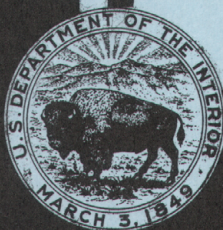
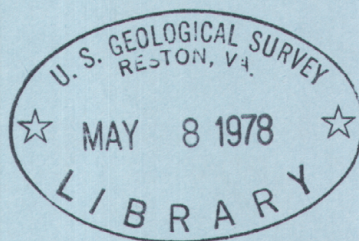


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SOUTH DAKOTA  
1977

# Water Resources Data for South Dakota Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-77-1

Prepared in cooperation with the State of South Dakota and  
with other agencies



# CALENDAR FOR WATER YEAR 1977

1976

## OCTOBER

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

## NOVEMBER

S	M	T	W	T	F	S
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## DECEMBER

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1977

## JANUARY

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30	31					

## FEBRUARY

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27	28					

## MARCH

S	M	T	W	T	F	S
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## APRIL

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## MAY

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## JUNE

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## JULY

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24	25	26	27	28	29	30
31						

## AUGUST

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
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21	22	23	24	25	26	27
28	29	30	31			

## SEPTEMBER

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



# **Water Resources Data for South Dakota Water Year 1977**



**U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-77-1**

**Prepared in cooperation with the State of South Dakota and  
with other agencies**



UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

W. A. Radlinski, Acting Director

For information on the water program in South Dakota write to  
District Chief, Water Resources Division  
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Huron, South Dakota 57350



#### PREFACE

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 J. E. Powell, District Chief, and Alfred Clebsch, Jr., Regional Hydrologist, Central Region. It was done in cooperation with the State of South Dakota and with other agencies.

This report is one of a series issued by State. General direction for the series is by J. S. Cragwall, Jr., Chief Hydrologist, U.S. Geological Survey, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management.



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## WATER RESOURCES DATA FOR SOUTH DAKOTA, 1977

### INTRODUCTION

Water resources data for the 1977 water year for South Dakota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This report contains discharge records for 97 gaging stations; stage and contents for 10 lakes and reservoirs; water quality for 26 gaging stations, and 148 wells; and water levels for 16 observation wells. Also included are 100 crest-stage partial-record stations. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in South Dakota.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records. Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published as an official Survey report on a State-boundary basis. These official Survey reports carry 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 report is identified as "U.S. Geological Survey Water-Data Report SD-77-1." Water-Data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

### COOPERATION

The U.S. Geological Survey and organizations of the State of South Dakota have had cooperative agreements for the systematic collection of surface-water records since 1914, for ground-water levels since 1935, and for water-quality records since 1947. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Department of Natural Resource Development, Vern W. Butler, secretary.

Department of Transportation, H. J. Decker, secretary.

East Dakota Conservancy Sub-district, J. L. Siegel, manager-engineer.

Black Hills Conservancy Sub-district, Ed Glassgow, manager-treasurer.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 24 gaging, 10 stage, and one water-quality station; the Bureau of Reclamation, U.S. Department of Interior, for 4 gaging stations; the Fish and Wildlife Service, U.S. Department of Interior, for one gaging station; and the Environmental Protection Agency, for 2 water-quality stations. The Missouri River basin development program provided funds for 18 gaging and 20 water-quality stations.

Organizations that supplied data are acknowledged in station descriptions.

### ACKNOWLEDGMENT

South Dakota district personnel who contributed significantly to the collection and preparation of the data in this report were: O. J. Larimer, chief, Hydrologic Surveillance and Analysis Section, N. F. Leibbrand, J. H. Eade, H. L. Dixon, L. D. Becker, D. W. Heyd, and E. M. Decker.



## HYDROLOGIC CONDITIONS

Combined storage in the four Missouri River main-stem reservoirs (Lakes Oahe, Sharpe, Francis Case, and Lewis and Clark) was 21,805,000 acre-feet at the end of the water year, a decrease of 2,315,000 acre-feet from the corresponding date a year ago.

Combined storage in the other major reservoirs (Shadehill, Angostura, Deerfield, Pactola, and Belle Fourche) was 213,911 acre-feet, a decrease of 4,290 acre-feet from the same date a year ago.

The drought continued throughout the State until after the spring runoff. With the arrival of spring precipitation began to increase both in frequency and intensity. By late fall the eastern and southern portions of the State had received 5 to 8 inches of rainfall above normal while the rest of the State received 2 to 5 inches above normal.

A comparison of monthly and yearly mean discharge with the median discharge for the 30-year base period (1931-60) for two key gaging stations is shown in figure 2.

## 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 equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is the primary energy donor in cellular life process. 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, 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 which produce colonies within 24 hours when incubated at 35°C + 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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

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

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

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter ( $\text{g/m}^3$ ), and periphyton and benthic organisms in grams per square meter ( $\text{g/m}^2$ ).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

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

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

Bottom material: See Bed material.

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

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.

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

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common 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 feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

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

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

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

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

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (coloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$



Where  $n_i$  is the number of individuals per taxon,  $n$  is the total number of individuals, and  $s$  is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

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 river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution 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 attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ( $\text{CaCO}_3$ ).

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 8-digit number.

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) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram ( $\mu\text{g/g}$ ) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

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

Milligrams per liter ( $\text{mg/L}$ ,  $\text{mg/L}$ ) 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  $\text{mg/L}$ , and is based on the mass of sediment per liter of water-sediment mixture.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters ( $\text{m}^2$ ), acres, or hectares. 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 milliliters ( $\text{mL}$ ) or liters ( $\text{L}$ ). 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 numbers are unique five-digit code numbers assigned to each parameter placed into storage. These codes are assigned by the Environmental Protection Agency and are also used to identify data exchanged among agencies.

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 ( $\text{mm}$ ), of suspended sediment or bed material 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 recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.	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 material 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 plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

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

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/mL of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells/mL of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

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  $\text{mg C}/(\text{m}^3 \cdot \text{time})$  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  $\text{mg O}_2/(\text{m}^3 \cdot \text{time})$  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.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

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

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).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge time mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

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 weight or volume, that passes a section during a given time.

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

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks 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 micromhos 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 micromhos). 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 lived.

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

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 multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

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

Surficial bed material is that 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 the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the



organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

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

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 in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

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.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

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

#### DOWNSTREAM ORDER AND STATION NUMBER

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 on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indentation in a list of stations in the front of the 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.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. 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 8-digit number for each station such as 06442500, which appears just to the left of the station name, includes the 2-digit part number "06" plus the 6-digit downstream order number "442500".

#### NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1 following page.

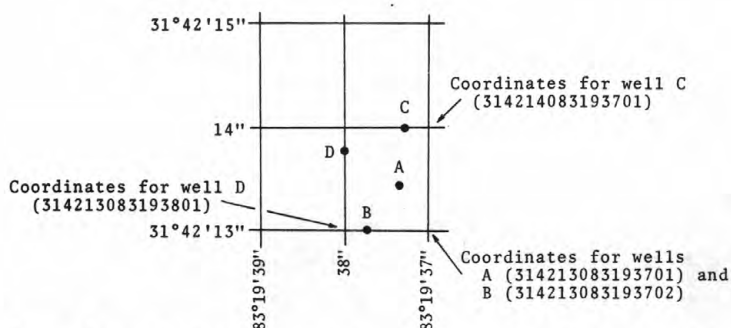


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude)

#### SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

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

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

#### EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

##### Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. 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 computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

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

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations 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 revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.



Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following EXTREMES, for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

#### Accuracy of field data and computed results

The accuracy of streamflow data 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 observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

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

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

#### Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

#### Records of discharge collected by agencies other than the Geological Survey

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va. 22092, maintains an index of all discharge measurement sites in the State. Information on records available at specific sites can be obtained upon request.

### EXPLANATION OF WATER-QUALITY RECORDS.

#### Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

#### Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

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.

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

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

#### Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures

are taken at about the same time each day. Large streams have a small diel 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.

#### 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 loads 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 in predicting long-term sediment-discharge characteristics of the stream.

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

### EXPLANATION OF GROUND-WATER LEVEL RECORDS

#### Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 1.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in 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 only to a tenth of a foot or a larger unit.



## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-one manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing 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) is on 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, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

- 1-D1. *Water temperature-influential factors, field measurement, and data presentation*, by H. H. Stevens Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 p. \$1.60.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mahey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages. 1.90.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages. \$1.75.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages. \$0.25.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages. \$0.20.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. \$0.40.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages. \$1.00.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. \$0.30.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages. \$0.20.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. \$0.45.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. \$1.25.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. \$0.40.
- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. \$0.35. Not currently available.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages. \$0.70.
- 3-B2. *Introduction to ground-water hydraulics—a programed text for self-instruction*, by D. S. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. \$0.65.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages. \$0.70.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. \$1.15.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages. \$0.30.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages. \$0.65.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. 0.75.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. \$0.75.
- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages. 0.65.
- 5-A1. *Methods for collection and analysis of water samples for dissolved minerals and gases*, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 pages. \$2.40.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages. \$0.80.
- 5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. \$0.90.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by K. V. Slack, R. C. Averett, P. E. Greason, and R. G. Lipscomb: USGS--TWRI Book 5, Chapter A4. 1973. 165 pages. \$1.95.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. \$0.65.
- 7-C1. *Finite-difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages. \$0.70.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages. \$0.40.

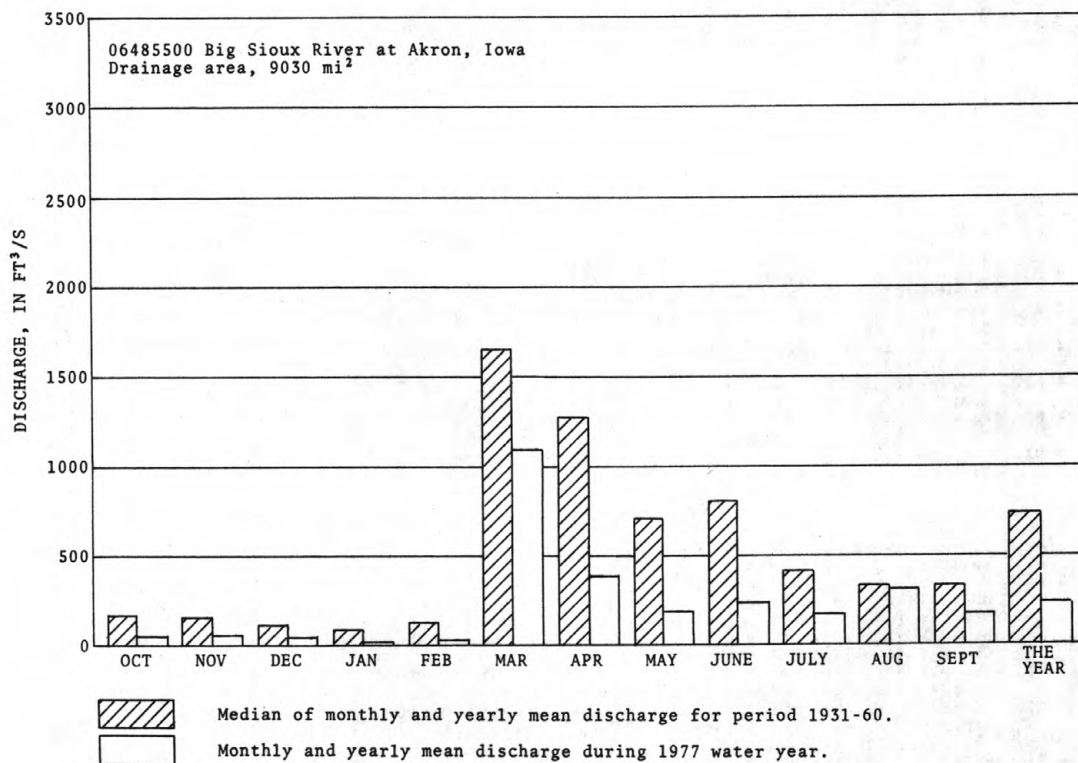
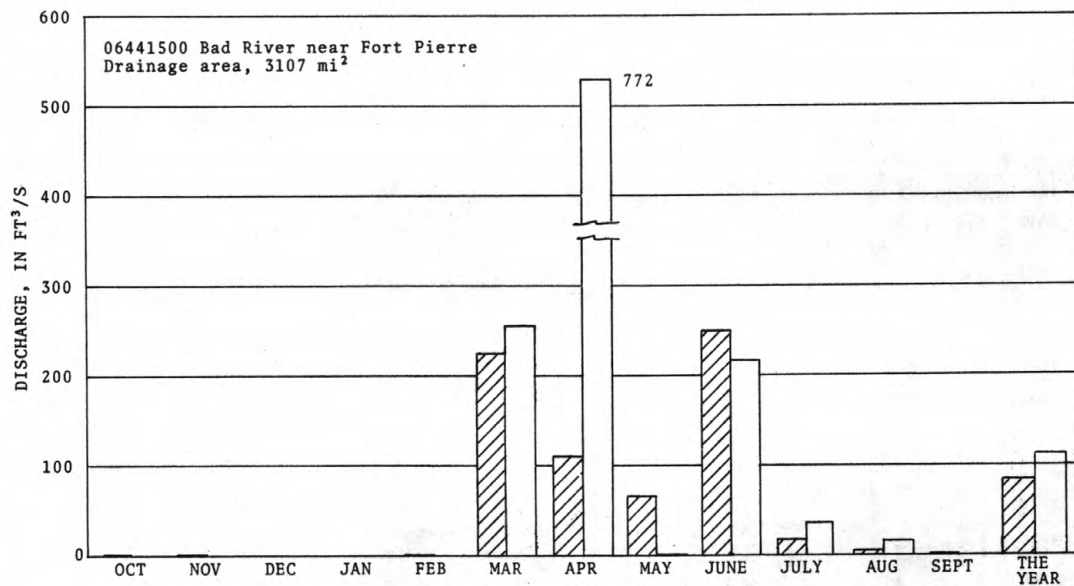


FIGURE 2.--Discharge during 1977 water year compared with median discharge for period 1931-60 for two representative gaging stations.

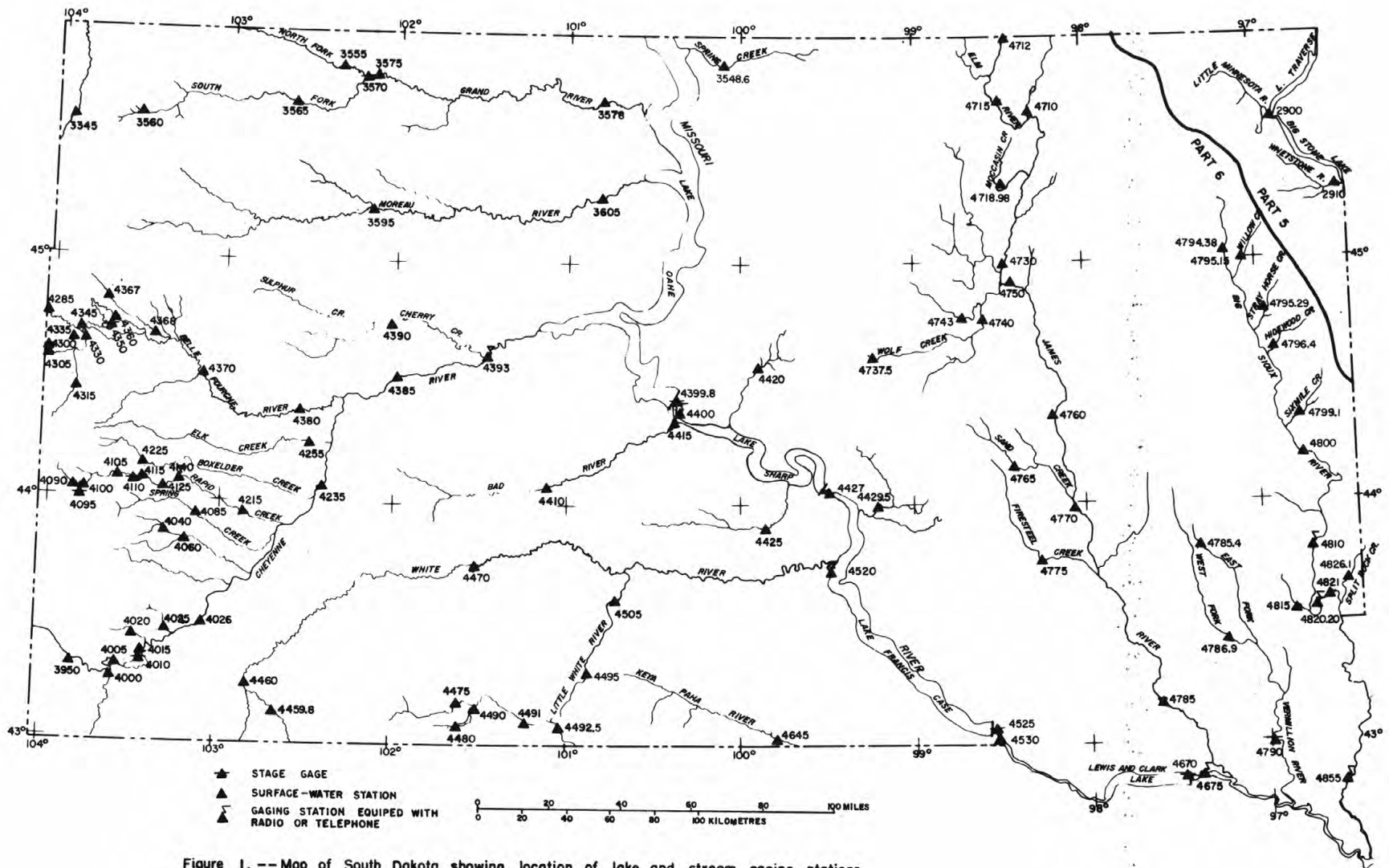


Figure 1. -- Map of South Dakota showing location of lake and stream gaging stations

