21.07	20.56	20.35	20.28
18	20.61	20.81	20.72	---	---	20.58	20.63	20.84	21.07	20.66	20.13	20.14
19	20.87	20.56	20.70	---	---	20.40	20.63	20.77	20.87	20.44	20.23	20.10
20	20.47	20.44	21.17	---	21.15	20.61	20.54	20.72	21.18	20.75	20.13	20.17
21	20.44	20.30	21.10	---	21.13	20.83	20.68	20.99	21.49	21.17	20.29	20.40
22	20.29	21.10	21.09	20.89	21.65	20.58	20.76	20.85	21.39	20.95	20.02	20.11
23	20.19	20.98	20.60	20.76	21.43	20.86	20.87	20.30	20.77	20.92	19.89	20.90
24	20.33	20.59	20.58	21.14	21.18	20.79	20.55	20.37	20.38	20.64	20.47	20.84
25	20.16	20.48	19.91	21.83	21.01	20.78	20.85	20.63	19.75	20.32	20.33	20.46
26	20.51	20.19	20.61	21.23	21.04	20.65	21.20	20.76	20.12	20.82	20.00	20.03
27	20.39	20.35	20.90	21.02	21.15	20.68	20.64	20.61	20.46	20.15	20.00	20.73
28	20.30	20.41	21.08	20.83	21.09	20.71	20.94	20.94	20.81	20.34	20.16	20.73
29	20.57	20.20	---	20.96	---	20.91	20.94	20.99	21.02	20.60	20.07	20.64
30	21.11	20.81	---	20.41	---	20.55	21.13	21.02	20.63	20.52	19.77	20.47
31	20.53	---	---	20.55	---	20.41	---	21.22	---	20.46	20.13	---
MEAN	20.63	20.53	---	---	---	20.62	20.74	20.89	20.98	20.61	20.24	20.25
MAX	21.47	21.10	---	---	---	21.30	21.24	21.36	21.70	21.17	20.61	20.90
MIN	20.16	20.16	---	---	---	19.77	20.42	20.30	19.75	20.15	19.77	19.63

MISSOURI-FORT RANDALL RIVER BASIN

06442700 LAKE SHARPE NEAR FORT THOMPSON, SD

LOCATION.--Lat 44°02'18", long 99°26'45", in SE1/4 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 above sea level.

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 1,422.0 ft (revised). 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, 1,751,000 acre-ft, June 20; minimum contents, 1,670,000 acre-ft, Jan. 8.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,420.52	1,705,000	-
Oct. 31	1,420.57	1,712,000	+7,000
Nov. 30	1,420.72	1,720,000	+8,000
Dec. 31	1,420.49	1,702,000	-18,000
CAL YR 1992	-	-	-30,000
Jan. 31	1,420.63	1,717,000	+15,000
Feb. 28	1,420.73	1,721,000	+4,000
Mar. 31	1,420.53	1,711,000	-10,000
Apr. 30	1,420.77	1,723,000	+12,000
May 31	1,420.89	1,733,000	+10,000
June 30	1,420.63	1,717,000	-16,000
July 31	1,420.85	1,728,000	+11,000
Aug. 31	1,420.20	1,696,000	-32,000
Sept. 30	1,420.62	1,710,000	+14,000
WTR YR 1993	-	-	+5,000

NOTE.--Lake frozen over Dec. 20 to Apr. 1.

MISSOURI-FORT RANDALL RIVER BASIN

06442718 CAMPBELL CREEK NEAR LEE'S CORNER, SD

LOCATION.--Lat 44°04'39", long 99°22'51", in NW1/4NE1/4NW1/4 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.

REVISED RECORDS.--WDR SD-91-1: 1988-90(P).

GAGE.--Water-stage recorder. Datum of gage is 1,440.32 ft above sea level.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.39	e.20	.00	.00	.00	.40	101	.50	26	1.1	.08
2	.16	.20	e.2.0	.00	.00	.00	.39	16	.58	5.8	.54	.08
3	.15	.19	e.30	.00	.00	.00	.41	7.7	.38	.33	.38	.08
4	.14	.22	e.10	.00	.00	.00	.31	2.9	.29	.21	.31	.08
5	.13	.15	e.05	.00	.00	.00	.27	.84	.26	.16	.27	.09
6	.10	.16	e.05	.00	.00	.00	.33	.71	.26	.15	.22	.09
7	.10	.16	e.05	.00	.00	.00	9.6	.81	27	.28	.19	.11
8	.10	.16	e.05	.00	.00	.00	13	2.3	5.4	.19	.16	.10
9	.12	.17	e.06	.00	.00	.00	3.1	44	.80	.15	.15	.09
10	.14	.17	e.10	.00	.00	.00	14	21	.41	.13	.13	.09
11	.15	.16	e.10	e.00	.00	e.00	12	8.0	.58	.11	.11	.09
12	.18	.17	e.05	.00	.00	e.00	35	2.7	.49	.08	.11	.10
13	.17	e.17	e.05	.00	.00	e.00	25	.75	.45	.10	.13	.10
14	.17	.16	e.01	.00	.00	e.00	42	.57	.38	.09	.14	.11
15	.17	.16	e.01	.00	.00	e.10	16	.38	.34	.12	.14	.10
16	.19	.17	e.01	.00	.00	e.05	9.2	.35	.77	.17	.13	.10
17	.19	.17	e.01	.00	.00	e.02	5.7	.56	20	.86	.12	.11
18	.19	.17	e.01	.00	.00	e.04	2.9	.40	14	4.0	.12	.11
19	.21	.17	e.02	.00	.00	e.08	1.7	.34	39	32	.11	.19
20	.22	.17	e.01	.00	.00	e.15	.75	.28	16	5.6	.10	.16
21	.22	.17	e.02	.00	.00	e.30	.42	.26	7.6	176	.10	.14
22	.22	.16	e.02	.00	.00	e.10	.35	.26	2.8	116	.09	.13
23	.23	.16	e.01	.00	.00	e.15	.31	.26	.77	88	.09	.12
24	.22	.16	e.02	.00	.00	e.20	.29	.30	1.7	473	.09	.13
25	.22	.16	e.01	.00	.00	e.30	.25	.23	.27	683	.08	.12
26	.25	.14	e.01	.00	.00	e.40	.24	.20	.15	75	.07	.12
27	.26	.14	e.01	.00	.00	e.60	.25	.21	.12	60	.08	.13
28	.26	.14	.00	.00	.00	e.70	.20	.22	.10	16	.08	.14
29	.27	.14	.00	.00	---	e.4.0	.24	.22	8.1	9.7	.09	.15
30	.29	.14	.00	.00	---	1.8	1.5	.32	.52	5.1	.08	.15
31	.31	---	.00	.00	---	.70	---	.25	---	2.5	.08	---
TOTAL	5.89	5.15	3.34	0.00	0.00	9.69	196.11	214.32	150.02	1780.83	5.59	3.39
MEAN	.19	.17	.11	.000	.000	.31	6.54	6.91	5.00	57.4	.18	.11
MAX	.31	.39	2.0	.00	.00	4.0	42	101	39	683	1.1	.19
MIN	.10	.14	.00	.00	.00	.00	.20	.20	.10	.08	.07	.08
AC-FT	12	10	6.6	.00	.00	19	389	425	298	3530	11	6.7

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993
MEAN	.036	.039	.030	.16	2.87	2.97
MAX	.19	.17	.11	.78	15.3	7.60
(WY)	1993	1993	1993	1992	1992	1991
MIN	.000	.000	.000	.000	.000	.18
(WY)	1988	1989	1988	1988	1989	1991

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	1187.84	2374.33	
ANNUAL MEAN	3.25	6.51	3.64
HIGHEST ANNUAL MEAN			9.61
LOWEST ANNUAL MEAN			.63
HIGHEST DAILY MEAN	105	683	909
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		3260	3260
INSTANTANEOUS PEAK STAGE		15.01	15.01
ANNUAL RUNOFF (AC-FT)	2360	4710	2640
10 PERCENT EXCEEDS	6.0	5.5	1.7
50 PERCENT EXCEEDS	.16	.15	.03
90 PERCENT EXCEEDS	.05	.00	.00

e Estimated

a No flow for long periods in most years.

MISSOURI-FORT RANDALL RIVER BASIN
06442900 ELM CREEK NEAR GANN VALLEY, SD

LOCATION.--Lat 44°04'38", long 99°09'03", in NW1/4NE1/4NE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND; WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.06	e.15	.00	.00	.00	15	14	.68	9.8	74	.41
2	.04	.06	e.05	.00	.00	.00	10	12	.83	14	53	.42
3	.04	.08	e.05	.00	e.00	.00	8.8	20	.81	8.8	40	.42
4	.04	.09	e.05	.00	e.01	e.50	6.8	16	.76	5.6	29	.45
5	.04	e.10	e.05	.00	e.01	e5.0	5.3	10	.77	4.1	23	.48
6	.03	e.10	e.05	.00	e.00	e75	4.7	8.2	.93	3.2	18	.49
7	.04	e.10	e.05	.00	e.00	e200	4.9	7.5	1.8	3.2	14	.48
8	.05	e.10	e.10	.00	.00	e400	5.6	6.9	5.9	3.2	11	.49
9	.04	e.10	e.10	.00	.00	e300	7.8	11	38	3.1	8.6	.43
10	.05	.12	e.10	.00	.00	e150	9.7	12	22	3.0	6.5	.41
11	.05	.14	e.10	.00	.00	e90	11	10	11	2.8	5.2	.48
12	.05	.14	e.10	.00	.00	e50	18	7.2	7.2	2.4	4.3	.56
13	.04	.11	e.10	.00	.00	e40	24	5.6	6.8	2.2	3.7	.57
14	.04	.11	e.10	.00	.00	e30	26	4.5	5.7	2.1	3.2	.56
15	.04	.13	e.05	.00	.00	e25	27	3.9	4.1	5.6	2.8	.55
16	.04	.14	e.05	.00	.00	e18	22	3.4	4.2	21	2.6	.54
17	.04	.20	e.05	.00	.00	e15	16	3.5	4.3	20	2.2	.43
18	.03	.27	e.05	.00	.00	e12	12	3.3	3.4	27	1.9	.42
19	.04	.32	e.05	.00	.00	9.1	9.5	2.7	5.1	89	1.7	.87
20	.04	.35	e.05	.00	.00	7.3	7.8	2.3	7.5	44	1.5	1.1
21	.04	.40	e.05	.00	.00	5.0	6.5	2.1	29	48	1.4	1.1
22	.05	.32	e.05	.00	.00	4.2	5.9	1.9	33	72	1.3	1.2
23	.05	e.30	e.05	.00	.00	4.1	5.5	1.8	22	129	1.1	1.3
24	.07	e.30	e.05	.00	.00	4.1	4.6	1.5	19	83	.96	1.2
25	.59	e.25	e.05	.00	.00	3.9	3.9	1.4	18	e1200	.76	.81
26	.13	e.20	e.05	.00	.00	3.7	3.7	1.0	14	e1650	.65	.70
27	.06	e.20	e.05	.00	.00	3.5	3.4	.91	11	653	.65	.53
28	.05	e.20	e.05	.00	.00	3.9	3.4	.77	8.6	393	.67	.51
29	.04	e.20	e.05	.00	---	4.7	3.1	.74	7.2	248	.64	.50
30	.04	e.20	e.02	.00	---	7.2	3.1	.67	8.2	151	.48	.50
31	.04	---	.00	.00	---	15	---	.56	---	105	.40	---
TOTAL	1.98	5.39	1.92	0.00	0.02	1486.20	295.0	177.35	301.78	5006.1	315.21	18.91
MEAN	.064	.18	.062	.000	.001	47.9	9.83	5.72	10.1	161	10.2	.63
MAX	.59	.40	.15	.00	.01	400	27	20	38	1650	74	1.3
MIN	.03	.06	.00	.00	.00	.00	3.1	.56	.68	2.1	.40	.41
AC-FT	3.9	11	3.8	.00	.04	2950	585	352	599	9930	625	38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993
MEAN	.013	.030	.016	.69	19.6	23.1
MAX	.064	.18	.062	4.04	113	62.1
(WY)	1993	1993	1993	1992	1992	1989
MIN	.000	.000	.000	.000	.000	.12
(WY)	1988	1988	1989	1989	1989	1991

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	4600.94	7609.86	
ANNUAL MEAN	12.6	20.8	10.3
HIGHEST ANNUAL MEAN			20.8
LOWEST ANNUAL MEAN			2.06
HIGHEST DAILY MEAN	716	1650	1650
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.03	.00	.00
INSTANTANEOUS PEAK FLOW		(b)	(b)
INSTANTANEOUS PEAK STAGE		17.24	17.24
ANNUAL RUNOFF (AC-FT)	9130	15090	7460
10 PERCENT EXCEEDS	17	22	9.9
50 PERCENT EXCEEDS	.32	.65	.04
90 PERCENT EXCEEDS	.04	.00	.00

e Estimated

a No flow at times in most years.

b Discharge to be determined.

MISSOURI-FORT RANDALL RIVER BASIN

06442996 LAKE FRANCIS CASE (AMERICAN CREEK BAY) AT CHAMBERLAIN, SD

LOCATION.--Lat 43°48'52", long 099°19'24", in SE1/4NE1/4NW1/4 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 sea level, from topographic map.

REMARKS.--Records fair except those for Aug. 30 to Sept. 30, which are poor. 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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	44.59	45.65	---	49.70	---	57.23	57.22	56.27	57.92	61.01	58.99
2	---	44.83	45.80	49.01	49.82	53.49	57.50	57.49	56.16	58.08	61.03	58.42
3	---	45.48	45.65	47.39	49.91	53.54	57.49	57.69	56.60	58.20	60.89	58.25
4	---	45.59	45.81	46.75	49.92	53.86	57.51	57.78	56.68	58.11	60.90	57.90
5	---	46.09	44.98	48.21	49.90	54.32	57.68	57.80	56.55	58.07	60.78	57.55
6	---	45.80	44.26	48.78	49.71	54.52	57.60	57.76	56.32	58.36	60.69	57.33
7	---	45.14	44.40	49.98	49.52	54.67	57.43	57.81	56.47	58.60	60.68	57.22
8	---	44.46	45.53	51.22	49.83	55.12	57.53	57.72	56.53	58.88	60.59	57.39
9	---	44.41	46.43	50.08	50.36	55.65	57.55	57.58	56.74	59.00	60.37	57.61
10	---	44.61	47.01	47.83	50.69	55.82	57.32	57.78	57.02	59.03	60.41	57.20
11	---	44.74	47.22	48.09	51.49	56.30	57.21	58.00	57.34	58.98	60.45	56.82
12	---	44.93	46.29	49.71	51.27	56.58	57.22	58.15	57.64	59.35	60.09	56.36
13	---	45.08	44.65	50.77	50.89	56.84	57.15	58.42	57.12	59.54	60.10	55.91
14	---	44.70	45.39	---	50.42	56.91	57.14	58.35	57.01	59.56	59.87	55.76
15	---	44.19	47.08	50.72	50.40	57.08	57.26	58.09	57.56	59.74	59.55	55.85
16	---	44.32	47.70	49.47	50.61	57.09	57.39	58.16	57.38	59.83	59.49	56.01
17	---	44.74	47.58	48.28	---	57.37	57.42	58.05	57.18	59.96	59.59	55.97
18	---	45.33	47.37	48.24	---	57.41	57.32	57.71	57.54	60.15	59.52	55.52
19	---	45.75	46.39	49.49	---	57.06	56.91	57.65	57.44	60.18	59.73	55.18
20	---	45.64	45.25	49.73	50.77	56.71	57.02	57.51	57.41	60.32	59.88	55.18
21	---	45.41	45.77	49.88	50.48	56.29	57.00	57.30	57.80	60.47	60.08	55.62
22	---	44.56	46.41	49.72	---	56.10	56.95	57.16	58.45	60.47	59.84	55.66
23	---	45.05	47.01	49.16	---	56.05	56.96	56.81	58.32	60.48	59.71	55.05
24	---	45.18	47.65	48.45	---	56.00	56.80	56.62	58.50	60.60	59.87	55.25
25	---	45.40	47.63	49.13	52.58	56.02	56.95	57.00	58.62	60.65	60.27	55.00
26	---	45.01	46.76	49.65	---	56.02	57.29	56.91	58.53	60.85	60.10	54.10
27	---	44.60	45.15	49.99	---	56.11	57.08	56.62	58.36	61.03	59.92	54.27
28	45.65	44.48	45.62	50.13	---	55.88	57.14	56.70	58.06	61.10	59.87	54.79
29	45.75	44.10	47.65	50.74	---	56.10	57.13	56.44	57.83	61.28	59.53	54.73
30	45.71	44.58	49.00	50.15	---	56.33	57.23	55.98	57.77	61.28	58.88	54.76
31	45.46	---	49.20	49.61	---	56.57	---	56.18	---	61.16	58.95	---
MEAN	---	44.96	46.40	---	---	---	57.25	57.43	57.37	59.72	60.09	56.19
MAX	---	46.09	49.20	---	---	---	57.68	58.42	58.62	61.28	61.03	58.99
MIN	---	44.10	44.26	---	---	---	56.80	55.98	56.16	57.92	58.88	54.10

WHITE RIVER BASIN

06445685 WHITE RIVER NEAR NEBRASKA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 43°00'47", long 102°50'07", in NE1/4SW1/4NE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	5.0	e4.0	e9.0	e16	e20	80	39	38	69	20	14
2	2.9	5.7	e4.0	e12	e17	e29	70	42	30	66	17	13
3	2.6	7.0	e4.0	e13	e18	e30	72	44	33	59	15	13
4	2.6	5.4	e3.6	e14	e19	e35	61	49	44	59	14	14
5	2.6	8.9	e3.0	e15	e20	e43	53	45	51	53	14	15
6	2.7	10	e3.0	e12	e21	e55	51	45	147	49	14	15
7	3.0	7.3	e4.0	e9.0	e23	e80	84	48	431	47	13	e16
8	4.2	5.9	e4.5	e8.0	e24	e400	99	50	966	49	14	e16
9	3.1	5.2	e6.0	e8.0	e26	e800	126	50	921	35	15	e17
10	3.0	5.2	e6.5	e7.8	e26	e700	165	47	919	29	13	16
11	3.7	5.1	e8.0	e7.0	e21	e700	129	34	578	28	13	16
12	5.3	5.5	e8.0	e6.4	e20	e600	80	39	169	30	13	19
13	5.8	5.5	e7.0	e6.0	e20	e500	79	35	118	26	13	19
14	4.9	5.4	e6.0	e6.0	e20	e450	217	33	84	24	14	18
15	4.2	5.5	e8.0	e6.0	e17	414	327	32	67	24	14	17
16	3.6	5.4	e8.0	e7.0	e15	451	415	31	58	23	24	18
17	3.3	5.4	e8.0	e7.0	e11	413	346	27	61	25	19	22
18	3.4	5.6	e8.0	e6.5	e10	378	173	26	178	98	19	19
19	3.5	5.4	e7.0	e6.0	e10	355	105	27	361	192	18	18
20	3.6	5.4	e7.0	e6.0	e10	374	86	29	417	107	17	32
21	3.6	5.4	e8.0	e7.0	e10	464	75	30	478	69	13	24
22	3.9	5.3	e8.0	e8.5	e9.0	603	67	28	389	54	10	14
23	4.1	5.2	e8.0	e9.5	e9.0	402	62	27	216	46	12	11
24	4.0	e6.0	e9.2	e9.0	e9.0	157	58	30	139	43	15	10
25	3.8	e6.0	e11.0	e9.0	e10	135	55	35	110	32	14	10
26	3.7	e5.2	e12.0	e10	e12	130	50	32	93	32	12	10
27	3.9	e4.9	e13.0	e13	e15	114	48	32	86	38	12	11
28	3.7	e4.2	e14.0	e14	e18	94	47	31	80	45	13	9.4
29	3.6	e4.2	e10.0	e10	---	85	43	32	74	32	17	9.6
30	3.9	e3.6	e8.0	e10	---	96	39	31	68	32	17	9.9
31	4.4	---	e7.0	e14	---	90	---	36	---	25	16	---
TOTAL	112.8	169.8	225.8	285.7	456.0	9197	3362	1116	7404	1540	464	465.9
MEAN	3.64	5.66	7.28	9.22	16.3	297	112	36.0	247	49.7	15.0	15.5
MAX	5.8	10	14	15	26	800	415	50	966	192	24	32
MIN	2.2	3.6	3.0	6.0	9.0	20	39	26	30	23	10	9.4
AC-FT	224	337	448	567	904	18240	6670	2210	14690	3050	920	924

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	MEAN	6.72	8.08	9.26	14.5	19.9	86.0	47.5	129	104	25.3	11.4	10.1
MAX	13.6	14.7	22.7	47.2	67.9	297	112	514	271	49.7	27.3	24.5	
(WY)	1992	1992	1992	1992	1992	1993	1993	1991	1991	1993	1991	1991	
MIN	2.07	3.31	3.35	1.53	1.82	5.02	23.1	19.5	11.6	.98	1.61	2.28	
(WY)	1991	1991	1991	1991	1991	1991	1992	1992	1989	1989	1989	1990	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	8853.56	24799.0	39.4
ANNUAL MEAN	24.2	67.9	78.2
HIGHEST ANNUAL MEAN			14.2
LOWEST ANNUAL MEAN			1991
HIGHEST DAILY MEAN	224	Jun 28	1910
LOWEST DAILY MEAN	.96	Aug 18	.00
ANNUAL SEVEN-DAY MINIMUM	1.5	Aug 13	.00
INSTANTANEOUS PEAK FLOW			3820
INSTANTANEOUS PEAK STAGE			19.07
ANNUAL RUNOFF (AC-FT)	17560	49190	28540
10 PERCENT EXCEEDS	55	151	70
50 PERCENT EXCEEDS	13	17	11
90 PERCENT EXCEEDS	3.0	4.2	2.0

e Estimated

a No flow at times in most years.

WHITE RIVER BASIN

06445700 WHITE RIVER NEAR SLIM BUTTE, SD

LOCATION.--Lat 43°05'23", long 102°47'52", in SE1/4SW1/4SW1/4 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 1970, December 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,000 ft above sea level, from topographic map. Prior to August 1962, nonrecording gage read daily. August 1962 to September 1970, water-stage recorder 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 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	6.5	e4.0	e10	e18	e29	90	6.5	32	60	20	15
2	1.3	5.4	e3.9	e14	e19	e33	72	7.0	31	63	16	13
3	1.8	7.6	e3.6	e15	e20	e38	75	7.8	37	66	13	12
4	1.9	6.9	e3.1	e16	e20	e45	66	9.1	44	55	12	11
5	1.5	6.7	e3.0	e12	e22	e58	57	9.1	51	52	11	11
6	2.0	11	e3.6	e9.2	e24	e80	54	11	108	49	11	13
7	2.4	9.1	e4.3	e8.0	e25	e100	70	10	376	46	11	14
8	2.9	7.7	e5.1	e8.0	e26	e200	98	14	689	47	11	14
9	4.2	6.5	e6.2	e8.0	e27	e400	119	12	846	40	13	16
10	3.1	6.3	e7.8	e7.0	e22	e700	168	12	762	30	11	15
11	2.8	5.7	e8.0	e6.5	e20	e600	168	6.7	e600	27	11	14
12	4.3	5.9	e7.0	e6.0	e20	e500	93	6.7	e190	28	11	15
13	5.4	6.5	e6.5	e6.0	e19	e450	66	7.4	e140	27	11	22
14	5.5	6.4	e7.6	e6.0	e17	e410	189	5.7	e90	24	11	20
15	5.0	6.0	e9.0	e6.0	e15	365	334	5.7	e70	24	11	18
16	4.7	6.0	e9.0	e6.9	e12	376	436	5.7	e60	21	14	17
17	4.2	6.0	e8.0	e6.7	e10	370	382	5.3	e65	22	26	22
18	3.8	6.2	e7.0	e6.0	e10	371	205	4.7	e120	46	19	26
19	3.6	6.6	e7.0	e6.0	e10	349	75	5.5	e200	203	20	35
20	3.8	6.1	e8.0	e6.5	e10	317	39	6.7	e330	144	18	22
21	3.9	6.0	e8.0	e7.5	e9.5	392	27	8.7	e600	70	16	17
22	3.9	5.9	e8.0	e9.5	e9.0	477	20	9.7	524	57	11	20
23	4.6	6.8	e9.0	e9.5	e9.0	511	15	9.5	493	49	7.9	40
24	4.2	5.9	e10	e9.0	e10	326	13	10	425	50	9.2	23
25	4.4	e5.1	e12	e10	e13	149	11	16	385	39	12	14
26	3.9	e4.8	e13	e12	e16	136	10	17	330	32	12	10
27	4.2	e4.1	e12	e14	e19	132	9.2	16	114	37	10	8.2
28	4.4	e3.8	e9.5	e11	e22	106	8.7	16	72	48	9.7	8.7
29	3.9	e3.5	e8.0	e10	---	88	8.1	19	66	36	9.9	9.1
30	4.1	e3.8	e7.0	e13	---	101	7.2	21	63	32	13	9.3
31	5.1	---	e8.5	e17	---	97	---	24	---	30	18	---
TOTAL	112.0	184.8	226.7	292.3	473.5	8306	2985.2	325.5	7913	1554	409.7	504.3
MEAN	3.61	6.16	7.31	9.43	16.9	268	99.5	10.5	264	50.1	13.2	16.8
MAX	5.5	11	13	17	27	700	436	24	846	203	26	40
MIN	1.2	3.5	3.0	6.0	9.0	29	7.2	4.7	31	21	7.9	8.2
AC-FT	222	367	450	580	939	16470	5920	646	15700	3080	813	1000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1970, 1992 - 1993, BY WATER YEAR (WY)

	1963	1964	1965	1966	1967	1968	1969	1970	1992	1993
MEAN	11.2	10.8	10.7	12.1	26.4	82.5	50.9	64.6	194	50.3
MAX	26.5	16.0	17.1	28.3	58.1	268	124	398	1012	185
(WY)	1963	1970	1992	1992	1963	1993	1970	1991	1967	1969
MIN	1.19	4.82	2.82	1.25	1.61	6.32	11.3	10.5	10.5	7.21
(WY)	1965	1965	1965	1991	1991	1991	1991	1993	1966	1964

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1963-1970, 1992-1993

	1992	1993	1963-1970	1992-1993
ANNUAL TOTAL	7661.32	23287.0		
ANNUAL MEAN	20.9	63.8		
HIGHEST ANNUAL MEAN			42.7a	
LOWEST ANNUAL MEAN			115	1967
HIGHEST DAILY MEAN	282	Jun 28	13.1	1964
LOWEST DAILY MEAN	.71	Aug 20	6720	Jun 16 1967
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 14	.00	Aug 24 1963b
INSTANTANEOUS PEAK FLOW			.00	Sep 4 1964
INSTANTANEOUS PEAK STAGE			1750	May 13 1991d
ANNUAL RUNOFF (AC-FT)	15200	46190	16.61	May 13 1991d
10 PERCENT EXCEEDS	44	189	30940	
50 PERCENT EXCEEDS	12	13	70	
90 PERCENT EXCEEDS	2.4	4.5	15	
			2.8	

e Estimated

a Median of annual mean discharges, 38 ft³/s.

b No flow for many days in some years.

c Gage height, 13.88 ft.

d Occurred during partial-record year.

f Backwater from ice.

WHITE RIVER BASIN

06445980 WHITE CLAY CREEK NEAR OGLALA, SD

LOCATION.--Lat 43°08'46", long 102°40'58", in NW1/4SE1/4SE1/4 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 sea level.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.95	1.4	e5.5	e2.8	e3.0	e2.0	20	13	9.2	7.7	6.1	4.0
2	e.94	1.4	e6.0	e4.0	e4.0	e3.0	19	13	10	9.3	5.9	4.5
3	e.94	1.4	e5.0	e5.0	e4.0	e4.0	19	13	10	27	5.7	4.2
4	e.92	1.4	e4.0	e4.0	e4.0	e5.0	19	13	12	23	5.9	4.4
5	e.91	1.9	e3.0	e3.5	e3.6	e5.0	19	14	15	17	5.9	4.8
6	e.95	4.3	e3.0	e3.0	e3.8	e7.0	19	15	14	11	5.7	5.0
7	e.97	5.5	e3.0	e3.0	e4.0	e10	20	22	13	10	6.0	5.9
8	e.97	5.1	e4.0	e2.5	e4.5	e11	20	20	29	9.5	6.4	5.9
9	e.97	5.3	e5.0	e2.5	e4.8	e10	20	18	43	9.2	6.3	5.6
10	e.97	5.3	e6.0	e2.2	e5.0	e9.0	19	17	21	9.2	5.8	5.4
11	e.98	6.1	e7.0	e2.1	e4.0	e7.8	19	16	15	9.2	5.8	5.0
12	e.98	5.9	e7.0	e2.1	e3.5	e7.0	19	15	14	8.5	6.0	5.2
13	e.99	7.0	e6.0	e2.0	e3.5	e6.0	19	15	12	8.9	5.4	5.2
14	e.99	6.0	e5.0	e1.7	e3.5	e7.5	20	14	10	9.1	5.4	5.2
15	.99	5.7	e5.0	e1.5	e3.0	e15	20	13	11	9.0	5.4	6.0
16	1.0	5.8	e4.5	e1.5	e2.5	e22	19	13	11	8.9	4.8	6.1
17	1.1	6.0	e4.0	e1.4	e2.0	e18	19	13	11	8.8	5.0	6.1
18	1.0	6.1	e3.5	e1.3	e1.8	e16	19	12	14	7.5	5.1	5.3
19	.94	6.4	e3.0	e1.2	e1.7	e22	19	12	18	7.5	4.9	8.0
20	.90	6.1	e3.0	e1.2	e1.6	e30	19	11	17	7.3	4.8	14
21	.90	6.1	e3.5	e1.3	e1.6	e30	19	11	15	7.2	4.9	10
22	.90	7.2	e3.5	e1.6	e1.5	e35	18	12	14	7.0	4.7	8.0
23	.90	7.4	e3.0	e1.8	e1.5	e40	9.1	11	14	7.2	4.7	7.2
24	.91	12	e3.0	e1.7	e1.5	e36	7.8	11	13	6.5	4.1	7.2
25	1.2	6.9	e3.5	e1.6	e1.5	e33	7.6	10	12	6.9	4.0	7.5
26	1.2	e4.0	e4.0	e1.9	e1.3	e31	7.4	10	11	8.8	4.4	7.3
27	1.2	e3.5	e4.5	e2.0	e1.6	31	9.8	10	10	8.2	4.3	7.2
28	1.2	e3.5	e4.5	e2.5	e1.6	23	12	9.3	9.7	8.8	4.9	7.0
29	1.2	e4.0	e3.5	e2.0	---	22	13	9.9	9.2	7.7	5.0	6.9
30	1.3	e4.9	e2.5	e2.2	---	21	14	9.7	8.8	7.2	4.6	7.1
31	1.3	---	e2.0	e2.6	---	20	---	9.1	---	7.2	4.4	---
TOTAL	31.57	153.6	130.0	69.7	79.9	539.3	503.7	405.0	425.9	300.3	162.3	191.2
MEAN	1.02	5.12	4.19	2.25	2.85	17.4	16.8	13.1	14.2	9.69	5.24	6.37
MAX	1.3	12	7.0	5.0	5.0	40	20	22	43	27	6.4	14
MIN	.90	1.4	2.0	1.2	1.3	2.0	7.4	9.1	8.8	6.5	4.0	4.0
AC-FT	63	305	258	138	158	1070	999	803	845	596	322	379

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1981, 1988 - 1993, BY WATER YEAR (WY)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1988	1989	1990	1991	1992	1993
MEAN	5.26	6.05	6.03	5.24	8.59	21.7	14.0	13.7	18.6	9.29	6.38	3.24										
MAX	15.8	13.1	11.0	11.4	25.4	112	21.6	22.6	109	39.8	19.8	8.74										
(WY)	1966	1969	1968	1981	1980	1966	1977	1971	1967	1969	1981	1967										
MIN	.36	1.92	1.72	.084	.095	6.32	5.13	7.57	3.62	1.62	.28	.000										
(WY)	1975	1975	1989	1989	1989	1991	1992	1992	1974	1974	1970	1974										

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1966-1981, 1988-1993

ANNUAL TOTAL	2225.07	2992.47	
ANNUAL MEAN	6.08	8.20	9.85a
HIGHEST ANNUAL MEAN			20.8
LOWEST ANNUAL MEAN			4.31
HIGHEST DAILY MEAN	22	Mar 29	554
LOWEST DAILY MEAN	.90	Oct 20	.00
ANNUAL SEVEN-DAY MINIMUM	.92	Oct 18	.00
INSTANTANEOUS PEAK FLOW		52	659
INSTANTANEOUS PEAK STAGE		8.06	15.02
ANNUAL RUNOFF (AC-FT)	4410	5940	7140
10 PERCENT EXCEEDS	11	19	17
50 PERCENT EXCEEDS	5.0	6.0	7.0
90 PERCENT EXCEEDS	1.5	1.4	1.5

e Estimated

a Median of annual mean discharges, 8.4 ft³/s.

b No flow at times in some years.

c Gage-height, 14.74 ft.

d Backwater from ice.

WHITE RIVER BASIN

06446000 WHITE RIVER NEAR OGLALA, SD

LOCATION.--Lat 43°15'17", long 102°49'29", in SW1/4NE1/4 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 sea level. Prior to May 6, 1947, nonrecording gage at same site and datum.

REMARKS.--Records fair 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.49	19	e5.2	e17	e20	e35	e125	e18	e38	66	e70	e24
2	.32	19	e4.9	e18	e23	e42	e100	e20	e42	62	e57	e28
3	.27	21	e4.2	e19	e25	e50	e150	e22	e43	83	e45	e32
4	.15	19	e4.0	e17	e26	e58	e130	e24	e45	75	e45	e36
5	.14	23	e4.9	e15	e28	e65	e90	e26	e54	74	e39	e35
6	.14	18	e6.0	e11	e29	e84	e100	e28	e350	71	e33	e30
7	.14	23	e7.0	e10.5	e30	e130	e150	e30	e675	65	e29	e29
8	.12	19	e8.0	e10	e30	e200	e185	e29	e1000	58	e25	e25
9	.08	12	e10	e9.5	e28	e450	214	e26	e1200	54	e24	e27
10	.09	9.1	e10	e8.5	e25	e900	234	e16	1010	47	e21	e28
11	.15	6.3	e10	e8.0	e23	e700	250	e16	829	40	e21	29
12	.16	5.9	e9.0	e7.8	e23	e600	226	e17	601	42	e22	31
13	1.1	4.8	e9.9	e7.5	e20	e520	189	e15	192	45	e25	25
14	1.1	6.4	e12	e7.5	e19	e490	184	e14	130	40	e23	29
15	8.8	8.1	e12	e7.3	e19	394	294	e13	94	35	e23	26
16	11	7.2	e11	e8.5	e15	315	454	e12	80	27	e23	28
17	10	5.8	e10	e8.0	e13	312	477	e11	281	e32	e23	30
18	6.2	6.7	e9.1	e7.5	e13	313	e200	e14	360	e37	e23	34
19	6.5	6.4	e10	e7.2	e13	314	e175	e18	297	e40	e24	52
20	4.5	6.9	e11	e8.0	e13	329	e150	e22	412	e50	e28	53
21	4.2	8.0	e10.8	e9.0	e12	329	e125	e22	421	e380	e32	36
22	4.1	7.2	e11	e11	e11	399	e100	e24	548	e295	e40	27
23	5.5	9.3	e15	e12	e12	424	e75	e30	481	e210	e39	25
24	4.6	7.0	e17	e12	e14	408	e50	e34	262	e125	e38	42
25	6.9	e6.0	e18	e12	e15	315	e25	e38	175	e125	e32	25
26	15	e5.5	e17.5	e14	e18	272	e23.2	e38	139	e100	e18	e12
27	15	e5.0	e16	e16	e23	233	e21.4	e45	117	e100	e22	e10
28	15	e4.5	e12	e15	e29	e200	e19.6	e47	98	e85	e24	e10
29	14	e5.0	e10	e14	---	e180	e17.8	e42	82	e65	e25	e11
30	14	e5.1	e11	e15	---	e160	e16	e40	71	e70	e25	e12
31	16	---	e13	e19	---	e150	---	e39	---	e89	e20	---
TOTAL	165.75	309.2	319.5	361.8	569	9371	4550.0	790	10127	2687	936	841
MEAN	5.35	10.3	10.3	11.7	20.3	302	152	25.5	338	86.7	30.2	28.0
MAX	16	23	18	19	30	900	477	47	1200	380	70	53
MIN	.08	4.5	4.0	7.2	11	35	16	11	38	27	18	10
AC-FT	329	613	634	718	1130	18590	9020	1570	20090	5330	1860	1670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1993, BY WATER YEAR (WY)

MEAN	15.2	17.1	14.9	13.1	31.8	112	72.9	103	152	54.7	26.9	21.8
MAX	63.1	55.8	55.7	37.7	77.4	807	362	583	1037	314	130	181
(WY)	1968	1987	1947	1947	1984	1949	1987	1957	1967	1969	1979	1955
MIN	.000	.76	1.83	.64	1.21	13.5	12.3	13.4	4.88	.002	1.17	.000
(WY)	1965	1977	1965	1991	1991	1991	1962	1985	1981	1985	1964	1964

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1944 - 1993

ANNUAL TOTAL	9542.30		31027.25				
ANNUAL MEAN	26.1		85.0			53.1a	
HIGHEST ANNUAL MEAN						142	1947
LOWEST ANNUAL MEAN						13.0	1985
HIGHEST DAILY MEAN	320	Jun 28	1200	Jun 9		3870	Jun 23 1947
LOWEST DAILY MEAN	.08	Oct 9	.08	Oct 9		.00	Sep 25 1952b
ANNUAL SEVEN-DAY MINIMUM	.12	Oct 4	.12	Oct 4		.00	Sep 25 1952
INSTANTANEOUS PEAK FLOW			2190	Jun 8		5200	Jun 21 1947c
INSTANTANEOUS PEAK STAGE			19.48	Jun 8		23.61	Jun 16 1967
ANNUAL RUNOFF (AC-FT)	18930		61540			38470	
10 PERCENT EXCEEDS	50		276			95	
50 PERCENT EXCEEDS	19		24			20	
90 PERCENT EXCEEDS	2.9		6.4			3.9	

e Estimated

a Median of annual mean discharges, 45 ft³/s.

b No flow at times in some years.

c From rating curve extended above 2,800 ft³/s on basis of velocity-area studies; gage height, 23.50 ft.

WHITE RIVER BASIN

06446100 WOUNDED KNEE CREEK AT WOUNDED KNEE, SD

LOCATION.--Lat 43°08'38", long 102°21'28", in NE1/4NE1/4NW1/4 sec.36, T.37 N., R.43 W., Shannon County, Hydrologic Unit 10140201, on left bank at downstream end of culvert on Tribal road 27 in Wounded Knee, and above the confluence of Spring Creek.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--June 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft above sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	5.7	e2.5	e1.9	e3.0	e2.7	e4.0	e5.5	8.0	3.0	2.5	e2.0
2	.70	12	e2.1	e2.0	e3.0	e2.8	e3.8	e5.7	5.5	3.0	2.5	e2.0
3	.69	13	e1.6	e2.0	e3.4	e3.0	e3.6	e6.0	5.8	4.1	2.5	e2.1
4	.65	e11	e1.3	e2.0	e3.8	e3.2	e3.4	e6.3	13	3.8	2.5	e2.1
5	.67	e7.0	e1.0	e1.9	e5.2	e3.5	e3.2	e6.7	13	3.5	2.5	e2.2
6	.73	e4.0	e.80	e1.8	e8.0	e3.8	e3.0	e7.0	13	3.0	2.5	e2.2
7	.95	e3.0	e1.0	e1.6	e9.0	e4.0	e5.0	e14	15	2.7	2.5	e2.2
8	1.1	e2.6	e1.2	e1.4	e8.0	5.4	e4.0	e13	17	2.6	2.5	e2.3
9	1.3	e2.9	e1.6	e1.3	e7.5	11	e3.0	e12	19	2.4	2.5	e2.3
10	1.5	e2.8	e2.0	e1.2	e7.0	13	e2.8	e11	16	2.4	2.5	e2.3
11	1.7	e2.5	e1.9	e1.1	e6.0	e11	e2.7	e10	14	2.4	2.4	e2.2
12	1.8	e2.6	e1.8	e1.0	e5.0	e8.8	e2.5	e9.2	12	2.6	e2.3	e2.2
13	1.8	e2.3	e1.7	e1.1	e4.5	e7.0	e4.0	8.5	6.9	4.0	e2.3	e2.2
14	1.7	e2.4	e1.6	e1.2	e4.0	e10	e6.0	6.1	5.2	4.5	e2.2	e2.3
15	1.9	e2.5	e1.5	e1.4	e3.5	e13	e4.2	5.5	4.5	3.5	e2.2	e2.3
16	1.9	e2.4	e1.4	e1.6	e3.0	e12	e3.0	5.4	4.1	3.1	e2.2	e2.3
17	2.0	e2.3	e1.3	e1.7	e2.5	e10	e2.7	5.2	4.6	3.2	e2.2	e2.3
18	2.1	e2.4	e1.2	e1.9	e2.5	e9.0	e2.4	4.9	7.1	3.0	e2.2	e2.4
19	2.4	e2.5	e1.1	e2.0	e2.4	e8.0	e2.0	4.8	12	2.8	e2.1	3.1
20	2.7	e2.5	e1.0	e2.1	e2.3	e10	e4.0	4.5	11	2.8	e2.1	5.4
21	2.7	e2.7	e1.0	e2.2	e2.2	e13	e3.1	4.3	8.8	2.8	e2.1	7.1
22	2.9	e3.0	e1.2	e2.2	e2.1	e16	e2.6	4.3	10	2.8	e2.1	6.6
23	2.9	e3.2	e1.5	e2.3	e2.0	e20	e2.0	4.9	11	2.8	e2.1	4.8
24	3.3	e3.4	e2.0	e2.3	e2.1	e17	e2.0	4.5	7.8	2.8	e2.1	4.8
25	3.6	e2.8	e2.2	e2.4	e2.2	e13	e2.0	4.1	6.1	2.8	e2.1	4.4
26	3.6	e2.5	e2.2	e2.4	e2.3	e11	e2.3	3.8	5.2	2.9	e2.0	3.5
27	3.7	e2.0	e2.3	e2.5	e2.4	e9.0	e2.5	3.6	4.6	3.2	e2.0	3.2
28	3.6	e2.2	e2.3	e2.6	e2.6	e7.4	e3.1	3.6	4.1	2.9	e2.0	2.9
29	3.9	e2.6	e2.4	e2.6	---	e6.0	e4.0	3.7	3.6	2.6	e2.0	2.7
30	3.9	e2.8	e2.2	e2.8	---	e5.0	e5.0	3.5	3.0	2.6	e2.0	2.6
31	5.4	---	e2.0	e2.9	---	e4.5	---	10	---	2.6	e2.0	---
TOTAL	68.35	115.6	50.90	59.4	111.5	273.1	97.9	201.6	270.9	93.2	69.7	91.0
MEAN	2.20	3.85	1.64	1.92	3.98	8.81	3.26	6.50	9.03	3.01	2.25	3.03
MAX	5.4	13	2.5	2.9	9.0	20	6.0	14	19	4.5	2.5	7.1
MIN	.56	2.0	.80	1.0	2.0	2.7	2.0	3.5	3.0	2.4	2.0	2.0
AC-FT	136	229	101	118	221	542	194	400	537	185	138	180

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 1993, BY WATER YEAR (WY)

	MEAN	2.20	3.85	1.64	1.92	3.98	8.81	3.26	6.50	9.03	3.01	2.25	3.03
MAX	2.20	3.85	1.64	1.92	3.98	8.81	3.26	6.50	9.03	3.01	2.25	3.03	3.03
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	2.20	3.85	1.64	1.92	3.98	8.81	3.26	6.50	9.03	3.01	2.25	3.03	3.03
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 WATER YEAR

ANNUAL TOTAL	1503.15
ANNUAL MEAN	4.12
HIGHEST DAILY MEAN	20 Mar 23
LOWEST DAILY MEAN	.56 Oct 1
ANNUAL SEVEN-DAY MINIMUM	.71 Oct 1
INSTANTANEOUS PEAK FLOW	20 Jun 9a
INSTANTANEOUS PEAK STAGE	3.34 Feb 9b
ANNUAL RUNOFF (AC-FT)	2980
10 PERCENT EXCEEDS	9.5
50 PERCENT EXCEEDS	2.8
90 PERCENT EXCEEDS	1.6

e Estimated

a Gage height, 2.30 ft.

b Backwater from ice.

WHITE RIVER BASIN

06446700 BEAR IN THE LODGE CREEK NEAR WANBLEE, SD

Location.--Lat 43°32'05", long 101°47'30", in NE1/4SW1/4 sec.12, T.41 N., R.38 W., Jackson County, Hydrologic Unit 10140202, on right bank at downstream side of bridge on State Highway 44, 0.9 mi south of Garner School, 8.2 mi southwest of Wanblee, and 25.3 mi upstream from mouth.

DRAINAGE AREA.--365 mi², approximately.

PERIOD OF RECORD.--June 1992 to May 1993.

GAGE.--Water-stage recorder. Elevation of gage is 2,500 ft above sea level, from topographic map. In 1951 and 1954-57, operated as nonrecording gage at same site and datum.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	8.6	e4.5	e1.9	e3.4	e3.5	e5.0	e7.5	---	---	---	---
2	3.2	5.0	e3.4	e2.1	e3.7	e3.5	e4.6	e9.2	---	---	---	---
3	3.7	5.0	e2.4	e2.3	e4.2	e3.8	e4.5	e16	---	---	---	---
4	3.1	4.9	e1.8	e2.3	e4.9	e4.1	e4.3	e17	---	---	---	---
5	3.2	7.5	e1.5	e2.2	e6.0	e4.6	e4.3	e40	---	---	---	---
6	3.4	7.1	e1.5	e2.0	e6.8	e5.1	e4.8	e80	---	---	---	---
7	3.7	7.6	e1.7	e1.7	e8.0	e5.8	e6.5	e68	---	---	---	---
8	3.5	6.5	e1.8	e1.7	e6.2	e6.5	e5.5	e67	---	---	---	---
9	3.8	5.1	e1.9	e1.6	e4.3	e8.0	e4.5	e60	---	---	---	---
10	3.8	4.5	e2.3	e1.6	e4.0	e9.5	e3.5	e50	---	---	---	---
11	4.5	4.7	e2.2	e1.5	e3.6	e12	e3.5	e40	---	---	---	---
12	5.0	4.3	e2.0	e1.5	e3.6	e7.8	e4.3	e30	---	---	---	---
13	4.2	4.6	e1.8	e1.6	e3.5	e7.0	e5.5	---	---	---	---	---
14	4.2	3.9	e1.8	e1.6	e3.4	e8.5	e8.0	---	---	---	---	---
15	4.9	4.6	e1.7	e1.7	e3.3	e10	e7.0	---	---	---	---	---
16	4.8	4.3	e1.8	e1.8	e3.0	e12	e6.0	---	---	---	---	---
17	5.0	4.0	e1.7	e1.9	e2.8	e9.0	e4.6	---	---	---	---	---
18	4.9	4.0	e1.7	e2.0	e2.8	e7.2	e4.5	---	---	---	---	---
19	4.7	4.0	e1.6	e2.2	e2.7	e8.5	e6.0	---	---	---	---	---
20	e4.2	4.1	e1.5	e2.3	e2.6	e13	e5.2	---	---	---	---	---
21	e3.4	3.9	e1.5	e2.5	e2.5	e16	e5.2	---	---	---	---	---
22	e4.3	4.5	e1.6	e2.5	e2.5	e9.5	e4.3	---	---	---	---	---
23	e4.6	4.6	e1.7	e2.5	e2.5	e7.2	e3.8	---	---	---	---	---
24	4.7	5.4	e1.8	e2.6	e2.5	e7.0	e3.8	---	---	---	---	---
25	4.2	7.1	e2.0	e2.6	e2.6	e6.5	e3.5	---	---	---	---	---
26	e3.9	3.1	e2.1	e2.7	e2.8	e6.0	e3.3	---	---	---	---	---
27	4.1	4.7	e2.3	e2.8	e3.2	e5.6	e4.0	---	---	---	---	---
28	4.0	5.2	e2.3	e2.9	e3.2	e5.5	e4.3	---	---	---	---	---
29	4.0	6.0	e2.1	e3.0	---	e5.4	e5.2	---	---	---	---	---
30	4.2	5.4	e2.0	e3.0	---	e5.0	e6.2	---	---	---	---	---
31	5.6	---	e1.8	e3.0	---	e5.0	---	---	---	---	---	---
TOTAL	127.9	154.2	61.8	67.6	104.6	228.1	145.7	---	---	---	---	---
MEAN	4.13	5.14	1.99	2.18	3.74	7.36	4.86	---	---	---	---	---
MAX	5.6	8.6	4.5	3.0	8.0	16	8.0	---	---	---	---	---
MIN	3.1	3.1	1.5	1.5	2.5	3.5	3.3	---	---	---	---	---
AC-FT	254	306	123	134	207	452	289	---	---	---	---	---

e Estimated

WHITE RIVER BASIN

06447000 WHITE RIVER NEAR KADOKA, SD

LOCATION.--Lat 43°45'09", long 101°31'28", in SE1/4SE1/4 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, 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 sea level. 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.77	e12	e6.0	e.00	e.00	304	1810	88	506	180	e40
2	.00	.87	e12	e5.0	e.00	e.00	229	1140	78	917	108	e35
3	.53	.81	e11	e4.2	e.00	e.00	200	663	132	967	59	e35
4	.80	1.2	e9.0	e3.6	e.00	e8.0	197	344	286	443	e34	e35
5	.71	3.1	e8.0	e3.0	e.00	e50	187	220	188	220	e42	e36
6	.66	1.9	e8.0	e2.7	e.00	e400	177	607	376	271	59	e40
7	.95	4.4	e8.0	e2.1	e.00	e2500	277	3680	1380	272	80	55
8	1.8	4.7	e8.5	e1.8	e.00	e2400	780	1530	2720	403	87	90
9	1.9	6.6	e11	e1.6	e.00	e1500	635	2400	2030	401	427	86
10	2.0	7.0	e12	e1.3	e.00	e1400	328	1120	1530	225	141	60
11	2.0	13	e12	e1.1	e.00	e1300	259	563	1320	168	57	43
12	2.1	5.4	e11	e1.0	e.00	e1200	449	356	1040	119	56	34
13	1.1	5.1	e11	e.90	e.00	e1250	450	227	852	1710	94	159
14	.24	5.5	e11	e.70	e.00	e1300	887	177	762	1060	88	150
15	.00	26	e12	e.50	e.00	e1400	907	145	613	411	112	153
16	.72	22	e12	e.20	e.00	e1650	652	118	2210	333	1520	124
17	.59	7.6	e11	e.10	e.00	e1950	442	96	1100	202	2400	70
18	1.6	7.6	e12	e.00	e.00	e2400	356	83	2400	375	1220	47
19	1.6	8.6	e10	e.00	e.00	e3000	476	70	3810	363	540	1340
20	2.2	8.8	e12	e.00	e.00	e4000	693	e60	2190	169	471	4480
21	2.5	8.9	e12	e.00	e.00	e5500	1290	e54	1230	160	2200	1410
22	2.7	25	e13	e.00	e.00	e1100	1160	e50	796	143	1430	568
23	2.9	17	e14	e.00	e.00	529	672	e46	686	127	1990	268
24	3.3	9.3	e15	e.00	e.00	394	379	e44	940	209	948	179
25	2.8	9.5	e14	e.00	e.00	462	250	e44	693	253	392	145
26	4.4	e12	e14	e.00	e.00	529	204	e44	566	1040	208	121
27	3.6	e13	e14	e.00	e.00	496	222	e44	395	1880	128	129
28	2.0	e11	e13	e.00	e.00	382	155	e46	286	1790	66	99
29	.26	e10	e10	e.00	---	342	126	e50	435	842	57	94
30	2.0	e11	e8.5	e.00	---	545	381	e56	301	505	e50	77
31	.51	---	e7.0	e.00	---	538	---	71	---	292	e45	---
TOTAL	48.47	267.65	348.0	35.80	0.00	38525.00	13724	15958	31433	16776	15289	10202
MEAN	1.56	8.92	11.2	1.15	.000	1243	457	515	1048	541	493	340
MAX	4.4	26	15	6.0	.00	5500	1290	3680	3810	1880	2400	4480
MIN	.00	.77	7.0	.00	.00	.00	126	44	78	119	34	34
AC-FT	96	531	690	71	.00	76410	27220	31650	62350	33280	30330	20240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1993, BY WATER YEAR (WY)

	MEAN	86.3	56.2	28.6	26.9	140	571	391	590	733	289	171	114
MAX	624	295	153	104	763	2479	1555	2802	3984	986	559	1060	
(WY)	1983	1957	1956	1990	1971	1944	1970	1982	1967	1969	1979	1955	
MIN	.000	1.74	.000	.000	.000	33.8	22.8	23.2	7.29	23.3	2.60	.17	
(WY)	1965	1977	1977	1977	1979	1981	1981	1985	1989	1980	1989	1975	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1943 - 1993

ANNUAL TOTAL	48949.80	142606.92	267
ANNUAL MEAN	134	391	573
HIGHEST ANNUAL MEAN			90.0
LOWEST ANNUAL MEAN			1944
HIGHEST DAILY MEAN	1950	5500	16500
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.08	.00	.00
INSTANTANEOUS PEAK FLOW		10000	21700
INSTANTANEOUS PEAK STAGE		unknown	16.18
ANNUAL RUNOFF (AC-FT)	97090	282900	193400
10 PERCENT EXCEEDS	366	1300	600
50 PERCENT EXCEEDS	39	57	56
90 PERCENT EXCEEDS	1.9	.00	3.1

e Estimated

a No flow at times in many years.

b Backwater from ice.

c Gage height, 13.83 ft, site then in use, from rating curve extended above 16,000 ft³/s.

WHITE RIVER BASIN

06447230 BLACKPIPE CREEK NEAR BELVIDERE, SD

LOCATION.--Lat 43°45'28", long 101°31'40", in NW1/4NW1/4 sec.27, T.44 N., R.33 W., Black Hills meridian, Jackson County, Hydrologic Unit 10240202, on left bank at downstream side of State Highway 63 bridge, 0.9 mi upstream from Porcupine Creek, 3.7 mi upstream from mouth, and 5.6 mi southeast of Belvidere.

DRAINAGE AREA.--250 mi², approximately.

PERIOD OF RECORD.-- April 1992 to September 1993.

GAGE.--Water stage recorder. Elevation of gage is 2,060 ft above sea level, 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 Measurement and Field Determination section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1		.00	9.3	e.00	e.00	e5.0	e.50	8.2	352	4.7	71	2.7	e.00
2		.00	6.0	e.00	e.00	e6.0	e2.0	8.1	90	5.9	46	2.0	e.00
3		.00	3.3	e.00	e.00	e3.0	e3.5	7.4	24	5.6	17	1.4	e.00
4		.00	2.4	e.00	e.00	e1.0	e5.0	6.3	9.7	5.9	12	1.2	e.00
5		.00	1.3	e.00	e.00	e1.5	e7.0	5.9	6.4	6.1	6.7	.94	e.00
6		.00	1.2	e.00	e.00	e2.0	e10	5.9	77	6.4	5.1	.86	1.6
7		.00	1.6	e.00	e.00	e3.0	e15	38	287	305	5.8	.92	.82
8		.00	3.2	e.00	e.00	e2.0	e30	105	242	167	87	.96	.10
9		.00	5.2	e.00	e.00	e1.0	e28	35	87	50	11	.92	.00
10		.00	4.2	e.00	e.00	e.70	e26	24	29	18	6.0	.87	.00
11		.00	3.6	e.00	e.00	e.40	e24	20	17	13	4.9	.80	.00
12		.00	3.5	e.00	e.00	e.20	e20	22	9.8	11	4.3	.66	.00
13		.00	1.9	e.00	e.00	e.00	e15	58	7.0	7.6	3.6	38	6.2
14		.00	4.1	e.00	e.00	e.00	e16	151	6.0	5.8	3.7	11	4.2
15		.00	2.3	e.00	.00	e.00	e18	71	5.1	5.1	3.7	5.2	.42
16		.00	1.9	e.00	.00	e.00	e22	52	5.1	112	25	26	.00
17		.00	2.1	e.00	.00	e.00	e20	43	4.4	197	14	13	.00
18		.00	1.4	e.00	.00	e.00	e18	23	4.2	261	5.8	3.9	.01
19		.00	1.3	e.00	.00	e.00	17	23	4.1	245	4.3	1.9	175
20		.00	1.1	e.00	.00	e.00	14	199	4.0	122	3.5	2.4	40
21		.00	1.0	e.00	.00	e.00	16	137	4.4	70	86	7.0	6.2
22		.00	.82	e.00	.00	e.00	15	66	3.9	35	24	3.2	2.9
23		.00	e.50	e.00	e.00	e.00	19	39	4.8	218	6.2	1.5	3.5
24		.00	e.10	e.00	e.00	e.00	14	17	3.9	102	14	e.50	4.0
25		.00	e.00	e.00	.00	e.00	13	12	3.5	22	66	e.00	2.7
26		.00	e.00	e.00	e.10	e.00	13	9.2	4.2	13	67	e.00	1.5
27		.00	e.00	e.00	e2.0	e.00	11	7.6	4.1	11	421	e.00	.96
28		.00	e.00	e.00	e5.0	e.20	10	7.0	4.3	12	25	e.00	.61
29		.00	e.00	e.00	e2.0	---	9.9	8.0	4.3	382	10	e.00	.44
30		.00	e.00	e.00	e2.5	---	10	262	4.3	64	6.7	e.00	.43
31		.00	---	e.00	e3.0	---	9.1	---	4.6	---	4.4	e.00	---
TOTAL		0.00	63.32	0.00	14.60	26.00	451.00	1470.6	1317.1	2483.1	1070.7	127.83	251.59
MEAN		.000	2.11	.000	.47	.93	14.5	49.0	42.5	82.8	34.5	4.12	8.39
MAX		.00	9.3	.00	5.0	6.0	30	262	352	382	421	38	175
MIN		.00	.00	.00	.00	.00	.50	5.9	3.5	4.7	3.5	.00	.00
AC-FT		.00	126	.00	29	52	895	2920	2610	4930	2120	254	499

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

MEAN	.000	2.11	.000	.47	.93	14.5	49.0	42.5	82.8	34.5	4.12	8.39
MAX	.000	2.11	.000	.47	.93	14.5	49.0	42.5	82.8	34.5	4.12	8.39
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	.000	2.11	.000	.47	.93	14.5	49.0	42.5	82.8	34.5	4.12	8.39
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 WATER YEAR

ANNUAL TOTAL	7275.84
ANNUAL MEAN	19.9
HIGHEST DAILY MEAN	421 Jul 27
LOWEST DAILY MEAN	.00 Oct 1a
ANNUAL SEVEN-DAY MINIMUM	.00 Oct 1a
INSTANTANEOUS PEAK FLOW	1760 Jun 29
INSTANTANEOUS PEAK STAGE	6.34 Jun 29
ANNUAL RUNOFF (AC-FT)	14430
10 PERCENT EXCEEDS	44
50 PERCENT EXCEEDS	2.7
90 PERCENT EXCEEDS	.00

e Estimated
a Many days.

WHITE RIVER BASIN

06447500 LITTLE WHITE RIVER NEAR MARTIN, SD

LOCATION.--Lat 43°10'00", long 101°37'47", in NW1/4 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 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 above sea level, 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 5, 1932, reached a stage of 13.3 ft, from floodmarks.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	15	e9.6	e7.4	e13	e20	46	28	13	17	13	12
2	9.2	17	e9.3	e7.5	e14	e20	41	29	14	16	12	11
3	9.3	18	e9.0	e7.5	e15	e20	36	28	18	17	11	10
4	9.2	e17	e9.0	e7.5	e16	e20	33	26	21	21	10	9.9
5	9.1	16	e9.0	e7.5	e20	e20	32	24	27	17	10	11
6	9.1	18	e9.0	e7.5	e24	e22	31	26	23	15	10	13
7	9.3	20	e9.0	e7.5	e28	e30	31	38	29	14	10	15
8	9.8	19	e9.0	e7.5	e32	e50	35	45	45	13	11	15
9	10	17	e9.2	e7.5	e36	e80	40	44	52	13	11	e15
10	12	18	e9.4	e7.5	e46	e90	42	45	41	13	10	e15
11	13	17	e9.6	e7.5	e70	e105	43	84	35	13	9.9	e14
12	13	17	e9.3	e7.5	e62	e120	39	96	37	13	9.9	e14
13	12	15	e9.1	e7.5	e54	e150	38	51	37	14	9.9	e13
14	11	16	e9.0	e7.5	e47	e155	40	36	28	21	9.8	e12
15	10	15	e8.8	e7.6	e40	e100	45	31	23	20	9.8	e12
16	10	16	e8.5	e7.7	e35	e100	52	28	20	19	11	e11
17	11	16	e8.2	e7.8	e30	e90	55	26	20	27	11	e14
18	11	16	e8.0	e7.8	e29	e75	52	23	23	29	11	e20
19	13	16	e8.1	e7.9	e28	e80	44	22	34	25	10	e15
20	13	16	e8.3	e8.0	e27	e100	40	20	34	21	10	e12
21	14	16	e8.5	e8.3	e26	e90	41	19	28	19	9.9	e12
22	13	16	e8.6	e8.7	e25	e80	47	19	30	17	9.9	e13
23	13	16	e8.4	e9.0	e24	e70	43	18	30	15	9.6	e14
24	12	15	e8.1	e9.3	e23	e75	39	17	29	14	9.3	e14
25	12	e14	e7.8	e9.6	e22	e80	34	17	29	15	9.1	e14
26	12	e13	e7.5	e9.9	e22	e65	30	16	27	16	9.6	e13
27	12	e13	e7.6	e10	e21	54	28	16	25	17	10	e13
28	12	e12	e7.8	e10	e20	50	27	15	22	19	10	e13
29	12	e11	e8.0	e10	---	50	27	14	20	15	11	e12
30	13	e10	e7.6	e11	---	50	28	14	18	14	10	e12
31	14	---	e7.5	e12	---	48	---	13	---	13	11	---
TOTAL	352.1	471	265.8	259.5	849	2159	1159	928	832	532	319.7	393.9
MEAN	11.4	15.7	8.57	8.37	30.3	69.6	38.6	29.9	27.7	17.2	10.3	13.1
MAX	14	20	9.6	12	70	155	55	96	52	29	13	20
MIN	9.1	10	7.5	7.4	13	20	27	13	13	13	9.1	9.9
AC-FT	698	934	527	515	1680	4280	2300	1840	1650	1060	634	781

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939, 1963 - 1993, BY WATER YEAR (WY)

MEAN	12.4	15.1	11.4	9.56	16.8	42.0	35.3	28.2	25.9	13.7	11.9	9.15
MAX	22.5	20.9	17.4	18.2	30.3	157	104	55.9	157	44.5	102	18.0
(WY)	1987	1987	1987	1984	1993	1966	1977	1983	1967	1969	1983	1983
MIN	7.86	9.73	5.59	4.51	6.26	11.4	13.0	12.2	5.65	2.01	1.80	4.87
(WY)	1980	1965	1986	1982	1989	1977	1981	1940	1940	1940	1940	1939

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1939, 1963-1993

ANNUAL TOTAL	5270.1	8521.0	
ANNUAL MEAN	14.4	23.3	19.3
HIGHEST ANNUAL MEAN			31.6
LOWEST ANNUAL MEAN			10.9
HIGHEST DAILY MEAN	39	Mar 13	916
LOWEST DAILY MEAN	5.2	Jul 13	.60
ANNUAL SEVEN-DAY MINIMUM	6.8	Jul 7	.67
INSTANTANEOUS PEAK FLOW		170	1190
INSTANTANEOUS PEAK STAGE		5.92	13.21
ANNUAL RUNOFF (AC-FT)	10450	16900	13960
10 PERCENT EXCEEDS	24	46	35
50 PERCENT EXCEEDS	12	15	13
90 PERCENT EXCEEDS	8.4	8.6	6.0

e Estimated

a Also Aug. 16, 18, 1940, and no flow part of each day Oct. 19, 20, 22, 1962 (regulation due to construction).

b Backwater from ice.

c 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.

WHITE RIVER BASIN

06449000 LAKE CREEK BELOW REFUGE, NEAR TUTHILL, SD

LOCATION.--Lat 43°08'46", long 101°30'38", in SW1/4 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 above sea level, by barometer. Prior to Aug. 4, 1938, nonrecording gage at same site and datum.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	e1.9	e12	5.9	30	27	75	21	20	39	21	e36
2	11	e1.9	e12	5.8	30	28	74	25	19	40	22	e36
3	4.2	e1.8	e11	5.7	30	27	73	28	19	42	24	e37
4	4.6	e1.6	e11	5.8	33	27	73	30	19	40	22	e38
5	4.3	e1.6	e11	e5.7	35	27	73	32	19	28	21	e39
6	4.2	e1.6	e11	e5.6	30	27	71	41	18	24	22	e39
7	4.4	e1.6	e11	5.5	31	28	71	47	20	22	23	e40
8	3.8	e1.6	e11	5.3	27	28	70	49	20	20	23	e41
9	3.8	e1.6	e11	5.5	27	28	58	48	16	18	23	41
10	3.2	e4.0	e10	e5.0	26	28	32	48	15	17	24	39
11	3.0	e12	e10	e4.8	27	29	30	49	15	15	24	38
12	2.3	e12	e10	e4.4	27	29	27	50	15	15	25	38
13	e2.0	e12	e10	e4.1	27	30	19	51	14	20	25	37
14	e1.9	e12	e10	e3.8	27	30	19	50	14	18	26	37
15	e1.9	e12	e10	e3.5	27	30	19	48	16	17	28	36
16	e1.9	e12	e10	3.2	28	31	20	47	16	17	30	36
17	e1.9	e12	e10	3.0	28	43	20	46	16	15	31	35
18	e1.9	e12	e10	3.2	28	66	20	43	16	15	32	35
19	e1.9	e12	e10	3.0	28	78	21	40	16	13	32	35
20	e1.9	e12	e10	3.1	28	84	21	38	16	13	33	35
21	e1.9	e12	e9.0	3.2	24	84	21	35	18	15	34	34
22	e1.9	e12	e9.0	6.0	28	84	22	34	21	20	37	34
23	e1.9	e12	e9.0	14	28	84	21	33	27	20	36	34
24	e1.9	e12	e9.0	14	28	84	18	29	35	20	36	33
25	e1.9	e12	e9.0	19	28	82	18	25	39	20	35	33
26	e1.9	e12	e9.0	28	28	81	19	23	37	20	35	32
27	e1.9	e12	e9.0	30	28	79	19	22	40	22	33	32
28	e1.9	e12	e9.0	31	28	77	19	22	39	18	34	31
29	e1.9	e12	e7.7	30	---	77	19	21	43	17	34	31
30	e1.9	e12	e6.0	30	---	77	19	22	40	18	35	31
31	e1.9	---	e6.0	30	---	77	---	20	---	19	e35	---
TOTAL	103.0	259.2	302.7	327.1	794	1611	1081	1117	678	657	895	1073
MEAN	3.32	8.64	9.76	10.6	28.4	52.0	36.0	36.0	22.6	21.2	28.9	35.8
MAX	18	12	12	31	35	84	75	51	43	42	37	41
MIN	1.9	1.6	6.0	3.0	24	27	18	20	14	13	21	31
AC-FT	204	514	600	649	1570	3200	2140	2220	1340	1300	1780	2130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1940, 1963 - 1993, BY WATER YEAR (WY)

	4.01	7.19	12.4	15.2	19.4	29.9	34.6	28.9	27.0	13.4	8.39	6.85
MEAN	4.01	7.19	12.4	15.2	19.4	29.9	34.6	28.9	27.0	13.4	8.39	6.85
MAX	23.8	37.2	32.7	28.6	39.7	109	96.1	79.3	139	63.4	36.6	35.8
(WY)	1939	1984	1980	1992	1981	1987	1977	1991	1991	1967	1979	1993
MIN	.000	.000	.000	.000	.000	.058	.090	.029	.033	.24	.084	.11
(WY)	1940	1940	1940	1940	1940	1940	1965	1939	1939	1939	1939	1939

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1939-1940, 1963-1993

ANNUAL TOTAL	4591.93	8898.0	
ANNUAL MEAN	12.5	24.4	17.2
HIGHEST ANNUAL MEAN			32.4
LOWEST ANNUAL MEAN			3.09
HIGHEST DAILY MEAN	49	Mar 6	424
LOWEST DAILY MEAN	.00	Jun 18	.00
ANNUAL SEVEN-DAY MINIMUM	.11	Jun 7	.00
INSTANTANEOUS PEAK FLOW			594
INSTANTANEOUS PEAK STAGE			6.46
ANNUAL RUNOFF (AC-FT)	9110	17650	12460
10 PERCENT EXCEEDS	30	43	43
50 PERCENT EXCEEDS	9.3	21	9.9
90 PERCENT EXCEEDS	.80	3.2	.40

e Estimated

a No flow at times in some years.

b Gage height, 5.57 ft, from rating curve extended above 150 ft³/s.

c Backwater from ice.

WHITE RIVER BASIN

06449100 LITTLE WHITE RIVER NEAR VETAL, SD

LOCATION.--Lat 43°06'03", long 101°13'49", in NE1/4NW1/4 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.

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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	29	e38	e23	e45	e52	191	62	63	113	71	67
2	35	29	e40	e24	e50	e53	183	60	57	109	71	66
3	34	29	e38	e24	e56	e53	181	60	59	108	73	65
4	27	26	e35	e25	e55	e54	177	59	66	103	76	68
5	24	e25	e34	e25	e59	e55	171	59	59	102	74	74
6	24	e25	e34	e25	e60	e56	170	75	60	94	74	69
7	24	e26	e33	e24	e62	e58	176	105	74	81	77	67
8	26	e28	e33	e24	e62	e60	171	107	71	77	76	67
9	26	30	e34	e24	e60	e60	171	112	69	73	74	68
10	25	31	e35	e24	e60	e55	169	110	68	74	72	66
11	26	31	e37	e24	e57	e50	144	106	70	70	71	66
12	25	38	e38	e24	e54	e45	113	105	73	65	70	66
13	25	41	e35	e23	e52	e40	116	121	73	68	70	66
14	24	43	e32	e23	e50	e45	109	150	73	71	71	65
15	25	42	e30	e24	e49	e50	108	133	72	69	71	63
16	26	41	e28	e24	e48	e80	104	117	74	69	119	62
17	27	40	e28	e24	e48	e100	103	109	84	70	91	63
18	27	40	e27	e25	e49	e130	104	102	91	67	81	65
19	28	42	e26	e25	e50	e160	106	98	93	68	79	87
20	28	43	e27	e25	e50	183	104	91	82	69	79	78
21	28	43	e28	e25	e50	215	98	84	80	70	82	68
22	27	43	e29	e26	e50	228	95	82	81	69	76	71
23	26	e38	e30	e28	e50	235	93	76	96	69	76	71
24	26	e34	e30	e27	e50	229	90	70	107	74	76	75
25	26	e28	e31	e26	e50	226	79	64	110	80	73	76
26	26	e24	e32	e28	e50	234	72	58	113	79	80	74
27	27	e27	e33	e30	e51	237	68	56	112	88	77	72
28	27	e30	e34	e32	e52	219	72	56	114	79	78	74
29	27	e35	e30	e32	---	203	70	55	112	73	75	72
30	27	e36	e27	e36	---	197	66	55	111	70	73	71
31	28	---	e25	e40	---	193	---	55	---	70	74	---
TOTAL	835	1017	991	813	1479	3855	3674	2652	2467	2441	2380	2082
MEAN	26.9	33.9	32.0	26.2	52.8	124	122	85.5	82.2	78.7	76.8	69.4
MAX	35	43	40	40	62	237	191	150	114	113	119	87
MIN	24	24	25	23	45	40	66	55	57	65	70	62
AC-FT	1660	2020	1970	1610	2930	7650	7290	5260	4890	4840	4720	4130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1993, BY WATER YEAR (WY)

	MEAN	30.4	36.7	35.9	33.3	48.9	92.9	96.0	84.2	77.8	46.2	36.4	29.4
MAX	49.4	58.2	70.6	55.1	91.7	205	273	185	267	156	137	69.4	
(WY)	1992	1984	1992	1992	1982	1978	1977	1991	1967	1967	1983	1993	
MIN	18.0	21.3	12.5	18.5	19.2	33.5	27.3	28.5	20.3	16.2	15.1	16.5	
(WY)	1977	1977	1975	1981	1977	1981	1981	1992	1985	1974	1961	1975	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1960 - 1993

ANNUAL TOTAL	15455		24686									
ANNUAL MEAN	42.2		67.6							54.0		
HIGHEST ANNUAL MEAN										75.8		1991
LOWEST ANNUAL MEAN										28.2		1981
HIGHEST DAILY MEAN	109	Mar 7	237	Mar 27						1200	May 16	1991
LOWEST DAILY MEAN	20	Aug 20	23	Jan 1,13,14						9.0	Dec 24	1974
ANNUAL SEVEN-DAY MINIMUM	21	Aug 16	24	Jan 8						9.6	Dec 19	1974
INSTANTANEOUS PEAK FLOW			2.44	Mar 27						3540	May 16	1991
INSTANTANEOUS PEAK STAGE			5.20	Mar 27						12.53	May 16	1991
ANNUAL RUNOFF (AC-FT)	30650		48960							39120		
10 PERCENT EXCEEDS	75		112							103		
50 PERCENT EXCEEDS	34		63							38		
90 PERCENT EXCEEDS	25		26							20		

e Estimated

WHITE RIVER BASIN

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD

LOCATION.--Lat 43°15'47", long 100°55'02", in NW1/4SE1/4 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 sea level, 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. Additional water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e75	82	e37	e44	e170	e87	241	145	124	209	168	110
2	e74	64	e34	e54	e180	e90	242	126	125	223	166	102
3	e74	58	e30	e70	e200	e110	236	156	96	228	162	94
4	e73	44	e27	e62	e200	e120	234	152	101	215	168	94
5	e73	51	e25	e60	e210	e120	233	143	116	212	180	115
6	e72	52	e26	e56	e230	e130	232	155	129	210	179	86
7	71	60	e26	e55	e250	e150	247	177	148	201	193	104
8	74	72	e28	e54	e220	e170	241	199	122	193	194	109
9	75	67	e30	e52	e200	e130	236	196	103	180	192	106
10	75	62	e35	e50	e190	e100	238	191	136	183	183	97
11	72	60	e40	e48	e180	56	228	178	142	174	182	101
12	72	58	e35	e45	e170	62	208	183	144	166	178	104
13	72	61	e30	e42	e160	55	209	191	158	165	181	92
14	67	55	e28	e40	e150	67	209	198	137	160	187	70
15	61	67	e29	e45	e140	100	199	212	135	174	188	93
16	64	67	e30	e50	e130	147	198	186	141	175	293	94
17	66	85	e30	e56	e120	150	201	182	156	174	235	94
18	63	83	e29	e60	e100	89	191	141	148	170	184	98
19	70	88	e28	e70	e110	113	198	146	166	161	165	115
20	72	83	e27	e79	e120	165	189	146	202	163	161	131
21	77	59	e32	e90	e105	196	189	158	201	169	156	155
22	83	55	e40	e100	e90	225	179	176	200	170	153	133
23	76	68	e35	e120	e80	237	180	181	195	189	137	123
24	74	55	e30	e110	e80	241	162	141	182	170	131	127
25	77	48	e40	e100	e80	243	146	123	187	187	130	127
26	71	25	e50	e110	e80	259	142	138	199	198	146	123
27	68	25	e60	e120	e81	267	147	148	227	197	135	111
28	68	e30	e55	e150	e84	265	123	137	222	202	129	124
29	69	e35	e50	e120	---	253	119	126	221	190	131	128
30	64	e36	e45	e100	---	245	146	121	210	181	120	138
31	66	---	e40	e130	---	241	---	112	---	176	111	---
TOTAL	2208	1755	1081	2342	4110	4883	5943	4964	4773	5765	5218	3298
MEAN	71.2	58.5	34.9	75.5	147	158	198	160	159	186	168	110
MAX	83	88	60	150	250	267	247	212	227	228	293	155
MIN	61	25	25	40	80	55	119	112	96	160	111	70
AC-FT	4380	3480	2140	4650	8150	9690	11790	9850	9470	11430	10350	6540

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	76.0	78.8	70.7	75.5	115	160	152	136	88.8	85.1	74.7	
MAX	93.8	111	103	97.3	161	252	239	268	281	186	168	110
(WY)	1983	1984	1992	1987	1982	1987	1983	1991	1993	1993	1993	
MIN	55.5	56.0	34.9	51.1	60.3	106	94.9	72.7	50.8	54.0	45.4	45.2
(WY)	1990	1986	1993	1982	1989	1990	1982	1992	1985	1985	1989	1984

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	31168	46340	
ANNUAL MEAN	85.2	127	105a
HIGHEST ANNUAL MEAN			127
LOWEST ANNUAL MEAN			74.0
HIGHEST DAILY MEAN	199	Mar 9	293
LOWEST DAILY MEAN	25	Nov 26	25
ANNUAL SEVEN-DAY MINIMUM	27	Dec 3	27
INSTANTANEOUS PEAK FLOW			772
INSTANTANEOUS PEAK STAGE			3.94
ANNUAL RUNOFF (AC-FT)	61820	91920	76070
10 PERCENT EXCEEDS	139	210	180
50 PERCENT EXCEEDS	74	125	86
90 PERCENT EXCEEDS	46	45	53

e Estimated

a Median of annual mean discharges, 110 ft³/s.

b Gage height, 3.51 ft.

c Backwater from ice.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS TOTAL (MG/L CACO3) (00900)
OCT												
06...	0920	72	324	8.4	7.5	10.5	26	704	9.4	91	170	120
NOV												
19...	1130	91	323	8.1	5.0	4.0	25	700	11.7	97	110	110
JAN												
06...	1400	56	332	8.5	3.0	0.5	8.6	695	12.8	97	K6	120
MAR												
04...	1350	123	272	8.5	4.5	0.0	20	698	11.5	86	K5	98
APR												
05...	1515	238	262	8.0	8.0	8.0	49	686	9.8	92	K10	94
MAY												
18...	1100	187	--	7.9	20.0	16.0	67	698	9.0	--	--	120
JUN												
17...	0945	155	330	8.0	24.0	18.0	68	697	8.4	97	K1000	110
AUG												
16...	1620	166	--	7.4	29.5	27.0	220	694	7.2	--	K10000	66
SEP												
07...	1325	107	325	8.4	21.0	17.5	140	697	8.7	100	500	110

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 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT												
06...	38	6.0	21	26	0.8	9.3	153	15	4.0	0.50	189	235
NOV												
19...	36	5.4	22	28	0.9	10	151	16	2.9	0.50	184	236
JAN												
06...	37	5.7	21	26	0.8	8.7	114	--	4.8	--	--	224
MAR												
04...	31	4.9	17	25	0.7	8.3	133	11	1.7	0.30	158	209
APR												
05...	29	5.2	18	27	0.8	9.2	124	13	2.1	0.40	153	198
MAY												
18...	38	6.6	31	33	1	11	163	24	5.5	0.50	217	290
JUN												
17...	36	5.7	26	31	1	9.9	147	18	2.6	0.50	190	232
AUG												
16...	21	3.4	10	21	0.5	11	94	6.4	2.0	0.40	114	151
SEP												
07...	34	5.9	21	28	0.9	5.8	150	14	3.8	0.60	179	234

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- ONIC + TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
OCT											
06...	0.32	45.7	57	0.020	0.03	--	0.010	0.710	0.700	--	0.230
NOV											
19...	0.32	58.0	54	<0.010	--	--	0.050	0.160	0.110	--	0.030
JAN											
06...	--	--	76	0.050	0.06	--	0.030	0.830	0.800	--	0.190
MAR											
04...	0.28	69.4	90	0.090	0.12	0.50	0.040	0.780	0.740	0.310	0.250
APR											
05...	0.27	127	183	0.020	0.03	0.90	<0.010	0.310	--	0.350	0.220
MAY											
18...	0.39	146	134	0.050	0.06	--	0.010	0.440	0.430	--	0.270
JUN											
17...	0.32	97.1	788	0.040	0.05	--	<0.010	0.560	--	--	0.220
AUG											
16...	0.21	67.7	2500	0.020	0.03	1.0	0.010	0.370	0.360	0.390	0.170
SEP											
07...	0.32	67.6	480	0.080	0.10	--	<0.010	0.630	--	--	0.280

WHITE RIVER BASIN

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC TOTAL (UG/L AS AS) (01002)	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)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	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)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)
OCT 06...	0.210	--	9	40	--	<10	<1	--	6	<1	--
NOV 19...	0.040	--	9	50	--	<10	1	--	110	<1	--
JAN 06...	0.160	--	5	--	--	<10	<1	--	130	<1	--
MAR 04...	0.230	5	6	40	<1	<10	1	1000	88	<1	40
APR 05...	0.190	6	6	30	<1	<10	2	3100	110	1	100
MAY 18...	0.250	--	7	50	--	<10	4	--	200	1	--
JUN 17...	0.210	--	8	60	--	<10	5	--	35	2	--
AUG 16...	0.160	7	6	40	<1	<10	3	13000	1100	2	760
SEP 07...	0.240	--	7	40	--	<10	3	--	22	<1	--

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY 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)	CYANIDE TOTAL (MG/L AS CN) (00720)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	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 06...	1	<0.1	--	<1	5	--	<0.01	--	280	54	28
NOV 19...	7	<0.1	--	<1	6	--	<0.01	--	107	26	94
JAN 06...	5	<0.1	--	<1	7	--	<0.01	--	35	5.3	56
MAR 04...	4	<0.1	<1	<1	7	<0.010	<0.01	5.1	102	34	89
APR 05...	5	<0.1	<1	<1	9	<0.010	<0.01	18	1020	655	36
MAY 18...	26	0.1	--	<1	28	--	<0.01	--	479	242	67
JUN 17...	7	<0.1	--	<1	19	--	<0.01	--	800	335	37
AUG 16...	48	3.8	<1	<1	26	<0.010	<0.01	39	1800	807	98
SEP 07...	2	<0.1	--	<1	<3	--	<0.01	--	434	125	46

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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, (PER- CENT SATUR- ATION) (DEG C) (00301)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ALDI- CARB WATER WHOLE TOT.REC (UG/L) (82619)	ALDRIN, TOTAL (UG/L) (39330)
MAY 18...	1100	187	--	7.9	20.0	16.0	698	9.0	--	<0.10	<0.5	<0.010
AUG 16...	1620	166	--	7.4	29.5	27.0	694	7.2	--	<0.10	<0.5	<0.010
SEP 07...	1325	107	325	8.4	21.0	17.5	697	8.7	100	<0.10	<0.5	<0.010

DATE	ALDRIN, DIS- SOLVED (UG/L) (39331)	AME- TRYNE TOTAL (UG/L) (82184)	DEETHYL ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	DEETHYL ATRA- ZINE WATER WHOLE TOTAL (UG/L) (75981)	DE-ISO PROPYL WATER WHOLE TOTAL (UG/L) (75980)	BROM- ACIL WATER WHLREC (UG/L) (30234)	BUTA- CHLOR WATER WHLREC (UG/L) (30235)	BUTYL- ATE WATER WHLREC (UG/L) (30236)	CARBO- FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CARBOX- IN WATER WHOLE RECOV- ERABLE (UG/L) (30245)	CHLOR- DANE, DIS- SOLVED (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED (UG/L) (39352)
MAY 18...	<0.01	<0.10	<0.1	<0.20	--	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1
AUG 16...	<0.01	<0.10	<0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1
SEP 07...	<0.01	<0.10	<0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1

WHITE RIVER BASIN

06449300 LITTLE WHITE RIVER ABOVE ROSEBUD, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	CHLOR- PYRIFOS TOTAL (UG/L) (38932)	CYAN- AZINE TOTAL (UG/L) (81757)	CYCLO- ATE WATER WHOLE RECOV- ERABLE (UG/L) (30254)	DDE, TOTAL (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDD, TOTAL (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDT, TOTAL (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DEF TOTAL (UG/L) (39040)	DI- AZINON, TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED (UG/L) (39572)
MAY 18...	<0.01	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01
AUG 16...	<0.01	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01
SEP 07...	<0.01	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01
DATE	DI- ELDRIN TOTAL (UG/L) (39380)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DIPHEN- AMID WATER WHOLE RECOV- ERABLE (UG/L) (30255)	DI- SYSTON TOTAL (UG/L) (39011)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	FONOFOS (DY- FONATE) WATER WHOLE TOT. REC (UG/L) (82614)	HEPTA- CHLOR, TOTAL (UG/L) (39410)
MAY 18...	<0.010	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010
AUG 16...	<0.010	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010
SEP 07...	<0.010	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010
DATE	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)	HEPTA- CHLOR EPOXIDE DIS- SOLVED (UG/L) (39420)	HEPTA- CHLOR EPOXIDE DIS- SOLVED (UG/L) (39421)	HEXAZI- NONE WATER WHOLE RECOV- ERABLE (UG/L) (30264)	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB WATER WHOLE RECOV. (UG/L) (30282)	METHO- MYL TOTAL (UG/L) (39051)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV (UG/L) (82350)
MAY 18...	<0.01	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01
AUG 16...	<0.01	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01
SEP 07...	<0.01	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01
DATE	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METOLA- CHLOR WATER WHOLE TOT. REC (UG/L) (82612)	METRI- BUZIN WATER WHOLE TOT. REC (UG/L) (82611)	MIREX, TOTAL (UG/L) (39755)	MIREX, DIS- SOLVED (UG/L) (39756)	1-NAPH- THOL WATER WHOLE REC (UG/L) (77441)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV (UG/L) (82348)	PHORATE TOTAL (UG/L) (39023)
MAY 18...	<0.01	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01
AUG 16...	<0.01	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01
SEP 07...	<0.01	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01
DATE	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)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	PRO- PAZINE TOTAL (UG/L) (39024)	PROPA- CHLOR WATER WHOLE RECOV. (UG/L) (30295)	PROPHAM TOTAL (UG/L) (39052)	PROPO- XUR WATER WHOLE RECOV. (UG/L) (30296)	SEVIN, TOTAL (UG/L) (39750)	SILVEX, TOTAL (UG/L) (39760)
MAY 18...	<0.1	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01
AUG 16...	<0.1	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01
SEP 07...	<0.1	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01

WHITE RIVER BASIN

06449400 ROSEBUD CREEK AT ROSEBUD, SD

LOCATION.--Lat 43°14'14", long 100°51'26", in SW1/4SW1/4NE1/4 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 and crest-stage gage. Datum of gage is 2,531.91 ft above sea level. October 1963 to September 1970, low-flow partial-record station 0.26 mi² upstream at different datum.