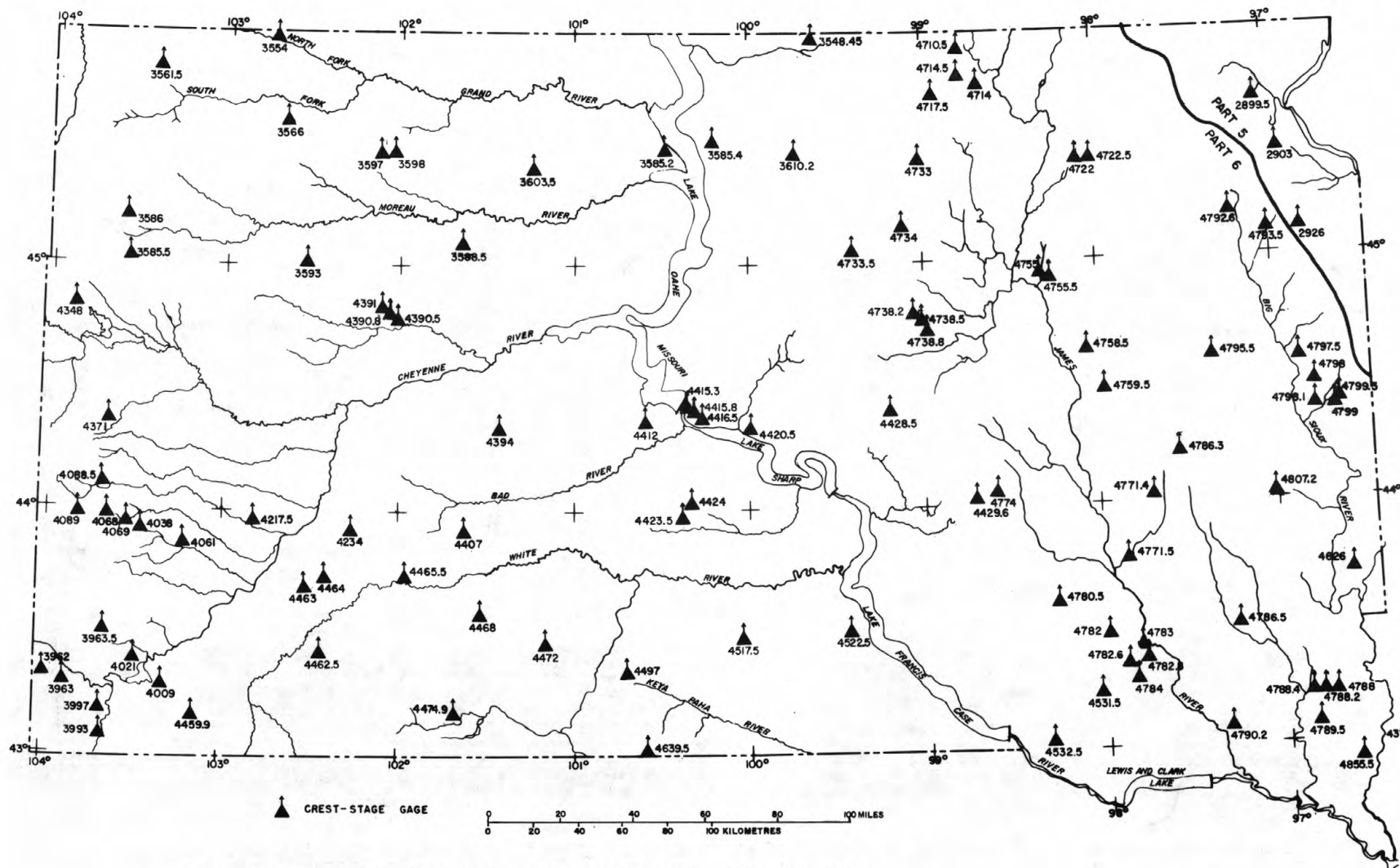


Figure 2.-- Map of South Dakota showing location of crest-stage partial-record stations



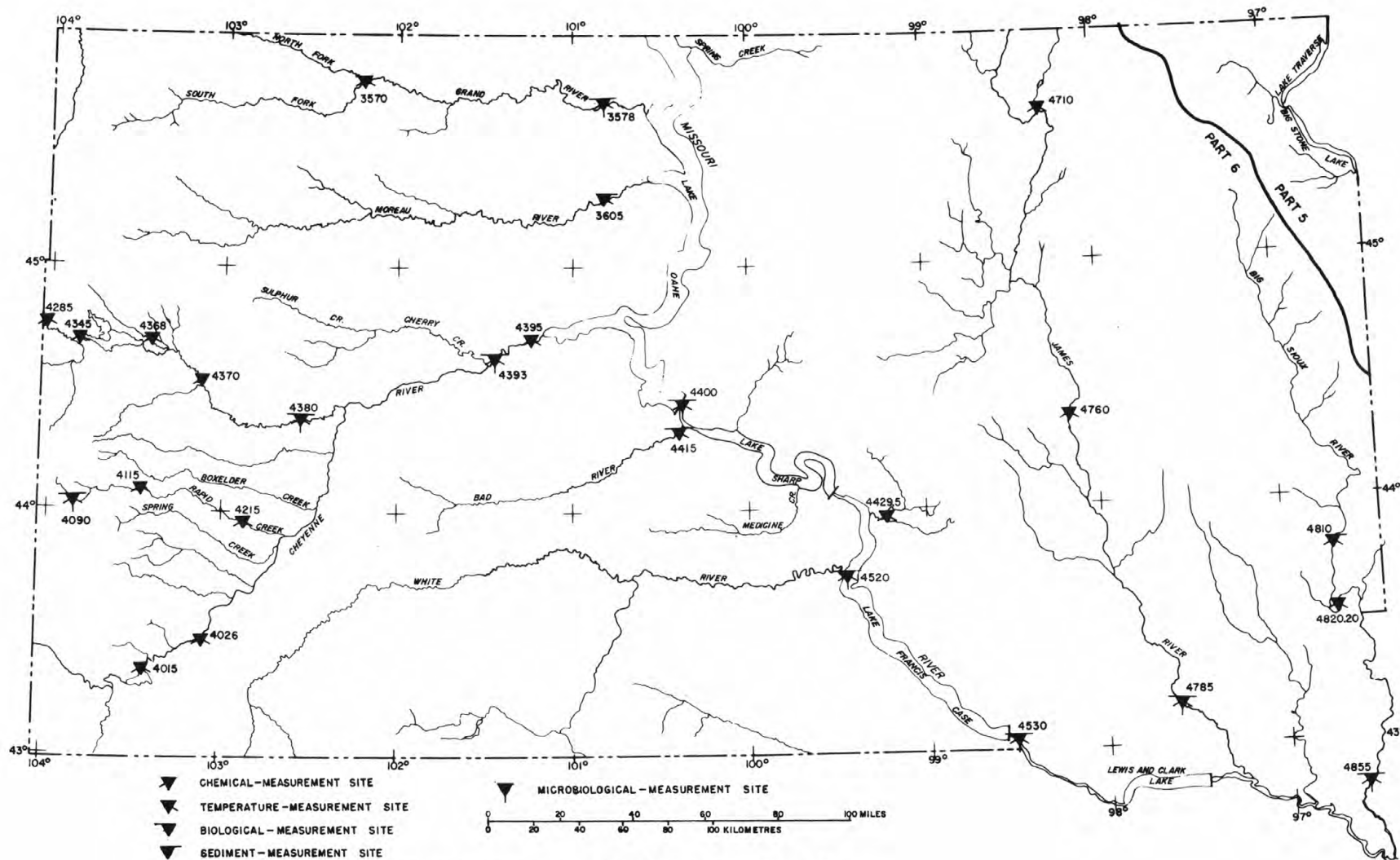


Figure 3.-- Map of South Dakota showing location of surface-water quality stations

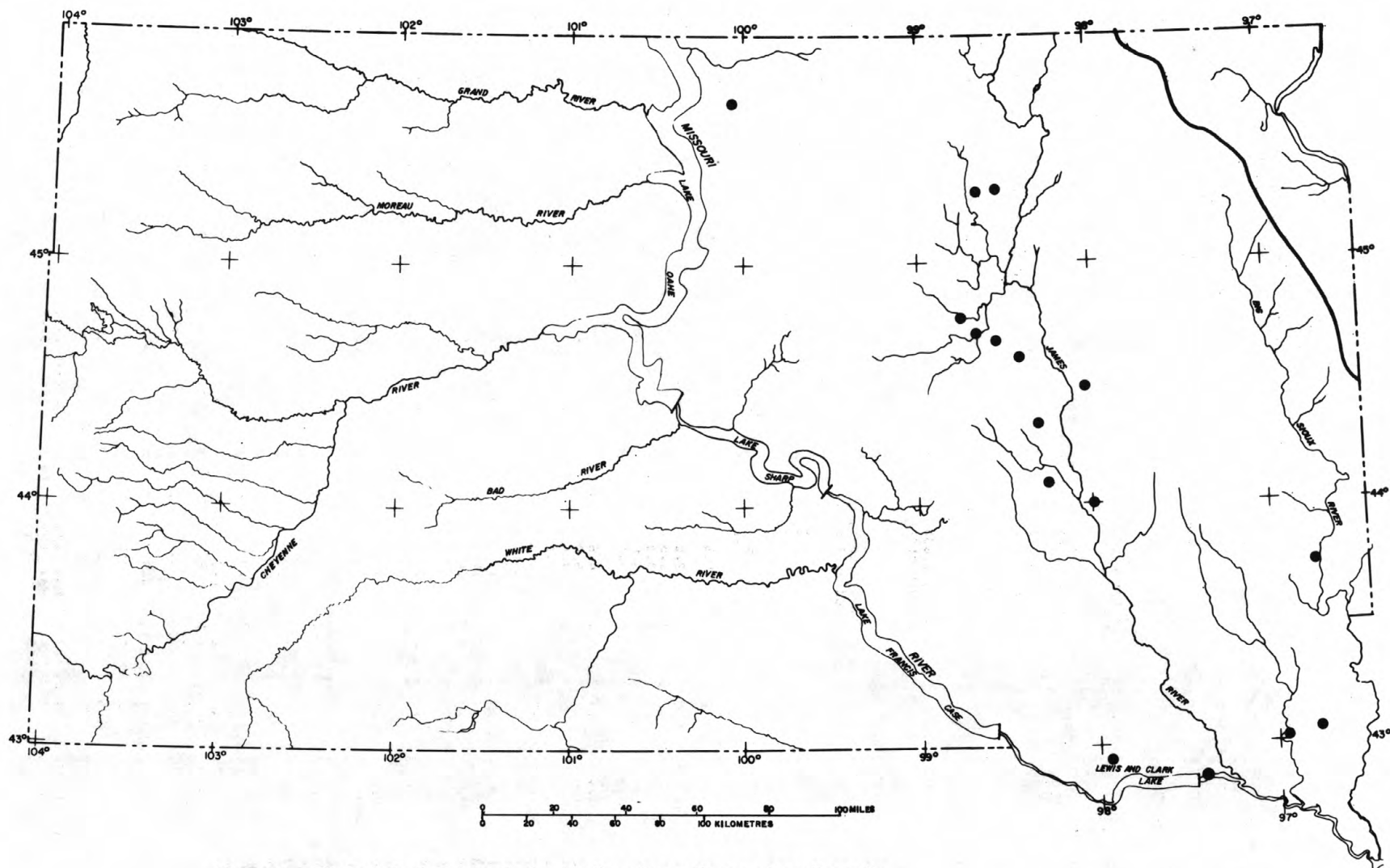


Figure 4. --Map of South Dakota showing location of ground-water observation wells

## GAGING STATION RECORDS

19

## LITTLE MISSOURI RIVER BASIN

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, SD

LOCATION.--Lat 45°32'49", long 103°58'23", in SW¼ sec.2, T.18 N., R.1 E., Harding County, Hydrologic Unit 10110201, on left bank 15 ft (5 m) upstream from bridge on State Highway 20 at east edge of Camp Crook.

DRAINAGE AREA.--1,970 mi<sup>2</sup> (5,100 km<sup>2</sup>), 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 (REVISED).--Water-stage recorder. Datum of gage is 3,108.98 ft (947.617 m) above mean sea level. Sept. 2, 1903, to Nov. 30, 1906, nonrecording gage at site 0.5 mi (0.8 km) upstream at different datum. May 1956 to Oct. 8, 1957, nonrecording gage at site 15 ft (5 m) downstream, and Oct. 9, 1957, to Sept. 30, 1976, water-stage recorder at present site both at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 132 ft<sup>3</sup>/s (3,738 m<sup>3</sup>/s), 95,630 acre-ft/yr (118 hm<sup>3</sup>/yr); median of yearly mean discharges, 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s), 72,400 acre-ft/yr (89 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,460 ft<sup>3</sup>/s (240 m<sup>3</sup>/s) May 7, 1975, gage height, 15.98 ft (4.871 m), present datum; maximum gage height, 16.43 ft (5.008 m), present datum, Mar. 20, 1975 (backwater from ice); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1952 reached a stage of about 18 ft (5.5 m), present datum, from local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,830 ft<sup>3</sup>/s (51.8 m<sup>3</sup>/s) at 0630 hours Apr. 10, gage height, 8.69 ft (2.649 m), no other peak above base of 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s); no flow Aug. 7, 9-18, 20, 21.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Nov. 10-13, Nov. 20 to Mar. 7, Mar. 28 to Apr. 3)

2.0	0	2.7	25	4.0	212
2.2	3.8	3.0	53	5.0	474
2.4	9.5	3.5	120	9.0	1,950

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	4.5	6.0	6.2	2.0	20	15	42	7.9	42	.09	2.0
2	2.6	4.0	6.2	6.0	2.5	20	15	40	8.2	20	.73	7.6
3	2.6	4.0	6.5	6.0	3.0	20	20	49	6.0	12	.06	3.4
4	2.6	4.3	6.2	6.3	3.5	20	40	46	8.5	6.6	.55	1.4
5	2.6	4.3	6.0	6.3	4.0	25	57	40	11	6.7	.50	1.1
6	2.8	4.6	5.5	6.5	4.5	30	77	36	9.5	23	.11	.93
7	2.8	4.8	6.0	7.0	5.0	35	81	34	6.0	18	.00	.66
8	3.0	5.0	6.0	6.0	7.0	40	397	33	6.7	27	.10	.76
9	3.0	5.0	6.0	4.0	9.0	35	1390	29	7.4	10	.00	1.0
10	7.6	5.0	6.0	3.5	11	30	1680	21	16	6.9	.00	.99
11	7.3	5.0	6.2	3.5	12	25	1400	17	35	5.0	.00	.85
12	7.6	5.0	6.5	3.5	14	20	1480	14	18	1.9	.00	.85
13	7.3	5.5	7.0	3.5	16	20	1380	15	20	1.1	.00	.85
14	6.9	6.6	7.5	4.0	18	20	1010	16	40	.88	.00	1.0
15	6.3	7.3	8.0	2.5	20	15	683	14	80	.95	.00	.85
16	6.9	7.3	8.5	2.0	22	15	482	16	40	1.6	.00	.85
17	8.2	7.3	8.5	2.5	25	15	383	16	30	1.8	.00	1.0
18	7.6	7.3	8.5	2.0	25	15	320	15	25	81	.00	1.2
19	4.6	8.2	8.0	2.5	25	15	238	16	20	67	.50	1.4
20	4.0	8.0	7.5	3.0	25	15	199	15	15	35	.00	1.4
21	4.0	8.0	7.5	3.0	30	15	151	14	11	17	.00	2.0
22	4.0	7.5	7.5	3.0	35	20	123	14	11	11	3.2	6.9
23	4.6	8.0	7.5	3.0	25	20	122	17	9.0	6.5	.43	6.9
24	5.3	8.5	7.5	3.0	20	20	107	21	7.0	4.1	.50	20
25	5.3	8.5	7.5	3.0	20	20	98	21	6.5	4.3	.21	52
26	5.3	7.5	8.0	3.0	20	20	85	19	6.0	1.1	.67	330
27	5.8	6.0	8.0	2.5	20	20	70	19	5.5	3.9	1.4	88
28	6.0	5.5	7.5	2.0	20	15	62	17	5.5	2.2	1.2	42
29	6.0	5.5	7.5	2.0	---	7.0	54	13	5.0	1.9	.67	22
30	5.5	6.0	7.0	2.0	---	5.0	50	9.5	24	.67	1.6	18
31	5.0	---	6.5	2.0	---	10	---	9.4	---	.52	1.0	---
TOTAL	155.5	184.0	218.6	115.3	443.5	622.0	12269	697.9	500.7	421.62	13.52	617.89
MEAN	5.02	6.13	7.05	3.72	15.8	20.1	409	22.5	16.7	13.6	.44	20.6
MAX	8.2	8.5	8.5	7.0	35	40	1680	49	80	81	3.2	330
MIN	2.4	4.0	5.5	2.0	2.0	5.0	15	9.4	5.0	.52	.00	.66
AC-FT	308	365	434	229	880	1230	24340	1380	993	836	27	1230

CAL YR 1976 TOTAL 39251.00 MEAN 107 MAX 4330 MIN 2.4 AC-FT 77850  
WTR YR 1977 TOTAL 16259.53 MEAN 44.5 MAX 1680 MIN .0 AC-FT 32250

## SPRING CREEK BASIN

06354860 SPRING CREEK NEAR HERREID, SD

LOCATION.--Lat 45°58'52", long 100°06'28", in SW¼ sec.13, T.127 N., R.77 W., Campbell County, Hydrologic Unit 10130102, on left bank 0.5 mi (0.8 km) upstream from county highway bridge, 2.4 mi (3.9 km) southwest of Herreid and 13.2 mi (21.2 km) upstream from high-water line of Lake Oahe.

DRAINAGE AREA.--440 mi<sup>2</sup> (1,140 km<sup>2</sup>), approximately, of which about 220 mi<sup>2</sup> (570 km<sup>2</sup>) is probably noncontributing.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,653.80 ft (504.078 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--15 years, 8.45 ft<sup>3</sup>/s (0.239 m<sup>3</sup>/s), 6,120 acre-ft/yr (7.55 hm<sup>3</sup>/yr); median of yearly mean discharges, 5.1 ft<sup>3</sup>/s (0.14 m<sup>3</sup>/s), 3,700 acre-ft/yr (4.6 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,160 ft<sup>3</sup>/s (32.9 m<sup>3</sup>/s) Mar. 17, 1966, gage height, 11.60 ft (3.536 m); no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--No flow during year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1976 TOTAL 51.72 MEAN .14 MAX 2.2 MIN .00 AC-FT 103  
WTR YR 1977 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 AC-FT 0



## 06355500 NORTH FORK GRAND RIVER NEAR WHITE BUTTE, SD

LOCATION.--Lat 45°47'39", long 102°21'59", in NE¼SE¼ sec.10, T.21 N., R.14 E., Perkins County, Hydrologic Unit 10130301, on right bank 1,400 ft (430 m) upstream from highway bridge and 9.8 mi (15.8 km) south of White Butte.

DRAINAGE AREA.--1,190 mi<sup>2</sup> (3,080 km<sup>2</sup>), 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. Altitude of gage is 2,275 ft (693 m), by barometer. 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 1,300 ft (400 m) downstream; Sept. 11, 1975, to Mar. 22, 1976, nonrecording gage at present site, and Mar. 23 to July 28, 1976, nonrecording gage at site 1,400 ft (430 m) downstream, all at present datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Bowman-Haley Reservoir, capacity, 93,000 acre-ft (115 hm<sup>3</sup>), 71 mi (114 km) upstream, beginning August 1966. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 54.0 ft<sup>3</sup>/s (1.529 m<sup>3</sup>/s), 39,120 acre-ft/yr (48.2 hm<sup>3</sup>/yr); median of yearly mean discharges, 32 ft<sup>3</sup>/s (0.91 m<sup>3</sup>/s), 23,200 acre-ft/yr (29 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,900 ft<sup>3</sup>/s (875 m<sup>3</sup>/s) Apr. 16, 1950, gage height, 20.0 ft (6.10 m), from floodmarks, from rating curve extended above 19,000 ft<sup>3</sup>/s (538 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,810 ft<sup>3</sup>/s (51.3 m<sup>3</sup>/s) June 12, gage height, 6.78 ft (2.066 m); no flow for many days.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Nov. 30 to Mar. 29)

1.76	0	2.1	1.5	2.5	16	4.0	277
1.8	.04	2.2	3.5	2.7	32	4.5	440
1.9	.14	2.3	6.0	3.0	68	5.0	650
2.0	.50	2.4	10	3.5	155	6.0	1,170

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.1	.50	.30	.30	.45	17	.21	10	9.7	.00	1.0
2	.00	2.6	.60	.30	.30	.45	17	.18	10	9.6	.00	1.1
3	.00	2.2	.70	.40	.40	.40	17	.18	6.7	8.8	.00	1.5
4	.00	2.2	.60	.50	.40	.50	17	.18	5.0	21	.00	2.5
5	.00	3.3	.60	.50	.40	1.0	17	.18	5.7	31	.00	1.8
6	.00	3.3	.60	.60	.40	5.0	20	.21	4.0	26	.00	1.1
7	.00	3.2	.70	.60	.45	8.0	23	.24	1.3	19	.00	1.9
8	.00	3.2	1.0	.60	.46	8.5	23	.28	.64	13	.00	1.4
9	.00	3.2	1.4	.60	.45	8.0	22	.28	.46	9.1	.00	4.0
10	.00	3.2	1.8	.70	.50	7.5	23	.32	1.5	8.3	.00	6.2
11	.00	3.2	2.0	.70	.50	7.5	23	.32	1.4	6.1	.00	6.4
12	.00	2.8	2.4	.82	.45	8.0	23	.40	1090	3.7	.00	4.4
13	.00	2.5	2.6	.80	.45	8.0	23	.40	556	.88	.00	2.8
14	.00	2.2	2.7	.80	.40	8.5	22	.39	288	.31	.00	2.7
15	.00	2.1	2.7	.70	.40	8.5	22	.32	297	.21	.00	3.3
16	.00	2.1	2.8	.70	.45	9.0	22	.40	179	.85	.00	3.0
17	.00	1.0	2.6	.70	.45	9.0	23	.40	202	.60	.00	2.8
18	.00	.19	2.0	.70	.45	9.0	22	.40	148	.49	.00	4.9
19	.00	.18	1.0	.70	.50	8.5	22	.45	86	.11	.00	4.3
20	.00	.18	.40	.80	.60	8.5	22	.45	59	.07	.00	2.8
21	.00	.18	.40	.80	.70	9.0	22	.56	48	.05	2.2	2.3
22	.00	.18	.50	.90	.70	9.5	22	.56	40	.04	1.6	4.8
23	.00	.18	.50	.90	.60	12	22	.63	31	.03	3.6	8.6
24	.00	.18	.50	.80	.50	16	22	.63	30	.01	4.0	9.7
25	.00	.18	.50	.70	.50	20	22	.71	28	.00	3.6	9.5
26	.00	.18	.50	.60	.50	20	22	.79	24	.00	1.5	14
27	.01	.18	.40	.40	.50	22	22	.88	21	.02	1.9	14
28	.02	.18	.40	.20	.45	24	21	.88	19	.01	.30	11
29	.02	.18	.30	.20	---	22	14	.98	15	.00	.13	11
30	.64	.20	.30	.30	---	21	3.5	1.1	9.8	.00	.11	10
31	1.6	---	.30	.30	---	22	---	1.2	---	.00	.32	---
TOTAL	2.29	47.77	34.30	18.62	13.16	321.80	612.5	15.11	3217.50	168.98	19.26	154.8
MEAN	.074	1.59	1.11	.60	.47	10.4	20.4	.49	107	5.45	.62	5.16
MAX	1.6	3.3	2.8	.90	.70	24	23	1.2	1090	31	4.0	14
MIN	.00	.18	.30	.20	.30	.40	3.5	.18	.46	.00	.00	1.0
AC-FT	4.5	95	68	37	26	638	1210	30	6380	335	38	307

CAL YR 1976 TOTAL 3929.39 MEAN 10.7 MAX 200 MIN .00 AC-FT 7790  
WTR YR 1977 TOTAL 4626.09 MEAN 12.7 MAX 1090 MIN .00 AC-FT 9180

## GRAND RIVER BASIN

06356000 SOUTH FORK GRAND RIVER AT BUFFALO, SD

LOCATION.--Lat 45°34'34", long 103°32'38", in SW¼ sec.29, T.19 N., R.5 E., Harding County, Hydrologic Unit 10130302, on right bank at downstream side of bridge on U.S. Highway 85, 0.3 mi (0.5 km) south of Buffalo.

DRAINAGE AREA.--148 mi<sup>2</sup> (383 km<sup>2</sup>).

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

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

GAGE.--Water-stage recorder. Datum of gage is 2,839.60 ft (865.510 m) above mean sea level. Prior to May 5, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 8.14 ft<sup>3</sup>/s (0.230 m<sup>3</sup>/s), 5,900 acre-ft/yr (7.27 hm<sup>3</sup>/yr); median of yearly mean discharges, 6.8 ft<sup>3</sup>/s (0.19 m<sup>3</sup>/s), 4,900 acre-ft/yr (6.0 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,780 ft<sup>3</sup>/s (78.7 m<sup>3</sup>/s) June 14, 1963, gage height, 9.01 ft (2.746 m), from rating curve extended above 550 ft<sup>3</sup>/s (15.6 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times in 1956-58, 1960, 1962, 1965, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1908 reached a stage of 15.4 ft (4.69 m), from information by South Dakota Department of Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft<sup>3</sup>/s (5.66 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
June 11	0315	*1110 31.4	*7.27 2.216	July 6	0315	310 8.78	5.41 1.649
June 14	0300	482 13.7	6.02 1.835	July 6	1500	298 8.44	5.36 1.634
June 15	0100	715 20.2	6.56 1.999				

Minimum daily discharge, 0.72 ft<sup>3</sup>/s (0.020 m<sup>3</sup>/s) Aug. 13, 14, 25, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.4	2.1	1.7	1.3	3.5	1.7	6.4	2.1	2.2	1.7	19
2	2.2	2.2	2.1	1.6	1.4	4.1	2.0	3.2	1.9	2.3	1.3	29
3	2.6	2.2	2.1	1.6	1.8	4.0	2.5	3.2	1.7	2.2	1.2	6.4
4	2.6	2.2	2.2	1.5	1.8	4.5	2.8	2.4	1.3	1.8	1.2	2.2
5	2.6	2.4	2.3	1.5	1.8	4.5	3.0	2.2	1.3	4.1	1.2	1.2
6	2.3	2.5	2.3	1.6	1.8	4.5	10	2.6	1.2	140	1.5	.98
7	2.2	2.2	2.0	1.8	2.1	4.5	20	2.4	.98	23	1.7	.80
8	2.2	2.3	2.3	1.7	2.3	5.0	30	2.2	.98	5.4	1.7	.98
9	2.1	2.4	2.1	1.6	2.5	6.0	40	2.2	8.8	3.7	1.7	1.3
10	2.1	2.2	1.9	1.6	2.5	7.0	20	1.9	198	2.9	1.5	1.4
11	2.1	2.2	2.0	1.6	2.4	7.0	11	1.7	398	2.5	1.2	1.7
12	2.0	2.0	2.1	1.6	2.3	7.0	8.6	1.9	39	2.0	.97	2.1
13	1.9	2.2	2.5	1.6	2.4	8.0	6.4	1.7	67	1.6	.72	2.1
14	2.1	2.3	2.9	1.6	2.1	9.4	6.4	1.5	194	1.2	.72	1.8
15	1.9	2.6	2.7	1.5	2.0	8.3	5.9	1.7	184	.83	11	1.5
16	1.9	2.6	2.6	1.6	2.5	7.2	4.6	1.7	28	.80	5.0	1.3
17	2.1	2.6	2.9	1.7	2.5	7.2	5.3	2.1	18	.97	2.2	1.3
18	2.2	2.4	2.2	1.5	2.5	5.0	4.2	2.1	6.1	.94	1.4	1.7
19	2.3	2.4	1.2	1.7	2.7	4.0	4.2	2.6	4.0	.80	1.0	1.7
20	2.4	2.4	1.9	1.7	3.0	8.8	4.2	2.6	3.6	.97	.97	2.2
21	2.4	2.3	1.8	1.7	3.3	3.4	4.2	2.4	5.0	.90	.80	8.8
22	2.4	2.3	1.7	1.8	3.5	4.0	4.2	2.4	3.6	.80	.80	8.6
23	2.4	2.3	1.7	1.8	3.5	3.0	4.2	2.1	2.4	.80	.80	12
24	2.4	2.3	1.7	1.8	3.3	4.0	4.2	1.7	2.1	.97	.80	31
25	2.7	2.1	1.7	1.8	3.2	3.2	3.6	1.5	1.9	.80	.72	13
26	2.6	2.0	1.8	1.8	3.2	3.0	3.6	1.9	1.8	6.2	.72	4.4
27	2.6	1.5	2.0	1.6	3.2	3.0	3.6	1.9	1.5	13	3.0	3.4
28	2.6	1.2	2.1	1.3	3.2	3.0	3.2	2.1	1.5	11	2.1	3.6
29	2.6	1.5	2.0	1.2	---	2.5	3.2	1.9	1.9	3.5	1.2	3.6
30	2.4	2.0	1.9	1.3	---	2.0	3.2	2.1	2.1	2.0	.98	34
31	2.4	---	1.8	1.3	---	1.5	---	2.6	---	1.6	3.8	---
TOTAL	71.4	66.2	64.6	49.7	70.1	152.1	230.0	70.9	1183.76	241.78	55.60	203.06
MEAN	2.30	2.21	2.08	1.60	2.50	4.91	7.67	2.29	39.5	7.80	1.79	6.77
MAX	2.7	2.6	2.9	1.8	3.5	9.4	40	6.4	398	140	11	34
MIN	1.9	1.2	1.2	1.2	1.3	1.5	1.7	1.5	.98	.80	.72	.80
AC-FT	142	131	128	99	139	302	456	141	2350	480	110	403
CAL YR 1976 TOTAL	2988.00			MEAN 8.16	MAX 781	MIN 1.0	AC-FT 5930					
WTR YR 1977 TOTAL	2459.20			MEAN 6.74	MAX 398	MIN .72	AC-FT 4880					

## GRAND RIVER BASIN

23

06356500 SOUTH FORK GRAND RIVER NEAR CASH, SD

LOCATION.--Lat 45°38'56", long 102°38'27", in SW¼SW¼ sec.34, T.20 N., R.12 E., Perkins County, Hydrologic Unit 10130302, on left bank at downstream side of highway bridge, 1.0 mi (1.6 km) upstream from Little Nasty Creek, 4.0 mi (6.4 km) north of Cash, 10 mi (16 km) south of Lodgepole, 12 mi (19 km) northwest of Bison, and 16 mi (26 km) downstream from Big Nasty Creek.

DRAINAGE AREA.--1,350 mi<sup>2</sup> (3,500 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Altitude of gage is 2,416 ft (736 m), by barometer. Prior to Oct. 25, 1946, nonrecording gage, and Oct. 25, 1946, to May 16, 1966, water-stage recorder, at site 500 ft (152 m) upstream. May 17, 1966, to May 2, 1968, nonrecording gage, at present site, all at same datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 54.1 ft<sup>3</sup>/s (1.532 m<sup>3</sup>/s), 39,200 acre-ft/yr (48.3 hm<sup>3</sup>/yr); median of yearly mean discharges, 35 ft<sup>3</sup>/s (0.99 m<sup>3</sup>/s), 25,400 acre-ft/yr (31 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft<sup>3</sup>/s (765 m<sup>3</sup>/s) Apr. 15, 1950, gage height, 15.40 ft (4.694 m), from rating curve extended above 14,000 ft<sup>3</sup>/s (396 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft<sup>3</sup>/s (14.2 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 8	1800	523 14.8	3.38 1.030	June 16	0600	*1030 29.2	*4.32 1.317
June 12	1900	792 22.4	3.89 1.186	July 7	1200	878 24.9	4.05 1.234

Minimum daily discharge, 0.50 ft<sup>3</sup>/s (0.014 m<sup>3</sup>/s) Jan. 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	8.5	4.8	3.2	.60	4.0	20	13	12	8.5	9.7	31
2	11	6.5	5.0	3.2	.60	4.0	11	13	9.2	8.2	7.8	68
3	11	7.0	5.0	3.2	.70	4.0	25	13	8.5	8.2	6.1	107
4	11	6.0	5.0	3.2	.70	4.5	32	13	8.2	9.1	6.5	71
5	11	6.0	5.0	3.3	.70	5.0	29	11	6.5	20	8.9	44
6	11	6.0	4.8	3.4	.80	10	39	11	5.8	169	23	21
7	11	6.0	4.8	3.2	.90	30	93	12	5.3	668	11	13
8	11	5.5	5.0	3.0	.90	45	380	12	4.7	551	10	13
9	11	5.5	5.0	2.8	2.0	40	347	11	5.5	177	10	10
10	10	5.5	5.5	2.8	3.0	38	217	11	12	93	6.5	9.2
11	9.5	5.5	6.0	2.8	3.0	35	158	9.2	131	50	3.9	9.2
12	10	5.2	7.0	2.8	2.8	38	113	9.2	587	24	3.9	8.2
13	10	6.5	8.5	3.0	2.6	40	75	8.9	510	20	3.6	8.2
14	11	7.5	9.2	3.0	2.5	40	57	8.5	194	15	3.4	7.8
15	9.0	7.5	9.0	3.0	2.5	40	43	8.5	662	12	3.9	7.5
16	9.0	8.5	9.5	3.0	3.0	38	37	12	848	11	4.7	7.5
17	9.0	8.5	9.5	3.0	3.0	35	33	11	526	8.9	5.0	7.8
18	8.5	8.0	8.5	3.2	3.5	30	28	10	174	8.2	13	135
19	11	7.0	7.5	3.5	4.0	25	24	13	103	8.2	9.2	38
20	9.5	6.0	7.0	3.5	4.5	21	23	14	65	8.2	7.5	18
21	11	5.5	7.0	3.5	5.0	26	22	15	44	7.5	6.5	15
22	10	5.0	7.0	3.4	4.5	27	21	16	31	6.1	6.5	51
23	9.5	4.9	6.5	3.4	4.5	23	21	13	22	6.1	6.8	169
24	9.0	5.5	6.0	3.2	4.4	24	18	11	18	6.1	4.7	80
25	9.0	5.5	6.0	3.0	4.2	23	17	9.7	14	5.8	4.5	97
26	9.5	5.0	6.0	2.0	4.2	23	16	11	12	5.5	4.7	91
27	8.5	4.8	5.5	1.0	4.2	21	16	10	11	6.8	5.0	70
28	9.5	4.5	4.5	.50	4.2	19	16	12	10	6.8	5.5	42
29	10	4.0	4.0	.50	---	25	16	11	9.2	6.5	7.5	28
30	8.5	4.5	3.5	.60	---	22	15	11	9.2	13	8.5	23
31	8.5	---	3.4	.60	---	22	---	12	---	11	13	---
TOTAL	308.5	181.9	191.0	83.80	77.50	781.5	1962	356.0	4058.1	1958.7	310.9	1300.4
MEAN	9.95	6.06	6.16	2.70	2.77	25.2	65.4	11.5	135	63.2	10.0	43.3
MAX	11	8.5	9.5	3.5	5.0	45	380	16	848	668	89	169
MIN	8.5	4.0	3.4	.50	.60	4.0	11	8.5	4.7	5.5	3.4	7.5
AC-FT	612	361	379	166	154	1550	3890	706	8050	3890	617	2580
CAL YR 1976 TOTAL	16085.40			MEAN 43.9	MAX 2320	MIN 3.4	AC-FT 31910					
WTR YR 1977 TOTAL	11570.30			MEAN 31.7	MAX 848	MIN .50	AC-FT 22950					

## GRAND RIVER BASIN

## 06357000 SHADEHILL RESERVOIR AT SHADEHILL, SD

LOCATION.--Lat 45°45'12", long 102°12'12", in E½ sec.25, T.21 N., R.15 E., Perkins County, Hydrologic Unit 10130302, at dam on Grand River, 1.3 mi (2.1 km) southwest of Shadehill.

DRAINAGE AREA.--3,120 m<sup>2</sup> (8,080 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is at mean 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, 81,443 acre-ft (100 hm<sup>3</sup>) between elevations 2,250.8 ft (686.04 m), invert of canal and river outlet, and elevation 2,272.0 ft (692.51 m), crest of morning-glory spillway. Dead storage, 58,231 acre-ft (71.8 hm<sup>3</sup>) below elevation 2,250.8 ft (686.04 m). Flood control, 217,708 acre-ft (268 hm<sup>3</sup>) between elevations 2,272.0 ft (692.51 m) and 2,302.0 ft (701.65 m), crest of emergency spillway. Surcharge, 111,203 acre-ft (137 hm<sup>3</sup>) at elevation 2,312.0 ft (704.70 m), maximum pool elevation. Total reservoir capacity is 468,585 acre-ft (578 hm<sup>3</sup>) at elevation 2,312.0 ft (704.70 m). The reservoir provides flood control and water for irrigation purposes. Figures given herein represent usable contents above elevation 2,250.8 ft (686.04 m). Prior to Oct. 1, 1968, reservoir contents published as total contents and included dead storage.

COOPERATION.--Records of elevations and contents furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum usable contents observed, 259,900 acre-ft (320 hm<sup>3</sup>) Apr. 10, 1952, elevation, 2,297.86 ft (700.388 m); minimum usable observed since first filling to spillway level, 25,950 acre-ft (32.0 hm<sup>3</sup>) Mar. 17, 1962, elevation, 2,258.90 ft (688.51 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 70,584 acre-ft (87.0 hm<sup>3</sup>) July 11, elevation, 2,269.72 ft (691.811 m); minimum, 60,492 acre-ft (74.6 hm<sup>3</sup>) Feb. 23-26, elevation, 2,267.50 ft (691.134 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	2268.94	66984	
Oct. 31 . . . . .	2268.34	64255	-2729
Nov. 30 . . . . .	2268.02	62814	-1441
Dec. 31 . . . . .	2267.83	61961	-853
CAL YR 1976 . . . . .			+3323
Jan. 31 . . . . .	2267.61	60981	-980
Feb. 28 . . . . .	2267.55	60714	-267
Mar. 31 . . . . .	2268.27	63939	+3225
Apr. 30 . . . . .	2268.91	66847	+2908
May 31 . . . . .	2268.29	64029	-2818
June 30 . . . . .	2269.33	68777	+4748
July 31 . . . . .	2269.02	67350	-1427
Aug. 31 . . . . .	2268.25	63849	-3501
Sept. 30 . . . . .	2268.31	64119	+270
WTR YR 1977 . . . . .			-2865



## GRAND RIVER BASIN

25

06357500 GRAND RIVER AT SHADEHILL, SD

LOCATION.--Lat 45°45'25", long 102°11'41", in NW¼NW¼ sec.30, T.21 N., R.16 E., Perkins County, Hydrologic Unit 10130303, on left bank 0.2 mi (0.3 km) downstream from Shadehill Dam, 1.1 mi (1.8 km) southwest of Shadehill, and 12.0 mi (19.3 km) southwest of Lemmon.