REMARKS.--Records fair 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	5.8	e6.1	e4.0	e4.9	e3.8	8.6	19	8.9	5.6	.00	6.4
2	11	7.7	e5.5	e4.7	e6.3	e4.5	8.0	11	9.4	5.6	.15	5.0
3	5.4	5.8	e4.7	e5.8	e8.9	e12	8.1	10	12	5.8	1.6	5.0
4	.35	5.5	e4.7	e6.7	e5.0	e7.3	8.9	9.7	12	4.7	2.1	6.0
5	7.6	5.4	e4.5	e6.3	e5.9	e16	7.8	9.2	9.6	4.3	2.2	6.6
6	18	5.2	e4.4	e6.0	e5.9	e13	8.6	12	10	4.8	2.7	6.7
7	2.1	5.5	e4.6	e6.0	e4.9	e25	9.6	13	11	4.4	4.8	6.2
8	6.2	5.5	e5.1	e6.2	e4.6	e40	9.6	14	7.2	4.6	4.2	6.1
9	5.6	5.1	e5.6	e6.1	e4.8	33	12	11	6.6	2.0	4.3	5.3
10	3.8	6.7	e6.0	e6.0	e4.8	8.5	11	10	5.9	.29	4.8	5.1
11	3.2	5.7	e5.8	e5.8	e4.6	7.8	7.7	9.8	5.7	.17	5.7	5.5
12	5.2	2.5	e5.5	e5.2	e4.5	7.4	6.7	9.7	5.9	.15	6.0	5.4
13	7.4	8.2	e5.2	e4.8	e4.1	e7.0	10	8.8	6.3	.23	5.8	6.0
14	5.1	15	e4.8	e4.3	e3.7	7.4	13	8.0	5.9	1.5	4.9	6.3
15	4.4	10	e4.4	e4.2	e3.5	10	9.9	8.8	6.0	.14	7.2	6.2
16	4.4	6.5	e4.0	e4.3	e3.4	6.1	8.7	8.9	7.2	.11	11	5.9
17	4.2	5.6	e3.5	e4.7	e3.3	e6.0	8.8	8.6	25	1.4	6.1	6.0
18	4.1	5.1	e2.8	e5.0	e3.2	7.2	8.3	8.5	12	3.3	6.8	7.9
19	3.8	6.8	e2.5	e5.0	e3.1	7.2	9.7	8.5	10	3.5	9.2	16
20	5.8	9.7	e2.2	e5.0	e3.1	8.2	11	8.6	7.7	3.6	6.3	8.2
21	3.2	5.6	e2.2	e5.0	e3.1	8.1	6.4	8.5	7.6	13	7.0	6.6
22	4.1	5.9	e2.2	e5.0	e3.1	7.7	16	9.4	7.2	20	6.6	6.3
23	6.4	e4.9	e2.3	e4.9	e3.1	8.1	9.5	9.5	7.8	1.4	5.4	6.3
24	4.0	e5.3	e2.8	e4.9	e3.1	8.1	9.6	8.9	8.2	.32	6.8	6.4
25	4.5	e5.6	e3.2	e4.9	e3.2	7.9	9.5	8.9	7.2	.27	6.3	5.9
26	5.9	e5.3	e3.9	e4.9	e3.3	11	9.0	8.6	6.0	.73	8.9	6.2
27	5.0	e5.2	e4.0	e4.8	e3.4	6.4	8.9	8.6	6.3	.55	7.6	6.5
28	5.4	e5.4	e4.0	e4.4	e3.8	9.5	11	9.1	5.8	25	7.9	6.5
29	5.2	e5.7	e3.9	e4.1	---	6.9	10	9.6	5.9	1.7	6.4	6.4
30	5.0	e6.0	e3.8	e3.9	---	6.8	16	9.1	5.8	20	6.2	6.5
31	5.3	---	e3.8	e3.8	---	8.0	---	8.5	---	.00	6.9	---
TOTAL	170.15	188.2	128.0	156.7	118.6	325.9	291.9	305.8	252.1	139.16	171.85	195.4
MEAN	5.49	6.27	4.13	5.05	4.24	10.5	9.73	9.86	8.40	4.49	5.54	6.51
MAX	18	15	6.1	6.7	8.9	40	16	19	25	25	11	16
MIN	.35	2.5	2.2	3.8	3.1	3.8	6.4	8.0	5.7	.00	.00	5.0
AC-FT	337	373	254	311	235	646	579	607	500	276	341	388

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY)

	MEAN	7.42	7.56	6.91	6.90	7.57	9.47	9.03	8.88	7.55	6.09	5.80	5.68
MAX	13.7	9.12	8.36	8.88	10.1	21.6	13.5	16.4	10.9	8.34	11.6	7.79	
(WY)	1982	1981	1986	1979	1986	1978	1986	1988	1979	1990	1981	1977	
MIN	5.30	5.64	4.13	5.05	4.24	6.73	5.69	5.64	3.43	3.96	3.79	1.96	
(WY)	1977	1976	1993	1993	1993	1976	1981	1976	1978	1980	1976	1979	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1975 - 1993

ANNUAL TOTAL	2360.19	2443.76	
ANNUAL MEAN	6.45	6.70	7.40
HIGHEST ANNUAL MEAN			8.84
LOWEST ANNUAL MEAN			5.70
HIGHEST DAILY MEAN	22	40	126
LOWEST DAILY MEAN	.08	.00	.00
ANNUAL SEVEN-DAY MINIMUM	2.4	.37	.08
INSTANTANEOUS PEAK FLOW		151	643
INSTANTANEOUS PEAK STAGE		6.06	10.34
ANNUAL RUNOFF (AC-FT)	4680	4850	5360
10 PERCENT EXCEEDS	8.2	10	10
50 PERCENT EXCEEDS	6.4	6.0	7.0
90 PERCENT EXCEEDS	4.1	3.1	4.5

e Estimated

a Also July 31 to Aug. 1, 1993.

WHITE RIVER BASIN

06449500 LITTLE WHITE RIVER NEAR ROSEBUD, SD

LOCATION.--Lat 43°19'32", long 100°53'00", in SW1/4NW1/4 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.

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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	84	e47	e60	e250	e132	e300	209	140	163	108	115
2	86	77	e50	e62	e270	e134	e295	179	139	160	101	115
3	83	79	e48	e70	e300	e136	e290	171	134	162	101	106
4	81	74	e47	e80	e280	e138	e285	171	148	157	100	112
5	72	77	e45	e75	e290	e140	e280	159	146	149	110	117
6	71	73	e44	e71	e280	e160	e271	171	135	148	107	115
7	65	78	e43	e70	e270	e180	303	200	160	146	112	120
8	64	85	e43	e69	e270	e200	302	218	159	130	115	122
9	64	88	e44	e68	e260	e190	294	226	142	131	115	118
10	68	86	e45	e67	e250	e180	291	212	144	125	109	113
11	72	79	e48	e65	e240	e160	289	197	141	119	108	119
12	73	79	e51	e64	e220	e130	237	189	143	114	106	121
13	75	77	e55	e62	e200	e100	245	190	151	116	107	111
14	73	96	e50	e61	e190	e120	262	210	136	111	112	95
15	63	93	e47	e60	e180	e135	244	242	133	118	113	105
16	61	96	e40	e65	e170	e155	237	216	136	120	269	112
17	62	94	e40	e70	e160	e170	224	199	172	123	150	110
18	64	94	e40	e90	e150	e180	218	189	168	120	130	104
19	73	94	e39	e100	e152	e200	234	183	176	118	136	141
20	82	e93	e37	e110	e155	e220	235	174	160	116	134	135
21	83	e93	e35	e140	e150	e260	226	175	155	115	131	127
22	84	e87	e42	e160	e140	e265	213	172	157	129	133	122
23	88	e80	e50	e180	e130	e270	207	188	155	123	125	114
24	85	e70	e60	e170	e120	e265	196	165	181	116	121	118
25	87	e60	e59	e150	e122	e280	185	154	156	114	124	122
26	83	e50	e70	e160	e125	e300	169	153	158	128	133	114
27	85	e35	e80	e180	e126	e310	162	147	167	121	125	106
28	86	e38	e90	e200	e130	e320	162	145	168	126	123	113
29	83	e40	e75	e180	---	e315	165	145	168	118	126	114
30	78	e43	e68	e200	---	e310	183	143	164	128	120	113
31	82	---	e60	e220	---	e300	---	136	---	115	108	---
TOTAL	2364	2292	1592	3379	5580	6355	7204	5628	4592	3979	3812	3469
MEAN	76.3	76.4	51.4	109	199	205	240	182	153	128	123	116
MAX	88	96	90	220	300	320	303	242	181	163	269	141
MIN	61	35	35	60	120	100	162	136	133	111	100	95
AC-FT	4690	4550	3160	6700	11070	12610	14290	11160	9110	7890	7560	6880

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1993, BY WATER YEAR (WY)

	MEAN	78.4	86.1	79.7	76.0	104	191	181	157	142	95.2	76.4	71.0
MAX	118	131	131	112	199	396	401	282	417	228	164	116	
(WY)	1947	1992	1992	1974	1993	1949	1977	1983	1967	1944	1983	1991	
MIN	61.1	60.0	51.4	23.1	60.2	91.6	85.9	87.5	62.5	44.1	45.3	50.2	
(WY)	1979	1979	1993	1962	1949	1981	1981	1992	1985	1974	1973	1975	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1944 - 1993

ANNUAL TOTAL	35856		50246										
ANNUAL MEAN	98.0		138							111			
HIGHEST ANNUAL MEAN										154		1944	
LOWEST ANNUAL MEAN										78.0		1976	
HIGHEST DAILY MEAN	221	Mar 9	320	Mar 28	1810	May 17	1944						
LOWEST DAILY MEAN	35	Nov 27	35	Nov 27, Dec. 21	10	Jan 4	1949a						
ANNUAL SEVEN-DAY MINIMUM	39	Dec 16	39	Dec 16	16	Jan 18	1962						
INSTANTANEOUS PEAK FLOW			752	Aug 16	4640	Jun 11	1967b						
INSTANTANEOUS PEAK STAGE			6.69	Aug 16	14.09	Jun 11	1967						
ANNUAL RUNOFF (AC-FT)	71120		99660		80420								
10 PERCENT EXCEEDS	157		243		190								
50 PERCENT EXCEEDS	90		125		90								
90 PERCENT EXCEEDS	64		62		57								

e Estimated

a Also Feb. 20, 1955.

b From rating curve extended above 1,300 ft³/s.

WHITE RIVER BASIN

06450500 LITTLE WHITE RIVER BELOW WHITE RIVER, SD

LOCATION.--Lat 43°36'05", long 100°44'58", in SW1/4NW1/4 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 sea level. Prior to June 8, 1968, at site 0.8 mi downstream at datum 4.50 ft lower.

REMARKS.--Records fair 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	187	e80	e70	e180	e115	214	642	73	110	87	106
2	98	158	e100	e80	e200	e120	210	361	81	107	110	108
3	109	155	e90	e90	e195	e130	199	180	88	131	89	106
4	97	143	e80	e88	e190	e135	197	151	98	125	95	101
5	86	137	e70	e85	e184	e140	183	140	91	112	97	105
6	83	192	e60	e82	e180	e700	192	144	77	112	102	127
7	76	177	e60	e80	e180	e1500	220	188	101	109	107	112
8	67	135	e60	e76	e178	1020	228	263	139	101	108	106
9	63	131	e71	e74	e178	635	218	216	e100	94	107	106
10	53	153	e85	e70	e165	424	220	184	e98	110	88	106
11	53	125	e100	e68	e150	311	216	159	e96	75	104	108
12	84	120	e120	e65	e130	268	189	145	e95	72	112	136
13	82	119	e110	e62	e120	202	183	139	e90	85	120	107
14	67	135	e100	e60	e110	227	221	137	e85	87	120	101
15	62	147	e90	e64	e100	242	218	164	e80	87	132	110
16	58	138	e90	e67	e95	255	192	157	e78	86	243	107
17	62	124	e90	e70	e90	302	177	135	157	85	203	109
18	60	120	e90	e75	e93	225	171	130	266	88	158	126
19	57	132	e80	e80	e97	208	180	122	336	90	123	155
20	66	85	e86	e84	e100	232	206	119	226	89	113	181
21	88	118	e92	e89	e100	254	248	111	137	146	114	140
22	121	e80	e100	e94	e100	245	205	112	141	148	115	123
23	125	72	e110	e100	e100	271	174	113	122	104	115	116
24	118	98	e100	e100	e100	273	165	114	134	99	107	116
25	111	101	e110	e100	e100	256	153	118	147	100	105	115
26	97	67	e120	e110	e100	257	144	93	126	117	116	112
27	110	64	e115	e130	e105	268	128	77	117	106	125	112
28	112	e76	e108	e150	e110	245	126	59	141	134	121	117
29	112	e90	e100	e120	---	252	132	92	139	112	114	111
30	146	e85	e90	e140	---	233	202	79	125	103	120	120
31	172	---	e80	e160	---	221	---	79	---	94	114	---
TOTAL	2791	3664	2837	2783	3730	10166	5711	4923	3784	3218	3684	3505
MEAN	90.0	122	91.5	89.8	133	328	190	159	126	104	119	117
MAX	172	192	120	160	200	1500	248	642	336	148	243	181
MIN	53	64	60	60	90	115	126	59	73	72	87	101
AC-FT	5540	7270	5630	5520	7400	20160	11330	9760	7510	6380	7310	6950

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1993, BY WATER YEAR (WY)

	MEAN	78.0	83.6	81.2	80.0	111	240	216	196	197	105	73.7	70.1
MAX	141	125	148	169	236	815	613	614	931	574	143	120	
(WY)	1983	1983	1992	1992	1987	1978	1977	1983	1968	1962	1951	1983	
MIN	53.3	60.5	39.1	28.5	57.5	85.9	76.9	82.5	54.7	31.3	37.1	33.0	
(WY)	1977	1976	1952	1962	1962	1981	1981	1985	1985	1974	1974	1952	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1950 - 1993

ANNUAL TOTAL	42785	50796	
ANNUAL MEAN	117	139	128a
HIGHEST ANNUAL MEAN			218
LOWEST ANNUAL MEAN			79.0
HIGHEST DAILY MEAN	295	1500	7590
LOWEST DAILY MEAN	40	53	7.0
ANNUAL SEVEN-DAY MINIMUM	58	62	11
INSTANTANEOUS PEAK FLOW		1650	13700
INSTANTANEOUS PEAK STAGE		7.99	15.46
ANNUAL RUNOFF (AC-FT)	84860	100800	92500
10 PERCENT EXCEEDS	189	219	212
50 PERCENT EXCEEDS	102	112	90
90 PERCENT EXCEEDS	68	76	51

e Estimated

a Median of annual mean discharges, 130 ft³/s.

b Also Aug. 31 and Sept. 1, 1952.

c Gage height, 5.24 ft.

d Gage height, 10.02 ft, site and datum then in use.

f Backwater from ice.

g From floodmark, maximum height, site and datum then in use, 11.21 ft.

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD
(National stream-quality accounting network station)

LOCATION.--Lat 43°44'54", long 99°33'22", in SE1/4SW1/4 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 sea level. See WSP 1709, 1729, or 1917 for history of changes prior to Feb. 27, 1960.

REMARKS.--Records fair 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	77	e110	e19	e24	e58	1040	1770	266	2160	1280	319
2	57	82	e100	e18	e25	e68	909	3440	270	1460	862	266
3	64	92	e92	e17	e26	e75	1160	5840	261	3110	651	243
4	e62	94	e87	e17	e28	e86	1080	3370	266	1720	482	207
5	61	88	e80	e16	e29	e90	853	2080	266	1740	403	184
6	58	89	e75	e15	e30	e100	761	1370	270	1560	334	187
7	61	123	e76	e15	e28	e300	774	982	296	1170	292	172
8	60	205	e78	e14	e26	e8000	895	888	455	780	259	163
9	61	222	e79	e13	e24	e8000	774	4670	793	1160	248	166
10	61	196	e80	e13	e22	e6000	711	2610	3630	1070	223	169
11	e62	171	e74	e12	e20	e5000	1030	3360	2520	813	204	156
12	e62	146	e70	e12	e18	e4000	1640	2510	2060	813	190	158
13	63	151	e64	e11	e17	e3000	1220	1500	1700	687	201	166
14	64	166	e59	e10	e16	e3000	1210	1010	1500	534	362	177
15	61	134	e54	e11	e15	e4000	1120	755	1370	417	346	197
16	69	136	e50	e13	e14	e4000	1590	641	1160	529	262	193
17	72	132	e47	e15	e15	e3000	2510	578	1130	1550	218	174
18	e74	130	e43	e16	e17	e4000	1670	514	2070	916	248	161
19	75	136	e40	e17	e18	e4000	1380	467	3260	658	693	343
20	69	127	e38	e18	e19	e6000	1340	427	4470	575	2480	380
21	65	117	e36	e19	e20	e10000	1280	393	4100	755	1460	360
22	67	136	e34	e20	e20	e9000	1120	400	3370	1760	895	2710
23	64	122	e32	e19	e20	e8000	1580	400	2470	2230	694	1750
24	61	e120	e30	e18	e24	e7000	2720	353	1890	1360	1390	1300
25	e60	e118	e28	e19	e28	e3000	1980	319	1280	3190	1850	952
26	58	e115	e27	e19	e35	1340	1350	314	1340	1550	1940	664
27	61	e112	e26	e20	e41	1230	1030	299	1550	907	1400	448
28	65	e110	e25	e20	e50	1070	813	289	2120	921	975	314
29	63	e100	e23	e20	---	1160	664	265	2210	1320	652	254
30	65	e105	e22	e22	---	1220	652	261	2810	3420	504	210
31	67	---	e20	e23	---	1150	---	262	---	1940	413	---
TOTAL	1975	3852	1699	511	669	106947	36856	42337	51153	42775	22411	13143
MEAN	63.7	128	54.8	16.5	23.9	3450	1229	1366	1705	1380	723	438
MAX	75	222	110	23	50	10000	2720	5840	4470	3420	2480	2710
MIN	57	77	20	10	14	58	652	261	261	417	190	156
AC-FT	3920	7640	3370	1010	1330	212100	73100	83980	101500	84840	44450	26070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1993, BY WATER YEAR (WY)

MEAN	167	129	72.0	62.5	232	1324	972	1223	1216	481	288	180
MAX	1016	433	206	197	1086	5856	4726	13630	5985	3553	1181	926
(WY)	1983	1930	1947	1948	1982	1978	1952	1942	1967	1962	1966	1951
MIN	28.0	16.7	6.63	3.34	11.3	177	111	93.8	39.5	1.05	.75	15.1
(WY)	1938	1977	1976	1991	1950	1934	1981	1934	1989	1936	1936	1937

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1929 - 1993

ANNUAL TOTAL	122901	324328	
ANNUAL MEAN	336	889	530a
HIGHEST ANNUAL MEAN			1729
LOWEST ANNUAL MEAN			151
HIGHEST DAILY MEAN	4000	10000	44000
LOWEST DAILY MEAN	20	10	.00
ANNUAL SEVEN-DAY MINIMUM	24	12	.00
INSTANTANEOUS PEAK FLOW		17000	51900
INSTANTANEOUS PEAK STAGE		18.09	23.59
ANNUAL RUNOFF (AC-FT)	243800	643300	384000
10 PERCENT EXCEEDS	895	2510	1140
50 PERCENT EXCEEDS	152	259	148
90 PERCENT EXCEEDS	63	20	30

e Estimated

a Median of annual mean discharges, 440 ft³/s.

b No flow for some days in 1971, 1974, 1976, 1980, 1989.

c Gage height, 17.14 ft, backwater from ice.

d Gage height, 15.40 ft, site and datum then in use.

f From floodmarks, ice jam.

g Ice jam.

WHITE RIVER BASIN

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. Flow affected by ice Nov. 24 to Mar. 25. 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, 15 mg/L, Feb. 15, 1982.

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, 45,900 mg/L, June 10; minimum daily mean, 42 mg/L, Feb. 21.

SEDIMENT LOAD: Maximum daily, 564,000 tons, May 3; minimum daily, 2.0 tons, Feb. 16, 17.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	ALKA- LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT MG/L AS CO3 (00452)	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)
NOV 17...	1500	123	473	8.3	165	199	1	2.0	2.0	1500	725
MAR 02...	1120	69	461	7.9	202	246	0	-0.5	0.0	35	716
MAY 11...	1440	4180	581	8.0	158	193	0	24.0	16.0	5900	729
JUL 13...	1245	711	1040	7.2	128	156	0	20.0	21.0	3200	720
SEP 10...	1245	162	570	8.6	168	193	6	20.5	17.5	1400	723

DATE	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCOCI 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)
NOV 17...	12.9	98	1600	1300	61	21	2.1	80	72	4	5.1
MAR 02...	9.6	70	K1	110	110	37	5.0	59	52	2	5.3
MAY 11...	8.0	85	--	1900	35	12	1.1	100	84	7	5.7
JUL 13...	8.1	97	3900	1700	230	84	5.7	110	49	3	8.9
SEP 10...	9.6	106	<25	K20	79	28	2.2	90	69	4	6.1

DATE	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)
NOV 17...	179	64	6.7	0.50	33	316	327	0.44	109	0.030	0.04
MAR 02...	203	39	5.1	0.40	43	320	300	0.41	55.9	0.040	0.05
MAY 11...	165	110	8.2	0.50	25	362	389	0.53	4390	0.040	0.05
JUL 13...	147	160	140	0.60	25	618	648	0.88	1240	0.100	0.13
SEP 10...	183	98	6.4	0.60	36	369	383	0.52	168	<0.010	--

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 17...	1.7	0.020	0.950	0.930	5.70	0.030	0.040	--	--	--	--
MAR 02...	0.40	0.040	1.00	0.960	0.230	0.170	0.170	230	63	<3	37
MAY 11...	0.40	<0.010	1.00	--	0.060	0.080	0.030	20	10	<3	11
JUL 13...	6.0	<0.010	0.600	--	6.20	1.20	1.10	20	62	<3	14
SEP 10...	0.30	<0.010	<0.050	--	0.050	0.050	0.040	<10	28	<3	5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	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 17...	--	--	--	--	--	--	--	--	6730	2240	92
MAR 02...	26	3	<10	2	1	<1.0	250	9	79	15	99
MAY 11...	35	1	<10	1	<2	<1.0	90	20	36000	406000	94
JUL 13...	44	220	<10	4	4	<1.0	420	12	8880	17000	96
SEP 10...	33	<1	<10	1	2	<1.0	210	28	1370	599	100

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	63	287	49	77	108	22	e110	e415	123
2	57	278	43	82	194	43	e100	e402	109
3	64	280	48	92	314	78	e92	e386	96
4	e62	279	47	94	416	106	e87	e360	85
5	61	273	45	88	360	86	e80	e334	72
6	58	264	41	89	396	95	e75	e304	62
7	61	260	43	123	462	153	e76	e270	55
8	60	260	42	205	2820	1560	e78	e238	50
9	61	262	43	222	7980	4780	e79	e218	46
10	61	244	40	196	11700	6190	e80	e210	45
11	e62	240	40	171	10000	4620	e74	e204	41
12	e62	256	43	146	9900	3900	e70	e200	38
13	63	294	50	151	9650	3930	e64	e198	34
14	64	282	49	166	7400	3320	e59	e208	33
15	61	206	34	134	7590	2750	e54	e222	32
16	69	118	22	136	7800	2860	e50	e222	30
17	72	120	23	132	6370	2270	e47	e214	27
18	e74	174	35	130	5400	1900	e43	e202	23
19	75	206	42	136	6550	2410	e40	e188	20
20	69	104	19	127	2730	936	e38	e170	17
21	65	94	16	117	4020	1270	e36	e154	15
22	67	92	17	136	4690	1720	e34	e140	13
23	64	84	15	122	3580	1180	e32	e128	11
24	61	64	11	e120	2480	804	e30	e122	9.9
25	e60	58	9.4	e118	2290	730	e28	e122	9.2
26	58	61	9.6	e115	1260	391	e27	e122	8.9
27	61	60	9.9	e112	590	178	e26	e122	8.6
28	65	66	12	e110	476	141	e25	e122	8.2
29	63	70	12	e100	e446	120	e23	e122	7.6
30	65	71	12	e105	e430	122	e22	e122	7.2
31	67	74	13	---	---	---	e20	e122	6.6
TOTAL	1975	---	934.9	3852	---	48665	1699	---	1143.2

e Estimated

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	e19	e125	6.4	e24	e61	4.0	e58	e80	13
2	e18	e130	6.3	e25	e58	3.9	e68	82	15
3	e17	e138	6.3	e26	e56	3.9	e75	116	23
4	e17	e158	7.3	e28	e54	4.1	e86	e142	33
5	e16	e194	8.4	e29	e54	4.2	e90	e150	36
6	e15	e210	8.5	e30	e55	4.5	e100	e206	56
7	e15	e216	8.7	e28	e55	4.2	e300	e1150	931
8	e14	e218	8.2	e26	e55	3.9	e8000	8590	186000
9	e13	e220	7.7	e24	e55	3.6	e8000	10500	227000
10	e13	e219	7.7	e22	e56	3.3	e6000	14500	235000
11	e12	e216	7.0	e20	e56	3.0	e5000	16500	223000
12	e12	e208	6.7	e18	e56	2.7	e4000	15400	166000
13	e11	e198	5.9	e17	e55	2.5	e3000	13000	105000
14	e10	e195	5.3	e16	e55	2.4	e3000	10000	81000
15	e11	e190	5.6	e15	e54	2.2	e4000	6850	74000
16	e13	e182	6.4	e14	e52	2.0	e4000	3790	40900
17	e15	e168	6.8	e15	e49	2.0	e3000	e1420	11500
18	e16	e150	6.5	e17	e45	2.1	e4000	e720	7780
19	e17	e134	6.2	e18	e43	2.1	e4000	e1000	10800
20	e18	e120	5.8	e19	e43	2.2	e6000	e3300	53500
21	e19	e110	5.6	e20	e42	2.3	e10000	e4650	126000
22	e20	e103	5.6	e20	e58	3.1	e9000	4180	102000
23	e19	e96	4.9	e20	e66	3.6	e8000	5620	121000
24	e18	e91	4.4	e24	e70	4.5	e7000	9530	180000
25	e19	e85	4.4	e28	e72	5.4	e3000	12300	99600
26	e19	e78	4.0	e35	e74	7.0	1340	9280	33600
27	e20	e72	3.9	e41	e76	8.4	1230	6650	22100
28	e20	e68	3.7	e50	e78	11	1070	5500	15900
29	e20	e66	3.6	---	---	---	1160	5210	16300
30	e22	e64	3.8	---	---	---	1220	5320	17500
31	e23	e63	3.9	---	---	---	1150	4380	13600
TOTAL	511	---	185.5	669	---	108.1	106947	---	2170187
APRIL			MAY			JUNE			
1	1040	3680	10300	1770	17900	85500	266	675	485
2	909	3060	7510	3440	33000	307000	270	650	474
3	1160	4200	13200	5840	35800	564000	261	500	352
4	1080	5450	15900	3370	26600	242000	266	415	298
5	853	5800	13400	2080	22000	124000	266	425	305
6	761	8420	17300	1370	18100	67000	270	475	346
7	774	8930	18700	982	14800	39200	296	645	515
8	895	7180	17400	888	11500	27600	455	1450	1780
9	774	4830	10100	4670	34900	440000	793	8260	17700
10	711	3450	6620	2610	28400	200000	3630	e45900	450000
11	1030	7150	19900	3360	34100	309000	2520	35100	239000
12	1640	13700	60700	2510	26200	178000	2060	34800	194000
13	1220	12800	42200	1500	22500	91100	1700	29800	137000
14	1210	10300	33700	1010	20600	56200	1500	25300	102000
15	1120	8720	26400	755	15800	32200	1370	19000	70300
16	1590	14600	62700	641	10800	18700	1160	9350	29300
17	2510	25000	169000	578	7900	12300	1130	7600	23200
18	1670	21700	97800	514	6000	8330	2070	15000	83800
19	1380	17800	66300	467	4350	5480	3260	42700	376000
20	1340	14800	53500	427	3450	3980	4470	35600	430000
21	1280	11000	38000	393	2680	2840	4100	34600	383000
22	1120	9050	27400	400	1950	2110	3370	28600	260000
23	1580	13800	58900	400	1530	1650	2470	18700	125000
24	2720	21400	157000	353	1040	991	1890	12800	65300
25	1980	16600	88700	319	850	732	1280	10200	35300
26	1350	13100	47700	314	775	657	1340	9990	36100
27	1030	10600	29500	299	755	610	1550	10800	45200
28	813	8350	18300	289	725	566	2120	12700	72700
29	664	6380	11400	265	695	497	2210	10600	63300
30	652	5140	9050	261	875	617	2810	12300	93300
31	---	---	---	262	735	520	---	---	---
TOTAL	36856	---	1248580	42337	---	2823380	51153	---	3336055

WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

SUSPENDED-SEDIMENT DISCHARGE, IN TONS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	2160	7850	45800	1280	17200	59400	319	8850	7620
2	1460	2950	11600	862	16500	38400	266	7150	5140
3	3110	10100	84800	651	16400	28800	243	6480	4250
4	1720	9950	46200	482	13100	17000	207	5480	3060
5	1740	13100	61500	403	9450	10300	184	4700	2330
6	1560	15400	64900	334	7450	6720	187	4000	2020
7	1170	e13400	42300	292	6850	5400	172	3200	1490
8	780	e10000	21100	259	5950	4160	163	2600	1140
9	1160	e15700	49200	248	4420	2960	166	1900	852
10	1070	e13600	39300	223	3120	1880	169	1460	666
11	813	e12000	26300	204	2050	1130	156	775	326
12	813	e16900	37100	190	1500	769	158	740	316
13	687	8550	15900	201	1200	651	166	765	343
14	534	7450	10700	362	2980	2910	177	885	423
15	417	7350	8280	346	4550	4250	197	1520	808
16	529	9900	14100	262	4450	3150	193	1870	974
17	1550	27400	115000	218	4550	2680	174	1680	789
18	916	22100	54700	248	4900	3280	161	5550	2410
19	658	15600	27700	693	24200	45300	343	8750	8100
20	575	9400	14600	2480	40400	271000	380	8950	9180
21	755	e8000	16300	1460	36000	142000	360	e8400	8160
22	1760	e11600	55100	895	28000	67700	2710	e38200	280000
23	2230	10800	65000	694	20400	38200	1750	e27200	129000
24	1360	8800	32300	1390	19100	71700	1300	19400	68100
25	3190	17100	147000	1850	23300	116000	952	18000	46300
26	1550	7400	31000	1940	22800	119000	664	e16400	29400
27	907	5150	12600	1400	21600	81600	448	e14400	17400
28	921	4500	11200	975	16400	43200	314	12400	10500
29	1320	11800	42100	652	12000	21100	254	10100	6930
30	3420	28000	259000	504	10400	14200	210	7400	4200
31	1940	21600	113000	413	10000	11200	---	---	---
TOTAL	42775	---	1575680	22411	---	1236040	13143	---	652227
YEAR	324328		13093185.7						
e Estimated									

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
OCT 1992					
08...	1325	59	7.0	260	99
NOV					
17...	1500	123	2.0	6140	92
MAR 1993					
02...	1120	69	0.0	82	99
MAY					
11...	1440	4180	16.0	35600	94
JUL					
13...	1245	711	21.0	8900	100
AUG					
09...	1410	250	--	4220	100
SEP					
10...	1245	162	17.5	1420	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 SE1/4SW1/4NW1/4 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 sea level, from topographic map.

REMARKS.--Records good except those for Mar. 2, 3, 9, 24-27, Apr. 22-24, 26, 27, May 5-14, 26, 27, June 7-9, 16-22, and Sept. 16, which are 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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	57.06	57.04	55.70	57.73	61.12	58.43
2	---	---	---	---	---	52.97	57.09	57.07	55.83	57.87	61.03	58.27
3	---	---	---	---	---	53.09	57.16	57.28	56.18	57.98	60.97	57.91
4	---	---	---	---	---	53.34	57.10	57.33	56.36	57.95	60.83	57.55
5	---	---	---	---	---	53.64	57.05	57.21	56.21	57.94	60.73	57.15
6	---	---	---	---	---	54.09	57.23	57.24	56.16	58.18	60.61	56.77
7	---	---	---	---	---	54.27	57.22	57.27	55.92	58.48	60.44	56.35
8	---	---	---	---	---	54.62	57.25	57.28	56.03	58.76	60.31	55.92
9	---	---	---	---	---	55.21	57.19	57.49	56.54	58.96	60.24	55.69
10	---	---	---	---	---	55.58	57.14	57.64	56.70	58.95	60.24	55.61
11	---	---	---	---	---	55.94	56.94	57.87	56.85	59.03	60.12	55.30
12	---	---	---	---	---	56.36	56.85	57.97	57.22	59.00	60.12	54.90
13	---	---	---	---	---	56.56	56.83	58.17	57.13	59.41	59.86	54.48
14	---	---	---	---	---	56.63	56.92	58.16	56.87	59.49	59.66	54.32
15	---	---	---	---	---	56.74	57.02	57.92	57.05	59.47	59.44	54.16
16	---	---	---	---	---	57.04	57.00	57.93	57.15	59.56	59.22	54.07
17	---	---	---	---	---	57.12	57.01	57.83	57.20	59.95	59.23	54.06
18	---	---	---	---	---	57.07	56.93	57.59	57.41	60.03	59.36	54.02
19	---	---	---	---	---	56.86	56.95	57.53	57.39	60.19	59.49	53.97
20	---	---	---	---	---	56.49	56.73	57.30	57.22	60.16	59.71	53.76
21	---	---	---	---	---	56.09	56.59	56.92	57.44	60.17	59.76	53.74
22	---	---	---	---	---	55.84	56.49	56.90	57.89	60.28	59.66	53.89
23	---	---	---	---	---	55.68	56.52	56.72	58.16	60.35	59.49	54.07
24	---	---	---	---	---	55.62	56.59	56.62	58.37	60.46	59.51	54.03
25	---	---	---	---	---	55.61	56.63	56.72	58.63	60.66	59.70	54.09
26	---	---	---	---	---	55.65	56.67	56.62	58.45	60.69	59.94	53.84
27	---	---	---	---	---	55.65	56.67	56.53	58.27	60.89	59.86	53.43
28	---	---	---	---	---	55.61	56.67	56.40	57.89	61.04	59.54	53.25
29	---	---	---	---	---	55.80	56.72	56.17	57.60	61.12	59.25	53.19
30	---	---	---	---	---	56.21	56.84	55.94	57.64	61.13	58.99	53.07
31	---	---	---	---	---	56.81	---	55.82	---	61.15	58.73	---
MEAN	---	---	---	---	---	---	56.90	57.18	57.12	59.58	59.91	54.98
MAX	---	---	---	---	---	---	57.25	58.17	58.63	61.15	61.12	58.43
MIN	---	---	---	---	---	---	56.49	55.82	55.70	57.73	58.73	53.07

MISSOURI-FORT RANDALL RIVER BASIN
06452320 PLATTE CREEK NEAR PLATTE, SD

LOCATION.--Lat 43°19'38", long 98°58'13", in NW1/4NW1/4NE1/4 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 sea level, from topographic map.

REMARKS.--Records good 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.11	1.0	e.08	e.04	e.09	9.9	11	8.9	150	190	7.1
2	.07	.11	.84	e.08	e.04	e.17	9.0	21	9.0	134	155	6.6
3	.07	.11	.92	e.08	e.04	e.40	7.7	26	8.9	126	133	6.2
4	.05	.13	.86	e.07	e.04	e1.5	7.3	21	8.8	136	112	5.9
5	.05	.13	.67	e.06	e.04	e10	6.7	16	7.5	191	95	5.9
6	.05	.13	.44	e.06	e.04	e100	6.5	16	7.0	528	80	5.7
7	.06	.13	.33	e.06	e.03	e180	7.9	18	125	551	66	5.5
8	.06	.14	.26	e.05	e.03	e200	11	18	142	425	56	5.3
9	.06	.13	.24	e.05	e.03	e160	11	41	89	343	48	4.8
10	.07	.13	.23	e.05	e.02	e120	12	69	45	309	41	4.3
11	.07	.13	.20	e.05	e.02	e100	12	55	30	294	35	4.3
12	.07	.14	.21	e.05	e.02	e75	11	36	23	269	31	4.0
13	.07	.14	.22	e.04	e.02	e57	12	26	21	282	28	3.8
14	.06	.16	.22	e.03	e.01	e45	14	24	19	274	24	4.2
15	.06	.16	.22	e.03	e.01	34	14	26	16	231	22	3.8
16	.06	.16	.21	e.03	e.01	28	14	26	14	196	27	3.3
17	.07	.51	.19	e.03	e.01	e21	13	24	e603	192	23	3.1
18	.07	1.0	.19	e.03	e.01	e17	12	21	345	193	30	3.2
19	.08	1.1	.19	e.03	e.01	e15	12	19	276	182	41	9.4
20	.07	1.1	.18	e.03	e.01	15	12	17	167	164	30	12
21	.07	1.1	.16	e.04	e.01	14	10	16	99	170	24	8.7
22	.07	1.1	.16	e.04	e.01	13	9.1	15	69	236	21	7.5
23	.08	1.0	e.15	e.04	e.01	12	7.7	14	217	251	18	6.9
24	.08	1.0	e.15	e.03	e.01	11	7.0	14	479	305	16	6.8
25	.09	1.0	e.14	e.03	e.01	10	6.5	12	524	347	14	6.8
26	.09	.99	e.14	e.03	e.01	9.5	5.3	10	303	390	12	6.8
27	.08	.88	e.14	e.04	e.02	8.9	4.8	10	217	441	11	7.2
28	.09	.88	e.14	e.04	e.04	8.4	5.1	8.7	201	392	10	6.1
29	.10	.93	e.12	e.04	---	9.7	5.3	8.9	186	335	9.7	5.9
30	.09	1.0	e.10	e.03	---	9.3	6.6	9.5	173	284	9.0	5.2
31	.10	---	e.09	e.04	---	9.0	---	10	---	232	8.3	---
TOTAL	2.23	15.73	9.31	1.39	0.60	1293.96	282.4	659.1	4433.1	8553	1420.0	176.3
MEAN	.072	.52	.30	.045	.021	41.7	9.41	21.3	148	276	45.8	5.88
MAX	.10	1.1	1.0	.08	.04	200	14	69	603	551	190	12
MIN	.05	.11	.09	.03	.01	.09	4.8	8.7	7.0	126	8.3	3.1
AC-FT	4.4	31	18	2.8	1.2	2570	560	1310	8790	16960	2820	350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1989	1990	1991	1992	1993
MEAN	.19	.36	.27	.21	.44	9.58	3.92	15.5	39.3	55.6
MAX	.87	1.27	1.05	.76	1.13	41.7	9.41	49.0	148	276
(WY)	1989	1989	1989	1989	1989	1993	1993	1990	1993	1993
MIN	.000	.002	.003	.009	.021	.39	.26	.014	.011	.15
(WY)	1990	1991	1990	1992	1993	1992	1990	1992	1992	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	153.31	16847.12	
ANNUAL MEAN	.42	46.2	
HIGHEST ANNUAL MEAN			11.4
LOWEST ANNUAL MEAN			46.2
HIGHEST DAILY MEAN	13	Sep 2	603
LOWEST DAILY MEAN	.00	Jan 9	.01
ANNUAL SEVEN-DAY MINIMUM	.00	May 13	.01
INSTANTANEOUS PEAK FLOW			1600
INSTANTANEOUS PEAK STAGE			7.24
ANNUAL RUNOFF (AC-FT)	304	33420	8260
10 PERCENT EXCEEDS	.99	184	11
50 PERCENT EXCEEDS	.07	6.7	.15
90 PERCENT EXCEEDS	.00	.04	.00

e Estimated

a No flow at times in most years.

MISSOURI-FORT RANDALL RIVER BASIN
06452380 ANDES CREEK NEAR ARMOUR, SD

LOCATION.--Lat 43°15'23", long 97°24'08", in SW1/4NW1/4 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 exceeds 2 ft³/s at time of site visit. Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	
APR 14...	1620	5.5	1610	8.0	9.0	5.0	719	13.9	690	
JUN 24...	1345	E50	650	7.6	18.0	22.0	720	7.0	260	
AUG 25...	1530	33	780	7.7	31.0	25.5	720	6.4	330	
SEP 17...	1110	2.8	1200	7.7	12.0	13.5	726	9.2	510	
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 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)
APR 14...	170	64	83	20	1	25	236	620	26	0.20
JUN 24...	66	24	28	18	0.8	17	159	160	14	0.20
AUG 25...	78	33	32	17	0.8	14	186	200	19	0.10
SEP 17...	120	51	57	19	1	12	263	360	21	0.20
DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CON-STI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)
APR 14...	8.1	1140	1190	1.62	17.7	0.030	0.04	0.020	<0.050	--
JUN 24...	23	433	452	0.61	--	0.030	0.04	0.020	0.230	0.210
AUG 25...	14	505	522	0.71	46.5	0.030	0.04	<0.010	0.220	--
SEP 17...	14	796	846	1.15	6.40	0.070	0.09	<0.010	0.320	--
DATE	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)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
APR 14...	0.440	0.390	4	<1.0	<1	<0.1	2	22	0.33	100
JUN 24...	1.60	1.40	8	<1.0	<1	<0.1	2	--	--	--
AUG 25...	0.940	0.900	10	<1.0	<1	0.2	<1	8	0.71	100
SEP 17...	0.630	0.590	9	<1.0	<1	<0.1	1	11	0.08	96

MISSOURI-FORT RANDALL RIVER BASIN

06452380 ANDES CREEK NEAR ARMOUR, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
04-14-93	1620	62	18	14	15	1.2	48000	14
08-25-93	1530	110	34	13	10	0.9	34000	<10

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)
890	1	<10	<2	37	32	11	10
660	<1	<10	<2	17	26	8	9

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)
<2	13	<8	<4	40000	21	11	18
<2	14	<8	<4	27000	11	7	10

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
14000	<2	18	38	4	6	0.7	<2	280
5400	<2	14	22	<4	4	--	<2	250

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)
<40	5	<5	1400	<100	63	2	16	66
<40	<4	<5	800	<100	35	1	10	33

MISSOURI-FORT RANDALL RIVER BASIN

06452383 LAKE ANDES TRIBUTARY NO. 3 NEAR ARMOUR, SD

LOCATION.--Lat 43°15'23", long 98°25'58", in SW1/4NE1/4 sec.5, T.97 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 collected only when discharge exceeds 2 ft³/s at time of site visit. Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 CACO3) (00900)
APR 14...	1400	2.9	2170	8.2	3.0	4.0	719	14.4	117	1000
JUN 23...	1700	13	1440	7.8	29.5	26.0	712	5.6	74	670

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 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)
APR 14...	220	120	85	15	1	31	241	910	42	0.30
JUN 23...	150	71	64	17	1	25	175	630	23	0.20

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L AS SOLVED) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L AS SOLVED) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)
APR 14...	22	1580	1700	2.31	13.3	0.060	0.08	0.030	0.800	0.770
JUN 23...	17	1090	1140	1.55	40.0	0.090	0.12	0.070	0.790	0.720

DATE	PHOS- PHORUS ORTHOPHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS 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- SOLVED (MG/L AS SE) (80154)	SEDI- MENT, DIS- SOLVED (MG/L AS SE) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 14...	0.660	0.500	4	<1.0	<1	<22	34	18	0.14	93
JUN 23...	0.540	0.430	7	<1.0	<1	<0.1	11	31	1.1	89

MISSOURI-FORT RANDALL RIVER BASIN

06452383 LAKE ANDES TRIBUTARY NO. 3 NEAR ARMOUR, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
04-14-93	1400	22	10	6.1	18	1.3	58000	10

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)
630	1	<10	<2	44	59	13	29

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)
<2	15	<8	<4	31000	29	20	28

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
1900	<2	26	39	7	9	--	<2	160

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)
<40	9	<5	2200	<100	130	2	21	130

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 SE1/4SE1/4SE1/4 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 collected only when discharge exceeds 2 ft³/s at time of site visit. Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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, (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	
APR 14...	1050	6.8	815	7.7	4.0	5.0	719	14.8	123	310	
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 (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)	
APR 14...	78	29	28	15	0.7	18	147	200	28	0.20	
DATE		SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)
APR 14...	15		490	510	0.69	9.36	0.400	0.52	0.050	0.660	0.610
DATE		PHOS-PHORUS ORTHO, DIS-SOLVED (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)	SEDI-MENT, DIS-SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
APR 14...	1.10	0.880	5	<1.0	<1	<0.1	2	23	0.42	100	

MISSOURI-FORT RANDALL RIVER BASIN

06452386 LAKE ANDES TRIBUTARY NO. 2 NEAR LAKE ANDES, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
04-14-93	1050	57	11	8.7	14	1.5	44000	13
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)	
750	1	<10	<2	41	39	13	20	
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)	
<2	25	<8	<4	31000	26	12	19	
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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
11000	2	23	39	5	6	--	<2	280
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)
<40	6	<5	1600	<100	100	2	19	96

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 NE1/4NE1/4SE1/4 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 collected only when discharge exceeds 2 ft³/s at time of site visit. No water-quality samples collected this water year; discharge at times of site visits less than 2 ft³/s.

MISSOURI-FORT RANDALL RIVER BASIN
06452390 LAKE ANDES ABOVE RAVINIA, SD

LOCATION.--Lat 43°13'15", long 98°24'55", in SW1/4SW1/4NE1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)
NOV 18...	0900	0.20	5270	8.1	4.0	2.0	727	10.3	80	3.60
FEB 17...	1030	0.32	11800	7.4	-23.0	0.0	737	13.4	99	6.00
APR 15...	1000	2.16	750	8.4	7.5	6.0	721	11.1	95	17.4
JUN 23...	1100	2.13	1050	7.9	21.0	21.5	715	8.6	104	26.4
AUG 25...	0930	2.13	765	9.2	23.0	23.5	718	6.2	78	41.3
SEP 15...	1015	2.13	780	9.5	9.0	13.5	725	9.2	93	40.8

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)
NOV 18...	2100	440	250	400	28	4	100	105	2600
FEB 17...	--	--	--	--	--	--	--	--	--
APR 15...	260	64	25	33	20	0.9	26	110	230
JUN 23...	400	100	37	48	19	1	29	193	330
AUG 25...	340	81	34	37	18	0.9	11	188	230
SEP 15...	320	71	35	41	21	1	4.4	183	240

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, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV 18...	230	0.40	16	4100	4540	6.17	0.530	0.68	0.030
FEB 17...	--	--	--	--	--	--	--	--	--
APR 15...	19	0.20	8.6	474	526	0.72	0.190	0.24	0.040
JUN 23...	24	0.20	23	715	754	1.03	0.500	0.64	0.170
AUG 25...	15	0.20	18	541	566	0.77	0.040	0.05	<0.010
SEP 15...	16	0.20	16	535	578	0.79	0.060	0.08	<0.010

MISSOURI-FORT RANDALL RIVER BASIN

06452390 LAKE ANDES ABOVE RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	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 18...	<0.050	--	0.690	<0.010	2	<1.0	<1	<0.1	<1
	FEB 17...	--	--	--	--	--	--	--	--	--
	APR 15...	0.130	0.090	0.700	0.410	4	<1.0	<1	<0.1	<1
	JUN 23...	0.830	0.660	1.40	1.20	11	<1.0	<1	<0.1	1
	AUG 25...	<0.050	--	0.670	0.590	9	<1.0	<1	<0.1	<1
	SEP 15...	<0.050	--	0.470	0.370	9	<1.0	<1	<0.1	<1

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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)	ALDI- CARB WATER TOT.REC (UG/L) (82619)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS- SOLVED (UG/L) (39331)
APR 15...	1000	750	8.4	7.5	6.0	721	11.1	95	<0.10	<0.5	<0.010	<0.01
JUN 23...	1100	1050	7.9	21.0	21.5	715	8.6	104	<0.10	<0.5	<0.010	<0.01

DATE	AME- TRYNE TOTAL (82184)	DEETHYL ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75981)	BROM- ACIL WATER WHLREC (UG/L) (30234)	BUTA- CHLOR WATER WHLREC (UG/L) (30235)	BUTYL- ATE WATER WHLREC (UG/L) (30236)	CARBO- FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CARBOX- IN WATER SHOLE RECOV- ERABLE (UG/L) (30245)	CHLOR- DANE, DIS- SOLVED (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED (UG/L) (39352)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (38932)	
APR 15...	<0.10	0.8	0.30	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1	<0.01
JUN 23...	<0.10	0.4	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1	<0.01

DATE	CYAN- AZINE TOTAL (UG/L) (81757)	CYCLO- ATE WATER WHOLE RECOV- ERABLE (UG/L) (30254)	DDE, DIS- SOLVED (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDD, TOTAL (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDT, TOTAL (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DEF TOTAL (UG/L) (39040)	DI- AZINON, TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN TOTAL (UG/L) (39380)
APR 15...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010
JUN 23...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010

DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DIPHEN- AMID WATER WHOLE RECOV- ERABLE (UG/L) (30255)	DI- SYSTON TOTAL (UG/L) (39011)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)
APR 15...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01
JUN 23...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01

MISSOURI-FORT RANDALL RIVER BASIN

06452390 LAKE ANDES ABOVE RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTA- CHLOR EPOXIDE DIS- SOLVED (UG/L) (39421)	HEXAZI- NONE WATER WHOLE RECOV- ERABLE (UG/L) (30264)	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB WATER WHOLE RECOV. (UG/L) (30282)	METHO- MYL TOTAL (UG/L) (39051)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV TOTAL (UG/L) (82350)	METHYL PARA- THION, TOTAL (UG/L) (39600)
APR 15...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	<0.01
JUN 23...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	<0.01

DATE	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METOLA- CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	METRI- BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	MIREX, TOTAL (UG/L) (39755)	MIREX, DIS- SOLVED (UG/L) (39756)	1-NAPH- THOL WATER WHOLE REC (UG/L) (77441)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV TOTAL (UG/L) (82348)	PHORATE TOTAL (UG/L) (39023)	PCB, TOTAL (UG/L) (39516)
APR 15...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
JUN 23...	<0.01	0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1

DATE	PCB, DIS- SOLVED (UG/L) (39517)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	PRO- PAZINE TOTAL (UG/L) (39024)	PROPA- CHLOR WATER WHOLE RECOV. (UG/L) (30295)	PROPHAM TOTAL (UG/L) (39052)	PROPO- XUR WATER WHOLE RECOV. (UG/L) (30296)	SEVIN, TOTAL (UG/L) (39750)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)
APR 15...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
JUN 23...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10

DATE	SIME- TRYNE TOTAL (UG/L) (39054)	TER- BACIL WATER WHOLE RECOV. (UG/L) (30311)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TRI- FLURA- LIN TOTAL (UG/L) (39030)	TOTAL TRI- THION DISSOLV (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)	VER- NOLATE WATER WHOLE RECOV. (UG/L) (30324)
APR 15...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.63	<0.01	<0.01	<0.10
JUN 23...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.26	<0.01	<0.01	<0.10

MISSOURI-FORT RANDALL RIVER BASIN
06452390 LAKE ANDES ABOVE RAVINIA, SD--Continued
WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
11-18-92	0900	50	12	8.8	17	1.4	50000	10
04-15-93	1000	45	12	4.7	18	1.4	58000	11
08-25-93	0930	41	11	5.3	18	1.4	56000	11

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)
370	1	<10	<2	53	48	11	32
610	1	<10	<2	47	60	12	33
400	1	<10	<2	42	59	13	36

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)
<2	13	<8	<4	25000	32	18	25
<2	14	<8	<4	33000	29	22	33
<2	15	<8	<4	32000	27	21	33

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
1900	<2	28	34	4	7	1.9	<2	340
2000	2	26	44	11	9	3.8	<2	300
1800	<2	25	42	6	9	--	<2	290

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)
<40	9	<5	2200	<100	110	2	19	100
<40	9	<5	2400	<100	140	2	20	140
<40	9	<5	2200	<100	130	2	19	130

MISSOURI-FORT RANDALL RIVER BASIN
06452391 LAKE ANDES NEAR RAVINIA, SD

LOCATION.--Lat 43°11'05", long 98°26'10", in SW1/4SW1/4SE1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE OF HG (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK (IN) (00077)
NOV										
18...	1000	0.55	7470	7.6	0.0	2.0	727	8.3	65	3.60
FEB										
17...	1130	0.49	12500	7.7	-24.0	0.0	737	4.7	35	5.04
APR										
15...	1100	0.98	3870	8.3	7.0	5.0	721	12.4	104	4.80
JUN										
23...	1230	1.37	2630	7.7	28.0	23.5	715	8.6	110	24.0
AUG										
25...	1030	2.13	2110	8.8	25.0	25.0	718	9.2	119	23.2
SEP										
15...	1100	2.29	1970	8.9	9.5	14.0	725	9.1	93	30.0

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- LITY LAB AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV									
18...	2800	560	350	570	29	5	190	147	3600
FEB									
17...	4800	540	840	1300	35	8	330	478	5400
APR									
15...	1500	320	180	270	26	3	95	142	1900
JUN									
23...	1000	220	120	170	26	2	3.0	139	1100
AUG									
25...	840	180	96	140	25	2	57	188	840
SEP									
15...	750	160	86	120	24	2	57	204	780

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, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV									
18...	410	0.80	23	5810	6550	8.91	9.60	12	0.100
FEB									
17...	890	0.70	29	9640	11100	15.1	22.0	28	0.020
APR									
15...	210	0.50	21	3090	3170	4.31	4.30	5.5	0.170
JUN									
23...	130	0.30	31	1870	2110	2.87	1.80	2.3	0.360
AUG									
25...	100	0.30	28	1560	1650	2.24	0.040	0.05	<0.010
SEP									
15...	90	0.30	27	1440	1510	2.05	0.030	0.04	<0.010

MISSOURI-FORT RANDALL RIVER BASIN

06452391 LAKE ANDES NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE		NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHOPHOS- PHATE (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										
18...		0.340	0.240	0.800	0.020	2	<1.0	<1	<0.1	<1
FEB										
17...		<0.050	--	0.210	0.050	10	<1.0	<2	<0.1	<1
APR										
15...		0.280	0.110	0.910	<0.010	5	<1.0	<1	<0.1	<1
JUN										
23...		1.40	1.04	0.430	0.280	12	<1.0	<1	<0.1	1
AUG										
25...		<0.050	--	0.920	0.730	17	<1.0	<1	<0.1	<1
SEP										
15...		<0.050	--	0.800	0.640	16	<1.0	<1	<0.1	<1

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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)	ALDI- CARB WATER TOT.REC (UG/L) (82619)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS- SOLVED (UG/L) (39331)
APR												
15...	1100	3870	8.3	7.0	5.0	721	12.4	104	<0.10	<0.5	<0.010	<0.01
JUN												
23...	1230	2630	7.7	28.0	23.5	715	8.6	110	<0.10	<0.5	<0.010	<0.01

DATE	AME- TRYNE TOTAL (82184)	DEETHYL ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75981)	BROM- ACIL WATER WHLREC (UG/L) (30234)	BUTA- CHLOR WATER WHLREC (UG/L) (30235)	BUTYL- ATE WATER WHLREC (UG/L) (30236)	CARBO- FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CARBOX- IN WATER WHOLE RECOV- ERABLE (UG/L) (30245)	CHLOR- DANE, DIS- SOLVED (UG/L) (39350)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (39352)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (39332)
APR											
15...	<0.10	<0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1
JUN											
23...	<0.10	0.2	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1

DATE	CYAN- AZINE TOTAL (UG/L) (81757)	CYCLO- ATE WATER WHOLE RECOV- ERABLE (UG/L) (30254)	DDE, DIS- SOLVED (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDD, TOTAL (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDD, DIS- SOLVED (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DDT, DIS- SOLVED (UG/L) (39040)	DI- AZINON, TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN TOTAL (UG/L) (39380)
APR												
15...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010
JUN												
23...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010

DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DIPHEN- AMID WATER WHOLE RECOV- ERABLE (UG/L) (30255)	DI- SYSTON TOTAL (UG/L) (39011)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)
APR												
15...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01
JUN												
23...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01

MISSOURI-FORT RANDALL RIVER BASIN

06452391 LAKE ANDES NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	HEPTA- CHLOR EPOXIDE	HEPTA- CHLOR EPOXIDE DIS-	HEXAZI- NONE WATER WHOLE RECOV-	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	METHIO- CARB WATER WHOLE RECOV. (UG/L) (30282)	METHO- MYL TOTAL (UG/L) (39051)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV (UG/L) (82350)	METHYL PARA- THION, TOTAL (UG/L) (39600)	
	TOTAL (UG/L) (39420)	SOLVED (UG/L) (39421)	ERABLE (UG/L) (30264)									
APR 15...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	
JUN 23...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	
DATE	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METOLA- CHLOR WATER TOT.REC (UG/L) (82612)	METRI- BUZIN WATER TOT.REC (UG/L) (82611)	MIREX, TOTAL (UG/L) (39755)	MIREX, DIS- SOLVED (UG/L) (39756)	1-NAPH- THOL WATER REC (UG/L) (77441)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV (UG/L) (82348)	PHORATE TOTAL (UG/L) (39023)	PCB, TOTAL (UG/L) (39516)
APR 15...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
JUN 23...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
DATE	PCB, DIS- SOLVED (UG/L) (39517)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	PRO- PAZINE TOTAL (UG/L) (39024)	PROPA- CHLOR WATER WHOLE RECOV. (UG/L) (30295)	PROPHAM TOTAL (UG/L) (39052)	PROPO- XUR WATER WHOLE RECOV. (UG/L) (30296)	SEVIN, TOTAL (UG/L) (39750)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)
APR 15...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
JUN 23...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
DATE	SIME- TRYNE TOTAL (UG/L) (39054)	TER- BACIL WATER WHOLE RECOV. (UG/L) (30311)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TRI- FLURA- LIN TOTAL (UG/L) (39030)	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)	VER- NOLATE WATER WHOLE RECOV. (UG/L) (30324)	
APR 15...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.01	<0.01	<0.01	<0.10	
JUN 23...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.07	<0.01	<0.01	<0.10	

MISSOURI-FORT RANDALL RIVER BASIN

06452391 LAKE ANDES NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
11-18-92	1000	49	11	7.3	19	1.3	53000	20
04-15-93	1100	64	12	6.4	18	1.5	51000	<10
08-25-93	1030	56	12	7.1	18	1.4	48000	12

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)
290	1	<10	<2	52	53	15	33
610	1	<10	<2	44	50	13	29
570	1	<10	<2	38	48	12	29

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)
<2	13	<8	<4	28000	30	16	29
<2	12	<8	<4	27000	26	18	29
<2	13	<8	<4	26000	23	16	28

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
1600	8	23	47	4	8	1.2	<2	400
2200	3	23	44	9	8	2.1	<2	480
2200	2	24	41	6	7	--	<2	430

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)
<40	8	<5	19000	<100	130	2	18	120
<40	7	<5	20000	<100	130	2	17	120
<40	8	<5	18000	<100	120	2	17	120

MISSOURI-FORT RANDALL RIVER BASIN

06452403 OWENS BAY NEAR RAVINIA, SD

LOCATION.--Lat 43°09'40", long 98°26'45", in NW1/4NW1/4SW1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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) (00300)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)
NOV									
18...	1110	0.30	4200	7.8	1.0	2.0	727	11.4	88 12.0
FEB									
17...	1235	0.75	2640	7.6	-21.0	0.0	737	14.4	103 29.5
APR									
15...	1200	0.75	2290	8.2	9.5	5.5	721	12.9	110 9.60
JUN									
23...	1315	0.91	2060	7.6	28.0	24.0	715	4.0	50 36.0
AUG									
25...	1120	0.61	1660	7.4	26.0	25.5	718	1.9	25 18.6
SEP									
15...	1145	0.53	1720	7.5	15.0	12.5	725	0.9	9 21.0

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- LILITY LAB AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV									
18...	1800	480	150	250	22	3	48	119	1800
FEB									
17...	1000	300	69	140	22	2	27	111	950
APR									
15...	960	270	70	120	21	2	28	116	920
JUN									
23...	860	240	64	110	21	2	30	134	810
AUG									
25...	710	200	52	89	--	1	<0.10	131	630
SEP									
15...	690	190	53	91	21	2	27	145	620

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, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV									
18...	310	3.0	15	3130	3410	4.64	2.30	3.0	0.060
FEB									
17...	190	2.2	9.4	1760	1930	2.62	1.50	1.9	0.020
APR									
15...	150	1.9	9.9	1640	1680	2.28	0.030	0.04	0.010
JUN									
23...	150	1.6	6.2	1490	1600	2.18	0.080	0.10	<0.010
AUG									
25...	110	1.3	7.4	--	1190	--	0.100	0.13	<0.010
SEP									
15...	120	1.5	16	1210	1240	1.69	0.570	0.73	<0.010

MISSOURI-FORT RANDALL RIVER BASIN

06452403 OWENS BAY NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)		NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)		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)	
		DATE																	
		NOV																	
		18...		0.470	0.410	0.120	<0.010			1	<1.0		<1	0.8	<1				
		FEB																	
		17...		0.140	0.120	0.100	<0.010			<1	<1.0		<1	<0.1	<1				
		APR																	
		15...		<0.050	--	0.040	<0.010			1	<1.0		<1	<0.1	<1				
		JUN																	
		23...		0.050	--	0.270	0.210			8	<1.0		<1	<0.1	<1				
		AUG																	
		25...		0.056	--	0.490	0.290			9	<1.0		<1	0.1	<1				
		SEP																	
		15...		<0.050	--	0.390	0.220			8	<1.0		<1	<0.1	<1				
		DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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, SATUR- ATION (UG/L) (00301)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ALDI- CARB WATER TOT.REC (UG/L) (82619)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS- SOLVED (UG/L) (39331)					
		APR																	
		15...	1200	2290	8.2	9.5	5.5	721	12.9	110	<0.10	<0.5	<0.010	<0.01					
		JUN																	
		23...	1315	2060	7.6	28.0	24.0	715	4.0	50	<0.10	<0.5	<0.010	<0.01					
		DATE	AME- TRYNE TOTAL (82184)	DEETHYL ATRA- ZINE WATER WHOLE, REC (UG/L) (39630)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75981)	BROM- ACIL WATER WHOLE, REC (UG/L) (30234)	BUTA- CHLOR WATER WHOLE, REC (UG/L) (30235)	BUTYL- ATE WATER WHOLE, REC (UG/L) (30236)	CARBO- FURAN WATER WHOLE, REC (UG/L) (82615)	CARBOX- IN WATER WHOLE, REC (UG/L) (30245)	CHLOR- DANE, DIS- SOLVED (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED (UG/L) (39352)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (38932)						
		APR																	
		15...	<0.10	0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1	<0.01					
		JUN																	
		23...	<0.10	<0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1	<0.01					
		DATE	CYAN- AZINE TOTAL (UG/L) (81757)	CYCLO- ATE WATER WHOLE REC (UG/L) (30254)	DDE, DIS- SOLVED (UG/L) (39365)	DDE, DIS- SOLVED (UG/L) (39366)	DDD, DIS- SOLVED (UG/L) (39360)	DDD, DIS- SOLVED (UG/L) (39361)	DDT, DIS- SOLVED (UG/L) (39370)	DDT, DIS- SOLVED (UG/L) (39371)	DEF TOTAL (UG/L) (39040)	DI- AZINON, TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN TOTAL (UG/L) (39380)					
		APR																	
		15...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010					
		JUN																	
		23...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010					
		DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DIPHEN- AMID WATER WHOLE REC (UG/L) (30255)	DI- SYSTON TOTAL (UG/L) (39011)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)					
		APR																	
		15...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010					
		JUN																	
		23...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010					

MISSOURI-FORT RANDALL RIVER BASIN

06452403 OWENS BAY NEAR RAVINIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	HEPTA-CHLOR EPOXIDE	HEPTA-CHLOR EPOXIDE	HEXAZI-NONE WATER WHOLE	LINDANE TOTAL	LINDANE DIS-SOLVED	MALA-THION, TOTAL	MALA-THION, DIS-SOLVED	METHIO-CARB WATER	METHO-MYL TOTAL	METH-OXY-CHLOR, TOTAL	METH-OXY-CHLOR DISSOLV	METHYL-PARA-THION, TOTAL
	RECOV-ERABLE	DIS-SOLVED	RECOV-ERABLE					WHOLE				
	(UG/L)	(UG/L)	(UG/L)					(UG/L)				
	(39420)	(39421)	(30264)	(39340)	(39341)	(39530)	(39532)	(30282)	(39051)	(39480)	(82350)	(39600)
APR 15...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	<0.01
JUN 23...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	<0.01
DATE	METHYL-PARA-THION, DIS-SOLVED	METOLA-CHLOR WATER WHOLE	METRI-BUZIN WATER WHOLE	MIREX, TOTAL	MIREX, DIS-SOLVED	1-NAPH-THOL WATER WHOLE	PARA-THION, TOTAL	PARA-THION, DIS-SOLVED	PER-THANE TOTAL	PER-THANE DISSOLV	PHORATE TOTAL	PCB, TOTAL
	TOT.REC	TOT.REC	TOT.REC									
	(UG/L)	(UG/L)	(UG/L)									
	(39602)	(82612)	(82611)	(39755)	(39756)	(77441)	(39540)	(39542)	(39034)	(82348)	(39023)	(39516)
APR 15...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
JUN 23...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
DATE	PCB, DIS-SOLVED	NAPH-THA-LENES, POLY-CHLOR.	PCN DISSOLV	PROME-TONE TOTAL	PROME-TRYNE TOTAL	PRO-PAZINE TOTAL	PROPA-CHLOR WATER WHOLE	PROPHAM TOTAL	PROPO-XUR WATER WHOLE	SEVIN, TOTAL	SILVEX, TOTAL	SIMA-ZINE TOTAL
	TOTAL	TOTAL										
	(UG/L)	(UG/L)										
	(39517)	(39250)	(82360)	(39056)	(39057)	(39024)	(30295)	(39052)	(30296)	(39750)	(39760)	(39055)
APR 15...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
JUN 23...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
DATE	SIME-TRYNE TOTAL	TER-BACIL WATER WHOLE	TOX-APHENE, TOTAL	TOX-APHENE, DIS-SOLVED	TRI-FLURA-LIN TOTAL	TOTAL TRI-THION	TRI-THION DISSOLV	2,4-D, TOTAL	2, 4-DP TOTAL	2,4,5-T TOTAL	VER-NOLATE WATER WHOLE	
	RECOV.	RECOV.	RECOV.	RECOV.								
	(UG/L)	(UG/L)	(UG/L)	(UG/L)								
	(39054)	(30311)	(39400)	(39401)	(39030)	(39786)	(82342)	(39730)	(82183)	(39740)	(30324)	
APR 15...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.11	<0.01	<0.01	<0.10	
JUN 23...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.19	<0.01	<0.01	<0.10	

MISSOURI-FORT RANDALL RIVER BASIN
06452403 OWENS BAY NEAR RAVINIA, SD--Continued
WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
11-18-92	1110	34	5.8	12	13	0.8	41000	<10
04-15-93	1200	66	18	12	13	0.8	38000	13
08-25-93	1120	100	26	13	12	3.2	40000	44

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)
650	<1	<10	<2	51	35	7	6
1200	<1	<10	<2	26	25	9	11
2700	<1	<10	<2	30	38	15	19

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)
<2	8	<8	<4	14000	29	7	13
<2	9	<8	<4	16000	15	11	14
<2	26	<8	<4	34000	20	8	15

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
610	<2	16	14	<4	5	0.2	<2	390
3300	2	14	20	5	4	0.7	<2	380
12000	8	22	35	<4	6	--	<2	430

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)
<40	<4	<5	2200	<100	47	1	15	32
<40	<4	<5	10000	<100	50	1	10	41
<40	4	<5	1300	<100	69	1	16	47

MISSOURI-FORT RANDALL RIVER BASIN

06452406 LAKE ANDES ABOVE LAKE ANDES, SD

LOCATION.--Lat 43°09'40", long 98°29'10", in NW1/4NW1/4SW1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado. The percent difference between cations and anions (in milliequivalents per liter) for the June 23 sample exceeded 5 percent; these data should be used with caution.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED CENT (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)
NOV 18...	1200	1.04	5810	8.5	1.5	2.0	727	13.5	105	5.40
FEB 17...	1325	0.52	15200	8.2	-21.0	1.0	737	11.0	85	9.60
APR 15...	1300	1.55	3690	8.6	9.5	5.5	721	13.6	116	8.40
JUN 23...	1430	1.52	3250	8.6	29.0	24.0	715	13.7	176	12.8
AUG 25...	1200	1.83	2900	8.6	27.0	26.0	718	9.3	123	12.6
SEP 15...	1315	1.83	3010	8.7	16.0	14.5	725	10.3	107	12.0

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 AD- SORP- TION RATIO PERCENT (00932)	SODIUM AD- SORP- TION RATIO PERCENT (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)
NOV 18...	2300	520	240	340	23	3	130	95	2700
FEB 17...	--	--	--	--	--	--	--	--	--
APR 15...	1500	350	160	220	23	2	86	129	1700
JUN 23...	980	160	140	200	29	3	88	95	1600
AUG 25...	1300	290	130	180	23	2	68	107	1400
SEP 15...	1300	300	140	180	22	2	74	81	1400

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, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV 18...	300	1.2	9.1	4300	4830	6.57	1.50	1.9	0.040
FEB 17...	--	--	--	--	--	--	--	--	--
APR 15...	210	1.0	11	2820	3040	4.13	1.90	2.4	0.060
JUN 23...	180	0.60	9.5	2440	2810	3.82	0.040	0.05	<0.010
AUG 25...	130	0.70	24	2290	2400	3.26	0.040	0.05	<0.010
SEP 15...	160	0.80	20	2320	2490	3.39	0.050	0.06	<0.010

MISSOURI-FORT RANDALL RIVER BASIN

06452406 LAKE ANDES ABOVE LAKE ANDES, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	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 18...	0.061	0.021	0.440	<0.010	1	<1.0	<1	<0.1	<1
	FEB 17...	--	--	--	--	--	--	--	--	--
	APR 15...	0.190	0.130	0.420	<0.010	4	<1.0	<1	<0.1	<1
	JUN 23...	<0.050	--	0.290	0.010	7	<1.0	<1	<0.1	<1
	AUG 25...	<0.050	--	0.320	0.010	19	<1.0	<1	0.2	<1
	SEP 15...	<0.050	--	0.310	0.010	16	<1.0	<1	<0.1	<1

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 (MG/L) (00301)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ALDI- CARB WATER TOT.REC (UG/L) (82619)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DIS- SOLVED (UG/L) (39331)
APR 15...	1300	3690	8.6	9.5	5.5	721	13.6	116	<0.10	<0.5	<0.010	<0.01
JUN 23...	1430	3250	8.6	29.0	24.0	715	13.7	176	<0.10	<0.5	<0.010	<0.01

DATE	AME- TRYNE TOTAL (82184)	DEETHYL ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75981)	BROM- ACIL WATER WHLREC (UG/L) (30234)	BUTA- CHLOR WATER WHLREC (UG/L) (30235)	BUTYL- ATE WATER WHLREC (UG/L) (30236)	CARBO- FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CARBOX- IN WATER WHOLE RECOV- ERABLE (UG/L) (30245)	CHLOR- DANE, DIS- SOLVED TOTAL (UG/L) (39350)	CHLOR- DANE, DIS- SOLVED TOTAL (UG/L) (39352)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (38932)	
APR 15...	<0.10	<0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1	<0.01
JUN 23...	<0.10	0.1	<0.20	<0.20	<0.20	<0.10	<0.10	<0.5	<0.20	<0.1	<0.1	<0.01

DATE	CYAN- AZINE TOTAL (UG/L) (81757)	CYCLO- ATE WATER WHOLE RECOV- ERABLE (UG/L) (30254)	DDE, DIS- SOLVED TOTAL (UG/L) (39365)	DDE, DIS- SOLVED TOTAL (UG/L) (39366)	DDD, DIS- SOLVED TOTAL (UG/L) (39360)	DDD, DIS- SOLVED TOTAL (UG/L) (39361)	DDT, DIS- SOLVED TOTAL (UG/L) (39370)	DDT, DIS- SOLVED TOTAL (UG/L) (39371)	DEF TOTAL (UG/L) (39040)	DI- AZINON, DIS- SOLVED TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED TOTAL (UG/L) (39572)	DI- ELDRIN TOTAL (UG/L) (39380)
APR 15...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010
JUN 23...	<0.20	<0.10	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010

DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DIPHEN- AMID WATER WHOLE RECOV- ERABLE (UG/L) (30255)	DI- SYSTON TOTAL (UG/L) (39011)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDO- SULFAN DISSOLV (UG/L) (82354)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN, DIS- SOLVED (UG/L) (39391)	ETHION, TOTAL (UG/L) (39398)	ETHION DISSOLV (UG/L) (82346)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, DIS- SOLVED (UG/L) (39411)
APR 15...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01
JUN 23...	<0.01	<0.10	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01

MISSOURI-FORT RANDALL RIVER BASIN

06452406 LAKE ANDES ABOVE LAKE ANDES, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	HEPTA- CHLOR EPOXIDE	HEPTA- CHLOR EPOXIDE	HEXAZI- NONE WATER	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS- SOLVED (UG/L) (39341)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB WATER	METHO- MYL TOTAL (UG/L) (39051)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METH- OXY- CHLOR DISSOLV (UG/L) (82350)	METHYL PARA- THION, TOTAL (UG/L) (39600)
	RECOV- ERABLE (UG/L) (30264)	WHOLE	WHOLE									
	TOTAL (UG/L) (39420)	SOLVED (UG/L) (39421)	RECOV. (UG/L) (30264)									
APR 15...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	<0.01
JUN 23...	<0.010	<0.01	<0.20	<0.010	<0.01	<0.01	<0.01	<0.5	<0.5	<0.01	<0.01	<0.01
DATE	METHYL PARA- THION, DIS- SOLVED (UG/L) (39602)	METOLA- CHLOR WATER TOT.REC (UG/L) (82612)	METRI- BUZIN WATER TOT.REC (UG/L) (82611)	MIREX, TOTAL (UG/L) (39755)	MIREX, DIS- SOLVED (UG/L) (39756)	1-NAPH- THOL WATER WHOLE REC (UG/L) (77441)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PER- THANE TOTAL (UG/L) (39034)	PER- THANE DISSOLV (UG/L) (82348)	PHORATE TOTAL (UG/L) (39023)	PCB, TOTAL (UG/L) (39516)
	TOTAL (UG/L) (39602)	TOT.REC (UG/L) (82612)	TOT.REC (UG/L) (82611)									
	TOTAL (UG/L) (39602)	TOT.REC (UG/L) (82612)	TOT.REC (UG/L) (82611)									
APR 15...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
JUN 23...	<0.01	<0.20	<0.10	<0.01	<0.01	<0.5	<0.01	<0.01	<0.1	<0.10	<0.01	<0.1
DATE	PCB, DIS- SOLVED (UG/L) (39517)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	PCN DISSOLV (UG/L) (82360)	PROME- TONE TOTAL (UG/L) (39056)	PROME- TRYNE TOTAL (UG/L) (39057)	PRO- PAZINE TOTAL (UG/L) (39024)	PROPA- CHLOR WATER WHOLE RECOV. (UG/L) (30295)	PROPHAM TOTAL (UG/L) (39052)	PROPO- XUR WATER WHOLE RECOV. (UG/L) (30296)	SEVIN, TOTAL (UG/L) (39750)	SILVEX, TOTAL (UG/L) (39760)	SIMA- ZINE TOTAL (UG/L) (39055)
	TOTAL (UG/L) (39517)	TOTAL (UG/L) (39250)	DISSOLV (UG/L) (82360)									
	TOTAL (UG/L) (39517)	TOTAL (UG/L) (39250)	DISSOLV (UG/L) (82360)									
APR 15...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
JUN 23...	<0.1	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.5	<0.5	<0.5	<0.01	<0.10
DATE	SIME- TRYNE TOTAL (UG/L) (39054)	TER- BACIL WATER WHOLE RECOV. (UG/L) (30311)	TOX- APHENE, TOTAL (UG/L) (39400)	TOX- APHENE, DIS- SOLVED (UG/L) (39401)	TRI- FLURA- LIN TOTAL (UG/L) (39030)	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)	VER- NOLATE WATER WHOLE RECOV. (UG/L) (30324)	
	TOTAL (UG/L) (39054)	WHOLE RECOV. (UG/L) (30311)	APHENE, TOTAL (UG/L) (39400)									
	TOTAL (UG/L) (39054)	WHOLE RECOV. (UG/L) (30311)	APHENE, TOTAL (UG/L) (39400)									
APR 15...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.02	<0.01	<0.01	<0.10	
JUN 23...	<0.10	<0.20	<1	<1.0	<0.10	<0.01	<0.01	0.06	<0.01	<0.01	<0.10	

MISSOURI-FORT RANDALL RIVER BASIN
06452406 LAKE ANDES ABOVE LAKE ANDES, SD--Continued
WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
11-18-92	1200	73	11	5.9	18	1.5	52000	10
04-15-93	1300	59	11	5.4	18	1.4	56000	16
08-25-93	1200	61	11	5.4	18	1.4	52000	10

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)
200	1	<10	<2	49	53	14	29
590	1	<10	<2	47	56	13	32
560	1	<10	<2	39	53	12	28

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)
<2	15	<8	<4	29000	30	13	34
<2	13	<8	<4	31000	29	19	35
<2	14	<8	<4	28000	25	20	33

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
2500	2	27	41	<4	8	1.7	<2	640
2100	2	26	42	10	9	1.9	<2	520
2100	<2	25	39	5	8	--	<2	540

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)
<40	9	<5	2000	<100	120	2	18	120
<40	9	<5	2200	<100	130	2	19	130
<40	8	<5	1900	<100	120	2	17	120

MISSOURI-FORT RANDALL RIVER BASIN

06452500 LAKE FRANCIS CASE AT PICKSTOWN, SD

LOCATION.--Lat 43°04'05", long 98°33'15", in SE1/4 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 above sea level. 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, 4,129,000 acre-ft, July 31; minimum contents, 2,338,000 acre-ft, Dec. 8.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,343.22	2,712,000	-
Oct. 31	1,337.35	2,349,000	-363,000
Nov. 30	1,337.61	2,367,000	+18,000
Dec. 31	1,341.49	2,605,000	+238,000
CAL YR 1992	-	-	-59,000
Jan. 31	1,349.19	3,129,000	+524,000
Feb. 28	1,352.16	3,366,000	+237,000
Mar. 31	1,357.00	3,780,000	+414,000
Apr. 30	1,356.94	3,765,000	-15,000
May 31	1,355.66	3,656,000	-109,000
June 30	1,357.52	3,817,000	+161,000
July 31	1,360.94	4,129,000	+312,000
Aug. 31	1,358.40	3,901,000	-228,000
Sept. 30	1,353.09	3,438,000	-463,000
WTR YR 1993	-	-	+726,000

NOTE.--Lake frozen over Jan. 1 to Mar. 28.