DRAINAGE AREA.--3,120 mi<sup>2</sup> (8,080 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1943 to current year. Records for July 1904 to October 1906 collected at site 4 mi (6 km) upstream and published as "at Seim" in WSP 130, 172, and 208 have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1279: 1943(M). See also Period of Record.

GAGE.--Water-stage recorder. Datum of gage is 2,192.48 ft (668.268 m) above mean sea level. Prior to Aug. 31, 1947, nonrecording gage, and Aug. 31, 1947, to Oct. 24, 1958, water-stage recorder, at site 0.8 mi (1.3 km) downstream at datum 6.02 ft (1.835 m) lower.

REMARKS.--Records good. Flow completely regulated by Shadehill Reservoir since July 1, 1950. (See station 06357000.) Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years, 114 ft<sup>3</sup>/s (3.228 m<sup>3</sup>/s), 82,590 acre-ft/yr (102 hm<sup>3</sup>/yr); median of yearly mean discharges, 65 ft<sup>3</sup>/s (1.84 m<sup>3</sup>/s), 47,100 acre-ft/yr (58 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,000 ft<sup>3</sup>/s (1,640 m<sup>3</sup>/s) Apr. 16, 1950, gage height, 21.0 ft (6.40 m), from floodmarks upstream from bridge; 19.06 ft (5.809 m), from floodmark in gage well, unreliable, site and datum then in use; no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 50 ft<sup>3</sup>/s (1.416 m<sup>3</sup>/s) Oct. 30; maximum gage height, 3.72 ft (1.134 m) Dec. 29 (backwater from ice); no flow Oct. 28.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Nov. 27 to Dec. 15, Dec. 28 to Jan. 20, Jan. 27 to Feb. 2)

2.28	0	2.5	5.5	2.8	20
2.3	.40	2.6	9.2	3.1	50
2.4	2.7				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	26	18	17	16	16	17	19	35	38	42	36
2	35	27	18	17	16	17	16	19	35	40	41	35
3	35	27	18	17	16	17	17	19	36	40	40	35
4	35	27	18	18	16	17	18	27	35	41	40	35
5	34	24	18	18	16	17	17	36	35	40	40	35
6	35	19	18	18	17	17	17	38	35	40	40	35
7	35	19	18	18	16	17	17	37	35	40	40	35
8	35	19	18	18	16	17	17	37	36	40	39	35
9	34	19	18	18	16	17	17	36	36	41	39	35
10	34	19	18	17	15	17	18	37	36	41	39	35
11	33	19	18	18	15	18	17	36	36	41	38	35
12	33	18	19	19	15	18	18	36	36	41	37	35
13	33	18	19	19	16	17	18	36	36	41	38	35
14	33	18	19	18	16	17	17	36	37	41	38	35
15	34	18	19	18	15	16	17	36	37	41	38	35
16	34	17	19	18	16	17	16	36	37	42	38	35
17	34	18	19	18	16	17	17	36	38	42	37	35
18	34	17	18	18	16	17	17	35	38	42	36	35
19	33	18	18	18	16	17	17	35	38	43	36	35
20	33	17	18	18	16	17	17	35	38	42	36	35
21	33	18	18	18	16	16	17	35	39	42	36	35
22	32	18	18	18	16	16	17	35	38	42	35	35
23	33	18	18	17	16	17	18	36	38	43	35	38
24	32	18	18	19	16	17	18	35	39	43	35	36
25	23	18	17	17	16	17	17	35	38	43	35	36
26	2.1	19	18	18	16	16	17	35	38	43	36	36
27	.03	18	18	18	16	16	18	35	38	43	35	37
28	.00	18	18	17	16	17	18	35	38	43	35	38
29	16	18	18	17	---	20	18	35	38	41	35	37
30	50	18	18	17	---	18	18	35	39	41	35	39
31	38	---	18	16	---	17	---	35	---	41	35	---
TOTAL	939.13	585	563	550	445	527	518	1048	1108	1282	1159	1068
MEAN	30.3	19.5	18.2	17.7	15.9	17.0	17.3	33.8	36.9	41.4	37.4	35.6
MAX	50	27	19	19	17	20	18	38	39	43	42	39
MIN	.00	17	17	16	15	16	16	19	35	38	35	35
AC-FT	1860	1160	1120	1090	883	1050	1030	2080	2200	2540	2300	2120
CAL YR 1976	TOTAL	11002.13	MEAN 30.1	MAX 107	MIN .00	AC-FT 21820						
WTR YR 1977	TOTAL	9792.13	MEAN 26.8	MAX 50	MIN .00	AC-FT 19420						

## GRAND RIVER BASIN

06357500 GRAND RIVER AT SHADEHILL, SD--Continued

## WATER-QUALITY RECORDS

LOCATION.--Prior to October 1977, sampling site was 0.2 mi (0.3 km) upstream.

PERIOD OF RECORD.--Water years 1952, 1954-68, 1977.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1953 to September 1965.

WATER TEMPERATURES: August 1954 to September 1959, October 1966 to September 1968.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,780 micromhos Mar. 1, 2, 14, 16, 19, 1962; minimum daily, 427 micromhos Apr. 27, 1955.

WATER TEMPERATURES: Maximum, 26.0°C Aug. 3, 1955; minimum, 0.0°C on many days during winter periods.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (000061)	SPECIFIC CONDUCTANCE (MICROMHOS) (000095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DIS-SOLVED CALCIUM (CA) (MG/L) (00915)	DIS-SOLVED MAGNESIUM (MG) (MG/L) (00925)
NOV 17...	1010	18	1880	8.9	6.0	250	0	43	34
JAN 12...	1015	18	1820	8.8	.0	250	0	43	35
MAR 09...	0830	17	1980	8.8	3.0	240	0	42	34
MAY 04...	1120	19	1630	8.8	17.0	230	0	42	31
JUN 28...	0850	38	1820	8.8	21.0	220	0	37	31

DATE	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CAC03 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)
NOV 17...	320	73	8.9	9.8	385	21	351	590	6.9
JAN 12...	350	74	9.6	9.2	396	25	366	630	8.3
MAR 09...	360	75	10	9.9	410	24	376	660	7.5
MAY 04...	340	75	9.7	8.8	430	15	378	600	7.0
JUN 28...	350	77	10	6.1	400	13	350	600	7.3

DATE	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DIS-SOLVED PHOSPHORUS (P) (MG/L) (00666)	DIS-SOLVED BORON (B) (UG/L) (01020)
NOV 17...	.4	4.4	1220	1.66	59.3	.06	.01	.01	450
JAN 12...	.5	4.6	1300	1.77	63.2	.14	.00	.01	470
MAR 09...	.5	3.9	1350	1.84	63.8	.16	--	--	470
MAY 04...	.5	3.7	1260	1.71	64.6	.07	.01	.00	430
JUN 28...	.5	3.8	1250	1.70	128	.05	.01	.01	450

## GRAND RIVER BASIN

27

06357800 GRAND RIVER AT LITTLE EAGLE, SD

LOCATION.--Lat 45°39'28", long 100°49'04", in NE¼NE¼ sec.32, T.20 N., R.27 E., Corson County, Hydrologic Unit 10130303, on left bank at downstream side of bridge on State Highway 63, 1.3 mi (2.1 km) southwest of Little Eagle and 4.7 mi (7.6 km) downstream from Little Oak Creek.

DRAINAGE AREA.--5,370 mi<sup>2</sup> (13,910 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,628.63 ft (496.406 m) above mean 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 (1.0 km) downstream at datum 2.00 ft (0.610 m) lower.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Shadehill Reservoir 144 mi (232 km) upstream. (See station 06357000.)

AVERAGE DISCHARGE.--19 years, 221 ft<sup>3</sup>/s (6.259 m<sup>3</sup>/s), 160,100 acre-ft/yr (197 hm<sup>3</sup>/yr); median of yearly mean discharges, 180 ft<sup>3</sup>/s (5.10 m<sup>3</sup>/s), 130,000 acre-ft/yr (160 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft<sup>3</sup>/s (425 m<sup>3</sup>/s) Mar. 12, 1972; maximum gage height, 21.76 ft (6.632 m) Mar. 18, 1966, from floodmarks, ice jam, site and datum then in use; no flow at times in 1958-62, 1969, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,190 ft<sup>3</sup>/s (62.0 m<sup>3</sup>/s) Sept. 25, gage height, 7.40 ft (2.256 m); no flow Dec. 28 to Feb. 19.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 4 to Apr. 2, June 28 to July 5; stage-discharge relation affected by ice Nov. 12 to Mar. 3)

Oct. 1 to Feb. 17

Feb. 18 to Sept. 30

2.9	2.0	3.0	6.3	4.5	244
3.0	10	3.2	18	5.0	480
3.2	36	3.4	35	6.0	1,060
3.5	87	3.7	75	7.0	1,820
		4.0	135	8.0	2,720

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	26	7.0	.00	.00	90	65	21	23	24	15	42
2	29	18	7.0	.00	.00	95	79	19	22	20	25	38
3	23	12	6.0	.00	.00	95	80	17	22	17	25	85
4	20	9.2	3.0	.00	.00	103	115	17	21	14	26	135
5	17	18	2.0	.00	.00	157	115	17	17	59	22	89
6	16	36	1.0	.00	.00	172	101	16	12	408	20	55
7	15	28	1.0	.00	.00	172	89	18	11	633	23	41
8	12	32	1.0	.00	.00	180	256	15	11	418	11	34
9	14	33	1.5	.00	.00	191	367	15	9.5	288	13	46
10	14	28	1.5	.00	.00	191	324	13	19	159	11	124
11	14	25	2.0	.00	.00	175	270	15	22	103	11	79
12	15	23	2.0	.00	.00	207	207	18	31	519	10	49
13	15	23	2.0	.00	.00	159	149	18	24	545	9.5	37
14	14	24	2.0	.00	.00	117	109	17	24	180	10	30
15	12	24	1.5	.00	.00	99	82	21	27	111	9.5	25
16	14	26	1.5	.00	.00	89	70	25	23	77	13	22
17	16	26	1.0	.00	.00	97	58	25	19	58	8.4	23
18	16	25	1.0	.00	.00	105	50	22	24	44	8.4	44
19	17	22	.70	.00	.00	77	46	24	27	31	11	37
20	21	20	.60	.00	5.0	80	44	22	19	23	13	126
21	21	16	.56	.00	20	84	41	27	16	19	17	117
22	22	15	.50	.00	40	77	38	32	14	15	16	79
23	30	12	.50	.00	50	64	34	31	12	15	17	137
24	32	10	.40	.00	80	80	32	25	58	12	16	669
25	30	7.0	.30	.00	90	86	29	22	77	9.5	24	1990
26	26	6.0	.20	.00	95	75	27	22	70	7.9	28	1140
27	38	6.0	.10	.00	95	67	25	22	54	8.4	31	471
28	36	6.5	.00	.00	90	51	25	22	41	12	28	260
29	36	6.5	.00	.00	---	69	23	24	34	20	24	185
30	44	7.0	.00	.00	---	109	22	28	25	22	22	145
31	36	---	.00	.00	---	73	---	28	---	19	31	---
TOTAL	701	570.2	47.86	.00	565.00	3486	2972	658	808.5	3890.8	548.8	6354
MEAN	22.6	19.0	1.54	.000	20.2	112	99.1	21.2	27.0	126	17.7	212
MAX	44	36	7.0	.00	95	207	367	32	77	633	31	1990
MIN	12	6.0	.00	.00	.00	51	22	13	9.5	7.9	8.4	22
AC-FT	1390	1130	95	.00	1120	6910	5890	1310	1600	7720	1090	12600
CAL YR 1976	TOTAL	23916.16	MEAN 65.3	MAX 765	MIN .00	AC-FT 47440						
WTR YR 1977	TOTAL	20602.16	MEAN 56.4	MAX 1990	MIN .00	AC-FT 40860						

## GRAND RIVER BASIN

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued  
(National stream-quality accounting network station)  
(National pesticide water-monitoring network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956, 1969, 1972 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to September 1976.

WATER TEMPERATURES: October 1975 to current year.

SUSPENDED SEDIMENT DISCHARGE: October 1971 to September 1976 (discontinued).

INSTRUMENTATION.--Water-quality monitor since June 20, 1977.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,100 micromhos Dec. 4, 7-9, 1976; minimum daily, 290 micromhos Feb. 7, 1976.

WATER TEMPERATURES: Maximum daily, 33.0°C Aug. 26, 1976; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 19,000 mg/L May 2, 1972; minimum daily mean, 0 mg/L Jan. 10, 11, Feb. 5-10, 1975.

SEDIMENT LOADS: Maximum daily, 259,000 tons (235,000 tonnes) Mar. 12, 1972; minimum daily, 0 ton (0 tonne) Jan. 10, 11, Feb. 5-10, 1975.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 32.5°C July 5; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (JTU) (00070)	FECAL COLI-FORM .7UM-MF (COL./100 ML) (31625)	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)
OCT											
01...	1100	35	2150	8.8	15.0	50	290	210	210	0	35
27...	1345	21	2110	8.6	2.5	85	175	260	300	0	42
NOV											
22...	1300	14	3280	8.8	.0	35	817	820	410	0	73
DEC											
21...	1330	.86	4040	8.1	.0	10	81	12	770	0	160
MAR											
15...	1420	73	960	8.2	4.0	300	ND	8110	95	0	20
APR											
13...	1025	160	680	8.7	12.0	500	870	87	68	0	17
MAY											
09...	1545	16	2700	8.8	23.0	10	ND	110	250	0	44
JUN											
07...	1400	12	2070	8.7	29.5	90	125	260	--	--	--
JUL											
05...	1445	27	1470	8.6	32.5	650	5400	7600	130	0	29
AUG											
30...	1340	22	1980	8.9	22.0	--	--	--	--	--	--

DATE	DIS-SOLVED MAGNESIUM (MG) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)
OCT											
01...	30	360	78	11	11	366	14	324	650	12	.4
27...	48	360	71	9.0	8.9	409	13	357	670	9.7	.4
NOV											
22...	55	580	75	12	13	688	0	564	1100	14	.5
DEC											
21...	91	850	70	13	10	1120	0	919	1700	31	.6
MAR											
15...	11	160	77	7.1	5.3	216	0	177	240	5.6	.3
APR											
13...	6.2	120	78	6.3	4.0	210	0	170	140	4.1	.3
MAY											
09...	34	450	79	12	12	440	9	380	810	22	.4
JUN											
07...	--	--	--	--	--	430	14	380	640	10	.6
JUL											
05...	13	270	81	10	8.3	270	0	220	440	21	.4
AUG											
30...	--	--	--	--	--	--	--	--	--	--	--

B Non-ideal colony count.  
ND Not detected.



## GRAND RIVER BASIN

29

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SILICA (MG/L) (00955)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)
OCT 01...	1.2	1310	1290	1.78	127	.00	.71	.71	3.1	.05	11	1800
27...	1.8	1330	1360	1.81	77.6	.06	.59	.65	2.9	.09	--	--
NOV 22...	2.8	2060	2180	2.80	82.9	.09	.66	.75	3.3	.05	--	56
DEC 21...	8.8	3390	3400	4.61	7.87	.15	.88	1.0	4.6	.02	--	2200
MAR 15...	4.0	577	553	.78	114	.27	1.1	1.4	6.1	.26	19	--
APR 13...	6.6	433	402	.59	187	.91	1.7	2.6	12	.31	--	--
MAY 09...	2.7	1640	1600	2.23	70.8	.01	.61	.62	2.7	.03	7.7	9200
JUN 07...	6.0	1400	--	1.90	45.4	.00	.98	.98	4.3	.12	--	11000
JUL 05...	5.9	927	921	1.26	67.6	.00	2.5	2.5	11	.37	--	--
AUG 30...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 01...	1100	2	1	1	<10	<10	0	0	0	0	<50
MAR 15...	1420	5	--	0	<10	<10	0	10	0	20	<50
MAY 09...	1545	1	--	1	10	10	0	0	0	0	<50

DATE	SUS- PENDE D COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MAN- GANESE (MN) (UG/L) (01055)
OCT 01...	<49	1	<10	<7	3	2900	20	<100	<100	0	70
MAR 15...	<50	0	40	35	5	13000	160	<100	<99	1	260
MAY 09...	<48	2	<10	<7	3	290	90	<100	<98	2	40

DATE	SUS- PENDE D MAN- GANESE (MN) (UG/L) (01054)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDE D MERCURY (HG) (UG/L) (71895)	DIS- SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE D SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE D ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)
OCT 01...	70	0	.0	.0	.0	1	0	1	40	40	0
MAR 15...	250	10	.0	--	.0	1	0	1	80	70	10
MAY 09...	20	20	.1	.1	.0	0	0	0	20	10	9

&lt; Less than.