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453020 MISSOURI RIVER BELOW GREENWOOD, SD

LOCATION.--Lat 42°54'19", long 98°20'58", in SE1/4NE1/4NE1/4 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 sea level.

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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.54	21.90	21.37	24.09	22.53	22.31	19.32	24.30	25.60	22.98	19.77	23.83
2	25.50	21.52	21.47	26.48	22.70	20.69	19.19	23.66	24.68	21.87	19.91	23.61
3	25.35	20.63	21.84	27.57	21.97	20.52	18.97	22.96	22.58	21.66	20.23	23.60
4	25.19	20.38	21.68	27.54	22.09	19.79	19.46	23.02	25.03	21.22	20.21	24.04
5	25.48	20.34	22.52	27.29	21.64	20.30	19.55	22.33	23.97	21.11	20.61	24.06
6	25.67	20.33	22.18	26.90	21.39	20.39	19.94	22.71	21.81	20.38	20.82	23.96
7	25.80	21.06	22.63	26.11	21.56	20.91	21.75	23.74	24.67	20.03	20.69	24.36
8	26.02	21.11	22.90	26.27	20.81	21.16	21.40	25.78	23.97	19.86	20.90	24.67
9	25.68	20.89	22.83	25.42	21.15	19.98	21.52	24.71	21.67	19.68	21.35	24.35
10	25.29	21.44	22.78	25.43	20.49	18.93	21.69	21.37	24.20	19.57	21.73	24.60
11	25.33	20.95	22.58	25.40	21.55	18.82	21.72	20.20	24.06	19.39	22.72	24.87
12	25.34	21.43	22.63	25.01	23.13	18.77	21.30	20.03	22.03	18.40	22.89	24.71
13	25.27	21.74	22.54	24.91	23.88	18.55	21.13	20.04	24.94	19.38	22.77	24.84
14	24.79	21.00	22.00	25.33	23.74	18.52	20.79	22.18	24.20	19.63	23.08	25.03
15	24.89	21.21	22.08	25.72	24.47	18.48	20.24	24.18	22.89	18.88	22.95	24.86
16	24.93	21.08	21.75	25.35	24.40	19.48	20.47	21.76	25.18	19.58	22.98	25.00
17	24.10	20.84	22.16	25.27	24.86	20.91	20.47	23.55	24.61	18.78	22.61	24.86
18	23.55	21.06	22.69	25.55	25.30	22.08	20.96	24.38	23.45	18.87	22.39	24.94
19	22.85	20.84	23.08	25.17	25.07	23.30	21.90	22.84	25.54	18.91	21.98	24.83
20	22.79	20.63	23.03	25.00	24.31	24.31	22.10	23.91	24.01	19.06	21.06	24.92
21	22.07	20.53	23.49	24.63	23.59	24.73	22.27	24.76	21.94	18.88	20.95	24.34
22	22.03	20.34	24.24	24.76	25.77	24.22	22.26	23.00	21.98	18.42	21.31	23.92
23	21.93	20.76	23.92	23.85	23.73	24.46	22.03	25.31	24.76	18.69	22.03	23.44
24	21.55	20.81	24.26	23.83	24.02	24.16	21.89	24.01	23.74	18.93	22.72	24.13
25	21.41	20.98	23.83	23.82	24.85	24.05	21.89	22.25	21.62	18.90	22.59	24.04
26	21.83	20.81	23.60	23.74	24.47	23.31	22.83	24.73	22.79	18.82	22.84	24.17
27	21.83	21.07	23.50	23.64	23.93	22.40	24.29	24.28	22.04	18.85	23.17	24.28
28	21.31	21.01	23.11	23.54	23.17	21.39	24.19	24.07	24.88	19.67	23.04	24.52
29	21.42	20.93	22.79	23.77	---	20.09	24.39	25.63	23.82	19.83	23.58	24.45
30	21.49	20.56	22.91	23.36	---	19.93	24.41	24.57	22.11	19.62	23.84	24.64
31	22.83	---	23.80	23.10	---	19.28	---	23.95	---	19.57	23.54	---
MEAN	23.84	20.94	22.78	25.09	23.23	21.17	21.48	23.36	23.63	19.66	21.98	24.40
MAX	26.02	21.90	24.26	27.57	25.77	24.73	24.41	25.78	25.60	22.98	23.84	25.03
MIN	21.31	20.33	21.37	23.10	20.49	18.48	18.97	20.03	21.62	18.40	19.77	23.44

MISSOURI-FORT RANDALL RIVER BASIN

06453120 MISSOURI RIVER ABOVE CHOTEAU CREEK, NEAR VERDEL, NE

LOCATION.--Lat 42°50'40", long 98°11'50", in NE1/4SW1/4SE1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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, (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	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)
NOV												
19...	1115	749	8.5	4.0	7.0	732	10.9	94	114	230	55	23
FEB												
18...	1115	840	8.2	-4.0	0.5	737	15.6	112	--	250	59	24
APR												
16...	0950	780	8.3	9.0	4.5	710	13.0	109	46.2	260	64	25
JUN												
24...	1035	722	8.3	18.5	16.5	723	8.9	96	58.3	220	56	20
AUG												
26...	1100	752	8.0	24.0	21.0	725	7.7	91	13.4	240	62	21
SEP												
16...	1135	760	8.4	20.5	18.5	727	8.8	99	33.6	230	58	21

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- LINEITY 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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV												
19...	69	39	2	4.8	160	220	12	0.60	6.0	486	482	0.66
FEB												
18...	67	37	2	5.0	171	210	12	0.50	5.9	487	499	0.68
APR												
16...	68	35	2	4.9	168	230	12	0.60	4.6	510	502	0.68
JUN												
24...	65	38	2	4.7	157	210	12	0.50	5.2	468	474	0.64
AUG												
26...	70	38	2	5.1	148	210	11	0.50	5.8	475	490	0.67
SEP												
16...	67	38	2	5.5	156	220	11	0.60	5.8	483	490	0.67

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	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												
19...	0.010	0.01	0.010	<0.050	--	<0.010	<0.010	2	<1.0	<1	0.5	2
FEB												
18...	0.020	0.03	0.010	0.150	0.140	0.020	<0.010	2	<1.0	<1	<0.1	1
APR												
16...	0.040	0.05	<0.010	<0.050	--	<0.010	<0.010	1	<1.0	<1	<0.1	1
JUN												
24...	0.040	0.05	<0.010	0.050	--	0.010	0.010	3	<1.0	<1	<0.1	2
AUG												
26...	0.020	0.03	<0.010	0.110	--	0.040	0.020	3	<1.0	<1	<0.1	1
SEP												
16...	0.030	0.04	<0.010	0.078	--	0.020	<0.010	3	<1.0	<1	0.1	2

MISSOURI-FORT RANDALL RIVER BASIN

06453120 MISSOURI RIVER ABOVE CHOTEAU CREEK, NEAR VERDEL, NE--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
11-19-92	1115	16	5.4	12	14	0.5	39000	<10
04-16-93	0950	24	3.2	10	17	0.7	34000	15
08-26-93	1100	23	3.4	10	16	0.8	33000	15

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)
1000	<1	<10	<2	47	36	9	5
1100	<1	<10	<2	31	15	13	7
1000	<1	<10	<2	29	16	13	6

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)
<2	7	<8	<4	18000	27	11	12
<2	7	<8	<4	25000	18	15	7
<2	11	<8	<4	23000	19	12	8

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
500	<2	23	20	<4	4	0.3	<2	250
3400	<2	14	34	<4	3	1.5	<2	220
3800	<2	15	29	<4	3	--	<2	220

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)
<40	6	<5	18000	<100	41	1	12	37
<40	<4	<5	600	<100	35	1	15	60
<40	4	<5	800	<100	34	1	13	51

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453200 CHOTEAU CREEK NEAR WAGNER, SD

LOCATION.--Lat 43°05'52", long 98°17'15", on section line between sec.27 and 28, T.96 N. (revised), 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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)
APR 16...	0830	E15	1380	8.1	8.5	2.0	722	9.2	71	570
JUN 24...	1100	<10	1030	8.1	15.0	20.0	720	6.1	71	460
AUG 27...	1330	69	1050	7.7	22.0	24.0	729	6.4	80	470
SEP 17...	0810	6.4	1480	7.7	12.0	14.0	727	10.0	102	620

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 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)
APR 16...	140	53	77.	22	1	23	254	480	37	0.20
JUN 24...	110	45	48	18	1	20	289	280	13	0.10
AUG 27...	110	47	45	17	0.9	19	260	310	13	0.20
SEP 17...	140	66	72	20	1	20	358	450	27	0.20

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT DAY) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)
APR 16...	25	989	1020	1.39	--	0.030	0.04	<0.010	0.091	--
JUN 24...	34	727	756	1.03	--	0.040	0.05	<0.010	<0.050	--
AUG 27...	20	722	754	1.03	140	0.060	0.08	<0.010	<0.050	--
SEP 17...	15	1010	1070	1.46	18.5	0.180	0.23	0.040	0.080	0.040

DATE	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)	SEDI-MENT, DIS-SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SIEVE # FINER THAN .062 MM (70331)
APR 16...	0.460	0.400	3	<1.0	<1	<0.1	2	37	--	90
JUN 24...	1.30	1.20	10	<1.0	<1	<0.1	<1	--	--	--
AUG 27...	0.770	0.720	10	<1.0	<1	0.2	<1	--	--	--
SEP 17...	0.550	0.530	8	<1.0	<1	0.2	1	8	0.14	100

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453200 CHOTEAU CREEK NEAR WAGNER, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
04-16-93	0830	55	13	7.4	18	1.1	58000	10
08-27-93	1330	50	14	6.0	18	0.9	61000	14
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)	
690	1	<10	<2	55	60	13	26	
640	1	<10	<2	49	69	14	31	
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)	
<2	13	<8	<4	32000	32	15	32	
<2	16	<8	<4	34000	31	14	38	
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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
2300	<2	27	41	11	9	1.0	<2	250
1800	<2	29	42	8	10	--	<2	250
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)
<40	8	<5	2400	<100	140	2	19	120
<40	9	<5	2600	<100	160	2	21	130

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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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 (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	
FEB											
18...	1645	E0.10	1430	8.0	5.0	0.5	737	6.4	46	510	
APR											
16...	1100	23	1470	8.2	9.0	7.5	722	11.4	101	580	
JUN											
24...	0830	8.8	1820	8.0	14.0	21.0	721	5.4	65	830	
AUG											
27...	0845	141	890	7.9	18.0	23.0	728	4.8	59	370	
SEP											
16...	0900	15	1640	8.3	15.5	13.5	724	10.4	106	690	
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 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)
FEB											
18...	120	51	92	26	2	39	192	450	59	0.20	
APR											
16...	140	55	91	25	2	23	237	510	52	0.20	
JUN											
24...	200	81	110	22	2	23	386	660	37	0.20	
AUG											
27...	89	37	38	17	0.9	22	218	250	13	0.20	
SEP											
16...	160	71	89	21	1	21	342	570	40	0.20	
DATE		SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-PT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)
FEB											
18...	22		959	1080	1.47	--	0.370	0.48	0.160	1.60	1.44
APR											
16...	14		1030	1090	1.48	67.7	0.020	0.03	<0.010	<0.050	--
JUN											
24...	22		1370	1460	1.99	34.7	0.030	0.04	<0.010	<0.050	--
AUG											
27...	25		608	626	0.85	238	0.030	0.04	<0.010	<0.050	--
SEP											
16...	17		1180	1230	1.67	49.8	0.050	0.06	<0.010	0.170	--
DATE		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)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)
FEB											
18...	1.30	1.10	7	<1.0	<1	<0.1	3	28	--	91	
APR											
16...	0.520	0.470	5	<1.0	<1	<0.1	4	24	1.5	100	
JUN											
24...	1.30	1.20	14	<1.0	<1	<0.1	2	7	0.17	100	
AUG											
27...	1.10	0.870	12	<1.0	<1	<0.1	<1	60	23	99	
SEP											
16...	0.450	0.420	9	<1.0	<1	<0.1	1	110	4.5	68	

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453252 CHOTEAU CREEK NEAR DANTE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
04-16-93	1100	63	13	9.4	16	1.5	50000	<10
08-27-93	0845	47	8.8	13	14	0.8	40000	<10

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)
660	1	<10	<2	46	42	12	20
550	<1	<10	<2	20	19	7	9

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)
<2	13	<8	<4	28000	27	13	22
<2	11	<8	<4	12000	13	11	11

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
6200	<2	23	34	9	7	2.9	<2	280
2100	<2	12	15	<4	3	--	<2	250

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)
<40	6	<5	2000	<100	100	2	19	93
<40	<4	<5	700	<100	42	1	9	45

MISSOURI-LEWIS AND CLARK RIVER BASIN
06453255 CHOTEAU CREEK NEAR AVON, SD

LOCATION.--Lat 42°55'24", long 98°06'21", in NW1/4NW1/4NW1/4 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 sea level, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and those for Oct. 21-25, Oct. 28 to Nov. 6, Nov. 14-21, Nov. 23 to Dec. 10, and Dec. 12-16, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.01	.10	.20	e.05	e10	e.01	14	19	27	107	199	57
2	e.01	.12	.14	e.05	e25	e.01	12	33	26	152	173	55
3	e.01	.07	.15	e.05	e30	e.01	10	36	24	197	148	51
4	e.01	.03	.19	e.04	e25	e.01	8.8	33	23	233	124	46
5	e.01	.02	.22	e.04	e20	e.01	7.2	31	21	216	103	45
6	e.50	.01	.28	e.04	e10	e10	6.4	28	20	199	92	42
7	e1.0	e.01	.30	e.04	e5.0	e300	8.8	284	19	172	87	39
8	e2.0	e.01	.30	e.03	e1.0	e800	8.3	1860	16	187	76	38
9	e1.0	e.01	.31	e.03	e.34	e11007.5	953	16	199	70	32	
10	e.50	e.01	.35	e.03	e1.0	876	8.0	986	13	140	66	23
11	e.40	e.01	e1.0	e.03	e.86	738	8.1	1380	12	145	59	20
12	e.30	e.01	.53	e.03	e.79	791	7.6	1030	10	193	52	18
13	e.20	e.01	.20	e.03	e.54	486	9.5	734	11	1070	53	32
14	e.15	.01	.15	e.03	e.50	397	18	544	11	822	48	28
15	e.10	.05	.13	e.03	e.40	325	24	369	9.8	731	43	23
16	e.10	.02	.13	e.03	e.30	243	23	261	9.5	539	45	17
17	e.10	.04	e.15	e.03	e.20	146	20	196	8.9	554	43	16
18	e.10	.06	e.15	e.02	e.10	90	18	146	8.9	1020	45	15
19	e.10	.09	e.15	e.02	e.10	103	20	105	8.7	1560	42	22
20	e.10	.11	e.15	e.02	e.15	91	21	96	7.1	1570	54	28
21	.07	.12	e.15	e.01	e.15	70	22	73	6.5	1110	61	28
22	.06	e.20	e.20	e.01	e.10	57	19	62	5.9	808	81	24
23	.07	.15	e.20	e.01	e.07	47	18	55	4.8	688	169	23
24	.02	.11	e.15	e.01	e.04	42	16	54	13	593	201	23
25	.02	.09	e.18	e.01	e.02	37	15	58	12	485	155	24
26	e.01	.09	e.15	e.01	e.01	27	14	54	20	386	114	20
27	e.01	.08	e.15	e.01	e.01	22	14	46	27	338	95	17
28	.01	.10	e.18	e.01	e.01	21	12	38	32	325	81	16
29	.01	.14	e.18	e.01	---	19	9.9	35	52	317	71	15
30	.02	.25	e.15	e.01	---	16	12	34	73	270	62	13
31	.03	---	e.10	e.10	---	15	---	31	---	230	60	---
TOTAL	7.03	2.13	6.97	0.87	131.69	6869.05	412.1	9664	548.1	15556	2772	850
MEAN	.23	.071	.22	.028	4.70	222	13.7	312	18.3	502	89.4	28.3
MAX	2.0	.25	1.0	.10	30	1100	24	1860	73	1570	201	57
MIN	.01	.01	.10	.01	.01	.01	6.4	19	4.8	107	42	13
AC-FT	14	4.2	14	1.7	261	13620	817	19170	1090	30860	5500	1690

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1983	6.42	42.0	1987	.23	1993
1984	3.92	14.5	1987	.071	1993
1985	3.35	10.4	1987	.22	1993
1986	2.45	6.79	1987	.028	1993
1987	18.5	103	1983	.70	1992
1988	169	914	1987	.62	1991
1989	180	653	1986	.42	1992
1990	103	339	1986	1.17	1989
1991	137	910	1984	2.01	1992
1992	78.0	502	1993	.24	1991
1993	13.0	89.4	1993	.067	1991
1994	14.5	98.2	1986	.027	1991

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	390.65	36819.94	60.8a
ANNUAL MEAN	1.07	101	168
HIGHEST ANNUAL MEAN			1.13
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	41	May 16	5020
LOWEST DAILY MEAN	.00	Sep 26	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Sep 25	.00
INSTANTANEOUS PEAK FLOW			7280
INSTANTANEOUS PEAK STAGE			13.93
ANNUAL RUNOFF (AC-FT)	775	73030	44050
10 PERCENT EXCEEDS	3.0	265	124
50 PERCENT EXCEEDS	.31	13	3.3
90 PERCENT EXCEEDS	.02	.02	.28

e Estimated

a Median of annual mean discharges, 20 ft³/s.

b Many days.

c Also Aug. 24 to Sept. 10, Sept. 15-18, 1991, and Sept. 26-30, 1992.

d From floodmark.

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453300 CHOTEAU CREEK BELOW AVON, SD

LOCATION.--Lat 42°51'40", long 98°08'25", in SW1/4SW1/4NE1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
NOV										
19...	1540	1.7	1690	--	7.0	4.0	732	11.8	94	780
FEB										
18...	1415	3.4	1770	7.3	-5.0	0.0	735	14.6	104	780
APR										
16...	1400	29	1700	8.0	15.0	10.0	710	12.9	123	820
JUN										
24...	1335	17	1610	7.7	24.0	24.0	723	9.1	115	720
AUG										
26...	1410	176	995	7.6	28.5	28.5	725	7.4	101	420
SEP										
16...	1440	28	1510	8.2	23.5	18.0	727	11.3	126	720

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 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)
NOV										
19...	210	61	85	19	1	15	246	720	27	0.30
FEB										
18...	210	61	72	16	1	17	261	620	23	0.20
APR										
16...	200	77	82	17	1	21	244	710	36	0.30
JUN										
24...	180	66	75	18	1	16	226	650	24	0.20
AUG										
26...	100	41	41	17	0.9	21	214	310	14	0.20
SEP										
16...	180	65	67	17	1	6.2	301	540	23	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)
NOV										
19...	18	1280	1370	1.86	6.29	0.020	0.03	0.020	<0.050	--
FEB										
18...	22	1180	1300	1.77	12.0	0.500	0.64	0.020	0.150	0.130
APR										
16...	11	1280	1350	1.84	106	0.020	0.03	<0.010	<0.050	--
JUN										
24...	16	1160	1260	1.71	57.8	0.020	0.03	<0.010	<0.050	--
AUG										
26...	23	681	704	0.96	335	0.040	0.05	<0.010	0.140	--
SEP										
16...	16	1080	1130	1.54	85.4	0.040	0.05	<0.010	0.057	--

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453300 CHOTEAU CREEK BELOW AVON, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PHOS-PHOSURUS TOTAL (MG/L AS P) (00665)	PHOS- PHOSURUS ORTHODIS- 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- SOLVED (MG/L) (80154)	SEDI- MENT, DIS- SOLVED (MG/L) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 19...	0.030	<0.010	1	<1.0	<1	0.7	<1	166	0.76	53
FEB 18...	0.080	0.030	1	<1.0	<1	0.3	2	64	0.59	--
APR 16...	0.210	0.120	3	<1.0	<1	<0.1	6	122	9.6	93
JUN 24...	0.100	0.040	5	<1.0	<1	<0.1	3	149	6.8	88
AUG 26...	0.930	0.640	12	<1.0	<1	0.2	1	145	69	100
SEP 16...	0.210	0.170	7	<1.0	<1	0.2	<1	159	12	97

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- PHOSURUS, TOTAL IN BOTTOM MATERIAL (MG/G)	ALUM- INUM, TOTAL IN BOTTOM MATERIAL (MG/G)	ARSENIC, TOTAL IN BOTTOM MATERIAL (UG/G)
11-19-92	1540	71	14	12	13	0.9	38000	10
04-16-93	1400	50	9.1	13	14	1.1	40000	<10
08-26-93	1410	45	6.7	13	14	0.8	37000	<10

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)
2400	<1	<10	<2	46	31	11	16
880	<1	<10	<2	45	24	10	7
680	<1	<10	<2	21	15	7	8

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)
<2	18	<8	<4	30000	30	6	10
<2	11	<8	<4	25000	25	11	11
<2	13	<8	<4	15000	16	9	8

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
8600	3	21	30	<4	5	1.5	<2	330
6200	<2	21	26	4	5	1.2	<2	290
5100	<2	15	20	<4	2	--	<2	280

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)
<40	6	<5	1400	<100	65	1	16	56
<40	7	<5	1600	<100	67	2	14	53
<40	<4	<5	500	<100	40	<1	11	43

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453305 MISSOURI RIVER BELOW CHOTEAU CREEK, NEAR VERDEL, NE

LOCATION.--Lat 42°50'05", long 98°08'20", in NW1/4SW1/4NW1/4 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.--Bottom sediments analyzed by USGS Geologic Division in Denver, Colorado.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATURATION) (00301)	TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077)	HARDNESS TOTAL (MG/L) (00900)	CALCIUM DIS-SOLVED (MG/L) (00915)	MAGNESIUM, DIS-SOLVED (MG/L) (00925)
NOV 19...	1020	752	8.5	7.0	7.0	732	10.9	94	114	220	53	22
FEB 18...	1050	830	8.4	-5.0	0.5	737	15.7	113	--	240	57	23
APR 16...	1045	780	8.4	11.0	4.5	710	13.0	109	48.0	250	61	24
JUN 24...	1000	720	8.1	18.0	17.0	723	8.9	97	47.3	220	57	20
AUG 26...	1015	769	8.1	24.0	21.5	725	7.4	88	15.0	250	65	22
SEP 16...	1110	770	8.3	18.0	18.0	727	8.7	97	30.0	240	63	21

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	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, SUM OF TUEENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
NOV 19...	67	39	2	4.8	161	220	12	0.60	5.3	481	484	0.66
FEB 18...	65	37	2	4.9	168	210	12	0.50	6.0	479	499	0.68
APR 16...	65	35	2	5.1	170	220	13	0.60	5.0	496	500	0.68
JUN 24...	65	38	2	4.8	157	210	11	0.50	5.3	468	474	0.64
AUG 26...	66	36	2	6.1	163	220	12	0.50	7.4	497	502	0.68
SEP 16...	66	36	2	5.8	157	220	12	0.60	5.9	489	534	0.73

DATE	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	PHOSPHORUS, TOTAL PHOSPHORUS (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)	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 19...	0.010	0.01	0.010	<0.050	--	<0.010	<0.010	2	<1.0	<1	<0.1	2
FEB 18...	0.020	0.03	0.010	0.062	0.052	0.020	<0.010	2	<1.0	<1	<0.1	1
APR 16...	0.020	0.03	<0.010	<0.050	--	0.020	<0.010	1	<1.0	<1	<0.1	1
JUN 24...	0.040	0.05	<0.010	<0.050	--	0.020	<0.010	2	<1.0	<1	<0.1	2
AUG 26...	0.050	0.06	<0.010	0.110	--	0.060	0.040	4	<1.0	<1	0.1	1
SEP 16...	0.040	0.05	<0.010	0.072	--	0.020	0.010	3	<1.0	<1	0.3	2

MISSOURI-LEWIS AND CLARK RIVER BASIN

06453305 MISSOURI RIVER BELOW CHOTEAU CREEK, NEAR VERDEL, NE--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
11-19-92	1020	25	8.5	12	17	0.6	45000	10
04-16-93	1045	31	8.0	10	17	0.7	51000	11
08-26-93	1015	110	8.5	8	14	1.1	39000	26

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)
860	1	<10	<2	51	36	10	9
770	1	<10	<2	46	45	12	18
1900	<1	<10	3	46	41	13	24

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)
<2	9	<8	<4	18000	28	9	16
<2	12	<8	<4	24000	26	14	23
<2	11	<8	<4	27000	29	11	18

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)	SELE- NIUM, TOTAL IN BOTTOM MATERIAL (UG/G)	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G)	STRON- TIUM, TOTAL IN BOTTOM MATERIAL (UG/G)
620	<2	20	22	<4	<5	0.4	<2	260
1500	<2	22	33	8	6	3.0	<2	260
2300	11	30	49	5	5	--	<2	440

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)
<40	<4	<5	1700	<100	53	1	13	45
<40	7	<5	2000	<100	100	2	16	76
<40	6	<5	1800	<100	160	2	21	110

NIOBRARA RIVER BASIN

06464100 KEYA PAHA RIVER NEAR KEYAPAHA, SD

LOCATION.--Lat 43°07'45", long 100°06'24", in NW1/4SW1/4SW1/4 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.

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

GAGE.--Water-stage recorder. Elevation of gage is 2,230 ft above sea level, 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 OUTSIDE PERIOD OF RECORD.--Flood of 1952 reached a stage of about 14 ft, at present datum, from information by local residents.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	17	e16	e9.0	e20	e17	61	112	30	36	21	15
2	14	18	e16	e9.0	e18	e18	62	135	30	33	20	14
3	14	19	e15	e10	e17	e20	62	125	31	30	19	14
4	14	e18	e14	e9.0	e18	e30	61	114	33	29	19	14
5	14	e16	e14	e8.5	e20	e50	58	102	33	26	18	15
6	14	e17	e14	e8.0	e23	e100	56	91	35	25	18	15
7	15	e18	e14	e8.0	e21	e400	61	91	37	24	18	15
8	15	e20	e14	e7.5	e19	e450	70	88	45	24	18	15
9	16	22	e15	e7.0	e21	382	75	85	39	25	18	15
10	16	22	e16	e6.5	e18	265	76	80	30	23	17	14
11	16	22	e16	e6.5	e17	186	75	75	29	23	16	14
12	15	22	e17	e7.0	e16	136	70	72	27	23	16	14
13	15	20	e16	e6.5	e16	e100	70	66	26	25	15	13
14	15	21	e15	e6.0	e17	91	78	61	25	25	16	14
15	16	20	e14	e6.0	e16	85	85	58	25	24	17	14
16	17	20	e14	e6.5	e15	77	90	55	24	23	40	14
17	17	20	e14	e7.0	e14	67	91	52	27	23	20	14
18	17	20	e13	e6.5	e13	62	88	48	37	23	20	14
19	17	20	e12	e6.5	e14	63	83	45	43	22	19	17
20	17	21	e11	e6.5	e14	62	86	43	47	21	19	20
21	16	21	e12	e6.5	e13	63	91	42	47	21	19	20
22	16	21	e13	e7.0	e12	61	90	40	44	24	20	20
23	16	e20	e14	e8.0	e12	61	85	39	40	31	19	19
24	15	e19	e13	e7.5	e12	62	80	37	48	33	18	18
25	15	e18	e14	e7.0	e13	62	74	35	60	33	17	18
26	15	e17	e13	e8.0	e13	60	68	34	54	36	17	18
27	16	e16	e14	e9.0	e14	60	62	33	44	35	16	17
28	15	e15	e15	e11	e16	58	59	32	38	30	15	17
29	16	e16	e13	e10	---	57	61	32	40	28	15	16
30	16	e15	e11	e11	---	57	71	31	40	26	15	16
31	17	---	e10	e15	---	58	---	30	---	24	15	---
TOTAL	481	571	432	247.5	452	3320	2199	1983	1108	828	570	473
MEAN	15.5	19.0	13.9	7.98	16.1	107	73.3	64.0	36.9	26.7	18.4	15.8
MAX	17	22	17	15	23	450	91	135	60	36	40	20
MIN	14	15	10	6.0	12	17	56	30	24	21	15	13
AC-FT	954	1130	857	491	897	6590	4360	3930	2200	1640	1130	938

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	18.9	20.7	17.1	14.9	42.2	80.5	67.2	68.1	51.8	28.8	18.1	15.9
MAX	43.7	38.7	30.8	28.9	152	158	155	158	131	59.1	32.4	28.6
(WY)	1983	1983	1983	1984	1982	1988	1987	1983	1982	1983	1992	1986
MIN	10.6	11.9	5.54	3.51	10.7	37.0	24.3	17.5	11.3	16.8	10.1	9.78
(WY)	1990	1986	1986	1991	1989	1990	1990	1992	1985	1985	1989	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	9368	12664.5	
ANNUAL MEAN	25.6	34.7	37.0a
HIGHEST ANNUAL MEAN			57.0
LOWEST ANNUAL MEAN			18.5
HIGHEST DAILY MEAN	90	Jul 12	450
LOWEST DAILY MEAN	10	Dec 31	6.0
ANNUAL SEVEN-DAY MINIMUM	13	Dec 18	6.4
INSTANTANEOUS PEAK FLOW			500
INSTANTANEOUS PEAK STAGE			8.58
ANNUAL RUNOFF (AC-FT)	18580	25120	26810
10 PERCENT EXCEEDS	44	74	75
50 PERCENT EXCEEDS	20	19	21
90 PERCENT EXCEEDS	14	12	11

e Estimated

a Median of annual mean discharges, 38 ft³/s.

b Gage height, 7.95 ft.

c Backwater from ice.

NIOBRARA RIVER BASIN

06464500 KEYA PAHA RIVER AT WEWELA, SD

LOCATION.--Lat 43°01'44", long 99°46'49", in NW1/4SW1/4SE1/4 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	36	e38	e18	e40	e31	123	383	65	89	46	40
2	32	36	e38	e17	e50	e32	125	417	66	86	42	42
3	32	37	e36	e18	e46	e33	122	380	67	77	40	37
4	32	e35	e35	e17	e43	e38	116	298	73	71	40	37
5	32	e30	e34	e16	e47	e60	111	249	74	64	41	43
6	31	e33	e33	e16	e52	e200	104	210	74	60	41	43
7	30	e36	e32	e16	e60	e500	118	201	71	57	39	44
8	31	e40	e32	e16	e58	e1400	164	206	67	55	40	41
9	32	45	e34	e15	e55	e1000	183	190	68	54	38	37
10	33	42	e37	e14	e60	763	177	170	65	53	36	37
11	33	44	e39	e13	e55	510	165	150	61	53	34	36
12	32	45	e40	e14	e50	374	153	137	58	53	31	36
13	32	43	e38	e13	e50	e300	155	125	56	57	32	35
14	31	43	e36	e12	e50	e200	187	114	54	56	32	35
15	31	43	e34	e12	e50	191	216	103	53	57	31	35
16	31	43	e34	e14	e47	171	238	96	53	55	e205	36
17	32	43	e33	e15	e44	143	230	92	62	55	e350	35
18	32	44	e32	e14	e41	127	214	89	79	54	e123	37
19	33	45	e30	e16	e39	124	204	86	106	53	91	46
20	33	47	e28	e16	e40	126	251	83	110	51	78	52
21	33	50	e29	e17	e39	127	231	80	102	48	62	53
22	34	44	e31	e18	e36	127	208	79	94	52	57	50
23	32	43	e34	e19	e34	122	185	77	93	57	52	46
24	31	e40	e33	e18	e33	121	161	73	132	68	48	46
25	31	e38	e35	e18	e32	122	139	73	135	61	47	43
26	30	e35	e33	e19	e32	122	121	70	128	59	47	42
27	31	e35	e35	e22	e30	120	111	69	111	64	43	39
28	31	e37	e38	e26	e30	116	101	67	97	60	41	41
29	31	e38	e33	e25	---	119	104	66	85	53	39	41
30	31	e36	e25	e28	---	118	149	67	91	50	39	39
31	32	---	e20	e35	---	115	---	66	---	48	39	---
TOTAL	985	1206	1039	547	1243	7652	4866	4566	2450	1830	1924	1224
MEAN	31.8	40.2	33.5	17.6	44.4	247	162	147	81.7	59.0	62.1	40.8
MAX	34	50	40	35	60	1400	251	417	135	89	350	53
MIN	30	30	20	12	30	31	101	66	53	48	31	35
AC-FT	1950	2390	2060	1080	2470	15180	9650	9060	4860	3630	3820	2430

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939-1940, 1948-1993, BY WATER YEAR (WY)

	34.7	39.3	31.0	26.2	52.8	176	152	123	92.7	60.4	33.1	27.6
MEAN	34.7	39.3	31.0	26.2	52.8	176	152	123	92.7	60.4	33.1	27.6
MAX	82.2	77.6	64.5	85.5	178	598	605	358	512	607	143	69.5
(WY)	1983	1983	1983	1983	1982	1960	1952	1962	1962	1962	1962	1986
MIN	8.49	12.0	8.74	1.61	5.07	33.5	31.3	27.4	12.2	3.55	.80	3.71
(WY)	1977	1977	1956	1949	1979	1975	1976	1981	1976	1940	1976	1976

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1939-1940, 1948-1993

ANNUAL TOTAL	20155		29532	
ANNUAL MEAN	55.1		80.9	
HIGHEST ANNUAL MEAN				70.8a
LOWEST ANNUAL MEAN				175
HIGHEST DAILY MEAN	217	Aug 5	1400	Mar 8
LOWEST DAILY MEAN	20	Dec 31	12	Jan 14,15
ANNUAL SEVEN-DAY MINIMUM	30	Jan 13	13	Jan 10
INSTANTANEOUS PEAK FLOW			2000	Mar 9
INSTANTANEOUS PEAK STAGE			7.96	Mar 9d
ANNUAL RUNOFF (AC-FT)	39980		58580	51280
10 PERCENT EXCEEDS	92		164	140
50 PERCENT EXCEEDS	44		46	38
90 PERCENT EXCEEDS	31		30	14

e Estimated

a Median of annual mean discharges, 58 ft³/s.

b Also Jan. 11 to Feb. 15, 1949, and Aug. 19 to Sept. 14, 1976.

c Gage height, 13.08 ft.

d Backwater from ice.

NIOBRARA RIVER BASIN

06464900 KEYA PAHA RIVER NEAR NAPER, NE

LOCATION.--Lat 42°55'00", long 99°05'50", in SE1/4SE1/4 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 Naper, and 8.8 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 above sea level, from topographic map. Prior to May 2, 1958, nonrecording gage at same site and datum.

REMARKS.--Records good, except for period of estimated record, which is poor. Minor diversions for irrigation above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	92	e80	e45	e62	e84	324	888	147	206	96	63
2	58	97	e78	e49	e68	e100	317	1100	141	235	85	66
3	58	92	e74	e54	e74	e150	312	733	146	283	78	59
4	59	97	e70	e50	e70	e250	296	548	188	180	75	58
5	57	92	e74	e49	e74	e300	285	475	186	144	83	85
6	61	90	e70	e48	e74	e600	285	541	174	120	79	99
7	81	84	e68	e48	e76	e800	354	604	196	112	75	93
8	80	96	e66	e50	e78	e1300	466	596	185	115	69	90
9	73	104	e72	e39	e72	e1800	491	528	158	103	66	83
10	74	108	e80	e38	e74	1450	456	446	136	94	62	74
11	75	105	e88	e45	e72	851	425	406	123	144	58	68
12	73	103	e90	e43	e66	596	394	437	100	95	54	68
13	73	93	e84	e40	e68	457	426	455	88	476	53	67
14	72	93	e78	e43	e64	360	423	416	78	301	53	70
15	69	92	e74	e42	e60	314	423	369	75	235	99	70
16	70	90	e80	e39	e60	291	442	333	67	181	340	68
17	69	89	e70	e43	e58	278	433	296	81	224	393	73
18	71	96	e64	e45	e64	261	460	258	136	210	547	76
19	73	99	e58	e46	e62	282	508	226	251	173	380	183
20	74	98	e60	e47	e64	291	742	196	266	222	228	231
21	74	98	e66	e46	e68	342	618	178	254	159	162	168
22	78	102	e73	e44	e64	358	444	173	214	138	134	141
23	75	100	e60	e42	e54	339	499	176	187	127	113	114
24	72	103	e66	e42	e60	342	498	156	454	113	101	102
25	72	105	e70	e45	e58	361	433	145	416	117	90	94
26	72	99	e74	e50	e66	361	383	137	317	108	78	90
27	76	e70	e80	e52	e70	335	330	132	247	233	72	87
28	74	e66	e60	e45	e80	325	296	116	238	183	71	81
29	74	e70	e47	e60	---	335	289	129	209	172	70	78
30	73	e74	e40	e68	---	303	435	210	332	131	69	79
31	78	---	e40	e68	---	297	---	181	---	111	64	---
TOTAL	2196	2797	2154	1465	1880	14513	12487	11584	5790	5445	3997	2778
MEAN	70.8	93.2	69.5	47.3	67.1	468	416	374	193	176	129	92.6
MAX	81	108	90	68	80	1800	742	1100	454	476	547	231
MIN	57	66	40	38	54	84	285	116	67	94	53	58
AC-FT	4360	5550	4270	2910	3730	28790	24770	22980	11480	10800	7930	5510

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1993, BY WATER YEAR (WY)

	MEAN	67.6	76.5	63.2	56.8	115	321	288	233	193	131	61.2	49.0
MAX	151	155	137	128	278	1087	919	662	945	1538	420	131	
(WY)	1983	1963	1963	1987	1984	1960	1984	1962	1962	1962	1962	1986	
MIN	14.7	17.3	20.4	7.00	22.4	80.3	71.9	58.5	20.8	1.97	1.18	8.05	
(WY)	1977	1977	1977	1977	1979	1981	1976	1981	1976	1976	1976	1975	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1958 - 1993

ANNUAL TOTAL	41986	67086		
ANNUAL MEAN	115	184		
HIGHEST ANNUAL MEAN			138	
LOWEST ANNUAL MEAN			389	1962
HIGHEST DAILY MEAN	778	Aug 8	44.5	1976
LOWEST DAILY MEAN	40	Dec 30	6500	Mar 24 1960
ANNUAL SEVEN-DAY MINIMUM	54	Jan 9	.00	Jul 22 1976
INSTANTANEOUS PEAK FLOW (STAGE)			9280(10.91)	Jul 1 1962
INSTANTANEOUS PEAK STAGE			**13.34	Mar 23 1960
ANNUAL RUNOFF (AC-FT)	83280	133100	99900	
10 PERCENT EXCEEDS	185	433	291	
50 PERCENT EXCEEDS	92	93	73	
90 PERCENT EXCEEDS	61	58	24	

e Estimated

* From floodmark, backwater from ice.

** Backwater from ice.

MISSOURI-LEWIS AND CLARK RIVER BASIN

06466700 LEWIS AND CLARK LAKE AT SPRINGFIELD, SD

LOCATION.--Lat 42°51'21", long 97°53'06", in SW1/4NE1/4SW1/4 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 sea level.

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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.11	7.85	7.44	7.95	7.76	7.44	7.25	7.42	7.33	6.58	6.65	7.18
2	7.95	7.91	7.59	8.42	7.83	7.28	7.27	7.53	7.86	6.85	6.52	7.14
3	7.92	7.98	7.68	8.80	7.96	6.88	7.16	7.40	7.43	6.94	6.37	7.18
4	7.92	7.90	7.49	8.94	8.00	6.64	7.04	7.26	7.23	7.08	6.35	7.12
5	7.77	7.89	7.50	9.07	8.05	6.41	6.94	7.23	7.80	7.11	6.34	7.29
6	7.85	7.80	7.51	9.06	8.08	6.54	6.88	6.97	7.28	7.07	6.36	7.31
7	8.01	7.71	7.43	9.00	8.10	7.01	6.63	6.84	7.09	7.12	6.46	7.34
8	8.30	7.67	7.47	8.81	8.11	8.43	6.57	7.29	7.44	7.30	6.43	7.38
9	8.37	7.64	7.52	8.82	7.84	9.02	6.70	8.19	6.88	7.33	6.30	7.37
10	8.20	7.61	7.53	8.62	7.62	9.18	6.69	8.33	6.65	7.51	6.25	7.36
11	8.13	7.72	7.69	8.55	7.23	9.20	6.67	8.06	7.29	7.49	6.25	7.39
12	8.10	7.62	7.72	8.43	6.95	9.00	6.87	7.77	6.77	7.72	6.30	7.41
13	8.17	7.74	7.69	8.18	7.52	8.71	6.88	7.39	6.44	8.05	6.47	7.32
14	8.03	7.98	7.72	8.01	7.95	8.27	6.75	6.95	7.28	8.81	6.57	7.44
15	7.91	8.02	7.61	8.10	8.12	7.77	6.66	7.12	6.87	9.15	6.68	7.60
16	7.87	8.00	7.49	8.20	8.18	7.23	6.44	6.98	6.67	9.05	7.00	7.52
17	7.80	8.04	7.37	8.18	7.98	6.90	6.30	6.59	7.34	8.93	7.29	7.62
18	7.61	8.05	7.22	8.16	7.84	6.71	6.13	7.05	7.13	8.83	7.50	7.70
19	7.50	8.06	7.16	8.22	7.98	6.92	6.24	6.82	7.06	8.75	7.70	7.90
20	7.33	8.00	7.24	8.22	8.07	7.07	6.45	6.60	7.92	8.74	7.85	7.77
21	7.45	7.94	7.21	8.21	7.97	7.58	6.75	7.06	7.50	8.64	7.67	7.96
22	7.34	7.95	7.31	8.18	7.57	7.58	6.89	6.87	6.87	8.41	7.32	7.83
23	7.27	7.84	7.51	8.16	7.53	7.59	6.97	6.69	6.68	8.10	7.03	7.75
24	7.28	7.81	8.39	7.97	7.55	7.67	6.62	7.47	7.59	7.81	7.01	7.63
25	7.20	7.75	8.93	7.83	7.55	7.56	6.60	6.93	7.21	7.44	7.07	7.61
26	7.15	7.73	8.91	7.73	7.53	7.45	6.51	6.69	6.90	7.41	6.99	7.41
27	7.23	7.78	8.84	7.68	7.50	7.34	6.59	7.29	6.67	7.21	7.00	7.43
28	7.26	7.82	8.48	7.73	7.48	7.28	6.84	6.99	6.64	7.00	7.02	7.39
29	7.33	7.75	8.41	7.74	---	7.24	6.99	6.98	7.44	7.08	6.99	7.47
30	7.42	7.77	8.26	7.72	---	7.14	7.29	7.53	6.89	7.01	6.92	7.40
31	7.57	---	7.96	7.69	---	7.16	---	7.19	---	6.86	7.08	---
MEAN	7.72	7.84	7.75	8.27	7.78	7.55	6.75	7.21	7.14	7.72	6.83	7.47
MAX	8.37	8.06	8.93	9.07	8.18	9.20	7.29	8.33	7.92	9.15	7.85	7.96
MIN	7.15	7.61	7.16	7.68	6.95	6.41	6.13	6.59	6.44	6.58	6.25	7.12

MISSOURI-LEWIS AND CLARK RIVER BASIN

06467000 LEWIS AND CLARK LAKE NEAR YANKTON, SD

LOCATION.--Lat 42°50'56", long 97°28'54", in SW1/4 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 above sea level. 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, 457,000 acre-ft, Mar. 11 and July 15; minimum contents, 364,000 acre-ft, Apr. 26.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,206.51	390,000	-
Oct. 31	1,207.31	411,000	+21,000
Nov. 30	1,207.68	424,000	+13,000
Dec. 31	1,206.47	391,000	-33,000
CAL YR 1992	-	-	-26,000
Jan. 31	1,206.97	403,000	+12,000
Feb. 28	1,206.30	386,000	-17,000
Mar. 31	1,207.10	406,000	+20,000
Apr. 30	1,205.77	373,000	-33,000
May 31	1,206.10	379,000	+6,000
June 30	1,206.17	380,000	+1,000
July 31	1,206.76	398,000	+18,000
Aug. 31	1,206.61	393,000	-5,000
Sept. 30	1,206.60	394,000	+1,000
WTR YR 1993	-	-	+4,000

NOTE.--Lake frozen over Dec. 7 to Apr. 6.

MISSOURI-LEWIS AND CLARK RIVER BASIN
06467500 MISSOURI RIVER AT YANKTON, SD

LOCATION.--Lat 42°51'58", long 97°23'37", in SW1/4SW1/4 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 sea level. 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 on Missouri River main stem completely regulated by a series of 6 dams with the most downstream being Gavins Point Dam (5.2 mi upstream from gage). Many diversions for irrigation and water supply above station. The last main-stem reservoir to reach maximum pool elevation was Oahe Reservoir on Aug. 22, 1975. Maximum discharge prior to Sept. 30, 1975, 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. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 50.5 ft, Apr. 5, 1881, ice jam, present datum.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24500	7560	9150	15700	e10500	e11500	6350	19100	15000	14200	6570	14400
2	24600	7490	10500	15600	e10500	e10500	6360	18600	24000	11800	6550	15200
3	24500	7400	10600	15300	e10500	e10000	6360	17600	15700	11000	6580	16700
4	24600	7470	10900	15500	e10500	e9500	6350	16400	15000	11100	6540	17300
5	24600	7560	12200	15400	e10500	e8500	6390	15800	23900	11000	6440	17700
6	24400	7520	12200	15600	e10500	e8000	8420	15800	16700	8280	6400	17700
7	24600	7600	12200	15400	e10500	e8000	10800	21200	16400	5810	6340	18500
8	26900	7560	12300	15500	e11500	e7000	10600	23400	23200	6850	6950	19400
9	27600	7640	12200	e15500	12800	8560	10600	17400	15800	7100	9290	19500
10	24600	7610	12200	e15500	13200	12400	10500	12300	15400	6900	10500	20300
11	24500	7700	12300	e15000	13100	12500	10500	11000	23400	6610	11400	20300
12	24600	7610	12300	e14000	13400	12300	10500	14200	16400	6340	12300	20700
13	23800	7650	12200	e13500	14000	12500	10600	9550	15900	7340	12600	20700
14	22800	7810	12100	e13000	14500	12500	10700	14200	23200	8230	12600	20800
15	22700	7850	12100	e12500	15000	12400	10800	20800	16500	11300	12700	20900
16	22700	7830	12200	e12500	15000	12200	10600	14900	15900	11200	13100	20900
17	20900	7920	12200	e12500	15100	12300	10600	14500	23300	11000	12000	20800
18	18200	7940	13100	e12500	15500	13100	11000	22400	16600	10900	10000	20900
19	14900	7790	14200	e12000	15300	14800	11800	15100	15800	10800	9320	21200
20	12700	7900	14300	e11500	14300	16800	12000	14900	15900	10900	11000	20400
21	10700	7810	14200	e11500	14000	20000	11400	24000	22900	10800	12600	19500
22	10500	7740	15300	e11500	e14000	20200	11700	15400	16400	10700	12700	18500
23	10000	7690	15300	e11500	e14000	20200	13900	14600	16300	10500	12600	17900
24	9550	7840	15000	e11500	e14000	20200	13800	22900	17200	9750	12700	17900
25	9620	7760	14800	e11500	e13500	19900	14300	15200	17100	8110	12700	18800
26	8960	7710	14900	e11500	e12500	16700	16100	14700	19800	6940	13400	19600
27	7870	7720	14900	e11000	e12000	13900	17900	23700	17500	6940	14800	19800
28	8000	7800	14500	e11000	e12000	12000	18000	20900	17100	6770	15500	19800
29	7680	7970	13200	e11500	---	8060	17900	20600	16400	6740	15600	19800
30	7490	8250	15300	e11500	---	6380	18300	24100	15900	6630	15500	20200
31	7550	---	15700	e11000	---	6410	---	18000	---	6660	15000	---
TOTAL	556620	231700	404550	409000	362200	389310	345130	543250	540600	279200	342280	576100
MEAN	17960	7723	13050	13190	12940	12560	11500	17520	18020	9006	11040	19200
MAX	27600	8250	15700	15700	15500	20200	18300	24100	24000	14200	15600	21200
MIN	7490	7400	9150	11000	10500	6380	6350	9550	15000	5810	6340	14400
AC-FT	1104000	459600	802400	811300	718400	772200	684600	1078000	1072000	553800	678900	1143000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1993, BY WATER YEAR (WY)*

	MEAN	36180	31400	20450	17400	17180	18700	25180	28450	29290	31780	33300	33980
MAX	62570	62180	36790	26490	24320	31630	36470	38490	40900	46970	52120	51940	
(WY)	1976	1976	1987	1987	1976	1976	1976	1976	1979	1978	1978	1978	
MIN	17960	7723	12390	11510	10300	10930	11500	17520	17100	9006	11040	19200	
(WY)	1993	1993	1991	1990	1991	1991	1993	1993	1984	1993	1993	1993	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER

YEAR WATER YEARS 1976 - 1993*

ANNUAL TOTAL	6769690							4979940					
ANNUAL MEAN	18500							13640					
HIGHEST ANNUAL MEAN										26980			
LOWEST ANNUAL MEAN										38220			
HIGHEST DAILY MEAN										13640			1976
LOWEST DAILY MEAN										63400			1993
ANNUAL SEVEN-DAY MINIMUM										5070			Nov 5 1975
INSTANTANEOUS PEAK FLOW										5740			Mar 6 1992
INSTANTANEOUS PEAK STAGE										63700			Mar 1 1992
ANNUAL RUNOFF (AC-FT)	13430000									23.17			Nov 5 1975a
10 PERCENT EXCEEDS										20800			Oct 6 1975
50 PERCENT EXCEEDS										12700			
90 PERCENT EXCEEDS										7560			

e Estimated

* Period of record since main-stem reservoirs reached maximum pool elevation (1976-93). See REMARKS.

a Gage height, 23.07 ft.

JAMES RIVER BASIN

06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND

LOCATION.--Lat 45°56'52", long 98°10'29", in SE1/4NE1/4NE1/4 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 sea level.

REMARKS.--Records good 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	13	e44	e3.8	e1.6	e5.2	532	33	86	208	1610	939
2	1.8	77	e40	e3.2	e2.1	e5.6	415	21	123	226	1630	962
3	.19	82	e36	e2.8	e3.0	e6.0	392	14	116	234	1650	951
4	.03	27	e31	e2.4	e4.2	e6.4	399	e11	97	167	1630	945
5	.06	.09	e28	e2.0	e5.3	e6.0	423	e9.4	62	260	1620	922
6	2.4	.08	e25	e1.7	e7.4	e5.7	413	e8.5	117	352	1530	911
7	21	.14	e21	e1.4	e10	e6.0	399	e10	123	426	1410	903
8	14	.28	e19	e1.2	e12	e6.7	372	e17	58	463	1260	871
9	.20	.87	e20	e1.0	e13	e7.4	327	e22	156	474	1170	903
10	2.9	1.9	e22	e.88	e12	e6.8	299	e37	113	471	1090	899
11	.12	2.8	e19	e.76	e11	e5.9	280	e49	59	446	1060	888
12	1.2	6.0	e16	e.70	e10	e5.2	238	e58	30	402	1060	904
13	4.1	9.8	e15	e.65	e9.7	e4.8	185	e50	104	385	1040	926
14	6.1	10	e14	e.60	e9.3	e5.5	167	e43	159	348	1030	902
15	.61	13	e13	e.56	e8.8	e7.0	151	e45	122	327	1030	871
16	.00	18	e12	e.52	e8.5	e10	111	e48	151	407	1030	875
17	.71	e23	e11	e.48	e8.2	e15	85	e42	179	474	1010	897
18	.00	e27	e9.9	e.45	e7.8	e25	147	e38	104	499	1010	900
19	.00	e32	e9.3	e.43	e7.6	e45	146	e35	122	555	1000	912
20	.01	35	e9.0	e.41	e7.2	e60	57	e31	87	671	992	926
21	.00	35	e8.4	e.42	e7.0	e82	38	e28	81	773	972	913
22	.00	34	e8.0	e.48	e6.6	e95	53	e27	43	889	963	919
23	.11	32	e7.6	e.60	e6.2	e125	70	e32	124	1010	964	912
24	.00	33	e7.2	e.56	e6.0	e150	87	e40	101	1170	962	906
25	18	35	e7.6	e.52	e5.8	e185	46	e49	132	1290	949	e905
26	.21	e36	e8.0	e.60	e5.4	e220	6.9	e60	189	1390	961	e905
27	1.3	e38	e7.7	e.68	e5.2	e280	39	e72	179	1440	960	e915
28	.74	e40	e7.0	e.65	e4.8	e340	21	81	163	1520	945	e935
29	.07	e41	e6.2	e.62	---	e400	38	44	172	1590	955	e895
30	.01	e42	e5.2	e.78	---	e460	35	148	198	1620	976	.893
31	.42	---	e4.5	e1.1	---	e500	---	106	---	1610	958	---
TOTAL	76.30	744.96	491.6	32.95	205.7	3082.2	5971.9	1308.9	3550	22097	35427	27305
MEAN	2.46	24.8	15.9	1.06	7.35	99.4	199	42.2	118	713	1143	910
MAX	21	82	44	3.8	13	500	532	148	198	1620	1650	962
MIN	.00	.08	4.5	.41	1.6	4.8	6.9	8.5	30	167	945	871
AC-FT	151	1480	975	65	408	6110	11850	2600	7040	43830	70270	54160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	MEAN	61.6	46.6	20.9	10.4	12.9	235	383	184	133	144	155	128
MAX	206	178	71.7	45.5	51.6	800	977	579	373	713	1143	910	
(WY)	1988	1988	1987	1987	1987	1987	1987	1987	1987	1993	1993	1993	
MIN	1.86	.20	.28	.056	.62	26.0	33.4	9.92	2.12	.015	.000	.011	
(WY)	1989	1991	1991	1991	1989	1990	1990	1990	1988	1988	1988	1990	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	9632.79	100293.51	127	
ANNUAL MEAN	26.3	275	312	
HIGHEST ANNUAL MEAN			10.3	1987
LOWEST ANNUAL MEAN			2210	1990
HIGHEST DAILY MEAN	235	1650	.00	Mar 28 1987
LOWEST DAILY MEAN	.00	.00	.00	Oct 8 1981
ANNUAL SEVEN-DAY MINIMUM	.00	.02	.00	Jul 10 1985
INSTANTANEOUS PEAK FLOW		1660	2300a	Mar 28 1987
INSTANTANEOUS PEAK STAGE		13.53	13.76	Mar 28 1987
ANNUAL RUNOFF (AC-FT)	19110	198900	91760	
10 PERCENT EXCEEDS	73	960	327	
50 PERCENT EXCEEDS	9.2	38	24	
90 PERCENT EXCEEDS	.00	.62	.00	

e Estimated

a About.

JAMES RIVER BASIN

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE1/4SE1/4 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.

DRAINAGE AREA.--5,480 mi², approximately, revised, of which about 3,300 mi² is probably noncontributing.

GAGE HEIGHT RECORDS

PERIOD OF RECORD.--October 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,200 ft above sea level.

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 daily gage height recorded, 93.38 ft, Aug. 3; minimum daily gage height recorded, 87.49 ft, Oct. 18.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	87.51	---	---	---	---	---	---	88.94	89.69	93.32	92.24
2	---	87.51	---	---	---	---	---	---	88.95	89.78	93.35	92.31
3	---	87.52	---	---	---	---	---	---	88.95	89.86	93.38	92.27
4	---	87.51	---	---	---	---	---	---	88.94	89.80	93.35	92.25
5	---	87.51	---	---	---	---	---	---	88.96	89.93	93.33	92.19
6	---	87.53	---	---	---	---	---	---	88.99	90.26	93.27	92.15
7	---	87.55	---	---	---	---	---	---	89.03	90.46	93.18	92.12
8	---	87.56	---	---	---	---	---	---	89.07	90.56	93.07	92.02
9	---	87.59	---	---	---	---	---	---	89.13	90.61	93.00	92.09
10	---	87.66	---	---	---	---	---	---	89.10	90.61	92.91	92.10
11	---	87.69	---	---	---	---	---	---	89.12	90.58	92.83	92.05
12	---	87.70	---	---	---	---	---	---	89.12	90.49	92.82	92.08
13	---	87.70	---	---	---	---	---	---	89.09	90.44	92.73	92.18
14	87.52	87.71	---	---	---	---	---	---	89.14	90.38	92.67	92.10
15	87.51	87.71	---	---	---	---	---	---	89.13	90.29	92.66	91.99
16	87.50	87.73	---	---	---	---	---	---	89.17	90.43	92.62	91.98
17	87.50	87.74	---	---	---	---	---	---	89.30	90.62	92.54	92.05
18	87.49	87.77	---	---	---	---	---	---	89.14	90.66	92.52	92.05
19	87.52	87.81	---	---	---	---	---	---	89.14	90.77	92.48	92.09
20	87.55	87.89	---	---	---	---	---	---	89.11	91.01	92.44	92.13
21	87.54	87.93	---	---	---	---	---	---	89.06	91.33	92.37	92.09
22	87.54	87.96	---	---	---	---	---	---	89.11	91.66	92.34	92.10
23	87.55	87.99	---	---	---	---	---	---	89.12	92.00	92.33	92.08
24	87.54	87.99	---	---	---	---	---	---	89.28	92.40	92.32	92.05
25	87.54	87.99	---	---	---	---	---	---	89.33	92.69	92.27	92.03
26	87.53	88.01	---	---	---	---	---	---	89.46	92.86	92.33	92.11
27	87.52	88.03	---	---	---	---	---	---	89.48	92.95	92.32	92.08
28	87.51	88.04	---	---	---	---	---	88.86	89.42	93.06	92.27	92.08
29	87.50	88.06	---	---	---	---	---	88.89	89.49	93.13	92.30	92.03
30	87.50	88.07	---	---	---	---	---	88.98	89.63	93.19	92.38	91.97
31	87.50	---	---	---	---	---	---	88.95	---	93.27	92.32	---
MEAN	---	87.77	---	---	---	---	---	---	89.16	91.15	92.71	92.10
MAX	---	88.07	---	---	---	---	---	---	89.63	93.27	93.38	92.31
MIN	---	87.51	---	---	---	---	---	---	88.94	89.69	92.27	91.97

JAMES RIVER BASIN

06470990 SAND LAKE - OPEN PLATFORM 1

LOCATION.--Lat 45°44'02", long 98°16'51", in NE1/4NE1/4NW1/4 sec.15, T.126 N., R.62 W., Brown County, Hydrologic Unit 10160003, on floating platform or ice, 8.2 mi north of Columbia.

DRAINAGE AREA.--5,759 mi², of which 3,376 mi² is probably noncontributing.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1988 to current year (seasonal records only).

pH: August 1988 to current year (seasonal records only).

WATER TEMPERATURE: April 1988 to current year (seasonal records only).

DISSOLVED OXYGEN: August 1988 to current year (seasonal records only).

TURBIDITY: April 1988 to August 1990, (seasonal records only).

WIND SPEED: April 1988 to August 1990 (seasonal records only).

WIND DIRECTION: April 1988 to August 1990 (seasonal records only).

INCIDENT LIGHT INTENSITY: April 1988 to August 1990 (seasonal records only).

REMARKS.--Specific conductance, pH, water temperature, and dissolved oxygen data were recorded at hourly intervals by a water-quality monitor operated from Jan. 9 to Feb. 25. Water-quality data missing from the water year 1992 Water Resources Data--South Dakota report are included in these tables.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (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)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) (71846)
JAN										
08...	1320	2090	8.1	-20.0	2.0	735	7.8	59	0.040	0.05
22...	1230	2220	7.8	-6.0	1.5	725	1.4	11	0.340	0.44
29...	1145	2210	7.5	-15.0	1.5	739	0.9	7	0.540	0.70
FEB										
12...	1310	2360	7.6	-7.0	2.0	730	1.6	12	0.480	0.62
26...	1035	2450	7.8	-15.0	1.0	737	3.2	23	0.830	1.1

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHATE DIS- SOLVED (MG/L AS P) (00671)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JAN									
08...	3.8	<0.010	<0.050	--	0.420	0.200	0.150	180	28.0
22...	3.3	0.080	0.190	0.110	0.480	0.240	0.210	30.0	3.20
29...	3.4	0.030	0.064	0.034	0.410	0.320	0.260	37.0	5.90
FEB									
12...	3.0	0.010	<0.050	--	0.440	0.280	0.260	76.0	25.0
26...	4.0	0.010	<0.050	--	0.730	0.570	0.550	6.60	0.500

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS. WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	2300	2250	2280
10	---	---	---	---	---	---	---	---	---	2300	2250	2280
11	---	---	---	---	---	---	---	---	---	2290	2240	2270
12	---	---	---	---	---	---	---	---	---	2290	2220	2260
13	---	---	---	---	---	---	---	---	---	2270	2240	2250
14	---	---	---	---	---	---	---	---	---	2290	2250	2270
15	---	---	---	---	---	---	---	---	---	2290	2260	2280
16	---	---	---	---	---	---	---	---	---	2280	2230	2260
17	---	---	---	---	---	---	---	---	---	2260	2230	2240
18	---	---	---	---	---	---	---	---	---	2260	2210	2240
19	---	---	---	---	---	---	---	---	---	2260	2220	2240
20	---	---	---	---	---	---	---	---	---	2250	2220	2240
21	---	---	---	---	---	---	---	---	---	2260	2220	2240
22	---	---	---	---	---	---	---	---	---	2340	2240	2290
23	---	---	---	---	---	---	---	---	---	2320	2300	2310
24	---	---	---	---	---	---	---	---	---	2310	2280	2290
25	---	---	---	---	---	---	---	---	---	2280	2230	2270
26	---	---	---	---	---	---	---	---	---	2280	2240	2250
27	---	---	---	---	---	---	---	---	---	2250	2230	2240
28	---	---	---	---	---	---	---	---	---	2240	2210	2220
29	---	---	---	---	---	---	---	---	---	2220	2190	2210
30	---	---	---	---	---	---	---	---	---	2220	2190	2210
31	---	---	---	---	---	---	---	---	---	2250	2210	2230
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	2270	2240	2260	---	---	---	---	---	---	---	---	---
2	2310	2270	2290	---	---	---	---	---	---	---	---	---
3	2320	2300	2310	---	---	---	---	---	---	---	---	---
4	2330	2320	2320	---	---	---	---	---	---	---	---	---
5	2340	2330	2340	---	---	---	---	---	---	---	---	---
6	2350	2340	2350	---	---	---	---	---	---	---	---	---
7	2360	2350	2360	---	---	---	---	---	---	---	---	---
8	2380	2340	2360	---	---	---	---	---	---	---	---	---
9	2370	2340	2360	---	---	---	---	---	---	---	---	---
10	2370	2350	2360	---	---	---	---	---	---	---	---	---
11	2370	2350	2360	---	---	---	---	---	---	---	---	---
12	2370	2330	2350	---	---	---	---	---	---	---	---	---
13	2340	2320	2320	---	---	---	---	---	---	---	---	---
14	2330	2310	2320	---	---	---	---	---	---	---	---	---
15	2330	2320	2320	---	---	---	---	---	---	---	---	---
16	2330	2320	2320	---	---	---	---	---	---	---	---	---
17	2360	2330	2340	---	---	---	---	---	---	---	---	---
18	2390	2360	2370	---	---	---	---	---	---	---	---	---
19	2410	2380	2390	---	---	---	---	---	---	---	---	---
20	2420	2400	2410	---	---	---	---	---	---	---	---	---
21	2440	2410	2420	---	---	---	---	---	---	---	---	---
22	2430	2420	2420	---	---	---	---	---	---	---	---	---
23	2440	2420	2430	---	---	---	---	---	---	---	---	---
24	2460	2430	2450	---	---	---	---	---	---	---	---	---
25	2490	2460	2470	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

PH, IN STANDARD UNITS, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

PH, IN STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993[illegible]

JAMES. RIVER BASIN

06470990 SAND LAKE - OPEN PLATFORM 1--Continued

PH, IN STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

WATER TEMPERATURE, IN DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	---	---	---		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		1.8	1.6	1.7
10	---	---	---		---	---	---		---	---	---		1.8	1.6	1.7
11	---	---	---		---	---	---		---	---	---		1.8	1.6	1.6
12	---	---	---		---	---	---		---	---	---		1.7	1.5	1.6
13	---	---	---		---	---	---		---	---	---		1.7	1.5	1.6
14	---	---	---		---	---	---		---	---	---		1.6	1.5	1.6
15	---	---	---		---	---	---		---	---	---		1.6	1.5	1.5
16	---	---	---		---	---	---		---	---	---		1.7	1.5	1.6
17	---	---	---		---	---	---		---	---	---		1.7	1.5	1.6
18	---	---	---		---	---	---		---	---	---		1.6	1.5	1.5
19	---	---	---		---	---	---		---	---	---		1.6	1.4	1.4
20	---	---	---		---	---	---		---	---	---		1.5	1.4	1.5
21	---	---	---		---	---	---		---	---	---		1.5	1.3	1.4
22	---	---	---		---	---	---		---	---	---		1.5	1.2	1.3
23	---	---	---		---	---	---		---	---	---		1.3	1.2	1.3
24	---	---	---		---	---	---		---	---	---		1.4	1.2	1.3
25	---	---	---		---	---	---		---	---	---		1.5	1.3	1.4
26	---	---	---		---	---	---		---	---	---		1.6	1.2	1.5
27	---	---	---		---	---	---		---	---	---		1.7	1.4	1.6
28	---	---	---		---	---	---		---	---	---		1.9	1.6	1.8
29	---	---	---		---	---	---		---	---	---		1.8	1.6	1.7
30	---	---	---		---	---	---		---	---	---		1.7	1.5	1.6
31	---	---	---		---	---	---		---	---	---		1.8	1.5	1.7
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

06470990 SAND LAKE - OPEN PLATFORM 1--Continued

DISSOLVED OXYGEN, IN MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

JAMES RIVER BASIN

06470992 SAND LAKE NEAR COLUMBIA, SD

LOCATION.--Lat 45°40'10", long 98°18'31", in NW1/4SW1/4 sec.4, T.125 N., R.62 W., Brown County, Hydrologic Unit 10160003, near outlet control structure 3 mi north of Columbia.

DRAINAGE AREA.--5,759 mi², of which 3,376 mi² is probably noncontributing.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1985 to current year (prior to October 1987, seasonal records only).

WATER TEMPERATURE: May 1985 to current year (prior to October 1987, seasonal records only).

pH: May to September 1985 and November 1987 to September 1988 (seasonal records only).

DISSOLVED OXYGEN: May to September 1985 and November 1987 to September 1988 (seasonal records only).

REMARKS.--Specific conductance and water temperature data were recorded at hourly intervals by a water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 4,980 microsiemens, Feb. 1, 1991; minimum recorded, 100 microsiemens, Mar. 6, 1991.

WATER TEMPERATURE: Maximum recorded, 32.3°C, July 31, 1987; minimum recorded, 0.0°C on several days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 2,430 microsiemens, Jan. 1, 2, 4; minimum, 480 microsiemens, Mar. 30.

WATER TEMPERATURE: Maximum, 25.6°C, July 30; minimum, 0.0°C, Nov. 3, 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
OCT 14...	0930	1440	8.5	2.5	5.0	31	0.280	0.36	0.020	0.100	0.080	0.090
JAN 22...	1500	2000	7.6	-1.5	0.5	40	0.430	0.55	0.020	<0.050	--	0.190
MAR 24...	1015	1920	8.3	4.0	2.0	18	0.140	0.18	<0.010	<0.050	--	0.170
JUL 01...	0800	830	8.2	19.5	19.5	17	0.110	0.14	0.010	<0.050	--	0.120
SEP 08...	0830	680	8.1	14.5	16.5	33	0.040	0.05	<0.010	<0.050	--	0.320

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1400	1350	1380	1450	1380	1420	1560	1550	1550	2430	2350	2390
2	1380	1340	1360	1440	1410	1430	1580	1550	1560	2430	2390	2410
3	1400	1320	1360	1440	1420	1430	1580	1550	1570	2410	2380	2390
4	1400	1310	1360	1460	1430	1440	1620	1570	1590	2430	2380	2400
5	1400	1330	1370	1480	1430	1450	1670	1620	1650	2420	2370	2400
6	1390	1350	1370	1450	1440	1450	1710	1670	1690	2390	2370	2380
7	1390	1280	1360	1480	1450	1470	1750	1690	1720	2410	2370	2380
8	1410	1330	1360	1480	1470	1470	1750	1720	1740	2370	2350	2360
9	1400	1360	1380	1480	1470	1480	1750	1730	1740	2370	2330	2340
10	1410	1340	1380	1490	1460	1480	1760	1730	1750	2410	2330	2350
11	1430	1380	1400	1480	1460	1470	1780	1730	1760	2360	2310	2330
12	1420	1400	1410	1470	1420	1450	1780	1760	1770	2350	2270	2310
13	1410	1390	1410	1460	1420	1440	1780	1770	1770	2310	2230	2280
14	1430	1400	1410	1490	1450	1480	1800	1770	1790	2260	2200	2240
15	1420	1390	1410	1490	1480	1480	1810	1790	1800	2230	2180	2200
16	1430	1380	1400	1500	1480	1490	1810	1790	1800	2190	2140	2160
17	1430	1360	1400	1490	1470	1480	1830	1790	1810	2140	2090	2120
18	1410	1340	1380	1480	1470	1480	1830	1820	1830	2110	2070	2090
19	1440	1300	1370	1470	1460	1470	1900	1820	1860	2080	2060	2070
20	1450	1400	1430	1470	1460	1470	1940	1900	1920	2060	2030	2050
21	1450	1410	1430	1470	1450	1460	1960	1930	1950	2040	2010	2030
22	1480	1410	1440	1470	1440	1450	1990	1940	1970	2080	1990	2020
23	1480	1410	1450	1460	1440	1450	2030	1970	2000	2060	2020	2050
24	1500	1420	1460	1460	1440	1450	2100	2030	2070	2060	2010	2030
25	1480	1440	1460	1460	1440	1450	2110	2060	2090	2050	2000	2020
26	1490	1440	1470	1500	1450	1480	2150	2100	2130	2050	2020	2030
27	1490	1450	1470	1530	1480	1510	2190	2140	2170	2040	2010	2030
28	1500	1430	1470	1570	1520	1550	2220	2150	2180	2040	2000	2020
29	1490	1420	1470	1570	1550	1560	2280	2210	2250	2040	1950	2000
30	1490	1420	1470	1560	1540	1550	2300	2260	2280	2030	1990	2010
31	1490	1420	1470	---	---	---	2370	2300	2340	2040	2020	2030
MONTH	1500	1280	1410	1570	1380	1470	2370	1550	1870	2430	1950	2190

JAMES RIVER BASIN

06470992 SAND LAKE NEAR COLUMBIA, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	2040	2010	2030	2300	2280	2290	1080	860	1000	760	750	750
2	2050	2020	2030	2300	2270	2280	1150	860	1030	770	730	750
3	2030	2010	2020	2290	2270	2280	1160	960	1100	770	750	760
4	2030	2010	2020	2280	2250	2270	1180	1010	1130	770	750	760
5	2020	2000	2010	2260	2230	2250	1180	1030	1110	780	750	770
6	2020	2000	2010	2250	2220	2240	1160	1010	1090	790	770	780
7	2020	2010	2010	2220	2180	2210	1240	1150	1190	800	770	780
8	2030	2010	2020	2200	2160	2180	1230	1180	1200	800	770	780
9	2050	2020	2040	2180	2120	2160	1200	1130	1170	790	770	780
10	2050	2030	2040	2170	2050	2120	1140	1060	1090	800	770	780
11	2080	2050	2060	2100	2040	2080	1070	1010	1050	830	780	800
12	2100	2070	2080	2060	2010	2030	1040	940	1000	810	790	800
13	2110	2070	2090	2030	1990	2010	940	920	930	840	790	810
14	2120	2090	2100	2040	1990	2020	940	930	930	830	810	820
15	2120	2090	2100	2060	2020	2040	940	920	930	830	800	810
16	2120	2090	2100	2070	2020	2040	930	870	900	840	800	820
17	2130	2100	2110	2080	2020	2060	870	830	850	840	820	830
18	2160	2120	2140	2090	2050	2070	850	820	840	840	810	830
19	2180	2150	2160	2100	2070	2080	840	810	830	830	800	820
20	2200	2170	2180	2110	2040	2090	830	790	820	830	800	820
21	2210	2190	2200	2100	2050	2090	800	750	780	840	810	830
22	2220	2190	2200	2120	2050	2090	790	730	760	860	830	840
23	2220	2190	2210	2070	1990	2040	740	720	730	840	800	820
24	2250	2210	2230	2000	1860	1960	750	720	730	830	800	820
25	2280	2240	2260	1900	1830	1860	750	720	740	840	810	830
26	2300	2270	2280	1890	1670	1840	770	720	740	840	820	830
27	2300	2260	2280	1680	1310	1540	760	740	750	840	830	830
28	2310	2270	2290	1390	1070	1310	770	740	750	850	830	840
29	---	---	---	1120	520	920	760	740	750	850	830	840
30	---	---	---	920	480	730	760	740	750	850	830	840
31	---	---	---	990	880	930	---	---	---	860	830	840
MONTH	2310	2000	2120	2300	480	1940	1240	720	920	860	730	810
	JUNE			JULY			AUGUST			SEPTEMBER		
1	850	830	840	820	800	810	820	800	810	630	610	620
2	850	830	840	840	800	810	810	800	800	630	610	620
3	860	830	850	830	790	800	810	790	800	640	610	630
4	870	840	850	820	780	800	800	780	790	640	620	630
5	870	850	860	800	770	780	790	770	780	640	620	630
6	880	860	870	770	750	770	790	760	770	650	620	640
7	880	850	860	760	740	750	760	740	750	660	630	640
8	870	840	850	740	720	730	770	740	750	690	640	670
9	880	850	860	750	710	730	760	720	740	700	680	690
10	880	850	870	750	710	730	730	700	720	700	680	690
11	890	850	870	780	710	740	710	650	670	720	690	700
12	890	860	870	---	---	---	680	630	650	710	690	700
13	900	870	880	---	---	---	670	620	640	710	690	690
14	880	860	870	---	---	---	630	620	630	710	690	700
15	870	850	860	---	---	---	640	610	620	710	690	700
16	870	840	850	---	---	---	630	600	610	710	690	700
17	870	850	860	---	---	---	640	600	610	710	690	700
18	870	850	860	---	---	---	620	590	610	710	690	700
19	880	850	860	---	---	---	610	590	600	700	690	700
20	890	840	860	---	---	---	610	580	590	700	690	690
21	910	860	880	760	740	750	610	580	590	700	690	700
22	900	860	880	770	750	760	610	590	600	700	690	700
23	900	820	870	800	750	770	620	590	600	710	690	700
24	830	800	810	830	770	800	620	590	600	710	690	700
25	830	810	820	830	790	810	620	600	610	710	690	700
26	830	820	820	900	820	860	610	600	600	710	690	700
27	840	820	830	890	790	800	630	600	610	710	690	700
28	840	820	830	830	790	810	620	600	610	710	690	700
29	840	800	810	840	800	820	620	600	610	710	680	700
30	820	800	810	840	800	820	610	600	610	710	680	700
31	---	---	---	830	790	810	620	600	610	---	---	---
MONTH	910	800	850	---	---	---	820	580	660	720	610	680

JAMES RIVER BASIN

06470992 SAND LAKE NEAR COLUMBIA, SD--Continued

WATER TEMPERATURE, IN DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.1	13.8	15.4	3.7	2.1	2.6	3.6	3.0	3.3	1.1	.8	1.0
2	17.2	13.6	15.4	2.1	.6	1.5	3.4	2.5	3.0	1.1	.8	1.0
3	17.4	14.4	16.0	.9	.0	.3	3.2	2.7	2.9	1.0	.8	.9
4	17.8	14.6	16.1	.7	.0	.3	3.1	2.4	2.8	1.0	.8	.9
5	16.9	15.3	16.0	1.9	.2	.9	3.0	2.3	2.7	.9	.7	.8
6	15.5	13.0	13.9	2.7	1.6	2.1	3.1	2.4	2.7	.9	.6	.8
7	13.1	9.9	11.3	2.8	2.2	2.5	3.0	2.6	2.8	.8	.7	.8
8	9.9	8.5	8.9	2.8	2.3	2.6	3.0	2.4	2.7	.8	.4	.7
9	9.8	8.1	8.9	3.4	2.4	2.9	3.0	2.6	2.8	.7	.6	.7
10	10.1	7.4	8.8	4.5	3.1	3.6	3.2	2.6	3.0	.7	.5	.6
11	11.0	7.4	9.1	4.9	2.9	3.8	3.0	2.5	2.8	.6	.4	.5
12	10.1	7.8	8.8	4.5	2.2	3.5	3.1	2.6	2.9	.6	.5	.5
13	8.8	7.2	8.0	2.2	.6	1.6	3.1	2.6	2.9	.7	.5	.6
14	7.5	5.3	6.1	3.5	1.4	2.4	2.9	2.4	2.7	.8	.5	.7
15	5.8	3.6	4.6	4.2	2.5	3.3	3.0	2.6	2.9	.8	.6	.7
16	4.5	2.1	3.4	4.2	2.9	3.7	3.3	2.9	3.1	.7	.5	.6
17	4.8	2.7	3.6	4.0	2.8	3.5	3.0	2.7	2.9	.7	.5	.6
18	3.9	2.4	3.1	3.2	2.3	2.8	3.1	2.7	3.0	.7	.5	.6
19	5.1	2.6	3.7	2.6	1.8	2.3	2.9	2.3	2.6	.7	.5	.6
20	6.3	3.7	4.8	3.0	1.7	2.6	2.5	2.1	2.3	.7	.5	.6
21	9.1	4.5	6.6	3.0	2.3	2.7	2.3	2.0	2.2	.7	.6	.7
22	13.3	8.8	10.8	2.8	1.9	2.4	2.5	2.0	2.3	.8	.4	.7
23	13.4	10.8	12.1	1.9	1.3	1.5	2.3	2.0	2.2	.7	.5	.6
24	13.4	10.7	12.1	2.1	1.4	1.7	2.4	1.6	2.0	.7	.5	.6
25	12.5	10.1	11.4	1.6	1.0	1.3	2.2	1.9	2.1	.6	.4	.6
26	10.6	8.2	9.5	2.0	.9	1.5	2.1	1.7	1.9	.6	.5	.6
27	9.6	7.0	8.5	2.9	1.7	2.3	2.2	1.5	1.9	.7	.5	.6
28	8.3	6.8	7.2	3.5	2.6	3.0	2.2	1.7	2.0	.7	.5	.6
29	7.4	5.6	6.6	3.5	3.2	3.3	1.9	1.4	1.7	1.0	.5	.8
30	6.4	4.2	5.1	3.6	3.2	3.4	1.5	1.2	1.3	1.1	.8	1.0
31	4.2	3.7	3.9	---	---	---	1.4	.9	1.2	1.1	.9	1.0
MONTH	17.8	2.1	9.0	4.9	.0	2.4	3.6	.9	2.5	1.1	.4	.7
FEBRUARY			MARCH			APRIL			MAY			
1	1.1	.8	1.0	.9	.6	.8	4.4	1.1	2.6	11.2	9.9	10.4
2	1.1	.9	1.0	.9	.6	.8	6.3	2.7	4.3	15.7	8.8	12.1
3	1.1	.9	1.0	.9	.7	.8	7.6	3.7	5.7	17.3	11.8	14.4
4	1.2	.9	1.1	1.0	.7	.9	8.4	4.8	6.2	18.6	13.9	16.2
5	1.1	.9	1.1	1.0	.7	.9	7.9	4.7	6.0	19.7	15.3	17.5
6	1.1	.9	1.0	1.1	.8	1.0	5.3	3.9	4.8	21.3	18.1	19.4
7	1.0	.8	1.0	1.5	.9	1.2	5.7	4.5	5.2	22.0	17.7	19.7
8	.9	.8	.9	2.0	1.1	1.5	9.5	4.6	6.9	21.4	19.2	20.4
9	.9	.8	.9	1.7	1.3	1.5	11.2	6.7	9.2	20.5	18.5	19.4
10	.8	.7	.8	2.0	1.1	1.5	9.9	4.4	6.9	20.3	17.1	18.8
11	.8	.7	.7	2.3	1.5	1.9	7.4	4.0	5.6	22.7	17.7	20.2
12	.9	.7	.8	2.1	1.7	1.9	9.0	5.5	7.3	23.1	19.8	21.4
13	.9	.7	.8	2.0	1.5	1.8	8.6	7.1	7.9	23.7	19.6	21.6
14	.8	.6	.8	2.0	1.5	1.8	10.5	7.0	8.7	22.5	19.3	20.8
15	.8	.6	.8	2.3	1.5	1.9	11.8	7.9	9.8	19.8	16.9	18.2
16	.8	.6	.8	2.2	1.6	1.9	13.3	8.4	10.9	19.4	14.9	17.4
17	.8	.6	.7	2.4	1.7	2.0	13.9	9.5	11.8	20.3	17.1	18.6
18	.7	.6	.7	2.0	1.5	1.8	13.9	11.0	12.4	18.3	15.4	16.4
19	.8	.6	.7	2.3	1.4	1.9	11.4	9.1	10.2	15.9	13.7	15.0
20	.7	.6	.6	3.0	1.6	2.3	11.5	7.4	9.5	16.0	13.2	14.6
21	.7	.6	.6	2.5	1.9	2.2	12.6	7.9	10.2	19.1	14.2	16.5
22	.8	.6	.7	3.1	1.7	2.4	14.5	9.3	11.9	20.2	16.2	17.9
23	.8	.6	.7	3.1	2.2	2.7	13.2	12.1	12.7	19.6	15.8	17.9
24	.8	.6	.7	3.7	2.5	3.2	15.0	11.3	13.0	15.8	13.7	14.8
25	.8	.5	.7	3.4	2.9	3.3	14.2	10.3	12.3	18.8	12.9	15.6
26	.8	.5	.7	4.3	2.8	3.6	14.4	10.1	12.4	17.9	15.5	16.6
27	.8	.6	.7	5.3	3.6	4.4	15.6	12.0	13.6	16.7	15.4	16.0
28	1.0	.6	.8	6.0	4.7	5.3	14.8	11.8	13.6	17.8	14.4	16.1
29	---	---	---	4.9	3.1	4.2	13.9	11.3	12.6	17.8	16.1	17.0
30	---	---	---	3.5	2.5	3.0	12.7	10.4	11.7	17.2	15.8	16.6
31	---	---	---	2.8	1.5	2.0	---	---	---	19.6	15.5	17.3
MONTH	1.2	.5	.8	6.0	.6	2.1	15.6	1.1	9.2	23.7	8.8	17.3

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD
(National stream-quality accounting network station)

LOCATION.--Lat 45°36'13", long 98°18'36", in NW1/4NW1/4 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 sea level. 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 fair except those for estimated daily discharges, which are 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, which reached maximum pool elevation in May 1974. Maximum discharge prior to Sept. 30, 1974, 5,420 ft³/s, May 24, 25, 1950, gage height, 16.89 ft, from graph based on gage readings; maximum daily reverse flow, 1,860 ft³/s, Apr. 8, 1952, backwater from Elm River. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	48	14	e4.5	e5.5	e4.0	50	265	66	120	635	1150
2	20	48	14	e4.0	e5.5	e5.0	70	252	60	133	684	1150
3	21	46	13	e4.0	e6.0	e5.0	90	240	55	149	719	1140
4	23	40	13	e4.0	e5.5	e6.0	100	226	50	166	705	1130
5	24	41	13	e4.0	e5.5	e6.0	114	206	45	179	695	1120
6	25	38	13	e4.0	e4.5	e7.0	120	182	40	193	699	1110
7	26	37	13	e4.0	e4.5	e7.0	128	165	45	205	708	1110
8	30	36	12	e4.0	e4.5	e7.0	128	152	50	210	718	1100
9	35	36	13	e4.0	e3.5	e8.0	117	145	55	220	739	1090
10	40	36	12	e4.0	e3.5	e8.0	117	138	55	230	759	1080
11	45	36	12	e4.0	e3.5	e8.0	138	134	58	240	827	1080
12	48	36	e11	e4.0	e3.5	e-5.0	154	129	60	250	900	1080
13	52	e35	e10	e4.0	e3.5	e-5.0	161	122	60	260	938	1090
14	52	34	e10	e3.5	e3.5	e1.0	171	116	59	271	982	1080
15	52	31	e10	e3.5	e3.0	e1.0	192	110	60	271	1010	1060
16	53	29	e10	e3.5	e3.0	e1.0	212	107	66	289	1040	1050
17	53	27	e9.0	e3.5	e3.0	e-20	231	103	70	399	1070	1050
18	52	25	e9.0	e3.5	e3.0	e-5.0	254	97	73	496	1130	1050
19	50	24	e7.0	e3.5	e3.0	e1.0	277	91	77	542	1150	1060
20	50	22	e7.0	e3.5	e3.0	e5.0	298	83	78	555	1150	1080
21	49	22	e8.0	e4.0	e3.0	e5.0	313	76	78	554	1140	1080
22	48	21	e8.0	e4.0	e3.0	e1.0	318	69	75	618	1120	1080
23	48	20	e7.0	e4.0	e3.0	e1.0	317	68	76	654	1120	1070
24	47	19	e8.0	e3.5	e2.5	e1.0	325	71	93	613	1110	1070
25	46	19	e7.0	e3.5	e3.0	e10	332	71	95	559	1090	1060
26	45	e18	e6.0	e4.0	e3.5	e20	330	68	97	484	1080	1070
27	45	18	e6.0	e4.0	e3.5	e75	327	67	99	455	1080	1060
28	44	16	e5.0	e4.0	e3.5	50	318	66	100	467	1070	1060
29	43	15	e4.0	e4.5	---	50	305	67	107	484	1090	1060
30	43	15	e4.0	e4.5	---	30	283	67	116	507	1140	1050
31	43	---	e4.0	e5.0	---	40	---	68	---	578	1160	---
TOTAL	1271	888	292.0	122.0	105.5	328.0	6290	3821	2118	11351	29458	32520
MEAN	41.0	29.6	9.42	3.94	3.77	10.6	210	123	70.6	366	950	1084
MAX	53	48	14	5.0	6.0	75	332	265	116	654	1160	1150
MIN	19	15	4.0	3.5	2.5	-20	50	66	40	120	635	1050
AC-FT	2520	1760	579	242	209	651	12480	7580	4200	22510	58430	64500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY) *

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	65.6	79.4	28.8	7.35	8.23	28.4	318	321	141	170	145	115							
MAX	305	285	128	41.0	43.7	247	1113	1501	666	1173	950	1084							
(WY)	1976	1976	1980	1987	1984	1987	1987	1979	1979	1975	1993	1993							
MIN	.000	.000	.000	.000	.000	-118	.014	.000	.000	.000	.000	.000							
(WY)	1977	1977	1977	1977	1977	1978	1977	1977	1977	1977	1977	1976							

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1975 - 1993 *

ANNUAL TOTAL	4444.98	88564.5	119	1987
ANNUAL MEAN	12.1	243	292	1977
HIGHEST ANNUAL MEAN			.063	1977
LOWEST ANNUAL MEAN				1977
HIGHEST DAILY MEAN	53	1160	2310	May 3 1979
LOWEST DAILY MEAN	.00	-20	-980	Mar 27 1978a
ANNUAL SEVEN-DAY MINIMUM	.00	-4.6	-525	Mar 25 1978a
INSTANTANEOUS PEAK FLOW		1160	2340	May 3 1979c
INSTANTANEOUS PEAK STAGE		15.31	17.11	Mar 24 1987a
ANNUAL RUNOFF (AC-FT)	8820	175700	86220	
10 PERCENT EXCEEDS	35	1060	373	
50 PERCENT EXCEEDS	5.4	52	9.5	
90 PERCENT EXCEEDS	.42	3.5	.00	

e Estimated

* Regulated period only (1975-93). See REMARKS.

a Backwater from Elm River.

b Gage height, 15.27 ft, backwater from downstream tributaries.

c Gage height, 16.15 ft.

d Backwater from downstream tributaries.

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 current year (seasonal records only).

pH: December 1987 to current year (seasonal records only).

WATER TEMPERATURE: October 1966 to September 1981; April 1986 to current year (seasonal records only).

DISSOLVED OXYGEN: November 1987 to current year (seasonal records only).

REMARKS.--Daily records of specific conductance, pH, water temperature, and dissolved oxygen were determined from data recorded at hourly intervals by a water-quality monitor. The water-quality monitor was shut off from Nov. 5 to Apr. 8. Other interruptions in record were due to malfunction of the sensors or recording instruments.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 3,080 microsiemens, Nov. 11, 1991; minimum recorded, 240 microsiemens, Mar. 17, 1972.

WATER TEMPERATURE: Maximum recorded, 36.5°C, June 21, 1988; minimum recorded, 0.0°C on many days during winter periods.

pH: Maximum recorded, 9.9, Mar. 18, 1988; minimum recorded, 6.6, July 6, 8, 9, 14, 1993.

DISSOLVED OXYGEN: Maximum recorded, 19.8 mg/L, Apr. 20, 1989; minimum recorded, 0.0 mg/L, June 2, 1988, July 4-21, 1991.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	ALKA- LINIT- WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)
OCT											
14...	1315	52	1480	8.2	406	495	0	7.5	7.0	2.5	730
DEC											
09...	1100	13	1740	8.0	482	588	0	4.0	0.5	5.3	717
FEB											
03...	1130	5.9	2440	7.8	618	754	0	0.0	0.5	5.8	735
APR											
28...	1100	320	817	8.0	224	273	0	19.0	12.5	2.5	726
MAY											
26...	1045	69	850	7.7	--	--	--	19.0	16.5	1.4	729
JUL											
14...	1045	268	830	7.6	--	--	--	18.5	19.0	0.60	730
AUG											
18...	1330	1140	580	7.8	230	281	0	24.0	24.5	2.0	726
SEP											
07...	1130	1110	677	7.8	--	--	--	19.0	18.0	1.2	729

DATE	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	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 PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
OCT 14...	10.4	90	--	160	220	390	72	50	160	46	4
DEC 09...	12.3	91	--	K4	K31	480	88	63	200	46	4
FEB 03...	1.8	13	--	200	60	650	120	86	250	44	4
APR 28...	6.4	63	--	46	80	220	43	28	81	42	2
MAY 26...	6.8	73	--	--	--	230	44	30	84	42	2
JUL 14...	2.9	33	1.6	--	--	230	43	30	85	42	2
AUG 18...	2.8	35	--	K20	270	220	47	25	46	31	1
SEP 07...	3.6	40	--	--	--	250	52	28	46	27	1

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)
OCT 14...	21	407	240	94	0.30	31	912	948	1.29	133	--
DEC 09...	22	483	300	110	0.40	24	1100	964	1.31	33.8	--
FEB 03...	22	620	350	140	0.40	37	1380	1470	2.00	23.4	--
APR 28...	13	220	130	49	0.20	8.3	487	541	0.74	467	--
MAY 26...	15	258	120	48	0.30	--	497	542	0.74	101	<1
JUL 14...	17	247	120	46	0.30	--	491	526	0.72	381	<1
AUG 18...	2.7	232	78	23	0.20	26	388	424	0.58	1310	--
SEP 07...	15	259	72	20	0.20	--	391	438	0.60	1310	8

DATE	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, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOR- THO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (MG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 14...	0.030	0.04	1.9	<0.010	<0.050	--	0.200	0.160	0.130	--	--
DEC 09...	0.020	0.03	2.0	0.020	0.130	0.110	0.190	0.120	0.110	<10	--
FEB 03...	0.860	1.1	3.1	<0.010	<0.050	--	0.530	0.400	0.380	<10	--
APR 28...	0.020	0.03	1.1	<0.010	<0.050	--	0.190	0.110	0.090	<10	--
MAY 26...	0.030	0.04	1.1	<0.010	<0.050	--	0.260	0.230	0.210	--	3
JUL 14...	0.040	0.05	--	<0.010	<0.050	--	--	0.310	0.270	--	--
AUG 18...	0.050	0.06	1.0	<0.010	<0.050	--	0.450	0.430	0.390	<10	--
SEP 07...	0.100	0.13	--	<0.010	0.053	--	--	0.410	0.410	--	--

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	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)
OCT 14...	--	--	--	--	--	--	--	--	--	--	--
DEC 09...	--	120	--	--	--	<3	--	--	14	--	120
FEB 03...	--	200	--	--	--	2	--	--	280	--	160
APR 28...	--	64	--	--	--	<3	--	--	24	--	49
MAY 26...	4	--	260	<1	<10	--	<1	90	16	<1	--
JUL 14...	5	--	280	--	<10	--	1	--	22	<1	--
AUG 18...	--	79	--	--	--	<3	--	--	28	--	33
SEP 07...	6	--	120	--	<10	--	2	--	30	<1	--

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MANGA-NESE, TOTAL RECOVERABLE (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)	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 14...	--	--	--	--	--	--	--	--	--	--	--
DEC 09...	--	29	--	<10	3	--	<1	<1.0	480	<6	--
FEB 03...	--	2600	--	4	6	--	<1	<1.0	640	6	--
APR 28...	--	39	--	<10	2	--	<1	<1.0	240	<6	--
MAY 26...	90	61	<0.1	--	--	<1	<1	--	--	--	<3
JUL 14...	--	96	<0.1	--	--	--	<1	--	--	--	7
AUG 18...	--	290	--	<10	2	--	<1	<1.0	240	<6	--
SEP 07...	--	230	<0.1	--	--	--	<1	--	--	--	10

DATE	CYANIDE TOTAL (MG/L AS CN) (00720)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	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, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 14...	--	--	--	--	--	--	--	--	--	--
DEC 09...	--	--	--	--	--	--	--	134	4.7	58
FEB 03...	--	--	--	--	--	--	--	213	3.4	77
APR 28...	--	--	--	--	--	--	--	20	17	85
MAY 26...	<0.010	<0.01	15	--	--	--	--	--	--	--
JUL 14...	--	<0.01	--	0.600	<0.100	470	470	--	--	--
AUG 18...	--	--	--	--	--	--	--	10	31	94
SEP 07...	--	<0.01	--	--	--	--	--	--	--	--

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1430	1410	1420	1370	1320	1340	---	---	---	---	---	---
2	1440	1410	1420	---	---	---	---	---	---	---	---	---
3	1440	1420	1430	---	---	---	---	---	---	---	---	---
4	1460	1430	1440	---	---	---	---	---	---	---	---	---
5	1460	1440	1450	---	---	---	---	---	---	---	---	---
6	1460	1440	1450	---	---	---	---	---	---	---	---	---
7	1450	1440	1450	---	---	---	---	---	---	---	---	---
8	1450	1440	1440	---	---	---	---	---	---	---	---	---
9	1460	1440	1450	---	---	---	---	---	---	---	---	---
10	1450	1440	1440	---	---	---	---	---	---	---	---	---
11	1450	1430	1440	---	---	---	---	---	---	---	---	---
12	1440	1430	1440	---	---	---	---	---	---	---	---	---
13	1470	1420	1440	---	---	---	---	---	---	---	---	---
14	1430	1410	1420	---	---	---	---	---	---	---	---	---
15	1430	1400	1410	---	---	---	---	---	---	---	---	---
16	1410	1390	1400	---	---	---	---	---	---	---	---	---
17	1400	1380	1400	---	---	---	---	---	---	---	---	---
18	1400	1380	1390	---	---	---	---	---	---	---	---	---
19	1400	1380	1390	---	---	---	---	---	---	---	---	---
20	1430	1380	1390	---	---	---	---	---	---	---	---	---
21	1400	1380	1390	---	---	---	---	---	---	---	---	---
22	1400	1380	1390	---	---	---	---	---	---	---	---	---
23	1410	1380	1390	---	---	---	---	---	---	---	---	---
24	1420	1380	1390	---	---	---	---	---	---	---	---	---
25	1410	1390	1400	---	---	---	---	---	---	---	---	---
26	1400	1390	1390	---	---	---	---	---	---	---	---	---
27	1400	1390	1400	---	---	---	---	---	---	---	---	---
28	1400	1390	1390	---	---	---	---	---	---	---	---	---
29	1410	1390	1400	---	---	---	---	---	---	---	---	---
30	1400	1390	1390	---	---	---	---	---	---	---	---	---
31	1400	1370	1390	---	---	---	---	---	---	---	---	---
MONTH	1470	1370	1410	---	---	---	---	---	---	---	---	---
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	790	770	780
2	---	---	---	---	---	---	---	---	---	780	770	780
3	---	---	---	---	---	---	---	---	---	790	770	780
4	---	---	---	---	---	---	---	---	---	790	780	780
5	---	---	---	---	---	---	---	---	---	800	780	790
6	---	---	---	---	---	---	---	---	---	800	790	790
7	---	---	---	---	---	---	---	---	---	790	780	780
8	---	---	---	---	---	---	---	---	---	790	770	780
9	---	---	---	---	---	---	1160	1140	1150	780	760	770
10	---	---	---	---	---	---	1190	1150	1180	780	760	770
11	---	---	---	---	---	---	1180	1150	1170	790	770	780
12	---	---	---	---	---	---	1160	1130	1140	800	780	790
13	---	---	---	---	---	---	1140	1110	1130	800	790	790
14	---	---	---	---	---	---	1120	1080	1100	800	790	800
15	---	---	---	---	---	---	1080	1030	1050	800	780	790
16	---	---	---	---	---	---	1030	1010	1020	800	790	800
17	---	---	---	---	---	---	1020	990	1000	810	790	800
18	---	---	---	---	---	---	1000	960	980	810	790	800
19	---	---	---	---	---	---	960	920	940	810	790	800
20	---	---	---	---	---	---	930	890	910	810	790	800
21	---	---	---	---	---	---	890	870	890	820	800	810
22	---	---	---	---	---	---	900	870	880	820	810	820
23	---	---	---	---	---	---	870	830	850	820	790	810
24	---	---	---	---	---	---	840	800	820	800	780	790
25	---	---	---	---	---	---	800	780	800	810	750	780
26	---	---	---	---	---	---	790	770	780	820	770	810
27	---	---	---	---	---	---	790	770	780	810	790	800
28	---	---	---	---	---	---	790	770	780	810	790	800
29	---	---	---	---	---	---	790	780	790	810	800	810
30	---	---	---	---	---	---	790	780	780	810	800	800
31	---	---	---	---	---	---	---	---	---	810	800	800
MONTH	---	---	---	---	---	---	---	---	---	820	750	790

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

PH, IN STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

DISSOLVED OXYGEN, IN MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	6.9	6.5	6.7	---	---	---	---	---	---
2	7.3	5.7	6.3	---	---	---	---	---	---	---	---	---
3	7.0	5.5	6.1	---	---	---	---	---	---	---	---	---
4	6.8	5.3	5.9	---	---	---	---	---	---	---	---	---
5	6.5	5.4	5.9	---	---	---	---	---	---	---	---	---
6	6.4	5.2	5.9	---	---	---	---	---	---	---	---	---
7	6.5	5.8	6.1	---	---	---	---	---	---	---	---	---
8	6.4	6.1	6.3	---	---	---	---	---	---	---	---	---
9	6.2	5.5	6.0	---	---	---	---	---	---	---	---	---
10	6.8	5.6	6.3	---	---	---	---	---	---	---	---	---
11	6.7	5.9	6.3	---	---	---	---	---	---	---	---	---
12	7.0	6.0	6.5	---	---	---	---	---	---	---	---	---
13	7.0	6.1	6.6	---	---	---	---	---	---	---	---	---
14	7.4	6.7	7.1	---	---	---	---	---	---	---	---	---
15	7.4	6.6	6.9	---	---	---	---	---	---	---	---	---
16	7.8	6.7	7.2	---	---	---	---	---	---	---	---	---
17	8.2	7.2	7.7	---	---	---	---	---	---	---	---	---
18	8.3	7.5	7.9	---	---	---	---	---	---	---	---	---
19	8.5	7.7	8.2	---	---	---	---	---	---	---	---	---
20	8.5	7.7	8.1	---	---	---	---	---	---	---	---	---
21	8.3	7.3	7.8	---	---	---	---	---	---	---	---	---
22	8.0	6.7	7.4	---	---	---	---	---	---	---	---	---
23	7.3	5.6	6.3	---	---	---	---	---	---	---	---	---
24	6.5	4.8	5.4	---	---	---	---	---	---	---	---	---
25	5.6	4.4	4.9	---	---	---	---	---	---	---	---	---
26	5.8	5.0	5.5	---	---	---	---	---	---	---	---	---
27	6.5	5.2	5.8	---	---	---	---	---	---	---	---	---
28	6.5	5.9	6.2	---	---	---	---	---	---	---	---	---
29	6.7	5.7	6.2	---	---	---	---	---	---	---	---	---
30	6.8	6.2	6.5	---	---	---	---	---	---	---	---	---
31	6.7	6.3	6.5	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	8.8	6.3	7.6	
2	---	---	---	---	---	---	---	---	8.9	6.1	7.6	
3	---	---	---	---	---	---	---	---	9.2	5.4	7.3	
4	---	---	---	---	---	---	---	---	8.3	4.5	6.4	
5	---	---	---	---	---	---	---	---	7.3	3.7	5.4	
6	---	---	---	---	---	---	---	---	5.2	2.3	3.7	
7	---	---	---	---	---	---	---	---	4.8	2.1	3.4	
8	---	---	---	---	---	---	---	---	3.4	.9	2.1	
9	---	---	---	---	---	---	12.5	9.4	11.0	4.1	.9	2.5
10	---	---	---	---	---	---	11.6	7.8	9.1	4.8	1.2	3.0
11	---	---	---	---	---	---	12.2	9.4	10.5	5.6	.7	3.2
12	---	---	---	---	---	---	13.3	10.3	11.6	5.0	.7	2.9
13	---	---	---	---	---	---	12.3	9.7	11.0	4.5	.6	2.6
14	---	---	---	---	---	---	12.5	9.1	10.7	4.7	.5	2.5
15	---	---	---	---	---	---	12.4	9.0	10.6	4.2	.6	2.3
16	---	---	---	---	---	---	11.1	8.3	9.8	4.6	.8	2.5
17	---	---	---	---	---	---	10.5	6.9	8.7	4.6	1.0	2.8
18	---	---	---	---	---	---	10.3	6.3	8.3	4.6	1.3	2.9
19	---	---	---	---	---	---	12.0	8.6	9.9	3.9	1.5	2.9
20	---	---	---	---	---	---	11.2	8.6	9.9	4.1	1.8	2.9
21	---	---	---	---	---	---	10.1	7.1	8.7	4.1	1.7	2.8
22	---	---	---	---	---	---	9.4	6.9	8.0	3.9	1.3	2.5
23	---	---	---	---	---	---	8.0	4.8	6.5	3.0	.7	1.8
24	---	---	---	---	---	---	9.8	6.9	8.1	6.5	2.2	4.2
25	---	---	---	---	---	---	9.7	6.6	8.3	6.7	3.6	5.1
26	---	---	---	---	---	---	9.6	6.4	8.0	6.0	3.3	4.6
27	---	---	---	---	---	---	9.2	5.5	7.6	6.8	2.7	4.5
28	---	---	---	---	---	---	8.0	5.4	6.8	7.3	3.6	5.2
29	---	---	---	---	---	---	9.0	4.9	6.8	6.5	3.8	5.1
30	---	---	---	---	---	---	8.8	5.8	7.3	7.1	3.4	5.1
31	---	---	---	---	---	---	---	---	---	7.7	4.2	5.6
MONTH	---	---	---	---	---	---	---	---	---	9.2	.5	4.0

[illegible]

JAMES RIVER BASIN

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW1/4SE1/4 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 sea level, 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 except those for estimated daily discharges and July 6 to Aug. 8, which are poor. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	183	8.4	7.3	22	172	16
2	.00	.00	.00	.00	.00	.00	142	8.0	6.2	27	142	16
3	.00	.00	.00	.00	.00	.00	110	7.0	5.8	32	119	14
4	.00	.00	.00	.00	.00	.00	85	6.6	5.6	34	99	17
5	.00	.00	.00	.00	.00	.00	66	6.2	4.5	41	85	14
6	.00	.00	.00	.00	.00	.00	53	5.6	4.3	252	74	17
7	.00	.00	.00	.00	.00	.00	46	6.5	6.3	353	64	22
8	.00	.00	.00	.00	.00	e.50	40	7.2	8.2	353	57	24
9	.00	.00	.00	.00	.00	e.50	33	9.3	5.4	328	52	35
10	.00	.00	.00	.00	.00	e.50	29	8.2	4.0	287	47	32
11	.00	.00	.00	.00	.00	e.50	28	9.1	2.9	240	42	28
12	.00	.00	.00	.00	.00	e20	25	9.7	2.7	203	44	25
13	.00	.00	.00	.00	.00	e50	23	8.8	4.0	176	42	23
14	.00	.00	.00	.00	.00	e40	21	8.4	4.2	150	38	20
15	.00	.00	.00	.00	.00	e30	19	8.0	4.4	124	37	17
16	.00	.00	.00	.00	.00	e40	17	9.2	5.9	149	36	17
17	.00	.00	.00	.00	.00	e40	16	12	6.8	169	33	17
18	.00	.00	.00	.00	.00	e30	16	13	7.0	179	33	15
19	.00	.00	.00	.00	.00	e25	15	14	11	253	31	11
20	.00	.00	.00	.00	.00	e30	13	13	11	563	29	9.4
21	.00	.00	.00	.00	.00	e30	12	12	10	691	28	10
22	.00	.00	.00	.00	.00	e25	12	12	8.5	567	30	11
23	.00	.00	.00	.00	.00	e30	11	14	7.9	363	31	9.0
24	.00	.00	.00	.00	.00	e32	11	14	7.1	273	30	6.6
25	.00	.00	.00	.00	.00	34	10	13	5.9	276	25	6.6
26	.00	.00	.00	.00	.00	43	9.3	13	5.3	264	24	8.5
27	.00	.00	.00	.00	.00	75	9.6	13	5.7	232	19	14
28	.00	.00	.00	.00	.00	217	8.8	11	8.8	270	20	9.4
29	.00	.00	.00	.00	---	264	8.4	9.7	14	265	19	7.7
30	.00	.00	.00	.00	---	252	8.2	11	20	220	17	12
31	.00	---	.00	.00	---	242	---	9.0	---	202	18	---
TOTAL	0.00	0.00	0.00	0.00	0.00	1551.00	1080.3	309.9	210.7	7558	1537	484.2
MEAN	.000	.000	.000	.000	.000	50.0	36.0	10.0	7.02	244	49.6	16.1
MAX	.00	.00	.00	.00	.00	264	183	14	20	691	172	35
MIN	.00	.00	.00	.00	.00	.00	8.2	5.6	2.7	22	17	6.6
AC-FT	.00	.00	.00	.00	.00	3080	2140	615	418	14990	3050	960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY)

	MEAN	1.07	.45	.27	.073	.29	67.4	81.9	20.9	17.0	31.0	6.95	1.63
MAX	18.3	6.37	4.16	1.16	4.47	419	788	106	131	446	142	16.1	16.1
(WY)	1987	1987	1987	1987	1987	1984	1966	1969	1986	1964	1962	1966	1993
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1957	1957	1957	1957	1957	1957	1959	1959	1959	1959	1959	1959	1958

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1957 - 1993

ANNUAL TOTAL	332.47	12731.10	
ANNUAL MEAN	.91	34.9	19.2a
HIGHEST ANNUAL MEAN			70.5
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	42	Jun 26	5500
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
INSTANTANEOUS PEAK FLOW		708	5930
INSTANTANEOUS PEAK STAGE		9.46	16.05
ANNUAL RUNOFF (AC-FT)	659	25250	13910
10 PERCENT EXCEEDS	.06	103	24
50 PERCENT EXCEEDS	.00	6.6	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a Median of annual mean discharges, 11 ft³/s.

b Also 1988 and 1990.

c No flow for long periods in each year.

d Backwater from ice.

JAMES RIVER BASIN

06471500 ELM RIVER AT WESTPORT, SD

LOCATION.--Lat 45°39'22", long 98°29'48", in SW1/4NW1/4 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 sea level. 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 fair. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	e.70	e8.0	e4.0	e1.0	e5.0	255	.83	8.9	15	417	168
2	11	e.70	e8.0	e3.0	e1.0	e5.0	190	.77	9.2	18	360	137
3	11	e.70	e5.0	e2.0	e.50	e3.0	143	.79	9.0	22	313	115
4	11	e.40	e4.0	e1.0	e1.0	e2.0	113	.81	7.8	26	268	101
5	12	e.30	e3.0	e1.0	e.50	e3.0	87	.74	7.0	26	231	94
6	12	e.20	e3.0	e3.0	e.50	e5.0	72	.85	6.3	26	198	87
7	12	e.20	e3.0	e3.0	e2.0	e10	63	2.2	6.8	31	174	81
8	12	e.10	e3.0	e3.0	e3.5	e70	54	10	8.0	146	155	75
9	12	e.10	e3.0	e2.0	e4.0	e100	48	30	7.2	237	141	71
10	11	e.10	e3.0	e1.0	e4.0	e80	42	33	6.3	232	318	65
11	9.6	e.10	e5.0	e1.0	e4.0	e50	41	19	6.6	208	356	62
12	8.9	e.10	e5.0	e1.0	e4.0	e40	34	9.9	6.5	179	302	61
13	8.9	e2.0	e5.0	e3.0	e3.0	e30	28	6.1	6.5	158	240	56
14	8.8	e.20	e4.0	e3.0	e3.0	e25	25	5.6	5.4	139	226	51
15	5.7	e.10	e3.0	e3.0	e2.5	e50	22	8.0	4.1	125	231	42
16	4.5	e.05	e3.0	e2.5	e2.5	e300	19	8.8	7.0	151	212	37
17	4.4	e2.0	e2.0	e2.0	e2.0	e150	15	9.0	6.9	216	192	33
18	4.4	e5.0	e2.0	e2.0	e2.0	e120	13	7.3	6.2	159	171	31
19	4.4	e5.0	e1.0	e2.0	e2.0	e90	11	6.8	7.4	168	151	30
20	4.4	e5.0	e1.0	e1.5	e2.0	e90	9.9	6.2	7.8	202	135	33
21	4.4	e5.0	e1.0	e1.5	e2.0	e60	7.8	6.3	7.1	634	121	33
22	4.4	e5.0	e1.0	e2.0	e2.0	e50	5.7	7.2	6.7	896	109	29
23	e4.0	e5.0	e1.0	e2.0	e1.5	e60	4.6	11	8.6	741	98	24
24	e3.5	e5.0	e1.0	e1.5	e1.0	e60	4.4	13	10	588	88	22
25	e3.5	e4.5	e1.0	e1.5	e1.0	e62	3.7	13	8.5	481	82	21
26	e3.0	e4.0	e1.0	e2.5	e1.0	e50	3.4	13	7.9	433	77	20
27	e2.5	e4.0	e1.0	e2.5	e3.0	e45	3.0	11	7.9	519	71	17
28	e2.0	e4.0	e.50	e2.5	e5.0	e50	2.0	8.9	7.6	580	66	16
29	e1.5	e4.0	e3.0	e1.5	---	e140	1.1	8.9	12	613	169	14
30	e1.0	e8.0	e5.0	e.50	---	277	1.1	9.1	18	571	214	13
31	e.70	---	e4.0	e.50	---	265	---	9.0	---	480	207	---
TOTAL	208.50	71.55	93.50	62.50	61.50	2347.0	1321.7	277.09	235.2	9020	6093	1639
MEAN	6.73	2.38	3.02	2.02	2.20	75.7	44.1	8.94	7.84	291	197	54.6
MAX	12	8.0	8.0	4.0	5.0	300	255	33	18	896	417	168
MIN	.70	.05	.50	.50	.50	2.0	1.1	.74	4.1	15	66	13
AC-FT	414	142	185	124	122	4660	2620	550	467	17890	12090	3250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1993, BY WATER YEAR (WY)

	MEAN	6.14	4.78	3.66	3.17	4.35	122	213	54.5	52.1	49.7	15.3	6.93
MAX	21.9	9.58	8.55	19.9	24.7	904	2399	464	584	606	197	54.6	
(WY)	1987	1987	1985	1946	1984	1966	1950	1964	1962	1993	1993	1993	
MIN	.79	.74	.20	.20	.000	1.03	.99	.63	.61	2.81	.53	.34	
(WY)	1979	1946	1946	1950	1949	1952	1957	1959	1946	1949	1946	1946	

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1946 - 1993

ANNUAL TOTAL	1870.41	21430.54	
ANNUAL MEAN	5.11	58.7	44.7a
HIGHEST ANNUAL MEAN			222
LOWEST ANNUAL MEAN			4.17
HIGHEST DAILY MEAN	30	Mar 1	896
LOWEST DAILY MEAN	.05	Nov 16	.05
ANNUAL SEVEN-DAY MINIMUM	.13	Nov 6	.13
INSTANTANEOUS PEAK FLOW			923
INSTANTANEOUS PEAK STAGE			8.91
ANNUAL RUNOFF (AC-FT)	3710	42510	32380
10 PERCENT EXCEEDS	12	191	48
50 PERCENT EXCEEDS	3.6	7.8	4.9
90 PERCENT EXCEEDS	.80	1.0	1.0

e Estimated

a Median of annual mean discharges, 25 ft³/s.

b No flow for many days in most years prior to 1960.

JAMES RIVER BASIN

06471550 JAMES RIVER BELOW COLUMBIA, SD

LOCATION.--Lat 45°36'17", long 98°18'15", in SW1/4SE1/4SW1/4 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.

REVISED RECORDS.--WDR SD-91-1: 1990 maximum gage height.

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 1,274.11 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and those for Apr. 19 to May 1 and June 4 to Sept. 30, 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, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	57	e18	e6.0	e6.0	e5.0	297	270	77	137	1160	1330
2	24	56	e17	e5.0	e7.0	e5.0	297	255	74	155	1130	1320
3	25	54	e16	e5.0	e7.0	e5.0	285	248	67	174	1090	1300
4	26	52	e16	e5.0	e6.0	e6.0	267	238	61	192	1040	1270
5	27	56	e16	e5.0	e6.0	e6.0	247	223	57	208	1010	1260
6	28	50	e16	e5.0	e5.0	e7.0	227	203	54	223	1010	1250
7	30	49	e16	e5.0	e5.0	e7.0	210	189	55	236	1010	1230
8	33	46	e16	e5.0	e5.0	e7.0	193	174	59	251	1020	1210
9	38	44	e16	e5.0	e4.0	e9.0	175	167	62	282	1040	1190
10	43	45	e16	e5.0	e4.0	e9.0	168	163	64	359	1050	1170
11	48	46	e16	e5.0	e4.0	e9.0	185	165	66	409	1160	1160
12	51	45	e15	e5.0	e4.0	e30	200	163	67	428	1270	1160
13	54	42	e15	e5.0	e4.0	e75	203	156	67	436	1290	1160
14	55	e40	e14	e4.0	e4.0	e60	207	148	67	445	1310	1160
15	56	e38	e14	e4.0	e3.5	e50	222	142	69	451	1310	1120
16	56	e35	e14	e4.0	e3.5	e50	238	139	76	471	1300	1090
17	56	e33	e13	e4.0	e3.5	e60	250	136	79	570	1290	1090
18	56	e31	e13	e4.0	e3.5	e100	264	132	84	692	1340	1080
19	56	e31	e10	e4.0	e3.5	e90	280	129	89	782	1370	1080
20	55	e30	e10	e4.0	e3.5	e90	300	122	91	828	1370	1130
21	55	e29	e12	e5.0	e3.5	e80	320	115	92	846	1340	1120
22	55	e28	e10	e5.0	e3.5	e80	320	108	90	870	1310	1120
23	54	e27	e10	e5.0	e3.5	e70	320	105	90	950	1300	1110
24	54	e26	e12	e4.5	e3.0	e70	330	108	103	1000	1290	1100
25	53	e25	e10	e4.5	e4.0	e100	335	109	107	1050	1260	1080
26	52	e24	e9.0	e5.0	e4.0	e150	335	103	110	1010	1240	1080
27	52	e23	e9.0	e5.0	e4.0	e250	330	97	111	969	1240	1070
28	51	e21	e9.0	e5.0	e4.0	264	325	92	114	1020	1200	1070
29	51	e19	e8.0	e5.0	---	222	310	89	120	1080	1230	1060
30	51	e19	e7.0	e5.0	---	198	285	85	129	1130	1320	1050
31	52	---	e6.0	e6.0	---	276	---	82	---	1170	1350	---
TOTAL	1421	1121	399.0	149.0	121.5	2440.0	7925	4655	2451	18824	37650	34620
MEAN	45.8	37.4	12.9	4.81	4.34	78.7	264	150	81.7	607	1215	1154
MAX	56	57	18	6.0	7.0	276	335	270	129	1170	1370	1330
MIN	24	19	6.0	4.0	3.0	5.0	168	82	54	137	1010	1050
AC-FT	2820	2220	791	296	241	4840	15720	9230	4860	37340	74680	68670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1989	1990	1991	1992	1993
MEAN	9.36	8.16	2.93	1.29	2.88	51.1	245	51.8	25.8	153
MAX	45.8	37.4	12.9	4.81	8.80	150	951	150	81.7	607
(WY)	1993	1993	1993	1992	1989	1989	1989	1993	1993	1993
MIN	.011	.22	.27	.096	.11	2.16	2.06	1.75	1.29	1.20
(WY)	1989	1989	1989	1989	1989	1991	1991	1990	1990	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	6136.26	111776.5	86.6
ANNUAL MEAN	16.8	306	306
HIGHEST ANNUAL MEAN			1.44
LOWEST ANNUAL MEAN			1600
HIGHEST DAILY MEAN	57	Nov 1	1370
LOWEST DAILY MEAN	.01	Jun 14	3.0
ANNUAL SEVEN-DAY MINIMUM	.04	Jun 10	3.4
INSTANTANEOUS PEAK FLOW			1390
INSTANTANEOUS PEAK STAGE			13.76
ANNUAL RUNOFF (AC-FT)	12170	221700	62740
10 PERCENT EXCEEDS	40	1160	168
50 PERCENT EXCEEDS	13	74	2.0
90 PERCENT EXCEEDS	.84	5.0	.10

e Estimated

a Some days most years.

b Gage height, 13.67 ft, backwater.

c Backwater.

d Backwater from ice.

JAMES RIVER BASIN

06473000 JAMES RIVER AT ASHTON, SD

LOCATION.--Lat 44°59'54", long 98°28'50", in NW1/4NW1/4NE1/4 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 sea level. 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 fair except those for Feb. 16 to Mar. 31, 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 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	41	34	e8.0	e6.5	e6.5	380	306	138	112	1020	1190
2	17	42	34	e8.0	e7.0	e6.5	357	310	136	148	1040	1210
3	17	43	32	e8.0	e7.0	e6.5	341	311	129	153	1050	1230
4	18	42	e30	e7.5	e7.0	e7.0	331	311	123	151	1060	1250
5	18	41	e30	e7.5	e7.5	e8.0	329	310	118	155	1060	1280
6	20	40	29	e7.5	e7.0	e9.0	333	306	113	162	1070	1310
7	20	40	27	e7.0	e7.0	e10	343	312	112	176	1080	1340
8	20	40	26	e7.0	e6.5	e10	344	311	109	198	1090	1360
9	20	41	25	e7.0	e6.5	e10	342	319	109	222	1110	1380
10	20	41	24	e6.5	e6.0	e9.0	344	327	104	245	1120	1380
11	20	42	23	e6.5	e6.0	e9.0	350	334	100	268	1140	1370
12	20	41	22	e6.5	e5.5	e8.0	354	332	96	289	1160	1370
13	20	41	22	e6.5	e5.5	e8.0	359	328	89	308	1160	1350
14	20	40	22	e6.0	e5.0	e8.0	363	321	86	324	1160	1330
15	19	41	22	e6.0	e5.0	e10	360	308	84	338	1170	1310
16	21	42	21	e6.0	e4.5	e12	359	297	85	380	1160	1290
17	22	43	20	e6.0	e4.5	e11	357	286	86	489	1150	1280
18	22	43	19	e6.0	e4.5	e11	346	276	81	546	1140	1270
19	25	45	18	e6.5	e5.0	e13	345	263	82	615	1130	1270
20	27	45	15	e6.5	e5.0	e14	338	249	81	626	1130	1270
21	31	44	e15	e6.5	e5.0	e15	331	236	79	636	1130	1260
22	33	43	e15	e7.0	e5.0	e15	324	223	76	657	1130	1250
23	33	42	e15	e7.0	e4.0	e15	314	211	76	697	1140	1240
24	35	41	e14	e7.0	e4.5	e20	342	200	80	e750	1140	1240
25	35	39	e13	e7.0	e5.0	e50	e320	189	82	e800	1140	1230
26	36	35	e12	e7.0	e5.0	e70	303	179	83	825	1140	1220
27	36	39	e12	e7.0	e5.0	e150	301	171	80	863	1140	1210
28	38	37	e11	e6.5	e6.0	e250	300	161	78	900	1140	1200
29	39	35	e10	e6.5	---	e300	300	151	87	917	1150	1190
30	40	35	e9.0	e6.5	---	e400	301	144	95	937	1170	1180
31	38	---	e8.0	e6.5	---	e410	---	139	---	985	1180	---
TOTAL	797	1224	629.0	211.0	158.0	1881.5	10111	8121	2877	14872	34800	38260
MEAN	25.7	40.8	20.3	6.81	5.64	60.7	337	262	95.9	480	1123	1275
MAX	40	45	34	8.0	7.5	410	380	334	138	985	1180	1380
MIN	17	35	8.0	6.0	4.0	6.5	300	139	76	112	1020	1180
AC-FT	1580	2430	1250	419	313	3730	20060	16110	5710	29500	69030	75890

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1993, BY WATER YEAR (WY)

	MEAN	34.7	42.3	29.9	9.67	5.90	62.7	405	535	326	223	161	81.5
MAX	332	291	187	75.6	53.9	380	2321	2984	2440	938	1123	1275	
(WY)	1976	1976	1980	1970	1987	1987	1969	1950	1950	1950	1993	1993	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
(WY)	1950	1950	1946	1950	1948	1956	1959	1959	1959	1959	1959	1958	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1946 - 1993

ANNUAL TOTAL	13812.51	113941.5	160a	
ANNUAL MEAN	37.7	312	639	
HIGHEST ANNUAL MEAN			.000	1969
LOWEST ANNUAL MEAN				1959
HIGHEST DAILY MEAN	358	Jul 2	1380	Sep 9
LOWEST DAILY MEAN	.05	Jun 4	4.0	Feb 23
ANNUAL SEVEN-DAY MINIMUM	.12	Jun 2	4.7	Feb 17
INSTANTANEOUS PEAK FLOW			1390	Sep 10c
INSTANTANEOUS PEAK STAGE			13.49	Aug 1b
ANNUAL RUNOFF (AC-FT)	27400	226000	115900	
10 PERCENT EXCEEDS	91	1160	545	
50 PERCENT EXCEEDS	17	80	16	
90 PERCENT EXCEEDS	.90	6.5	.00	

e Estimated

a Median of annual mean discharges, 110 ft³/s.

b Backwater from Snake Creek.

c Gage height, 12.92 ft, backwater.

d Gage height, 20.63 ft.

JAMES RIVER BASIN

06476000 JAMES RIVER AT HURON, SD

LOCATION.--Lat 44°21'49", long 98°11'56", in SW1/4SE1/4NE1/4 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.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to September 1932, August 1943 to current year. Monthly discharge only for some periods from August 1928 to September 1932, 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 sea level. 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 and July 26 to Sept. 30, 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 May 1974. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	27	42	e23	28	18	871	424	202	696	3340	1500
2	10	33	40	22	30	17	876	395	207	683	3280	1520
3	12	38	41	21	25	16	858	370	196	736	3180	1540
4	9.3	40	40	20	24	15	775	355	193	882	3070	1530
5	9.1	33	39	18	23	17	658	339	169	896	2950	1530
6	12	35	39	18	24	22	652	326	170	861	2840	1540
7	19	39	38	18	24	54	680	355	173	836	2730	1540
8	19	39	37	18	24	81	663	439	200	847	2580	1540
9	8.7	38	37	18	24	101	601	615	261	865	2500	1590
10	14	40	37	18	27	154	591	626	250	860	2340	1620
11	10	39	35	19	28	142	649	568	259	877	2230	1670
12	13	43	35	20	28	154	628	517	217	839	2160	1670
13	9.7	43	36	18	25	152	623	431	219	846	2020	1660
14	14	42	34	18	24	139	689	424	225	834	2040	1610
15	10	43	35	21	23	126	696	396	184	782	2060	1520
16	9.9	46	33	24	22	123	665	373	188	767	2150	1500
17	12	42	33	24	21	120	625	357	231	1210	2090	1530
18	8.4	40	32	24	21	126	617	357	260	1250	2040	1530
19	1.8	42	32	24	19	137	632	336	319	1370	1980	1520
20	7.1	44	32	24	19	154	560	320	412	1430	1940	1530
21	3.1	45	32	24	20	171	494	293	449	1460	1910	1500
22	1.4	43	32	24	e19	170	476	287	369	1580	1890	1500
23	8.7	42	30	25	e17	164	454	337	332	1590	1860	1490
24	11	46	29	24	e17	165	498	317	1110	1680	1800	1480
25	15	47	29	25	e17	218	461	248	1500	1940	1770	1460
26	11	43	28	24	e17	310	372	223	1320	2570	1710	1440
27	14	46	28	24	e18	443	426	232	1040	3130	1630	1380
28	15	44	27	24	19	502	413	221	746	3320	1580	1360
29	14	44	e26	24	---	558	403	195	632	3390	1560	1350
30	14	43	e24	25	---	676	376	219	785	3410	1560	1280
31	16	---	e23	25	---	825	---	198	---	3390	1540	---
TOTAL	341.7	1229	1035	678	627	6070	17982	11093	12818	45827	68330	45430
MEAN	11.0	41.0	33.4	21.9	22.4	196	599	358	427	1478	2204	1514
MAX	19	47	42	25	30	825	876	626	1500	3410	3340	1670
MIN	1.4	27	23	18	17	15	372	195	169	683	1540	1280
AC-FT	678	2440	2050	1340	1240	12040	35670	22000	25420	90900	135500	90110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1993, BY WATER YEAR (WY)

	MEAN	38.8	41.9	36.2	21.1	22.0	340	810	666	455	282	211	97.5
MAX	313	275	211	159	157	2007	5510	3617	2834	1478	2204	1514	
(WY)	1976	1976	1980	1970	1984	1986	1969	1986	1950	1993	1993	1993	
MIN	.000	.000	.000	.000	.000	3.29	1.37	.000	.000	.000	.000	.000	
(WY)	1946	1946	1946	1946	1956	1965	1959	1959	1959	1959	1959	1949	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1929-1932, 1944-1993

ANNUAL TOTAL	29961.68	211460.7	244a	
ANNUAL MEAN	81.9	579	1010	1969
HIGHEST ANNUAL MEAN			.51	1959
LOWEST ANNUAL MEAN				
HIGHEST DAILY MEAN	1050	3410	8940	Apr 12 1969
LOWEST DAILY MEAN	.00	1.4	.00	Oct 12 1944b
ANNUAL SEVEN-DAY MINIMUM	.00	5.9	.00	Sep 29 1945c
INSTANTANEOUS PEAK FLOW		3440	9000	Apr 13 1969
INSTANTANEOUS PEAK STAGE		13.41	16.70	Apr 13 1969
ANNUAL RUNOFF (AC-FT)	59430	419400	176800	
10 PERCENT EXCEEDS	233	1660	764c	
50 PERCENT EXCEEDS	34	196	38c	
90 PERCENT EXCEEDS	1.0	17	.00c	

e Estimated

a Median of annual mean discharges, 140 ft³/s.

b No flow for long periods in most years.

c Reflects water years 1944-93 only.

d Gage height, 13.36 ft, backwater.

e Backwater.

JAMES RIVER BASIN

06476000 JAMES RIVER AT HURON, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1948 to September 1952, October 1955 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1956 to October 1970, September 1971 to current year.

WATER TEMPERATURE: September 1956 to October 1970, September 1971 to current year.

REMARKS.--Water temperature and specific conductance samples collected once daily by observer.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,170 microsiemens, Mar. 14, 1965; minimum daily, 175 microsiemens, Mar. 30, Apr. 2, 1960.

WATER TEMPERATURE: Maximum daily, 32.5°C, June 27, 1990; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed daily, 2,250 microsiemens, Jan. 2; minimum observed daily, 420 microsiemens, June 30.

WATER TEMPERATURE: Maximum observed, 25.0°C, Aug. 9, 10; minimum observed daily, 1.0°C, Dec. 3.

SPECIFIC CONDUCTANCE, IN MICROSIEMENS PER CENTIMETER AT 25 °CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1230	840	1850	2180	2350	1500	770	1100	1160	1000	630	930
2	1240	1050	1850	2320	2400	1900	650	1140	1140	1070	680	900
3	1250	840	1280	2340	2400	750	690	1180	1180	1100	750	900
4	1270	610	1470	1130	2400	840	900	1200	1200	1170	820	900
5	1250	950	1300	520	2400	1740	890	1220	1170	1140	810	880
6	1240	1350	1850	---	2400	1120	750	1240	1170	1130	810	860
7	1240	1400	1760	---	2400	1840	700	1250	1210	1180	830	850
8	1240	1440	1850	---	2400	1500	700	1260	1210	1240	850	850
9	1240	1400	1700	---	2400	1550	710	1260	1250	1260	890	850
10	1240	1400	1800	---	2360	980	740	1260	1280	1230	890	870
11	1240	1400	1770	---	2350	600	800	1300	1360	1240	900	850
12	1230	1400	1570	---	1750	750	830	1360	1340	1280	1000	830
13	1220	1190	890	---	2300	650	880	1320	1240	1300	1000	800
14	1220	1400	1580	---	2270	960	880	1380	1170	1350	1000	790
15	1220	1300	1480	---	2250	970	930	1400	1130	1220	950	800
16	1220	1400	1460	---	2250	1530	970	1480	1080	1160	950	790
17	1210	1220	880	---	1800	1650	960	1340	1050	1110	960	800
18	1220	1400	1840	---	2160	1700	930	1340	1080	1130	1000	790
19	---	1100	1580	---	2130	1800	920	1340	1140	1120	1000	780
20	1210	1480	1600	1420	2000	1860	910	1340	1120	1060	980	790
21	---	1270	1830	450	2130	1900	910	1320	1060	1070	970	800
22	---	480	1180	1900	2070	1800	930	1300	1010	1020	960	800
23	---	850	940	2440	2070	1730	950	1280	1010	940	960	810
24	1230	1380	1240	2400	2080	1650	1000	1260	440	900	970	810
25	1250	1420	1280	2400	2000	1480	1000	1250	480	850	970	810
26	1260	1440	910	---	2000	1150	1020	1280	750	800	980	810
27	1270	870	1800	2400	---	750	1020	1280	980	710	980	820
28	1280	1300	1750	2440	2000	750	1050	1280	850	620	980	820
29	1280	1450	1500	2430	---	1100	1070	1280	620	600	980	830
30	1300	910	780	2440	---	1100	1080	1290	650	600	970	830
31	1300	---	1850	2440	---	1000	---	1280	---	580	970	---

JAMES RIVER BASIN

06476000 JAMES RIVER AT HURON, SD--Continued

WATER TEMPERATURE, IN DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	6.5	3.0	1.0	3.5	2.0	4.5	11.0	16.0	21.0	25.0	21.5
2	18.5	4.5	2.0	1.0	4.0	2.0	4.5	11.5	16.0	21.5	24.5	20.0
3	18.5	3.0	2.0	1.0	3.5	2.0	5.5	14.0	16.0	23.0	23.0	20.0
4	18.0	2.0	1.0	1.0	3.5	2.0	6.0	15.5	17.0	23.5	23.0	20.0
5	16.5	1.0	1.5	1.0	3.0	1.0	7.0	16.5	17.0	22.5	24.0	19.5
6	14.5	1.0	1.5	---	3.0	2.0	6.5	17.0	18.0	23.0	23.0	19.0
7	12.5	1.0	1.5	---	3.0	2.0	6.0	18.5	18.0	22.5	23.0	19.0
8	12.0	1.0	1.0	---	3.0	2.0	7.5	18.0	18.0	22.0	23.5	19.0
9	12.5	4.0	1.0	---	2.5	1.0	8.5	17.0	19.0	23.0	25.5	18.0
10	11.0	3.0	1.0	---	2.0	1.0	8.0	18.5	19.5	23.5	25.5	18.0
11	11.0	3.0	1.0	---	2.0	1.0	7.5	19.0	18.0	23.0	25.0	19.0
12	9.5	3.0	1.0	---	2.0	2.0	7.0	20.0	17.5	22.5	25.0	19.0
13	11.0	3.0	1.0	---	2.0	1.0	7.0	20.0	23.0	21.5	24.0	16.0
14	9.0	2.0	1.0	---	2.0	1.0	7.0	20.0	22.5	21.0	25.0	15.5
15	8.0	3.0	1.0	---	1.5	2.0	8.0	18.0	23.0	21.5	26.0	15.5
16	7.5	3.0	1.0	---	2.0	2.0	9.0	18.0	22.5	23.5	26.0	15.5
17	7.0	2.5	1.0	---	2.0	2.0	9.5	18.0	19.5	23.5	26.0	15.0
18	7.0	3.0	1.0	---	1.5	2.0	11.5	18.0	18.0	23.5	25.5	14.5
19	---	2.0	1.0	---	1.5	2.0	10.0	18.0	18.0	24.0	25.0	14.0
20	8.0	2.0	1.0	1.0	2.0	2.0	10.0	17.0	19.0	24.0	24.5	14.0
21	8.0	2.0	1.0	1.0	2.0	2.5	10.5	18.0	21.5	23.5	25.0	13.5
22	8.0	2.0	1.0	1.0	1.0	2.0	12.5	18.5	22.0	22.5	24.0	14.5
23	8.0	2.0	1.0	1.0	1.5	1.5	12.5	18.0	24.0	23.5	25.0	14.5
24	13.0	2.0	1.0	1.0	1.0	2.0	13.0	18.0	22.0	25.0	25.5	15.0
25	11.0	2.0	1.0	1.0	1.5	3.0	10.5	18.0	21.0	23.0	26.0	15.0
26	9.5	3.0	1.0	---	2.0	4.0	12.5	19.0	22.5	24.0	25.5	14.0
27	10.5	4.0	1.0	2.0	1.5	4.5	14.5	19.0	23.5	24.0	25.0	12.5
28	9.5	4.0	1.0	1.5	1.5	5.0	14.0	18.5	23.0	23.5	24.0	13.0
29	8.5	3.0	1.0	2.0	---	4.0	14.0	18.0	21.0	24.5	24.5	14.5
30	8.0	3.0	1.0	2.5	---	4.0	13.5	17.0	20.0	25.0	22.0	13.5
31	8.0	---	1.0	3.0	---	5.0	---	17.5	---	25.5	22.0	---

JAMES RIVER BASIN

06477000 JAMES RIVER NEAR FORESTBURG, SD

LOCATION.--Lat 43°58'26", long 98°04'14", in SW1/4SW1/4NW1/4 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 sea level (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. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in March 1920 and March 1922 reached a stage of about 18 ft, from information by local residents.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	36	e49	e29	e20	e22	1430	624	287	2390	3110	1690
2	12	47	e48	e28	e23	e26	1370	699	302	2300	3260	1650
3	12	51	e47	e27	e26	e28	1300	703	312	2260	3340	1640
4	11	51	e47	e26	e30	e30	1220	673	297	2330	3410	1630
5	11	45	e46	e25	e32	e38	1120	632	274	2370	3420	1620
6	11	44	e46	e24	e33	e50	1000	582	256	2370	3430	1610
7	12	46	e45	e23	e32	e90	937	596	239	2340	3390	1620
8	17	45	e45	e22	e32	e180	940	673	224	2330	3320	1630
9	16	47	e44	e21	e31	e300	930	845	239	2280	3230	1640
10	18	51	e44	e20	e31	e280	893	1090	270	2250	3090	1660
11	18	51	e43	e19	e31	e250	872	1320	291	2230	2930	1690
12	18	51	e43	e18	e30	e250	878	1420	303	2130	2800	1730
13	16	e50	e42	e18	e30	e250	879	1320	313	2030	2690	1750
14	16	50	e42	e17	e29	e280	889	1160	296	1900	2580	1760
15	15	51	e41	e17	e29	e300	921	987	278	1780	2570	1750
16	14	54	e40	e17	e28	e290	956	859	281	1660	2480	1700
17	13	56	e39	e17	e28	e260	956	778	326	1630	2420	1670
18	13	54	e38	e16	e27	e280	918	716	372	1690	2360	1670
19	12	55	e37	e16	e27	e300	881	653	517	1740	2320	1690
20	12	56	e37	e16	e26	e300	854	588	740	1800	2290	1730
21	12	56	e37	e16	e26	e300	814	525	874	1900	2270	1750
22	12	55	e36	e16	e25	e280	768	473	1160	2020	2230	1720
23	13	53	e35	e17	e25	e280	731	447	1370	2120	2190	1680
24	16	e52	e35	e16	e24	e336	706	450	1480	2170	2160	1660
25	20	e52	e34	e17	e24	e412	687	439	1770	2230	2100	1610
26	21	e51	e34	e17	e23	e539	659	393	2070	2320	2020	1570
27	18	e51	e33	e18	e23	e642	604	359	2260	2420	1940	1550
28	17	e50	e33	e17	e22	e882	562	332	2370	2550	1890	1520
29	17	e50	e32	e16	---	e1060	552	315	2440	2710	1840	1490
30	20	e49	e31	e16	---	e1460	528	304	2470	2850	1760	1450
31	25	---	e30	e16	---	e1500	---	293	---	2980	1730	---
TOTAL	472	1510	1233	598	767	11495	26755	21248	24681	68080	80570	49530
MEAN	15.2	50.3	39.8	19.3	27.4	371	892	685	823	2196	2599	1651
MAX	25	56	49	29	33	1500	1430	1420	2470	2980	3430	1760
MIN	11	36	30	16	20	22	528	293	224	1630	1730	1450
AC-FT	936	3000	2450	1190	1520	22800	53070	42150	48950	135000	159800	98240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1993, BY WATER YEAR (WY)

	MEAN	53.4	54.5	44.6	26.4	26.1	426	1010	762	534	332	247	126
MAX	429	282	196	173	104	2481	6284	5396	2920	2196	2599	1651	
(WY)	1987	1976	1976	1970	1987	1986	1969	1986	1962	1993	1993	1993	
MIN	.000	.000	.000	.000	.000	9.75	2.39	5.61	.39	.002	.004	.000	
(WY)	1977	1977	1977	1977	1977	1990	1990	1959	1981	1981	1976	1976	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1951 - 1993

ANNUAL TOTAL	35652.4	286939	
ANNUAL MEAN	97.4	786	
HIGHEST ANNUAL MEAN			304a
LOWEST ANNUAL MEAN			1321
HIGHEST DAILY MEAN	725	Jun 22	4.75
LOWEST DAILY MEAN	4.3	Jun 14	.00
ANNUAL SEVEN-DAY MINIMUM	5.0	Jun 10	.00
INSTANTANEOUS PEAK FLOW			12500
INSTANTANEOUS PEAK STAGE		14.13	Aug 4
ANNUAL RUNOFF (AC-FT)	70720	569100	220300
10 PERCENT EXCEEDS	240	2280	820
50 PERCENT EXCEEDS	45	300	45
90 PERCENT EXCEEDS	11	17	2.0

e Estimated

a Median of annual mean discharges, 180 ft³/s.

b No flow at times in some years.

JAMES RIVER BASIN

06477500 FIRESTEEL CREEK NEAR MOUNT VERNON, SD

LOCATION.--Lat 43°46'30", long 98°14'33", in SW1/4SW1/4 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 sea level.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	1.9	1.5	e.30	e2.0	e1.0	55	89	30	693	113	6.6
2	3.1	2.7	e1.5	e.40	e2.0	e1.5	50	220	30	482	89	6.3
3	2.3	2.8	1.4	e.50	e2.0	e2.0	45	363	29	1150	71	5.7
4	2.3	e3.0	1.3	e.50	e2.0	e4.0	42	346	28	1600	57	5.1
5	2.1	3.4	1.1	e.50	e2.0	e10	39	256	26	1830	49	4.7
6	2.1	2.8	1.2	e.50	e1.9	e40	38	193	24	1440	43	4.5
7	1.9	2.5	1.2	e.50	e1.8	e180	39	189	25	1070	39	4.4
8	1.8	2.4	1.1	e.50	e1.7	e500	51	216	23	849	36	4.6
9	1.8	2.7	.98	e.50	e1.6	e750	55	428	21	833	34	4.2
10	1.7	3.0	.96	e.40	e1.5	351	59	699	19	664	33	3.8
11	1.6	2.9	.93	e.50	e1.3	220	85	631	16	701	33	3.6
12	1.5	2.7	.94	e.60	e1.2	159	87	475	14	642	29	3.4
13	1.4	e2.5	.98	e.60	e1.0	106	90	324	35	522	27	3.6
14	1.3	2.3	.99	e.60	e.90	e90	95	237	32	429	25	3.8
15	1.2	2.1	.99	e.60	e.80	e70	95	178	25	321	24	3.5
16	1.3	1.9	.99	e.60	e.70	e60	98	140	23	248	23	3.2
17	1.4	1.8	.99	e.60	e.60	51	120	117	182	245	23	3.2
18	1.3	1.8	1.0	e.60	e.60	49	113	106	154	433	22	3.4
19	1.3	1.7	e1.0	e.60	e.70	46	95	87	303	426	20	7.8
20	1.2	1.9	e1.0	e.60	e.80	39	81	73	354	356	19	18
21	1.2	1.9	1.0	e.70	e.90	37	66	62	329	273	18	22
22	1.2	2.0	1.0	e.80	e.70	34	55	54	276	266	16	17
23	1.0	1.8	.99	e.80	e.60	35	48	49	223	477	14	14
24	.81	1.6	.99	e.80	e.50	39	47	46	302	785	13	12
25	1.0	1.6	.97	e.60	e.60	42	46	42	543	804	12	11
26	1.1	e1.4	.86	e.80	e.70	41	42	39	439	596	10	9.5
27	1.3	1.5	.83	e1.0	e.70	41	39	39	308	384	9.1	7.8
28	1.2	1.4	.66	e1.0	e.80	42	35	37	216	270	8.4	6.8
29	1.1	1.3	e.60	e.90	---	59	33	34	230	202	7.9	5.6
30	.97	1.4	e.50	e.80	---	62	35	32	568	169	7.9	5.3
31	.92	---	e.40	e1.5	---	59	---	31	---	140	7.3	---
TOTAL	47.80	64.7	30.85	20.20	32.60	3220.5	1878	5832	4827	19300	932.6	214.4
MEAN	1.54	2.16	1.00	.65	1.16	104	62.6	188	161	623	30.1	7.15
MAX	3.4	3.4	1.5	1.5	2.0	750	120	699	568	1830	113	22
MIN	.81	1.3	.40	.30	.50	1.0	33	31	14	140	7.3	3.2
AC-FT	95	128	61	40	65	6390	3730	11570	9570	38280	1850	425

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1993, BY WATER YEAR (WY)

	MEAN	1.59	.46	.29	.97	4.44	80.0	70.9	48.4	72.2	25.2	8.37	.94
MAX	39.2	5.01	2.40	23.3	75.1	455	623	514	1097	623	124	13.8	
(WY)	1983	1983	1963	1973	1973	1960	1969	1962	1962	1993	1992	1992	
MIN	.000	.000	.000	.000	.000	.000	.049	.004	.001	.000	.000	.000	
(WY)	1959	1960	1956	1956	1956	1965	1980	1980	1968	1959	1958	1958	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1956 - 1993

ANNUAL TOTAL	4794.62	36400.65	26.2a
ANNUAL MEAN	13.1	99.7	203
HIGHEST ANNUAL MEAN			.033
LOWEST ANNUAL MEAN			1962
HIGHEST DAILY MEAN	1670	Aug 8	1830
LOWEST DAILY MEAN	.00	May 20	.30
ANNUAL SEVEN-DAY MINIMUM	.00	May 20	.44
INSTANTANEOUS PEAK FLOW			1930
INSTANTANEOUS PEAK STAGE			11.48
ANNUAL RUNOFF (AC-FT)	9510	72200	18980
10 PERCENT EXCEEDS	16	326	19
50 PERCENT EXCEEDS	1.1	9.1	.10
90 PERCENT EXCEEDS	.02	.76	.00

e Estimated

a Median of annual mean discharge, 9.9 ft³/s.

b No flow for many days in most years.

c Gage height, 15.34 ft.

d Backwater from ice.

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 SW1/4SW1/4 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 above sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	55	123	e61	59	58	2850	e1100	615	4640	5440	2620
2	63	76	106	e58	84	57	2850	e1300	607	4590	5160	2500
3	63	93	114	e54	144	56	2780	e1500	604	4860	4890	2400
4	62	98	100	e50	191	55	2660	e1700	585	6010	4690	2310
5	59	98	88	e48	204	55	2530	1690	556	e10000	e4400	2240
6	62	96	106	e44	198	56	2370	1650	526	e17500	4090	2160
7	81	89	105	e42	204	95	2280	1640	532	16100	4060	2090
8	110	86	101	e40	185	e600	2290	e2500	561	14000	4010	2030
9	124	85	99	e40	161	e1500	2360	e5600	634	12300	4000	1970
10	111	93	99	e40	149	e2000	2300	e5800	663	11100	3960	1880
11	90	96	96	e40	128	e2500	2220	e6000	695	10500	3940	1800
12	81	105	96	e40	111	e2600	2110	5840	692	9950	3920	1760
13	73	108	98	e40	113	e3000	1960	5440	681	10200	3920	1790
14	71	112	97	e38	111	e2900	1910	4950	705	10600	3900	1790
15	69	109	97	e38	100	e2700	2000	4510	783	9400	3880	1770
16	66	107	99	e40	90	e2400	1930	4130	822	8400	4050	1750
17	64	108	98	e40	84	2010	1800	3820	870	8100	4240	1750
18	62	110	95	e40	e80	1440	1700	3490	1040	e9450	4140	1760
19	58	117	92	e40	80	e1100	1630	3230	e1700	e9350	4330	1860
20	57	132	81	e40	77	e1000	1590	2990	e2500	e8750	4720	1980
21	57	139	85	e40	73	e900	1550	2640	e2900	e7900	5250	2030
22	59	146	88	e41	71	e800	1450	2150	3220	7180	5280	2040
23	63	146	86	e42	65	e1000	1350	1840	3860	6550	4840	2030
24	62	145	77	e43	e60	e1500	1240	1920	4450	6090	4510	2000
25	70	145	74	e44	e60	e1720	e1150	1450	4940	6060	4110	1970
26	67	142	72	e45	e60	1880	e1100	e1200	5160	6350	3770	1930
27	64	102	73	e49	e60	2330	e1050	e1000	5160	6270	3440	1880
28	61	95	71	e51	e60	2570	e1000	e770	5080	6140	3210	1820
29	57	111	68	e49	---	2740	e950	716	4940	6050	3030	1780
30	53	121	66	e48	---	2830	e1000	677	4780	5930	2870	1740
31	48	---	e65	e51	---	2820	---	642	---	5720	2730	---
TOTAL	2150	3265	2815	1376	3062	47272	55960	83885	60861	266040	128780	59430
MEAN	69.4	109	90.8	44.4	109	1525	1865	2706	2029	8582	4154	1981
MAX	124	146	123	61	204	3000	2850	6000	5160	17500	5440	2620
MIN	48	55	65	38	59	55	950	642	526	4590	2730	1740
AC-FT	4260	6480	5580	2730	6070	93760	111000	166400	120700	527700	255400	117900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1993, BY WATER YEAR (WY)

	MEAN	78.4	71.8	55.8	39.4	84.6	692	1372	952	902	562	288	151
MAX	909	909	417	243	171	640	2942	8188	7302	7585	8582	4154	1981
(WY)	1987	1987	1987	1987	1970	1952	1987	1969	1986	1984	1993	1993	1993
MIN	.000	.000	.000	2.72	1.52	2.14	16.8	18.5	8.52	5.14	.79	.000	.27
(WY)	1940	1940	1940	1940	1940	1940	1940	1934	1934	1981	1936	1934	1941

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1929 - 1993

ANNUAL TOTAL	58821	714896	
ANNUAL MEAN	161	1959	
HIGHEST ANNUAL MEAN			438a
LOWEST ANNUAL MEAN			2042
HIGHEST DAILY MEAN	919	Aug 12	13.8
LOWEST DAILY MEAN	15	Jan 14	27600
ANNUAL SEVEN-DAY MINIMUM	18	Jun 10	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			29400
INSTANTANEOUS LOW FLOW			20.45
ANNUAL RUNOFF (AC-FT)	116700	1418000	317300
10 PERCENT EXCEEDS	368	5200	1120
50 PERCENT EXCEEDS	98	950	68
90 PERCENT EXCEEDS	32	57	8.0

e Estimated

a Median of annual mean discharges, 210 ft³/s.

b No flow for many days in some years.

JAMES RIVER BASIN

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.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	ALKA- LITY WAT DIS TOT IT MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT MG/L AS CO3 (00452)	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)
NOV 17...	0950	108	1980	8.5	273	287	23	0.0	1.0	4.2	737
FEB 08...	1500	180	1560	7.8	238	290	0	2.0	0.0	4.4	735
MAY 04...	0940	1710	1150	8.0	184	225	0	27.0	13.0	32	728
AUG 17...	1305	4230	870	8.5	194	235	1	32.0	27.5	28	733

DATE	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- 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 AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
NOV 17...	15.8	116	32	63	760	170	80	140	28	16
FEB 08...	12.2	87	58	84	580	140	56	88	24	18
MAY 04...	11.6	116	K4600	65	440	100	46	74	26	17
AUG 17...	7.9	105	2600	500	290	67	30	55	29	3.5

DATE	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)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)
NOV 17...	265	730	88	0.30	16	1410	1480	2.01	432	0.050	0.06
FEB 08...	238	470	45	0.20	15	982	1040	1.41	505	0.500	0.64
MAY 04...	188	390	35	0.20	9.0	785	842	1.15	3890	0.020	0.03
AUG 17...	197	200	31	0.20	24	531	571	0.78	6520	0.030	0.04

JAMES RIVER BASIN

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 17...	1.5	0.010	<0.050	--	0.300	0.120	0.090	20	52	<3	4
FEB 08...	2.1	0.060	0.750	0.690	0.560	0.460	0.430	20	36	<3	67
MAY 04...	0.90	0.020	0.330	0.310	0.210	0.200	0.150	<10	58	<3	13
AUG 17...	1.1	0.010	0.110	0.100	0.750	0.650	0.640	240	49	<3	24

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, DIS- SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. # FINER THAN .062 MM (70331)
NOV 17...	130	510	<10	5	<1	<1.0	1600	<6	115	34	49
FEB 08...	86	590	<10	5	1	<1.0	1200	<6	41	20	98
MAY 04...	64	12	<10	6	<1	<1.0	750	<6	120	554	93
AUG 17...	40	110	<10	8	<1	<1.0	420	7	72	822	97

JAMES RIVER BASIN

06478513 JAMES RIVER NEAR YANKTON, SD

LOCATION.--Lat 42°59'45", long 97°22'10", in NE1/4NW1/4 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 sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and those for May 17 to June 20, July 1-19, 25-28, and Aug. 20 to Sept. 30, 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 Beaver Creek. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	72	144	e80	e90	e90	2800	1120	790	4550	4960	2940
2	83	116	134	e80	e100	e90	2830	1180	733	4500	4780	2790
3	75	118	123	e75	e125	e90	2830	1520	704	4510	4580	2670
4	73	114	140	e75	e150	e90	2800	1770	678	4940	4390	2580
5	72	116	116	e75	e200	e90	2750	1860	662	5350	4250	2490
6	67	115	116	e70	e300	e100	2680	1880	618	6170	4080	2420
7	93	113	123	e70	e300	e200	2660	2080	996	10500	3960	2310
8	244	111	121	e65	e275	e400	2640	2130	707	15200	3870	2180
9	245	110	115	e65	e260	e900	2570	2640	627	14600	3820	2110
10	189	109	113	e60	e225	e1500	2530	3710	643	13200	3740	2020
11	164	107	110	e60	e200	e1600	2500	4690	678	11700	3680	1930
12	140	110	106	e55	e170	e2000	2440	5090	720	10600	3650	1860
13	115	114	107	e55	e150	e2400	2390	5160	773	10800	3690	1790
14	103	117	106	e55	e140	e2700	2410	5050	733	11600	3790	1790
15	93	122	106	e50	e130	e3000	2340	4770	756	11400	3800	1760
16	88	125	105	e55	e110	e3000	2280	4460	874	10100	3950	1760
17	84	121	103	e55	e95	e2900	2210	4190	1000	9200	3910	1720
18	79	119	103	e55	e90	e2700	2110	3950	1030	9090	3930	1740
19	78	126	99	e55	e90	e2200	2020	3650	1250	9340	3990	1830
20	77	143	e100	e55	e90	1820	2000	3420	1800	9330	4060	1940
21	74	144	96	e55	e100	1460	1910	3170	2140	8750	4210	1920
22	71	145	95	e60	e90	1290	1780	2980	2410	7990	4470	1940
23	68	149	96	e70	e80	1130	1660	2890	2620	7280	4660	1920
24	66	153	e95	e70	e80	1100	1550	2530	3130	6650	4600	1920
25	68	148	e95	e70	e80	1350	1430	2280	3560	6150	4400	1920
26	69	157	e90	e70	e80	1800	1320	1900	3990	5810	4180	1900
27	73	143	e90	e75	e80	2130	1220	1420	4300	5610	4030	1870
28	72	145	e95	e80	e90	2310	1120	1130	4500	5480	3760	1830
29	67	139	e90	e80	---	2440	1050	1020	4580	5330	3590	1780
30	63	132	e90	e70	---	2550	1010	1100	4610	5210	3540	1750
31	61	---	e90	e80	---	2660	---	903	---	5090	3160	---
TOTAL	3004	3753	3312	2045	3970	48090	63840	85643	52612	256030	125480	61380
MEAN	96.9	125	107	66.0	142	1551	2128	2763	1754	8259	4048	2046
MAX	245	157	144	80	300	3000	2830	5160	4610	15200	4960	2940
MIN	61	72	90	50	80	90	1010	903	618	4500	3160	1720
AC-FT	5960	7440	6570	4060	7870	95390	126600	169900	104400	507800	248900	121700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	183	150	117	73.7	140	983	2209	1606	1558	1336	525	369
MAX	1119	426	286	179	580	2512	7756	8083	7806	8259	4048	2046
(WY)	1987	1987	1987	1987	1983	1987	1986	1984	1993	1993	1993	1993
MIN	5.97	4.79	15.6	9.10	27.3	40.1	24.1	67.9	108	21.9	16.9	10.2
(WY)	1982	1982	1982	1991	1990	1990	1990	1992	1992	1988	1989	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	63396	709159	771a
ANNUAL MEAN	173	1943	2084
HIGHEST ANNUAL MEAN			56.5
LOWEST ANNUAL MEAN			26000
HIGHEST DAILY MEAN	906	Aug 13	15200
LOWEST DAILY MEAN	25	Jan 28	50
ANNUAL SEVEN-DAY MINIMUM	27	Jan 26	54
INSTANTANEOUS PEAK FLOW			15800
INSTANTANEOUS PEAK STAGE			21.15
ANNUAL RUNOFF (AC-FT)	125700	1407000	558600
10 PERCENT EXCEEDS	404	4630	2200
50 PERCENT EXCEEDS	114	1100	165
90 PERCENT EXCEEDS	30	74	20

e Estimated

a Median of annual mean discharges, 370 ft³/s.

MISSOURI-LEWIS AND CLARK RIVER BASIN

06478515 MISSOURI RIVER NEAR GAYVILLE, SD

LOCATION.--Lat 42°51'01", long 97°13'12", in SW1/4NW1/4 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 sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for Nov. 19, Dec. 27, Jan. 5, May 4, 12, 18, 19, and June 10 to July 29, which are fair. 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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47.35	43.58	43.70	---	46.88	47.78	44.29	46.78	45.98	46.82	45.28	46.24
2	47.36	43.46	44.05	---	46.54	47.25	44.27	46.77	47.03	46.02	45.22	46.28
3	47.35	43.34	44.21	---	46.05	46.85	44.25	46.66	46.46	45.99	45.15	46.49
4	47.34	43.29	44.58	---	45.85	46.55	44.19	46.57	45.90	46.12	45.05	46.61
5	47.36	43.26	44.97	45.90	45.75	45.73	44.18	46.46	47.00	46.15	44.96	46.65
6	47.33	43.20	44.82	46.10	45.57	44.77	44.49	46.52	46.57	46.00	44.92	46.66
7	47.35	43.15	44.80	46.19	45.37	44.67	45.15	47.04	46.22	45.80	44.88	46.73
8	47.60	43.10	44.92	46.73	45.31	44.69	45.21	47.70	46.99	46.87	44.91	46.89
9	47.89	43.05	44.84	48.14	45.47	44.49	45.18	---	46.38	47.05	45.24	46.89
10	47.41	42.99	44.81	49.71	45.50	45.55	45.16	---	45.90	46.92	45.45	46.98
11	47.36	42.94	44.84	49.75	45.47	45.65	45.11	---	46.89	46.68	45.59	47.01
12	47.35	42.90	44.81	49.80	45.53	45.56	45.12	---	46.48	46.45	45.77	47.03
13	47.27	42.82	44.81	49.40	45.65	45.74	45.14	46.09	46.03	46.62	45.87	47.05
14	47.06	42.78	44.79	49.44	45.69	45.74	45.16	46.67	46.77	46.77	45.87	47.06
15	47.06	42.73	44.79	49.31	45.83	45.70	45.19	47.44	46.36	47.18	45.87	47.08
16	47.05	42.67	44.77	49.20	45.86	45.70	45.17	47.06	46.09	47.10	46.02	47.07
17	46.82	42.62	44.83	49.07	46.40	45.63	45.13	46.78	46.87	46.90	45.84	47.06
18	46.33	42.57	44.94	49.01	47.34	45.71	45.19	47.08	46.49	46.88	45.44	47.07
19	45.65	42.58	45.25	48.94	47.43	46.08	45.34	46.67	45.97	46.88	45.24	47.16
20	45.04	---	45.31	48.68	46.81	46.41	45.52	46.62	46.11	---	45.55	47.11
21	44.74	---	45.28	48.57	46.95	46.92	45.32	47.58	46.92	---	45.94	46.98
22	44.74	---	45.46	48.49	49.24	47.02	45.32	47.02	46.61	46.53	46.08	46.83
23	44.59	---	45.48	48.42	49.28	47.02	45.75	46.53	46.22	46.46	46.14	46.71
24	44.36	---	45.88	48.23	48.87	47.01	45.82	47.34	46.52	46.30	46.15	46.71
25	44.29	---	45.47	48.24	48.47	47.04	45.85	46.75	46.59	46.27	46.12	46.82
26	44.19	---	45.64	48.18	48.47	46.74	46.18	46.30	46.86	45.61	46.19	46.95
27	43.89	---	45.54	47.92	48.14	46.11	46.59	47.15	46.80	45.51	46.37	47.00
28	43.77	---	---	47.46	48.00	45.70	46.58	47.24	46.78	45.47	46.51	46.98
29	43.71	---	---	47.25	---	44.95	46.57	46.98	46.78	45.40	46.50	46.99
30	43.54	---	---	47.37	---	44.36	46.63	47.32	46.84	45.30	46.53	47.07
31	43.49	---	---	47.26	---	44.32	---	46.92	---	45.30	46.41	---
MEAN	46.02	---	---	---	46.70	45.92	45.30	---	46.51	---	45.71	46.87
MAX	47.89	---	---	---	49.28	47.78	46.63	---	47.03	---	46.53	47.16
MIN	43.49	---	---	---	45.31	44.32	44.18	---	45.90	---	44.88	46.24

MISSOURI-LEWIS AND CLARK RIVER BASIN

06478530 LAKE THOMPSON NEAR OLDHAM, SD

LOCATION.--Lat 44°13'24", long 97°26'46", in SW1/4SE1/4SW1/4 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 sea level.