## GRAND RIVER BASIN

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	ALDRIN		CHLOR-DANE		DDD		DDE		TOTAL DDT (UG/L) (39370)	
		TOTAL ALDRIN (UG/L) (39330)	IN BOTTOM MA- TERIAL (UG/KG) (39333)	TOTAL CHLOR- DANE (UG/L) (39350)	IN BOTTOM MA- TERIAL (UG/KG) (39351)	TOTAL DDD (UG/L) (39360)	IN BOTTOM MA- TERIAL (UG/KG) (39363)	TOTAL DDE (UG/L) (39365)	IN BOTTOM MA- TERIAL (UG/KG) (39368)		
NOV 22...	1300	ND	ND	ND	ND	ND	ND	ND	ND	ND	
MAR 15...	1420	ND	--	ND	--	ND	--	ND	--	ND	
MAY 09...	1545	ND	--	ND	--	ND	--	ND	--	ND	
AUG 30...	1340	ND	--	ND	--	ND	--	ND	--	ND	
DATE		DDT		DI-AZINON		DI-ELDRIN		ENDRIN		ETHION	
		IN BOTTOM MA- TERIAL (UG/KG) (39373)	TOTAL DI- AZINON (UG/L) (39570)	IN BOTTOM MA- TERIAL (UG/KG) (39571)	TOTAL DI- ELDRIN (UG/L) (39380)	IN BOTTOM MA- TERIAL (UG/KG) (39383)	TOTAL ENDRIN (UG/L) (39390)	IN BOTTOM MA- TERIAL (UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	IN BOTTOM MA- TERIAL (UG/KG) (39399)	TOTAL HEPTA- CHLOR (UG/L) (39410)
NOV 22...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 15...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
MAY 09...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
AUG 30...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
DATE		HEPTA-CHLOR		HEPTA-CHLOR		LINDANE		MALA-THION		METHOX-CHLOR	
		IN BOTTOM MA- TERIAL (UG/KG) (39413)	TOTAL HEPTA- CHLOR (UG/L) (39420)	IN BOT- TOM MA- TERIAL (UG/KG) (39423)	TOTAL HEPTA- CHLOR (UG/L) (39430)	IN BOTTOM MA- TERIAL (UG/KG) (39433)	TOTAL LINDANE (UG/L) (39530)	IN BOTTOM MA- TERIAL (UG/KG) (39531)	TOTAL MALA- THION (UG/L) (39480)	IN BOT- TOM MA- TERIAL (UG/KG) (39481)	TOTAL METHYL PARA- THION (UG/L) (39600)
NOV 22...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 15...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
MAY 09...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
AUG 30...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
DATE		METHYL PARA-THION		METHYL TRI-THION		PARA-THION		SIMA-ZINE		SIMA-ZINE	
		IN BOT- TOM MA- TERIAL (UG/KG) (39601)	TOTAL METHYL TRI- THION (UG/L) (39790)	IN BOT- TOM MA- TERIAL (UG/KG) (39791)	TOTAL METHYL TRI- THION (UG/L) (39540)	IN BOT- TOM MA- TERIAL (UG/KG) (39541)	IN BOT- TOM MA- TERIAL (UG/L) (39025)	IN BOT- TOM MA- TERIAL (UG/L) (39046)	IN BOT- TOM MA- TERIAL (UG/L) (39400)	IN BOT- TOM MA- TERIAL (UG/L) (39403)	TOTAL TRI- THION (UG/L) (39786)
NOV 22...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 15...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
MAY 09...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
AUG 30...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
DATE		TRI-THION		ATRA-ZINE		2,4-D		2,4,5-T		SILVEX	
		IN BOTTOM MA- TERIAL (UG/KG) (39787)	TOTAL ATRA- ZINE (UG/L) (39630)	IN BOT- TOM MA- TERIAL (UG/KG) (39631)	TOTAL ATRA- ZINE (UG/L) (39730)	IN BOTTOM MA- TERIAL (UG/KG) (39731)	TOTAL 2,4-D (UG/L) (39740)	IN BOTTOM MA- TERIAL (UG/KG) (39741)	TOTAL 2,4,5-T (UG/L) (39760)	IN BOTTOM MA- TERIAL (UG/KG) (39761)	TOTAL SILVEX (UG/L) (39761)
NOV 22...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 15...	--	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 09...	--	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 30...	--	ND	--	ND	--	ND	--	ND	--	ND	--

ND Not detected.

## GRAND RIVER BASIN

31

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1830	---	---	---	1170	1160	---	1970	---	---	940
2	1890	---	---	---	---	710	1290	---	1820	---	2020	945
3	1670	1860	---	---	---	1210	1290	2150	1950	---	2020	940
4	1320	2020	---	---	---	860	1290	2120	2110	---	2010	955
5	1260	1920	3850	---	---	1010	1180	2210	2120	1530	1920	940
6	1490	1880	---	---	---	1000	1090	2270	2110	1060	1800	940
7	1550	1870	---	---	---	1000	620	---	1930	780	1790	1060
8	1740	1880	---	---	---	1010	620	1980	2130	570	1790	1060
9	1770	---	3550	---	---	1030	620	2370	2150	560	1750	1070
10	1840	1960	3620	---	---	1100	620	2380	2140	610	1810	1540
11	1900	2220	3600	---	---	1000	---	2430	1520	610	2010	835
12	1960	2530	3430	---	---	770	670	2450	1730	820	2000	830
13	1980	---	3380	---	---	770	680	2500	2030	510	2010	830
14	2060	2780	1820	---	---	770	740	2580	1950	510	2000	1240
15	2080	2760	2370	---	---	850	790	2570	1490	520	2000	1230
16	2100	---	3230	---	---	850	840	2550	1620	580	1960	1180
17	2100	2580	3200	---	---	860	1100	2450	1790	760	2080	1120
18	2080	2400	---	---	---	850	1100	2300	1680	760	2160	1120
19	2080	---	---	---	---	400	1050	1200	2300	1840	830	2170
20	2070	2600	---	---	1480	1060	1340	2270	1830	930	2160	1580
21	2110	2680	---	---	1000	1080	1470	2170	1920	1060	2100	1020
22	---	2890	---	---	1530	1060	1570	2190	1700	1060	2090	1010
23	2070	---	---	---	1120	1080	1780	2180	1300	1500	2100	610
24	2040	---	---	---	790	1080	1770	2100	930	1500	1850	610
25	2020	2480	---	---	680	1060	1820	2140	940	1500	1850	---
26	1930	2520	---	---	570	1060	1880	2110	940	1500	1850	---
27	---	3000	---	---	900	1060	1860	2070	940	---	1850	---
28	---	3500	---	---	810	1060	1880	1860	940	---	---	460
29	1900	3980	---	---	---	1060	2140	1840	1230	---	---	480
30	1880	4150	---	---	---	1040	2140	1860	1210	---	1920	570
31	1850	---	---	---	---	1210	---	1850	---	---	1830	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	13.0	0.0	0.0	0.0	0.0	---	---	27.0	---	---	21.0
2	21.0	---	0.0	0.0	0.0	0.0	---	---	25.0	---	27.0	22.0
3	23.0	6.0	0.0	0.0	0.0	0.0	---	24.0	26.0	---	24.0	22.0
4	12.0	5.0	0.0	0.0	0.0	2.0	9.0	26.0	25.0	---	24.0	22.0
5	13.0	8.0	0.0	0.0	0.0	2.0	7.0	26.0	27.0	32.5	28.0	22.0
6	10.0	10.0	0.0	0.0	0.0	3.0	4.0	21.0	31.0	29.0	27.0	23.0
7	15.0	9.0	0.0	0.0	0.0	2.0	9.0	---	29.5	27.0	28.0	21.0
8	14.0	4.0	0.0	0.0	0.0	2.0	7.0	25.0	26.0	26.0	27.0	20.0
9	8.0	---	0.0	0.0	0.0	3.0	8.0	23.0	26.0	25.0	28.0	20.0
10	14.0	4.0	0.0	0.0	0.0	5.0	7.0	20.0	31.0	24.0	24.0	17.0
11	13.0	2.0	0.0	0.0	0.0	2.0	7.0	25.0	23.0	23.0	25.0	17.0
12	---	1.0	0.0	0.0	0.0	3.0	13.0	26.0	18.0	25.0	24.0	19.0
13	10.0	---	0.0	0.0	0.0	2.0	12.0	25.0	23.0	26.0	22.0	21.0
14	10.0	4.0	0.0	0.0	0.0	6.0	18.0	23.0	23.0	24.0	22.0	20.0
15	11.0	4.0	0.0	0.0	0.0	4.0	18.0	21.0	27.0	24.0	23.0	22.0
16	10.0	---	0.0	0.0	0.0	5.0	15.0	20.0	29.0	28.0	23.0	24.0
17	12.0	4.0	0.0	0.0	0.0	8.0	16.0	28.0	26.0	28.0	23.0	23.0
18	14.0	5.0	0.0	0.0	0.0	5.0	14.0	21.0	23.0	29.0	24.0	16.0
19	2.0	---	0.0	0.0	3.0	4.0	11.0	20.0	23.0	29.0	23.0	20.0
20	5.0	4.0	0.0	0.0	3.0	6.0	15.0	23.0	25.0	25.0	20.0	20.0
21	9.0	5.0	0.0	0.0	5.0	4.0	18.0	20.0	19.0	26.0	16.0	21.0
22	---	0.0	0.0	0.0	3.0	6.0	22.0	22.0	27.0	27.0	21.0	20.0
23	5.0	---	0.0	0.0	2.0	7.0	20.0	26.0	29.0	28.0	22.0	17.0
24	7.0	---	0.0	0.0	1.0	10.0	21.0	27.0	25.0	27.0	22.0	14.0
25	2.0	5.0	0.0	0.0	1.0	6.0	19.0	24.0	21.0	24.0	21.0	---
26	3.0	0.0	0.0	0.0	1.0	---	22.0	28.0	19.0	22.0	20.0	---
27	2.5	5.0	0.0	0.0	1.0	---	18.0	26.0	26.0	---	19.0	16.0
28	---	3.0	0.0	0.0	1.0	---	20.0	27.0	24.0	---	---	14.0
29	14.0	0.0	0.0	0.0	---	---	19.0	28.0	28.0	---	---	14.0
30	10.0	0.0	0.0	0.0	---	---	21.0	17.0	23.0	---	22.0	11.0
31	---	---	0.0	0.0	---	---	---	26.0	---	---	20.0	---

## GRAND RIVER BASIN

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 1,76 1100	OCT 27,76 1345	NOV 22,76 1300	DEC 21,76 1330
TOTAL CELLS/ML	1800	7100	56	2200
DIVERSITY: DIVISION	1.0	0.6	1.0	0.4
..CLASS	1.0	0.6	1.0	0.4
...ORDER	1.2	0.6	1.0	0.4
...FAMILY	2.0	0.8	2.0	0.5
....GENUS	2.2	0.8	2.1	0.5

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	280#	15	--	-	--	-	53	2
....CERASTERIAS	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-
....TETRAEDRON	55	3	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	550#	30	--	-	--	-	--	-
..TETRASPORALES								
...PALMELLACEAE								
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-
..VOLVOCALES								
...PHACOTACEAE								
....PHACOTUS	55	3	--	-	--	-	--	-
..ZYGNEATALES								
...DESMIDIACEAE								
....STAUSTRUM	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINODISACEAE								
....CYCLOTELLA	--	-	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....COCONEIS	--	-	38	1	7	13	--	-
...CYMBELLACEAE								
....CYMBELLA	--	-	38	1	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	4	6	*	0
...FRAGILARIACEAE								
....FRAGILARIA	--	-	--	-	--	-	*	0
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	120	2	--	-	--	-
...NAVICULACEAE								
....CALONEIS	55	3	--	-	--	-	*	0
....GYROSIGMA	--	-	38	1	--	-	--	-
...NAVICULA	110	6	850	12	7	13	*	0
....PINNULARIA	*	0	--	-	--	-	--	-
...NITZSCHIIACEAE								
....HANTZSCHIA	--	-	38	1	4	6	--	-
....NITZSCHIA	720#	39	--	-	7	13	19	1
..CHRYSOPHYCEAE								
...CHRYSOMONADALES								
....CHROMULINACEAE								
....CHRYSOCOCCUS	--	-	--	-	--	-	*	0



06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 1,76 1100	OCT 27,76 1345	NOV 22,76 1300	DEC 21,76 1330
TOTAL CELLS/ML	1800	7100	56	2200
DIVERSITY: DIVISION	1.0	0.6	1.0	0.4
..CLASS	1.0	0.6	1.0	0.4
...ORDER	1.2	0.6	1.0	0.4
...FAMILY	2.0	0.8	2.0	0.5
....GENUS	2.2	0.8	2.1	0.5

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCCOCCALES								
....CHROCCOCCACEAE								
.....AGMENELLUM	--	-	--	-	--	-	--	-
.....ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
...NOSTOCACEAE								
.....ANABAENA	--	-	--	-	28# 50		--	-
.....ANABAENOPSIS	--	-	--	-	--	-	--	-
...OSCILLATORIA								
....LYNGBYA	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	6000# 84		--	-	2000# 94	
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
....CRYPTOCHRYSIDACEAE								
.....CHROOMONAS	--	-	--	-	--	-	38	2
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....EUGLENA	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## GRAND RIVER BASIN

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 9,77 1545	JUN 7,77 1400	AUG 2,77 1515
TOTAL CELLS/ML	9200	11000	510000
DIVERSITY: DIVISION	1.0	1.1	0.3
..CLASS	1.4	1.1	0.3
...ORDER	1.5	1.5	0.3
....FAMILY	1.7	2.2	0.4
.....GENUS	2.0	2.9	0.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....CHARACIACEAE						
.....SCHROEDERIA	--	-	83	1	--	-
....HYDRODICTYACEAE						
.....PEDIASTRUM	--	-	440	4	--	-
....OOCYSTACEAE						
.....ANKISTRODESMUS	2900#	31	1500	13	--	-
....CERASTERIAS	--	-	--	-	4600	1
....DICTYOSPHAERIUM	690	8	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	*	0
....OOCYSTIS	--	-	770	7	4600	1
....TETRAEDRON	--	-	--	-	--	-
....SCENEDESMACEAE						
.....ACTINASTRUM	--	-	1200	10	--	-
....CRUCIGENIA	--	-	110	1	--	-
....SCENEDESMUS	350	4	940	8	12000	2
..TETRASPORALES						
...PALMELLACEAE						
....SPHAEROCYSTIS	--	-	610	5	--	-
..VOLVOCALES						
...PHACOTACEAE						
....PHACOTUS	--	-	--	-	--	-
..ZYGNEMATALES						
...DESMIDIACEAE						
....STAUSTRUM	--	-	*	0	--	-
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINODISCACEAE						
.....CYCLOTELLA	120	1	--	-	--	-
...PENNALES						
....ACHNANTHACEAE						
.....COCCONEIS	--	-	--	-	--	-
....CYMBELLACEAE						
.....CYMBELLA	--	-	--	-	--	-
....DIATOMACEAE						
.....DIATOMA	--	-	--	-	--	-
....FRAGILARIACEAE						
.....FRAGILARIA	--	-	--	-	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	--	-
....NAVICULACEAE						
.....CALONEIS	--	-	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-
....NAVICULA	--	-	*	0	*	0
....PINNULARIA	--	-	--	-	--	-
...NITZSCHACEAE						
.....NITZSCHIA	--	-	--	-	--	-
....NITZSCHIA	4000#	44	--	-	--	-
..CHRYSOPHYCEAE						
...CHRYSOMONADALES						
....CHROMULINACEAE						
.....CHRYSOCOCCUS	1000	11	--	-	--	-

06357800 GRAND RIVER AT LITTLE EAGLE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 9,77 1545	JUN 7,77 1400	AUG 2,77 1515
TOTAL CELLS/ML	9200	11000	510000
DIVERSITY: DIVISION	1.0	1.1	0.3
..CLASS	1.4	1.1	0.3
..ORDER	1.5	1.5	0.3
...FAMILY	1.7	2.2	0.4
....GENUS	2.0	2.9	0.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
....CHROCOCCACEAE						
.....AGMENELLUM	--	-	890	8	--	-
.....ANACYSTIS	--	-	4200#	37	--	-
...HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	490000#	95
...OSCILLATORIACEAE						
....LYNGBYA	--	-	--	-	3100	1
....OSCILLATORIA	--	-	440	4	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	--	-	--	-
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	58	1	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## MOREAU RIVER BASIN

06359500 MOREAU RIVER NEAR FAITH, SD

LOCATION.--Lat 45°11'52", long 102°09'22", in NW¼NW¼ sec.10, T.14 N., R.16 E., Perkins County, Hydrologic Unit 10130306, on left bank 10 ft (3 m) downstream from bridge on State Highway 73, 3.1 mi (5.0 km) downstream from Rabbit Creek and 13.5 mi (21.7 km) northwest of Faith.

DRAINAGE AREA.--2,660 mi<sup>2</sup> (6,890 km<sup>2</sup>), 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 (682.350 m) above mean sea level. Prior to Oct. 5, 1949, nonrecording gage 0.3 mi (0.5 km) upstream and Oct. 5, 1949, to July 16, 1959, nonrecording gage and crest-stage gage at present site; both at datum 1.0 ft (0.30 m) higher. July 17, 1959, to Sept. 1, 1971, recording gage at site 500 ft (152 m) downstream at present datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years, 132 ft<sup>3</sup>/s (3.738 m<sup>3</sup>/s), 95,630 acre-ft/yr (118 hm<sup>3</sup>/yr); median of yearly mean discharges, 94 ft<sup>3</sup>/s (2.66 m<sup>3</sup>/s), 68,100 acre-ft/yr (84 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft<sup>3</sup>/s (736 m<sup>3</sup>/s) Apr. 9, 1944, gage height, 20.9 ft (6.37 m), from floodmarks, site and datum then in use, from rating curve extended above 12,000 ft<sup>3</sup>/s (340 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times in 1944, 1946, 1948-51, 1955-66, 1968-71, 1974-75.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,070 ft<sup>3</sup>/s (115 m<sup>3</sup>/s) at 2000 hours July 6, gage height, 10.28 ft (3.133 m), no other peak above base of 1,500 ft<sup>3</sup>/s (42.5 m<sup>3</sup>/s); minimum daily discharge, 0.54 ft<sup>3</sup>/s (0.015 m<sup>3</sup>/s) Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	7.8	4.0	1.5	1.5	2.0	33	17	11	10	10	12
2	7.2	7.2	4.5	1.5	1.5	2.0	38	15	9.8	7.5	8.2	17
3	6.9	7.8	4.0	1.5	1.5	2.5	56	15	8.5	3.8	7.2	13
4	6.6	8.2	3.5	1.5	1.5	4.5	70	14	8.2	19	9.4	15
5	5.7	8.2	3.5	1.5	1.0	5.0	53	13	7.2	131	7.5	20
6	5.7	8.2	3.5	2.0	1.0	10	59	13	6.3	2160	6.0	18
7	5.7	7.2	3.5	2.0	1.0	30	88	12	5.4	2040	4.8	12
8	5.7	7.8	4.0	1.5	1.5	50	143	11	5.4	721	4.0	8.8
9	6.0	7.8	4.0	1.5	1.5	90	228	11	6.0	215	3.2	6.6
10	6.0	7.5	4.5	1.0	1.5	75	820	10	7.2	123	2.3	5.7
11	6.0	7.0	5.0	1.0	1.5	80	1060	9.4	9.8	75	1.8	4.8
12	6.0	7.0	5.0	1.5	1.0	70	765	8.8	7.5	51	1.6	4.0
13	6.3	7.5	5.5	1.5	1.0	70	451	9.8	7.8	35	1.4	4.0
14	6.3	8.0	5.5	1.5	1.0	75	276	11	106	29	1.2	3.6
15	6.6	8.0	6.0	1.0	1.0	70	176	9.1	73	20	1.2	3.2
16	6.6	8.0	6.0	1.0	1.5	65	131	8.5	63	15	1.2	3.0
17	5.7	9.4	6.5	1.0	2.5	60	104	7.5	106	12	1.5	2.5
18	6.3	8.8	6.5	1.5	4.0	65	82	8.5	83	10	1.6	3.0
19	6.0	8.5	6.0	1.5	5.0	60	71	12	136	9.8	1.2	3.2
20	6.9	8.0	5.0	2.0	4.5	60	62	14	91	8.5	.98	5.0
21	7.5	7.5	4.5	2.0	4.0	65	52	24	80	7.5	.90	25
22	6.6	7.0	4.5	2.0	3.5	59	46	62	48	6.6	.82	45
23	6.9	7.5	5.0	2.0	3.0	44	39	39	30	6.6	.75	472
24	6.9	8.0	5.0	2.0	3.0	36	35	29	22	6.3	.61	438
25	6.9	7.5	5.0	1.5	2.5	31	31	19	23	6.6	.54	178
26	7.8	6.0	5.0	1.5	2.5	23	27	16	16	6.3	.75	76
27	8.5	4.0	4.5	1.0	2.5	21	25	13	13	17	2.3	46
28	8.5	3.5	3.5	1.0	2.0	23	22	11	11	19	3.2	34
29	7.8	3.5	2.5	1.0	---	56	21	17	9.1	31	3.0	28
30	8.2	4.0	1.5	1.0	---	40	20	17	14	59	2.3	29
31	7.5	---	1.5	1.0	---	50	---	13	---	17	11	---
TOTAL	208.5	216.4	138.5	45.0	59.5	1394.0	5084	489.6	1024.2	5878.5	102.45	1535.4
MEAN	6.73	7.21	4.47	1.45	2.13	45.0	169	15.8	34.1	190	3.30	51.2
MAX	8.5	9.4	6.5	2.0	5.0	90	1060	62	136	2160	11	472
MIN	5.7	3.5	1.5	1.0	1.0	2.0	20	7.5	5.4	3.8	.54	2.5
AC-FT	414	429	275	89	118	2760	10080	971	2030	11660	203	3050

CAL YR 1976 TOTAL 38655.00 MEAN 106 MAX 5980 MIN 1.5 AC-FT 76670  
WTR YR 1977 TOTAL 16176.05 MEAN 44.3 MAX 2160 MIN .54 AC-FT 32090



MOREAU RIVER BASIN

37

06360500 MOREAU RIVER NEAR WHITEHORSE, SD

LOCATION.--Lat 45°15'21", long 100°50'33", in SW¼SE¼ sec.17, T.15 N., R.27 E., Dewey County, Hydrologic Unit 10130306, on left bank 30 ft (9 m) downstream from bridge, 2.4 mi (3.9 km) southeast of Whitehorse, 8.8 mi (14.2 km) downstream from Little Moreau River, and 16.3 mi (26.2 km) southeast of town of Timber Lake.