REMARKS.--Published records good except those for Aug. 30, 31, which are fair. 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 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.67	1.47	1.53	1.55	1.59	1.69	2.03	2.50	2.89	3.83	5.62	6.13
2	1.67	1.58	1.53	1.56	1.60	1.69	2.03	2.51	2.97	3.86	5.62	6.16
3	1.67	1.58	1.53	1.56	1.60	1.69	2.04	2.51	2.98	3.90	5.62	6.16
4	1.63	1.72	1.53	1.55	1.60	1.69	2.04	2.50	2.99	4.05	5.67	6.16
5	1.61	1.66	1.53	1.55	1.60	1.69	2.04	2.48	2.95	4.13	5.68	6.17
6	1.65	1.51	1.53	1.55	1.60	1.69	2.05	2.47	2.95	4.16	5.72	6.18
7	1.66	1.48	1.52	1.55	1.60	1.69	2.13	2.53	2.97	4.21	5.69	6.19
8	1.73	1.47	1.53	1.55	1.60	1.69	2.18	2.68	2.97	4.27	5.71	6.17
9	1.62	1.49	1.53	1.55	1.60	1.70	2.19	2.81	3.11	4.33	5.79	6.19
10	1.61	1.52	1.53	1.55	1.61	1.70	2.21	2.83	3.12	4.34	5.83	6.17
11	1.55	1.49	1.52	1.56	1.63	1.69	2.27	2.83	3.09	4.38	5.82	6.13
12	1.58	1.55	1.53	1.58	1.66	1.70	2.28	2.83	3.05	4.40	5.80	6.17
13	1.53	1.55	1.54	1.59	1.65	1.69	2.30	2.81	3.19	4.45	5.86	6.20
14	1.54	1.50	1.54	1.59	1.66	1.69	2.36	2.81	3.20	4.50	5.88	6.23
15	1.53	1.48	1.56	1.59	1.65	1.69	2.37	2.82	3.15	4.50	6.05	6.14
16	1.54	1.49	1.55	1.59	1.65	1.70	2.37	2.81	3.21	4.54	6.07	6.16
17	1.51	1.49	1.55	1.59	1.65	1.68	2.37	2.81	3.34	4.82	6.07	6.22
18	1.50	1.48	1.56	1.59	1.65	1.69	2.36	2.84	3.39	4.92	6.11	6.22
19	1.40	1.50	1.56	1.59	1.65	1.69	2.41	2.82	3.49	4.98	6.14	6.26
20	1.47	1.56	1.56	1.59	1.65	1.69	2.41	2.82	3.50	5.02	6.14	6.36
21	1.45	1.57	1.56	1.60	1.67	1.73	2.38	2.80	3.53	5.03	6.11	6.36
22	1.40	1.53	1.56	1.60	1.68	1.75	2.34	2.77	3.50	5.06	6.13	6.38
23	1.47	1.52	1.56	1.61	1.67	1.75	2.36	2.85	3.60	5.14	6.17	6.38
24	1.49	1.55	1.57	1.60	1.67	1.75	2.40	2.90	3.67	5.18	6.16	6.38
25	1.46	1.58	1.55	1.60	1.69	1.76	2.42	2.85	3.68	5.27	6.15	6.39
26	1.48	1.54	1.55	1.60	1.69	1.78	2.32	2.82	3.69	5.33	6.18	6.39
27	1.44	1.52	1.55	1.60	1.69	1.85	2.35	2.87	3.71	5.34	6.19	6.38
28	1.47	1.52	1.55	1.60	1.69	1.89	2.41	2.88	3.71	5.38	6.16	6.41
29	1.45	1.53	1.56	1.59	---	1.93	2.42	2.86	3.67	5.41	6.17	---
30	1.41	1.53	1.56	1.59	---	1.96	2.43	2.89	3.80	5.42	6.22	---
31	1.40	---	1.55	1.60	---	2.02	---	2.89	---	5.54	6.25	---
MEAN	1.54	1.53	1.54	1.58	1.64	1.74	2.28	2.75	3.30	4.70	5.96	---
MAX	1.73	1.72	1.57	1.61	1.69	2.02	2.43	2.90	3.80	5.54	6.25	---
MIN	1.40	1.47	1.52	1.55	1.59	1.68	2.03	2.47	2.89	3.83	5.62	---

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 SW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	e.80	e8.0	e.10	.00	.00	147	29	6.7	643	80	4.8
2	1.6	e1.5	e6.0	e.07	.00	.00	107	62	8.5	430	79	4.4
3	1.4	e3.0	e5.0	e.06	.00	.00	78	81	9.0	e1200	55	3.9
4	1.3	e2.8	e4.0	e.03	.00	.00	54	65	8.4	e2500	41	3.8
5	1.3	e2.6	e3.0	e.01	.00	.00	40	43	7.4	e1350	34	3.3
6	1.2	e2.3	e2.0	e.01	.00	.00	33	30	6.4	639	29	3.0
7	2.0	e2.0	e2.5	e.01	.00	.00	37	65	9.2	460	25	2.9
8	6.0	e3.0	e2.5	.00	.00	.00	80	338	16	382	22	2.8
9	9.5	e4.0	e2.5	.00	.00	.00	134	572	18	321	19	2.6
10	9.5	e7.0	e2.5	.00	.00	e.02	110	347	19	336	16	2.3
11	7.9	e10	e2.3	.00	.00	e.01	82	192	17	698	13	2.2
12	6.5	e20	e2.2	.00	.00	e.01	87	120	12	520	14	2.0
13	e5.5	e20	e2.1	.00	.00	e.01	77	76	26	330	14	2.4
14	e5.0	e18	e2.0	.00	.00	e.01	63	51	43	256	12	2.6
15	e4.5	e18	e1.9	.00	.00	e.03	60	36	42	205	11	2.5
16	e4.0	e14	e1.7	.00	.00	e.10	56	28	45	162	13	2.1
17	e3.5	e12	e1.6	.00	.00	e.12	49	25	120	360	14	1.9
18	e3.0	e11	e1.5	.00	.00	e.14	38	24	457	540	65	2.2
19	e2.5	e11	e1.4	.00	.00	e.16	32	19	667	339	118	4.6
20	e2.2	e12	e1.3	.00	.00	e.40	26	17	588	231	82	9.2
21	e2.0	e13	e1.2	.00	.00	e1.0	21	14	438	175	54	9.4
22	e1.8	e15	e1.0	.00	.00	e2.0	17	13	310	135	40	12
23	e1.6	e17	e.90	.00	.00	e4.0	15	12	248	108	31	9.6
24	e1.5	e15	e.90	.00	.00	e5.0	14	12	346	94	23	6.7
25	e1.3	e10	e.70	.00	.00	e50	13	11	514	204	17	5.1
26	e1.0	e9.0	e.60	.00	.00	e250	14	8.2	410	199	13	4.0
27	e.90	e7.0	e.50	.00	.00	780	14	7.5	278	170	11	3.6
28	e.80	e6.0	e.40	.00	.00	602	12	6.2	193	132	8.3	3.3
29	e.70	e6.0	e.30	.00	---	365	11	5.6	201	92	7.1	2.7
30	e.60	e7.0	e.20	.00	---	242	11	6.7	522	65	6.6	2.5
31	e.50	---	e.15	.00	---	186	---	6.9	---	53	5.7	---
TOTAL	92.80	280.00	62.85	0.29	0.00	2488.01	1532	2323.1	5585.6	13329	972.7	124.4
MEAN	2.99	9.33	2.03	.009	.000	80.3	51.1	74.9	186	430	31.4	4.15
MAX	9.5	20	8.0	.10	.00	780	147	572	667	2500	118	12
MIN	.50	.80	.15	.00	.00	.00	11	5.6	6.4	53	5.7	1.9
AC-FT	184	555	125	.6	.00	4930	3040	4610	11080	26440	1930	247

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1993, BY WATER YEAR (WY)

MEAN	1.26	.98	.27	.039	2.21	17.7	14.8	5.70	16.8	17.8	3.12	3.29
MAX	21.5	14.2	4.08	.91	40.7	80.3	87.5	74.9	186	430	50.3	63.0
(WY)	1987	1983	1983	1983	1983	1993	1984	1993	1993	1993	1992	1986
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1967	1967	1967	1967	1968	1968	1967	1967	1968	1968	1967	1967

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1967 - 1993

	1992 CALENDAR YEAR	1993 WATER YEAR	WATER YEARS 1967 - 1993
ANNUAL TOTAL	3701.19	26790.75	
ANNUAL MEAN	10.1	73.4	7.02a
HIGHEST ANNUAL MEAN			73.4
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	161	2500	2500
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		3300	3300
INSTANTANEOUS PEAK STAGE		11.95	11.95
ANNUAL RUNOFF (AC-FT)	7340	53140	5090
10 PERCENT EXCEEDS	35	235	6.1
50 PERCENT EXCEEDS	1.6	6.7	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a Median of annual mean discharges, 2.3 ft³/s.

b Also 1975 and 1981 water years.

c No flow for many days in each year.

d From high-water mark.

MISSOURI-LEWIS AND CLARK RIVER BASIN
06478690 WEST FORK VERMILLION RIVER NEAR PARKER, SD

LOCATION.--Lat 43°24'55", long 97°12'18", in NE1/4NE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	5.1	12	e2.0	e1.5	e1.8	721	177	114	1360	101	30
2	4.3	8.0	9.2	e3.0	e1.6	e1.8	529	307	143	1150	95	28
3	3.5	10	e8.5	e3.0	e1.8	e1.9	376	267	129	781	103	26
4	3.1	11	e8.0	e2.5	e2.0	e2.0	279	177	112	2220	90	24
5	2.8	9.1	7.3	e2.0	e3.0	e2.0	214	133	109	3650	82	22
6	2.8	10	7.9	e2.0	e9.0	e2.1	170	103	97	2100	79	21
7	4.8	11	7.6	e2.0	e8.0	e2.5	184	182	87	1390	72	19
8	12	11	7.8	e1.8	e7.0	e5.0	285	4110	80	1060	66	20
9	20	12	8.1	e2.0	e4.0	e40	305	3020	74	999	61	18
10	17	17	8.1	e2.5	e3.0	e100	290	1860	74	1100	55	15
11	13	24	7.9	e4.0	e2.5	e200	271	1270	74	1650	51	14
12	12	26	7.9	e3.5	e2.0	e150	255	916	72	2140	47	16
13	10	25	7.7	e2.0	e1.8	e100	225	593	411	1470	47	30
14	8.9	20	7.5	e2.0	e1.5	e100	253	375	310	1140	44	31
15	7.8	20	7.1	e1.8	e1.3	e100	264	261	221	827	110	20
16	6.9	20	6.9	e1.8	e1.0	e70	225	196	803	557	264	16
17	6.1	18	6.6	e1.5	e.90	e60	179	159	730	971	148	14
18	6.1	16	6.2	e1.5	e1.3	e50	151	135	566	1530	219	15
19	5.7	18	6.0	e1.5	e1.7	e40	131	115	806	1300	956	30
20	5.3	27	5.0	e1.5	e2.0	e50	110	101	1120	933	760	65
21	5.0	30	4.9	e1.5	e2.0	e100	96	90	1140	775	281	56
22	5.2	29	4.8	e1.5	e1.7	e70	87	84	806	708	157	46
23	5.3	27	4.5	e1.5	e1.7	e50	79	208	991	568	117	38
24	4.8	22	4.0	e1.5	e2.0	e80	73	151	1370	393	91	34
25	4.5	16	4.1	e1.5	e2.0	e500	66	136	1780	572	74	35
26	4.5	15	3.7	e1.5	e2.4	2090	59	140	1270	901	62	31
27	4.3	e14	3.6	e1.5	e2.0	2980	58	111	894	501	55	25
28	4.2	e14	3.7	e1.5	e1.9	2230	57	89	667	295	49	23
29	3.8	e13	3.4	e1.5	---	1600	53	81	513	201	45	23
30	3.7	12	e3.0	e1.5	---	1260	53	106	548	147	40	21
31	3.7	---	e2.5	e1.5	---	887	---	117	---	123	36	---
TOTAL	206.0	510.2	195.5	60.4	72.60	12926.1	6098	15770	16111	33512	4457	806
MEAN	6.65	17.0	6.31	1.95	2.59	417	203	509	537	1081	144	26.9
MAX	20	30	12	4.0	9.0	2980	721	4110	1780	3650	956	65
MIN	2.8	5.1	2.5	1.5	.90	1.8	53	81	72	123	36	14
AC-FT	409	1010	388	120	144	25640	12100	31280	31960	66470	8840	1600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1993, BY WATER YEAR (WY)

	MEAN	3.86	5.27	1.91	.93	17.6	119	99.2	44.2	87.2	54.6	9.25	13.3
MAX	40.5	105	27.9	9.05	267	453	698	509	1345	1081	144	324	
(WY)	1987	1983	1983	1983	1983	1983	1983	1984	1993	1984	1993	1993	1986
MIN	.000	.000	.000	.000	.000	.000	.021	.000	.001	.008	.000	.000	.000
(WY)	1975	1982	1965	1965	1975	1981	1990	1990	1990	1981	1989	1989	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1962 - 1993

ANNUAL TOTAL	7317.37	90724.80	
ANNUAL MEAN	20.0	249	38.1a
HIGHEST ANNUAL MEAN			249
LOWEST ANNUAL MEAN			.019
HIGHEST DAILY MEAN	220	4110	4110
LOWEST DAILY MEAN	.10	.90	.00
ANNUAL SEVEN-DAY MINIMUM	.12	1.4	.00
INSTANTANEOUS PEAK FLOW		6300	6300
INSTANTANEOUS PEAK STAGE		13.14	13.14
ANNUAL RUNOFF (AC-FT)	14510	180000	27600
10 PERCENT EXCEEDS	59	890	50
50 PERCENT EXCEEDS	7.6	31	.60
90 PERCENT EXCEEDS	.30	2.0	.00

e Estimated

a Median of annual mean discharges, 9.2 ft³/s.

b No flow for many days in most years.

MISSOURI-LEWIS AND CLARK RIVER BASIN
06479010 VERMILLION RIVER NEAR VERMILLION, SD

LOCATION.--Lat 42°49'02", long 96°55'26", in SE1/4SE1/4NW1/4 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, 1993).

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 sea level, from topographic map. Flow effected by East Vermillion Lake Reservoir, capacity, 550 acres, located about 54 mi upstream.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and those for Mar. 29 to Apr. 6, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	168	228	e70	e50	e50	4990	698	2390	4660	2810	946
2	111	293	217	e70	e55	e40	6470	893	2410	4250	2680	750
3	105	459	207	e70	e55	e40	6160	1100	2440	3860	2530	547
4	100	497	183	e70	e60	e50	5430	1320	2470	3740	2280	460
5	97	476	e175	e60	e65	e50	4600	1280	2500	3700	1970	415
6	94	406	e165	e60	e70	e50	3960	1100	2500	3820	1690	374
7	146	347	e165	e50	e75	e55	3640	1050	2480	5840	1420	342
8	1100	313	e165	e50	e95	e70	3500	1340	2480	9960	1200	327
9	1970	298	167	e50	e110	e150	3320	1620	2520	9920	1010	324
10	1820	307	156	e50	e105	e400	3130	1780	2560	9420	860	311
11	1570	304	139	e50	e102	e610	2990	1900	2590	8310	752	295
12	1200	304	154	e50	e90	e700	2820	2140	2570	6640	656	280
13	828	300	152	e60	e85	e800	2690	2350	2500	6130	636	267
14	608	286	145	e50	e75	e800	2720	2550	2310	8700	770	263
15	506	273	e130	e40	e70	e550	2630	2620	2080	9990	1190	255
16	441	266	e130	e50	e70	e400	2500	2670	1980	9360	1700	266
17	388	256	e125	e60	e60	e300	2390	2850	1910	8290	1900	260
18	351	247	e125	e60	e50	e290	2290	2900	1890	7860	1750	252
19	328	251	e120	e60	e50	e280	2240	2830	1940	6870	1740	281
20	309	304	e120	e60	e50	e280	2290	2680	2010	5840	1740	406
21	290	339	e120	e60	e60	e380	2050	2410	2080	5540	1700	620
22	272	350	e125	e70	e50	e350	1820	2060	2160	5880	1700	779
23	249	358	e125	e70	e40	e350	1580	1930	2230	5700	1710	670
24	231	335	e115	e80	e40	e410	1310	2040	2450	5050	1670	532
25	220	309	e115	e70	e35	950	1060	2110	2630	4320	1500	460
26	205	280	e110	e90	e40	2300	911	2220	2670	3820	1170	410
27	191	237	e110	e70	e40	2470	810	2330	2820	3570	899	373
28	181	204	e120	e60	e50	2480	736	2390	3290	3370	746	346
29	170	216	e105	e50	---	2530	661	2430	4260	3190	626	319
30	163	240	e90	e45	---	2620	604	2570	4790	3010	670	300
31	157	---	e80	e45	---	2990	---	2490	---	2910	770	---
TOTAL	14517	9223	4383	1860	1797	23795	82302	62651	75910	183520	44445	12430
MEAN	468	307	141	60.0	64.2	768	2743	2021	2530	5920	1434	414
MAX	1970	497	228	90	110	2990	6470	2900	4790	9990	2810	946
MIN	94	168	80	40	35	40	604	698	1890	2910	626	252
AC-FT	28790	18290	8690	3690	3560	47200	163200	124300	150600	364000	88160	24650

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1993, BY WATER YEAR (WY)

MEAN	155	92.8	59.0	35.6	64.1	505	1128	635	999	803	226	194
MAX	643	307	144	67.7	138	1286	4405	2021	6062	5920	1434	754
(WY)	1987	1993	1987	1987	1984	1986	1984	1993	1984	1993	1993	1986
MIN	5.54	7.99	7.37	6.71	9.00	15.3	13.1	21.8	15.4	14.2	13.2	5.22
(WY)	1990	1990	1991	1991	1989	1991	1990	1991	1989	1989	1990	1991

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1984 - 1993	
ANNUAL TOTAL	76103.5		516833			
ANNUAL MEAN	208		1416		408a	
HIGHEST ANNUAL MEAN					1416	
LOWEST ANNUAL MEAN					27.9	
HIGHEST DAILY MEAN	1970	Oct 9	9990	Jul 15	20200	Jun 23 1984
LOWEST DAILY MEAN	6.0	Jan 9	35	Feb 25	3.6	Oct 10 1991b
ANNUAL SEVEN-DAY MINIMUM	6.6	Jan 11	42	Feb 22	4.5	Oct 6 1991
INSTANTANEOUS PEAK FLOW			10200	Jul 8	21400	Jun 23 1984
INSTANTANEOUS PEAK STAGE			26.68	Jul 8c	31.77	Jun 23 1984
ANNUAL RUNOFF (AC-FT)	151000		1025000		295600	
10 PERCENT EXCEEDS	452		3530		1040	
50 PERCENT EXCEEDS	150		460		64	
90 PERCENT EXCEEDS	8.0		60		8.2	

e Estimated

a Median of annual mean discharges, 210 ft³/s.

b Also Oct. 18, 1991.

c Backwater loop.

BIG SIOUX RIVER BASIN

06479215 BIG SIOUX RIVER NEAR FLORENCE, SD

LOCATION.--Lat 45°10'51", long 97°11'09", in NE1/4NE1/4NE1/4 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 sea level, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and those for Dec. 13-18, Jan. 2-15, 18-22, Jan. 27 to Feb. 16, and Mar. 4-10, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.44	.94	1.5	e1.0	.70	e.70	162	16	5.4	78	57	7.1
2	.44	1.1	.74	.77	.68	e.80	113	17	5.4	56	45	7.6
3	1.2	.91	e.70	.74	.68	e.80	80	16	4.9	60	37	8.1
4	4.8	.55	e.70	.65	.68	.78	61	15	4.0	85	32	8.2
5	2.3	.43	e.70	.60	.68	.78	51	13	4.0	79	28	8.5
6	1.3	.42	e.80	.51	.68	.78	43	11	3.8	58	25	9.3
7	.97	.44	e.90	.49	.68	.79	46	13	3.7	43	22	9.0
8	.83	2.0	e1.0	.49	.68	.80	64	29	4.0	39	18	8.6
9	.70	2.6	e1.3	.49	.68	.84	64	53	5.4	40	15	6.8
10	.63	2.9	e1.4	.49	.68	.85	59	50	7.1	41	12	5.2
11	.58	3.2	e1.5	.49	.68	e.80	60	44	8.5	45	11	4.7
12	.51	3.8	e1.7	.49	.68	e.70	66	39	7.8	52	9.6	4.6
13	.51	e5.0	1.7	.50	.68	e.70	77	29	7.4	62	7.8	4.5
14	.50	3.9	1.7	.50	.66	e.70	81	22	7.8	58	13	4.3
15	.47	3.1	1.7	.49	.67	e.70	99	16	7.7	48	18	4.0
16	.47	2.5	1.7	e.50	.69	e.80	82	13	8.9	40	24	4.5
17	.50	2.2	1.7	e.52	e.70	e.70	73	11	13	335	28	4.4
18	.51	2.1	1.7	.56	e.70	e.70	61	8.0	28	426	26	4.0
19	.51	1.9	e1.7	.58	e.70	e.70	50	5.9	45	430	22	4.8
20	.51	2.0	e1.7	.59	e.78	e.70	37	4.3	83	350	18	7.3
21	.52	2.2	e1.7	.59	e.90	e.70	31	3.4	57	236	16	12
22	.55	2.1	e1.7	.60	e1.0	e.80	26	2.7	41	141	13	19
23	.56	1.9	e1.6	e.60	e.90	e.90	22	2.8	43	100	12	18
24	.56	2.0	e1.5	e.60	e.80	e1.0	20	4.2	49	82	11	15
25	.55	1.9	e1.6	e.60	e.70	e1.2	18	4.5	54	810	9.9	12
26	.51	1.9	e1.6	e.60	e.70	e4.8	17	4.5	44	584	9.1	9.7
27	.52	1.7	e1.6	.71	e.60	e200	17	6.1	32	332	8.5	8.1
28	.54	1.8	e1.3	.70	e.70	884	17	7.2	23	211	8.0	7.3
29	.54	1.7	e1.2	.65	---	410	16	6.7	38	138	7.4	6.7
30	.54	1.7	e1.0	.66	---	199	15	6.9	138	98	8.0	6.3
31	.61	---	e.90	.69	---	227	---	6.9	---	76	7.5	---
TOTAL	24.68	60.89	42.24	18.45	20.06	1944.52	1628	481.1	783.8	5233	578.8	239.6
MEAN	.80	2.03	1.36	.60	.72	62.7	54.3	15.5	26.1	169	18.7	7.99
MAX	4.8	5.0	1.7	1.0	1.0	884	162	53	138	810	57	19
MIN	.44	.42	.70	.49	.60	.70	15	2.7	3.7	39	7.4	4.0
AC-FT	49	121	84	37	40	3860	3230	954	1550	10380	1150	475

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1993, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	2.66	1.68	.85	.36	1.04	40.1	26.4	10.4	15.5
MAX	10.4	4.69	2.54	1.27	3.88	111	115	36.8	61.1
(WY)	1987	1985	1987	1987	1985	1986	1986	1986	1993
MIN	.010	.056	.025	.000	.000	.54	1.08	1.73	.28
(WY)	1989	1989	1990	1990	1990	1991	1990	1988	1988

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1985 - 1993

ANNUAL TOTAL	2131.68	11055.14	
ANNUAL MEAN	5.82	30.3	11.4
HIGHEST ANNUAL MEAN			30.8
LOWEST ANNUAL MEAN			.62
HIGHEST DAILY MEAN	137	884	1140
LOWEST DAILY MEAN	.23	.42	.00
ANNUAL SEVEN-DAY MINIMUM	.27	.49	.00
INSTANTANEOUS PEAK FLOW		1280	1810
INSTANTANEOUS PEAK STAGE		9.18	9.18
ANNUAL RUNOFF (AC-FT)	4230	21930	8260
10 PERCENT EXCEEDS	18	63	22
50 PERCENT EXCEEDS	1.5	4.0	.89
90 PERCENT EXCEEDS	.48	.56	.04

e Estimated

a No flow Aug. 9-11, 1985, Dec. 16 to Mar. 5, 1990, and Feb. 16-25, 1991.

b Gage height, 9.08 ft.

BIG SIOUX RIVER BASIN

06479438 BIG SIOUX RIVER NEAR WATERTOWN, SD

LOCATION.--Lat 45°00'22", long 97°09'53", in NE1/4NE1/4NE1/4 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 sea level (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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	e6.0	e11	e2.0	e3.5	e4.0	548	52	31	526	178	30
2	4.7	e7.0	e10	e2.0	e3.5	e4.0	355	54	32	415	145	32
3	4.5	e6.5	e9.0	e2.0	e4.0	e4.0	261	58	32	309	123	30
4	4.5	e6.5	e9.0	e2.0	e4.0	e4.0	196	59	30	420	104	29
5	4.3	e6.0	e8.0	e2.0	e4.0	e4.5	161	55	29	471	92	28
6	4.7	e6.0	e8.0	e2.0	e4.0	e4.5	143	50	27	358	83	25
7	6.0	e6.0	e8.0	e2.0	e4.0	e5.0	138	53	30	267	76	24
8	5.0	e6.5	e8.0	e2.0	e4.0	e5.5	177	68	31	203	70	24
9	4.7	e7.0	e9.0	e2.0	e4.0	e5.5	234	122	33	164	65	25
10	4.3	10	e9.0	e2.0	e4.0	e5.5	210	213	41	156	58	25
11	4.0	14	e9.0	e2.0	e3.5	e5.0	187	179	39	154	54	23
12	3.9	16	e9.0	e2.0	e3.5	e4.0	195	126	35	150	51	22
13	3.6	e16	e9.0	e2.5	e3.5	e3.5	213	96	31	145	50	21
14	3.6	e15	e9.0	e2.5	e3.0	e3.0	244	77	27	141	59	22
15	3.8	e15	e9.0	e2.5	e3.0	e3.5	351	62	25	139	86	22
16	3.6	e15	e9.0	e2.5	e2.5	e4.0	345	52	25	129	94	22
17	3.6	15	e9.0	e2.5	e2.5	e3.5	271	46	29	692	90	22
18	3.6	14	e8.0	e2.5	e2.5	e3.5	204	41	40	1350	79	22
19	3.7	14	e7.0	e2.5	e3.0	e4.0	168	37	75	859	70	22
20	4.0	13	e7.0	e2.5	e3.0	e4.4	139	34	255	658	63	27
21	4.0	e13	e7.0	e2.5	e3.5	e4.4	115	32	323	533	53	35
22	4.0	e13	e7.0	e2.5	e3.5	e4.4	97	30	275	432	47	49
23	4.2	e13	e6.0	e2.5	e3.5	e4.4	85	30	193	326	43	58
24	4.2	e12	e6.0	e2.5	e3.5	e5.0	76	32	160	262	39	55
25	4.6	e12	e5.0	e2.5	e3.5	e10	71	32	184	853	36	47
26	3.8	e12	e5.0	e2.5	e3.5	e15	66	35	187	1810	34	40
27	4.0	e12	e5.0	e2.5	e3.5	e40	62	34	157	1060	32	35
28	3.8	e12	e5.0	e2.5	e4.0	e2500	58	32	113	596	31	32
29	3.8	e12	e4.0	e2.5	---	1700	56	31	93	392	30	30
30	3.9	e12	e4.0	e3.0	---	747	54	30	222	291	29	28
31	4.4	---	e3.0	e3.0	---	681	---	29	---	225	29	---
TOTAL	129.6	337.5	231.0	72.5	97.5	5796.1	5480	1881	2804	14486	2093	906
MEAN	4.18	11.2	7.45	2.34	3.48	187	183	60.7	93.5	467	67.5	30.2
MAX	6.0	16	11	3.0	4.0	2500	548	213	323	1810	178	58
MIN	3.6	6.0	3.0	2.0	2.5	3.0	54	29	25	129	29	21
AC-FT	257	669	458	144	193	11500	10870	3730	5560	28730	4150	1800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1993, BY WATER YEAR (WY)

	4.95	5.42	2.45	1.02	4.35	92.8	90.3	30.1	38.4	38.6	14.6	8.37
MEAN	4.95	5.42	2.45	1.02	4.35	92.8	90.3	30.1	38.4	38.6	14.6	8.37
MAX	33.0	19.0	10.6	6.81	36.7	321	403	170	157	467	120	49.6
(WY)	1987	1987	1987	1987	1984	1986	1986	1986	1991	1993	1991	1986
MIN	.034	.10	.005	.000	.000	.26	2.95	.57	.035	.051	.035	.028
(WY)	1989	1989	1977	1977	1977	1975	1990	1981	1976	1976	1976	1982

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1973 - 1993

ANNUAL TOTAL	9669.9	34314.2	
ANNUAL MEAN	26.4	94.0	27.7a
HIGHEST ANNUAL MEAN			96.6
LOWEST ANNUAL MEAN			2.22
HIGHEST DAILY MEAN	637	Jul 2	4300
LOWEST DAILY MEAN	2.5	Jan 16	.00
ANNUAL SEVEN-DAY MINIMUM	2.6	Jan 15	.00
INSTANTANEOUS PEAK FLOW			4970
INSTANTANEOUS PEAK STAGE			11.13
ANNUAL RUNOFF (AC-FT)	19180	68060	20070
10 PERCENT EXCEEDS	59	229	50
50 PERCENT EXCEEDS	11	22	2.8
90 PERCENT EXCEEDS	3.7	3.0	.03

e Estimated

a Median of annual mean discharges, 18 ft³/s.

b No flow at times in 1988-91.

c Gage height, 11.08 ft.

d Backwater.

BIG SIOUX RIVER BASIN

06479525 BIG SIOUX RIVER NEAR CASTLEWOOD, SD

LOCATION.--Lat 44°43'54", long 97°02'39", in SW1/4SW1/4 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 sea level (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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	13	e26	e14	e10	e9.0	592	322	144	350	488	223
2	19	16	e26	e15	e10	e9.0	500	326	149	442	489	217
3	17	23	e24	e14	e10	e9.0	474	329	146	412	485	211
4	16	37	e23	e12	e10	e9.0	463	311	143	512	477	208
5	16	42	e20	e11	e10	e10	459	289	138	589	471	202
6	18	35	e20	e10	e10	e12	460	274	136	500	457	197
7	16	29	e20	e9.0	e9.0	e15	476	299	123	384	445	193
8	15	32	e20	e9.0	e9.0	e20	538	368	127	359	432	189
9	14	30	e22	e9.0	e9.0	e60	586	432	156	357	418	187
10	16	25	e24	e9.0	e9.0	e70	582	471	142	345	402	181
11	18	36	e25	e10	e9.0	e50	595	373	135	327	384	175
12	16	24	e25	e10	e9.0	e40	597	321	128	310	372	172
13	15	36	e25	e10	e8.0	e30	601	287	126	299	358	172
14	13	45	e25	e9.0	e7.5	e30	590	275	124	298	390	172
15	11	47	e24	e8.0	e7.0	e30	605	244	109	291	512	169
16	12	35	e23	e8.0	e7.0	e25	623	228	100	286	547	164
17	14	23	e22	e8.0	e6.0	e25	628	217	116	312	434	159
18	14	23	e22	e8.0	e7.0	e25	584	204	141	354	383	151
19	14	22	e20	e9.0	e7.0	e25	533	193	214	393	356	149
20	15	29	e20	e10	e7.0	e20	504	184	366	356	337	167
21	13	27	e22	e10	e7.0	e20	513	176	395	324	321	192
22	13	25	e22	e10	e6.5	e20	499	170	271	305	308	253
23	16	25	e20	e10	e6.5	e20	475	174	256	303	298	257
24	15	e25	e18	e9.0	e6.5	e30	436	192	265	308	288	222
25	14	e25	e18	e9.0	e7.0	e40	433	185	279	562	276	198
26	13	e24	e18	e10	e7.0	e100	411	177	256	899	268	185
27	13	e23	e18	e10	e7.0	e300	396	162	213	757	260	176
28	12	e23	e17	e9.0	e8.0	e1000	380	162	185	560	251	167
29	13	e25	e16	e8.0	---	e1200	359	155	189	511	244	157
30	11	e25	e15	e9.0	---	821	335	153	283	490	237	151
31	11	---	e15	e9.0	---	582	---	147	---	487	230	---
TOTAL	453	849	655	305.0	226.0	4656.0	15227	7800	5555	12982	11618	5616
MEAN	14.6	28.3	21.1	9.84	8.07	150	508	252	185	419	375	187
MAX	20	47	26	15	10	1200	628	471	395	899	547	257
MIN	11	13	15	8.0	6.0	9.0	335	147	100	286	230	149
AC-FT	899	1680	1300	605	448	9240	30200	15470	11020	25750	23040	11140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1993, BY WATER YEAR (WY)

	MEAN	22.2	20.0	12.7	6.73	13.8	107	220	107	96.4	68.7	55.5	40.4
MAX	97.2	72.4	47.6	38.4	53.4	502	1310	613	380	419	375	187	187
(WY)	1987	1987	1987	1987	1984	1985	1986	1986	1984	1993	1993	1993	1993
MIN	1.06	.71	.039	.000	.000	1.54	7.60	3.28	3.11	3.17	2.33	2.94	2.94
(WY)	1977	1977	1977	1977	1977	1990	1990	1977	1988	1988	1983	1990	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1977 - 1993

ANNUAL TOTAL	19218.5	65942.0	
ANNUAL MEAN	52.5	181	64.2a
HIGHEST ANNUAL MEAN			250
LOWEST ANNUAL MEAN			8.15
HIGHEST DAILY MEAN	517	Jun 19	2020
LOWEST DAILY MEAN	5.0	Jan 16	.00
ANNUAL SEVEN-DAY MINIMUM	6.1	Jan 14	.00
INSTANTANEOUS PEAK FLOW			1500
INSTANTANEOUS PEAK STAGE			11.39
ANNUAL RUNOFF (AC-FT)	38120	130800	46510
10 PERCENT EXCEEDS	118	480	160
50 PERCENT EXCEEDS	35	126	13
90 PERCENT EXCEEDS	13	9.0	.70

e Estimated

a Median of annual mean discharges, 46 ft³/s.

b No flow for many days in some years.

c Backwater from ice.

BIG SIOUX RIVER BASIN

06479928 BATTLE CREEK NEAR NUNDA, SD

LOCATION.--Lat 44°09'10", long 96°53'18", in SE1/4SE1/4SE1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	31	12	e1.0	e1.5	e4.0	e486	97	44	464	104	21
2	8.4	35	11	e.79	e2.0	e3.0	e377	216	71	579	92	20
3	7.5	35	10	e.62	e2.0	e2.0	310	219	78	e1600	84	18
4	5.3	36	8.2	e.50	e2.0	e2.5	266	158	72	e2200	76	17
5	4.2	37	8.0	e.40	e2.0	e3.0	233	120	62	e1200	72	14
6	3.7	37	7.7	e.35	e2.0	e3.0	204	99	52	e850	67	14
7	4.4	37	6.9	e.30	e2.0	e3.0	227	193	70	e750	63	13
8	8.6	36	6.4	e.25	e1.9	e4.0	368	466	120	e610	59	12
9	12	35	6.3	e.20	e1.8	e4.5	441	725	161	554	54	11
10	17	37	6.2	e.20	e1.7	e5.0	337	758	190	453	50	9.3
11	19	39	5.9	e.20	e1.6	e5.0	389	584	147	386	47	8.6
12	18	43	5.9	e.15	e1.5	e3.0	469	355	100	323	44	8.4
13	16	44	6.1	e.15	e1.3	e2.0	361	264	88	272	41	8.1
14	15	33	6.9	e.25	e1.2	e2.0	318	208	99	238	41	8.5
15	13	30	8.0	e.20	e1.0	e2.0	333	162	104	214	40	8.6
16	13	26	8.8	e.20	e.90	e3.0	318	134	379	194	40	8.5
17	12	24	8.1	e.25	e.90	e2.0	267	116	e1000	327	39	7.6
18	14	22	7.9	e.25	e.70	e2.0	224	109	e950	434	43	8.1
19	16	21	7.4	e.30	e.90	e2.0	198	94	e1050	322	52	9.9
20	16	e20	6.3	e.40	e1.0	e3.0	171	83	e1100	272	47	19
21	17	e20	5.9	e.30	e1.2	e4.0	151	73	e950	221	42	21
22	19	e20	5.7	e.60	e1.3	e4.0	130	65	e800	190	38	20
23	23	e20	4.9	e.50	e1.3	e4.0	113	63	e700	174	38	17
24	25	e20	3.3	e.40	e1.0	e4.0	107	67	e800	162	37	16
25	26	e20	3.2	e.40	e1.0	e4.6	99	59	e750	239	34	13
26	27	e15	2.1	e.50	e1.5	e20	90	54	e650	266	31	13
27	27	e15	1.7	e.60	e2.0	e300	88	51	460	211	29	11
28	27	e15	1.7	e.80	e3.0	e1300	82	48	331	167	27	10
29	26	15	1.5	e.60	---	1140	75	44	273	140	26	9.2
30	26	12	1.5	e.80	---	e869	68	46	345	117	25	9.1
31	28	---	1.3	e1.0	---	e648	---	46	---	109	23	---
TOTAL	501.9	830	186.8	13.46	42.20	4357.6	7300	5776	11996	14238	1505	383.9
MEAN	16.2	27.7	6.03	.43	1.51	141	243	186	400	459	48.5	12.8
MAX	28	44	12	1.0	3.0	1300	486	758	1100	2200	104	21
MIN	3.7	12	1.3	.15	.70	2.0	68	44	44	109	23	7.6
AC-FT	996	1650	371	27	84	8640	14480	11460	23790	28240	2990	761

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	3.27	5.71	1.30	.15	8.24	46.6	52.6	45.0	115	101	13.8	7.92
MEAN	3.27	5.71	1.30	.15	8.24	46.6	52.6	45.0	115	101	13.8	7.92
MAX	16.2	27.7	6.03	.43	38.6	141	243	186	400	459	48.5	26.2
(WY)	1993	1993	1993	1993	1992	1993	1993	1993	1993	1993	1993	1992
MIN	.000	.000	.000	.000	.000	.053	.10	.59	.083	.018	.000	.000
(WY)	1989	1990	1990	1989	1989	1990	1990	1989	1989	1989	1989	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1989 - 1993

ANNUAL TOTAL	7584.92	47130.86	33.4
ANNUAL MEAN	20.7	129	129
HIGHEST ANNUAL MEAN			1993
LOWEST ANNUAL MEAN			1989
HIGHEST DAILY MEAN	285	2200	2200
LOWEST DAILY MEAN	.20	.15	.00
ANNUAL SEVEN-DAY MINIMUM	.24	.19	.00
INSTANTANEOUS PEAK FLOW		3400	3400
INSTANTANEOUS PEAK STAGE		12.99	12.99
ANNUAL RUNOFF (AC-FT)	15040	93480	24200
10 PERCENT EXCEEDS	43	378	54
50 PERCENT EXCEEDS	13	23	.70
90 PERCENT EXCEEDS	.63	1.0	.00

e Estimated

a No flow at times in most years.

b Backwater.

BIG SIOUX RIVER BASIN

06480000 BIG SIOUX RIVER NEAR BROOKINGS, SD

LOCATION.--Lat 44°10'48", long 96°44'55", in NW1/4NW1/4 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	141	e190	e40	e60	e65	4500	1220	850	2670	1710	1050
2	151	170	e180	e45	e65	e65	3930	1370	897	2570	1690	1020
3	148	196	e170	e45	e70	e65	3350	1490	954	3730	1670	974
4	141	196	e160	e45	e80	e65	2880	1550	1000	9870	1710	940
5	136	179	e150	e40	e70	e65	2470	1470	1010	11300	1740	906
6	134	181	e150	e35	e70	e65	2180	1380	967	8200	1720	879
7	139	190	e150	e30	e70	e70	2150	1390	932	6230	1630	859
8	161	185	e140	e35	e70	e75	2390	1670	957	5130	1530	836
9	182	202	e140	e35	e70	e75	2590	2530	1040	4290	1450	820
10	187	228	e140	e35	e60	e70	2690	3620	1130	3630	1360	791
11	184	245	e140	e35	e60	e60	2740	3920	1180	3220	1300	773
12	177	264	e130	e40	e60	e60	2730	3480	1180	2870	1240	752
13	170	252	e130	e40	e55	e50	2780	2870	1140	2610	1190	740
14	160	224	e130	e40	e55	e50	2760	2380	1100	2410	1190	741
15	151	260	e130	e35	e50	e50	2660	2020	1060	2240	1280	748
16	146	264	e130	e35	e50	e60	2490	1750	1110	2100	1420	754
17	143	250	e127	e35	e50	e50	2350	1570	1590	2080	1690	742
18	140	240	e125	e35	e45	e60	2220	1450	3420	2110	2020	733
19	141	238	e110	e40	e45	e70	2080	1340	8020	2150	2250	741
20	142	243	e110	e40	e55	e70	1910	1250	9380	2130	2250	845
21	137	240	e110	e40	e65	e70	1740	1170	9390	2070	2120	992
22	139	238	e110	e50	e60	e75	1610	1090	8030	1990	1890	1200
23	139	244	e110	e50	e60	e80	1520	1050	6700	1890	1710	1310
24	133	235	e100	e45	e60	e90	1450	1020	5890	1800	1590	1290
25	132	227	e105	e40	e55	e100	1390	995	5290	1790	1480	1210
26	130	195	e90	e40	e60	e200	1320	978	4900	1780	1370	1140
27	126	184	e80	e50	e60	e500	1290	991	4350	1770	1290	1060
28	122	e170	e80	e55	e60	e1500	1250	991	3710	1720	1230	973
29	121	e180	e70	e50	---	e5000	1210	958	3190	1660	1180	890
30	120	e200	e60	e50	---	7160	1170	926	2920	1650	1140	837
31	122	---	e50	e55	---	5970	---	873	---	1680	1090	---
TOTAL	4510	6461	3797	1285	1690	22005	67800	50762	93287	101340	48130	27546
MEAN	145	215	122	41.5	60.4	710	2260	1637	3110	3269	1553	918
MAX	187	264	190	55	80	7160	4500	3920	9390	11300	2250	1310
MIN	120	141	50	30	45	50	1170	873	850	1650	1090	733
AC-FT	8950	12820	7530	2550	3350	43650	134500	100700	185000	201000	95470	54640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1993, BY WATER YEAR (WY)

	MEAN	89.9	74.2	40.9	21.0	45.1	456	729	382	483	289	144	131
MAX	767	411	208	179	270	2037	4445	2804	3432	3269	1553	1693	
(WY)	1987	1985	1987	1987	1983	1985	1969	1986	1984	1993	1993	1986	
MIN	.039	.094	.088	.000	.000	1.45	27.3	21.4	13.5	.94	.015	.011	
(WY)	1977	1977	1977	1977	1956	1975	1959	1959	1976	1976	1976	1976	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1954 - 1993

ANNUAL TOTAL	138512	428613	
ANNUAL MEAN	378	1174	
HIGHEST ANNUAL MEAN			241a
LOWEST ANNUAL MEAN			1174
HIGHEST DAILY MEAN	5310	11300	15.5
LOWEST DAILY MEAN	30	30	.00
ANNUAL SEVEN-DAY MINIMUM	30	35	.00
INSTANTANEOUS PEAK FLOW		13300	33900
INSTANTANEOUS PEAK STAGE		13.50	14.77
ANNUAL RUNOFF (AC-FT)	274700	850200	174600
10 PERCENT EXCEEDS	763	2750	575
50 PERCENT EXCEEDS	228	742	48
90 PERCENT EXCEEDS	73	50	4.0

e Estimated

a Median of annual mean discharges, 150 ft³/s.

b No flow at times in 1956, 1976, 1977, 1982.

BIG SIOUX RIVER BASIN

06480400 SPRING CREEK NEAR FLANDREAU, SD

LOCATION.--Lat 44°07'18", long 96°35'19", in SE1/4NE1/4NE1/4 sec.33, T.108 N., R.48 W., 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 September 30, 1993 (discontinued).

REVISED RECORDS.--WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,580 ft above sea level, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are poor, and those for Oct. 7 to Nov. 1, Nov. 4, 9-12, 14-16, 18, and 19, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.0	5.3	e4.5	e2.5	e2.0	e4.5	101	29	17	159	28	17
2	e4.0	e5.5	e4.5	e2.5	e2.5	e4.5	70	82	26	93	27	14
3	e3.0	e6.0	e4.0	e2.5	e2.5	e4.5	46	72	35	1850	25	12
4	e3.0	6.6	e3.0	e2.5	e2.5	e5.0	36	38	28	1120	25	12
5	e2.0	e6.5	e2.5	e2.5	e3.0	e5.0	31	25	25	335	24	11
6	e2.0	e6.0	e2.5	e2.5	e3.0	e5.5	28	20	19	156	24	10
7	2.3	e6.0	e3.0	e2.5	e3.0	e6.0	50	27	16	98	23	11
8	2.8	e5.5	e3.5	e2.0	e3.0	e6.0	142	213	16	81	23	10
9	5.3	5.4	e4.0	e2.0	e3.0	e6.0	117	184	17	76	23	10
10	5.8	6.5	e4.0	e2.0	e3.0	e6.0	62	75	16	67	23	9.4
11	5.4	7.6	e4.0	e2.0	e3.0	e6.0	65	43	14	62	21	9.1
12	5.3	7.4	e4.0	e2.0	e3.0	e5.0	68	30	12	69	21	9.2
13	5.4	e6.5	e4.0	e2.0	e3.0	e4.5	53	23	13	77	21	11
14	5.6	6.2	e4.0	e2.0	e3.0	e4.5	42	19	18	61	21	13
15	5.8	6.7	e4.5	e2.0	e3.0	e6.0	51	16	22	51	35	12
16	5.4	6.3	e4.8	e2.5	e3.0	e5.0	46	14	27	44	68	11
17	5.6	e6.0	e4.2	e2.0	e3.0	e4.5	40	13	134	67	79	9.9
18	5.6	5.8	e4.1	e1.5	e3.0	e4.5	31	14	376	79	54	11
19	5.3	5.8	e4.0	e1.0	e3.0	e5.0	26	13	291	65	80	16
20	5.4	e6.0	e3.8	e1.5	e3.0	e5.0	23	12	256	56	69	57
21	5.8	e6.0	e3.6	e1.5	e3.5	e5.0	20	11	134	45	50	63
22	6.4	e6.0	e3.8	e2.0	e4.0	e5.5	18	10	70	38	39	55
23	6.2	e6.0	e3.5	e2.0	e4.0	e5.5	17	11	102	36	39	37
24	6.2	e6.0	e3.4	e2.0	e4.0	e7.0	16	15	131	36	54	30
25	5.6	e6.0	e3.4	e2.0	e4.0	e8.0	15	16	146	83	38	25
26	5.3	e6.0	e3.0	e2.0	e4.0	e50	14	13	93	70	29	21
27	5.4	e5.5	e3.0	e2.0	e4.0	e300	14	13	50	56	23	18
28	5.4	e5.5	e3.0	e2.0	e4.0	e1000	14	15	33	45	20	17
29	5.3	e5.0	e3.0	e2.0	---	429	13	14	138	35	18	15
30	5.3	e5.0	e3.0	e2.0	---	194	13	14	256	30	18	14
31	5.3	---	e2.5	e2.0	---	181	---	17	---	28	17	---
TOTAL	151.2	180.6	112.1	63.5	89.0	2288.0	1282	1111	2531	5168	1059	570.6
MEAN	4.88	6.02	3.62	2.05	3.18	73.8	42.7	35.8	84.4	167	34.2	19.0
MAX	6.4	7.6	4.8	2.5	4.0	1000	142	213	376	1850	80	63
MIN	2.0	5.0	2.5	1.0	2.0	4.5	13	10	12	28	17	9.1
AC-FT	300	358	222	126	177	4540	2540	2200	5020	10250	2100	1130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

MEAN	10.9	11.3	5.25	3.85	15.3	56.2	36.9	20.3	41.6	25.7	7.96	17.6
MAX	27.5	42.9	12.2	8.63	75.8	182	111	56.3	224	167	34.2	113
(WY)	1985	1983	1983	1984	1983	1986	1984	1986	1984	1993	1993	1986
MIN	2.11	2.55	.34	.029	.20	5.71	5.39	2.79	2.56	1.33	1.20	1.67
(WY)	1992	1991	1990	1990	1989	1991	1990	1992	1988	1988	1988	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	3274.9	14606.0	
ANNUAL MEAN	8.95	40.0	21.1a
HIGHEST ANNUAL MEAN			43.9
LOWEST ANNUAL MEAN			4.17
HIGHEST DAILY MEAN	375	1850	1850
LOWEST DAILY MEAN	1.0	1.0	.00
ANNUAL SEVEN-DAY MINIMUM	1.9	1.6	.00
INSTANTANEOUS PEAK FLOW		4480	4480
INSTANTANEOUS PEAK STAGE		16.84	16.84
ANNUAL RUNOFF (AC-FT)	6500	28970	15210
10 PERCENT EXCEEDS	11	75	38
50 PERCENT EXCEEDS	5.0	10	5.9
90 PERCENT EXCEEDS	2.4	2.5	1.5

e Estimated

a Median of annual mean discharges, 15 ft³/s.

b Also Dec. 27, 1989, to Jan. 13, 1990.

BIG SIOUX RIVER BASIN

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD

LOCATION.--Lat 43°47'25", long 96°44'42", in NW1/4NW1/4 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 sea level. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221	191	e200	e100	e65	e80	8820	1890	1540	7480	2090	1310
2	213	221	e200	e90	e70	e80	7890	2410	1740	5600	2070	1260
3	204	238	e200	e90	e75	e80	6200	2350	1750	5600	2060	1220
4	199	251	e190	e90	e80	e80	4840	2260	1680	11300	2010	1170
5	195	261	e180	e90	e90	e80	4050	2180	1650	14100	1990	1130
6	184	259	e190	e80	e95	e80	3350	2110	1610	13100	1990	1090
7	196	237	e190	e80	e100	e80	3090	2150	1560	11400	2000	1060
8	270	256	e200	e80	e105	e90	3150	3640	1500	8950	1970	1030
9	328	261	e210	e75	e105	e95	3180	3990	1470	7700	1890	996
10	284	296	e210	e70	e100	e100	3200	3970	1490	6920	1790	966
11	283	326	e220	e70	e95	e90	3270	3580	1530	6990	1710	943
12	284	338	e220	e70	e95	e80	3380	3890	1550	5770	1630	920
13	272	346	e210	e65	e95	e80	3320	4260	1590	4950	1550	917
14	255	341	e200	e70	e90	e80	3300	4080	1620	4430	1500	883
15	239	343	e190	e70	e90	e90	3360	3510	1580	3980	1500	866
16	227	346	e185	e70	e90	e80	3340	2990	1760	3560	1530	865
17	215	348	e185	e70	e90	e80	3220	2620	2290	3800	1660	865
18	210	356	e185	e70	e90	e80	3050	2350	2370	4260	2020	865
19	206	343	e175	e65	e90	e80	2870	2120	3070	3580	2450	893
20	201	352	e160	e65	e90	e80	2710	1960	4360	3260	2450	1050
21	198	368	e150	e65	e90	e85	2550	1840	6410	3050	2570	1120
22	203	376	e145	e65	e90	e90	2400	1750	8770	2900	2600	1210
23	195	365	e140	e65	e90	e90	2260	1670	9050	2760	2490	1320
24	194	342	e140	e65	e90	e100	2120	1630	8760	2650	2250	1420
25	193	333	e130	e65	e90	e150	2010	1580	8280	2990	2050	1460
26	187	e250	e120	e65	e85	e500	1920	1540	7550	3110	1890	1430
27	183	e240	e120	e65	e85	e2000	1880	1530	6560	2750	1730	1360
28	181	e230	e110	e65	e85	e4500	1820	1490	5650	2530	1590	1300
29	177	e200	e110	e60	---	e6000	1770	1500	5650	2380	1500	1210
30	177	e200	e100	e60	---	7450	1720	1740	8030	2240	1430	1130
31	177	---	e100	e60	---	8110	---	1710	---	2140	1360	---
TOTAL	6751	8814	5265	2230	2505	30740	100040	76290	112420	166230	59320	33259
MEAN	218	294	170	71.9	89.5	992	3335	2461	3747	5362	1914	1109
MAX	328	376	220	100	105	8110	8820	4260	9050	14100	2600	1460
MIN	177	191	100	60	65	80	1720	1490	1470	2140	1360	865
AC-FT	13390	17480	10440	4420	4970	60970	198400	151300	223000	329700	117700	65970

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1993, BY WATER YEAR (WY)

	MEAN	122	105	62.5	32.0	68.7	631	1200	541	630	420	207	180
MAX	1090	587	333	220	584	2813	6756	3699	5392	5362	1914	2541	
(WY)	1987	1983	1987	1987	1983	1985	1969	1986	1984	1993	1993	1986	
MIN	1.60	3.43	2.30	.71	1.30	10.6	45.3	42.6	19.4	2.77	.17	.000	
(WY)	1977	1977	1977	1977	1977	1975	1959	1981	1976	1976	1976	1976	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1949 - 1993

ANNUAL TOTAL	183279	603864	
ANNUAL MEAN	501	1654	
HIGHEST ANNUAL MEAN			350a
LOWEST ANNUAL MEAN			1654
HIGHEST DAILY MEAN	4590	Jun 24	14100
LOWEST DAILY MEAN	44	Jan 15	60
ANNUAL SEVEN-DAY MINIMUM	47	Jan 14	63
INSTANTANEOUS PEAK FLOW			16400
INSTANTANEOUS PEAK STAGE			15.56
ANNUAL RUNOFF (AC-FT)	363500	1198000	253600
10 PERCENT EXCEEDS	1110	4060	803
50 PERCENT EXCEEDS	298	893	75
90 PERCENT EXCEEDS	104	80	10

e Estimated

a Median of annual mean discharges, 210 ft³/s.

b Also Jan. 30 and 31.

c No flow Aug. 25 to Oct. 17, 1976.

BIG SIOUX RIVER BASIN

06481500 SKUNK CREEK AT SIOUX FALLS, SD

LOCATION.--Lat 43°32'01", long 96°47'26", in NW1/4SW1/4 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 sea level (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 those for Mar. 31 to July 20, which are fair. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	98	e120	e40	e30	e30	1380	719	715	3610	986	314
2	108	e130	e115	e45	e30	e30	1210	972	909	3160	.898	285
3	102	e150	e115	e45	e30	e35	1010	769	746	2820	833	258
4	96	e135	e90	e40	e30	e35	896	632	649	4090	785	246
5	92	e125	e70	e40	e30	e35	803	538	589	4000	744	226
6	94	e120	e70	e35	e30	e35	738	500	529	4380	710	201
7	118	e115	e80	e35	e30	e40	880	547	524	4450	684	161
8	244	e120	e80	e30	e30	e100	1060	4670	549	4060	653	e170
9	299	e125	e80	e35	e30	e220	928	2440	500	3930	618	160
10	248	138	e90	e35	e30	e250	816	1410	462	4770	586	149
11	204	145	e90	e35	e25	e200	888	1100	434	7610	561	140
12	167	142	e80	e40	e25	e150	882	1000	411	4880	531	133
13	149	125	e80	e40	e25	e150	839	886	556	3720	503	150
14	130	118	e75	e35	e20	e100	879	793	526	3220	487	184
15	108	120	e75	e35	e20	e100	891	704	453	2660	693	165
16	112	121	e75	e30	e20	e75	823	656	786	2190	883	150
17	107	117	e75	e30	e15	e100	729	635	934	3240	749	141
18	104	117	e75	e30	e20	e95	681	639	920	3940	791	141
19	100	121	e70	e35	e20	e50	649	610	1100	2420	937	211
20	100	137	e60	e35	e25	e50	610	590	983	1820	828	451
21	96	163	e60	e35	e25	e60	548	564	889	1590	814	466
22	95	156	e60	e40	e25	e45	527	1030	783	1440	729	388
23	91	e140	e50	e35	e25	e50	505	1580	1090	1340	685	321
24	89	e130	e50	e30	e24	e65	479	654	1710	1270	623	290
25	87	e120	e50	e30	e25	e330	463	511	1770	1600	558	259
26	84	e120	e60	e35	e20	e2400	439	439	1500	1720	493	226
27	82	e125	e60	e35	e25	e4790	448	425	1220	1480	441	198
28	80	e120	e50	e30	e30	e4050	436	394	1040	1340	409	179
29	79	e115	e45	e25	---	2650	406	471	1180	1310	388	159
30	77	e115	e45	e25	---	2400	395	1100	3060	1200	360	148
31	81	---	e40	e30	---	1870	---	888	---	1090	337	---
TOTAL	3735	3823	2235	1075	714	20590	22238	28866	27517	90350	20297	6670
MEAN	120	127	72.1	34.7	25.5	664	741	931	917	2915	655	222
MAX	299	163	120	45	30	4790	1380	4670	3060	7610	986	466
MIN	77	98	40	25	15	30	395	394	411	1090	337	133
AC-FT	7410	7580	4430	2130	1420	40840	44110	57260	54580	179200	40260	13230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1993, BY WATER YEAR (WY)

	MEAN	25.1	21.3	11.4	5.63	28.6	184	231	110	136	119	43.4	40.9
MAX	405	316	126	50.2	321	869	1530	931	1903	2915	655	798	
(WY)	1987	1983	1983	1987	1983	1983	1983	1993	1984	1993	1993	1986	1988
MIN	.14	.29	.10	.048	.037	1.20	1.35	.82	.50	.16	.11	.070	
(WY)	1959	1965	1965	1977	1977	1968	1959	1981	1977	1977	1976	1958	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1949 - 1993

ANNUAL TOTAL	48454.80	228110	79.8a	1993
ANNUAL MEAN	132	625	625	1981
HIGHEST ANNUAL MEAN			1.55	
LOWEST ANNUAL MEAN			11500	Jun 17 1957
HIGHEST DAILY MEAN	1020	Aug 10	7610	Jul 11
LOWEST DAILY MEAN	.90	Jan 15	15	Feb 17
ANNUAL SEVEN-DAY MINIMUM	1.2	Jan 13	20	Feb 13
INSTANTANEOUS PEAK FLOW			8640	Jul 11
INSTANTANEOUS PEAK STAGE			10.81	Jul 11
ANNUAL RUNOFF (AC-FT)	96110	452500	57820	
10 PERCENT EXCEEDS	314	1490	150	
50 PERCENT EXCEEDS	84	184	6.0	
90 PERCENT EXCEEDS	5.7	30	.50	

e Estimated

a Median of annual mean discharges, 32 ft³/s.

b No flow at times in some years.

c Site and datum then in use, from rating curve extended above 8,100 ft³/s on basis of slope-area measurement of peak flow.

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 SW1/4NW1/4 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 sea level (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. Flow is regulated by a flood-control diversion channel, which starts 16.1 river miles upstream from gage, just north of Foss Air Field, and rejoins the river 0.4 mi upstream from gage. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 10, 1969, reached a stage of 27.45 ft, discharge, 40,700 ft³/s.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	368	370	e370	e160	121	112	8320	2560	2450	11400	3140	1560
2	359	396	e380	e160	125	113	8690	3370	2730	11000	3000	1490
3	351	419	e380	e150	130	117	8610	3320	2660	9570	2890	1420
4	345	423	e300	e150	135	125	7490	2990	2390	10500	2800	1350
5	336	417	e260	e140	136	137	6210	2750	2250	13700	2700	1290
6	372	421	e300	e130	141	137	5350	2640	2130	17400	2640	1240
7	464	389	e320	e130	143	175	4740	2810	2100	17700	2610	1190
8	671	393	e320	e130	138	240	4880	7160	2030	16200	2560	1150
9	706	403	e340	e130	146	332	4750	7740	1900	14200	2460	1110
10	625	428	e340	e125	146	399	4500	5910	1850	13200	2310	1070
11	554	456	e320	e125	134	342	4560	5020	1820	14500	2170	1040
12	511	472	e310	e125	e130	315	4690	4650	1810	12100	2060	1010
13	475	470	e290	e120	e130	268	4660	4880	2100	9770	1950	1030
14	446	452	e275	e120	e120	261	4680	4980	2080	8270	1880	1000
15	414	460	e275	e120	e120	246	4720	4500	1910	7160	2270	968
16	397	466	e273	e120	e120	230	4630	3890	2950	6160	2370	946
17	381	446	e270	e120	e120	203	4390	3420	2990	6450	2280	955
18	372	488	e270	e120	e120	200	4160	3050	3120	8290	2710	945
19	365	492	e260	115	e115	198	3930	2750	3680	6960	3280	1130
20	361	510	e260	116	e115	190	3650	2520	4230	5580	3220	1320
21	353	537	e250	115	e115	184	3360	2330	4840	4930	3280	1430
22	349	536	e240	117	e115	192	3140	2720	6120	4510	3260	1420
23	345	522	e230	119	e115	228	2930	4890	7700	4270	3170	1430
24	338	482	e220	119	112	234	2740	2580	9730	4090	2920	1500
25	338	459	e210	e118	106	437	2560	2180	9870	4620	2630	1530
26	330	372	e200	117	105	2300	2410	2020	9600	4940	2390	1490
27	326	e370	e190	117	106	6270	2360	2010	8960	4680	2170	1420
28	318	362	e190	118	109	7090	2270	1880	8080	4060	1960	1350
29	309	364	e180	119	---	7680	2160	2150	7620	3840	1840	1270
30	309	e370	e180	116	---	8250	2110	3560	8830	3590	1800	1190
31	313	---	e170	119	---	8480	---	2950	---	3340	1640	---
TOTAL	12501	13145	8373	3900	3468	45685	133650	110180	130530	266980	78360	37244
MEAN	403	438	270	126	124	1474	4455	3554	4351	8612	2528	1241
MAX	706	537	380	160	146	8480	8690	7740	9870	17700	3280	1560
MIN	309	362	170	115	105	112	2110	1880	1810	3340	1640	945
AC-FT	24800	26070	16610	7740	6880	90620	265100	218500	258900	529600	155400	73870

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1993, BY WATER YEAR (WY)

	245	217	131	71.2	143	1065	1493	910	1037	848	368	375
MEAN	245	217	131	71.2	143	1065	1493	910	1037	848	368	375
MAX	1580	1009	476	289	798	3479	6543	4516	6880	8612	2528	3468
(WY)	1987	1983	1983	1987	1983	1985	1986	1986	1984	1993	1993	1986
MIN	15.9	17.4	15.0	6.26	10.2	31.7	40.8	54.4	31.6	19.4	20.3	16.7
(WY)	1989	1977	1990	1982	1989	1975	1990	1977	1976	1976	1976	1976

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1972 - 1993

ANNUAL TOTAL	231452	844016	
ANNUAL MEAN	632	2312	576a
HIGHEST ANNUAL MEAN			2312
LOWEST ANNUAL MEAN			50.4
HIGHEST DAILY MEAN	3830	Jun 25	20700
LOWEST DAILY MEAN	53	Jan 26	.81
ANNUAL SEVEN-DAY MINIMUM	55	Jan 24	1.3
INSTANTANEOUS PEAK FLOW			21600
INSTANTANEOUS PEAK STAGE			23.84
ANNUAL RUNOFF (AC-FT)	459100	1674000	417300
10 PERCENT EXCEEDS	1360	6340	1470
50 PERCENT EXCEEDS	404	1030	134
90 PERCENT EXCEEDS	89	120	22

e Estimated

a Median of annual mean discharge, 310 ft³/s.

BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW1/4SW1/4 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 sea level. 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. 4-10, Dec.19 to Mar. 24, Mar. 31 to Apr. 4, Aug. 23-26, 28, 29, 31, and Sept. 3-9, 11, 13-15. 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	474	908	856	210	250	165	8150	1370	8870	18200	2270	2680
2	468	991	842	370	290	180	6030	1690	7510	13800	1950	2050
3	453	1060	843	330	340	205	4220	2140	9150	7430	1720	1780
4	434	1100	600	300	390	225	3350	2050	7900	12000	1570	1580
5	418	1080	430	270	380	250	2910	1750	4890	21900	1450	1440
6	419	1030	400	280	420	280	2590	1550	3670	13600	1380	1350
7	582	1010	470	260	370	320	2660	2270	4750	7580	1330	1270
8	1600	992	600	250	335	390	3610	6050	8220	6160	1260	1220
9	3090	1000	680	230	300	375	4420	21500	8010	7620	1180	1170
10	3300	1020	740	220	310	360	3650	13600	5320	6970	1110	1120
11	2570	1070	695	230	300	265	3070	7220	3470	12300	1040	1080
12	2120	1110	708	240	250	190	3110	4500	2810	22300	976	1020
13	1840	1080	736	260	240	170	2890	3380	2680	16000	1090	991
14	1650	1030	711	230	270	150	2840	2780	3970	13900	1670	1000
15	1490	989	706	250	260	170	3280	2400	3790	10000	3290	1020
16	1390	996	699	280	180	230	3320	2150	3470	6030	7080	1010
17	1310	976	649	260	130	180	2840	2000	6840	7900	6020	983
18	1240	952	654	240	170	150	2370	2030	9890	12800	3390	995
19	1210	954	651	220	220	140	2180	1980	11400	8940	3020	1060
20	1170	1030	440	240	210	150	2490	1820	10500	5360	3290	1360
21	1120	1150	380	260	195	230	3190	1680	9390	4210	2300	1650
22	1100	1200	450	240	180	170	2620	1570	6470	3530	1940	1770
23	1070	1160	400	260	150	180	2140	1530	5370	3180	1760	1570
24	1040	1100	160	245	120	390	1900	1540	8690	2950	1560	1420
25	1020	1040	190	230	130	917	1690	1450	9680	4110	1380	1320
26	1000	982	370	250	120	3400	1520	1360	7740	8150	1200	1250
27	968	921	350	240	135	11100	1430	1350	4420	6390	1900	1170
28	945	921	310	210	150	19000	1410	1290	3250	7650	1690	1120
29	926	888	230	180	---	17400	1380	1310	3250	4900	1490	1070
30	894	908	220	200	---	12600	1310	6250	9480	3230	3270	1040
31	880	---	140	220	---	9740	---	12000	---	2650	5210	---
TOTAL	38191	30648	16310	7705	6795	79672	88570	115560	194850	281740	69786	39559
MEAN	1232	1022	526	249	243	2570	2952	3728	6495	9088	2251	1319
MAX	3300	1200	856	370	420	19000	8150	21500	11400	22300	7080	2680
MIN	418	888	140	180	120	140	1310	1290	2680	2650	976	983
AC-FT	75750	60790	32350	15280	13480	158000	175700	229200	386500	558800	138400	78470
CFSM	.77	.64	.33	.16	.15	1.61	1.85	2.34	4.08	5.71	1.41	.83
IN.	.89	.72	.38	.18	.16	1.86	2.07	2.70	4.55	6.58	1.63	.92

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1993, BY WATER YEAR (WY)

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEAN	177	205	111	58.1	195	910	1165	539	806	579	245	171
MAX	1232	2039	676	432	1059	3421	6507	3728	6495	9088	2251	1319
(WY)	1993	1980	1983	1983	1966	1983	1969	1993	1993	1993	1993	1993
MIN	2.39	9.70	3.22	.037	.30	35.1	35.9	44.4	46.3	21.9	6.79	3.26
(WY)	1959	1959	1959	1977	1959	1959	1959	1968	1964	1976	1976	1955

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1948 - 1993

ANNUAL TOTAL	332891	969386	
ANNUAL MEAN	910	2656	
HIGHEST ANNUAL MEAN			430
LOWEST ANNUAL MEAN			2656
HIGHEST DAILY MEAN	4940	Jul 13	31.0
LOWEST DAILY MEAN	45	Jan 15	35400
ANNUAL SEVEN-DAY MINIMUM	48	Jan 1	.00
INSTANTANEOUS PEAK FLOW			139
INSTANTANEOUS PEAK STAGE			Feb 23
INSTANTANEOUS LOW FLOW			May 9
ANNUAL RUNOFF (AC-FT)	660300	1923000	40400
ANNUAL RUNOFF (CFSM)	.57	1.67	17.32
ANNUAL RUNOFF (INCHES)	7.78	22.65	.00
10 PERCENT EXCEEDS	1900	7690	many years
50 PERCENT EXCEEDS	709	1180	
90 PERCENT EXCEEDS	152	220	

BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°50'14", long 96°33'41", in SW1/4SE1/4SW1/4 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 sea level. 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, and those for Mar. 29-31, May 9-10, which are fair. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1200	1490	1560	e1000	e520	e520	24800	3990	17500	15300	7630	7650
2	1170	1550	1560	e1050	e560	e530	20600	4280	17600	31600	7010	5710
3	1140	1720	1510	e1000	e590	e550	18100	5410	13400	32200	6540	4650
4	1120	1880	1510	e950	e630	e600	15800	6610	13200	23000	6190	4140
5	1090	1950	e1450	e900	e650	e650	14400	6670	13000	25300	5940	3790
6	1070	1920	e1400	e850	e720	e700	13000	5770	9820	45100	5690	3520
7	1180	1840	e1400	e800	e720	e800	11300	5240	8000	34200	5550	3310
8	1780	1800	e1500	e750	e720	e1300	10200	6060	9610	27500	5330	3210
9	3590	1750	e1600	e700	e720	e2000	10300	9310	11800	27400	5170	3070
10	5100	1730	e1700	e680	e720	e2400	11000	39300	11200	27200	4950	2930
11	5310	1760	e1700	e650	e720	e2400	10800	36900	9030	25900	4660	2800
12	4650	1840	e1650	e640	e710	e2200	9650	21000	6850	36900	4380	2690
13	3520	1920	e1600	e610	e670	e1800	9190	14500	6050	50600	4220	2610
14	3070	1920	e1550	e600	e630	e1700	9090	11400	6080	36700	4530	2560
15	2760	1850	e1500	e590	e620	e1500	8970	9940	7290	27300	5020	2590
16	2520	1780	e1400	e580	e610	e1500	9450	9300	7670	20600	7220	2590
17	2330	1760	e1300	e560	e600	e1300	9540	8620	8100	15200	10500	2520
18	2200	1740	e1250	e550	e590	e1200	8980	7860	10900	16000	8470	2490
19	2100	1720	e1200	e540	e580	e1100	8360	7150	14500	19900	7490	2560
20	2020	1770	e1200	e530	e570	e1100	8020	6090	16000	18400	7700	2810
21	1950	1880	e1150	e530	e570	e1200	7630	5840	15800	13700	8100	3510
22	1900	2050	e1150	e530	e560	e1200	7620	5300	15900	11200	7360	4260
23	1840	2120	e1100	e530	e550	e1100	6870	5380	14200	9850	6850	4270
24	1790	2090	e1100	e530	e540	e1150	6100	6650	13900	9090	6550	3900
25	1740	2000	e1150	e530	e530	e2000	5490	8560	18000	8550	6170	3670
26	1690	1890	e1150	e520	e520	e5000	4990	7140	21900	9330	5620	3550
27	1650	1750	e1100	e520	e520	8800	4560	5270	21800	12700	5200	3400
28	1610	1620	e1050	e520	e520	14200	4330	4730	17600	12400	5600	3240
29	1560	1640	e1000	e530	---	23200	4210	4470	14800	12200	5040	3080
30	1530	1580	e950	e540	---	28600	4050	5420	13500	10100	4870	2940
31	1490	---	e900	e520	---	29100	---	10300	---	8370	6650	---
TOTAL	67670	54310	41340	20330	17160	141400	297400	294460	385000	673790	192200	104020
MEAN	2183	1810	1334	656	613	4561	9913	9499	12830	21740	6200	3467
MAX	5310	2120	1700	1050	720	29100	24800	39300	21900	50600	10500	7650
MIN	1070	1490	900	520	520	520	4050	3990	6050	8370	4220	2490
AC-FT	134200	107700	82000	40320	34040	280500	589900	584100	763600	1336000	381200	206300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1993, BY WATER YEAR (WY)

	441	413	271	171	466	2287	2955	1518	1950	1383	682	651
MEAN	4039	3022	1967	841	2399	8866	20690	9499	15820	21740	6200	7313
MAX	1987	1980	1983	1983	1966	1983	1969	1993	1984	1993	1993	1986
(WY)	32.9	47.9	32.1	6.68	12.1	124	139	73.3	100	50.7	45.2	36.4
MIN	1959	1959	1977	1977	1936	1931	1931	1934	1933	1931	1976	1976
(WY)												

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1929 - 1993

ANNUAL TOTAL	699658	2289080	1099a
ANNUAL MEAN	1912	6271	6271
HIGHEST ANNUAL MEAN			120
LOWEST ANNUAL MEAN			77500
HIGHEST DAILY MEAN	8300	50600	77500
LOWEST DAILY MEAN	165	520	4.0
ANNUAL SEVEN-DAY MINIMUM	174	524	4.4
INSTANTANEOUS PEAK FLOW		66700	80800
INSTANTANEOUS PEAK STAGE		23.05	23.05
ANNUAL RUNOFF (AC-FT)	1388000	4540000	796400
10 PERCENT EXCEEDS	1660	15800	2460
50 PERCENT EXCEEDS	1610	3070	321
90 PERCENT EXCEEDS	288	600	68

e Estimated

a Median of annual mean discharge, 750 ft³/s.

b Also Jan. 27, 28, 31, Feb. 1, 26-28, and Mar. 1.

c Gage height, 22.99 ft.

d From high-water mark.

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 1992 TO SEPTEMBER 1993

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)	
JAN 19...	1305	544	1220	7.6	326	398	0	0.5	0.0	3.4	742	
MAR 25...	1045	E2000	680	8.0	192	234	0	6.0	0.5	100	739	
JUN 08...	1445	9970	697	8.1	193	236	0	22.0	20.5	160	718	
SEP 23...	0925	4320	910	--	--	--	--	8.0	15.0	38	--	
DATE		OXYGEN, DIS- SOLVED (PER- CENT SATUR- (MG/L) (00300)	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 PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	
JAN 19...	9.6	68	150	16	540	130	51	34	12	0.6	5.0	
MAR 25...	12.8	92	3900	4200	300	74	27	21	13	0.5	13	
JUN 08...	6.8	80	K9000	6300	310	75	30	14	9	0.3	5.7	
SEP 23...	10.6	--	2100	650	460	110	46	24	10	0.5	7.8	
DATE		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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-PT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)
JAN 19...	320	240	41	0.40	18	758	770	1.05	1130	0.170	0.22	
MAR 25...	197	130	28	0.20	11	443	460	0.63	--	1.50	1.9	
JUN 08...	201	130	16	0.40	11	421	464	0.63	12500	0.100	0.13	
SEP 23...	281	180	19	0.40	16	598	594	0.81	6930	0.040	0.05	
DATE		NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
JAN 19...	0.70	0.060	9.30	9.24	0.330	0.280	0.270	<10	91	<3	<3	
MAR 25...	3.6	0.100	4.40	4.30	0.610	0.580	0.480	50	64	<3	68	
JUN 08...	0.90	0.060	4.90	4.84	0.200	0.160	0.160	40	89	<3	23	
SEP 23...	0.80	0.020	5.70	5.68	0.200	0.140	0.140	10	99	<3	<3	

BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	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)	SEDI- MENT, DIS- SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. 4 FINER THAN (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. 4 FINER THAN (70331)
JAN 19...	36	56	<10	1	2	<1.0	510	<6	186	273	74
MAR 25...	21	170	<10	3	3	<1.0	280	7	813	--	96
JUN 08...	20	13	10	5	2	<1.0	300	<6	236	6350	94
SEP 23...	31	3	<10	2	2	<1.0	420	<6	236	2750	94

BIG SIOUX RIVER BASIN

06485696 BRULE CREEK NEAR ELK POINT, SD

LOCATION.--Lat 42°48'32", long 96°41'11", in SW1/4SW1/4 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 sea level, 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	44	37	e15	e11	e9.0	524	162	169	91	77	57
2	21	94	35	e16	e13	e10	369	267	175	89	71	51
3	21	117	34	e17	e15	e12	263	166	233	108	67	46
4	20	88	e33	e16	e18	e14	208	123	172	164	64	42
5	20	72	e32	e15	e19	e17	177	97	135	280	63	40
6	20	62	e31	e15	e20	e20	158	88	111	183	61	37
7	109	57	e31	e14	e20	e25	193	112	99	106	60	35
8	976	54	e33	e14	e20	e40	271	245	113	89	65	34
9	804	58	e37	e15	e18	e100	213	318	117	155	64	43
10	537	62	e40	e15	e14	e400	164	233	83	169	58	36
11	273	57	e50	e16	e9.0	e350	158	156	74	107	54	32
12	156	51	e50	e17	e5.0	e250	144	124	68	99	51	31
13	129	50	e50	e15	e5.0	e200	136	100	68	732	53	30
14	111	46	e50	e13	e5.0	e180	240	85	68	1630	72	29
15	97	43	e50	e10	e5.0	e180	242	80	66	1550	135	29
16	87	44	e47	e12	e5.0	e200	179	76	58	668	364	28
17	81	45	e45	e13	e4.0	e150	134	76	112	963	453	27
18	76	44	e43	e13	e3.5	e100	114	78	96	810	434	28
19	73	47	e40	e14	e4.0	e100	167	80	93	544	199	40
20	69	72	e30	e14	e4.5	e200	357	73	117	283	145	86
21	65	81	e35	e13	e5.0	e400	206	74	93	203	112	77
22	60	68	e30	e14	e5.0	e350	134	69	76	177	95	58
23	56	61	e25	e14	e4.0	e300	117	102	69	168	89	48
24	51	55	e20	e12	e4.0	e400	105	272	174	161	79	41
25	49	49	e25	e10	e4.0	e1200	94	171	342	133	70	39
26	46	44	e20	e13	e4.0	e1550	89	106	336	114	63	38
27	43	e41	e25	e15	e5.0	1910	86	87	138	116	57	35
28	40	e40	e24	e14	e8.0	1770	85	82	105	115	63	34
29	39	e39	e22	e12	---	1110	81	129	94	96	57	34
30	38	38	e20	e10	---	649	78	298	87	86	99	33
31	37	---	e15	e10	---	572	---	287	---	82	69	---
TOTAL	4225	1723	1059	426	257.0	12768.0	5486	4416	3741	10271	3463	1218
MEAN	136	57.4	34.2	13.7	9.18	412	183	142	125	331	112	40.6
MAX	976	117	50	17	20	1910	524	318	342	1630	453	86
MIN	20	38	15	10	3.5	9.0	78	69	58	82	51	27
AC-FT	8380	3420	2100	845	510	25330	10880	8760	7420	20370	6870	2420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

	MEAN	36.8	26.2	18.5	12.6	30.9	159	151	88.2	154	72.2	27.7	31.5
MAX	136	57.4	34.4	28.7	65.0	412	597	597	298	696	331	112	97.9
(WY)	1993	1993	1987	1986	1988	1993	1984	1984	1983	1993	1993	1985	1985
MIN	2.16	3.21	1.79	1.58	4.41	10.7	7.75	8.06	3.49	5.74	4.67	2.94	2.94
(WY)	1992	1990	1990	1990	1990	1991	1990	1989	1989	1988	1990	1991	1991

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	20369.9	49053.0	
ANNUAL MEAN	55.7	134	67.2a
HIGHEST ANNUAL MEAN			160
LOWEST ANNUAL MEAN			8.63
HIGHEST DAILY MEAN	976	Oct 8	5520
LOWEST DAILY MEAN	6.0	Jan 15	.43
ANNUAL SEVEN-DAY MINIMUM	7.6	Jan 11	.77
INSTANTANEOUS PEAK FLOW			6290
INSTANTANEOUS PEAK STAGE			22.39
ANNUAL RUNOFF (AC-FT)	40400	97300	48690
10 PERCENT EXCEEDS	100	276	130
50 PERCENT EXCEEDS	33	67	20
90 PERCENT EXCEEDS	10	14	3.3

e Estimated

a Median of annual mean discharges, 40 ft³/s.

b Gage height, 15.32 ft.

MISSOURI-LITTLE SIOUX RIVER BASIN

06486000 MISSOURI RIVER AT SIOUX CITY, IA

LOCATION.--Lat 42°29'09", long 96°24'49", in NW1/4SE1/4 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 sea level. 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. 19 to Mar. 4. 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.

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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25200	10800	10500	9600	14200	14300	41200	25500	34500	44500	27100	26500
2	25500	11300	10700	10400	14100	14400	41900	26800	32100	43300	24900	26600
3	25400	11400	12300	12300	14000	14000	38200	28000	39800	45100	23700	25300
4	25300	11600	12600	14700	14200	13100	35600	28100	39200	53200	22700	24900
5	25200	11600	12100	15200	14600	12900	33900	28500	33600	52200	22000	25600
6	25300	11600	12900	14600	15000	12400	31300	28300	38200	48600	21000	25600
7	26200	11400	13500	14500	14900	12200	30000	28300	37500	55300	20200	25100
8	29800	11200	13200	14600	14500	15600	30300	30000	31600	59000	19600	25100
9	34100	11200	14200	14800	14300	20100	29200	36200	34100	62700	19300	25800
10	37100	11100	14300	14900	14500	19700	27700	33900	34400	61200	20000	25700
11	33600	11000	14100	13900	15200	19900	27300	37600	30400	59800	20400	25900
12	32400	10900	14400	14500	15100	19600	26900	49900	33100	55900	20600	25900
13	31100	10900	14600	15000	14300	18100	26200	48200	31400	58600	21400	25900
14	29500	10800	14700	14200	15100	17100	26600	41700	26400	69100	22200	26200
15	27400	10800	14500	13700	15700	18100	27300	36800	28800	71300	23100	25800
16	27000	10700	14600	13900	15800	19100	27000	38200	28800	66700	25100	25800
17	26200	10600	14500	14200	14900	18400	26400	34900	26500	58900	28100	25900
18	24600	10500	14500	14200	14600	17100	26000	31300	30700	53700	30900	26000
19	21900	10600	14200	14000	14200	16800	26300	34300	32900	49100	29600	26200
20	18900	10800	14600	14200	15500	19900	28300	32800	31200	47900	25700	27000
21	16500	10900	15200	14400	16600	22800	27800	28700	33200	48500	25000	27200
22	14700	11100	15500	14000	15500	23900	25500	32600	38700	45600	26800	27000
23	13900	11200	15800	14200	13200	25000	24100	31100	40400	41800	27100	26700
24	13500	11300	14900	14000	13000	27500	24900	27400	38100	38000	26400	25800
25	12800	11200	14500	13700	14600	29000	24900	31500	39400	34800	26000	25300
26	12600	11000	15800	13500	14700	36100	24000	31200	40800	31600	25300	25400
27	12200	10700	15600	14000	14500	35300	23900	27300	44600	29800	24800	26000
28	11100	10400	16500	14200	14500	31300	25100	29500	48500	31600	24800	26100
29	11000	10200	16300	13600	---	31900	24900	31800	47500	32700	25800	25700
30	10900	10200	15300	13200	---	31600	24700	29700	46200	31900	26400	25600
31	10600	---	11500	13300	---	32600	---	33700	---	30100	26400	---
TOTAL	691500	329000	437900	429500	411300	659800	857400	1013800	1072600	1512500	752400	777600
MEAN	22310	10970	14130	13850	14690	21280	28580	32700	35750	48790	24270	25920
MAX	37100	11600	16500	15200	16600	36100	41900	49900	48500	71300	30900	27200
MIN	10600	10200	10500	9600	13000	12200	23900	25500	26400	29800	19300	24900
AC-FT	1372000	652600	868600	851900	815800	1309000	1701000	2011000	2128000	3000000	1492000	1542000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1993, BY WATER YEAR (WY)

MEAN	35300	30500	18430	15770	16620	21760	32490	32260	33810	35490	35980	35800
MAX	63260	62930	36770	27720	27730	36270	50970	46250	54190	53720	63090	63290
(WY)	1976	1976	1987	1987	1983	1983	1969	1986	1971	1975	1975	1975
MIN	14350	6951	8271	7316	6293	10130	23480	23820	23270	26890	24270	25790
(WY)	1962	1962	1962	1964	1963	1958	1961	1962	1960	1958	1993	1962

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1958 - 1993a

	1992	1993	1958-1993a
ANNUAL TOTAL	7685400	8945300	
ANNUAL MEAN	21000	24510	28730
HIGHEST ANNUAL MEAN			40750
LOWEST ANNUAL MEAN			20030
HIGHEST DAILY MEAN	37100	71300	103000
LOWEST DAILY MEAN	10200	9600	3000
ANNUAL SEVEN-DAY MINIMUM	10500	10500	5430
INSTANTANEOUS PEAK FLOW		72200	101000
INSTANTANEOUS PEAK STAGE		27.33	30.65
ANNUAL RUNOFF (AC-FT)	15240000	17740000	20810000
10 PERCENT EXCEEDS	28700	39300	43700
50 PERCENT EXCEEDS	24500	25100	29800
90 PERCENT EXCEEDS	11500	11600	11600

a Post-regulation period.