DRAINAGE AREA.--4,880 mi<sup>2</sup> (12,640 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,661.48 ft (506.419 m) above mean sea level. Prior to Nov. 24, 1954, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period of no gage-height record, July 20 to Sept. 17, and those for winter periods, which are poor.

AVERAGE DISCHARGE.--23 years, 185 ft<sup>3</sup>/s (5.239 m<sup>3</sup>/s), 134,000 acre-ft/yr (165 hm<sup>3</sup>/yr); median of yearly mean discharges, 110 ft<sup>3</sup>/s (3.12 m<sup>3</sup>/s), 79,700 acre-ft/yr (98 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft<sup>3</sup>/s (595 m<sup>3</sup>/s) Mar. 14, 1972; maximum gage height, 26.20 ft (7.986 m) Mar. 14, 1972 (backwater from ice); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a stage of about 26.2 ft (7.99 m). Flood in March 1947 was probably higher.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,160 ft<sup>3</sup>/s (89.5 m<sup>3</sup>/s) at 2130 hours July 8, gage height, 9.29 ft (2.832 m), no other peak above base of 1,800 ft<sup>3</sup>/s (51.0 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	3.0	69	35	18	16	5.0	.05
2	.00	.00	.00	.00	.00	2.5	87	33	12	7.4	.64	.30
3	.00	.00	.00	.00	.00	2.5	98	31	5.8	7.2	.63	1.0
4	.00	.00	.00	.00	.00	3.0	80	27	3.3	41	2.2	2.0
5	.00	.00	.00	.00	.00	4.0	81	23	2.6	24	2.0	4.0
6	.00	.00	.00	.00	.00	4.0	128	20	2.1	6.0	1.5	6.0
7	.00	.00	.00	.00	.00	7.0	226	16	1.1	389	1.0	9.0
8	.00	.00	.00	.00	.00	10	163	15	.68	2000	.70	10
9	.00	.00	.00	.00	.00	40	203	13	.98	2180	.50	9.5
10	.00	.00	.00	.00	.00	62	257	9.1	1.0	1120	.35	8.0
11	.00	.00	.00	.00	.00	116	263	5.2	1.1	598	.25	7.0
12	.00	.00	.00	.00	.00	95	650	3.5	1.0	352	.20	6.0
13	.00	.00	.00	.00	.00	97	1080	3.1	.92	250	.15	5.5
14	.00	.00	.00	.00	.00	82	892	2.3	.92	193	.13	5.0
15	.00	.00	.00	.00	.00	99	647	1.8	.75	136	.11	5.0
16	.00	.00	.00	.00	.00	88	500	1.7	.71	102	.10	10
17	.00	.00	.00	.00	1.0	83	378	1.7	.50	85	.09	30
18	.00	.00	.00	.00	2.0	74	294	1.4	.33	72	.07	179
19	.00	.00	.00	.00	4.0	80	238	1.3	.28	62	.06	240
20	.00	.00	.00	.00	5.0	76	202	1.3	.09	45	.04	105
21	.00	.00	.00	.00	6.0	68	171	1.4	39	30	.03	65
22	.00	.00	.00	.00	5.0	72	145	2.1	68	20	.01	40
23	.00	.00	.00	.00	4.0	59	123	3.3	960	15	.00	85
24	.00	.00	.00	.00	4.0	64	103	4.5	643	10	.00	380
25	.00	.00	.00	.00	3.5	64	87	3.0	259	8.0	.00	954
26	.00	.00	.00	.00	3.5	73	73	2.3	162	7.0	.00	1100
27	.00	.00	.00	.00	3.0	73	64	2.2	122	7.0	.00	680
28	.00	.00	.00	.00	3.0	61	54	12	80	10	.00	368
29	.00	.00	.00	.00	---	86	46	28	56	15	.00	251
30	.00	.00	.00	.00	---	92	42	28	30	20	.00	171
31	.00	---	.00	.00	---	77	---	26	---	18	.00	---
TOTAL	.00	.00	.00	.00	44.00	1817.0	7444	358.2	2473.16	7845.6	15.76	4736.35
MEAN	.0000	.0000	.0000	.0000	1.57	58.6	248	11.6	82.4	253	.51	158
MAX	.00	.00	.00	.00	6.0	116	1080	35	960	2180	5.0	1100
MIN	.00	.00	.00	.00	.00	2.5	42	1.3	.09	6.0	.00	.05
AC-FT	.00	.00	.00	.00	87	3600	14770	710	4910	15560	31	9390

CAL YR 1976 TOTAL 52464.80 MEAN 143 MAX 7860 MIN .00 AC-FT 104100  
WTR YR 1977 TOTAL 24734.07 MEAN 67.8 MAX 2180 MIN .00 AC-FT 49060

## CHEYENNE RIVER BASIN

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

LOCATION.--Lat 44°05'04", long 104°03'41", in NE¼NE¼ sec.4, T.47 N., R.60 W., Weston County, Hydrologic Unit 10120107, between Forest Service Road 811 and right bank in Mallo Campgrounds, 300 ft (91 m) upstream from mouth, 800 ft (244 m) upstream from dam on Stockade Beaver Creek, and 3.8 mi (6.1 km) east of Four Corners.

DRAINAGE AREA.--10.3 mi<sup>2</sup> (26.7 km<sup>2</sup>).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 6,030 ft (1,840 m), from topographic map.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21 ft<sup>3</sup>/s (0.59 m<sup>3</sup>/s) Apr. 26, gage height, 5.40 ft (1.646 m); minimum daily, 1.1 ft<sup>3</sup>/s (0.031 m<sup>3</sup>/s) Sept. 9.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13 ft<sup>3</sup>/s (0.37 m<sup>3</sup>/s) at 1230 hours May 17 (result of destruction of beaver dam upstream), no other peak above base of 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s); minimum daily discharge, 0.23 ft<sup>3</sup>/s (0.007 m<sup>3</sup>/s) Oct. 14.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-15, 17, 18, 23-26, Oct. 28 to Nov. 2,  
Nov. 5, 6, 9, 20, 23-27, Dec. 2-22, Dec. 24 to Feb. 25, May 14-17, July 14;  
stage-discharge relation affected by ice Oct. 16, 19-22, 27, Nov. 3, 4, 7,  
8, 10-19, 21, 22, Nov. 28 to Dec. 1, Dec. 23, Feb. 26 to Mar. 27)

3.7	0.18	3.9	0.50	4.2	1.5
3.8	.30	4.1	1.1	4.3	2.1

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	.46	.50	.48	.50	.50	1.2	1.4	1.3	1.6	1.4	1.5
2	.36	.42	.46	.46	.50	.50	1.2	1.4	1.3	1.7	1.4	1.5
3	.34	.45	.44	.46	.50	.50	1.2	1.4	1.3	1.7	1.4	1.5
4	.32	.50	.44	.48	.50	.50	1.3	1.4	1.3	1.8	1.4	1.4
5	.32	.53	.44	.46	.50	.50	1.2	1.4	1.3	1.8	1.4	1.4
6	.30	.53	.42	.50	.50	.53	1.2	1.4	1.3	1.9	1.3	1.5
7	.28	.53	.48	.50	.48	.56	1.1	1.4	1.3	1.9	1.3	1.5
8	.28	.53	.44	.44	.50	.56	1.2	1.3	1.3	1.9	1.3	1.5
9	.28	.53	.44	.46	.50	.56	1.2	1.2	1.3	1.9	1.3	1.5
10	.26	.50	.44	.50	.48	.56	1.2	1.2	1.3	1.9	1.3	1.5
11	.26	.45	.44	.50	.46	.50	1.1	1.2	1.3	1.9	1.3	1.5
12	.25	.40	.44	.50	.44	.62	1.2	1.0	1.3	1.9	1.2	1.6
13	.24	.45	.44	.50	.42	.62	1.1	1.0	1.4	1.9	1.2	1.6
14	.23	.50	.42	.50	.44	.65	1.1	.95	1.4	2.0	1.2	1.5
15	.25	.50	.42	.48	.42	.62	1.2	.92	1.3	1.9	1.2	1.5
16	.25	.55	.42	.50	.42	.68	1.3	.86	1.4	1.9	1.2	1.5
17	.26	.60	.42	.53	.44	.68	1.3	1.3	1.5	1.8	1.2	1.5
18	.26	.65	.44	.48	.42	.68	1.3	1.3	1.4	1.7	1.2	1.5
19	.25	.55	.42	.50	.42	.68	1.3	1.3	1.4	1.7	1.2	1.5
20	.25	.46	.36	.48	.46	.68	1.3	1.3	1.4	1.6	1.2	1.5
21	.25	.40	.42	.50	.46	.68	1.3	1.3	1.4	1.6	1.3	1.5
22	.30	.40	.50	.50	.46	.68	1.3	1.2	1.4	1.6	1.3	1.5
23	.32	.53	.50	.48	.44	.70	1.3	1.2	1.4	1.5	1.3	1.7
24	.36	.48	.48	.50	.46	.80	1.3	1.2	1.4	1.5	1.3	1.6
25	.38	.46	.46	.50	.44	.90	1.3	1.2	1.4	1.5	1.3	1.5
26	.34	.44	.42	.50	.45	1.0	1.3	1.2	1.5	1.5	1.4	1.5
27	.35	.30	.42	.50	.50	1.1	1.3	1.2	1.5	1.4	1.5	1.5
28	.46	.30	.40	.44	.50	1.1	1.4	1.2	1.5	1.4	1.4	1.5
29	.42	.35	.42	.53	---	1.1	1.4	1.2	1.6	1.4	1.4	1.5
30	.42	.45	.38	.53	---	1.2	1.4	1.3	1.6	1.4	1.4	1.6
31	.44	---	.44	.53	---	1.2	---	1.3	---	1.5	1.4	---
TOTAL	9.68	14.20	13.56	15.22	13.01	22.14	37.5	38.13	41.5	52.7	40.6	45.4
MEAN	.31	.47	.44	.49	.46	.71	1.25	1.23	1.38	1.70	1.31	1.51
MAX	.46	.65	.50	.53	.50	1.2	1.4	1.4	1.6	2.0	1.5	1.7
MIN	.23	.30	.36	.44	.42	.50	1.1	.86	1.3	1.4	1.2	1.4
AC-FT	19	28	27	30	26	44	74	76	82	105	81	90

CAL YR 1976 TOTAL 391.08 MEAN 1.07 MAX 2.6 MIN .23 AC-FT 776  
WTR YR 1977 TOTAL 343.64 MEAN .94 MAX 2.0 MIN .23 AC-FT 682

## CHEYENNE RIVER BASIN

39

06392950 STOCKADE BEAVER CREEK NEAR NEWCASTLE, WY

LOCATION.--Lat 43°51'30", long 104°06'23", in SW¼SE¼ sec.19, T.45 N., R.60 W., Weston County, Hydrologic Unit 10120107, on left bank at downstream side of bridge on county highway 0.6 mi (1.0 km) upstream from South Draw, 2.5 mi (4.0 km) upstream of LAK Reservoir Dam, and 4.7 mi (7.6 km) east of Newcastle.

DRAINAGE AREA.--107 mi<sup>2</sup> (277 km<sup>2</sup>).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,455 ft (1,358 m), from topographic map.

REMARKS.--Records good. A few small diversions above station for irrigation. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107 ft<sup>3</sup>/s (3.03 m<sup>3</sup>/s) June 16, 1977, gage height, 7.54 ft (2.298 m); maximum gage height, 7.91 ft (2.411 m) Jan. 12, 1975 (backwater from ice); minimum daily discharge, 6.2 ft<sup>3</sup>/s (0.18 m<sup>3</sup>/s) May 27, 28, 31, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 107 ft<sup>3</sup>/s (3.03 m<sup>3</sup>/s) at 1930 hours June 16, gage height, 7.54 ft (2.298 m), no other peak above base of 50 ft<sup>3</sup>/s (1.42 m<sup>3</sup>/s); minimum daily discharge, 6.2 ft<sup>3</sup>/s (0.18 m<sup>3</sup>/s) May 27, 28, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	15	14	14	15	15	14	8.0	6.4	12	11	12
2	10	15	14	14	14	15	14	8.0	6.5	12	9.4	12
3	10	14	14	14	14	15	14	7.8	6.4	12	9.1	11
4	11	14	14	15	14	15	14	6.9	6.5	12	9.1	11
5	10	14	14	14	14	15	14	7.1	6.9	12	11	11
6	10	15	14	14	14	15	14	6.9	8.2	12	11	11
7	11	14	14	15	15	15	14	7.1	8.2	12	16	12
8	11	15	14	15	14	15	14	7.1	8.9	11	11	12
9	11	15	14	16	14	15	14	7.1	11	10	11	13
10	11	14	14	16	14	15	14	7.6	11	10	11	12
11	12	15	14	16	15	15	14	8.7	10	10	11	12
12	14	14	14	15	15	15	16	7.6	11	11	9.9	12
13	14	14	13	15	15	16	14	7.1	11	11	9.1	12
14	14	15	14	15	15	15	13	7.1	12	11	12	12
15	14	15	14	14	14	15	13	7.3	11	10	10	12
16	14	15	14	14	14	15	12	7.1	27	9.4	9.6	12
17	14	15	14	15	14	15	10	6.9	25	9.1	11	12
18	14	15	14	15	14	15	9.6	7.2	15	8.9	12	11
19	14	15	13	15	14	15	11	8.0	14	8.4	12	8.9
20	14	15	14	14	14	14	11	6.9	13	8.9	12	8.9
21	14	15	14	15	15	14	10	6.9	12	9.1	12	8.9
22	14	15	15	15	15	14	9.6	6.7	12	8.9	12	11
23	14	16	14	14	15	14	9.4	6.5	12	8.9	12	14
24	14	16	14	15	15	14	9.6	6.5	12	9.1	12	14
25	14	16	14	15	15	14	8.4	6.4	12	9.6	12	14
26	14	16	14	15	15	14	8.0	6.4	12	9.4	12	14
27	14	16	15	15	14	14	7.8	6.2	12	9.9	15	14
28	14	14	15	15	14	14	7.8	6.2	11	10	13	14
29	14	14	15	15	---	15	8.2	6.4	11	11	12	13
30	14	14	15	14	---	14	8.4	6.4	11	11	12	14
31	14	---	15	15	---	14	---	6.2	---	10	12	---
TOTAL	397	445	438	458	404	455	350.8	218.3	346.0	319.6	354.2	360.7
MEAN	12.8	14.8	14.1	14.8	14.4	14.7	11.7	7.04	11.5	10.3	11.4	12.0
MAX	14	16	15	16	15	16	16	8.7	27	12	16	14
MIN	10	14	13	14	14	14	7.8	6.2	6.4	8.4	9.1	8.9
AC-FT	787	883	869	908	801	902	696	433	686	634	703	715
CAL YR 1976	TOTAL	4668.0	MEAN 12.8	MAX 22	MIN 8.9	AC-FT 9260						
WTR YR 1977	TOTAL	4546.6	MEAN 12.5	MAX 27	MIN 6.2	AC-FT 9020						

## CHEYENNE RIVER BASIN

06395000 CHEYENNE RIVER AT EDMONT, SD

LOCATION.--Lat 43°18'20", long 103°49'14", in SW¼SE¼SE¼ sec.36, T.8 S., R.2 E., Fall River County, Hydrologic Unit 10120106, on right bank at downstream side of bridge on U.S. Highway 18, at Edgemont, 300 ft (91 m) downstream from Burlington Northern Railroad bridge and 600 ft (183 m) upstream from Cottonwood Creek.

DRAINAGE AREA.--7,143 mi<sup>2</sup> (18,500 km<sup>2</sup>).

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

REVISED RECORDS.--WSP 1086: Drainage area. WSP 1116: 1947.