DISCHARGE AT PARTIAL-RECORD STATIONS

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.

Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area	Period of record	Water year 1993 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
MINNESOTA RIVER BASIN								
Florida Creek near Burr, MN (05299750)	Lat 44°49'00", long 96°25'10", in SE1/4SE1/4 sec.29, T.115 N., R.46 W., Yellow Medicine County, Hydrologic Unit 07020003, at culvert on County Road 15, 2.2 mi west of Burr, 6 mi northwest of Canby. Drainage area is 77.3 mi ² .	1982 1983-84†, 1991-93	6-19-93	20.01	810	6-17-92	20.85	996
MISSOURI-OAHE RIVER BASIN								
Spring Creek near Herreid, SD (06354860)	Lat 45°58'52", long 100°06'28", in SW1/4 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 sea level. Drainage area is 440 mi ² , of which 220 mi ² is probably noncontributing.	1962-86†, 1989-93	7-27-93	12.56	1,570	7-27-93	12.56	1,570
BELLE FOURCHE RIVER BASIN								
Bear Butte Creek near Sturgis, SD (06437500)	Lat 44°28'53", long 103°16'31", in NW1/4SE1/4 sec.16, T.6 N., R.7 E., Meade County, Hydro- logic Unit 10120202, on left bank 0.8 mi downstream from Spring Creek, 12.5 mi north- east of Sturgis, and 13.4 mi upstream from mouth. Datum of gage is 2,779.91 ft above sea level. Drainage area is 192 mi ² .	1945-62, 1962-72†, 1990-93	(a)	9.48	1,300	6-16-62	12.45	12,700
MISSOURI-OAHE RIVER BASIN								
Chantier Creek near Hayes, SD (06439960)	Lat 44°31'20", long 100°42'13", in NE1/4NE1/4SW1/4 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 sea level, from topographic map. Drainage area is 21.5 mi ² .	1990-93	7-13-93	14.81	^b 8,000	7-13-93	14.81	^b 8,000

DISCHARGE AT PARTIAL-RECORD STATIONS

Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area	Period of record	Water year 1993 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
MISSOURI-FORT RANDALL RIVER BASIN								
Medicine Creek near Philip, SD (06440850)	Lat 44°03'17", long 101°29'12", in SE1/4 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 sea level, from topo- graphic map. Drainage area is 56.5 mi ² .	1989-93	6-17-93	5.50	168	6-15-91	6.82	(c)
Plum Creek near Hayes, SD (06441100)	Lat 44°20'41", long 101°07'40", in SW1/4 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. Eleva- tion of gage is 2,034 ft above sea level, from topo- graphic map. Drainage area is 24.5 mi ² .	1989-93	6- 7-93	2.73	67	6- 7-93	2.73	67
Medicine Knoll Creek near Blunt, SD (06442000)	Lat 44°33'46", long 99°54'50", in NW1/4 sec.31, T.11 N., R.75 W., Sully County, Hydro- logic Unit 10140103, on left downstream wingwall of bridge, 4.8 mi northeast of Blunt, and 5.5 mi upstream from South Fork Medicine Knoll Creek. Datum of gage is 1,611.08 ft above sea level. Drainage area is 317 mi ² .	1950-90†, 1991-93	3-30-93	11.05	661	6- 5-91	12.98	6,370
Medicine Creek at Kennebec, SD (06442500)	Lat 43°54'17", long 99°52'35", in NW1/4NE1/4 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 sea level. Drainage area is 464 mi ² .	1954-90†, 1991-93	3-24-93	9.78	1,150	6- 4-91	19.11	16,100
Campbell Creek near Geddes, SD (06452330)	Lat 43°11'08", long 98°48'19", in SE1/4 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 sea level, from topo- graphic map. Drainage area is 8.37 mi ² .	1989-93	7-11-93	7.81	^d 140	5-24-90	9.83	678
NIOBRARA RIVER BASIN								
Antelope Creek near Mission, SD (06463900)	Lat 43°16'26", long 100°40'56", in SE1/4SW1/4 sec.7, T.38 N., R.28 W., Todd County, Hydro- logic Unit 10150006, at culvert on county road, 2.0 mi southwest of Mission. Eleva- tion of gage is 2,595 ft above sea level, from topographic map. Drainage area is 71.3 mi ² .	1990-93	5- 1-93	6.00	53	5- 1-93	6.00	53

DISCHARGE AT PARTIAL-RECORD STATIONS

Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area	Period of record	Water year 1993 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
JAMES RIVER BASIN								
Turtle Creek near Tulare, SD (06474000)	Lat 44°44'06", long 98°35'09", in SE1/4SE1/4 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 above sea level, by barometer. Drainage area is 1,124 mi ² .	1953-56, 1965-81†, 1984-89†, 1990-93	8-14-93	8.60	720	4- 5-69	^e 18.51	6,000
James River near Redfield, SD (06475000)	Lat 44°54'38", long 98°28'18", in NW1/4NW1/4NW1/4 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 sea level. Drainage area is 13,911 mi ² , of which 4,118 mi ² is probably noncontributing.	1950-90†, 1991-93	8- 1-93	^f 14.64	^d 2,100	4-13-69	24.93	7,310
Sand Creek near Alpena, SD (06476500)	Lat 44°09'15", long 98°26'06", in NE1/4NE1/4 sec.19, T.108 N., R.63 W., Jerauld County, Hydrologic Unit 10160006, at downstream left wingwall 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 inter- link with Cain Creek. Eleva- tion of gage is 1,315 ft above sea level, by baro- meter. Drainage area is 261 mi ² .	1950-89†, 1990-93	3-25-93	10.48	270	3-28-60	^g 13.35	2,240
Rock Creek near Fulton, SD (06477150)	Lat 43°45'39", long 97°54'25", in NW1/4NW1/4 sec.3, T.103 N., R.59 W., Hanson County, Hydrologic Unit 10160011, at right downstream wingwall of highway bridge, 4.9 mi northwest of Fulton, and 9.5 mi upstream from mouth. Elevation of gage is 1,235 ft above sea level, from topo- graphic map. Prior to 1989 at same site and different datum. Drainage area is 240 mi ² .	1966-72†, 1972-79, 1989-93	7- 6-93	14.34	1,880	4- 7-69	^h 10.21	2,040
Enemy Creek near Mitchell, SD (06478052)	Lat 43°38'33", long 97°59'09", in NW1/4NW1/4 sec.13, T.102 N., R.60 W., Davison County, Hydrologic Unit 10160011, at right downstream wingwall of highway bridge, 7.3 mi upstream from mouth, and 4.5 mi southeast of Mitchell. Elevation of gage is 1,280 ft above sea level, from topo- graphic map. Drainage area is 163 mi ² .	1975-87†, 1989-93	7- 6-93	14.97	4,050	6-22-84	15.15	4,280

DISCHARGE AT PARTIAL-RECORD STATIONS

Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area	Period of record	Water year 1993 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
JAMES RIVER BASIN--Continued								
Dry Creek near Parkston, SD (06478300)	Lat 43°22'18", long 97°49'23", in SE1/4 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 sea level, from topo- graphic map. Prior to 1989 at same site and different datum. Drainage area is 97.2 mi ² .	1955-80, 1989-93	5- 8-93	8.92	2,240	3-27-60	ⁱ 12.70	4,210
Wolf Creek near Clayton, SD (06478390)	Lat 43°22'18", long 97°36'12", in NW1/4NE1/4 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 sea level, from topo- graphic map. Drainage area is 396 mi ² .	1975-88†, 1989-93	7- 5-93	17.39	5,390	6-21-84	18.01	6,520
MISSOURI-LEWIS AND CLARK RIVER BASIN								
Vermillion River near Wakonda, SD (06479000)	Lat 42°59'27", long 96°57'49", in SW1/4NW1/4 sec.2, T.94 N., R.52 W., Clay County, Hydro- logic Unit 10170102, at right downstream wingwall of State Highway 19, 4.3 mi downstream from Frog Creek, 7.4 mi south- east of Wakonda, and 29.6 mi upstream from mouth. Datum of gage is 1,150.9 ft above sea level (levels by Corps of Engineers). Drainage area is 2,170 mi ² , of which 494 mi ² is usually noncontributing.	1945-83†, 1989-93	7- 7-93	17.33	13,000	6-23-84	17.62	17,000
BIG SIOUX RIVER BASIN								
Hidewood Creek near Estelline, SD (06479640)	Lat 44°36'42", long 96°54'17", in SW1/4NW1/4 sec.12, T.113 N., R.51 W., Hamlin County, Hydrologic Unit 10170202, at left upstream wingwall, 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 above sea level, by barometer. Drainage area is 164 mi ² .	1968-85†, 1990-93	3-28-93	^f 11.44	^d 3,000	6-16-92	^j 13.10	^k 17,300
Medary Creek near Brookings, SD (06479980)	Lat 44°13'27", long 96°46'06", in NE1/4NE1/4NE1/4 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 south- east of Brookings. Datum of gage is 1,570.20 ft above sea level. Drainage area is 200 mi ² .	1981-90†, 1992-93	7- 4-93	11.78	3,710	7- 4-93	11.78	3,710

DISCHARGE AT PARTIAL-RECORD STATIONS

Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area	Period of record	Water year 1993 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
BIG SIOUX RIVER BASIN--Continued								
Flandreau Creek above Flandreau, SD (06480650)	Lat 44°03'45", long 96°29'15", in SE1/4NE1/4NE1/4 sec.20, T.107 N., R.47 W., Moody County, Hydrologic Unit 10170203, on right bank at county highway bridge 5.9 mi upstream from mouth, and 5.2 mi east of Flandreau. Elevation of gage is 1,555 ft above sea level, from topo- graphic map. Drainage area is 100 mi ² .	1981-91†, 7- 4-93 1992-93	11.28	2,410	6-20-84	11.02	2,650	
Split Rock Creek at Corson, SD (06482610)	Lat 43°36'59", long 96°33'54", in NE1/4NW1/4 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 sea level (levels by Corps of Engineers). Drainage area is 464 mi ² .	1951-65, 5- 8-93 1965-89†, 1990-93	17.58	18,900	5- 8-93	17.58	18,900	
Beaver Creek at Valley Springs, SD (06482745)	Lat 43°35'10", long 96°28'20", in NW1/4NW1/4 sec.3, T.101 N., R.47 W., Minnehaha County, Hydrologic Unit 10170203, at bridge on County Road 103 (Valley Drive), 1 mi west of South Dakota-Minnesota border, 2.5 mi south of Interstate 90. Drainage area is 104 mi ² .	1986-93 5- 8-93	24.21	^d 2,000	7- 2-92	24.69	2,200	
Beaver Creek at Canton, SD (06482848)	Lat 43°17'12", long 96°35'46", in SW1/4SW1/4SE1/4 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 sea level, from topo- graphic map. Drainage area is 124 mi ² .	1982-89†, 6- 7-93 1990-93	12.93	^d 3,680	6-20-83	^f 14.61 ^{d,1}	13,680	
Rock River at Luverne, MN (06483000)	Lat 43°39'15", long 96°12'03", in SW1/4NE1/4 sec.11, T.102 N., R.45 W., Rock County, Hydrologic Unit 10170204, at bridge on Main Street (County Highway 4) in Luverne. Drainage area is 425 mi ² .	1911-14†, 5- 8-93 1972-93	14.23	35,400	5- 8-93	14.23	35,400	

† Operated as a continuous-record gaging station.

a Sometime between May 6-18.

b Discharge determined by slope-area indirect measurement; peak resulted from stock dam failure.

c Discharge not determined.

d Estimated.

e Backwater from ice.

f Backwater.

g Maximum gage height, 14.1 ft, Mar. 28, 1950, backwater from ice.

h At different datum; maximum gage height at current datum, 14.34 ft, July 6, 1993.

i At different datum.

j From floodmark.

k Based on contracted opening and flow-over-road indirect measurement of peak flow, 1.1 mi north of gage.

l Gage height, 12.93 ft, June 7, 1993.

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 NW1/4SE1/4SW1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--10 years, 23.17 in.

REMARKS.--Records fair except those for estimated periods, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.05	.00	e.00	.00	.00	.00	.10	.01	.02	.00
2	.00	.83	.03	.13	e.00	.00	.00	.00	.14	.00	.00	.00
3	.00	.59	.28	.05	e.29	.25	.00	.00	.25	.00	.00	.00
4	.00	.28	.00	.00	e.00	.00	.00	.00	.00	.02	.00	.58
5	.00	.04	.00	.00	e.00	.00	.00	1.55	.00	.03	.00	.00
6	.17	.04	.00	.02	e.00	.00	.95	.04	.71	.42	.02	.00
7	.39	.00	.00	.00	e.00	.00	.67	.36	1.75	.02	.02	.00
8	.00	.06	.00	.30	e.00	.00	.00	.87	e.95	.02	.00	.00
9	.15	.07	.00	.14	.03	.06	.02	.12	e.00	.00	.00	.00
10	.00	.00	.00	.00	.26	.03	.40	.00	.14	.07	.00	.00
11	.00	.08	.00	.01	.14	.21	.02	.00	.00	.00	.00	.00
12	.00	.05	.53	.09	.05	.07	.07	.00	.00	.19	.08	.00
13	.00	.00	.14	.00	.02	.00	.24	.00	.00	.00	.18	.00
14	.00	.00	.00	.00	.10	.00	.00	.00	.02	.34	.00	.00
15	.18	.00	.19	.00	.11	.07	.00	.14	.52	.13	.05	.00
16	.00	.00	.00	.00	.00	.03	.04	.08	.76	.01	.02	.00
17	.00	.00	.00	.00	.00	.00	.01	.00	.41	.15	.00	.10
18	.00	.00	.00	.00	.00	.00	.00	.00	.63	.01	.00	.15
19	.00	.00	.00	.00	.00	.09	.18	.00	.00	.00	.51	.47
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.74	.02	.00
21	.00	.00	.00	.10	.04	.15	.00	.51	.09	.02	.00	.00
22	.00	.00	.07	.10	.00	.00	.00	.11	.02	.01	.00	.00
23	.00	.25	.09	.21	.07	.00	.23	.17	.02	.12	.00	.00
24	.00	.08	.11	.00	.00	.00	.16	.00	.02	.10	.00	.00
25	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	e.00	.00	.12	.00	.00	.04	.06	.00	.00
27	.00	.00	.00	e.00	.00	.03	.00	.00	.02	.01	.00	.00
28	.00	.05	.01	e.00	.00	.23	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	e.00	---	.06	.00	.24	.14	.00	.07	.00
30	.00	.00	.01	e.00	---	.26	1.05	.00	.02	.58	.00	.00
31	.22	---	.06	e.00	---	.10	---	.01	---	.02	.00	---
TOTAL	1.11	2.42	1.57	1.18	1.11	1.76	4.04	4.20	6.75	3.08	0.99	1.30

e Estimated

CHEYENNE RIVER BASIN

433758103353300 PRECIP AT BEAVER VALLEY NEAR PRINGLE, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°37'58", long 103°35'33", in NE1/4NW1/4SE1/4NW1/4 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 current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 5,000 ft above sea level, from topographic map.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.03	.00	.44	.04	.00	.00
2	.00	.00	.22	.00	.19	.00	.00	.02	.06	.04	.00	.00
3	.00	.03	.04	.06	.35	.03	.00	.00	1.82	.16	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	.00	.00
5	.00	.03	.00	.00	.00	.00	.00	1.46	.10	.30	.00	.06
6	.02	.00	.00	.00	.00	.00	.71	.10	1.20	.00	.00	.00
7	.10	.00	.00	.00	.00	.00	.11	.28	3.52	.04	.00	.16
8	.00	.05	.03	.53	.00	.00	.00	.87	.04	.02	.02	.02
9	.00	.03	.00	.21	.03	.00	.02	.10	.00	.06	.00	.00
10	.00	.00	.00	.02	.37	.07	.01	.00	.00	.02	.00	.02
11	.02	.00	.00	.00	.13	.05	.00	.00	.06	.00	.00	.00
12	.00	.00	.38	.14	.00	.00	.03	.00	.00	.00	.10	.16
13	.00	.00	.20	.00	.00	.00	.66	.00	.00	.00	.10	.00
14	.00	.00	.00	.00	.00	.00	.06	.02	.02	.00	.00	.02
15	.00	.00	.07	.00	.09	.00	.00	.22	.44	.68	.32	.00
16	.00	.00	.00	.00	.03	.13	.00	.00	.72	.68	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.26	.16	.56	.02	.06
18	.00	.00	.03	.00	.00	.00	.00	.00	.54	.02	.00	.27
19	.00	.00	.00	.00	.00	.26	.00	.00	.02	.00	1.04	.39
20	.00	.00	.00	.00	.00	.02	.05	.02	.00	.00	.06	.02
21	.02	.00	.00	.00	.08	.04	.00	.04	.58	.04	.02	.00
22	.06	.00	.00	.00	.00	.00	.00	.26	.04	.00	.00	.00
23	.00	.14	.09	.00	.00	.00	.03	.02	.00	.00	.02	.00
24	.00	.13	.00	.00	.09	.00	.00	.00	.02	.10	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	.00	.02
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.90	.08	.00
27	.00	.00	.00	.00	.00	.05	.00	.02	.00	.00	.28	.00
28	.05	.00	.10	.00	.03	.44	.00	.00	.00	.00	.02	.02
29	.05	.00	.00	.00	---	.10	.00	.04	.00	.02	.00	.00
30	.00	.00	.05	.00	---	.05	.61	.00	.00	.00	.00	.00
31	.60	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.92	0.41	1.21	0.96	1.39	1.24	2.32	3.73	9.82	3.72	2.08	1.22

CAL YR 1992 TOTAL 21.43
WTR YR 1993 TOTAL 29.02

CHEYENNE RIVER BASIN

434732103305500 PRECIP AT BISMARK LAKE NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°47'32", long 103°30'55", in NW1/4NE1/4SW1/4NW1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.88	e.00	.00	.00
2	---	---	---	---	---	---	---	.00	.32	e.00	.06	.00
3	---	---	---	---	---	---	---	.00	.90	e.19	.00	.00
4	---	---	---	---	---	---	---	.72	.00	e.00	.00	.00
5	---	---	---	---	---	---	---	1.15	.00	e.00	.00	.00
6	---	---	---	---	---	---	---	.00	e.00	.27	.00	.00
7	---	---	---	---	---	---	---	.76	e2.19	.00	.03	.42
8	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
9	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.01	.00	.00
11	---	---	---	---	---	---	---	.00	.00	.00	.12	.00
12	---	---	---	---	---	---	---	.00	.00	.18	.32	.07
13	---	---	---	---	---	---	---	.00	.00	.00	.06	.00
14	---	---	---	---	---	---	---	.03	.00	.00	e.00	.00
15	---	---	---	---	---	---	---	.02	.05	.75	e.27	.00
16	---	---	---	---	---	---	---	.13	.62	1.32	.00	.00
17	---	---	---	---	---	---	---	.00	.43	.00	.00	.02
18	---	---	---	---	---	---	---	.03	.15	.00	.00	.62
19	---	---	---	---	---	---	---	.00	.00	.00	1.16	.03
20	---	---	---	---	---	---	---	.00	.00	.00	.31	.00
21	---	---	---	---	---	---	---	.04	.32	.00	.02	.00
22	---	---	---	---	---	---	---	.36	.00	.04	.00	.00
23	---	---	---	---	---	---	---	.06	.00	e.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	e.15	.00	.02
25	---	---	---	---	---	---	---	.00	.00	.04	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.23	.08	.00
27	---	---	---	---	---	---	---	.01	.28	.00	.00	.00
28	---	---	---	---	---	---	---	.00	.06	.00	.00	.00
29	---	---	---	---	---	---	---	.02	.00	.00	.00	.00
30	---	---	---	---	---	---	---	e.00	.05	.00	.00	.00
31	---	---	---	---	---	---	---	e.50	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	3.83	6.25	3.18	2.43	1.18

e Estimated

BELLE FOURCHE RIVER BASIN

442343103363900 .PRECIP AT BOULDER PARK NEAR STURGIS, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°23'43", long 103°36'39", in SE1/4SE1/4NE1/4 sec.15 T.5 N., R.4 E., Lawrence County, Hydrologic Unit 10120202, 0.1 mi north of U.S. Highway 14A, 0.5 mi west of Boulder Park School, and 5.0 mi west of Sturgis.

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

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 48 in. tall. Elevation of gage is 4,075 ft above sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.-- 5 years, 24.99 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.30	.00	.00	.00	.00	.10	.30	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
3	.00	.90	.40	.00	.20	.00	.00	.00	.20	.50	.00	.00
4	.00	.20	.00	.00	.00	.60	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.20	.00	.20	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	1.70	.00	.20	.00	.63
7	.50	.00	.00	.00	.00	.00	.80	.00	2.10	1.00	.10	.04
8	.10	.00	.00	.00	.00	.00	.60	1.40	1.00	.10	.00	.00
9	.00	.30	.00	.30	.00	.00	.10	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
11	.00	.00	.00	.00	.20	.10	.20	.00	.00	.30	.00	.00
12	.00	.10	.00	.00	.00	.00	.20	.00	.00	.00	.20	.00
13	.00	.00	.70	.00	.00	.00	.00	.00	.00	.00	.10	.00
14	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.10	.00
15	.00	.00	.00	.00	.20	.00	.00	.00	.00	.20	.00	.00
16	.20	.00	.10	.00	.00	.20	.00	.00	1.40	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.20	.10	1.30	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	1.25
19	.00	.00	.00	.00	.00	.00	.00	.10	.40	.00	.00	.40
20	.00	.10	.00	e.00	.00	.00	.20	.00	.00	.00	.80	.25
21	.00	.00	.00	e.25	.00	.00	.10	.00	.00	1.10	.00	.00
22	.00	.00	.00	e.25	.30	.30	.00	.00	.00	.00	.00	.00
23	.00	.40	.30	e.53	.00	.00	.00	.70	.30	.00	.00	.00
24	.00	.00	.00	e.00	.00	.00	.20	.00	.00	.10	.00	.00
25	.00	.00	.00	e.07	.00	.00	.00	.30	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00
27	.00	.00	.00	.00	.00	.10	.10	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.20	.00	.00	.00	.10	.00	.00
29	.00	.00	.00	.00	---	.20	.00	.00	.00	.00	.00	.00
30	.00	.10	.00	.00	---	.40	.50	.40	.30	.00	.00	.00
31	.00	---	.00	.00	---	.10	---	.00	---	.30	.00	---
TOTAL	0.80	2.40	1.50	1.40	0.90	2.20	3.40	5.30	7.40	4.30	1.30	2.57

e Estimated

CHEYENNE RIVER BASIN

434939103272800 PRECIP AT CAMP REMINGTON NEAR HAYWARD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°49'39", long 103°27'28", in NW1/4NW1/4SW1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--3 years (water years 1990, 1992, 1993), 25.36 in.

REMARKS.--Records good.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.03	.28	.02	.00	.00
2	.00	.02	.12	.05	.32	.00	.00	.00	.23	.08	.03	.00
3	.00	.08	.15	.06	.08	.00	.00	.00	1.23	.10	.00	.00
4	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	2.06	.04	.05	.00	.42
6	.05	.00	.00	.00	.00	.00	1.50	.09	.96	.48	.00	.00
7	.17	.00	.00	.00	.00	.00	.25	.09	1.41	.00	.03	.00
8	.06	.05	.00	.56	.00	.00	.00	.95	.00	.00	.02	.00
9	.04	.00	.00	.39	.06	.00	.02	.00	.00	.00	.03	.00
10	.00	.00	.00	.03	.34	.23	.03	.00	.00	.00	.03	.00
11	.00	.00	.00	.07	.09	.11	.22	.00	.02	.00	.02	.00
12	.00	.00	.55	.04	.02	.01	.15	.00	.00	.04	.08	.06
13	.00	.00	.05	.00	.00	.00	.74	.00	.00	.00	.47	.00
14	.00	.00	.00	.00	.01	.00	.02	.00	.00	.00	.00	.00
15	.00	.00	.06	.00	.08	.00	.00	.02	.02	.58	.20	.00
16	.00	.00	.00	.00	.02	.12	.00	.02	.55	1.11	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.11	.29	.73	.00	.12
18	.00	.00	.04	.00	.00	.00	.05	.00	.47	.00	.00	.26
19	.00	.00	.00	.00	.00	.32	.03	.00	.00	.00	.97	.35
20	.00	.00	.00	.00	.00	.02	.07	.00	.00	.00	.38	.00
21	.00	.00	.00	.00	.08	.03	.00	.17	.18	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.27	.01	.00	.00	.00
23	.00	.08	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00
24	.00	.12	.00	.00	.12	.00	.00	.00	.00	.17	.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	.30	.00	.00
27	.00	.00	.00	.05	.00	.02	.00	.00	.00	.00	.00	.00
28	.00	.00	.07	.00	.01	.46	.00	.00	.29	.00	.00	.00
29	.05	.00	.00	.00	---	.13	.00	.00	.02	.00	.00	.00
30	.01	.00	.00	.00	---	.04	1.27	.00	.04	.00	.00	.00
31	.54	---	.07	.00	---	.00	---	.81	---	.00	.00	---
TOTAL	0.92	0.35	1.11	1.25	1.28	1.49	4.35	4.67	6.04	3.66	2.26	1.21

CHEYENNE RIVER BASIN

434807103235400 PRECIP AT CENTER LAKE NEAR HAYWARD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°48'07", long 103°23'54", in SW1/4NW1/4NW1/4SW1/4, 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--4 years, 24.38 in.

REMARKS.--Records fair except those for estimated period, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.03	.00	.00	.00	e.00	e.00	e.00	e.96	e.32	.00	.08
2	.00	.05	.00	.04	.12	e.00	e.00	e.00	e.32	e.19	.00	.00
3	.00	.00	.00	.06	.12	e.00	e.00	e.00	e.98	e.00	.00	.00
4	.00	.00	.00	.00	.00	e.00	e.00	e.00	e.00	e.00	.00	.00
5	.00	.03	.00	.02	.00	e.00	e.00	e1.71	e.02	e.00	.00	.42
6	.06	.00	.02	.00	.00	e.00	e1.51	e.15	e.64	e.38	.00	.00
7	.15	.00	.00	.00	.00	e.00	e.25	e.15	e1.33	e.00	.00	.00
8	.00	.09	.15	.66	.00	e.00	e.00	e1.07	e.00	e.07	.00	.00
9	.00	.03	.02	.34	.02	e.00	e.02	e.00	e.00	e.00	.00	.00
10	.00	.00	.00	.08	.40	e.23	e.03	e.00	e.00	e.00	.00	.00
11	.00	.00	.00	.04	.12	e.11	e.22	e.00	e.10	e.00	.00	.00
12	.00	.00	.44	.06	.00	e.01	e.15	e.00	e.00	e.32	.47	.22
13	.00	.00	.10	.00	.04	e.00	e.75	e.00	e.00	.00	.14	.00
14	.00	.00	.00	.00	.00	e.00	e.02	e.00	e.00	.00	.00	.00
15	.00	.00	.00	.00	.02	e.00	e.05	e.00	e.04	.48	.20	.00
16	.00	.00	.00	.00	.02	e.12	e.03	e.00	e.49	.58	.00	.03
17	.00	.00	.02	.00	.00	e.00	e.07	e.09	e.29	.44	.00	.05
18	.00	.00	.02	.00	.00	e.00	e.00	e.00	e.34	.00	.00	.65
19	.00	.00	.00	.00	.00	e.32	e.00	e.00	e.00	.00	1.18	.07
20	.00	.00	.04	.00	.00	e.02	e.00	e.00	e.00	.00	.09	.00
21	.00	.00	.00	.04	.04	e.03	e.00	e.03	e.08	.00	.00	.00
22	.00	.00	.00	.00	.00	e.02	e.00	e.27	e.00	.00	.11	.00
23	.00	.02	.00	.00	.00	e.00	e.00	e.03	e.00	.04	.00	.00
24	.00	.00	.00	.00	.20	e.00	e.00	e.02	e.00	.23	.00	.00
25	.00	.00	.02	.00	e.00	e.00	e.00	e.00	e.06	.03	.00	.00
26	.00	.03	.00	.00	e.00	e.00	e.00	e.00	e.00	.22	.00	.00
27	.00	.06	.00	.00	e.00	e.00	e.00	e.00	e.16	.00	.27	.00
28	.00	.00	.04	.00	e.00	e.46	e.00	e.02	e.17	.00	.00	.00
29	.05	.00	.00	.00	---	e.13	e.00	e.00	e.00	.00	.00	.00
30	.05	.00	.02	.00	---	e.04	e1.60	e.00	e.09	.00	.00	.00
31	.42	---	.04	.00	---	e.00	---	e.20	---	.00	.12	---
TOTAL	0.73	0.34	0.93	1.34	1.10	1.49	4.70	3.74	6.07	3.30	2.58	1.52

e Estimated

CHEYENNE RIVER BASIN

441832103523200 PRECIP AT CHEYENNE CROSSING NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°18'32", long 103°52'32", in NE1/4SE1/4SE1/4NE1/4, 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--5 years, 18.00 in.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.01	.00	.00	.00	.00	.00	.13	.00	.00	.00
2	.00	.45	.00	.05	.07	.00	.00	.00	.01	.00	.01	.03
3	.00	.46	.10	.04	.15	.26	.00	.00	.06	.00	.00	.00
4	.00	.28	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
5	.00	.03	.00	.00	.00	.00	.00	.78	.01	.06	.00	.35
6	.10	.00	.00	.00	.00	.00	.52	.08	.02	.55	.35	.00
7	.30	.00	.00	.00	.00	.00	.57	.04	1.74	.02	.00	.00
8	.00	.02	.00	.04	.00	.00	.00	.65	1.01	.00	.00	.00
9	.11	.07	.00	.00	.00	.03	.02	.15	.01	.03	.00	.00
10	.00	.00	.00	.00	.05	.00	.40	.00	.00	.00	.02	.00
11	.00	.05	.00	.00	.05	.02	.00	e.00	.00	.01	.00	.00
12	.00	.02	.18	.00	.00	.00	.00	e.00	.00	.16	.11	.00
13	.00	.01	.19	.00	.00	.00	.08	e.00	.00	.01	.48	.00
14	.00	.00	.00	.00	.00	.00	.01	e.00	.00	.06	.00	.00
15	.10	.00	.11	.00	.00	.05	.00	e.20	.32	.10	.08	.00
16	.00	.00	.00	.00	.00	.01	.01	e.00	.44	.01	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	e.07	.09	.07	.00	.11
18	.00	.00	.00	.00	.00	.00	.00	e.00	.51	.00	.00	.05
19	.00	.00	.00	.00	.00	.03	.03	e.00	.00	.00	.77	.29
20	.00	.00	.00	.00	.00	.00	.00	e.00	.00	1.09	.01	.00
21	.00	.00	.00	.05	.00	.06	.00	e.00	.32	.02	.00	.00
22	.00	.02	.00	.07	.00	.00	.00	e.34	.01	.00	.00	.00
23	.01	.22	.07	.16	.00	.00	.29	e.07	.00	.08	.00	.00
24	.00	.00	.05	.00	.00	.00	.11	e.14	.00	.08	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.01	.01	.22	.10	.01
27	.00	.00	.00	.00	.00	.01	.02	.00	.21	.00	.00	.00
28	.00	.03	.00	.00	.00	.02	.00	.10	.03	.00	.00	.00
29	.00	.01	.00	.00	---	.03	.00	.01	.06	.00	.01	.00
30	.00	.00	.00	.00	---	.11	.48	.00	.12	.73	.02	.00
31	.19	---	.00	.00	---	.01	---	.03	---	.00	.00	---
TOTAL	0.81	1.67	0.71	0.41	0.32	0.64	2.54	2.67	5.11	3.31	1.96	0.84

CAL YR 1992 TOTAL 17.60

WTR YR 1993 TOTAL 20.99

e Estimated

PRECIPITATION RECORDS

PERIOD OF RECORD.--December 1990 to current year.

REMARKS.--Records poor.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.02	.00	.00	.00	.02	.02	.25	.00	.00	.00
2	.00	.02	.15	.06	.19	.00	.00	.00	.00	.55	.00	.00
3	.00	.00	.06	.09	.17	.00	.00	.00	.69	.02	.00	.00
4	.00	.02	.02	.02	.00	.00	.00	.48	.00	.02	.00	.00
5	.00	.00	.00	.00	.02	.00	.00	.61	.06	.02	.00	.00
6	.06	.00	.00	.00	.00	.00	.56	.00	.39	.08	.00	.00
7	.04	.02	.02	.00	.00	.00	.02	.13	2.33	.04	.00	.00
8	.02	.04	.00	.13	.00	.00	.00	1.16	.04	.00	.00	.00
9	.00	.02	.00	.06	.06	.00	.02	.00	.00	.04	.00	.00
10	.00	.00	.00	.02	.47	.00	.02	.02	.00	.00	.00	.00
11	.00	.00	.00	.00	.17	.00	.02	.00	.00	.02	.00	.00
12	.00	.00	.75	.02	.04	.00	.00	.00	.00	.29	.02	.00
13	.00	.00	.17	.02	.00	.00	.20	.00	.00	.02	.06	.02
14	.00	.00	.04	.00	.00	.00	.04	.00	.00	.08	.04	.00
15	.00	.02	.02	.00	.09	.00	.00	.00	.27	.41	.55	.00
16	.00	.00	.09	.02	.02	.00	.00	.00	.94	.04	.02	.00
17	.00	.00	.06	.00	.00	.00	.00	.06	.53	.98	.02	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.45	.00	.00	.24
19	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	1.64	.40
20	.00	.00	.04	.02	.00	.00	.00	.00	.00	.00	.06	.02
21	.00	.00	.00	.00	.02	.02	.00	.00	.67	.00	.38	.00
22	.00	.00	.00	.00	.02	.00	.00	.10	.00	.00	.02	.00
23	.02	.08	.00	.00	.00	.00	.00	.00	.00	.02	.02	.00
24	.00	.08	.00	.00	.00	.00	.00	.02	.00	.20	.00	.00
25	.00	.02	.00	.00	.02	.00	.00	.00	.00	.02	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.40	.46	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.02
28	.00	.00	.00	.00	.00	.52	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.12	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.08	.34	.02	.02	.00	.00	.00
31	.02	---	.04	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.16	0.32	1.48	0.46	1.29	0.84	1.24	2.62	6.64	3.27	3.29	0.70

CAL YR 1992	TOTAL 16.78
WTR YR 1993	TOTAL 22.31

BELLE FOURCHE RIVER BASIN

442745103434500 PRECIP AT ELKHORN PEAK NEAR WHITEWOOD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°27'45", long 103°43'45", in NE1/4SE1/4SE1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--5 years, 19.46 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.10	.00	.00	.10	.00	.00
2	.00	.00	.00	.00	.00	.00	.10	.00	.50	.10	.00	.00
3	.00	.00	.30	.00	.00	.00	.10	.00	.00	.10	.00	.00
4	.00	.00	.00	.00	.00	.70	.00	.00	.10	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.80	.00	.00	.00	.80
7	.00	.00	.00	.00	.00	.00	.90	.30	1.20	.50	.00	.10
8	.50	.30	.00	.00	.00	.00	.10	.70	2.00	.10	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.50	.20	.10	.00	.00
10	.00	.00	.00	.00	.00	.00	.40	.20	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
13	.00	.00	.70	.00	.00	.00	.10	.00	.00	.60	.20	.00
14	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.90	.00
15	.00	.00	.00	.00	.00	.10	.10	.00	.00	.00	.00	.00
16	.00	.00	.10	.00	.00	.00	.00	.00	1.00	.10	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.20	1.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.20
19	.00	.00	.00	.00	.00	.00	.00	.00	1.10	.00	.00	.30
20	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.30	.10
21	.00	.00	.00	.40	.00	.20	.00	.00	.00	.30	.00	.00
22	.00	.00	.00	.00	.00	.30	.50	.40	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00
24	.00	.00	.80	.00	.00	.00	.00	.00	.00	.40	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.10	.10	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.10	.00	.50	.20	.00
28	.00	.00	.00	.00	.40	.00	.00	.30	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.10	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.50	.00	.20	.00	.00	.00
31	.20	---	.00	.30	---	.50	---	.00	---	.40	.00	---
TOTAL	0.70	0.30	1.90	0.70	0.40	2.00	3.00	4.10	7.40	3.40	1.60	1.50

CAL YR 1992 TOTAL 17.50
WTR YR 1993 TOTAL 27.00

BELLE FOURCHE RIVER BASIN

441852103594800 PRECIP AT HEADWATERS LITTLE SPEARFISH CREEK NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°18'52", long 103°59'48", in NE1/4NE1/4NE1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--5 years, 24.23 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.10	.10	.00	.00	.00	.00	.50	.30	.00	.00	.00
2	.00	.80	.00	.00	.10	.00	.00	.00	.20	.00	.00	.00
3	.00	.20	.30	.20	.15	.00	.00	.00	.10	.00	.00	.00
4	.00	.00	.00	.00	.00	.30	.00	.00	.20	.10	.00	.00
5	.00	.00	.00	.00	.00	.00	.03	.25	.00	.00	.00	.00
6	.00	.05	.00	.00	.00	.00	.80	.45	.00	.30	.00	.45
7	.50	.00	.00	.00	.00	.00	.47	.00	.80	.00	.00	.00
8	.50	.00	.00	.00	.00	.00	.00	.40	2.10	.00	.00	.00
9	.05	.00	.00	.20	.00	.10	.00	.40	.80	.00	.00	.00
10	.12	.45	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.20	.00	.00	.00	.00	.10	.00	.00
12	.00	.30	.00	.05	.00	.00	.20	.00	.00	.00	.00	.00
13	.00	.00	.40	.00	.00	.00	.20	.00	.00	.05	.55	.10
14	.00	.15	.00	.00	.00	.00	.20	.00	.00	.00	.50	.05
15	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00
16	.20	.00	.00	.00	.25	.20	.00	.00	.50	.00	.00	.00
17	.00	.00	.10	.00	.00	.00	.00	.10	.60	.10	.00	.10
18	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.10
19	.00	.00	.00	.00	.00	.00	.00	.00	.70	.00	.00	.40
20	.00	.00	.00	.00	.00	.20	.20	.00	.00	.00	1.30	.05
21	.00	.00	.00	.00	.20	.00	.00	.00	.25	.70	.00	.00
22	.00	.00	.00	.10	.00	.20	.00	.50	.00	.05	.00	.00
23	.00	.35	.30	.30	.00	.00	.00	.10	.00	.00	.00	.00
24	.00	.20	.00	.10	.00	.00	.15	.20	.00	.00	.00	.00
25	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.30
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00
27	.00	.00	.00	.00	.00	.00	.05	.10	.20	.40	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00
29	.00	.20	.10	.00	---	.00	.00	.00	.25	.00	.00	.00
30	.00	.00	.00	.00	---	.10	.50	.00	.00	.00	.15	.00
31	.20	---	.05	.00	---	.20	---	.00	---	.05	.00	---
TOTAL	1.57	2.80	1.35	0.95	1.00	1.30	3.20	3.30	7.40	2.05	2.50	1.55

CHEYENNE RIVER BASIN

431806103351800 PRECIP AT HIGHLAND CEMETERY NEAR HOT SPRINGS, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°18'06", long 103°35'18", in NW1/4NE1/4 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 1991 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 3,380 ft above sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.04	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.06	.00	.00	.00
3	---	---	---	---	---	---	---	.00	1.12	.97	.00	.00
4	---	---	---	---	---	---	---	.00	.00	.07	.00	.32
5	---	---	---	---	---	---	---	.24	.00	.00	.00	.14
6	---	---	---	---	---	---	---	.00	.00	.03	.09	.00
7	---	---	---	---	---	---	---	.00	1.04	.18	.00	.00
8	---	---	---	---	---	---	---	.00	.43	.00	.00	.00
9	---	---	---	---	---	---	---	1.34	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
11	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.33	.30
13	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
14	---	---	---	---	---	---	---	.07	.00	.00	.00	.00
15	---	---	---	---	---	---	---	.14	.35	.00	.00	.00
16	---	---	---	---	---	---	---	.00	.85	.70	.84	.00
17	---	---	---	---	---	---	---	.00	.63	.05	.00	.00
18	---	---	---	---	---	---	---	.00	.16	.20	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.00	.55
20	---	---	---	---	---	---	---	.00	.00	.00	.68	.00
21	---	---	---	---	---	---	---	.11	.19	.00	.00	.00
22	---	---	---	---	---	---	---	.00	.00	.00	.08	.00
23	---	---	---	---	---	---	---	.00	.43	.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.00	.00	.14
25	---	---	---	---	---	---	---	.00	.00	.32	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.18	.00	.00
27	---	---	---	---	---	---	---	.00	.12	.38	.43	.00
28	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.10	.00	.00	.00	.00
30	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	2.00	5.42	3.08	2.45	1.45

CHEYENNE RIVER BASIN

434358103494800 PRECIP AT JEWEL CAVE NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°43'58", long 103°49'87", in SW1/4SE1/4NW1/4, 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 current year (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 sea level, from topographic map.

REMARKS.--Records 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.19	.02	.00	.00	.00	.00	.19	.01	.00	.00	.00
2	.00	.00	.00	.00	.16	.00	.00	.01	.16	.00	.00	.01
3	.00	.00	.21	.00	.15	.00	.00	.00	.13	e.32	.01	.03
4	.00	.09	.00	.01	.00	.00	.00	.00	.24	e.00	.03	.00
5	.00	.00	.00	.00	.00	.00	.02	.64	.02	e.32	.00	.21
6	.00	.01	.00	.00	.00	.00	.05	1.44	.05	.02	.06	.08
7	.00	.00	.00	.00	.00	.00	.44	.01	1.53	.21	.00	.01
8	.00	.01	.00	.06	.00	.00	.00	.84	2.05	.00	.02	.01
9	.00	.00	.00	e.35	.00	.00	.00	.04	.01	.00	.00	.00
10	.05	.11	.00	e.06	.39	.00	.14	.02	.00	.00	.00	.00
11	.00	.00	.00	e.09	.24	.00	e.00	.00	.00	.02	.00	.00
12	.00	.00	.00	e.14	e.01	.00	.07	.00	.00	.00	.03	e.00
13	.00	.02	.61	.00	e.01	.00	.07	.00	.00	.00	.76	.02
14	.00	.00	.00	.00	e.06	.00	.05	.00	.00	.00	.07	.00
15	.00	.00	.00	.00	e.05	.00	.48	.11	.00	.00	.00	.00
16	.00	.00	.01	.00	.13	.00	.00	.01	.27	1.67	.34	.00
17	.00	.00	.00	.00	.00	.02	.00	.39	1.17	.85	.00	.05
18	.00	.00	.00	.00	.00	.00	.02	.01	e1.00	.00	.00	.05
19	.00	.01	.00	.00	.00	.00	.00	.00	.19	.01	.00	.74
20	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00	1.01	.00
21	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.02
22	.00	.00	.00	.00	.00	.00	.00	.01	.38	.00	.02	e.00
23	.00	.05	.00	.00	.00	.00	.01	e.00	.00	.01	.00	.00
24	.00	.11	.00	e.00	.08	.00	.09	.36	e.00	.10	.00	.00
25	.00	.12	.00	.00	.05	.00	.00	.00	.01	.15	.00	.00
26	.00	.00	.00	.00	.00	.00	.02	.00	.00	.05	.02	.00
27	.00	.00	.00	.00	.00	.00	.03	.00	.00	.45	.09	.00
28	.00	.00	.00	.00	.00	.02	.02	.00	.00	.01	.00	.00
29	.02	.00	.00	.00	---	.02	.00	.00	.17	.00	.00	.00
30	.05	.00	.00	.00	---	.38	.21	.17	.08	.00	.00	.00
31	e.19	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.31	0.72	0.85	0.71	1.38	0.44	1.72	4.25	7.47	4.19	2.46	1.23

WTR YR 1993 TOTAL 25.73

e Estimated

CHEYENNE RIVER BASIN

440501103262300 PRECIP AT JOHNSON SIDING NEAR RAPID CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°05'01", long 103°26'23", in NW1/4SE1/4SW1/4SE1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--5 years, 20.46 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.02	.00	.00	.00	.00	.00	.00	.07	.02	.00	.00
2	.00	.02	.00	.00	.02	.00	.00	.00	.18	.00	.00	.00
3	.00	.29	.19	.09	.12	.00	.00	.00	.58	.00	.00	.00
4	.00	.05	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.77	.01	.00	.00	.59
6	.04	.00	.00	.00	.00	.00	.69	1.24	.00	.04	.02	.00
7	.21	.00	.00	.00	.00	.00	.50	.00	2.00	.11	.12	.00
8	.00	.03	.00	.15	.00	.00	.00	1.13	.11	.08	.00	.00
9	.02	.01	.00	.32	.00	.00	.00	.02	.00	.00	.00	.00
10	.00	.00	.00	.00	.16	.00	.05	.00	.00	.07	.01	.00
11	.00	.00	.00	.00	.18	.03	.00	.00	.00	.03	.00	.00
12	.00	.00	.25	.08	.00	.04	.19	.00	.00	.22	.00	.00
13	.00	.00	.26	.00	.00	.00	.48	.00	.00	.00	.34	.00
14	.00	.00	.00	.00	.03	.00	.00	.00	.00	.08	.00	.00
15	.00	.00	.00	.00	.07	.00	.00	.02	.00	.00	.00	.00
16	.00	.00	.02	.00	.00	.00	.00	.00	.53	.44	.25	.00
17	.00	.00	.01	.00	.00	.00	.00	.04	.82	.44	.00	.06
18	.00	.00	.02	.00	.00	.00	.00	.00	.39	.00	.00	.10
19	.00	.00	.00	.00	.00	.10	.04	.00	.00	.00	.00	.67
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00
21	.00	.00	.00	.00	.05	.00	.00	.00	.00	.79	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.90	.04	.02	.00	.01
23	.00	.04	.00	.01	.00	.00	.00	.04	.00	.10	.00	.00
24	.00	.05	.00	.00	.02	.00	.05	.00	.00	.19	.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	.17	.00	.00
27	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
28	.00	.00	.01	.00	.00	.00	.00	.01	.01	.00	.00	.00
29	.00	.00	.00	.00	---	.30	.00	.55	.01	.00	.00	.00
30	.01	.00	.00	.00	---	.03	1.27	.00	.02	.00	.00	.00
31	.37	---	.05	.00	---	.00	---	.02	---	.00	.00	---
TOTAL	0.65	0.51	0.81	0.65	0.65	0.51	3.27	4.74	4.84	2.80	1.34	1.43

CAL YR 1992 TOTAL 16.64
WTR YR 1993 TOTAL 22.20

PRECIPITATION RECORDS

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

REMARKS.--Records fair.

[illegible]

CHEYENNE RIVER BASIN

435355103432800 PRECIP AT MEDICINE MOUNTAIN NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°53'55", long 103°43'28", in SW1/4SW1/4SE1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--4 years (water years 1989-90, 1991-93), 21.16 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	e.00	.00	.00	.00	.00	.00	.00	.60	.30	.00	.00	.00
3	e.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	e.00	.30	.00	.10	.00	.00	.00	.00	.00	.40	.00	.00
5	e.00	.00	.00	.00	.00	.00	.30	.10	.20	.00	.00	.00
6	e.39	.00	.00	.00	.00	.00	.40	.00	2.20	.00	.00	.10
7	e.72	.00	.00	.00	.00	.00	.20	1.00	.00	.00	.00	.10
8	e.19	.00	.00	.00	.00	.00	.00	.80	1.50	.00	.00	.00
9	e.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.40	.00
10	e.00	.20	.00	.00	.10	.00	.70	.00	.00	.10	.00	.00
11	e.00	.00	.00	.00	.20	.00	.10	.00	.00	.00	.00	.00
12	e.00	.00	.00	.00	.20	.20	.00	.00	.20	.00	.00	.00
13	e.00	.00	.60	.00	.00	.00	.30	.10	.00	.20	.30	.20
14	e.00	.00	.00	.00	.20	.00	.00	.00	.00	.20	.00	.00
15	e.00	.00	.00	.20	.20	.00	.00	.00	.00	.00	.00	.00
16	e.00	.00	.10	.00	.00	.00	e.00	.00	.20	2.10	.00	.40
17	e.00	.00	.00	.00	.00	.00	e.00	.10	.00	.80	.00	.00
18	e.00	.10	.20	.00	.00	.00	e.00	.00	.00	.00	.00	.00
19	e.00	.00	.00	.00	.00	.00	e.01	.00	.00	.00	.40	.00
20	e.00	.10	.00	.00	.00	.00	e.03	.00	.20	.00	1.10	.00
21	.00	.00	.00	.00	.10	.00	e.00	.00	.00	.00	.00	e.00
22	.00	.00	.00	.20	.00	.20	e.00	.00	.00	.00	.00	e.00
23	.00	.00	.00	.00	.10	.00	e.00	1.00	.00	.40	.00	e.00
24	.00	.10	.40	.00	.00	.10	e.00	.00	.80	.00	.00	e.20
25	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00	e.00
26	.00	.00	.00	.10	.00	.00	e.00	.00	.00	.00	.00	e.00
27	.00	.10	.00	.00	.00	.00	e.00	.00	.00	.00	.00	e.00
28	.00	.00	.00	.00	.00	.30	e.00	.30	.00	.30	.00	e.00
29	.00	.00	.00	.00	---	.00	e.00	.00	.00	.00	.00	e.00
30	.00	.00	.00	.00	---	.30	e.26	.00	.00	.00	.00	e.00
31	.20	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	1.50	0.90	1.50	0.60	1.10	1.10	2.30	4.00	5.60	4.50	2.20	1.00

CAL YR 1992 TOTAL 19.40

WTR YR 1993 TOTAL 26.30

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 NW1/4NW1/4NE1/4NE1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.70	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
3	---	---	---	---	---	---	---	.00	1.60	.09	.06	.00
4	---	---	---	---	---	---	---	.00	.12	.00	.00	.00
5	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
6	---	---	---	---	---	---	---	1.64	.00	.00	.00	.46
7	---	---	---	---	---	---	---	.09	1.90	.00	.00	.00
8	---	---	---	---	---	---	---	1.32	.00	.00	.00	.00
9	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.00	.06	.00
11	---	---	---	---	---	---	---	.00	.08	.00	.00	.00
12	---	---	---	---	---	---	---	.00	.00	.12	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.00	.44	.24
14	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
15	---	---	---	---	---	---	---	.00	.16	.00	.00	.00
16	---	---	---	---	---	---	---	.00	.00	.45	.00	.00
17	---	---	---	---	---	---	---	.11	.72	.94	.00	.00
18	---	---	---	---	---	---	---	.00	.52	e.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	e.00	.00	.81
20	---	---	---	---	---	---	---	.00	.07	e.01	2.17	.00
21	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
22	---	---	---	---	---	---	---	.59	.00	e.00	.00	.00
23	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	e.13	.00	.00
25	---	---	---	---	---	---	---	.05	.00	e.37	.00	.00
26	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
27	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
28	---	---	---	---	---	---	---	.00	.74	e.00	.00	.00
29	---	---	---	---	---	---	---	.00	.12	e.00	.00	.00
30	---	---	---	---	---	---	---	.00	.00	e.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	e.00	.00	---
TOTAL	---	---	---	---	---	---	---	3.80	6.73	2.11	2.73	1.51

e Estimated

BELLE FOURCHE RIVER BASIN

441207104012700 PRECIP AT O'NEIL PASS NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°12'07", long 104°01'27", in NW1/4SW1/4SE1/4 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 sea level, from topographic map. Prior to May 5, 1989, a non-shielded, 8.0-in. diameter plastic gage, 72 in. tall.

AVERAGE ANNUAL PRECIPITATION.--5 years, 24.37 in.

REMARKS.--Records fair except those for estimated period, which are poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.13	.10	.20	.00	.00	.00	.00	.27	.00	.02	.00
2	.00	.40	.05	.00	.13	.00	.00	.00	.04	.00	.00	.10
3	.00	.62	.14	.04	.10	.13	.00	.00	.17	.00	.09	.00
4	.00	.12	.02	.01	.00	.00	.00	.00	.00	.27	.00	.00
5	.00	.08	.00	.00	.00	.05	.00	.82	.00	.05	.00	.48
6	.35	.02	.00	.00	.00	.00	.60	.01	.07	.65	.00	.00
7	.13	.01	.00	.00	.00	.00	.51	.43	3.45	.02	.00	.00
8	.00	.17	.00	.20	.03	.00	.02	.30	.94	.00	.00	.00
9	.24	.36	.00	.21	.00	.08	.00	.08	.00	.07	.02	.00
10	.00	.05	.00	.02	.17	.00	.71	.00	.00	.00	.04	.00
11	.00	.10	.00	.00	.18	.14	.01	.00	.03	.00	.00	.00
12	.00	.05	.40	.02	.04	.11	.05	.02	.00	.05	.15	.00
13	.00	.08	.10	.00	.00	.00	.20	.00	.00	.00	.40	.06
14	.00	.01	.00	.00	.06	.00	.23	.00	.00	.37	.00	.00
15	.08	.00	.06	.00	.09	.04	.00	.02	.88	.00	.05	.00
16	.00	.00	.04	.00	.03	.00	.07	.04	.45	.11	.06	.00
17	.00	.00	.08	.02	.00	.00	.00	.02	.06	.15	.00	.22
18	.00	.00	.00	.02	.00	.00	.00	.00	.46	.00	.00	.03
19	.00	.00	.00	.00	.00	.06	.04	.00	.00	.00	.00	.23
20	.00	.00	.00	.00	.00	.03	.09	.00	.00	.00	.55	.00
21	.00	.00	.00	.08	.01	.07	.00	e1.42	.44	1.33	.00	.00
22	.00	.03	.00	.06	.01	.00	.00	e.90	.00	.00	.00	.00
23	.00	.13	.06	.09	.00	.00	.21	.17	.00	.15	.00	.00
24	.00	.03	.07	.01	.05	.00	.03	.00	.00	.12	.00	.00
25	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00
26	.00	.04	.00	.06	.00	.00	.03	.00	.00	.33	.00	.00
27	.07	.00	.00	.00	.00	.00	.02	.03	.00	.02	.00	.00
28	.00	.04	.04	.00	.00	.10	.00	.10	.23	.00	.00	.00
29	.00	.00	.00	.00	---	.02	.00	.00	.05	.00	.00	.00
30	.00	.00	.00	.00	---	.11	.69	.00	.10	.00	.07	.02
31	.00	---	.08	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.87	2.47	1.24	1.04	0.90	0.94	3.64	4.36	7.64	3.69	1.45	1.14

CAL YR 1992 TOTAL 22.90

WTR YR 1993 TOTAL 29.38

e Estimated

CHEYENNE RIVER BASIN

432343103421500 PRECIP AT PARKER PEAK NEAR EDGE MONT, SD
(Formerly published as Precip at Parker Peak near Minnekahta, SD)

PRECIPITATION RECORDS

LOCATION.--Lat 43°23'43", long 103°42'15", in SW1/4NW1/4NW1/4SE1/4, 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 1991 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,090 ft above sea level, from topographic map.

REMARKS.--Records fair except those for estimated periods, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	---	.00	.00	e.05
2	---	---	---	---	---	---	---	.00	---	3.40	.00	e.00
3	---	---	---	---	---	---	---	.00	---	.00	.05	e.09
4	---	---	---	---	---	---	---	.00	---	.00	.05	e.00
5	---	---	---	---	---	---	---	.35	---	.05	.00	e.29
6	---	---	---	---	---	---	---	.00	---	.11	.00	e.00
7	---	---	---	---	---	---	---	.00	---	.00	.00	e.00
8	---	---	---	---	---	---	---	.77	---	.00	.00	e.00
9	---	---	---	---	---	---	---	.45	---	.00	.00	e.00
10	---	---	---	---	---	---	---	.00	---	.17	.00	e.00
11	---	---	---	---	---	---	---	.00	---	.00	.00	e.00
12	---	---	---	---	---	---	---	.00	---	.12	.10	e.33
13	---	---	---	---	---	---	---	.00	---	.00	.00	e.00
14	---	---	---	---	---	---	---	.00	---	.00	.00	e.00
15	---	---	---	---	---	---	---	.11	---	.16	.00	e.00
16	---	---	---	---	---	---	---	.00	---	.14	.36	e.00
17	---	---	---	---	---	---	---	.00	---	.00	.00	e.00
18	---	---	---	---	---	---	---	.00	---	.00	.00	e.09
19	---	---	---	---	---	---	---	.00	---	.00	2.85	.00
20	---	---	---	---	---	---	---	.00	---	.00	.53	.00
21	---	---	---	---	---	---	---	.00	---	.00	.00	.00
22	---	---	---	---	---	---	---	.00	---	.00	.00	.00
23	---	---	---	---	---	---	---	.00	---	.00	.00	.00
24	---	---	---	---	---	---	---	.00	---	.25	.00	.00
25	---	---	---	---	---	---	---	.00	---	.00	.00	.00
26	---	---	---	---	---	---	---	.00	---	.22	.22	.00
27	---	---	---	---	---	---	---	.00	---	.00	.00	.00
28	---	---	---	---	---	---	---	.00	---	.00	.00	.00
29	---	---	---	---	---	---	---	.00	---	.00	.00	.00
30	---	---	---	---	---	---	---	.00	---	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	1.68	---	4.62	4.16	0.85

e Estimated

CHEYENNE RIVER BASIN

434002103214500 PRECIP AT RACETRACK BUTTE, NEAR FAIRBURN, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°40'02", long 103°21'45", in SW1/4SE1/4SE1/4 sec.26, T.4 S., R.6 E., Custer County, Hydrologic Unit 10120109, 100 ft east of Wildlife Loop Road CSP #1, 0.8 mi southeast of Racetrack Butte, and 7.0 mi west of Fairburn.

PERIOD OF RECORD.--October 1983 to current year. Published as Custer State Park from October 1983 to September 1987, and as Precip at Custer State Park at Racetrack Butte, near Fairburn, SD, from October 1987 to September 1989.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 3,970 ft above sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--10 years, 16.55 in.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.01	.00	.00	.05	.00	.02	e.00	.66	.00	.00	.00
2	.00	.00	.22	.02	.30	.00	.00	e.00	.20	.00	.00	.00
3	.00	.00	.08	.04	.02	.03	.00	e.00	1.07	.20	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	e.00	.02	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	e1.31	.05	.00	.07	.41
6	.00	.00	.00	.00	.00	.00	.37	e.05	.48	.29	.00	.00
7	.19	.00	.00	.00	.00	.00	.23	e.02	.98	.00	.02	.00
8	.00	.09	.00	e.38	.00	.00	.00	e.64	.00	.03	.00	.00
9	.00	.01	.00	e.20	.13	.00	.00	e.00	.00	.00	.00	.00
10	.00	.00	.00	e.01	.24	.10	.00	e.00	.00	.02	.00	.00
11	.00	.00	.00	e.04	.06	.11	.00	e.00	.00	.00	.00	.00
12	.00	.00	.20	.00	.03	.00	.05	e.00	.00	.00	.04	.21
13	.00	.00	.10	.00	.00	.00	.83	e.00	.00	.00	.25	.00
14	.00	.00	.00	.00	.02	.00	.03	e.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.05	.00	e.00	e.03	.68	1.21	.18	.00
16	.00	.00	.00	.00	.01	.03	e.00	e.00	.40	.70	.00	.00
17	.00	.00	.00	.00	.00	.00	e.00	e.10	.00	.28	.00	.02
18	.00	.00	.02	.00	.00	.00	e.00	e.00	.36	.00	.00	.26
19	.00	.00	.00	.00	.00	.33	e.04	e.01	.00	.00	.95	.41
20	.00	.00	.03	e.06	.04	.08	e.09	e.00	.00	.00	.18	.00
21	.00	.00	.00	.00	.07	.03	e.00	e.00	.12	.00	.00	.00
22	.00	.00	.00	.00	.01	.00	e.00	e.46	.00	.03	.03	.00
23	.00	.06	.00	.00	.02	.00	e.00	e.03	.00	.00	.00	.00
24	.00	.09	.00	.00	.09	.00	e.00	e.03	.00	.29	.00	.02
25	.00	.00	.00	.00	.03	.00	e.00	e.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	e.00	e.00	.00	.52	.00	.00
27	.00	.00	.00	.00	.00	.00	e.00	e.00	.00	.00	.00	.00
28	.00	.00	.09	.00	.00	.31	e.00	e.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.06	e.00	e.00	.00	.00	.02	.00
30	.00	.00	.05	.00	---	.00	e.84	e.00	.00	.00	.00	.00
31	.32	---	.00	.00	---	.00	---	e.24	---	.03	.00	---
TOTAL	0.51	0.26	0.79	0.75	1.17	1.08	2.50	2.92	5.02	3.60	1.74	1.33

CAL YR 1992 TOTAL 16.91

WTR YR 1993 TOTAL 21.67

e Estimated

CHEYENNE RIVER BASIN

434751104005100 PRECIP AT REDBIRD CANYON NEAR NEWCASTLE, WY

PRECIPITATION RECORDS

LOCATION.--Lat 43°47'51", long 104°00'51", in SW1/4SW1/4SW1/4, 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 current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 4,760 ft above sea level, from topographic map.

REMARKS.--Records poor.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.42	.00	.00	.00
2	.00	.00	.19	.14	.19	.00	.00	.00	.00	.04	.00	.02
3	.00	.13	.04	.04	.04	.00	.00	.00	.14	.02	.00	.00
4	.00	.15	.02	.00	.00	.00	.00	.79	.00	.18	.00	.00
5	.00	.02	.00	.00	.00	.00	.00	.77	.00	.00	.00	.50
6	.07	.00	.00	.00	.00	.00	.08	.02	.12	.12	.08	.02
7	.07	.00	.00	.00	.00	.00	.00	.10	4.48	.02	.00	.00
8	.00	.04	.00	.31	.00	.00	.02	.79	.59	.00	.00	.00
9	.00	.21	.00	.10	.04	.00	.08	.00	.02	.00	.00	.00
10	.00	.00	.00	.02	.33	.00	.08	.00	.00	.02	.00	.00
11	.02	.00	.00	.02	.14	.00	.02	.00	.00	.00	.00	.00
12	.00	.00	.49	.10	.02	.02	.04	.00	.00	.00	.18	.00
13	.00	.06	.04	.00	.00	.00	.16	.00	.00	.00	.44	.00
14	.00	.00	.02	.00	.02	.00	.20	.00	.00	.00	.00	.00
15	.00	.00	.06	.00	.08	.00	.02	.02	.08	2.16	.20	.02
16	.00	.00	.00	.00	.02	.00	.02	.20	1.02	.00	.02	.00
17	.00	.00	.02	.00	.00	.00	.00	.06	.12	1.38	.00	.06
18	.00	.00	.06	.00	.00	.00	.00	.00	.57	.00	.00	.23
19	.00	.02	.02	.00	.00	.08	.02	.00	.02	.02	.60	.44
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00
21	.00	.00	.00	.00	.06	.00	.00	.04	.12	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.32	.02	.02	.00	.00
23	.00	.04	.00	.00	.00	.02	.00	.02	.00	.02	.00	.00
24	.00	.11	.00	.00	.06	.00	.00	.00	.00	.14	.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	1.12	.14	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00
28	.00	.00	.06	.00	.00	.00	.00	.02	.00	.00	.00	.02
29	.00	.00	.02	.00	---	.04	.00	.04	.00	.00	.00	.00
30	.00	.00	.08	.00	---	.14	.18	.00	.00	.00	.00	.00
31	.00	---	.02	.00	---	.02	---	.00	---	.00	.00	---
TOTAL	0.16	0.78	1.14	0.73	1.00	0.32	0.92	3.19	7.72	5.28	1.72	1.31

CAL YR 1992 TOTAL 17.08

WTR YR 1993 TOTAL 24.27

CHEYENNE RIVER BASIN

440242103520600 PRECIP AT REYNOLDS PRAIRIE NEAR HILL CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°02'42", long 103°52'06", in NW1/4NE1/4SW1/4, sec.15, T.1 N., R.2 E., Pennington County, Hydrologic Unit 10120110, 0.1 mi northeast of U.S. Forest Service Road 110, 2.0 mi west of Reynolds Prairie, 3.5 mi northwest of Deerfield Lake, and 16 mi northwest of Hill City.

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

INSTRUMENTATION.--Shielded, 8.0-in. diameter plastic gage, 72 in. tall. Elevation of gage is 6,100 ft above sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--5 years, 20.35 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.60	.40	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10
3	.00	.00	.00	.00	.00	.00	.00	.00	.10	.20	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.40	.00	.10	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.50	.00	.00	.00	.00	.40	.00	.00	.50
7	.50	.00	.00	.00	.00	.00	.50	1.60	2.40	.00	.10	.00
8	.40	.00	.00	.00	.00	.00	.00	.00	2.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00
10	.00	.00	.00	.00	.40	.20	.40	.00	.00	.00	.00	.00
11	.00	.20	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.50	.00	.00	.00	.30	.80	.00	.00	.70	.00
14	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
15	.00	.00	.00	.10	.10	.20	.10	.00	.00	.00	.30	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	1.00	.70	.00	.00
17	.00	.00	.00	.00	.00	.00	.30	.00	.30	.90	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
19	.00	.40	.00	.00	.00	.00	.00	.00	.10	.00	.00	.60
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.70	.00	.00
22	.00	.00	.00	.00	.20	.00	.00	1.30	.00	.60	.00	.00
23	.00	.40	.00	.00	.00	.00	.00	.80	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.10	.10	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
26	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00
28	.00	.00	.00	.00	.00	.10	.00	.00	.20	.00	.50	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.10	.00	---	.00	.30	.40	.00	.00	.00	.00
31	.10	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	1.00	1.00	1.00	1.00	0.90	0.60	2.10	5.70	7.00	3.80	1.60	1.20

CAL YR 1992 TOTAL 20.40
WTR YR 1993 TOTAL 26.90

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 NE1/4NW1/4SW1/4NE1/4, 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--4 years, 22.40 in.

REMARKS.--Records fair except those for estimated periods, which are poor. 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	e.00	e.02	.00	.00	.00	.00	.60	.00	e.00	.00
2	.00	.00	e.15	e.00	.00	.00	.00	.00	.15	.00	e.09	.00
3	.00	.00	e.11	e.05	.40	.00	.00	.00	.00	.10	e.06	.00
4	.00	.00	e.00	e.00	.00	.00	.00	.00	.00	.00	e.00	.00
5	.00	.00	e.00	e.00	.00	.00	.00	.55	1.60	.00	e.26	.00
6	.00	.00	e.00	e.00	.00	.00	.00	.90	.00	.00	.00	.30
7	.00	.00	e.00	e.00	.00	.00	.85	e.09	1.90	.25	.00	.00
8	.25	.00	e.00	e.54	.00	.00	.30	e.90	.00	.00	.00	.00
9	.00	.10	e.00	e.29	.00	.00	.00	e.00	.00	.00	.00	.00
10	.00	.00	e.00	e.02	.00	.00	.00	e.00	.00	.00	.00	.00
11	.00	.00	e.00	e.05	.40	.35	.00	e.00	.00	.00	.00	.00
12	.00	.00	e.43	e.00	.05	.00	.00	e.00	.20	.00	e.05	.00
13	.00	.00	e.07	e.00	.00	.00	.70	e.00	.00	.20	e.65	.10
14	.00	.00	e.00	e.00	.00	.00	.50	e.00	.00	.00	e.00	.00
15	.00	.00	e.00	.00	.00	.00	.00	e.02	.00	.00	e.35	.00
16	.00	.00	e.00	.00	.00	.00	.00	e.02	.05	.65	e.00	.00
17	.00	.00	e.00	.00	.00	.00	.00	e.10	.00	.00	e.00	.00
18	.00	.00	e.00	.00	.00	.25	.00	e.00	.00	.70	e.00	.00
19	.00	.00	e.00	.00	.00	.00	.00	e.00	1.10	.00	e1.82	.80
20	.00	.00	e.00	.00	.00	.35	.00	e.00	.00	.00	e.22	.00
21	.00	.00	e.00	.00	.25	.00	.00	e.16	.00	.05	e.00	.00
22	.00	.00	e.00	.00	.00	.00	.00	e.26	.15	.00	e.00	.00
23	.00	.00	e.00	.00	.00	.00	.00	e.05	.00	.00	e.00	.00
24	.00	.00	e.00	.00	.00	.00	.00	e.00	.00	.00	e.00	.00
25	.00	.00	e.00	.00	.15	.00	.00	e.00	.00	.00	e.00	.00
26	.00	.00	e.04	.00	.00	.00	.00	e.00	.00	.00	.00	.00
27	.00	.00	e.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00
28	.00	.00	e.09	.00	.00	.00	.00	e.00	.70	.00	.00	.00
29	.00	.00	e.00	.00	---	.40	.00	e.00	.10	.00	.00	.00
30	.00	.30	e.02	.00	---	.30	1.40	e.00	.00	e.00	.00	.00
31	.60	---	e.01	.00	---	.00	---	e.00	---	e.00	.00	---
TOTAL	0.85	0.40	0.92	0.97	1.25	1.65	3.75	3.05	6.55	1.95	3.50	1.20

CAL YR 1992 TOTAL 18.67

WTR YR 1993 TOTAL 26.04

e Estimated

CHEYENNE RIVER BASIN

433848103443200 PRECIP AT S & G CANYON NEAR PRINGLE, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°38'48", long 103°44'32", in NW1/4SE1/4NE1/4, 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 1991 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 4,880 ft above sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.07	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.44	.44	.00	.02
3	---	---	---	---	---	---	---	.00	.24	.04	.00	.00
4	---	---	---	---	---	---	---	.51	.34	.00	.00	.00
5	---	---	---	---	---	---	---	.92	.10	.04	.20	.15
6	---	---	---	---	---	---	---	.00	2.08	.47	.00	.00
7	---	---	---	---	---	---	---	.10	1.65	.00	.00	.00
8	---	---	---	---	---	---	---	.00	1.07	.00	.00	.00
9	---	---	---	---	---	---	---	.00	.00	.20	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
11	---	---	---	---	---	---	---	.00	.10	.00	.15	.05
12	---	---	---	---	---	---	---	.00	.00	.30	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.01	.48	.00
14	---	---	---	---	---	---	---	.04	.00	.20	.00	.00
15	---	---	---	---	---	---	---	.07	.40	.00	.40	.00
16	---	---	---	---	---	---	---	.24	.00	.85	.00	.00
17	---	---	---	---	---	---	---	.00	.00	.54	.00	.00
18	---	---	---	---	---	---	---	.00	.76	.00	.00	.75
19	---	---	---	---	---	---	---	.00	.00	.00	1.00	.00
20	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	---	.03	.45	.00	.00	.00
22	---	---	---	---	---	---	---	.21	.00	.00	.00	.00
23	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.20	.00	.00
25	---	---	---	---	---	---	---	.00	.03	.62	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.00	.02	.00
27	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
28	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
30	---	---	---	---	---	---	---	.25	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	2.37	7.73	3.91	2.25	0.97

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 SW1/4SW1/4NW1/4NW1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.20	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.33	.00	.00	.00
3	---	---	---	---	---	---	---	.00	.00	.20	.00	.00
4	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
5	---	---	---	---	---	---	---	1.05	.00	.03	.00	.00
6	---	---	---	---	---	---	---	2.15	.40	.00	.00	e.62
7	---	---	---	---	---	---	---	.00	1.60	.23	1.23	e.05
8	---	---	---	---	---	---	---	1.17	.00	.00	.00	e.00
9	---	---	---	---	---	---	---	.00	.00	.20	.00	e.00
10	---	---	---	---	---	---	---	.00	.00	.06	.00	e.00
11	---	---	---	---	---	---	---	.00	.00	.00	.03	e.00
12	---	---	---	---	---	---	---	.00	.00	.00	.03	e.00
13	---	---	---	---	---	---	---	.00	.00	.00	.28	e.00
14	---	---	---	---	---	---	---	.00	.00	.00	.03	e.00
15	---	---	---	---	---	---	---	.00	.00	.00	.00	e.00
16	---	---	---	---	---	---	---	.00	.00	1.89	.00	e.00
17	---	---	---	---	---	---	---	.00	.55	.45	.16	e.00
18	---	---	---	---	---	---	---	.11	.00	.12	.00	e.09
19	---	---	---	---	---	---	---	.00	.00	.00	.00	e.59
20	---	---	---	---	---	---	---	.00	.00	.00	1.10	e.14
21	---	---	---	---	---	---	---	.00	.00	.54	.10	.00
22	---	---	---	---	---	---	---	.60	.51	.00	.00	.00
23	---	---	---	---	---	---	---	.22	.00	.31	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.20	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.00	.00	.39	.00	.00
28	---	---	---	---	---	---	---	.00	.05	.00	.00	.00
29	---	---	---	---	---	---	---	.00	.02	.00	.00	.00
30	---	---	---	---	---	---	---	.60	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	5.90	3.66	4.62	2.96	1.49

e Estimated

CHEYENNE RIVER BASIN

440756103450300 PRECIP AT TELEGRAPH GULCH ABOVE ROCHFORD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°07'56", long 103°45'03", in SW1/4NW1/4NE1/4SW1/4 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 sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--3 years, 22.57 in.

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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.05	.00	.00	.00	.01	.30	.28	.00	.00	.00
2	.00	.00	.00	.00	.03	.00	.00	.00	.22	.00	.00	.05
3	.00	e.75	.14	.18	.17	.00	.00	.00	.21	.07	.00	.00
4	.00	e.15	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
5	.00	e.04	.00	.00	.00	.00	.00	.33	.00	.00	.00	.07
6	.00	e.10	.00	.00	.00	.00	.00	1.17	1.56	.05	.00	.36
7	.31	.00	.00	.00	.00	.00	.94	.11	1.00	.63	.17	.02
8	.00	.00	.00	.00	.00	.00	.00	1.05	.89	.00	.00	.00
9	.10	.00	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00
10	.08	.00	.00	.04	.00	.00	.34	.00	.00	.11	.00	.00
11	.00	.00	.00	.00	.26	.00	.02	.00	.00	.02	.00	.00
12	.00	.05	.00	.03	.07	.00	.00	.00	.00	.07	.05	.00
13	.00	.00	.54	.00	.00	.00	.10	.00	.00	.04	.38	.00
14	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.04	.00
15	.00	.00	.00	.00	.01	.00	.02	.00	.00	.24	.00	.00
16	.00	.00	.04	.00	.00	.05	.00	.00	.56	.64	.27	.00
17	.00	.00	.00	.00	.00	.00	.00	.09	.91	.37	.00	.00
18	.00	.00	.02	.00	.00	.00	.00	.00	.13	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.29	.00	.00	.40
20	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	1.38	.06
21	.00	.00	.00	.00	.01	.00	.00	.00	.00	1.79	.00	.00
22	.00	.00	.00	.03	.00	.00	.00	1.68	.31	.02	.00	.08
23	.00	.04	.07	.07	.00	.00	.00	.44	.00	.13	.00	.00
24	.00	.00	.05	.00	.01	.00	.00	.06	.00	.00	.00	.00
25	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
27	.00	.00	.00	.00	.00	.00	.10	.00	.00	.12	.00	.00
28	.06	.00	.00	.00	.00	.07	.00	.00	.02	.00	.00	.00
29	.00	.00	.02	.00	---	.12	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.04	.45	.00	.00	.00	.00	.00
31	.00	---	.07	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.55	1.14	1.00	0.56	0.56	0.30	2.03	5.23	6.38	4.35	2.31	1.04

CAL YR 1992 TOTAL 19.31

WTR YR 1993 TOTAL 25.45

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 NW1/4NE1/4NW1/4SE1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.03	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.21	.17	.00	.00
3	---	---	---	---	---	---	---	.00	.11	.00	.00	.08
4	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
5	---	---	---	---	---	---	---	.20	.13	.00	.00	.00
6	---	---	---	---	---	---	---	---	.06	.11	.04	.67
7	---	---	---	---	---	---	---	.05	1.55	.85	.14	.00
8	---	---	---	---	---	---	---	1.50	1.63	.02	.00	.00
9	---	---	---	---	---	---	---	.23	.06	.01	.00	.00
10	---	---	---	---	---	---	---	.09	.00	.00	.00	.00
11	---	---	---	---	---	---	---	.00	.00	.22	.02	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.09	.00
13	---	---	---	---	---	---	---	.00	.00	.24	.20	.12
14	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
15	---	---	---	---	---	---	---	.08	.00	.26	.00	.00
16	---	---	---	---	---	---	---	.04	.62	.14	.12	.00
17	---	---	---	---	---	---	---	.09	1.18	.08	.00	.00
18	---	---	---	---	---	---	---	.00	.18	.03	.00	.22
19	---	---	---	---	---	---	---	.01	e.63	.00	.01	.49
20	---	---	---	---	---	---	---	.00	e.00	.00	1.14	.21
21	---	---	---	---	---	---	---	.00	e.14	1.33	.02	.00
22	---	---	---	---	---	---	---	.48	.00	.03	.00	.00
23	---	---	---	---	---	---	---	.00	.08	.16	.00	.00
24	---	---	---	---	---	---	---	.18	.00	.30	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.10	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.02	.02	.04
27	---	---	---	---	---	---	---	.04	.08	.07	.06	.00
28	---	---	---	---	---	---	---	.05	.08	.01	.01	.00
29	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
30	---	---	---	---	---	---	---	.40	.16	.00	.07	.00
31	---	---	---	---	---	---	---	.00	---	.28	.00	---
TOTAL	---	---	---	---	---	---	---	---	6.93	4.43	1.94	1.83

e Estimated

CHEYENNE RIVER BASIN

441810104062300 PRECIP AT WAGON CANYON NEAR SUNDANCE, WY

PRECIPITATION RECORDS

LOCATION.--Lat 44°18'10", long 104°06'23", in SW1/4NE1/4SW1/4 sec.19, T.50 N., R.60 W., Crook County, Hydrologic Unit 10120101, in Wagon Canyon 15 mi southeast of Sundance, 17 mi south of Beulah, and 2.5 mi west of the South Dakota-Wyoming State line.

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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00
2	.00	.00	.20	.00	.10	.00	.00	.00	.20	e.00	.00	---
3	.00	.60	.00	.20	.00	.50	.10	.00	.00	e.00	.10	---
4	.00	.00	.10	.00	.00	.00	.00	.00	.00	e.00	.00	---
5	.00	.50	.00	.00	.00	.00	.00	.40	.00	.20	.00	---
6	.10	.10	.00	.00	.00	.00	.00	.20	.00	.00	.00	---
7	.20	.00	.00	.00	.00	.00	.80	.00	1.10	1.00	.00	---
8	.10	.00	.00	.30	.00	.00	.10	.40	2.30	.00	.00	---
9	.10	.20	.00	.00	.00	.00	.00	.10	.00	.00	.00	---
10	.00	.20	.00	.00	.30	.00	.70	.20	.00	.00	.00	---
11	.00	.00	.00	.00	.10	.30	.00	.00	.00	.00	.00	---
12	.10	.20	.00	.00	.00	.00	.00	.00	.00	.00	.10	---
13	.00	.10	.40	.00	.10	.00	.20	.00	.00	.00	.60	---
14	.00	.00	.00	.10	.00	.00	.30	.00	.00	.00	.20	---
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	---
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.10	---
17	.10	.00	.00	.00	.00	.00	.00	.10	.50	.00	.10	---
18	.00	.00	.00	.00	.00	.00	.10	.00	.20	.00	.00	---
19	.00	.00	.00	.00	.00	.00	.00	.00	.80	.00	.00	---
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.80	---
21	.00	.00	.00	.00	.10	.10	.00	.00	.00	1.00	.00	---
22	.00	.00	.00	.10	.00	.30	.00	.00	.00	.10	.00	---
23	.10	.20	.30	.50	.00	.00	.10	.00	.00	.00	.00	---
24	.00	.00	.00	.00	.00	.00	.30	.00	.30	.00	.00	---
25	.00	.00	.00	.00	.00	.00	.00	1.30	.00	.20	.00	---
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	---
27	.10	.00	.00	.00	.00	.00	.00	.10	.00	.20	.10	---
28	.00	.00	.00	.00	.10	.00	.20	.20	.30	.00	.00	---
29	.00	.20	.20	.00	---	.10	.00	.00	1.00	.00	.00	---
30	.00	.00	.00	.00	---	.10	.40	.00	.10	.00	.10	---
31	.00	---	.00	.00	---	.10	---	.00	---	.10	.00	---
TOTAL	0.90	2.30	1.20	1.20	0.80	1.50	3.30	3.20	6.80	2.90	2.20	---

CAL YR 1992 TOTAL 22.95

e Estimated

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 NE1/4SW1/4NE1/4 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 sea level, from topographic map.

REMARKS.--Records fair except those for estimated periods, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.46	.18	.00	.00
2	---	---	---	---	---	---	---	.00	.31	.00	.00	.00
3	---	---	---	---	---	---	---	.00	1.43	.20	.05	.00
4	---	---	---	---	---	---	---	.00	.03	.00	.00	.00
5	---	---	---	---	---	---	---	.45	.07	.00	.00	.43
6	---	---	---	---	---	---	---	1.20	.00	.00	.00	.00
7	---	---	---	---	---	---	---	.00	1.94	.00	.00	.03
8	---	---	---	---	---	---	---	.95	.00	.35	.00	.00
9	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
11	---	---	---	---	---	---	---	.00	.05	.00	.00	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.11	.00
13	---	---	---	---	---	---	---	.00	.04	.20	.35	.19
14	---	---	---	---	---	---	---	.00	.00	.00	.20	.00
15	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
16	---	---	---	---	---	---	---	.00	.07	.55	.21	.00
17	---	---	---	---	---	---	---	.08	.53	.84	.00	.09
18	---	---	---	---	---	---	---	.02	.63	.00	.00	.29
19	---	---	---	---	---	---	---	.02	.00	.00	2.42	.39
20	---	---	---	---	---	---	---	.00	.00	.00	.00	e.00
21	---	---	---	---	---	---	---	.04	.11	.00	.00	e.00
22	---	---	---	---	---	---	---	.40	.00	.00	.00	e.00
23	---	---	---	---	---	---	---	.03	.00	.03	.00	.09
24	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.25	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.08	.00	.00
27	---	---	---	---	---	---	---	.00	.00	.00	.03	.00
28	---	---	---	---	---	---	---	.00	.53	.00	.00	e.00
29	---	---	---	---	---	---	---	.00	.20	.00	.00	e.00
30	---	---	---	---	---	---	---	.02	.00	.00	.00	e.00
31	---	---	---	---	---	---	---	.41	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	3.65	6.40	2.68	3.37	1.51

e Estimated

BELLE FOURCHE RIVER BASIN

441632103482400 PRECIP NEAR ENGLEWOOD NEAR LEAD, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°16'32", long 103°48'24", in SW1/4SE1/4NE1/4SW1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.19	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.12	.00	.02	.04
3	---	---	---	---	---	---	---	.00	.39	.00	.00	.00
4	---	---	---	---	---	---	---	.00	.00	.13	.00	.00
5	---	---	---	---	---	---	---	1.22	.00	.15	.00	.53
6	---	---	---	---	---	---	---	.08	1.40	.76	.47	.00
7	---	---	---	---	---	---	---	.73	1.75	.00	.00	.00
8	---	---	---	---	---	---	---	.00	.33	.02	.00	.00
9	---	---	---	---	---	---	---	.37	.00	.03	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.02	.00	.00
11	---	---	---	---	---	---	---	.00	.00	.17	.00	.00
12	---	---	---	---	---	---	---	.00	.00	.00	.15	.00
13	---	---	---	---	---	---	---	.00	.00	.00	.24	.10
14	---	---	---	---	---	---	---	.00	.00	.46	.00	.00
15	---	---	---	---	---	---	---	.07	.44	.16	.18	.00
16	---	---	---	---	---	---	---	.00	.70	.00	.00	.00
17	---	---	---	---	---	---	---	.08	.17	.23	.00	.18
18	---	---	---	---	---	---	---	.03	.49	.00	.00	.10
19	---	---	---	---	---	---	---	.00	.00	.00	.77	.40
20	---	---	---	---	---	---	---	.00	.19	1.37	.00	.00
21	---	---	---	---	---	---	---	.67	.00	.03	.00	.00
22	---	---	---	---	---	---	---	.18	.00	.00	.00	.00
23	---	---	---	---	---	---	---	.18	.00	.23	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.17	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.00	.00	.07
26	---	---	---	---	---	---	---	.03	.00	.04	.22	.00
27	---	---	---	---	---	---	---	.00	.11	.00	.00	.00
28	---	---	---	---	---	---	---	.05	.05	.00	.00	.00
29	---	---	---	---	---	---	---	.03	.06	.00	.00	.00
30	---	---	---	---	---	---	---	.00	.00	.18	.05	.00
31	---	---	---	---	---	---	---	.10	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	3.82	6.39	4.15	2.10	1.42

CHEYENNE RIVER BASIN

433702103411200 PRECIP NEAR HOPKINS FLATS NEAR PRINGLE, SD

. PRECIPITATION RECORDS

LOCATION.--Lat 43°37'02", long 103°41'12", in NW1/4SW1/4NE1/4, 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 1991 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 5,020 ft above sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.68	.00	.00	.04
2	---	---	---	---	---	---	---	.00	.00	.15	.00	.00
3	---	---	---	---	---	---	---	.00	.58	.05	.00	.07
4	---	---	---	---	---	---	---	.20	.00	.00	.00	.00
5	---	---	---	---	---	---	---	.50	.20	.08	.00	.22
6	---	---	---	---	---	---	---	.00	.00	.51	.24	.00
7	---	---	---	---	---	---	---	.00	1.85	.00	.00	.00
8	---	---	---	---	---	---	---	1.20	1.48	.00	.00	.00
9	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
10	---	---	---	---	---	---	---	.00	.00	.08	.00	.00
11	---	---	---	---	---	---	---	.00	.06	.00	.06	.00
12	---	---	---	---	---	---	---	.00	.00	.05	.00	.00
13	---	---	---	---	---	---	---	.00	.00	.04	.09	.25
14	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
15	---	---	---	---	---	---	---	.00	.26	1.01	.00	.00
16	---	---	---	---	---	---	---	.11	.58	.00	.00	.00
17	---	---	---	---	---	---	---	.18	.00	.33	.00	.07
18	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.00	.73	.70
20	---	---	---	---	---	---	---	.05	.70	.00	.00	.00
21	---	---	---	---	---	---	---	.00	.00	.04	.00	.00
22	---	---	---	---	---	---	---	.15	.00	.00	.00	.00
23	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
24	---	---	---	---	---	---	---	.00	.00	.18	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.84	.15	.00
27	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
28	---	---	---	---	---	---	---	.00	.00	.00	.01	.00
29	---	---	---	---	---	---	---	.14	.02	.00	.00	.00
30	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	2.53	6.41	3.36	1.28	1.35

CHEYENNE RIVER BASIN

434534103290500 PRECIP NEAR MT. COOLIDGE NEAR CUSTER, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°45'34", long 103°29'05", in NW1/4NE1/4NW1/4SE1/4 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 current year.

INSTRUMENTATION.--Shielded precipitation recorder with 8.0-in. orifice and 12-in. capacity. Elevation of gage is 5,010 ft above sea level, from topographic map.

AVERAGE ANNUAL PRECIPITATION.--4 years, 23.57 in.

REMARKS.--Records fair.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.02	.00	.00	.00	.00	e.28	e.02	.00	.00
2	.00	.01	.14	.00	.36	.00	.00	.00	e.23	e.08	.03	.00
3	.00	.03	.10	.05	.12	.00	.00	.00	e1.22	e.10	.02	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	1.56	e.04	e.05	.09	.50
6	.08	.00	.00	.00	.00	.00	.88	.06	e.95	e.48	.00	.00
7	.15	.00	.00	.00	.00	.00	.21	.02	e1.40	e.00	.00	.00
8	.04	.05	.00	.53	.00	.00	.00	.76	e.00	e.00	.00	.00
9	.00	.02	.00	.28	.03	.00	.05	.00	e.00	e.00	.00	.00
10	.00	.00	.00	.02	.33	.21	.00	.00	e.00	e.00	.00	.00
11	.00	.00	.00	.05	.07	.05	.06	.00	e.02	e.00	.06	.00
12	.00	.00	.39	.00	.00	.00	.14	.00	e.00	e.04	.05	.30
13	.00	.00	.06	.00	.00	.00	.59	.00	e.00	e.00	.59	.00
14	.00	.00	.00	.00	.03	.00	.02	.00	e.00	e.00	.00	.00
15	.00	.00	.00	.00	.07	.00	.00	.03	e.02	.76	.32	.00
16	.00	.00	.00	.00	.02	.14	.00	.00	e.55	.19	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.12	e.29	.52	.00	.10
18	.00	.00	.00	.00	.00	.00	.00	.00	e.47	.00	.00	.27
19	.00	.00	.00	.00	.00	.34	.05	.01	e.00	.00	1.66	.34
20	.00	.00	.00	.06	.00	.07	.11	.00	e.00	.00	.20	.00
21	.00	.00	.00	.00	.08	.03	.00	.00	e.18	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.55	e.01	.00	.00	.00
23	.00	.07	.00	.00	.00	.00	.00	.03	e.00	.00	.00	.00
24	.00	.10	.00	.00	.13	.00	.00	.04	e.00	.19	.00	.04
25	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00
26	.00	.00	.04	.00	.00	.00	.00	.00	e.00	.30	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00
28	.00	.00	.08	.00	.00	.49	.00	.00	e.29	.00	.00	.00
29	.06	.00	.00	.00	---	.02	.00	.00	e.02	.00	.00	.00
30	.02	.00	.02	.00	---	.03	1.00	.00	e.04	.00	.00	.00
31	.49	---	.01	.00	---	.00	---	.28	---	.00	.00	---
TOTAL	0.84	0.28	0.84	1.01	1.24	1.38	3.11	3.46	6.01	2.73	3.02	1.55

CAL YR 1992 TOTAL 19.47

WTR YR 1993 TOTAL 25.47

e Estimated

CHEYENNE RIVER BASIN

432933103511000 PRECIP NEAR PILGER MOUNTAIN NEAR EDMONT, SD

PRECIPITATION RECORDS

LOCATION.--Lat 43°29'33", long 103°51'10", in SW1/4,SE1/4,SW1/4,SW1/4, sec.26, T.6 S., R.2 E., Custer County, Hydrologic Unit 10120106, 2.3 mi east of Pilger Mountain, 9.0 mi southeast of Dewey, and 13 mi north of Edgemont.

PERIOD OF RECORD.--May 1992 to current year (seasonal record).

INSTRUMENTATION.--Non-shielded, 4.0-in. diameter plastic gage with 11-in. capacity. Elevation of gage is 40,900 ft above sea level, 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.

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.05	.00	---	---
2	---	---	---	---	---	---	---	.00	.19	.00	---	---
3	---	---	---	---	---	---	---	.00	.29	.78	---	---
4	---	---	---	---	---	---	---	.00	.18	.00	---	---
5	---	---	---	---	---	---	---	.60	.00	.04	---	---
6	---	---	---	---	---	---	---	.00	.06	.06	---	---
7	---	---	---	---	---	---	---	.00	1.32	.14	---	---
8	---	---	---	---	---	---	---	.90	.97	.00	---	---
9	---	---	---	---	---	---	---	.17	.00	.00	---	---
10	---	---	---	---	---	---	---	.00	.00	.00	---	---
11	---	---	---	---	---	---	---	.00	.00	.00	---	---
12	---	---	---	---	---	---	---	.00	.25	.08	---	---
13	---	---	---	---	---	---	---	.00	.00	.41	---	---
14	---	---	---	---	---	---	---	.00	.00	.00	---	---
15	---	---	---	---	---	---	---	.00	.11	.00	---	---
16	---	---	---	---	---	---	---	.12	.00	.15	---	---
17	---	---	---	---	---	---	---	.10	.58	.35	---	---
18	---	---	---	---	---	---	---	.02	.55	.00	---	---
19	---	---	---	---	---	---	---	.00	.08	.00	---	---
20	---	---	---	---	---	---	---	.00	.00	.00	---	---
21	---	---	---	---	---	---	---	.00	.00	.00	---	---
22	---	---	---	---	---	---	---	.00	.41	.00	---	---
23	---	---	---	---	---	---	---	.04	.00	.00	---	---
24	---	---	---	---	---	---	---	.00	.00	.10	---	---
25	---	---	---	---	---	---	---	.00	.00	.09	---	---
26	---	---	---	---	---	---	---	.00	.00	.11	---	---
27	---	---	---	---	---	---	---	.00	.00	.48	---	---
28	---	---	---	---	---	---	---	.00	.00	.00	---	---
29	---	---	---	---	---	---	---	.00	.00	.00	---	---
30	---	---	---	---	---	---	---	.02	.00	.00	---	---
31	---	---	---	---	---	---	---	.00	---	.00	---	---
TOTAL	---	---	---	---	---	---	---	1.97	5.04	2.79	---	---

CHEYENNE RIVER BASIN

440001103300200 PRECIP NEAR SHERIDAN LAKE NEAR HILL CITY, SD

PRECIPITATION RECORDS

LOCATION.--Lat 44°00'01", long 103°30'02", in NE1/4SE1/4NW1/4 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 sea level, 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 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.00	.30	.00	.00	.00
2	---	---	---	---	---	---	---	.00	.38	.00	.00	.00
3	---	---	---	---	---	---	---	.00	.35	.33	.03	.00
4	---	---	---	---	---	---	---	.00	.44	.00	.00	.00
5	---	---	---	---	---	---	---	.83	.00	.00	.00	.00
6	---	---	---	---	---	---	---	.94	.04	.00	.00	.65
7	---	---	---	---	---	---	---	.26	1.93	.15	.28	.05
8	---	---	---	---	---	---	---	1.08	.06	.00	.00	.00
9	---	---	---	---	---	---	---	.10	.02	.32	.00	.00
10	---	---	---	---	---	---	---	.00	.01	.06	.00	.00
11	---	---	---	---	---	---	---	.00	.00	.02	.00	.00
12	---	---	---	---	---	---	---	.00	.01	.00	.21	.00
13	---	---	---	---	---	---	---	.00	.00	.14	.53	.00
14	---	---	---	---	---	---	---	.00	.00	.00	.02	.00
15	---	---	---	---	---	---	---	.00	.02	.21	.00	.00
16	---	---	---	---	---	---	---	.07	.82	.98	.38	.00
17	---	---	---	---	---	---	---	.13	.32	.60	.00	.00
18	---	---	---	---	---	---	---	.00	.09	.14	.00	.09
19	---	---	---	---	---	---	---	.02	.00	.00	.00	.62
20	---	---	---	---	---	---	---	.00	.00	.00	.73	.15
21	---	---	---	---	---	---	---	.00	.09	.63	.00	.00
22	---	---	---	---	---	---	---	.76	.00	.03	.00	.00
23	---	---	---	---	---	---	---	.53	.00	.12	.00	.00
24	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
25	---	---	---	---	---	---	---	.00	.00	.16	.00	.00
26	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.00	.05	.52	.00	.00
28	---	---	---	---	---	---	---	.00	.02	.00	.07	.00
29	---	---	---	---	---	---	---	.00	.02	.00	.00	.00
30	---	---	---	---	---	---	---	.20	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	4.95	4.97	4.41	2.25	1.56

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 and National Trends Network (NADP/NTN).

ACCUMULATED PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
SUMMATION VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.24	.00	.00	.00	.00	.00	.55	1.28	.10	.00	.00
2	.00	.06	.00	.00	.00	.00	.00	.00	.00	<.01	<.01	.00
3	.00	<.01	.04	.00	.00	.00	.00	.00	.00	.55	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06
5	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.42	.48	.00	.00	.00	.00
7	<.01	.00	.00	.00	.00	.00	.51	.12	.09	.10	.05	.00
8	.00	<.01	.00	.00	.00	.00	.00	.65	.04	.05	<.01	.00
9	<.01	.00	.00	.00	.00	<.01	.00	.17	<.01	.00	<.01	<.01
10	.00	.00	.00	<.01	.15	.00	.53	.00	.00	.36	.00	.00
11	.00	.00	.00	.06	.00	.04	.00	.00	.00	.00	<.01	.00
12	.02	.02	.00	.01	.09	.00	.00	.00	.20	.03	.21	<.01
13	.00	.00	.07	.00	<.01	.00	.22	.00	.00	.03	.00	.26
14	.00	.00	.00	.00	.00	.00	.35	.00	.00	---	<.01	.00
15	.01	.00	.07	.00	.00	.00	.00	.00	.20	---	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	1.09	---	1.17	.00
17	<.01	.00	.00	.00	.00	.00	.00	.21	.79	---	<.01	<.01
18	.00	.01	.00	.00	.00	.00	.00	.00	.49	---	.00	.00
19	.00	.07	.00	.00	.00	.00	.00	.00	.00	---	<.01	1.34
20	.00	.00	.00	<.01	.00	.00	.00	.00	.00	---	<.01	.00
21	.00	.00	.00	<.01	.02	.45	.00	.00	<.01	.45	<.01	<.01
22	.00	.00	.00	.00	.00	.00	.00	<.01	.23	.00	.00	.00
23	.00	.00	.02	.02	.00	.00	.01	.19	.27	.00	.00	.00
24	.00	.00	.00	.00	.10	.00	.18	.00	.33	.25	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	<.01
26	.00	.00	.00	.00	.00	.00	.03	.15	.00	.60	.14	.00
27	.00	.00	.00	.00	.00	.00	.00	<.01	.00	.00	.00	<.01
28	.00	.00	.00	.00	.00	.00	.01	<.01	.40	.00	.00	.00
29	.00	.03	<.01	.00	---	.50	.00	.15	1.34	<.01	<.01	.00
30	.00	.00	.00	.00	---	.00	.55	<.01	.00	.00	.00	.00
31	.50	---	.00	.00	---	.17	---	.00	---	.14	.00	---

< Actual value is known to be less than the value shown

MISCELLANEOUS WATER QUALITY DATA
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. Precipitation water-quality laboratory analyses are performed by the Central Analytical Laboratory (CAL), Illinois State Water Survey, Champaign, Illinois. The records of precipitation and precipitation water-quality presented below are reported exactly as they are received from the CAL and are not reviewed for accuracy or consistency by the South Dakota District of the USGS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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 FIELD WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE LAB WET TOT (US/CM) (83156)	SPEC. CONDUCT- TANCE FIELD BLK TOT (US/CM) (83436)	SPEC. CONDUCT- TANCE LAB BLK TOT (US/CM) (83438)	PH FIELD WET T (UNITS) (83106)	PH LAB WET T (UNITS) (83107)
SEP 29- OCT 06	0.0	0.00	--	--	--	2.3	--	--	--	6.05
OCT 06-13	0.02	0.022	--	63	--	40.6	--	--	--	7.07
OCT 13-20	0.01	0.008	--	45	--	62.7	--	--	--	7.08
OCT 20-27	0.0	0.00	--	--	--	1.5	--	--	--	6.03
OCT 27- NOV 03	--	1.246	--	--	16.5	15.0	--	--	4.59	4.65
NOV 03-10	--	0.00	--	--	--	2.2	--	--	--	6.32
NOV 10-17	0.02	0.013	--	37	--	12.8	--	--	--	6.21
NOV 17-24	0.08	0.141	--	103	28.3	26.8	--	--	5.27	5.83
NOV 24- DEC 01	0.03	0.047	--	92	--	9.1	--	--	--	6.12
DEC 01-08	0.04	0.047	--	68	--	18.1	--	--	--	6.63
DEC 08-15	0.16	0.015	--	5.3	--	50.9	--	--	--	5.28
DEC 15-22	0.0	0.001	--	--	--	--	--	--	--	--
DEC 22-29	0.02	0.00	--	10	--	--	--	--	--	--
DEC 29 1992- JAN 05 1993	--	--	0.00	--	--	--	--	8.0	--	--
JAN 05-12	0.06	0.009	--	9.0	--	24.7	--	--	--	6.85
JAN 12-19	0.01	0.015	--	90	--	18.2	--	--	--	5.69
JAN 19-26	0.02	0.00	--	25	--	29.2	--	--	--	5.29
JAN 26- FEB 02	0.0	0.00	--	--	--	1.8	--	--	--	6.11
FEB 02-09	0.0	0.00	--	--	--	1.5	--	--	--	6.13
FEB 09-16	0.24	0.069	--	17	--	14.8	--	--	--	4.62
FEB 16-23	0.02	0.00	--	--	--	1.8	--	--	--	6.07
FEB 23- MAR 02	0.10	--	0.093	54	--	--	17.3	25.3	--	--
MAR 02-09	0.0	0.00	--	--	--	1.7	--	--	--	6.07
MAR 09-16	0.04	0.043	--	63	--	12.8	--	--	--	6.34
MAR 16-23	0.40	0.036	--	5.2	--	22.2	--	--	--	6.10
MAR 23-30	0.50	0.895	--	104	29.2	30.0	--	--	4.33	4.35
MAR 30- APR 06	0.25	0.279	--	65	13.8	12.8	--	--	5.12	5.54
APR 06-13	1.46	2.629	--	104	16.9	14.2	--	--	4.71	4.85
APR 13-20	--	0.776	--	--	7.9	6.6	--	--	7.85	5.27
APR 20-27	0.22	0.369	--	97	25.9	24.6	--	--	6.39	6.79
APR 27- MAY 04	1.11	1.887	--	99	9.6	7.1	--	--	6.37	6.38
MAY 04-11	1.42	2.331	--	95	5.4	6.5	--	--	6.22	6.28
MAY 11-18	0.21	0.375	--	104	8.7	8.4	--	--	5.88	6.53
MAY 18-25	0.19	0.341	--	104	11.7	12.3	--	--	5.44	6.24
MAY 25- JUN 02	1.58	2.698	--	99	9.3	9.0	--	--	6.03	6.30

MISCELLANEOUS WATER QUALITY DATA
00430061 HURON WELL FIELD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	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)	POTAS- SIUM ATM DEP BLK DIS (MG/L) (83402)
SEP 29-										
OCT 06	--	--	0.020	--	0.004	--	0.110	--	<0.003	--
OCT 06-13	--	--	3.04	--	0.541	--	0.934	--	0.273	--
OCT 13-20	--	--	--	--	--	--	--	--	--	--
OCT 20-27	--	--	0.010	--	0.003	--	0.028	--	<0.003	--
OCT 27-										
NOV 03	--	--	0.090	--	0.026	--	0.014	--	0.008	--
NOV 03-10	--	--	0.020	--	0.003	--	0.075	--	0.007	--
NOV 10-17	--	--	0.330	--	0.045	--	0.521	--	<0.019	--
NOV 17-24	--	--	0.970	--	0.106	--	0.142	--	0.032	--
NOV 24-										
DEC 01	--	--	0.130	--	0.032	--	0.049	--	0.018	--
DEC 01-08	--	--	1.09	--	0.094	--	1.25	--	0.054	--
DEC 08-15	--	--	3.78	--	0.375	--	0.398	--	0.064	--
DEC 15-22	--	--	--	--	--	--	--	--	--	--
DEC 22-29	--	--	--	--	--	--	--	--	--	--
DEC 29 1992-										
JAN 05 1993	--	6.50	--	0.890	--	0.168	--	0.100	--	0.019
JAN 05-12	--	--	--	--	--	--	--	--	--	--
JAN 12-19	--	--	0.330	--	0.056	--	0.509	--	0.161	--
JAN 19-26	--	--	--	--	--	--	--	--	--	--
JAN 26-										
FEB 02	--	--	0.010	--	0.003	--	0.113	--	0.006	--
FEB 02-09	--	--	0.010	--	<0.003	--	0.098	--	<0.003	--
FEB 09-16	--	--	0.280	--	0.086	--	0.055	--	0.013	--
FEB 16-23	--	--	0.080	--	0.020	--	0.132	--	0.006	--
FEB 23-										
MAR 02	7.04	7.07	--	2.40	--	0.609	--	0.192	--	0.030
MAR 02-09	--	--	0.010	--	0.003	--	0.105	--	0.005	--
MAR 09-16	--	--	0.420	--	0.104	--	0.068	--	0.035	--
MAR 16-23	--	--	0.150	--	0.030	--	0.107	--	0.027	--
MAR 23-30	--	--	0.090	--	0.016	--	0.020	--	0.008	--
MAR 30-										
APR 06	--	--	0.250	--	0.034	--	0.052	--	0.016	--
APR 06-13	--	--	0.130	--	0.019	--	0.066	--	0.008	--
APR 13-20	--	--	0.080	--	0.018	--	0.032	--	0.004	--
APR 20-27	--	--	0.510	--	0.110	--	0.077	--	0.046	--
APR 27-										
MAY 04	--	--	0.040	--	0.009	--	0.015	--	0.006	--
MAY 04-11	--	--	0.090	--	0.014	--	0.033	--	0.011	--
MAY 11-18	--	--	0.330	--	0.088	--	0.129	--	0.045	--
MAY 18-25	--	--	0.210	--	0.044	--	0.083	--	0.017	--
MAY 25-										
JUN 02	--	--	0.160	--	0.019	--	0.034	--	0.015	--

MISCELLANEOUS WATER QUALITY DATA
00430061 HURON WELL FIELD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SULFATE	SULFATE	CHLO-	CHLO-	NI-	NI-	NI-	NI-	PHOS-	PHOS-
	ATM DEP	ATM DEP	RIDE	RIDE	TROGEN	TROGEN	TROGEN	TROGEN	PHORUS	PHORUS
	WET DIS	BLK DIS	ATM DEP	ATM DEP	NITRATE	NITRATE	AMMON.	AMMON.	ORTHO	ORTHO
	AS SO4 (MG/L) (83160)	AS SO4 (MG/L) (83442)	WET DIS (MG/L) (82944)	BLK DIS (MG/L) (83226)	WET DIS AS NO3 (MG/L) (83071)	BLK DIS AS NO3 (MG/L) (83353)	WET DIS AS NH4 (MG/L) (83047)	BLK DIS AS NH4 (MG/L) (83329)	WET DIS AS PO4 (MG/L) (83111)	BLK DIS AS PO4 (MG/L) (83393)
SEP 29-										
OCT 06	0.03	--	0.15	--	0.08	--	0.060	--	<0.020	--
OCT 06-13	4.50	--	0.29	--	3.02	--	0.810	--	<0.100	--
OCT 13-20	--	--	--	--	--	--	--	--	--	--
OCT 20-27	0.04	--	<0.03	--	0.11	--	0.020	--	<0.020	--
OCT 27-										
NOV 03	1.41	--	0.03	--	1.79	--	0.500	--	<0.020	--
NOV 03-10	0.08	--	0.09	--	0.20	--	0.150	--	<0.020	--
NOV 10-17	1.16	--	0.45	--	1.29	--	0.390	--	<0.130	--
NOV 17-24	3.48	--	0.13	--	6.18	--	2.27	--	<0.020	--
NOV 24-										
DEC 01	0.76	--	0.09	--	1.59	--	0.660	--	<0.020	--
DEC 01-08	0.77	--	0.31	--	3.35	--	0.860	--	<0.020	--
DEC 08-15	4.62	--	0.64	--	11.8	--	3.45	--	<0.120	--
DEC 15-22	--	--	--	--	--	--	--	--	--	--
DEC 22-29	--	--	--	--	--	--	--	--	--	--
DEC 29 1992-										
JAN 05 1993	--	0.23	--	0.10	--	0.99	--	0.070	--	<0.020
JAN 05-12	--	--	--	--	--	--	--	--	--	--
JAN 12-19	1.18	--	0.68	--	3.79	--	<0.120	--	<0.120	--
JAN 19-26	--	--	--	--	--	--	--	--	--	--
JAN 26-										
FEB 02	0.06	--	0.11	--	0.20	--	0.140	--	<0.020	--
FEB 02-09	0.05	--	0.09	--	0.22	--	0.080	--	<0.020	--
FEB 09-16	0.49	--	0.12	--	3.13	--	0.100	--	<0.020	--
FEB 16-23	0.04	--	0.24	--	0.24	--	0.070	--	<0.020	--
FEB 23-										
MAR 02	--	1.06	--	0.09	--	2.40	--	0.220	--	<0.020
MAR 02-09	0.03	--	0.12	--	0.22	--	0.150	--	<0.020	--
MAR 09-16	1.55	--	0.07	--	0.84	--	0.760	--	<0.020	--
MAR 16-23	3.14	--	0.16	--	3.63	--	2.28	--	<0.020	--
MAR 23-30	3.74	--	0.04	--	2.11	--	0.930	--	<0.020	--
MAR 30-										
APR 06	1.64	--	0.10	--	2.32	--	0.960	--	<0.020	--
APR 06-13	2.20	--	0.07	--	1.50	--	0.780	--	<0.020	--
APR 13-20	0.90	--	0.05	--	0.88	--	0.370	--	<0.020	--
APR 20-27	3.02	--	0.09	--	3.07	--	2.48	--	<0.020	--
APR 27-										
MAY 04	0.63	--	<0.03	--	0.90	--	0.830	--	<0.020	--
MAY 04-11	0.56	--	0.06	--	0.80	--	0.410	--	<0.020	--
MAY 11-18	0.77	--	0.06	--	0.64	--	0.640	--	<0.020	--
MAY 18-25	1.49	--	0.06	--	1.46	--	0.900	--	<0.020	--
MAY 25-										
JUN 02	0.83	--	0.06	--	1.43	--	0.920	--	<0.020	--

MISCELLANEOUS WATER QUALITY DATA

00430061 HURON WELL FIELD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	VOLUME ATM DEP WET (L) (83177)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT (82284)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	PH FIELD ATM DEP WET T (UNITS) (83106)	PH LAB ATM DEP WET T (UNITS) (83107)	CALCIUM ATM DEP WET DIS (MG/L) (82932)
JUN 1993								
02-08	0.09	0.149	96	21.4	22.6	6.78	6.74	1.14
JUN								
08-15	0.24	0.420	101	9.6	10.0	5.80	6.13	0.210
JUN								
15-22	2.57	4.386	99	9.2	9.4	6.30	6.32	0.440
JUN								
22-29	1.23	2.090	99	7.1	7.5	6.41	6.33	0.220
JUN 29-								
JUL 06	1.99	3.474	101	6.2	7.5	5.73	5.82	0.230
JUL								
06-13	0.57	1.035	105	8.2	8.8	6.13	6.38	0.230
JUL								
13-20	--	2.608	--	6.1	6.4	5.89	6.03	0.110
JUL								
20-27	1.30	2.147	96	5.3	6.0	5.93	6.10	0.130
JUL 27-								
AUG 03	0.14	0.00	98	11.0	12.1	6.51	6.56	0.480
AUG								
03-10	0.05	0.067	77	--	32.0	--	6.95	0.850
AUG								
10-17	1.38	2.422	102	4.8	5.1	6.05	6.02	0.080
AUG								
17-24	--	0.00	--	--	--	--	--	--
AUG								
24-31	0.15	0.261	101	17.2	19.6	6.08	6.49	0.630
AUG 31-								
SEP 07	0.06	0.123	119	6.9	6.5	5.28	6.23	0.220
SEP								
07-14	0.26	0.410	91	11.2	9.3	5.24	6.28	0.320
SEP								
14-21	1.34	2.416	105	6.8	5.1	5.05	5.50	0.030
SEP								
21-28	--	0.001	--	--	--	--	--	--
SEP 28-								
OCT 05	0.0	0.00	--	--	1.7	--	5.95	0.050

DATE	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)
JUN 1993								
02-08	0.158	0.272	0.200	2.22	0.30	2.34	1.56	<0.020
JUN								
08-15	0.028	0.046	0.020	1.14	0.09	1.71	0.840	<0.020
JUN								
15-22	0.049	0.034	0.058	0.99	0.07	1.27	0.420	<0.020
JUN								
22-29	0.036	0.065	0.104	0.61	0.08	1.18	0.630	<0.020
JUN 29-								
JUL 06	0.027	0.057	0.024	0.92	0.07	1.24	0.490	<0.020
JUL								
06-13	0.036	0.076	0.058	0.76	0.10	1.22	0.590	<0.020
JUL								
13-20	0.017	0.063	0.015	0.86	0.07	0.88	0.550	<0.020
JUL								
20-27	0.020	0.058	0.016	0.56	0.07	0.90	0.440	<0.020
JUL 27-								
AUG 03	0.085	0.137	0.042	0.90	0.11	1.83	0.860	<0.020
AUG								
03-10	0.167	0.218	0.126	2.54	0.28	3.96	2.42	0.190
AUG								
10-17	0.014	0.042	0.013	0.47	0.06	0.81	0.490	<0.020
AUG								
17-24	--	--	--	--	--	--	--	--
AUG								
24-31	0.075	0.231	0.088	2.24	0.19	3.11	1.38	<0.020
AUG 31-								
SEP 07	0.060	0.142	0.030	0.54	0.08	0.67	0.230	<0.020
SEP								
07-14	0.057	0.075	0.044	0.99	0.10	1.35	0.700	<0.020
SEP								
14-21	0.006	0.024	0.003	0.80	<0.03	0.43	0.300	<0.020
SEP								
21-28	--	--	--	--	--	--	--	--
SEP 28-								
OCT 05	0.012	0.064	0.004	<0.03	0.07	<0.03	0.020	<0.020

MISCELLANEOUS WATER QUALITY DATA

MISSOURI-OAHE BASIN

444254101040600 FOSTER CREEK AT FOSTER BAY NEAR EAGLE BUTTE, SD

LOCATION.--Lat 44°42'54", long 101°04'06", in SE1/4NE1/4NW1/4 sec. 27, T.9 N., R.25 E., Stanley County, Hydrologic Unit 10130105, on left bank, near mouth of Foster Creek, and 21 mi south-southeast of Eagle Butte.

PERIOD OF RECORD.--March to September 1993 (discontinued).

REMARKS.--Samples collected Mar. 4 were taken using equal-width increment method and all other samples obtained from single-stage sampler.

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)
MAR 1993					
04...	1115	29	0.5	393	99
JUL					
10...	--	--	--	393	--
20...	--	--	--	58100	--
20...	--	--	--	56300	--
22...	--	--	--	26400	--

MISSOURI-OAHE BASIN

444320101043500 FOSTER CREEK TRIB AT FOSTER BAY NEAR EAGLE BUTTE, SD

LOCATION.--Lat 44°43'20", long 101°04'35", in SE1/4NE1/4SE1/4 sec.21, T.9 N., R.25 E., Stanley County, Hydrologic Unit 10130105, on left bank of Todd's Draw, near mouth of Foster Creek, and 21 mi south-southeast of Eagle Butte.

PERIOD OF RECORD.--March to September 1993 (discontinued).

REMARKS.--Samples collected using equal-width increment method. No flows of sufficient magnitude to trigger the single-stage sampler.

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)
MAR 1993					
04...	1250	2.2	0.5	120	99

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.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
LAGOON 1	434415096371501	05-19-93	1100	898	6.5	12.0	15.0	130	606
EROS LAKE	434405096365501	05-19-93	1315	1160	7.8	12.0	15.5	46	730
103N48W 5CACA	434508096372701	05-20-93	1000	1110	7.4	8.5	9.5	25	740
103N48W 9CCDA	434400096362201	05-20-93	0830	2010	7.4	6.5	9.5	28	1390
103N48W17ACCC	434332096371501	06-09-93	0930	883	7.4	16.5	10.0	<10	588

DATE	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	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, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	BORON, TOTAL RECOVERABLE (UG/L AS B) (01022)
LAGOON 1	05-19-93	7.10	7.90	15.0	0.790	1.0	1.50	260
EROS LAKE	05-19-93	0.010	--	<0.050	0.170	0.22	0.130	190
103N48W 5CACA	05-20-93	<0.010	--	19.0	0.030	0.04	0.030	50
103N48W 9CCDA	05-20-93	<0.010	--	74.0	0.020	0.03	0.030	10
103N48W17ACCC	06-09-93	<0.010	--	<0.050	0.180	0.23	0.020	20

DATE	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	CYANIDE TOTAL (MG/L AS CN) (00720)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IODIDE, DIS-SOLVED (MG/L AS I) (71865)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
LAGOON 1	05-19-93	3.8	10	0.100	2200	0.018	130	<1.0
EROS LAKE	05-19-93	4.8	3	<0.010	80	0.050	<1	<1.0
103N48W 5CACA	05-20-93	0.11	<1	<0.010	670	0.003	<1	<1.0
103N48W 9CCDA	05-20-93	0.58	2	0.040	20	0.011	<1	<1.0
103N48W17ACCC	06-09-93	0.070	<1	<0.010	120	0.008	<1	<1.0

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)
05051650 LA BELLE CR NEAR VEBLEN SD (LAT 45 53 33N LONG 097 11 56W)					
NOV 1992					
17...	1020	0.12	1.0	1.5	1360
DEC					
15...	1105	0.06	0.5	-6.0	1410
MAR 1993					
23...	1010	2.3	0.5	4.0	1500
29...	1115	52	1.0	13.0	500
APR					
05...	1130	17	3.5	6.5	520
MAY					
14...	1135	1.7	16.0	23.0	860
JUN					
08...	1100	5.6	13.0	16.0	810
JUL					
01...	1550	9.7	27.0	13.0	760
26...	1210	18	20.0	27.0	740
AUG					
09...	1125	3.0	22.5	29.0	800
SEP					
08...	1115	1.1	14.5	24.0	960
05289985 BIG COULEE CR NEAR PEEVER SD (LAT 45 29 14N LONG 097 57 34W)					
OCT 1992					
06...	1140	0.03	9.0	10.0	1620
NOV					
17...	1215	1.0	1.5	2.0	1460
DEC					
15...	1330	0.91	0.5	-1.0	1360
FEB 1993					
22...	1345	0.65	0.0	-21.0	1470
MAR					
23...	1210	2.6	1.0	11.0	1350
29...	1325	34	2.0	10.0	560
MAY					
14...	0855	3.5	15.0	14.0	1120
JUN					
08...	1400	5.6	14.0	20.0	1200
JUL					
01...	1305	6.4	23.0	27.0	1090
26...	1505	24	20.5	27.0	970
AUG					
09...	1645	2.2	27.0	30.0	1200
SEP					
08...	1305	0.49	14.5	22.0	1360
05299700 COBB CREEK NEAR GARY SD (LAT 44 44 22N LONG 096 27 26W)					
OCT 1992					
07...	1430	4.3	9.5	6.0	800
NOV					
18...	1235	9.9	0.5	3.0	1040
DEC					
16...	1535	6.6	0.5	-4.0	940
JAN 1993					
21...	1400	3.1	0.5	-2.0	850
FEB					
23...	1620	2.8	0.0	-2.0	800
MAR					
24...	1140	4.0	1.0	12.0	780
30...	1105	379	3.0	4.0	520
APR					
06...	1415	118	6.0	14.0	790
MAY					
10...	1540	364	15.0	17.5	660
JUN					
09...	1415	51	15.5	18.0	880
30...	1400	201	24.5	27.0	530
AUG					
12...	0930	25	22.5	21.5	770
SEP					
09...	1240	9.6	16.0	16.0	780

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)
05299750 FLORIDA CREEK NEAR BURR, MN (LAT 44 49 00N LONG 096 25 10W)					
MAR 1993					
24...	1250	5.6	1.0	9.0	780
30...	1315	390	3.0	6.0	500
MAY					
10...	1305	414	15.0	16.0	670
06334500 LITTLE MISSOURI R AT CAMP CROOK SD (LAT 45 32 49N LONG 103 58 23W)					
OCT 1992					
20...	1630	1.4	12.0	23.0	1610
DEC					
02...	0840	1.8	0.0	-8.0	1860
JAN 1993					
14...	1505	1.3	0.0	-18.0	1710
MAR					
03...	1005	1.8	0.0	3.0	1530
APR					
13...	1850	56	7.5	4.5	654
MAY					
27...	0930	15	16.0	20.0	1300
JUN					
11...	1430	2960	--	--	--
23...	1800	128	--	13.5	991
JUL					
22...	1245	1070	21.0	22.5	981
AUG					
18...	0920	166	19.0	14.5	1310
06354882 OAK CR NEAR WAKPALA SD (LAT 45 42 43N LONG 100 33 32W)					
DEC 1992					
01...	0915	0.46	0.0	3.5	921
MAR 1993					
09...	1225	570	0.0	7.0	396
APR					
12...	1535	6.6	8.5	9.0	607
MAY					
25...	1545	25	16.0	21.0	1060
JUN					
22...	1715	14	19.0	32.0	1410
JUL					
27...	1335	323	19.0	23.0	307
28...	1300	713	21.0	33.0	--
AUG					
17...	0935	5.9	23.0	21.0	543
06355500 NORTH FORK GRAND R NEAR WHITE BUTTE SD (LAT 45 48 10N LONG 102 21 45W)					
DEC 1992					
01...	1400	2.0	0.0	4.0	3980
JAN 1993					
14...	1000	0.09	0.0	-25.0	5370
MAR					
02...	1050	0.09	0.0	3.0	4020
10...	1400	239	0.0	1.5	434
APR					
13...	1240	33	9.0	8.5	2730
MAY					
26...	1025	3.9	14.0	11.5	3420
JUN					
23...	1230	3.0	19.0	25.0	1760
JUL					
22...	0915	83	20.0	19.0	2210
AUG					
17...	1555	29	25.5	24.0	2550

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)
06356000 SOUTH FORK GRAND R AT BUFFALO SD (LAT 45 34 34N LONG 103 32 38W)					
OCT 1992					
21...	1000	2.3	6.0	7.0	1800
DEC					
02...	1005	0.90	0.0	-3.5	2070
JAN 1993					
14...	1730	0.38	--	--	1830
MAR					
02...	1835	3.2	0.0	2.5	1360
11...	0915	4.5	0.0	-3.0	444
APR					
14...	0840	3.8	4.5	1.5	1850
MAY					
26...	1620	2.5	16.0	21.5	1880
JUN					
23...	1610	2.7	19.0	14.0	1780
JUL					
22...	1000	6.5	21.0	20.0	1020
AUG					
18...	1210	3.3	20.0	19.0	1380
06356500 SOUTH FORK GRAND R NEAR CASH SD (LAT 45 38 56N LONG 102 38 27W)					
OCT 1992					
20...	1320	8.4	8.5	18.0	2360
DEC					
01...	1550	9.0	0.0	1.5	2920
MAR 1993					
02...	1330	8.7	0.0	4.5	3020
10...	1615	747	0.0	0.5	267
APR					
13...	1535	39	7.0	5.0	2160
MAY					
26...	1405	12	16.0	16.5	2400
JUN					
23...	1410	8.6	--	--	1800
JUL					
22...	1250	191	21.5	23.0	773
AUG					
17...	1850	59	25.0	22.0	1650
06357800 GRAND R AT LITTLE EAGLE SD (LAT 45 39 28N LONG 100 49 04W)					
OCT 1992					
19...	1400	15	8.0	15.0	2630
NOV					
30...	1600	9.5	0.0	6.5	2260
MAR 1993					
01...	1405	3.7	0.5	9.0	1560
08...	1620	6970	0.5	8.5	192
APR					
12...	1305	90	7.5	9.5	1600
MAY					
25...	1855	35	16.0	23.0	1960
JUN					
23...	0900	904	--	--	1240
JUL					
26...	1525	1530	22.0	27.0	1250
28...	1615	6630	21.0	22.0	--
AUG					
16...	1405	370	24.5	29.0	1360

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)
06359500 MOREAU R NEAR FAITH SD (LAT 45 11 52N LONG 102 09 22W)					
OCT 1992					
21...	1315	2.2	11.0	19.0	2440
DEC					
02...	1345	9.7	0.0	3.5	2740
JAN 1993					
15...	1020	1.3	0.0	-17.0	3530
MAR					
03...	1410	4.5	0.0	3.5	2450
11...	1245	1370	0.0	0.5	218
APR					
14...	1240	60	7.5	--	1390
MAY					
27...	1330	33	16.0	21.5	1430
JUN					
11...	1550	1800	20.0	23.0	--
24...	0930	47	19.0	14.0	1310
JUL					
21...	2010	4130	--	--	133
27...	1500	5100	19.0	17.0	415
AUG					
26...	0850	37	19.0	18.0	1270
06360500 MOREAU R NEAR WHITEHORSE SD (LAT 45 15 21N LONG 100 50 33W)					
NOV 1992					
30...	1255	4.6	0.0	7.0	3160
MAR 1993					
05...	1240	670	1.0	5.5	444
09...	1335	6690	0.5	6.5	661
JUL					
23...	1740	6510	22.0	26.5	545
06395000 CHEYENNE R AT EDGEMONT SD (LAT 43 18 20N LONG 103 49 14W)					
OCT 1992					
06...	0830	0.14	9.0	6.0	6900
NOV					
25...	0950	5.6	0.0	-8.0	5430
JAN 1993					
07...	1000	5.8	0.0	-19.0	5050
FEB					
09...	1130	6.2	0.0	-1.0	5080
APR					
08...	1100	504	7.0	17.0	1250
MAY					
24...	1015	52	12.5	14.0	3220
JUL					
12...	1310	47	26.0	28.5	3050
SEP					
07...	0940	27	14.0	13.0	4000
06400000 HAT CR NEAR EDGEMONT SD (LAT 43 14 24N LONG 103 35 16W)					
NOV 1992					
25...	1215	0.34	0.0	-2.0	2050
JAN 1993					
07...	1130	0.15	0.0	-5.0	3510
FEB					
09...	1340	0.29	0.0	3.0	4340
APR					
08...	1515	109	10.0	17.0	1460
MAY					
24...	1215	5.7	17.0	18.5	3220
JUL					
12...	1515	16	24.0	29.5	2170
16...	1535	1790	18.0	23.0	510
SEP					
07...	1145	0.39	15.5	15.0	4030

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)
06400497 CASCADE SPRINGS NEAR HOT SPRINGS SD (LAT 43 20 10N LONG 103 33 07W)					
OCT 1992					
06...	1305	18	20.0	7.0	2610
NOV					
27...	0915	17	20.0	-1.0	2620
JAN 1993					
07...	1300	17	20.0	-9.0	2650
FEB					
09...	1505	17	20.0	5.0	2670
APR					
09...	1320	18	21.0	20.0	2600
28...	1245	17	20.0	18.0	2620
MAY					
24...	1350	17	20.0	16.5	2640
JUL					
14...	0930	16	21.0	18.0	2670
SEP					
07...	1345	17	20.0	19.0	2670
06400875 HORSEHEAD CR AT OELRICHS SD (LAT 43 11 17N LONG 103 13 34W)					
MAR 1993					
10...	1350	6.6	1.0	4.0	262
APR					
12...	1045	35	7.0	6.0	556
JUN					
03...	0950	1.5	12.0	7.0	1730
JUL					
13...	1800	0.23	--	--	--
06401500 CHEYENNE R BELOW ANGOSTURA DAM SD (LAT 43 20 42N LONG 103 26 12W)					
OCT 1992					
09...	0930	2.4	12.0	10.0	2300
FEB 1993					
12...	0900	1.4	3.0	-3.0	2400
APR					
12...	1330	1.3	10.0	10.0	2200
JUN					
03...	1200	2.0	12.0	8.0	1980
JUL					
07...	1530	239	20.0	25.0	2020
SEP					
08...	1230	3.3	20.0	25.0	2060
06402000 FALL R AT HOT SPRINGS SD (LAT 43 25 50N LONG 103 28 33W)					
OCT 1992					
05...	1335	21	25.0	18.0	1280
NOV					
27...	1100	22	20.0	3.0	1290
JAN 1993					
07...	1400	23	20.0	-3.0	1290
FEB					
11...	1400	21	21.0	-9.0	1290
APR					
09...	0915	24	20.0	10.0	1270
MAY					
24...	1525	21	24.0	15.0	1300
JUL					
14...	1140	20	--	--	--
SEP					
08...	1420	21	25.0	23.0	1300
06402430 BEAVER CREEK NEAR PRINGLE, SD (LAT 43 34 53N LONG 103 28 34W)					
OCT 1992					
02...	0950	0.18	10.0	27.0	570
NOV					
19...	0930	0.33	4.0	3.0	552
JAN 1993					
04...	0925	0.24	0.0	-11.0	574
FEB					
24...	1000	0.40	0.0	-8.0	530
MAR					
25...	0855	1.2	6.0	22.0	495
MAY					
17...	1210	1.2	17.0	20.0	554
JUL					
16...	1310	1.7	19.5	29.5	548
SEP					
03...	0945	1.0	11.0	20.0	598

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)					
OCT 1992					
02...	1210	8.5	17.0	26.0	2320
NOV					
19...	1130	8.7	13.5	7.5	2400
JAN 1993					
04...	1140	8.7	10.0	-4.0	2400
FEB					
24...	1240	8.9	10.0	-7.0	2340
MAR					
25...	1215	9.4	16.0	23.0	2300
MAY					
14...	1100	8.9	17.0	26.0	2300
JUL					
16...	1105	10	19.0	24.0	2300
SEP					
01...	1310	9.3	20.0	24.0	2350
06402500 BEAVER CR NEAR BUFFALO GAP SD (LAT 43 27 56N LONG 103 18 22W)					
OCT 1992					
05...	1200	5.1	12.0	15.0	2450
NOV					
19...	1330	8.7	7.0	8.0	2430
JAN 1993					
04...	1335	8.1	0.0	-3.0	2540
FEB					
25...	0945	9.1	0.0	-7.5	2380
MAR					
29...	1010	10	9.0	7.0	1580
MAY					
14...	1215	8.4	19.0	21.0	2370
JUL					
14...	1345	6.7	17.5	22.0	2460
SEP					
01...	1055	8.5	16.0	25.0	2400
06402995 FRENCH CREEK ABOVE STOCKADE LAKE NEAR CUSTER, SD (LAT 43 46 10N LONG 103 32 10W)					
OCT 1992					
13...	1130	0.35	9.0	22.5	431
NOV					
27...	1355	0.30	1.0	12.5	527
JAN 1993					
13...	1600	0.25	0.0	-13.0	--
MAR					
05...	1130	0.35	0.5	7.0	615
APR					
09...	1530	12	9.5	16.0	285
MAY					
10...	1410	25	12.5	18.0	240
JUN					
10...	1340	47	12.0	20.5	245
JUL					
14...	1715	8.2	14.5	13.0	345
AUG					
31...	1500	3.4	16.0	23.5	386
06403300 FRENCH CR ABOVE FAIRBURN SD (LAT 43 43 02N LONG 103 22 03W)					
OCT 1992					
14...	1215	1.4	6.0	1.0	314
NOV					
30...	1405	0.90	0.5	8.0	320
JAN 1993					
11...	1255	0.90	--	--	--
MAR					
15...	1150	4.6	0.5	14.0	306
APR					
23...	1150	11	10.0	17.5	297
MAY					
11...	1150	39	13.0	18.5	282
JUN					
15...	1220	37	17.0	22.5	255
JUL					
20...	1450	25	18.0	23.0	270
SEP					
01...	1355	6.9	14.0	21.0	295

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)
06404000 BATTLE CR NEAR KEYSTONE SD (LAT 43 52 21N LONG 103 20 10W)					
OCT 1992					
01...	0905	0.46	12.0	20.0	322
NOV					
18...	1440	1.6	4.0	2.0	355
JAN 1993					
14...	1145	1.5	0.0	-8.0	375
FEB					
08...	1200	1.7	0.0	5.0	336
MAR					
24...	0845	6.8	2.0	15.0	270
MAY					
13...	1345	57	17.0	26.0	168
JUN					
07...	1300	1080	11.0	11.0	113
JUL					
27...	1135	22	16.0	20.0	225
SEP					
07...	0830	5.1	12.5	14.5	353
06404800 GRACE COOLIDGE CREEK NEAR HAYWARD, SD (LAT 43 48 07N LONG 103 26 03W)					
OCT 1992					
13...	1400	0.44	10.0	19.5	95
DEC					
04...	1040	0.30	1.0	-9.0	103
JAN 1993					
13...	1210	0.25	0.0	13.0	112
MAR					
02...	1047	0.24	0.5	1.5	91
APR					
08...	1500	2.3	7.5	12.0	71
16...	1445	6.0	6.0	10.0	63
MAY					
06...	1030	26	8.5	11.5	55
JUN					
07...	1200	123	13.0	11.5	48
08...	1015	42	9.0	9.0	57
09...	1525	27	13.5	19.5	60
10...	1520	19	15.0	23.0	63
JUL					
14...	1240	2.1	13.0	14.5	92
SEP					
02...	1205	1.1	13.5	20.0	93
06404998 GRACE COOLIDGE CR NR GAME LODGE NR CUSTER SD (LAT 43 45 40N LONG 103 21 49W)					
OCT 1992					
14...	1500	2.3	7.0	2.0	217
NOV					
27...	1525	2.2	1.0	4.0	226
JAN 1993					
12...	1500	1.8	0.0	-14.0	103
MAR					
15...	1450	2.9	3.0	12.5	202
MAY					
03...	1520	12	14.0	21.0	162
10...	1155	45	10.0	18.0	135
JUN					
14...	1330	34	15.5	19.0	151
JUL					
14...	1455	10	15.5	16.0	155
SEP					
07...	1455	6.8	14.0	16.0	195
06405800 BEAR GULCH NEAR HAYWARD, SD (LAT 43 47 30N LONG 103 20 47W)					
OCT 1992					
13...	1435	0.02	12.0	19.0	178
APR 1993					
08...	1205	1.1	7.0	12.0	127
MAY					
11...	1515	12	15.0	19.0	120
JUN					
09...	1405	18	14.0	22.5	117
JUL					
14...	1030	1.1	14.0	15.0	223
SEP					
07...	1600	0.67	17.0	18.0	157

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)
06406000 BATTLE CR AT HERMOSA SD (LAT 43 49 41N LONG 103 11 44W)					
OCT 1992					
01...	1100	4.6	14.0	27.0	699
NOV					
18...	1310	4.6	5.0	1.0	704
JAN 1993					
13...	0840	3.8	0.0	-23.0	664
FEB					
12...	1130	3.6	0.0	0.0	703
MAR					
24...	1020	4.6	10.0	21.0	695
MAY					
13...	1150	94	15.0	25.0	298
JUN					
07...	1530	1020	--	--	--
10...	1230	233	15.0	19.0	250
JUL					
08...	1540	33	17.5	20.5	500
SEP					
03...	1215	17	14.5	24.0	530

06406500 BATTLE CR BELOW HERMOSA SD (LAT 43 43 30N LONG 102 54 15W)

OCT 1992					
01...	1300	1.6	15.0	29.0	850
NOV					
18...	1110	4.4	4.0	1.0	826
JAN 1993					
13...	1050	3.5	0.0	-20.0	853
FEB					
12...	1330	5.3	0.0	-1.0	845
MAR					
24...	1230	8.2	8.0	23.0	672
MAY					
06...	1605	11	16.5	19.0	761
07...	1030	141	15.0	--	653
13...	0910	103	15.0	21.0	343
JUN					
17...	1330	102	15.0	12.0	435
JUL					
08...	1355	34	19.5	24.5	609
SEP					
07...	1345	19	16.5	21.0	620

06406920 SPRING CREEK ABOVE SHERIDAN LAKE NEAR KEYSTONE, SD (LAT 43 57 39N LONG 103 29 18W)

OCT 1992					
05...	1300	2.4	8.0	3.0	386
NOV					
06...	1115	3.3	1.0	2.0	386
DEC					
04...	1400	1.3	0.0	-7.0	433
JAN 1993					
07...	1340	1.9	0.0	-7.0	427
FEB					
12...	1215	2.4	0.0	6.5	415
MAR					
18...	1115	5.6	1.5	18.0	360
APR					
12...	1105	18	5.5	2.5	304
MAY					
12...	1020	96	--	--	186
JUN					
29...	1115	59	17.5	19.5	237
AUG					
04...	1200	27	15.5	18.0	--
SEP					
07...	1025	15	10.5	12.0	329

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)
06407500 SPRING CR NEAR KEYSTONE SD (LAT 43 58 45N LONG 103 20 25W)					
OCT 1992					
06...	1045	0.63	8.0	8.0	328
NOV					
06...	0925	3.5	1.5	1.0	316
DEC					
04...	1030	1.8	0.0	-4.0	349
JAN 1993					
07...	1000	3.2	0.0	-12.0	335
FEB					
11...	0945	5.0	0.5	-8.0	325
MAR					
18...	0855	6.5	2.0	--	312
APR					
12...	1450	24	6.0	4.5	312
MAY					
12...	1250	144	--	--	284
14...	1405	112	15.5	23.5	279
JUN					
07...	1632	231	--	--	209
29...	1340	94	15.0	20.0	243
AUG					
09...	0940	37	17.0	19.5	262
SEP					
07...	0840	21	13.0	9.5	272
06408500 SPRING CR NEAR HERMOSA SD (LAT 43 56 30N LONG 103 09 33W)					
OCT 1992					
01...	1415	0.10	20.0	27.0	1340
NOV					
20...	0950	0.31	2.5	0.5	1280
JAN 1993					
11...	1125	0.12	0.0	-11.0	1340
FEB					
08...	1415	0.33	0.0	0.0	1310
MAR					
29...	1225	0.92	9.0	6.5	776
MAY					
12...	1030	78	13.0	24.0	350
JUL					
08...	1105	33	16.5	18.0	533
AUG					
31...	1335	4.9	15.0	23.0	916
06408700 RHOADS FORK NEAR ROCHFORD SD (LAT 44 08 12N LONG 103 51 29W)					
OCT 1992					
15...	1220	3.8	6.5	-2.5	460
DEC					
02...	1305	3.8	5.0	-5.0	452
JAN 1993					
15...	1305	4.0	5.0	7.0	436
MAR					
17...	1415	3.5	5.5	3.0	418
APR					
26...	1225	3.7	11.0	17.5	410
JUN					
16...	1115	4.8	10.0	17.5	423
JUL					
16...	1150	4.6	13.0	21.5	427
SEP					
03...	1000	4.4	8.0	13.5	--

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)
06408860 RAPID CREEK NEAR ROCHFORD, SD (LAT 44 06 17N LONG 103 38 35W)					
OCT 1992					
15...	1455	8.9	5.5	0.0	423
DEC					
01...	1215	8.8	0.5	-1.0	437
JAN 1993					
20...	1300	9.0	0.0	-3.0	436
MAR					
04...	1405	9.0	1.0	4.5	414
APR					
22...	1440	23	8.5	17.5	349
MAY					
07...	1250	61	7.5	16.0	289
22...	1125	95	10.0	15.5	285
JUN					
07...	1250	135	11.5	11.0	282
JUL					
08...	1000	41	12.0	18.0	326
AUG					
31...	0930	16	9.0	5.5	384
06409000 CASTLE CR ABOVE DEERFIELD RES NEAR HILL CITY SD (LAT 44 00 49N LONG 103 49 48W)					
OCT 1992					
01...	1345	9.2	9.5	19.0	467
JAN 1993					
15...	1050	8.7	0.5	-5.0	471
MAR					
19...	1320	9.2	2.0	5.0	458
APR					
22...	1155	12	5.0	17.0	468
MAY					
07...	1010	18	7.0	11.0	471
JUN					
07...	1100	38	9.0	8.5	431
JUL					
02...	1230	21	14.5	20.5	465
06410000 CASTLE CR BELOW DEERFIELD DAM SD (LAT 44 01 45N LONG 103 46 53W)					
OCT 1992					
01...	1140	12	12.0	22.5	392
MAR 1993					
01...	1225	2.2	7.0	10.0	415
APR					
02...	0930	21	4.0	9.0	430
MAY					
13...	1130	26	5.5	18.5	408
JUN					
16...	1100	32	7.0	23.0	404
JUL					
16...	1135	20	9.5	20.5	394
AUG					
26...	1000	25	9.5	15.5	400
06410500 RAPID CR ABOVE PACTOLA RES AT SILVER CITY, SD (LAT 44 05 05N LONG 103 34 48W)					
OCT 1992					
16...	1140	15	2.0	6.5	403
DEC					
01...	1520	12	0.5	-2.0	408
JAN 1993					
14...	1040	12	0.0	-5.0	385
MAR					
04...	1035	15	0.5	10.0	428
APR					
09...	1010	58	3.5	15.0	293
MAY					
07...	1555	189	10.5	14.0	249
JUN					
07...	1525	361	10.5	10.5	258
JUL					
08...	1400	124	12.0	18.0	326
AUG					
31...	1125	52	9.5	13.0	370

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)
06411500 RAPID CR BELOW PACTOLA DAM SD (LAT 44 04 36N LONG 103 28 54W)					
OCT 1992					
22...	1200	15	8.0	23.0	384
DEC					
02...	1610	15	4.5	-4.0	452
JAN 1993					
14...	1410	18	3.5	-2.0	387
MAR					
09...	1330	16	5.0	5.0	393
APR					
09...	1245	18	6.0	15.0	390
MAY					
12...	1530	18	10.5	23.0	389
JUN					
08...	1700	20	--	--	--
11...	1245	231	7.0	19.0	374
15...	1425	199	7.0	27.0	--
JUL					
22...	1455	144	8.5	23.5	360
23...	1510	134	--	--	--
AUG					
31...	1310	62	9.5	16.0	347
06412200 RAPID CREEK AB VICTORIA CR NR RAPID CITY, SD (LAT 44 02 48N LONG 103 21 06W)					
OCT 1992					
02...	1315	49	12.5	28.0	377
NOV					
05...	1355	16	0.5	-0.5	389
DEC					
03...	1445	21	0.0	-5.0	409
JAN 1993					
05...	1115	16	0.0	-15.0	409
FEB					
09...	0930	18	--	--	--
MAR					
17...	1150	24	0.5	1.0	397
APR					
15...	1140	23	6.5	9.5	384
MAY					
17...	1310	29	16.0	18.0	363
27...	1035	28	17.0	23.0	370
JUN					
07...	1423	153	--	--	248
28...	0855	316	9.5	20.0	374
AUG					
10...	0915	50	15.0	18.0	378
SEP					
03...	1050	62	11.0	17.0	364
06412500 RAPID CR ABOVE CANYON LAKE NEAR RAPID CITY SD (LAT 44 03 04N LONG 103 18 47W)					
OCT 1992					
02...	1045	38	11.0	17.0	382
NOV					
05...	1155	4.6	3.5	0.5	390
DEC					
02...	1035	3.1	0.5	0.0	405
JAN 1993					
05...	1345	9.1	0.0	-13.5	406
FEB					
10...	0900	9.7	0.5	-5.0	393
MAR					
17...	0945	6.1	1.0	-4.0	297
APR					
15...	1010	13	4.5	11.0	385
MAY					
03...	1450	13	14.5	23.0	379
08...	1048	76	10.0	8.0	310
27...	1210	22	17.0	26.0	357
JUN					
07...	1115	246	13.0	--	241
08...	1850	150	--	--	--
15...	1230	250	--	--	--
21...	0941	322	--	--	--
JUL					
06...	0900	207	9.5	--	--
AUG					
10...	1045	46	16.5	21.0	377
SEP					
03...	0930	61	--	--	368

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)
06412810 CLEGHORN SPRINGS AT RAPID CITY, SD (LAT 44 03 32N LONG 103 17 49W)					
OCT 1992					
13...	1040	11	11.5	12.5	385
13...	1045	10	11.5	12.5	--
13...	1255	12	12.5	--	385
13...	1315	12	--	--	--
JUL 1993					
29...	0800	11	--	--	--
29...	1205	12	--	--	--
06412900 RAPID CREEK BLW CLEGHORN SPGS AT RAPID CITY SD (LAT 44 03 33N LONG 103 17 49W)					
OCT 1992					
02...	0905	58	11.0	12.0	385
NOV					
04...	1340	18	8.0	2.0	386
DEC					
02...	0845	19	7.5	-7.0	386
JAN 1993					
05...	0810	18	5.5	-14.0	388
FEB					
08...	1140	27	3.0	3.5	401
MAR					
17...	0815	15	7.5	-5.5	386
APR					
15...	0800	35	7.5	6.5	387
MAY					
17...	1430	45	--	20.0	365
JUN					
28...	1200	330	12.5	28.0	372
AUG					
04...	0940	71	--	--	380
SEP					
03...	0800	77	11.0	10.0	375
06413650 LIME CREEK AT MOUTH AT RAPID CITY, SD (LAT 44 04 27N LONG 103 15 53W)					
OCT 1992					
22...	1600	0.20	12.0	2.5	1560
MAR 1993					
09...	1545	0.50	7.5	4.0	1510
JUN					
21...	0940	2.5	13.5	25.0	1180
22...	1015	2.3	16.0	25.0	1180
JUL					
21...	0315	31	16.0	20.0	475
06414000 RAPID CR AT RAPID CITY SD (LAT 44 05 09N LONG 103 14 31W)					
OCT 1992					
01...	1515	60	16.5	19.0	419
NOV					
04...	0940	23	4.5	-0.5	616
DEC					
03...	1130	21	1.5	-3.0	624
JAN 1993					
06...	1215	27	0.0	-8.0	559
FEB					
09...	1450	30	--	--	611
MAR					
17...	1440	24	6.5	3.0	656
APR					
15...	1325	41	12.5	10.5	619
MAY					
20...	1000	47	13.5	15.0	571
JUN					
11...	1540	341	--	--	394
25...	1055	347	10.0	17.0	407
AUG					
09...	1330	63	21.0	26.5	522
SEP					
02...	1535	78	16.5	17.5	462

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)
06418900 RAPID CR BL SEWAGE TREATMENT PL NR RAPID CITY, SD (LAT 44 01 24N LONG 103 05 43W)					
OCT 1992					
01...	0925	23	17.0	14.0	1140
NOV					
02...	0900	21	11.0	6.0	965
DEC					
01...	1105	36	7.0	4.5	1200
JAN 1993					
04...	0845	33	3.0	-16.0	877
FEB					
08...	0845	52	3.0	-5.0	873
MAR					
15...	0910	53	3.0	9.0	970
APR					
08...	1215	77	9.0	16.0	1010
MAY					
08...	1345	491	11.0	11.0	519
18...	0920	62	15.0	17.0	982
JUL					
06...	1330	217	--	--	--
AUG					
06...	1045	87	18.0	21.0	810
SEP					
02...	0925	72	17.0	16.0	765
06421500 RAPID CR NEAR FARMINGDALE SD (LAT 43 56 31N LONG 102 51 12W)					
OCT 1992					
01...	1135	14	13.5	22.5	1370
NOV					
02...	1115	40	5.5	5.0	1240
DEC					
01...	1405	53	1.0	3.5	1260
JAN 1993					
04...	1230	27	0.0	-11.5	1210
FEB					
09...	1240	47	--	--	--
MAR					
15...	1155	56	1.0	14.5	1180
APR					
08...	1400	158	8.0	14.5	990
MAY					
08...	1645	770	13.0	14.0	658
18...	1125	72	17.0	14.5	1000
JUN					
23...	0945	295	--	16.5	529
AUG					
06...	1325	82	20.0	26.0	730
SEP					
02...	1210	70	17.0	17.5	844
06422500 BOXELDER CR NEAR NEMO SD (LAT 44 08 38N LONG 103 27 16W)					
OCT 1992					
05...	1155	2.8	11.0	18.0	355
NOV					
05...	0925	2.4	0.5	-6.0	370
DEC					
02...	1245	3.1	0.0	-0.5	381
JAN 1993					
06...	0935	2.9	0.0	-10.0	380
FEB					
10...	1135	3.7	2.5	-2.5	346
MAR					
18...	1330	6.4	4.0	7.0	305
APR					
12...	0930	28	4.0	3.0	224
MAY					
17...	0910	59	12.0	14.0	210
JUN					
08...	0954	151	--	--	--
29...	0915	64	17.0	18.0	243
AUG					
11...	0925	25	16.0	24.0	309
13...	1245	25	17.5	26.0	297
SEP					
27...	1340	11	11.5	20.0	--

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)
06423010 BOXELDER CR NEAR RAPID CITY SD (LAT 44 07 54N LONG 103 17 54W)					
MAY 1993					
10...	1010	20	11.0	19.5	258
11...	1110	19	15.0	22.0	237
14...	1035	1.7	15.5	20.5	285
JUN					
09...	1125	111	--	--	217
11...	1715	87	--	--	244
23...	1435	39	--	25.5	275
06423500 CHEYENNE RIVER NEAR WASTA, SD (LAT 44 04 52N LONG 102 24 03W)					
OCT 1992					
15...	1240	76	6.0	10.0	2390
DEC					
01...	1345	199	-18.0	-0.5	2650
JAN 1993					
06...	0940	50	0.0	-9.0	2220
FEB					
09...	1035	150	0.0	-1.0	1550
MAR					
25...	1300	356	0.5	21.0	2200
MAY					
06...	1215	12500	--	--	--
21...	1330	275	19.0	24.0	1920
JUN					
24...	0945	996	16.5	--	1330
AUG					
02...	1100	315	19.5	26.0	1490
SEP					
01...	1020	153	17.0	18.5	1860
06424000 ELK CR NEAR ROUBAIX SD (LAT 44 17 41N LONG 103 35 47W)					
OCT 1992					
01...	1100	1.2	9.0	26.5	354
NOV					
10...	1145	2.9	--	--	--
JAN 1993					
07...	1320	1.6	1.0	5.0	385
FEB					
08...	1330	1.6	0.5	10.0	370
MAR					
23...	1340	12	1.0	18.0	280
APR					
08...	1530	15	5.5	10.5	--
16...	1125	11	5.5	9.5	--
MAY					
06...	0910	51	8.0	13.0	172
JUN					
08...	1220	119	--	--	--
18...	0915	32	9.0	--	248
JUL					
09...	1315	13	16.5	26.0	303
AUG					
26...	1515	4.1	17.5	19.0	320
06425100 ELK CR NR RAPID CITY SD (LAT 44 14 25N LONG 103 09 03W)					
MAR 1993					
09...	1215	86	1.0	6.0	177
10...	0821	23	0.0	0.0	--
15...	1415	3.4	4.0	17.5	382
18...	1547	1.2	4.0	9.0	486
APR					
16...	0845	5.1	8.5	8.0	1000
MAY					
06...	1820	106	15.5	17.5	949
08...	1905	936	--	--	--
20...	1200	2.3	16.0	17.0	1350
JUN					
09...	0920	62	14.0	20.0	596
23...	1230	5.2	--	--	795
AUG					
04...	1500	0.34	24.0	23.0	1160

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)
06425500 ELK CR NEAR ELM SPRINGS SD (LAT 44 14 54N LONG 102 30 10W)					
MAR 1993					
25...	1120	41	0.5	15.5	--
29...	1045	132	9.0	6.0	--
MAY					
06...	1550	1290	--	--	--
08...	1717	3340	13.0	13.5	706
21...	1010	14	--	22.0	2140
JUN					
22...	1055	3.9	--	--	--
AUG					
02...	1520	2.4	24.0	26.0	--
SEP					
01...	1240	0.10	17.5	23.5	4870

06428500 BELLE FOURCHE R AT WY-SD STATE LINE (LAT 44 44 59N LONG 104 02 49W)

OCT 1992					
02...	1140	6.3	15.5	27.0	2290
NOV					
03...	1020	9.2	1.5	0.0	2250
DEC					
14...	1105	2.3	0.5	-6.0	2910
JAN 1993					
19...	1145	0.26	0.0	-5.5	3060
MAR					
09...	1000	87	0.5	3.0	684
25...	1300	229	4.5	19.0	897
APR					
05...	0950	53	9.0	13.0	1450
MAY					
12...	1030	153	16.5	19.5	932
JUN					
09...	1405	748	14.5	21.5	1060
21...	1405	252	23.0	30.5	958
30...	0930	1540	17.0	17.5	750
JUL					
12...	1215	238	28.0	18.0	965
AUG					
06...	1010	68	18.0	15.0	1790
23...	1010	85	19.0	20.0	1920

06429997 MURRAY DITCH AB HEADGATE AT WY-SD STATE LINE (LAT 44 34 35N LONG 104 03 20W)

JUN 1993					
08...	1055	8.5	12.0	13.0	1350
JUL					
23...	0930	4.2	17.0	19.0	1400
AUG					
18...	1120	3.9	18.0	24.5	1360

06430500 REDWATER CR AT WY-SD STATE LINE (LAT 44 34 26N LONG 104 02 54W)

OCT 1992					
08...	1450	23	9.5	15.0	1480
NOV					
19...	1135	22	6.5	4.5	1470
JAN 1993					
04...	1135	21	0.0	-2.0	1490
29...	1400	22	2.0	2.5	1500
APR					
01...	1045	25	6.5	5.0	1480
22...	1355	25	13.0	22.5	1440
JUN					
08...	1215	20	12.0	13.0	1390
30...	1100	25	16.0	21.0	1420
JUL					
23...	1120	21	19.5	23.0	1440
AUG					
18...	1325	20	19.5	26.0	1430

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)
06430532 CROW CREEK NEAR BEULAH, WY (LAT 44 34 14N LONG 104 00 19W)					
OCT 1992					
14...	1340	28	10.0	5.5	1380
NOV					
19...	1400	27	10.0	5.0	1380
DEC					
15...	1415	33	9.0	-1.0	1380
JAN 1993					
29...	1200	35	8.0	0.5	1410
APR					
22...	1155	36	13.0	21.0	1390
JUN					
08...	1425	158	11.5	15.0	848
JUL					
22...	1245	29	15.0	22.0	1340
AUG					
23...	1345	28	15.5	28.5	1320
06430540 COX LAKE OUTLET NEAR BEULAH, WY (LAT 44 33 56N LONG 103 59 37W)					
OCT 1992					
14...	1500	4.1	10.5	8.5	1210
DEC					
15...	1045	4.2	6.0	2.5	1230
06430770 SPEARFISH CREEK NEAR LEAD, SD (LAT 44 17 56N LONG 103 52 02W)					
OCT 1992					
02...	1300	13	8.0	27.0	451
NOV					
16...	1215	17	4.0	11.5	465
DEC					
21...	1535	16	1.5	-1.5	460
JAN 1993					
25...	1530	16	4.0	6.5	461
MAR					
17...	1130	19	2.0	4.0	459
APR					
19...	1355	18	4.0	0.0	450
MAY					
24...	1400	21	9.5	14.5	445
JUL					
21...	1345	23	14.0	24.0	436
AUG					
17...	1330	18	12.0	29.0	420
06430800 ANNIE CREEK NEAR LEAD, SD (LAT 44 19 37N LONG 103 53 38W)					
NOV 1992					
16...	1330	0.09	1.5	12.5	388
MAR 1993					
17...	1330	0.01	0.0	--	428
APR					
20...	1120	1.9	2.0	11.0	215
06430850 LITTLE SPEARFISH CREEK NEAR LEAD, SD (LAT 44 20 58N LONG 103 56 08W)					
OCT 1992					
05...	1420	13	9.5	14.5	473
NOV					
16...	1440	11	7.5	7.0	473
DEC					
29...	1245	9.9	5.5	8.0	478
JAN 1993					
28...	1200	11	6.0	-3.0	479
MAR					
18...	1440	13	9.0	15.0	470
APR					
20...	1250	12	6.5	6.0	472
MAY					
26...	1130	13	10.5	24.5	433
JUL					
13...	1335	16	8.5	11.0	455
AUG					
19...	1150	13	10.5	25.0	450

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)
06430898 SQUAW CREEK NEAR SPEARFISH, SD (LAT 44 24 04N LONG 103 53 35W)					
OCT 1992					
05...	1140	0.27	9.5	20.0	374
NOV					
18...	1100	0.47	2.5	10.5	337
DEC					
29...	1420	0.24	0.0	11.5	345
JAN 1993					
28...	1520	0.40	0.0	2.5	346
APR					
20...	1420	7.6	2.5	5.0	183
MAY					
07...	1335	22	8.5	19.0	118
26...	1350	3.4	14.0	29.5	224
JUN					
08...	1700	95	8.0	17.5	124
JUL					
13...	0915	2.6	11.0	9.0	287
06430900 SPEARFISH CREEK ABOVE SPEARFISH, SD (LAT 44 24 06N LONG 103 53 40W)					
OCT 1992					
05...	1315	35	7.5	20.0	449
NOV					
18...	1255	38	5.0	3.0	450
DEC					
29...	1520	43	2.0	4.5	461
JAN 1993					
28...	1355	36	2.5	5.5	451
MAR					
26...	1415	48	8.0	21.0	435
APR					
20...	1530	57	5.0	6.0	424
MAY					
07...	1420	109	9.0	19.5	374
18...	1500	70	--	--	--
26...	1515	59	12.5	27.5	389
JUN					
08...	1745	260	9.5	15.5	847
JUL					
13...	1100	53	9.0	10.0	436
AUG					
19...	1425	41	12.5	22.5	407
06431500 SPEARFISH CR AT SPEARFISH SD (LAT 44 28 57N LONG 103 51 40W)					
OCT 1992					
08...	1100	30	4.5	11.0	449
NOV					
18...	1425	34	5.0	3.0	442
JAN 1993					
04...	1545	25	0.0	-7.0	456
FEB					
01...	1325	36	2.0	10.0	448
APR					
01...	0925	36	4.5	0.0	426
26...	1100	63	5.5	19.5	370
MAY					
18...	1620	67	--	--	--
27...	1125	56	10.5	19.5	406
JUL					
12...	1350	52	12.0	20.0	407
AUG					
19...	1545	44	12.5	26.5	402

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)
06432020 SPEARFISH CREEK BELOW SPEARFISH, SD (LAT 44 34 48N LONG 103 53 37W)					
OCT 1992					
08...	1245	35	8.0	14.0	730
NOV					
18...	1545	47	5.0	3.5	685
JAN 1993					
04...	1420	33	0.0	-2.5	778
FEB					
01...	1100	52	2.5	5.5	637
APR					
01...	1230	53	7.0	3.0	614
26...	1405	73	13.5	24.5	523
MAY					
27...	1405	58	17.5	25.5	544
JUL					
12...	1140	58	14.0	17.0	612
AUG					
23...	1120	49	14.5	27.5	672
06433000 REDWATER RIVER ABOVE BELLE FOURCHE SD (LAT 44 40 02N LONG 103 50 20W)					
OCT 1992					
06...	1225	69	10.0	8.5	1370
NOV					
03...	1355	137	4.5	1.5	1220
DEC					
14...	1415	127	1.0	-1.5	1270
JAN 1993					
25...	1105	105	0.0	7.0	1260
MAR					
08...	1140	177	5.5	7.0	1100
APR					
08...	1100	157	7.0	12.0	1180
MAY					
12...	1400	191	16.0	25.0	953
JUN					
21...	1615	180	20.5	24.5	999
JUL					
23...	1240	118	21.5	20.5	1110
AUG					
23...	1350	36	21.0	30.5	1210
06433500 HAY CR AT BELLE FOURCHE SD (LAT 44 40 01N LONG 103 50 46W)					
NOV 1992					
03...	1240	0.01	3.0	1.5	1870
DEC					
14...	1245	0.01	0.0	-0.5	3030
MAR 1993					
08...	1355	27	1.0	10.0	585
23...	1400	3.1	7.5	14.0	1840
APR					
08...	0925	2.0	5.0	9.0	2190
MAY					
12...	1230	0.92	17.0	28.5	1670
JUN					
08...	0915	64	11.0	9.5	1400
29...	1410	11	17.0	17.0	615
JUL					
27...	1210	1.1	16.5	17.0	2600
AUG					
23...	1225	0.01	--	30.5	--
06434500 INLET CANAL NEAR BELLE FOURCHE (LAT 44 42 14N LONG 103 49 23W)					
APR 1993					
21...	1125	253	6.0	12.0	1240
JUN					
08...	1240	1340	12.0	12.0	875
JUL					
23...	1025	91	21.5	18.0	1370
AUG					
02...	1150	94	21.0	21.5	817
25...	1340	100	21.0	20.0	1830

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)
06436000 BELLE FOURCHE R NEAR FRUITDALE SD (LAT 44 41 27N LONG 103 44 14W)					
OCT 1992					
08...	1120	14	8.0	16.0	2250
NOV					
04...	1340	8.6	3.5	0.0	1830
DEC					
15...	1440	7.1	0.5	0.0	1820
JAN 1993					
25...	1410	11	0.5	9.0	1520
MAR					
11...	1110	8.3	0.5	0.0	1400
APR					
08...	1305	9.3	8.0	14.5	2130
MAY					
14...	1055	8.9	21.0	25.0	1580
JUN					
09...	1100	1310	12.5	25.0	839
11...	1205	497	15.0	27.0	759
30...	1255	3390	16.5	23.5	567
JUL					
13...	1400	692	18.0	22.5	799
AUG					
06...	1250	142	19.0	23.5	1390
25...	1135	24	21.0	20.0	1740
06436156 WHITETAIL CREEK AT LEAD, SD (LAT 44 20 36N LONG 103 45 57W)					
OCT 1992					
01...	1350	0.74	12.0	27.0	1300
NOV					
05...	1255	0.79	1.0	3.0	489
DEC					
21...	1325	0.89	0.5	3.5	485
JAN 1993					
25...	1235	0.67	0.0	6.0	478
APR					
19...	1045	5.3	3.0	3.5	487
MAY					
06...	1120	22	8.0	15.5	317
24...	1100	6.3	8.5	11.5	398
JUL					
20...	1135	3.8	15.0	22.0	447
06436170 WHITEWOOD CREEK AT DEADWOOD (LAT 44 22 48N LONG 103 43 25W)					
OCT 1992					
01...	1505	7.5	16.5	30.5	459
NOV					
05...	1120	9.4	7.0	-3.0	1880
DEC					
21...	1120	9.8	7.0	2.0	1500
FEB 1993					
08...	1500	10	8.5	13.0	1360
MAR					
18...	1110	10	8.5	14.0	1460
APR					
21...	1035	31	5.0	10.0	644
JUN					
30...	1255	36	15.5	21.0	759
AUG					
17...	1110	15	17.0	21.0	1060

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)
06436190 WHITEWOOD CREEK NEAR WHITEWOOD SD (LAT 44 32 30N LONG 103 34 16W)					
OCT 1992					
05...	1425	7.3	14.5	15.0	1320
NOV					
06...	1410	13	5.0	2.0	1460
DEC					
17...	1210	9.3	1.0	-3.0	1390
JAN 1993					
26...	1300	15	3.0	8.0	1290
MAR					
11...	1300	15	4.0	-1.0	1310
APR					
12...	1200	51	8.0	6.5	716
MAY					
18...	1155	57	14.0	17.0	766
JUN					
17...	1345	133	12.0	10.5	616
JUL					
27...	1010	34	15.0	21.5	1040
AUG					
24...	1335	16	22.5	22.5	1210
SEP					
28...	0915	15	11.5	13.5	1180
06436198 WHITEWOOD CR ABOVE VALE SD (LAT 44 37 04N LONG 103 28 52W)					
MAY 1993					
05...	2400	2520	--	--	--
06436760 HORSE CR ABOVE VALE SD (LAT 44 39 08N LONG 103 21 59W)					
OCT 1992					
05...	1235	0.88	13.0	17.5	3890
NOV					
06...	1215	1.3	3.0	1.0	4350
DEC					
17...	1015	1.6	0.0	-10.0	5500
JAN 1993					
26...	1105	1.3	0.5	11.0	5450
MAR					
10...	1230	192	0.5	6.5	1840
23...	1205	95	1.0	9.0	1280
25...	1025	311	3.0	18.0	959
26...	1315	509	8.0	23.0	827
APR					
12...	0930	11	7.0	3.0	2530
MAY					
14...	1335	42	21.0	25.0	1760
JUN					
10...	1055	883	15.0	27.0	874
JUL					
13...	1115	140	17.5	16.0	1120
AUG					
24...	1110	46	21.0	22.0	1820
06437000 BELLE FOURCHE R NEAR STURGIS SD (LAT 44 30 47N LONG 103 08 11W)					
MAR 1993					
30...	1005	561	7.5	7.0	1210
MAY					
10...	1425	1640	15.0	23.5	956
JUL					
01...	1100	4860	18.0	27.0	770
AUG					
26...	1320	226	21.5	23.5	1760
06437020 BEAR BUTTE CREEK NEAR DEADWOOD, SD (LAT 44 20 08N LONG 103 38 06W)					
OCT 1992					
01...	1235	0.50	11.0	27.0	363
DEC					
01...	1235	0.70	0.0	0.0	340
JAN 1993					
07...	1515	0.62	0.0	-7.0	330
FEB					
08...	1130	0.90	0.5	5.0	319
APR					
21...	1325	15	6.0	13.0	217
JUL					
20...	0915	4.9	12.0	19.5	288