GAGE.--Water-stage recorder. Datum of gage is 3,414.56 ft (1,040.758 m) above mean sea level. Prior to Dec. 1, 1906, nonrecording gage 20 ft (6 m) upstream at datum 0.7 ft (0.21 m) 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 (0.610 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Many small reservoirs above station used for stock and irrigation water, total capacity, about 45,000 acre-ft (55.5 hm<sup>3</sup>). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 97.4 ft<sup>3</sup>/s (2.758 m<sup>3</sup>/s), 70,570 acre-ft/yr (87.0 hm<sup>3</sup>/yr); median of yearly mean discharges, 72 ft<sup>3</sup>/s (2.04 m<sup>3</sup>/s), 52,200 acre-ft/yr (64 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,800 ft<sup>3</sup>/s (391 m<sup>3</sup>/s) May 25, 1971, gage height, 10.57 ft (3.222 m), present datum; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 12, 1920, reached a stage of 13.0 ft (3.96 m) and May 1, 1922, 14.0 ft (4.27 m), present datum, from floodmarks at railroad bridge.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,570 ft<sup>3</sup>/s (72.8 m<sup>3</sup>/s) at 1200 hours July 10, gage height, 5.82 ft (1.774 m), no other peak above base of 1,500 ft<sup>3</sup>/s (42.5 m<sup>3</sup>/s); no flow Jan. 13-18, July 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	9.6	10	2.5	.30	35	49	11	1.6	.19	2.1	4.2
2	.19	9.0	10	2.5	.60	30	40	9.6	1.4	.08	1.4	4.2
3	.19	15	9.0	2.5	2.0	30	31	8.4	1.2	.05	1.2	3.6
4	.19	15	7.0	2.5	5.0	30	27	6.6	1.3	.37	1.2	5.4
5	.25	15	5.0	2.0	10	30	26	7.8	.90	.56	2.4	3.0
6	.48	16	4.0	2.0	20	35	33	7.2	.64	.08	2.1	3.6
7	.40	15	3.0	2.0	25	40	43	5.4	.56	.00	1.4	3.0
8	.25	16	3.5	1.5	25	60	155	6.0	.48	.06	2.3	2.4
9	.19	14	3.5	1.0	25	70	330	7.8	.40	10	13	1.6
10	.19	14	3.5	.50	25	70	262	5.4	.40	1130	115	1.6
11	.19	8.0	3.5	.30	25	65	145	9.0	.56	504	121	1.6
12	.19	4.0	3.5	.15	25	70	127	5.4	.56	192	27	3.0
13	.19	6.5	3.5	.00	25	80	120	4.8	.41	86	16	4.8
14	.19	9.5	3.5	.00	30	69	81	3.6	150	44	16	4.8
15	.19	13	3.5	.00	30	48	51	3.6	26	28	22	4.8
16	.19	16	4.0	.00	30	56	49	4.8	10	15	54	4.8
17	.25	19	5.0	.00	30	56	28	6.0	4.8	9.6	19	4.8
18	.25	18	4.0	.00	30	73	22	5.4	2.7	7.2	9.0	4.8
19	.25	20	3.0	.05	30	107	21	20	39	7.2	7.2	4.2
20	.64	13	3.0	.10	35	88	18	23	418	7.2	7.8	4.2
21	4.8	7.0	3.0	.15	35	63	21	12	127	6.0	7.2	4.2
22	7.8	11	3.0	.15	35	113	20	9.0	19	4.2	4.8	5.8
23	6.0	16	3.0	.15	35	90	33	5.4	9.0	2.7	7.2	305
24	6.6	22	3.0	.15	35	75	23	4.2	9.0	7.3	9.6	53
25	11	22	3.0	.15	35	71	18	2.7	12	22	13	114
26	14	9.5	3.5	.15	35	103	16	3.0	6.0	17	7.6	180
27	14	9.5	3.5	.10	35	159	14	2.7	2.7	15	2.7	50
28	15	9.5	3.0	.05	35	113	15	2.1	1.2	11	4.8	27
29	8.4	9.5	3.0	.05	---	106	20	2.1	.64	7.2	6.0	21
30	9.0	10	2.5	.10	---	79	13	2.1	.33	3.6	5.4	24
31	14	---	2.5	.15	---	76	---	2.1	---	6.0	4.8	---
TOTAL	115.65	391.6	128.0	20.95	707.90	2190	1851	208.2	888.37	2143.59	514.2	858.4
MEAN	3.73	13.1	4.13	.68	25.3	70.6	61.7	6.72	29.6	69.1	16.6	28.6
MAX	15	22	10	2.5	35	159	330	23	418	1130	121	305
MIN	.19	4.0	2.5	.00	.30	30	13	2.1	.33	.00	1.2	1.6
AC-FT	229	777	254	42	1400	4340	3670	413	1760	4250	1020	1700

CAL YR 1976 TOTAL 13712.45 MEAN 37.5 MAX 1620 MIN .12 AC-FT 27200  
WTR YR 1977 TOTAL 10017.86 MEAN 27.4 MAX 1130 MIN .00 AC-FT 19870



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LOCATION: --Lat 43°14'24", long 103°35'16", in SW¼SE¼NE¼ sec.25, T.9 S., R.4 E., Fall River County, Hydrologic Unit 10120108, on right bank at upstream side of bridge on State Highway 71, 2.0 mi (3.2 km) upstream from mouth, 2.0 mi (3.2 km) west of Heppner, and 12.5 mi (20.1 km) southeast of Edgemont.

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

REMARKS.--Records good. A few small diversions above station for irrigation. Lander ditch diverts water from Hat Creek 0.4 mi (0.6 km) upstream from gaging station for irrigating hay meadows downstream from station. Several observations of water temperature were made during the year. Results of discharge measurements, in cubic feet per second, of Lander ditch during water year 1976-77 are given herewith:

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 256 ft<sup>3</sup>/s (9.49 m<sup>3</sup>/s) Apr. 14, gage height, 9.49 ft (2.893 m), no peak above base of 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s); no flow for many days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.02	.35	.82	.50	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.35	.73	.20	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.35	.44	.10	.00	.00
4	.00	.00	.00	.00	.00	.00	.36	.28	.28	.05	.00	.00
5	.00	.00	.00	.00	.00	.00	.05	.04	.12	.01	.00	.00
6	.00	.00	.00	.00	.00	.00	.03	.28	.06	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.60	.35	.06	.00	.00	.00
8	.00	.00	.00	.00	.00	.68	1.2	.44	.02	.00	.00	.00
9	.00	.00	.00	.00	.00	.04	.76	.54	.02	.00	.00	.00
10	.00	.00	.00	.00	.00	.16	1.9	.35	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.35	2.7	.28	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.21	4.1	.28	.01	.00	.00	.00
13	.00	.00	.00	.00	.00	.23	46	.28	.02	.00	.00	.00
14	.00	.00	.00	.00	.00	.40	39	.35	1.7	.00	.00	.00
15	.00	.00	.00	.00	.00	.37	10	.28	8.1	.00	.00	.00
16	.00	.00	.00	.00	.00	.51	4.0	.12	3.6	.00	.00	.00
17	.00	.00	.00	.00	.00	.30	.42	.12	2.7	.00	.00	.00
18	.00	.00	.00	.00	.00	.23	.18	.16	18	.00	.00	.00
19	.00	.00	.00	.00	.00	.27	.35	.28	8.8	.00	.00	.00
20	.00	.00	.00	.00	.00	.11	.28	.16	5.0	.00	.00	.00
21	.00	.00	.00	.00	.00	.20	1.0	.35	4.1	.00	.00	.00
22	.00	.00	.00	.00	.00	.39	.54	1.2	3.3	.00	.00	.00
23	.00	.00	.00	.00	.00	.68	.28	2.5	3.2	.00	.00	.00
24	.00	.00	.00	.00	.00	.37	.28	.82	4.8	.00	.00	.00
25	.00	.00	.00	.00	.00	.46	.16	.16	5.3	.00	.00	.00
26	.00	.00	.00	.00	.00	1.7	.35	.16	4.1	.00	.00	.00
27	.00	.00	.00	.00	.00	.39	.28	.28	3.5	.00	.00	.00
28	.00	.00	.00	.00	.00	.07	.21	.54	3.0	.00	.00	.00
29	.00	.00	.00	.00	---	.06	.35	.54	2.0	.00	.00	.00
30	.00	.00	.00	.00	---	.01	.28	.54	1.0	.00	.00	.00
31	.00	---	.00	.00	---	.02	---	.44	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	8.21	115.68	13.17	84.78	.86	.00	.00
MEAN	.000	.000	.000	.000	.000	.26	3.86	.42	2.83	.028	.000	.000
MAX	.00	.00	.00	.00	.00	1.7	46	2.5	18	.50	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	16	229	26	168	1.7	.00	.00
CAL YR 1976	TOTAL	2204.38	MEAN	6.02	MAX	350	MIN	.00	AC-FT	4370		
WTR YR 1977	TOTAL	222.70	MEAN	.61	MAX	46	MIN	.00	AC-FT	442		

## CHEYENNE RIVER BASIN

06400497 CASCADE SPRINGS NEAR HOT SPRINGS, SD

LOCATION.--Lat 43°20'10", long 103°33'07", in SE¼SW¼ 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 (5.3 km) upstream from mouth, and 8.5 mi (13.7 km) southwest of Hot Springs.

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

GAGE.--Water-stage recorder. Altitude of gage is 3,440 ft (1,049 m), from topographic map.

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

EXTREMES FOR CURRENT PERIOD.--July to September 1976: Maximum daily discharge, 22 ft<sup>3</sup>/s (0.62 m<sup>3</sup>/s) July 1-17; minimum daily, 19 ft<sup>3</sup>/s (0.54 m<sup>3</sup>/s) Aug. 15-26, Sept. 9.

Water year 1977: Maximum discharge, 49 ft<sup>3</sup>/s (1.39 m<sup>3</sup>/s) July 4, gage height, 6.25 ft (1.905 m); minimum daily, 18 ft<sup>3</sup>/s (0.51 m<sup>3</sup>/s) for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										22	21	20
2										22	20	20
3										22	20	20
4										22	20	20
5										22	20	20
6										22	20	20
7										22	20	20
8										22	20	20
9										22	20	19
10										22	20	20
11										22	20	20
12										22	20	20
13										22	20	20
14										22	20	20
15										22	19	20
16										22	19	20
17										22	19	20
18										21	19	20
19										21	19	20
20										21	19	20
21										21	19	20
22										21	19	20
23										21	19	20
24										21	19	20
25										21	19	20
26										21	19	20
27										21	20	20
28										21	20	20
29										21	20	20
30										21	20	20
31										21	20	---
TOTAL										668	609	599
MEAN										21.5	19.6	20.0
MAX										22	21	20
MIN										21	19	19
AC-FT										1320	1210	1190

## CHEYENNE RIVER BASIN

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06400497 CASCADE SPRINGS NEAR HOT SPRINGS, SD--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	20	19	19	19	19	20	20	20	20	20	19
2	20	20	19	19	19	19	20	20	20	20	20	19
3	20	20	19	19	19	19	20	20	20	20	19	19
4	20	20	19	19	19	19	20	20	20	21	19	19
5	20	20	19	18	19	19	20	20	20	20	19	19
6	20	20	19	18	19	19	20	20	20	20	19	19
7	20	20	19	18	19	19	20	20	20	20	19	19
8	20	20	19	18	19	19	20	20	20	20	19	19
9	20	20	19	19	18	19	20	20	20	20	19	19
10	20	20	19	19	19	19	20	20	20	20	19	19
11	20	20	19	19	19	19	20	20	20	20	19	19
12	20	20	19	19	19	19	20	20	20	20	19	19
13	20	20	19	19	19	20	20	20	20	20	19	18
14	20	20	19	19	19	20	20	20	20	20	19	19
15	20	20	19	19	19	20	20	20	20	20	19	19
16	20	20	19	19	19	20	20	20	20	20	19	19
17	20	20	19	18	19	20	20	20	20	20	19	19
18	20	20	19	19	19	20	20	20	20	20	19	19
19	20	20	20	19	19	20	20	20	20	20	19	19
20	20	20	20	18	19	20	20	20	20	20	19	19
21	20	19	19	18	19	20	20	20	20	20	19	18
22	20	19	19	18	19	20	20	20	20	20	19	18
23	20	20	19	18	19	20	20	20	20	20	19	19
24	20	20	19	18	19	20	20	20	20	20	19	18
25	20	20	19	18	19	20	20	20	20	20	19	18
26	20	20	19	18	19	20	20	20	20	20	19	19
27	19	20	19	18	19	20	20	20	20	20	19	19
28	20	19	19	18	19	20	20	20	20	19	19	19
29	20	19	19	18	---	20	20	20	20	19	19	19
30	20	19	19	18	---	20	20	20	20	20	19	18
31	20	---	19	18	---	20	---	20	---	20	19	---
TOTAL	619	595	591	572	531	608	600	620	600	619	591	564
MEAN	20.0	19.8	19.1	18.5	19.0	19.6	20.0	20.0	20.0	20.0	19.1	18.8
MAX	20	20	20	19	19	20	20	20	20	21	20	19
MIN	19	19	19	18	18	19	20	20	20	19	19	18
AC-FT	1230	1180	1170	1130	1050	1210	1190	1230	1190	1230	1170	1120
WTR YR 1977	TOTAL	7110	MEAN 19.5	MAX 21	MIN 18	AC-FT	14100					

## CHEYENNE RIVER BASIN

## 06401000 ANGOSTURA RESERVOIR NEAR HOT SPRINGS, SD

LOCATION.--Lat 43°20'35", long 103°26'16", in SW¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, Hydrologic Unit 10120106, at dam on Cheyenne River, 6.5 mi (10.5 km) southeast of Hot Springs.

DRAINAGE AREA.--9,100 mi<sup>2</sup> (23,570 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is at mean 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, 127,558 acre-ft (157 hm<sup>3</sup>) between elevations 3,139.75 ft (956.996 m), invert of lowest outlet, and 3,187.2 ft (971.46 m), top of spillway gates. Dead storage below elevation 3,139.75 ft (956.996 m), 11,203 acre-ft (13.8 hm<sup>3</sup>). Surchage capacity, 196,221 acre-ft (242 hm<sup>3</sup>), maximum pool elevation. Figures given herein represent contents above elevation 3,139.75 ft (956.996 m). Water is stored for irrigation.

COOPERATION.--Records of elevations, contents, and diversion to Angostura project furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 145,200 acre-ft (179 hm<sup>3</sup>) June 18, 1962, elevation, 3,189.00 ft (972.007 m); minimum observed since normal operating level reached, 45,350 acre-ft (55.9 hm<sup>3</sup>) Sept. 28, 1960, elevation, 3,162.90 ft (964.052 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 93,032 acre-ft (115 hm<sup>3</sup>) May 9, elevation, 3,179.16 ft (969.008 m); minimum, 58,681 acre-ft (72.4 hm<sup>3</sup>) Sept. 21, elevation, 3,169.20 ft (965.972 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	†Diversions (acre-feet)
Sept. 30 . . . . .	3174.66	76339		
Oct. 31 . . . . .	3174.78	76754	+415	
Nov. 30 . . . . .	3175.05	77694	+940	
Dec. 30 . . . . .	3175.40	78947	+1253	
CAL YR 1976 . . . . .			-1110	38263
Jan. 31 . . . . .	3175.77	80272	+1325	
Feb. 28 . . . . .	3176.25	82014	+1742	
Mar. 31 . . . . .	3177.52	86731	+4717	
Apr. 30 . . . . .	3179.07	92676	+5945	
May 31 . . . . .	3178.24	89466	-3210	3913
June 30 . . . . .	3177.00	84771	-4695	6273
July 31 . . . . .	3174.19	74714	-10057	12503
Aug. 31 . . . . .	3171.07	64444	-10270	11399
Sept. 30 . . . . .	3170.19	61698	-2746	6060
WTR YR 1977 . . . . .			-14641	40148

† Diversions from Angostura irrigation project.



## 06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, SD

LOCATION.--Lat 43°20'42", long 103°26'12", in NE¼NW¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, Hydrologic Unit 10120109, on right bank 800 ft (244 m) downstream from Angostura Dam, 4.8 mi (7.7 km) upstream from Fall River and 6.5 mi (10.5 km) southeast of Hot Springs.

DRAINAGE AREA.--9,100 mi<sup>2</sup> (23,600 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1309: 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 3,058.02 ft (932.084 m) above mean 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 (7.7 km) downstream at different datum.

REMARKS.--Records fair. Flow completely regulated by Angostura Reservoir 800 ft (244 m) upstream since October 1949. (See station 06401000.)

AVERAGE DISCHARGE.--32 years, 74.1 ft<sup>3</sup>/s (2.099 m<sup>3</sup>/s), 53,690 acre-ft/yr (66.2 hm<sup>3</sup>/yr); median of yearly mean discharges, 46 ft<sup>3</sup>/s (1.30 m<sup>3</sup>/s), 33,300 acre-ft/yr (41 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft<sup>3</sup>/s (688 m<sup>3</sup>/s) June 18, 1962, gage height, 13.81 ft (4.209 m), from rating curve extended above 6,000 ft<sup>3</sup>/s (170 m<sup>3</sup>/s); no flow Oct. 9, 1949, to Feb. 5, 1950, Apr. 28, Aug. 26, 30, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,330 ft<sup>3</sup>/s (37.7 m<sup>3</sup>/s) July 8, gage height, 6.32 ft (1.926 m), backwater from downstream tributary; minimum daily, 0.62 ft<sup>3</sup>/s (0.189 m<sup>3</sup>/s) June 22, 23.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 8 to Sept. 30; stage-discharge relation affected by ice Nov. 10-14, 22, Nov. 25 to Dec. 2, Dec. 19, 20, Dec. 29 to Jan. 6, Jan. 8-12, 14-18, 21-30, Feb. 1, 6, 8, 9, 14)

2.7	0.58	3.1	11
2.8	1.4	3.2	18
2.9	3.1	3.4	47
3.0	6.2		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.3	1.2	1.2	1.3	1.2	1.2	1.1	1.0	.73	.76	.91
2	1.2	1.3	1.2	1.2	1.3	1.4	1.2	1.1	.91	.67	.74	.82
3	1.1	1.3	1.2	1.2	1.3	1.3	1.2	1.1	.93	.67	.71	.81
4	1.2	1.3	1.2	1.2	1.2	1.3	1.1	1.0	.93	.96	.71	.82
5	1.2	1.3	1.2	1.2	1.2	1.3	1.2	1.1	.89	.73	.77	.77
6	1.4	1.3	1.2	1.2	1.2	1.3	1.1	1.1	.91	.73	.70	.77
7	1.2	1.3	1.2	1.2	1.2	1.3	1.1	1.1	.90	.73	.70	.79
8	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.2	.91	33	1.0	.78
9	1.4	1.2	1.2	1.2	1.2	1.2	1.1	1.1	.89	5.8	1.5	.84
10	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	.84	1.0	1.1	.84
11	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.0	.80	.96	.80	.81
12	1.3	1.2	1.2	1.2	1.2	1.2	1.4	1.0	.87	.96	.76	.80
13	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.0	.81	.90	.76	.82
14	1.3	1.2	1.2	1.3	1.2	1.2	1.2	1.0	.82	1.0	.90	.78
15	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.0	.73	.90	.74	.76
16	1.3	1.1	1.1	1.2	1.2	1.3	1.1	1.1	.73	.87	.75	.76
17	1.3	1.1	1.2	1.2	1.1	1.3	1.1	1.0	.73	.86	.69	.72
18	1.4	1.1	1.2	1.3	1.2	1.4	1.1	1.0	.73	.85	.71	.79
19	1.4	1.2	1.2	1.3	1.2	1.4	1.2	1.0	.73	.85	.73	.81
20	1.4	1.2	1.2	1.3	1.2	1.4	1.1	1.0	.73	.84	.70	.76
21	1.4	1.2	1.2	1.3	1.1	1.3	1.1	1.1	.67	.87	.72	.70
22	1.4	1.2	1.2	1.3	1.1	1.3	1.1	1.0	.62	.79	.78	.77
23	1.5	1.2	1.2	1.3	1.1	1.2	1.1	1.0	.62	.80	.82	1.1
24	1.5	1.2	1.2	1.3	1.2	1.2	1.1	1.0	.67	1.2	.77	.78
25	1.5	1.2	1.2	1.3	1.1	1.2	1.1	1.0	.67	.85	.79	.77
26	1.5	1.2	1.2	1.3	1.1	1.2	1.1	1.0	.67	.79	.86	.77
27	1.3	1.2	1.2	1.3	1.1	1.2	1.1	1.0	.67	.77	.86	.78
28	1.3	1.2	1.2	1.3	1.2	1.3	1.2	1.0	.67	.75	.85	.77
29	1.3	1.2	1.2	1.3	---	1.3	1.2	1.0	.67	.74	.89	.97
30	1.3	1.2	1.2	1.3	---	1.2	1.1	1.0	.73	.70	.87	3.9
31	1.3	---	1.2	1.3	---	1.2	---	1.0	---	.75	.87	---
TOTAL	40.6	36.4	37.1	38.8	33.2	39.1	34.3	32.2	23.45	63.07	25.31	27.27
MEAN	1.31	1.21	1.20	1.25	1.19	1.26	1.14	1.04	.78	2.03	.82	.91
MAX	1.5	1.3	1.2	1.3	1.3	1.4	1.4	1.2	1.0	.33	1.5	3.9
MIN	1.1	1.1	1.1	1.2	1.1	1.2	1.1	1.0	.62	.67	.69	.70
AC-FT	81	72	74	77	66	78	68	64	47	125	50	54
CAL YR 1976	TOTAL 439.40		MEAN 1.20		MAX 2.0		MIN .67		AC-FT 872			
WTR YR 1977	TOTAL 430.80		MEAN 1.18		MAX 33		MIN .62		AC-FT 854			

## CHEYENNE RIVER BASIN

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to September 1970, October 1971 to current year.