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)
06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS (LAT 44 22 11N LONG 102 33 56W)					
OCT 1992					
14...	1030	31	6.0	3.0	2450
JAN 1993					
05...	1340	9.8	0.0	-13.0	1820
FEB					
09...	1610	19	0.0	-1.5	2710
MAR					
29...	0935	2600	8.5	6.0	831
MAY					
09...	1035	14900	11.0	--	830
10...	1315	4410	14.5	21.0	818
06439000 CHERRY CR NEAR PLAINVIEW SD (LAT 44 44 35N LONG 102 03 11W)					
MAR 1993					
11...	1515	1180	0.5	0.0	210
APR					
21...	0920	108	5.5	2.5	1670
MAY					
10...	2040	1740	15.0	18.0	806
25...	0830	28	13.5	10.0	1840
JUL					
12...	1300	598	21.0	19.0	379
21...	1640	3300	21.0	26.0	412
AUG					
26...	1145	21	21.0	18.0	2210
06439300 CHEYENNE RIVER AT CHERRY CREEK, SD (LAT 44 36 10N LONG 101 29 24W)					
DEC 1992					
03...	1215	100	0.0	-0.5	2720
MAR 1993					
04...	1205	192	0.0	4.0	1910
10...	1540	8510	--	--	--
MAY					
07...	1640	13500	--	20.0	--
10...	1645	21600	16.0	21.0	862
25...	1410	499	19.0	23.5	2270
JUL					
08...	1515	1910	20.5	23.5	1330
AUG					
29...	1300	582	23.5	25.0	1270
06439430 COTTONWOOD CR NR CHERRY CR SD (LAT 44 40 28N LONG 101 24 16W)					
MAR 1993					
04...	1515	98	0.0	5.0	360
10...	1750	154	0.0	0.0	460
15...	1540	20	2.0	--	541
APR					
21...	1045	2.5	5.0	5.5	2170
MAY					
07...	1850	197	18.0	20.0	1050
JUL					
07...	1605	1.8	27.0	26.5	890
21...	1230	18	20.0	28.0	879
06441000 BAD R NEAR MIDLAND SD (LAT 44 04 01N LONG 101 09 36W)					
FEB 1993					
08...	1640	79	0.0	-0.5	797
MAR					
08...	1405	1870	0.0	9.0	276
MAY					
07...	1530	201	10.0	21.5	296
JUN					
08...	1515	737	15.0	20.0	320
06441110 PLUM CREEK BELOW HAYES, SD (LAT 44 12 38N LONG 100 43 34W)					
MAR 1993					
26...	1200	2.1	0.5	21.0	2930

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)
06442718 CAMPBELL C NR LEE'S CORNER (LAT 44 04 39N LONG 099 22 51W)					
OCT 1992					
07...	1400	0.10	9.0	9.0	3400
NOV					
17...	1020	0.17	1.5	0.5	3280
APR 1993					
28...	1120	0.21	9.0	12.0	3110
MAY					
18...	1120	0.41	11.5	14.5	2650
JUN					
22...	1005	2.8	21.0	21.0	1200
JUL					
27...	1325	47	22.5	23.0	580
AUG					
30...	1045	0.09	11.5	16.0	3320
SEP					
14...	0950	E0.11	8.5	9.5	3320
06442900 ELM CR NEAR GANN VALLEY SD (LAT 44 04 38N LONG 099 09 03W)					
OCT 1992					
07...	1305	0.05	8.5	6.5	1470
NOV					
17...	1125	0.18	2.5	2.5	1330
APR 1993					
28...	1225	3.4	12.0	12.0	1650
MAY					
18...	0930	3.2	15.0	13.0	1880
JUN					
22...	0830	34	21.5	22.5	1110
JUL					
27...	1050	625	22.5	21.0	380
28...	1730	344	24.0	28.5	400
AUG					
30...	0940	0.50	18.5	17.0	1200
SEP					
14...	0840	E0.49	8.0	4.0	1280
06445685 WHITE R NR NE-SD STATE LINE (LAT 43 00 53N LONG 102 50 07W)					
OCT 1992					
08...	0845	3.0	6.5	0.0	1010
NOV					
24...	0945	8.0	2.0	-3.0	918
JAN 1993					
05...	1010	15	0.0	-8.0	786
FEB					
10...	0930	26	--	--	--
APR					
14...	1445	251	7.0	7.0	618
JUN					
02...	1125	29	17.5	14.0	914
JUL					
13...	1535	26	22.0	22.5	1010
SEP					
09...	1200	17	16.0	19.0	1060
06445700 WHITE RIVER NEAR SLIM BUTTE, SD (LAT 43 05 23N LONG 102 47 52W)					
OCT 1992					
07...	0930	2.3	9.0	3.5	1070
NOV					
24...	1130	6.2	2.0	-1.0	953
JAN 1993					
05...	1335	13	0.0	-11.0	850
FEB					
10...	1055	23	--	--	--
APR					
14...	1145	181	7.0	7.0	788
JUN					
02...	0945	34	13.0	12.0	805
JUL					
13...	1700	26	22.0	22.5	948
SEP					
09...	1350	17	16.0	20.0	970

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)
06445980 WHITE CLAY CR NEAR OGLALA SD (LAT 43 08 46N LONG 102 40 58W)					
OCT 1992					
07...	1210	0.95	7.0	4.5	665
NOV					
23...	1230	9.0	2.0	-2.0	510
JAN 1993					
06...	1200	3.3	0.0	-5.0	624
FEB					
11...	1200	5.0	--	--	--
APR					
15...	0845	20	5.0	9.0	462
JUN					
02...	1300	11	16.0	14.0	490
JUL					
13...	1115	8.6	19.5	21.0	469
SEP					
10...	1100	5.4	13.0	18.0	450
06446000 WHITE R NEAR OGLALA SD (LAT 43 15 17N LONG 102 49 29W)					
OCT 1992					
08...	1210	0.13	8.0	14.0	773
NOV					
23...	1100	8.0	2.5	-2.0	1180
JAN 1993					
06...	1400	12	0.0	-1.0	874
FEB					
11...	1015	22	0.0	-9.0	678
MAR					
26...	1333	251	--	--	--
JUN					
02...	1440	42	17.5	15.5	978
JUL					
13...	1340	43	21.5	19.5	807
SEP					
09...	0930	17	15.0	19.0	1190
06446100 WOUNDED KNEE CREEK AT WOUNDED KNEE, SD (LAT 43 08 38N LONG 102 21 28W)					
JUN 1992					
04...	1545	474	20.5	26.0	345
JUL					
15...	0925	2.5	19.0	17.0	343
AUG					
26...	0855	1.5	12.0	9.0	343
OCT					
14...	1320	1.6	--	--	332
DEC					
02...	0900	2.2	0.0	18.0	434
29...	1000	2.4	0.0	-1.0	350
FEB 1993					
09...	0950	7.7	0.5	-2.0	394
MAR					
24...	0940	17	0.5	14.0	350
MAY					
06...	1015	6.9	16.0	22.0	433
06446700 BEAR IN THE LODGE CR NEAR WANBLEE SD (LAT 43 32 05N LONG 101 47 30W)					
OCT 1992					
14...	1620	4.5	6.0	6.0	496
NOV					
24...	1610	5.4	0.0	0.0	510
DEC					
29...	1600	2.1	0.0	18.0	480
FEB 1993					
09...	1255	4.3	0.5	12.0	399
MAR					
23...	1730	7.2	0.0	20.0	401
MAY					
06...	1500	88	16.0	20.0	370

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)
06447000 WHITE R NEAR KADOKA SD (LAT 43 45 09N LONG 101 31 28W)					
OCT 1992					
13...	1420	1.9	15.0	15.0	827
NOV					
23...	1235	15	0.0	0.0	720
DEC					
28...	1200	13	0.0	0.0	1150
MAR 1993					
23...	1445	529	0.5	20.0	1300
MAY					
07...	1010	4780	16.0	22.0	443
JUN					
09...	1245	1780	16.0	22.0	500
JUL					
08...	1015	341	21.0	20.0	570
AUG					
06...	1000	59	22.0	20.0	670
SEP					
07...	1205	53	21.0	30.5	653
06447230 BLACK PIPE CR NR BELVIDERE SD (LAT 43 45 28N LONG 101 13 40W)					
JAN 1992					
14...	1100	0.54	0.0	2.5	1040
FEB					
25...	1315	31	4.0	14.0	432
MAR					
31...	1550	4.4	10.0	--	721
APR					
08...	1735	4.2	16.5	14.5	750
JUN					
09...	1110	0.68	21.0	22.5	880
19...	1515	69	24.0	26.0	621
JUL					
15...	1600	7.9	28.5	25.0	452
AUG					
24...	1150	6.7	13.0	13.5	416
MAR 1993					
03...	1400	3.5	0.0	0.0	837
23...	1105	21	0.5	-1.0	498
MAY					
07...	1300	264	16.0	21.5	431
JUN					
09...	1515	37	19.0	21.5	434
JUL					
08...	1215	73	20.0	23.0	450
SEP					
07...	1450	0.96	21.0	27.0	984
06447500 LITTLE WHITE R NEAR MARTIN SD (LAT 43 10 00N LONG 101 37 47W)					
OCT 1992					
14...	1020	10	6.0	10.0	227
NOV					
23...	1605	16	0.0	0.0	230
DEC					
28...	1410	7.8	0.0	0.0	190
FEB 1993					
08...	1710	32	0.5	4.0	209
MAR					
24...	1615	68	0.5	22.0	221
MAY					
05...	1715	23	15.0	22.0	433
JUN					
16...	1745	17	--	--	499
JUL					
07...	1615	14	19.0	29.5	460
AUG					
05...	1715	10	22.5	23.0	350
SEP					
09...	0855	15	15.0	18.0	254

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)
06449000 LAKE CR BELOW REFUGE NEAR TUTHILL SD (LAT 43 08 46N LONG 101 30 38W)					
NOV 1992					
24...	1215	12	0.0	0.0	510
DEC					
29...	1243	6.2	11.0	18.0	630
FEB 1993					
08...	1450	27	0.5	4.0	470
MAR					
24...	1345	84	0.5	21.0	260
MAY					
05...	1515	32	15.0	13.0	382
JUN					
23...	1405	54	22.5	26.0	418
JUL					
07...	1420	22	19.0	29.0	392
AUG					
05...	1535	21	22.5	23.0	410
SEP					
08...	1715	53	19.0	24.0	375
09...	1050	41	--	--	--
06449100 LITTLE WHITE R NEAR VETAL SD (LAT 43 06 03N LONG 101 13 49W)					
OCT 1992					
14...	1310	25	6.0	8.0	328
DEC					
02...	1230	40	0.0	20.0	439
JAN 1993					
05...	1540	26	0.0	-7.5	395
FEB					
08...	1145	62	0.5	-2.0	380
MAR					
04...	1015	54	0.0	-1.0	319
APR					
06...	1200	169	5.0	5.0	285
MAY					
05...	1315	58	15.0	13.5	400
JUN					
16...	1600	75	18.0	24.0	389
JUL					
07...	1225	81	19.0	21.5	420
AUG					
05...	1330	77	22.0	21.5	390
SEP					
08...	1515	68	21.0	26.5	356
06449400 ROSEBUD CR AT ROSEBUD SD (LAT 43 14 09N LONG 100 51 12W)					
OCT 1992					
05...	1645	9.0	15.0	15.0	385
NOV					
19...	0940	9.1	4.0	5.0	370
JAN 1993					
06...	1630	6.0	0.5	-5.0	373
MAR					
03...	1725	12	0.0	2.0	380
APR					
06...	1410	8.4	5.5	6.0	373
MAY					
13...	1000	7.6	16.0	21.5	387
JUN					
17...	1350	30	19.0	25.0	249
30...	1415	1.3	21.0	24.0	--
AUG					
11...	1330	5.5	21.0	29.0	346
SEP					
08...	1245	5.6	19.5	25.5	341
OCT					
19...	0925	7.0	9.0	11.0	350

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)
06449500 LITTLE WHITE R NEAR ROSEBUD SD (LAT 43 19 32N LONG 100 53 00W)					
OCT 1992					
05...	1435	75	17.0	17.0	352
NOV					
18...	1715	97	4.0	0.0	342
JAN 1993					
06...	0945	71	0.5	-7.0	366
MAR					
04...	1700	138	0.0	5.0	303
APR					
06...	0940	271	5.0	4.0	294
MAY					
13...	1130	190	16.0	26.5	385
JUN					
16...	1330	137	18.0	24.0	357
AUG					
11...	1145	103	21.5	25.5	340
SEP					
08...	1040	117	17.0	21.0	392
OCT					
18...	1820	97	12.0	12.5	310
06450500 LITTLE WHITE R BELOW WHITE RIVER SD (LAT 43 36 05N LONG 100 44 58W)					
OCT 1992					
05...	1240	74	16.5	17.5	365
NOV					
19...	1630	105	4.0	3.0	358
JAN 1993					
05...	1240	85	0.0	-7.0	420
MAR					
05...	1040	140	0.0	4.0	332
APR					
05...	1200	46	6.0	7.0	330
MAY					
13...	1600	139	16.0	29.5	335
JUN					
16...	1130	78	--	--	473
AUG					
18...	1930	143	25.0	26.5	294
SEP					
07...	1725	107	19.0	27.0	351
06452320 PLATTE CREEK NEAR PLATTE, SD (LAT 43 19 38N LONG 098 58 13W)					
OCT 1992					
07...	0920	0.06	11.0	5.0	2140
NOV					
18...	0925	1.1	3.0	0.0	2280
JAN 1993					
08...	0920	0.05	0.0	-12.0	3180
MAR					
02...	1600	0.17	0.5	4.0	2830
APR					
15...	1735	13	7.5	12.0	1130
MAY					
19...	0920	18	16.5	12.0	1420
JUN					
22...	1520	66	23.5	29.0	820
JUL					
27...	1710	446	26.0	28.0	460
SEP					
14...	1815	4.4	16.0	13.0	1190
06452330 CAMPBELL CREEK NEAR GEDDES, SD (LAT 43 11 08N LONG 098 48 19W)					
AUG 1993					
16...	1500	0.72	26.0	28.5	3130
06452389 LAKE ANDES TRIB NO.1 NR LAKE ANDES SD (LAT 43 11 25N LONG 098 27 57W)					
APR 1993					
15...	1515	1.2	7.0	13.0	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)
06453255 CHOTEAU CR NR AVON SD (LAT 42 55 24N LONG 098 06 21W)					
OCT 1992					
21...	1515	0.07	13.0	24.0	1450
NOV					
18...	1425	0.06	3.0	6.0	1430
DEC					
07...	1220	0.28	1.0	6.0	1630
FEB 1993					
11...	0845	0.80	0.0	-5.0	1100
MAR					
10...	1145	854	1.0	1.0	280
29...	1415	20	--	11.5	850
MAY					
03...	1315	35	15.0	22.0	1780
JUN					
10...	1925	13	27.0	28.5	1560
30...	0955	70	21.0	21.0	1520
JUL					
07...	1610	167	26.0	28.5	--
14...	1400	831	20.0	23.0	700
AUG					
18...	1215	49	24.0	20.5	1530
SEP					
30...	1345	14	15.0	25.5	1710
06464100 KEYA PAHA R NEAR KEYAPAHA SD (LAT 43 07 45N LONG 100 06 24W)					
OCT 1992					
06...	1600	14	11.5	8.0	420
NOV					
18...	1515	20	2.0	0.0	448
JAN 1993					
07...	1145	8.1	0.0	-6.0	551
MAR					
03...	1400	19	0.0	2.5	455
APR					
15...	1110	85	5.0	5.5	502
MAY					
17...	1435	52	16.0	21.5	536
JUN					
18...	1250	38	--	--	429
JUL					
29...	1045	28	23.0	26.5	315
SEP					
08...	1200	16	17.0	20.5	453
06464500 KEYA PAHA R AT WEWELA SD (LAT 43 01 44N LONG 099 46 49W)					
OCT 1992					
06...	1750	29	12.0	7.0	439
NOV					
18...	1315	44	1.5	0.0	449
JAN 1993					
07...	1440	16	0.0	-6.0	531
MAR					
03...	1110	33	0.0	2.5	447
APR					
15...	1325	215	5.0	3.5	518
MAY					
17...	1745	94	16.0	21.5	528
JUN					
18...	0955	78	18.0	21.0	414
JUL					
29...	0845	55	21.0	20.0	308
SEP					
08...	0940	41	14.0	16.5	450
06466715 SNATCH CREEK NEAR TABOR, SD (LAT 42 54 30N LONG 097 46 33W)					
MAR 1993					
10...	1500	100	4.0	4.0	200
JUL					
13...	1315	1860	21.0	23.5	230

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)
06467500 MISSOURI R AT YANKTON SD (LAT 42 51 58N LONG 097 23 37W)					
OCT 1992					
21...	1035	10600	10.0	15.0	750
NOV					
18...	1110	7890	4.0	5.0	730
DEC					
08...	1520	12600	1.0	6.0	670
JAN 1993					
20...	1205	11500	0.0	-3.0	830
FEB					
09...	1025	11900	0.0	3.0	720
MAR					
26...	1045	18000	2.5	11.0	600
MAY					
05...	1030	15700	12.0	18.5	700
JUN					
11...	1055	21700	17.0	19.5	710
30...	1530	15600	23.5	29.0	700
AUG					
18...	0915	10900	23.0	23.0	690
SEP					
24...	1045	18000	16.0	18.0	760
06471000 JAMES R AT COLUMBIA SD (LAT 45 36 13N LONG 098 18 36W)					
NOV 1992					
05...	0915	40	1.0	-2.0	1710
MAR 1993					
31...	1505	39	4.0	2.5	630
APR					
05...	1225	116	5.0	12.0	1000
08...	0930	130	5.5	5.5	1240
15...	1020	189	11.0	11.0	1050
JUL					
02...	0910	129	20.0	23.5	810
21...	1345	548	22.5	29.0	640
26...	1500	472	25.0	25.0	740
30...	1105	494	24.0	23.0	770
AUG					
03...	1140	727	19.5	18.0	810
12...	1025	897	22.0	23.0	760
30...	1410	1140	20.0	21.0	630
06471200 MAPLE R AT ND-SD STATE LINE (LAT 45 56 20N LONG 098 27 08W)					
MAR 1993					
24...	1315	32	1.5	16.5	430
APR					
01...	0815	190	1.0	0.0	310
MAY					
06...	0830	6.2	17.0	17.0	830
JUN					
03...	0830	6.1	14.0	13.0	960
30...	1030	20	17.0	23.0	950
JUL					
20...	1110	553	22.5	25.0	720
23...	1410	352	23.0	30.0	570
AUG					
19...	0930	31	21.5	23.0	1080
SEP					
08...	1130	25	15.5	22.0	1120

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)
06471500 ELM R AT WESTPORT SD (LAT 45 39 22N LONG 098 29 48W)					
NOV 1992					
04...	1100	0.37	1.0	-0.5	1080
DEC					
17...	0820	2.4	0.0	-9.0	1580
FEB 1993					
04...	0935	0.84	0.5	-2.5	1460
MAR					
25...	0800	62	1.5	2.5	470
APR					
01...	1135	261	3.0	15.0	340
MAY					
06...	1110	0.69	18.0	22.0	820
JUN					
03...	1145	9.1	17.0	19.0	1060
30...	1330	18	21.0	25.0	1140
JUL					
20...	1430	178	24.0	27.5	880
23...	1115	761	21.0	28.0	660
AUG					
19...	1210	150	24.0	25.0	920
SEP					
08...	1345	75	19.0	28.5	790
06471550 JAMES RIVER BELOW COLUMBIA, SD (LAT 45 36 17N LONG 098 18 18W)					
NOV 1992					
05...	1415	60	1.0	-1.0	1360
DEC					
16...	1045	14	0.5	-1.0	1700
FEB 1993					
04...	1425	6.4	0.5	7.0	2160
MAR					
31...	1245	264	3.5	3.0	390
APR					
07...	1415	213	6.0	6.0	820
15...	1130	223	9.0	11.0	--
MAY					
05...	1040	228	17.0	24.0	830
JUN					
04...	1105	62	17.0	15.0	850
JUL					
01...	1130	131	19.0	24.0	830
21...	1515	848	22.5	29.0	590
26...	1640	1010	25.0	25.0	640
30...	1245	649	25.0	31.0	730
AUG					
03...	1320	1090	21.0	21.0	760
12...	1240	1290	23.5	26.0	760
18...	1330	1360	24.0	22.0	620
30...	1410	1330	21.5	19.0	900
SEP					
07...	1130	1240	17.5	18.0	650
06473000 JAMES R AT ASHTON SD (LAT 45 00 02N LONG 098 28 57W)					
NOV 1992					
06...	1045	41	1.0	-2.0	1490
DEC					
17...	1315	20	1.0	2.0	2130
FEB 1993					
05...	1215	7.2	1.0	6.0	--
MAR					
26...	1230	68	2.0	16.5	1660
APR					
01...	1650	380	5.0	11.0	820
07...	1000	343	6.0	5.0	790
15...	1620	361	8.5	14.5	770
MAY					
07...	1300	312	20.0	26.0	980
JUN					
02...	1700	136	17.0	24.0	1110
JUL					
02...	1445	149	22.0	24.0	980
26...	1120	807	23.0	27.5	680
30...	1035	928	24.5	29.5	810
AUG					
03...	1030	1050	22.0	15.5	920
12...	1635	1170	24.0	25.5	900
20...	1005	1130	24.0	24.0	890
SEP					
09...	1015	1380	17.5	18.0	760

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	CUBIC FEET PER SECOND (00061)	DIS- CHARGE, INST. TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06474000 TURTLE CR NEAR TULARE SD (LAT 44 44 06N LONG 098 35 09W)					
JUL 1993					
02...	1830	38	24.5	26.0	770
27...	1200	181	24.0	26.5	720
06475000 JAMES R NEAR REDFIELD SD (LAT 44 54 33N LONG 098 27 34W)					
MAY 1993					
07...	0935	423	18.0	16.0	1070
JUL					
26...	1405	1780	23.0	31.0	660
AUG					
20...	1325	1710	25.0	25.0	920
06476000 JAMES R AT HURON SD (LAT 44 21 49N LONG 098 11 56W)					
APR 1993					
06...	1200	644	6.0	7.0	770
JUN					
28...	1550	696	23.0	25.0	940
JUL					
27...	1500	3180	24.5	22.0	680
30...	1400	3400	24.5	31.0	600
AUG					
03...	1625	3160	24.0	21.0	790
16...	1930	2150	26.5	26.5	910
SEP					
09...	1500	1650	19.0	22.5	900
06476500 SAND CR NEAR ALPENA SD (LAT 44 09 15N LONG 098 26 06W)					
MAR 1993					
10...	0940	54	0.0	-2.0	350
06477000 JAMES R NEAR FORESTBURG SD (LAT 43 58 26N LONG 098 04 14W)					
NOV 1992					
09...	1340	48	4.0	6.0	1570
DEC					
14...	1310	42	0.5	0.5	1810
JAN 1993					
21...	1620	16	3.0	3.0	2450
FEB					
10...	0830	31	0.5	-6.0	2030
MAR					
10...	1445	279	1.5	1.5	890
30...	1345	1460	6.5	5.0	590
MAY					
03...	1530	710	15.0	20.0	1210
JUN					
21...	1510	880	22.5	26.0	1030
28...	0930	2390	22.0	22.5	620
AUG					
06...	1620	3440	24.0	26.5	780
16...	1515	2440	27.0	27.5	1020
SEP					
10...	1330	1760	18.0	23.0	890
06477150 ROCK CR NEAR FULTON SD (LAT 43 45 39N LONG 097 54 25W)					
FEB 1993					
12...	1220	3.0	0.0	-2.0	2070
MAR					
26...	1850	180	7.0	15.0	330
MAY					
11...	1730	712	19.0	24.0	690
JUL					
01...	1045	873	20.5	21.5	550
06...	1220	1540	22.0	25.0	470

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)					
NOV 1992					
09...	1100	2.5	4.0	8.0	1600
DEC					
14...	1015	1.0	1.0	0.5	2170
FEB 1993					
10...	1040	1.5	0.5	-6.0	1550
MAR					
10...	1210	332	1.0	1.0	390
31...	1410	59	5.5	2.0	740
MAY					
03...	1200	376	14.0	15.5	1110
JUN					
21...	1135	332	21.5	29.0	430
28...	1205	211	22.5	23.5	530
JUL					
06...	1415	1420	23.0	26.0	420
AUG					
16...	1040	23	26.0	26.0	1470
SEP					
10...	1000	3.8	15.0	17.0	1650
06478052 ENEMY CR NEAR MITCHELL SD (LAT 43 38 33N LONG 097 59 09W)					
MAY 1993					
03...	0920	156	10.0	15.5	1250
JUN					
21...	1135	659	22.5	26.5	540
06478300 DRY CR NEAR PARKSTON SD (LAT 43 22 18N LONG 097 49 23W)					
FEB 1993					
08...	0940	0.99	0.0	-3.0	780
MAR					
26...	1635	24	10.5	19.0	550
MAY					
08...	1710	1050	18.0	17.0	340
11...	1410	131	18.0	19.5	500
AUG					
19...	0920	393	23.0	22.0	420
06478390 WOLF CR NEAR CLAYTON SD (LAT 43 22 18N LONG 097 36 12W)					
MAY 1993					
11...	1115	1430	17.0	22.0	550
JUL					
06...	1625	2730	24.0	28.0	350
06478500 JAMES R NEAR SCOTLAND SD (LAT 43 11 09N LONG 097 38 07W)					
OCT 1992					
20...	1130	56	7.0	10.0	1670
DEC					
07...	1005	104	0.0	-2.0	1880
JAN 1993					
21...	1150	40	0.0	0.5	2240
MAR					
30...	0930	2830	9.0	6.0	620
MAY					
10...	1350	5800	16.5	20.5	--
JUN					
15...	1230	791	22.0	21.0	1420
28...	1120	5090	23.5	20.0	750
JUL					
08...	1045	14200	--	--	--
14...	1225	10600	22.0	22.0	560
23...	0925	6610	23.0	19.0	760
SEP					
03...	1105	2400	20.5	26.5	1060
22...	1510	2040	15.5	16.0	1000

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)
06478513 JAMES RIVER NR YANKTON SD (LAT 42 59 45N LONG 097 22 10W)					
OCT 1992					
20...	1355	78	9.0	13.0	1710
NOV					
19...	0905	124	2.0	2.0	1930
DEC					
07...	1535	130	1.0	-1.0	1970
FEB 1993					
09...	1415	257	0.0	4.5	1310
MAR					
29...	1730	2290	--	11.0	590
MAY					
03...	1715	1600	15.0	25.0	1210
10...	1640	3970	16.0	18.0	490
JUN					
11...	1615	690	--	--	--
28...	1440	4500	24.0	24.0	750
JUL					
08...	1445	15600	--	--	--
14...	0920	11300	22.0	19.5	510
AUG					
19...	1250	4040	26.0	31.0	870
SEP					
22...	1120	2000	15.0	16.0	1030
06478540 LITTLE VERMILLION R NEAR SALEM SD (LAT 43 47 39N LONG 097 22 02W)					
OCT 1992					
05...	0950	1.2	15.0	16.0	1060
NOV					
06...	1145	2.3	0.0	-4.0	1470
DEC					
17...	1320	1.6	0.0	-3.5	1710
MAR 1993					
28...	0950	643	6.0	9.0	330
30...	1115	259	--	8.0	520
APR					
05...	1100	40	4.0	8.0	770
MAY					
10...	1330	342	16.5	17.0	710
JUN					
14...	1210	45	19.0	21.0	1130
30...	1300	544	19.0	21.0	380
AUG					
17...	0930	14	23.0	22.0	1100
SEP					
10...	1210	2.3	15.5	17.5	1060
06478690 WEST FORK VERMILLION R NEAR PARKER SD (LAT 43 24 55N LONG 097 12 18W)					
OCT 1992					
05...	1215	2.7	17.5	18.0	1360
NOV					
05...	1530	8.1	0.5	-4.0	1660
DEC					
17...	0945	6.3	0.0	-5.0	2280
FEB 1993					
26...	1100	2.4	0.5	-3.0	1750
MAR					
09...	1010	22	0.0	7.0	1100
28...	1255	2160	8.5	15.5	280
30...	0830	1350	8.0	6.0	370
APR					
05...	1450	210	4.0	9.5	760
MAY					
08...	2045	4210	15.0	15.0	330
12...	0950	944	18.0	21.0	760
JUN					
14...	1600	289	21.5	24.0	930
30...	1635	594	22.0	27.0	790
JUL					
06...	1935	1760	25.0	29.0	450
AUG					
19...	1250	1000	24.0	26.5	620
SEP					
10...	0925	14	15.0	11.5	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)
06478920 VERMILLION RIVER NEAR CENTERVILLE, SD (LAT 43 03 27N LONG 096 57 48W)					
OCT 1992					
09...	1025	819	8.0	21.0	980
MAR 1993					
26...	1535	1800	2.0	13.5	405
30...	1055	5370	7.0	7.5	430
APR					
01...	1450	4990	4.0	2.0	520
MAY					
11...	1450	4780	15.5	22.0	760
JUL					
08...	1000	8740	24.0	26.5	460
06479000 VERMILLION R NEAR WAKONDA SD (LAT 42 59 27N LONG 096 57 49W)					
OCT 1992					
09...	1225	1390	8.0	14.0	820
MAR 1993					
26...	1800	2480	2.0	13.5	500
29...	1905	3980	7.5	9.0	450
JUL					
07...	1910	11200	26.0	28.0	630
06479001 VERMILLION RIVER OVERFLOW NEAR WAKONDA, SD (LAT 42 59 43N LONG 096 57 47W)					
MAY 1993					
11...	1730	560	16.0	23.0	760
06479010 VERMILLION RIVER NR VERMILLION SD (LAT 42 49 02N LONG 096 55 26W)					
OCT 1992					
09...	1535	1980	9.0	15.5	1000
22...	0850	278	11.0	19.0	1760
NOV					
19...	1325	253	3.0	5.0	1850
DEC					
09...	1330	166	1.0	6.5	1940
JAN 1993					
20...	1655	58	0.0	-6.0	1680
FEB					
11...	1320	102	0.5	-2.0	1480
MAR					
11...	1150	607	0.0	12.0	900
29...	1800	2570	7.0	15.0	500
APR					
01...	1025	4840	3.5	7.0	490
06...	0915	4050	7.5	6.0	700
MAY					
05...	1345	1330	16.5	21.0	1500
12...	0840	2060	--	17.0	--
JUN					
09...	1605	2480	19.0	21.0	810
29...	1355	4330	23.0	22.5	870
JUL					
08...	1035	9980	25.0	21.5	700
09...	0920	10000	24.0	21.5	--
14...	1220	8900	22.5	28.5	660
AUG					
20...	1350	1720	26.0	27.0	1210
SEP					
24...	1355	526	15.5	20.5	1550

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)
06479215 BIG SIOUX RIVER NR FLORENCE SD (LAT 45 10 51N LONG 097 11 09W)					
OCT 1992					
06...	1400	1.2	11.0	12.0	710
NOV					
17...	1410	2.1	1.0	1.0	790
DEC					
15...	1520	1.7	0.5	-5.0	830
FEB 1993					
22...	1605	1.0	0.0	-16.0	940
MAR					
23...	1400	1.0	0.5	2.0	920
29...	1610	323	3.0	9.0	240
31...	1210	247	1.0	2.5	260
APR					
05...	1445	50	5.0	11.0	540
MAY					
13...	1355	28	18.5	24.0	700
JUN					
08...	1635	3.8	15.0	14.0	640
JUL					
01...	1000	81	20.0	22.0	400
26...	1720	482	24.5	28.0	290
AUG					
10...	0930	13	22.0	28.5	680
SEP					
08...	1455	8.5	19.0	23.0	640
06479438 BIG SIOUX R NEAR WATERTOWN SD (LAT 45 00 22N LONG 097 09 53W)					
OCT 1992					
07...	0930	6.4	10.0	5.0	600
NOV					
17...	1640	14	1.0	-0.5	720
DEC					
16...	0940	9.0	0.5	-2.0	740
JAN 1993					
22...	1000	2.5	0.5	-4.0	850
FEB					
23...	0910	3.5	0.0	-27.0	750
MAR					
23...	1615	4.4	1.0	1.0	770
29...	1835	1380	1.0	6.0	650
31...	0915	625	2.0	2.0	760
APR					
06...	0840	144	5.0	2.5	590
MAY					
13...	1625	91	19.5	23.5	730
JUN					
09...	0905	31	13.0	15.0	750
30...	1755	283	27.0	27.0	560
JUL					
27...	0925	1110	22.5	21.5	340
AUG					
10...	1445	58	26.5	31.0	710
SEP					
09...	0755	25	14.5	14.5	680

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06479525 BIG SIOUX R NEAR CASTLEWOOD SD (LAT 44 43 54N LONG 097 02 39W)					
OCT 1992					
07...	1130	16	8.0	5.0	1030
NOV					
18...	0910	25	0.5	-0.5	1000
DEC					
16...	1215	23	0.5	-3.0	860
JAN 1993					
22...	1330	10	0.5	6.0	1100
FEB					
23...	1310	6.4	0.0	-23.0	1340
MAR					
24...	0905	27	9.0	0.0	1060
30...	0815	922	3.0	4.0	360
APR					
06...	1140	459	6.0	9.0	620
MAY					
13...	1150	283	17.0	20.0	860
JUN					
09...	1120	161	15.0	16.0	760
30...	0925	279	18.0	22.0	690
JUL					
27...	1220	751	23.5	23.0	530
AUG					
11...	1115	385	24.0	26.0	630
SEP					
09...	1015	189	15.0	16.5	690
06479640 HIDEWOOD CR NEAR ESTELLINE SD (LAT 44 36 42N LONG 096 54 17W)					
MAR 1993					
30...	1600	362	3.0	5.0	660
06479928 BATTLE CR NEAR NUNDA SD (LAT 44 09 10N LONG 096 53 18W)					
OCT 1992					
08...	1220	9.2	6.0	6.0	1550
NOV					
19...	0855	21	1.5	1.0	1780
DEC					
17...	1200	7.9	0.5	-3.0	2120
FEB 1993					
24...	1515	1.0	0.0	-21.0	1010
MAR					
25...	1325	4.6	0.0	2.0	1440
29...	1115	1150	5.0	9.0	560
31...	0845	640	3.0	2.0	840
APR					
07...	1150	218	4.0	4.5	1220
MAY					
09...	1415	736	16.0	17.5	1200
JUN					
18...	1425	931	17.0	18.0	760
JUL					
01...	1615	486	23.0	24.0	930
AUG					
18...	1525	45	24.0	27.5	1180
SEP					
08...	0910	12	15.5	15.5	1250
06479980 MEDARY CR NEAR BROOKINGS, SD (LAT 44 13 27N LONG 096 46 06W)					
MAR 1993					
30...	1615	1030	4.0	5.0	390
JUN					
18...	1210	2810	15.5	15.5	370

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)
06480000 BIG SIOUX RIVER NEAR BROOKINGS SD (LAT 44 10 48N LONG 096 44 55W)					
OCT 1992					
08...	0945	158	8.0	4.5	940
NOV					
18...	1540	239	2.0	2.5	1100
DEC					
17...	1000	115	0.5	-3.0	1060
FEB 1993					
24...	1135	60	0.0	-23.0	940
MAR					
25...	1015	97	0.0	2.0	1060
30...	1145	6730	3.0	5.0	600
APR					
07...	0910	2110	4.0	1.5	750
MAY					
12...	1210	3480	16.0	31.0	920
JUN					
10...	1055	1130	17.0	24.0	1010
29...	1135	3090	19.5	18.0	870
JUL					
07...	1005	6450	24.0	24.0	610
AUG					
18...	1330	2060	24.0	28.0	680
SEP					
10...	0855	796	15.5	12.5	1000
06480400 SPRING CR NEAR FLANDREAU SD (LAT 44 07 18N LONG 096 35 19W)					
OCT 1992					
06...	0955	2.0	14.0	10.0	640
NOV					
04...	1135	6.6	0.0	-2.5	790
DEC					
15...	1115	4.5	0.0	-2.5	1020
FEB 1993					
23...	1130	4.1	0.5	-10.0	800
MAR					
30...	0815	201	3.0	5.5	300
APR					
07...	1355	48	3.0	3.5	730
JUN					
17...	1655	148	19.0	18.0	720
18...	1005	368	16.5	16.0	380
29...	1150	26	20.0	22.5	720
AUG					
17...	1300	78	24.5	25.0	560
SEP					
08...	1130	10	16.5	25.5	720
06480650 FLANDREAU CR ABOVE FLANDREAU SD (LAT 44 03 45N LONG 096 29 14W)					
MAR 1993					
29...	1510	813	5.0	10.5	260
MAY					
09...	1000	624	16.0	15.0	380
JUN					
18...	0845	1140	15.5	14.0	350
06480655 BIG SIOUX RIVER AT FLANDREAU, SD (LAT 44 03 07N LONG 096 35 13W)					
MAR 1993					
30...	1750	8940	2.5	4.0	400
JUL					
07...	1605	7770	25.0	23.0	550

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)
06481000 BIG SIOUX R NEAR DELL RAPIDS SD (LAT 43 47 25N LONG 096 44 42W)					
OCT 1992					
06...	1255	185	14.0	9.0	930
NOV					
04...	1515	256	1.0	-2.0	1040
DEC					
16...	1355	184	0.0	-2.0	1140
MAR 1993					
01...	1245	82	0.0	11.0	1140
30...	1645	7000	3.0	5.0	350
APR					
06...	1600	3250	5.5	8.0	670
MAY					
10...	1610	3860	16.0	16.0	780
JUN					
17...	1140	2370	20.0	19.0	860
28...	1310	5620	22.5	25.0	760
JUL					
06...	1635	13300	24.0	22.0	550
AUG					
19...	1700	2520	25.0	29.0	710
SEP					
03...	0945	1220	19.0	15.5	940
06481500 SKUNK CR AT SIOUX FALLS SD (LAT 43 32 01N LONG 096 47 26W)					
OCT 1992					
05...	1630	90	18.5	23.5	1450
NOV					
05...	0910	122	0.0	-4.5	1380
DEC					
16...	0915	77	0.0	-4.0	1530
JAN 1993					
20...	1300	36	0.5	2.0	1170
FEB					
24...	1210	24	0.5	-1.0	1480
MAR					
09...	1240	176	1.0	10.0	680
28...	1540	4230	7.0	17.5	350
30...	1400	2320	6.0	6.0	600
APR					
06...	0930	754	5.0	5.0	980
MAY					
08...	1540	4950	11.5	18.0	550
11...	0810	1160	11.0	14.0	1020
JUN					
16...	1105	793	19.5	25.5	1000
30...	0905	2500	17.5	19.0	660
JUL					
08...	1330	3850	18.0	20.5	910
AUG					
17...	1620	716	26.0	29.0	1000
SEP					
08...	1615	170	19.5	25.5	1060

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)
06482020 BIG SIOUX R AT NORTH CLIFF AVE AT SIOUX FALLS SD (LAT 43 34 01N LONG 096 42 39W)					
OCT 1992					
07...	0940	403	11.5	7.5	920
NOV					
05...	1250	419	1.0	-2.0	1090
DEC					
16...	1120	255	0.0	-2.0	1380
JAN 1993					
21...	0845	114	1.0	-3.0	1640
FEB					
24...	1445	110	0.5	-5.0	1330
MAR					
29...	1320	7710	5.0	15.0	340
APR					
06...	1230	5420	6.0	10.0	650
MAY					
10...	1315	5880	16.5	17.5	770
JUN					
16...	1515	2930	19.5	27.5	700
28...	1645	7950	22.5	24.0	760
JUL					
01...	1150	11400	22.0	25.0	580
06...	1940	17900	24.5	24.5	570
AUG					
20...	1050	3290	24.0	24.5	840
SEP					
09...	0955	1120	17.5	18.0	1000
06482500 PIPESTONE CREEK NEAR PIPESTONE, MN (LAT 44 04 54N LONG 096 18 27W)					
MAR 1993					
28...	1010	439	1.0	10.5	240
30...	1635	75	3.5	4.0	610
MAY					
11...	1330	39	11.0	20.0	850
06482610 SPLIT ROCK CR AT CORSON SD (LAT 43 36 59N LONG 096 33 54W)					
MAR 1993					
28...	1755	4760	4.5	13.0	220
29...	1335	4600	5.0	12.0	260
MAY					
08...	1545	14700	16.0	18.0	230
06482745 BEAVER CREEK AT VALLEY SPRINGS, SD (LAT 43 35 10N LONG 096 28 20W)					
MAR 1993					
29...	1545	903	5.0	16.0	280
30...	0940	440	3.5	5.0	420
JUN					
29...	1825	325	19.0	17.0	520
06482848 BEAVER CR AT CANTON SD (LAT 43 17 12N LONG 096 35 46W)					
MAR 1993					
10...	1620	69	1.5	9.0	860
29...	1010	1050	7.5	14.0	500
JUN					
08...	1215	633	19.0	20.0	580
AUG					
19...	0820	148	22.5	24.0	1360
06482933 CHANARAMBI CREEK NEAR EDGERTON, MN (LAT 43 53 59N LONG 096 03 39W)					
MAR 1993					
28...	1320	359	3.0	19.0	310
APR					
07...	1025	126	2.5	3.5	660
MAY					
11...	1125	255	13.0	20.0	640
06483000 ROCK RIVER AT LUVERNE, MN (LAT 43 39 15N LONG 096 12 03W)					
MAR 1993					
28...	1620	7550	3.0	15.0	230
30...	1205	2140	4.0	5.5	360
MAY					
08...	2010	17100	--	--	--

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)
06485500 BIG SIOUX R AT AKRON IA (LAT 42 50 14N LONG 096 33 41W)					
OCT 1992					
22...	1530	1910	11.0	28.0	1060
NOV					
20...	1220	1770	3.0	--	1060
FEB 1993					
10...	1050	718	4.0	3.0	1100
MAR					
29...	1100	22900	4.0	12.5	270
31...	1615	29800	1.5	4.0	340
APR					
05...	1710	14400	8.0	13.0	590
MAY					
06...	1030	5900	17.0	25.5	980
11...	1140	36500	15.0	16.0	450
JUN					
29...	1040	16000	22.0	25.0	740
JUL					
07...	1145	35200	23.0	25.5	500
13...	1805	49900	22.5	22.5	420
23...	1530	9650	23.5	33.5	850
AUG					
20...	0910	7450	24.0	22.0	860
06485696 BRULE CREEK NR ELK POINT SD (LAT 42 48 32N LONG 096 41 11W)					
OCT 1992					
09...	1515	730	8.0	21.0	620
22...	1140	60	12.0	23.0	1310
NOV					
20...	0900	68	3.5	2.0	1250
DEC					
09...	1050	37	0.0	0.0	1280
FEB 1993					
12...	0840	3.1	--	--	--
MAR					
11...	0910	339	0.0	6.0	470
29...	1520	1030	8.0	18.0	460
31...	1035	537	4.0	2.5	780
APR					
05...	1420	176	8.0	11.5	1100
MAY					
06...	0750	90	16.0	18.0	1180
JUN					
09...	1215	120	18.0	27.0	940
29...	0825	95	20.0	22.0	1140
JUL					
14...	0930	1430	22.5	26.5	350
AUG					
20...	1100	147	22.0	26.0	1090
SEP					
23...	1710	47	16.0	15.5	1150

MISCELLANEOUS DISCHARGE MEASUREMENTS

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)
433628103175200 LAME JOHNNY CREEK AT HWY 79 NEAR FAIRBURN, SD (LAT 43 36 28N LONG 103 17 52W)					
JUN 1993					
25...	1215	1.9	17.5	26.0	585
434244103205400 FRENCH CREEK BLW MADISON OUTCROP NEAR FAIRBURN, SD (LAT 43 42 44N LONG 103 20 54W)					
MAY 1993					
11...	1435	24	15.5	21.0	284
JUN					
07...	1535	136	14.5	12.0	208
15...	1400	25	19.0	27.0	257
JUL					
20...	1545	12	19.5	24.5	255
06405400 GRACE COOLIDGE CR NEAR FAIRBURN SD (LAT 43 46 13N LONG 103 20 28W)					
MAY 1993					
10...	1055	38	9.5	14.0	136
JUN					
14...	1450	24	17.0	22.0	154
434843103153000 GRACE COOLIDGE CREEK 3.5 MILES SW OF HERMOSA, SD (LAT 43 48 43N LONG 103 15 30W)					
SEP 1993					
02...	0910	12	12.5	15.5	434
435148103373500 SPRING CREEK NEAR OREVILLE, SD (LAT 43 51 48N LONG 103 37 35W)					
NOV 1993					
09...	1040	1.6	0.5	4.0	385
435628103324600 SPRING CREEK ABOVE MITCHELL LAKE NEAR HILL CITY, SD (LAT 43 56 28N LONG 103 32 46W)					
NOV 1992					
09...	1305	2.8	3.0	3.5	358
06408000 SPRING CR NEAR RAPID CITY SD (LAT 43 59 20N LONG 103 15 55W)					
MAY 1993					
14...	1240	66	15.0	19.5	303
AUG					
09...	0845	7.0	16.0	22.5	303
06412300 TITTLE SPRINGS AT RAPID CITY, SD (LAT 44 02 42N LONG 103 19 37W)					
OCT 1992					
02...	1420	2.2	13.0	28.0	390
NOV					
04...	1445	1.8	10.0	1.5	410
DEC					
03...	1445	1.7	7.5	0.0	396
JAN 1993					
05...	1155	2.0	5.0	-10.0	404
28...	0905	2.2	--	--	--
FEB					
02...	1100	2.0	--	--	--
08...	1230	1.9	4.0	1.0	395
MAR					
17...	1305	1.5	4.0	2.0	394
APR					
03...	1040	2.2	4.0	6.5	--
13...	0945	2.3	4.5	4.0	391
24...	1608	2.1	5.0	17.5	--
MAY					
08...	0900	2.6	6.5	7.0	--
17...	1130	2.4	8.0	14.5	369
22...	0905	2.4	8.0	25.0	--
27...	1100	2.4	9.0	23.0	373
JUN					
07...	1456	2.6	--	--	--
25...	1315	2.3	10.0	23.0	380
AUG					
05...	1315	1.6	10.0	24.0	388
10...	1130	1.5	11.0	23.0	389
SEP					
02...	1615	1.9	12.0	18.0	392

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)
440105103230700 VICTORIA CR BELOW VICTORIA DAM NR RAPID CITY, SD (LAT 44 01 05N LONG 103 23 07W)					
MAY 1993					
27...	0910	4.0	13.0	21.0	245
AUG					
10...	0805	1.4	16.5	20.0	239
440251103204100 VICTORIA CREEK AT MOUTH NEAR RAPID CITY SD (LAT 44 02 51N LONG 103 20 41W)					
MAY 1993					
27...	0800	3.0	17.0	23.0	262
AUG					
10...	0745	0.26	15.0	18.0	304
06413600 CITY SPRINGS AT RAPID CITY, SD (LAT 44 05 24N LONG 103 17 32W)					
NOTE: Miscellaneous measurements for water years 1989-92 also published.					
DEC 1988					
19...	0930	0.10	--	--	--
FEB 1989					
24...	1330	0.0	--	--	--
APR					
25...	0900	0.0	--	--	--
SEP					
26...	1605	0.0	--	--	--
27...	--	0.0	--	--	--
28...	0805	0.0	--	--	--
NOV					
14...	1150	0.0	--	--	--
DEC					
29...	0935	0.0	--	-1.0	--
JAN 1990					
22...	1551	0.0	--	9.0	--
MAR					
07...	1505	0.0	--	0.05	--
APR					
05...	1520	1.4	--	--	--
12...	0850	1.3	--	--	--
MAY					
18...	1800	0.0	--	--	--
31...	1220	0.02	--	--	--
JUN					
18...	1445	0.02	--	--	--
JUL					
12...	1130	1.7	--	--	--
AUG					
20...	1415	0.0	--	--	--
OCT					
02...	1415	0.0	--	--	--
DEC					
31...	1225	0.0	--	--	--
APR 1991					
04...	0700	0.0	--	--	--
MAY					
08...	0925	0.0	--	--	--
10...	1315	0.0	--	--	--
15...	1153	0.26	--	--	--
22...	1140	0.79	--	--	--
JUN					
13...	1235	0.96	19.5	25.0	759
28...	0938	0.73	--	--	--
JUL					
01...	0915	0.62	--	--	--
AUG					
07...	1415	0.45	11.5	22.0	450
SEP					
30...	0915	0.09	--	--	--
OCT					
24...	0830	0.06	12.0	2.0	358
DEC					
31...	1530	0.04	11.5	-3.5	352
JAN 1992					
23...	1550	0.03	11.0	9.0	--
MAR					
11...	1445	0.03	11.0	10.0	353
MAY					
28...	1125	0.0	--	--	--
JUL					
27...	--	0.0	--	--	--
SEP					
16...	1115	0.0	--	--	--
OCT					
19...	1030	0.0	--	--	--
JAN 1993					
16...	1430	0.0	--	4.0	--

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)
06413600 CITY SPRINGS AT RAPID CITY, SD (LAT 44 05 24N LONG 103 17 32W)--Continued					
MAR 1993					
09...	1500	0.0	--	--	--
MAY					
03...	--	0.0	--	--	--
06...	--	0.50	--	--	--
AUG					
03...	1530	0.76	11.0	18.5	533
26...	1005	0.54	11.0	--	--
SEP					
03...	1530	0.45	--	--	--
09...	0815	0.47	12.5	26.0	--
440756103244400 BOXELDER CREEK BELOW NORRIS PK NEAR RAPID CITY, SD (LAT 44 07 56N LONG 103 24 44W)					
MAY 1993					
17...	1040	62	--	--	--
06422650 BOXELDER CR AT DOTY SCHOOL NEAR BLACKHAWK SD (LAT 44 07 03N LONG 103 21 54W)					
MAY 1993					
17...	0910	35	--	--	--
SEP					
27...	1620	9.5	--	--	--
06429920 BEAR GULCH NEAR MAURICE, SD (LAT 44 25 14N LONG 104 02 26W)					
OCT 1992					
14...	1050	0.12	4.5	3.0	271
MAY 1993					
14...	1440	15	14.0	23.0	448
JUL					
21...	1000	5.9	15.0	22.0	224
AUG					
25...	1225	0.86	14.0	18.0	268
SEP					
08...	1015	0.87	--	--	--
06430520 BEAVER CREEK NEAR MAURICE, SD (LAT 44 22 57N LONG 104 00 13W)					
OCT 1992					
05...	1540	0.10	--	--	264
AUG 1993					
25...	1600	1.0	17.5	25.0	261
SEP					
08...	1330	0.94	15.0	24.0	264
06430525 McNENNY ST F HATCH REARING POND OUT NR BEULAH, WY (LAT 44 33 30N LONG 104 00 34W)					
OCT 1992					
02...	1500	0.94	--	--	--
09...	1500	0.94	--	--	--
14...	1525	0.94	11.0	8.5	651
16...	1500	0.94	--	--	--
23...	1500	0.94	--	--	--
30...	1500	0.94	--	--	--
NOV					
06...	1500	0.94	--	--	--
13...	1500	0.94	--	--	--
19...	1500	0.94	11.0	5.0	650
20...	1500	0.94	--	--	--
27...	1500	0.94	--	--	--
DEC					
04...	1500	0.94	--	--	--
11...	1500	0.94	--	--	--
18...	1500	0.94	--	--	--
24...	1500	0.94	--	--	--
JAN 1993					
04...	1300	0.94	10.0	0.0	656
MAY					
07...	1500	0.94	--	--	--
14...	1500	0.94	--	--	--
21...	1500	0.94	--	--	--
28...	1500	0.94	--	--	--
JUN					
04...	1500	0.94	--	--	--
11...	1500	0.94	--	--	--
18...	1500	0.94	--	--	--
25...	1500	0.94	--	--	--

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)
06430525 McNENNY ST F HATCH REARING POND OUT NR BEULAH, WY (LAT 44 33 30N LONG 104 00 34W)--Continued					
JUL 1993					
02...	1500	0.94	--	--	--
09...	1500	0.94	--	--	--
16...	1500	0.94	--	--	--
23...	1500	0.94	--	--	--
30...	1500	0.94	--	--	--
AUG					
06...	1500	0.94	--	--	--
13...	1500	0.94	--	--	--
20...	1500	0.94	--	--	--
23...	1415	--	--	--	656
27...	1500	0.94	--	--	--
SEP					
03...	1500	0.94	--	--	--
10...	1500	0.94	--	--	--
17...	1500	0.94	--	--	--
24...	1500	0.94	--	--	--
06430528 McNENNY ST F HATCH VIEW POND OUTLET NR BEULAH, WY (LAT 44 33 31N LONG 104 00 36W)					
OCT 1992					
02...	1500	0.91	--	--	--
09...	1500	0.91	--	--	--
14...	1530	0.75	11.0	8.5	689
16...	1500	0.91	--	--	--
23...	1500	0.91	--	--	--
30...	1500	0.91	--	--	--
NOV					
06...	1500	0.91	--	--	--
13...	1500	0.91	--	--	--
14...	1505	1.0	10.5	5.0	690
20...	1500	0.91	--	--	--
27...	1500	0.91	--	--	--
DEC					
04...	1500	0.91	--	--	--
11...	1500	0.91	--	--	--
18...	1500	0.91	--	--	--
24...	1500	0.91	--	--	--
JAN 1993					
04...	1245	0.83	10.0	0.0	694
MAY					
07...	1500	0.91	--	--	--
14...	1500	0.91	--	--	--
21...	1500	0.91	--	--	--
28...	1500	0.91	--	--	--
JUN					
04...	1500	0.91	--	--	--
11...	1500	0.91	--	--	--
18...	1500	0.91	--	--	--
25...	1500	0.91	--	--	--
JUL					
16...	1500	1.2	--	--	--
23...	1500	1.1	--	--	--
30...	1500	1.1	--	--	--
AUG					
06...	1500	1.1	--	--	--
13...	1500	1.1	--	--	--
20...	1500	1.1	--	--	--
23...	1430	0.83	--	--	684
27...	1500	1.1	--	--	--
SEP					
03...	1500	1.1	--	--	--
10...	1500	1.1	--	--	--
17...	1500	1.1	--	--	--
24...	1500	1.1	--	--	--

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 1992					
02...	1145	3.7	7.0	22.0	430
NOV					
16...	1050	6.5	2.5	7.0	456
DEC					
21...	1430	6.0	0.5	0.0	451
JAN 1993					
25...	1355	6.4	2.0	8.0	450
MAR					
17...	1000	9.6	0.0	4.0	459
APR					
19...	1220	8.0	4.0	-1.0	447
MAY					
24...	1250	10	8.5	10.0	437
JUL					
21...	1200	11	13.0	21.0	422
AUG					
17...	1510	9.1	14.5	27.5	--
442418103534400 SPEARFISH CREEK NEAR MAURICE, SD (LAT 44 24 18N LONG 103 53 44W)					
MAY 1993					
18...	1355	74	--	--	--
442430103535300 SPEARFISH CREEK ABV AQUEDUCT INLET BLW MAURICE, SD (LAT 44 24 30N LONG 103 53 53W)					
MAY 1993					
18...	1500	70	--	--	--
06466715 SNATCH CREEK NEAR TABOR, SD (LAT 42 54 30N LONG 097 46 33W)					
MAR 1993					
10...	1500	100	4.0	4.0	200
JUL					
13...	1315	1860	21.0	23.5	230
06478920 VERMILLION RIVER NEAR CENTERVILLE, SD (LAT 43 03 27N LONG 096 57 48W)					
OCT 1992					
09...	1025	819	8.0	21.0	980
MAR 1993					
26...	1535	1800	2.0	13.5	405
30...	1055	5370	7.0	7.5	430
APR					
01...	1450	4990	4.0	2.0	520
MAY					
11...	1450	4780	15.5	22.0	760
JUL					
08...	1000	8740	24.0	26.5	460
06479001 VERMILLION RIVER OVERFLOW NEAR WAKONDA, SD (LAT 42 59 43N LONG 096 57 47W)					
MAR 1993					
29...	1740	1120	--	--	--
MAY					
11...	1730	560	16.0	23.0	760
06480655 BIG SIOUX RIVER AT FLANDREAU, SD (LAT 44 03 07N LONG 096 35 13W)					
MAR 1993					
30...	1750	8940	2.5	4.0	400
JUL					
07...	1605	7770	25.0	23.0	550
06482614 SPLIT ROCK CREEK BELOW CORSON, SD (LAT 43 36 31N LONG 096 33 47W)					
MAY 1993					
08...	1545	14700	16.0	18.0	230

GROUND-WATER LEVELS

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 SW1/4SW1/4SW1/4NW1/4 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 sea level. 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 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60.04	58.67	57.78	57.53	57.10	56.59	56.28	55.76	55.34	54.62	54.22	54.21
2	59.99	58.56	57.83	57.39	57.07	56.55	56.27	55.71	55.26	54.61	54.22	54.21
3	59.92	58.49	57.83	57.32	57.11	56.57	56.28	55.61	55.27	54.59	54.27	54.23
4	59.87	58.52	57.89	57.36	57.11	56.62	56.28	55.57	55.27	54.45	54.28	54.20
5	59.85	58.52	57.89	57.39	57.08	56.62	56.24	55.61	55.26	54.49	54.26	54.22
6	59.86	58.51	57.78	57.39	57.01	56.54	56.17	55.60	55.24	54.55	54.24	54.24
7	59.81	58.49	57.77	57.31	56.95	56.52	56.14	55.52	55.21	54.55	54.22	54.24
8	59.73	58.39	57.76	57.34	56.97	56.51	56.07	55.44	55.10	54.52	54.20	54.22
9	59.60	58.35	57.66	57.39	56.93	56.51	56.03	55.47	55.21	54.42	54.22	54.18
10	59.58	58.42	57.73	57.40	56.93	56.59	56.01	55.50	55.25	54.42	54.23	54.22
11	59.57	58.42	57.73	57.34	56.90	56.62	56.04	55.50	55.26	54.39	54.23	54.18
12	59.51	58.33	57.66	57.23	56.86	56.64	56.05	55.48	55.26	54.39	54.23	54.04
13	59.47	58.33	57.71	57.28	56.81	56.64	56.05	55.45	55.23	54.40	54.24	54.12
14	59.40	58.31	57.72	57.29	56.82	56.53	55.99	55.40	55.24	54.46	54.21	54.17
15	59.40	58.30	57.60	57.25	56.84	56.45	55.96	55.41	55.25	54.45	54.19	54.18
16	59.40	58.22	57.63	57.19	56.87	56.59	55.93	55.44	55.17	54.41	54.19	54.14
17	59.35	58.21	57.63	57.24	56.88	56.63	55.93	55.41	55.12	54.39	54.18	54.16
18	59.33	58.21	57.58	57.24	56.83	56.58	55.90	55.44	55.12	54.33	54.18	54.15
19	59.25	58.18	57.58	57.24	56.72	56.49	55.88	55.43	55.08	54.35	54.19	54.11
20	59.13	58.10	57.58	57.23	56.69	56.53	55.97	55.41	55.04	54.34	54.22	53.92
21	59.11	58.07	57.49	57.12	56.63	56.49	55.99	55.39	55.02	54.33	54.21	53.92
22	59.06	58.07	57.49	57.12	56.71	56.45	55.92	55.35	55.00	54.27	54.15	53.94
23	59.10	57.99	57.65	57.17	56.74	56.43	55.82	55.32	54.95	54.21	54.10	53.98
24	59.09	58.01	57.65	57.18	56.73	56.37	55.81	55.41	54.88	54.16	54.13	53.96
25	59.01	58.01	57.52	57.18	56.69	56.37	55.92	55.43	54.89	54.14	54.16	53.88
26	58.96	58.00	57.52	57.11	56.71	56.34	55.92	55.42	54.89	54.17	54.19	53.90
27	58.91	57.96	57.45	57.11	56.68	56.32	55.84	55.35	54.87	54.14	54.23	53.91
28	58.87	57.91	57.51	57.19	56.64	56.30	55.87	55.40	54.87	54.20	54.22	53.94
29	58.85	57.86	57.49	57.20	---	56.29	55.87	55.40	54.86	54.22	54.16	53.95
30	58.81	57.86	57.47	57.15	---	56.25	55.85	55.35	54.66	54.20	54.22	53.89
31	58.72	---	57.53	57.09	---	56.27	---	55.36	---	54.20	54.24	---
MAX	60.04	58.67	57.89	57.53	57.11	56.64	56.28	55.76	55.34	54.62	54.28	54.24

GROUND-WATER LEVELS

BEADLE COUNTY

442112098174001.

LOCATION.--Lat 44°21'12", long 98°17'40", in SW1/4SW1/4SW1/4NW1/4 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 artesian unused public supply 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 sea level. Measuring point: Top of platform 2.40 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 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39.82	41.50	42.19	43.42	39.41	37.42	36.17	35.08	34.08	32.86	31.91	30.80
2	41.27	41.49	41.87	42.35	39.29	37.29	36.12	35.07	33.89	32.78	32.12	30.79
3	41.53	41.15	42.14	42.55	39.54	37.27	36.16	34.94	33.90	32.73	32.15	30.81
4	41.83	41.52	42.50	42.69	39.54	37.34	36.17	34.84	33.89	32.44	32.02	30.74
5	42.08	41.82	42.09	43.21	39.88	37.33	36.04	34.88	33.86	32.48	32.09	30.76
6	41.27	41.97	42.02	43.35	40.07	37.13	35.90	34.87	33.78	32.54	31.88	30.80
7	41.58	41.85	42.29	43.47	40.08	37.05	35.88	34.68	33.70	32.56	31.71	30.80
8	40.98	41.46	41.82	43.61	40.05	37.09	35.77	34.53	33.35	32.53	31.60	30.74
9	41.70	41.06	41.88	43.05	39.92	37.07	35.65	34.74	33.55	32.54	31.58	30.61
10	41.74	41.62	41.96	43.05	40.13	37.16	35.61	34.81	33.62	32.54	31.70	30.66
11	41.74	41.66	42.57	42.86	39.95	37.19	35.66	34.81	33.62	32.56	31.59	30.50
12	41.77	41.76	42.90	42.87	39.37	37.21	35.71	34.75	33.59	32.56	31.88	30.21
13	41.77	41.95	42.54	41.72	38.98	37.20	35.71	34.68	33.58	32.45	32.63	30.38
14	42.52	41.69	41.50	41.28	38.83	36.98	35.61	34.50	33.65	32.53	32.60	30.45
15	42.47	41.70	40.96	40.88	38.72	36.69	35.56	34.52	33.67	32.52	31.86	30.46
16	42.27	41.13	41.21	40.51	38.65	37.05	35.49	34.55	33.43	32.39	31.64	30.38
17	42.56	41.11	41.17	40.43	38.63	37.09	35.47	34.46	33.47	32.32	31.47	30.42
18	42.49	43.28	41.21	40.32	38.43	36.89	35.37	34.52	33.48	32.32	31.37	30.41
19	41.84	43.76	41.38	40.36	38.13	36.76	35.34	34.48	33.43	32.32	31.35	30.31
20	42.24	42.61	41.42	40.32	38.03	36.84	35.52	34.44	33.36	32.33	31.37	30.16
21	42.34	42.48	42.86	40.11	37.80	36.70	35.56	34.36	33.31	32.28	31.30	30.16
22	42.55	42.03	43.66	40.21	37.90	36.69	35.37	34.24	33.24	32.17	31.11	30.20
23	42.52	42.14	43.95	40.18	37.92	36.62	35.19	34.12	33.11	32.06	31.00	30.23
24	41.72	42.44	43.95	40.20	37.90	36.48	35.13	34.29	33.09	31.99	30.99	30.17
25	41.94	42.59	43.94	40.16	37.78	36.46	35.35	34.33	33.12	31.92	30.99	30.02
26	41.94	42.62	43.12	40.08	37.81	36.39	35.35	34.29	33.11	32.08	31.02	30.05
27	41.84	42.20	42.93	40.12	37.67	36.29	35.13	34.13	33.06	32.05	31.08	30.05
28	41.89	41.94	42.93	40.13	37.55	36.22	35.19	34.23	33.01	32.22	31.01	30.09
29	41.91	41.81	43.14	40.13	---	36.21	35.19	34.23	32.97	32.39	30.86	30.09
30	41.83	41.81	42.73	39.75	---	36.12	35.14	34.11	32.85	32.11	30.94	29.90
31	41.47	---	43.29	39.42	---	36.14	---	34.12	---	31.93	30.94	---
MAX	42.56	43.76	43.95	43.61	40.13	37.42	36.17	35.08	34.08	32.86	32.63	30.81

GROUND-WATER LEVELS

CODINGTON COUNTY

450905097072202.

LOCATION.--Lat 45°09'05", long 97°07'22", in NW1/4NW1/4NW1/4 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 sea level. 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, 10.62 ft below land-surface datum, July 25, 1993.

DEPTH, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.62	15.34	14.12	13.99	13.81	13.70	13.42	12.61	12.17	11.53	10.94	17.26
2	17.59	15.23	14.12	13.91	13.79	13.70	13.39	12.59	12.14	11.47	11.04	17.48
3	17.55	15.12	14.12	13.91	13.88	13.73	13.37	12.54	12.14	11.46	11.26	17.55
4	17.51	15.11	14.17	13.92	13.82	13.76	13.35	12.50	12.13	11.35	11.32	17.54
5	17.49	15.09	14.17	13.94	13.79	13.76	13.29	12.51	12.12	11.36	11.62	17.36
6	17.46	15.07	14.09	13.94	13.78	13.72	13.24	12.48	12.07	11.41	11.82	17.29
7	17.41	15.02	14.11	13.92	13.76	13.72	13.22	12.44	12.06	11.41	11.94	16.97
8	17.26	14.95	14.10	13.92	13.76	13.75	13.15	12.36	11.97	11.36	12.03	17.39
9	17.11	14.85	14.02	13.95	13.73	13.75	13.10	12.37	12.03	11.35	12.60	17.47
10	16.99	14.81	14.09	13.95	13.76	13.80	13.07	12.38	12.04	11.32	13.57	17.10
11	16.93	14.81	14.09	13.90	13.76	13.82	13.01	12.38	12.02	11.32	14.11	16.78
12	16.78	14.71	14.02	13.83	13.73	13.80	13.00	12.35	12.04	11.32	14.58	17.09
13	16.71	14.71	14.03	13.86	13.73	13.81	12.98	12.35	12.04	11.26	14.55	17.44
14	16.60	14.65	14.03	13.86	13.74	13.79	12.94	12.29	12.07	11.28	14.28	17.43
15	16.55	14.61	13.98	13.85	13.76	13.70	12.86	12.32	12.09	11.27	13.97	17.18
16	16.48	14.54	14.01	13.83	13.78	13.82	12.82	12.32	12.02	11.21	13.78	16.80
17	16.40	14.49	14.01	13.85	13.78	13.84	12.81	12.30	12.00	11.19	13.59	16.53
18	16.34	14.48	13.98	13.86	13.74	13.77	12.77	12.32	11.99	11.14	13.41	16.30
19	16.23	14.47	13.99	13.86	13.71	13.74	12.80	12.30	11.96	11.14	13.31	16.21
20	16.10	14.34	13.99	13.86	13.71	13.76	12.83	12.30	11.87	11.13	13.50	15.80
21	16.05	14.31	13.94	13.78	13.68	13.76	12.84	12.29	11.83	11.11	14.03	15.63
22	15.94	14.31	13.94	13.80	13.77	13.76	12.77	12.24	11.79	11.08	14.61	15.40
23	15.91	14.26	14.03	13.84	13.75	13.71	12.72	12.20	11.80	11.06	15.25	15.29
24	15.88	14.26	14.00	13.85	13.75	13.73	12.70	12.24	11.70	11.02	15.92	15.12
25	15.76	14.26	13.97	13.86	13.76	13.74	12.75	12.26	11.72	10.95	17.54	14.93
26	15.74	14.24	13.98	13.78	13.77	13.74	12.75	12.23	11.69	10.95	18.22	14.77
27	15.66	14.24	13.96	13.78	13.73	13.68	12.67	12.21	11.70	10.91	18.80	14.75
28	15.60	14.20	13.98	13.88	13.72	13.62	12.68	12.21	11.69	10.94	19.47	14.57
29	15.56	14.17	13.97	13.88	---	13.57	12.65	12.21	11.68	10.95	19.20	14.53
30	15.52	14.15	13.96	13.82	---	13.52	12.65	12.17	11.54	10.92	18.04	14.37
31	15.45	---	14.00	13.80	---	13.45	---	12.18	---	10.93	17.51	---
MAX	17.62	15.34	14.17	13.99	13.88	13.84	13.42	12.61	12.17	11.53	19.47	17.55

GROUND-WATER LEVELS

LINCOLN COUNTY

431619096460202.

LOCATION.--Lat 43°16'19", long 96°46'02", in NE1/4NE1/4NE1/4NE1/4 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 artesian observation well, diameter 6 in, depth 383 ft, screened 363 to 383 ft.

INSTRUMENTATION.--None, only instantaneous water-level observations.

DATUM.--Elevation of land-surface datum is 1,320 ft above sea level. 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 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

10/05/92	169.65	06/30/93	169.84
12/16/92	169.29	07/29/93	169.62
02/24/93	169.32	08/19/93	169.62
03/25/93	169.30	09/09/93	169.61
06/22/93	169.62		

GROUND-WATER LEVELS
MARSHALL COUNTY

454745097450401.

LOCATION.--Lat 45°47'45", long 97°45'04", in SE1/4NE1/4SE1/4 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 artesian unused public supply 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 sea level. Measuring point: Top of recorder platform 1.95 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, 39.64 ft below land-surface datum, Sept. 12, 1993.

DEPTH, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40.93	40.86	40.62	40.87	40.59	40.37	40.39	40.43	40.35	40.33	39.90	39.87
2	40.89	40.77	40.75	40.63	40.58	40.38	40.38	40.40	40.35	40.28	39.88	39.93
3	40.92	40.79	40.78	40.62	40.72	40.46	40.45	40.34	40.38	40.23	39.98	39.95
4	40.91	40.84	40.85	40.74	40.72	40.49	40.45	40.35	40.37	40.00	39.99	39.93
5	41.00	40.89	40.85	40.77	40.63	40.49	40.37	40.44	40.35	40.05	39.96	39.96
6	41.05	40.90	40.74	40.77	40.60	40.39	40.34	40.39	40.31	40.14	39.96	39.98
7	40.99	40.90	40.75	40.69	40.57	40.37	40.33	40.27	40.28	40.17	39.92	39.98
8	40.94	40.79	40.73	40.82	40.58	40.44	40.25	40.22	40.08	40.14	39.88	39.94
9	40.85	40.75	40.56	40.86	40.53	40.40	40.23	40.40	40.32	40.15	39.91	39.92
10	40.91	40.83	40.73	40.86	40.62	40.54	40.21	40.48	40.36	40.17	39.96	40.00
11	40.91	40.84	40.74	40.76	40.62	40.56	40.28	40.48	40.36	40.20	39.94	39.89
12	40.93	40.78	40.68	40.60	40.54	40.60	40.32	40.40	40.34	40.20	39.98	39.79
13	40.90	40.81	40.73	40.69	40.51	40.56	40.31	40.39	40.39	40.22	40.01	39.91
14	40.96	40.85	40.75	40.69	40.56	40.43	40.26	40.33	40.47	40.28	39.90	39.99
15	41.00	40.87	40.54	40.59	40.59	40.26	40.24	40.36	40.51	40.24	39.90	39.99
16	41.03	40.80	40.69	40.59	40.68	40.62	40.22	40.41	40.34	40.13	39.92	39.97
17	41.03	40.85	40.68	40.64	40.68	40.62	40.22	40.40	40.44	40.07	39.88	40.00
18	41.07	40.87	40.60	40.69	40.57	40.52	40.17	40.47	40.46	40.07	39.92	40.00
19	40.94	40.86	40.67	40.69	40.44	40.50	40.28	40.45	40.39	40.10	39.95	39.95
20	40.90	40.78	40.67	40.64	40.45	40.54	40.36	40.40	40.35	40.10	39.99	39.89
21	40.90	40.80	40.60	40.50	40.41	40.51	40.37	40.40	40.35	40.06	39.96	39.91
22	40.91	40.80	40.68	40.51	40.53	40.52	40.23	40.29	40.30	40.01	39.82	39.95
23	40.99	40.79	40.87	40.60	40.56	40.43	40.14	40.23	40.24	39.97	39.78	40.00
24	40.97	40.84	40.85	40.64	40.55	40.39	40.35	40.38	40.19	39.94	39.84	39.93
25	40.92	40.86	40.78	40.65	40.56	40.38	40.50	40.39	40.30	39.83	39.87	39.84
26	40.93	40.84	40.78	40.56	40.57	40.37	40.46	40.39	40.36	39.88	39.93	39.92
27	40.88	40.83	40.79	40.56	40.50	40.31	40.33	40.38	40.43	39.82	39.99	39.92
28	40.91	40.75	40.84	40.74	40.40	40.34	40.40	40.44	40.49	39.92	39.95	40.01
29	40.93	40.76	40.78	40.74	---	40.34	40.40	40.42	40.43	39.98	39.87	40.02
30	40.92	40.76	40.79	40.58	---	40.30	40.41	40.38	40.34	39.92	39.94	39.88
31	40.87	---	40.87	40.59	---	40.39	---	40.42	---	39.94	39.97	---
MAX	41.07	40.90	40.87	40.87	40.72	40.62	40.50	40.48	40.51	40.33	40.01	40.02

GROUND-WATER LEVELS

SHANNON COUNTY

430027102311801.

LOCATION.--Lat 43°00'27", long 102°03'18", in SW1/4NW1/4SE1/4 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 sea level. 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, 43.13 ft below land-surface datum, Dec. 23, 1992; minimum water level, 42.70 ft below land-surface datum, Jan. 8, 1990.

DEPTH, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42.99	43.00	43.03	42.98	43.00	42.97	43.00	43.01	42.96	42.94	42.98	42.93
2	42.98	42.99	43.02	42.97	43.01	43.00	43.00	42.97	42.96	42.94	42.97	42.97
3	42.98	43.05	43.05	43.01	43.05	43.02	43.03	42.95	42.98	42.92	42.97	42.96
4	43.02	43.05	43.06	43.01	43.04	43.05	42.99	42.95	42.97	42.94	42.96	42.96
5	43.07	43.01	43.00	43.05	43.00	43.00	42.96	43.01	42.94	42.95	42.95	42.97
6	43.04	43.01	43.01	42.99	42.98	43.00	42.99	43.01	42.94	42.97	42.93	42.95
7	43.04	42.97	43.00	43.01	42.99	42.99	43.00	42.93	42.89	42.95	42.92	42.95
8	42.98	42.98	42.95	43.04	42.98	43.00	42.99	42.99	42.97	42.96	42.93	42.94
9	43.02	43.02	43.03	43.07	43.00	43.05	42.94	43.07	42.99	42.97	42.97	42.97
10	43.02	43.04	43.04	43.01	43.03	43.04	42.99	43.04	42.98	43.00	42.95	42.96
11	43.02	43.02	42.98	43.00	43.02	43.05	42.99	43.00	42.97	43.00	42.96	42.87
12	43.02	43.04	43.01	43.03	42.99	43.06	43.00	42.98	43.00	42.93	42.98	42.98
13	43.03	43.02	43.05	43.03	43.01	42.98	42.99	42.97	43.01	43.01	42.94	42.96
14	43.02	43.03	43.00	42.97	43.02	42.95	42.99	42.97	43.00	42.99	42.93	42.95
15	43.08	43.00	43.00	42.97	43.02	42.97	42.98	43.01	42.96	42.94	42.95	42.93
16	43.06	42.99	43.02	43.02	43.05	43.09	42.99	42.98	43.01	42.98	42.93	42.96
17	43.07	43.00	42.97	42.99	43.05	43.06	42.99	42.99	43.01	42.99	42.95	42.94
18	43.03	43.01	43.00	43.02	42.99	42.98	42.93	42.99	42.98	42.99	42.96	42.92
19	43.00	43.01	43.02	42.99	42.96	43.08	43.05	42.98	42.96	42.98	42.99	42.92
20	42.99	43.01	42.99	42.98	42.95	43.06	43.05	42.97	42.95	42.95	42.96	42.92
21	43.00	43.02	43.01	43.04	43.00	43.03	43.04	42.97	42.98	42.94	42.91	42.95
22	43.07	42.95	43.00	43.02	43.04	43.02	42.95	42.97	42.95	42.95	42.93	42.96
23	43.08	43.03	43.13	43.08	43.03	42.97	42.95	43.00	42.98	42.97	42.93	42.95
24	43.02	43.04	43.05	43.02	42.98	42.97	43.03	43.01	42.99	42.94	42.91	42.90
25	43.02	43.03	43.04	42.99	43.04	43.00	43.04	43.01	42.99	42.96	42.97	42.94
26	43.01	43.03	42.96	43.03	43.02	42.99	42.97	42.95	42.95	42.97	42.97	42.97
27	43.01	43.02	43.05	42.99	43.01	42.97	43.00	43.01	42.94	42.97	42.98	42.94
28	43.01	43.00	43.03	43.07	42.99	42.98	43.01	42.99	42.95	42.97	42.91	42.97
29	42.97	43.02	43.00	43.03	---	42.99	42.99	43.03	42.98	42.95	42.97	42.94
30	42.94	42.98	43.07	43.03	---	43.01	43.00	42.99	42.97	42.95	42.97	42.93
31	43.00	---	43.07	43.02	---	43.01	---	42.99	---	42.98	42.96	---
MAX	43.08	43.05	43.13	43.08	43.05	43.09	43.05	43.07	43.01	43.01	42.99	42.98

GROUND-WATER LEVELS
SHANNON COUNTY--Continued

430027102311806.

LOCATION.--Lat 43°00'27", long 102°31'18" in SW1/4NW1/4SE1/4 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 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 sea level. 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, 36.29 ft below land-surface datum, June 7, 1993.

DEPTH, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MAXIMUM DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36.82	36.74	36.80	36.81	36.81	36.63	36.65	36.58	36.54	36.46	36.72	36.64
2	36.77	36.67	36.80	36.66	36.77	36.65	36.55	36.56	36.58	36.48	36.67	36.75
3	36.75	36.82	36.83	36.76	36.89	36.69	36.64	36.49	36.56	36.38	36.73	36.75
4	36.77	36.83	36.88	36.76	36.89	36.73	36.64	36.43	36.55	36.40	36.72	36.72
5	36.89	36.80	36.85	36.83	36.85	36.71	36.51	36.50	36.48	36.46	36.68	36.72
6	36.88	36.81	36.76	36.81	36.80	36.68	36.49	36.47	36.48	36.50	36.66	36.74
7	36.87	36.80	36.76	36.76	36.75	36.66	36.52	36.35	36.29	36.50	36.59	36.72
8	36.83	36.69	36.72	36.81	36.75	36.67	36.53	36.42	36.35	36.51	36.59	36.72
9	36.80	36.76	36.75	36.85	36.68	36.71	36.44	36.58	36.44	36.55	36.66	36.73
10	36.82	36.84	36.78	36.85	36.74	36.75	36.47	36.62	36.46	36.59	36.67	36.76
11	36.84	36.84	36.72	36.71	36.74	36.76	36.49	36.60	36.43	36.64	36.64	36.59
12	36.84	36.85	36.75	36.78	36.65	36.81	36.53	36.57	36.45	36.56	36.72	36.61
13	36.78	36.87	36.80	36.79	36.70	36.75	36.50	36.55	36.56	36.63	36.67	36.69
14	36.79	36.84	36.80	36.74	36.71	36.62	36.51	36.51	36.60	36.66	36.63	36.71
15	36.91	36.82	36.68	36.67	36.74	36.52	36.51	36.55	36.55	36.59	36.66	36.67
16	36.92	36.76	36.74	36.76	36.82	36.81	36.49	36.56	36.51	36.56	36.64	36.72
17	36.88	36.78	36.71	36.74	36.82	36.81	36.51	36.56	36.55	36.65	36.64	36.72
18	36.88	36.81	36.71	36.77	36.75	36.63	36.42	36.60	36.53	36.66	36.68	36.71
19	36.77	36.80	36.78	36.76	36.62	36.75	36.57	36.60	36.48	36.71	36.71	36.55
20	36.79	36.79	36.76	36.72	36.55	36.75	36.64	36.57	36.47	36.63	36.72	36.58
21	36.76	36.81	36.73	36.77	36.62	36.70	36.64	36.52	36.45	36.57	36.66	36.59
22	36.91	36.75	36.75	36.76	36.68	36.70	36.47	36.49	36.38	36.58	36.60	36.65
23	36.95	36.80	36.93	36.84	36.69	36.63	36.37	36.58	36.40	36.57	36.63	36.68
24	36.92	36.85	36.84	36.84	36.67	36.60	36.51	36.65	36.48	36.57	36.61	36.62
25	36.87	36.86	36.84	36.78	36.70	36.63	36.58	36.66	36.52	36.60	36.68	36.61
26	36.87	36.87	36.79	36.78	36.70	36.62	36.53	36.60	36.49	36.60	36.72	36.70
27	36.83	36.87	36.80	36.73	36.70	36.54	36.55	36.60	36.44	36.60	36.78	36.66
28	36.84	36.75	36.81	36.86	36.66	36.57	36.59	36.62	36.45	36.66	36.68	36.74
29	36.79	36.79	36.77	36.86	---	36.58	36.57	36.60	36.47	36.63	36.69	36.73
30	36.71	36.78	36.88	36.81	---	36.61	36.55	36.65	36.51	36.62	36.76	36.59
31	36.71	---	36.91	36.83	---	36.66	---	36.65	---	36.67	36.76	---
MAX	36.95	36.87	36.93	36.86	36.89	36.81	36.65	36.66	36.60	36.71	36.78	36.76

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.



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