WATER TEMPERATURES: October 1968 to September 1970, October 1971 to September 1973, October 1975 to September 1976.

REMARKS.--No observers' samples available Oct. 30 to Nov. 30, Jan. 1-31. Specific conductance estimated on basis of discharge-conductance ratio.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,750 micromhos Jan. 13, 1975; minimum daily, 575 micromhos July 5, 1977.  
WATER TEMPERATURES: Maximum daily, 31.0°C July 6, 10, 18, 23, 1976; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,690 micromhos July 31; minimum daily, 575 micromhos July 5.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (000095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT									
13...	1315	1.2	2350	8.1	13.5	970	830	250	83
NOV									
09...	0900	1.1	2450	8.5	7.0	970	830	250	83
DEC									
07...	1345	1.2	2600	8.2	2.5	1000	890	270	84
JAN									
05...	1445	1.2	2300	8.0	2.0	1100	920	280	88
FEB									
23...	1445	.98	2700	8.2	4.5	1000	910	280	84
MAR									
22...	1600	1.1	3100	7.9	6.5	1100	930	290	83
APR									
20...	1300	1.1	2600	7.9	11.0	1000	900	280	81
MAY									
18...	0930	1.0	1700	8.0	16.0	1100	940	290	84
JUN									
16...	0930	.71	1950	7.8	21.5	1000	890	270	84
JUL									
13...	1545	.74	2400	8.1	23.0	950	820	250	78
AUG									
09...	1530	.79	2500	7.4	25.0	970	810	250	84
SEP									
06...	1515	1.1	4100	8.3	27.0	980	850	240	92

## CHEYENNE RIVER BASIN

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06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 13...	200	31	2.8	11	162	0	133	1100	140
NOV 09...	200	31	2.8	10	166	0	136	1100	130
DEC 07...	210	31	2.9	11	158	0	130	1200	130
JAN 05...	210	30	2.8	11	173	0	142	1100	140
FEB 23...	210	30	2.8	10	165	0	135	1200	140
MAR 22...	200	29	2.7	9.9	164	0	130	1100	140
APR 20...	210	30	2.8	10	160	0	130	1100	130
MAY 18...	200	29	2.7	9.7	160	0	130	1100	140
JUN 16...	200	30	2.7	9.9	160	0	130	1100	130
JUL 13...	180	29	2.5	10	150	0	120	1000	120
AUG 09...	190	30	2.7	12	190	0	160	1100	120
SEP 06...	190	29	2.6	12	160	0	130	1000	120

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2250	2300	2200	2200	2150	1980	2070	2020	2030	2300	1820	1800
2	2250	2300	2200	2200	2200	2000	2060	2020	2210	2300	1560	2300
3	2250	2300	2200	2200	2200	2000	2060	2070	2210	2300	1750	2350
4	2250	2300	2200	2200	2200	2000	2080	2050	2210	1090	1860	2000
5	2300	2300	2250	2200	2150	2100	2080	2080	2220	575	1820	2350
6	2350	2300	2250	2200	2150	1980	2080	2080	2220	610	1840	2250
7	2300	2300	2200	2200	2150	1800	2090	2120	2240	945	1820	2340
8	2300	2300	2200	2200	2150	2000	2080	2180	2230	1070	1840	2200
9	2300	2300	2200	2200	2150	2080	2030	1900	2220	845	1870	2250
10	2300	2300	2250	2200	2200	2100	2020	1900	2150	1050	1900	1750
11	2250	2300	2250	2200	2200	1900	2030	1950	2000	1150	1950	1750
12	2250	2300	2250	2200	2200	1940	1970	2010	1800	1250	2150	2300
13	2250	2300	2250	2200	2150	1980	1970	2010	1600	1640	2200	2320
14	2250	2300	2250	2200	2150	2000	1960	2020	1450	1800	2150	2380
15	2250	2300	2250	2200	2200	2140	2020	2020	1570	1950	2200	1600
16	2300	2300	2250	2150	2200	1920	2040	2020	1590	2050	2220	1950
17	2250	2300	2250	2150	2200	1930	2040	1950	1610	2220	2250	2350
18	2250	2300	2200	2150	2200	2030	2040	2000	1660	2180	2220	2120
19	2250	2300	2150	2150	2200	1860	2030	1970	1790	2200	2220	2350
20	2250	2300	2200	2150	2200	2090	2070	1930	2000	2220	2220	1980
21	2350	2300	2250	2150	2200	1920	2050	1970	2000	2220	2020	2250
22	2400	2300	2250	2150	2150	1890	2090	1940	2030	2210	2100	1600
23	2400	2250	2200	2150	2150	1830	2100	1930	2040	2240	2100	1650
24	2350	2250	2250	2150	2200	1890	2100	1950	2080	1850	2300	2320
25	2300	2250	2200	2150	2200	1950	2090	1900	2100	2230	1980	2350
26	2300	2250	2200	2150	2150	1900	2090	1950	2120	2560	1950	1650
27	2300	2250	2250	2150	2200	1890	2100	2040	2120	2470	1700	1550
28	2300	2250	2150	2150	2200	2000	2100	2040	2140	2570	1440	2050
29	2300	2250	2100	2150	---	1840	2000	2040	2180	2580	1660	2100
30	2300	2250	2150	2150	---	1850	1960	2060	2180	2610	1660	2130
31	2300	---	2200	2150	---	2000	---	2070	---	2690	1660	---

## CHEYENNE RIVER BASIN

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (SUM OF TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED BORON (B) (UG/L) (01020)
OCT 13...	.7	7.1	1870	2.54	6.06	.15	.00	.00	180
NOV 09...	.7	6.8	1860	2.53	5.52	.10	.00	.00	190
DEC 07...	.7	7.1	1990	2.71	6.45	.19	.00	.00	190
JAN 05...	.7	7.6	1920	2.61	6.22	.10	.01	.00	190
FEB 23...	.6	6.7	2010	2.73	5.32	.08	.01	.02	190
MAR 22...	.7	7.0	1910	2.60	5.67	.10	.01	.00	190
APR 20...	.6	6.1	1900	2.58	5.64	.19	.00	.00	180
MAY 18...	.7	6.1	1910	2.60	5.16	.07	.01	.00	170
JUN 16...	.7	6.4	1880	2.56	3.60	.06	.00	.00	180
JUL 13...	.7	7.1	1720	2.34	3.44	.18	.01	.00	170
AUG 09...	.6	9.1	1860	2.53	3.97	.04	.10	.00	160
SEP 06...	.7	8.8	1740	2.37	5.17	.01	.01	.00	170

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			0.0	1.0	1.0	5.0	8.0	20.0	22.0	21.0	---	24.0
2			0.5	1.0	1.0	2.0	6.0	22.0	28.0	---	---	23.0
3			0.5	1.0	1.0	4.0	5.0	24.0	---	---	---	18.0
4			0.5	3.0	1.0	3.0	10.0	22.0	---	24.0	---	22.0
5			0.5	1.0	0.5	8.0	10.0	22.0	---	27.0	---	21.0
6			0.5	2.0	0.5	6.0	15.0	22.0	26.0	30.0	25.0	23.0
7			0.5	1.0	0.5	5.0	16.0	18.0	27.0	21.0	28.0	18.0
8			0.5	0.0	1.0	10.0	14.0	16.0	26.0	23.0	28.0	21.0
9			0.0	2.0	1.5	8.0	12.0	22.0	---	18.0	---	22.5
10			0.0	1.0	2.0	5.0	11.0	22.0	---	25.0	27.0	22.0
11			0.5	0.0	2.5	2.0	9.0	20.0	---	---	27.0	21.0
12			0.5	2.0	---	6.0	9.0	25.0	---	22.0	30.0	22.0
13			0.5	1.0	3.0	9.0	---	23.0	---	25.0	26.0	23.0
14			0.5	1.0	3.0	10.0	15.0	24.0	27.0	---	26.0	24.5
15			0.5	0.0	3.0	9.0	14.0	24.0	26.0	---	27.0	24.5
16			0.5	1.0	3.0	11.0	17.0	21.0	---	---	28.0	23.5
17			0.5	1.0	---	9.0	18.0	22.0	27.0	28.0	29.0	21.5
18			0.5	2.0	2.5	9.0	---	23.0	24.0	29.0	26.0	19.0
19			0.5	1.0	3.0	10.0	19.0	15.0	24.0	28.0	27.0	20.0
20			0.5	2.0	---	8.0	13.0	21.0	22.0	20.0	28.0	23.5
21			0.5	2.0	2.0	8.0	16.0	17.0	24.0	---	22.0	22.0
22			0.5	1.0	2.0	10.0	17.0	25.0	22.0	---	27.0	19.5
23			0.5	2.0	3.0	11.0	17.0	24.0	27.0	---	28.0	14.0
24			0.0	1.0	3.5	10.0	14.0	25.0	---	---	28.0	17.5
25			0.5	0.0	3.0	10.0	17.0	25.0	24.0	---	27.0	19.5
26			0.5	1.0	4.0	11.0	24.0	25.0	30.0	---	28.0	16.5
27			0.0	2.0	4.0	11.0	26.0	25.0	26.0	---	28.0	19.0
28			0.0	1.0	4.0	8.0	24.0	22.0	26.0	---	17.0	17.0
29			0.0	2.0	---	5.0	---	24.0	25.0	---	26.0	---
30			0.0	1.0	---	4.0	29.0	21.0	25.0	---	25.0	13.5
31			0.0	2.0	---	8.0	---	21.0	---	---	23.0	---

## 06402000 FALL RIVER AT HOT SPRINGS, SD

LOCATION.--Lat 43°25'50", long 103°28'33", in NW¼NW¼ 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 (9.7 km) upstream from mouth.

DRAINAGE AREA.--137 mi<sup>2</sup> (355 km<sup>2</sup>).

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 (1,040.343 m) above mean sea level. Prior to June 2, 1939, nonrecording gage at site 300 ft (91 m) upstream at datum 3.00 ft (0.914 m) higher.

REMARKS.--Records good. Flow regulated by Coldbrook Reservoir, capacity, 7,200 acre-ft (8.88 hm<sup>3</sup>), beginning September 1952, and Cottonwood Springs Lake, capacity, 8,385 acre-ft (10.3 hm<sup>3</sup>) since June 1969. Some diversion above station for municipal supply of Hot Springs. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years, 25.4 ft<sup>3</sup>/s (0.719 m<sup>3</sup>/s), 18,400 acre-ft/yr (22.7 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft<sup>3</sup>/s (371 m<sup>3</sup>/s) Sept. 4, 1938, gage height, 18.4 ft (5.61 m), site and datum then in use, from rating curve extended above 51 ft<sup>3</sup>/s (1.44 m<sup>3</sup>/s) on basis of weir formula and slope-area measurement of peak flow; minimum, 4.0 ft<sup>3</sup>/s (0.11 m<sup>3</sup>/s) Sept. 23, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 486 ft<sup>3</sup>/s (13.8 m<sup>3</sup>/s) July 4, gage height, 3.32 ft (1.012 m); minimum daily, 18 ft<sup>3</sup>/s (0.51 m<sup>3</sup>/s) many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	24	23	22	20	21	20	20	21	25	20	19
2	23	24	23	22	20	21	22	21	21	25	20	18
3	24	24	23	21	20	21	23	21	21	26	21	18
4	24	24	23	22	20	21	23	22	21	38	21	19
5	23	22	23	21	20	21	23	20	21	23	22	18
6	25	22	23	21	20	21	23	20	20	23	21	18
7	23	22	22	21	20	20	22	19	21	22	22	20
8	24	21	22	20	20	20	21	20	21	26	32	20
9	23	21	22	20	19	21	21	21	21	27	22	21
10	23	21	22	21	19	22	22	20	21	23	22	21
11	22	21	22	21	19	21	22	19	22	22	21	21
12	23	22	22	21	19	22	26	19	29	21	20	21
13	22	21	22	21	19	22	21	21	23	21	19	20
14	23	21	22	21	19	22	21	21	22	22	20	20
15	23	22	22	21	20	22	20	21	25	21	19	20
16	22	21	22	21	20	23	19	22	21	19	19	20
17	22	21	22	22	20	24	19	20	22	19	18	20
18	22	21	22	22	20	24	20	22	21	18	19	20
19	22	22	22	21	19	24	21	21	21	18	18	20
20	21	22	22	23	19	24	21	21	21	20	18	19
21	22	22	22	23	19	24	21	22	21	20	18	19
22	22	22	22	23	19	24	20	22	21	19	20	26
23	22	23	22	23	21	24	19	21	21	19	18	32
24	22	23	22	23	21	24	19	22	23	33	19	22
25	23	23	22	22	20	25	19	21	23	22	20	22
26	23	23	22	22	21	24	18	21	24	22	20	23
27	24	23	22	22	21	23	18	21	24	22	21	21
28	23	23	22	22	21	23	18	21	23	21	19	21
29	23	23	22	22	---	22	19	22	24	20	20	21
30	23	23	22	21	---	21	19	22	24	20	19	24
31	24	---	22	21	---	20	---	21	---	20	19	---
TOTAL	708	667	688	669	555	691	620	647	664	697	627	624
MEAN	22.8	22.2	22.2	21.6	19.8	22.3	20.7	20.9	22.1	22.5	20.2	20.8
MAX	25	24	23	23	21	25	26	22	29	38	32	32
MIN	21	21	22	20	19	20	18	19	20	18	18	18
AC-FT	1400	1320	1360	1330	1100	1370	1230	1280	1320	1380	1240	1240
CAL YR 1976	TOTAL	7783	MEAN 21.3	MAX 63	MIN 15	AC-FT	15440					
WTR YR 1977	TOTAL	7857	MEAN 21.5	MAX 38	MIN 18	AC-FT	15580					



## CHEYENNE RIVER BASIN

06402500 BEAVER CREEK NEAR BUFFALO GAP, SD

LOCATION.--Lat 43°27'56", long 103°18'22", in SE¼SE¼ sec.5, T.7 S., R.7 E., Fall River County, Hydrologic Unit 10120109, on left bank 1.5 mi (2.4 km) south of Buffalo Gap and 4.5 mi (7.2 km) upstream from mouth.

DRAINAGE AREA.--130 mi<sup>2</sup> (340 km<sup>2</sup>), approximately.

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

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

GAGE.--Water-stage recorder. Altitude of gage is 3,150 ft (960 m), from topographic map. Prior to June 20, 1939, nonrecording gage at site 0.8 mi (1.3 km) downstream at different datum.

REMARKS.--Records good except those for Jan. 1-17, which are poor. Nearly all flow is diverted above station during irrigation season. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years, 7.02 ft<sup>3</sup>/s (0.199 m<sup>3</sup>/s), 5,090 acre-ft/yr (6.28 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft<sup>3</sup>/s (331 m<sup>3</sup>/s) Sept. 4, 1938, gage height, 16.46 ft (5.017 m), site and datum then in use, from rating curve extended above 11 ft<sup>3</sup>/s (0.31 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1927 reached a stage of 18.0 ft (5.49 m), former site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16 ft<sup>3</sup>/s (0.45 m<sup>3</sup>/s) May 5, gage height, 4.15 ft (1.265 m); maximum gage height, 4.65 ft (1.417 m) Jan. 9 (backwater from ice), no peak above base of 24 ft<sup>3</sup>/s (0.68 m<sup>3</sup>/s); minimum daily discharge, 0.11 ft<sup>3</sup>/s (0.003 m<sup>3</sup>/s) Aug. 8.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Nov. 28-30, Dec. 30 to Jan. 17, Jan. 28-31)

2.8	0	3.3	2.4	4.0	10
2.9	.30	3.5	4.1	4.5	24
3.1	1.1				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	7.5	9.8	9.0	10	9.8	6.6	9.5	.74	.44	.21	7.3
2	5.3	7.1	9.8	9.0	10	10	6.8	9.6	.58	.41	.15	5.9
3	5.5	5.9	9.6	9.0	10	10	7.2	9.6	.54	.35	.18	3.7
4	5.8	4.1	9.6	9.0	10	10	6.6	9.1	.54	.59	.17	5.8
5	6.1	4.1	10	9.0	10	10	6.7	8.8	.46	.74	.32	5.9
6	6.4	4.0	9.8	9.5	10	10	6.7	9.8	.54	.54	.18	5.8
7	4.2	4.0	9.8	9.8	10	10	4.8	9.8	.74	.45	.14	5.0
8	1.7	5.2	9.8	9.5	10	10	2.2	10	.86	.52	.11	4.6
9	1.7	5.9	9.8	9.0	10	10	2.1	10	.88	1.4	1.6	4.4
10	1.8	5.6	9.8	9.0	10	10	2.1	9.1	.99	.75	4.0	4.7
11	1.8	7.3	9.8	9.0	10	9.8	2.3	8.3	1.0	.66	4.9	4.8
12	1.8	8.2	9.8	9.0	10	10	5.6	8.3	1.2	.69	5.0	5.0
13	2.0	8.2	9.8	9.2	10	10	6.5	7.3	1.5	.63	5.2	5.0
14	2.2	8.2	9.5	9.2	10	10	6.1	5.9	1.5	.65	8.4	5.0
15	2.3	8.5	9.3	9.0	10	9.5	8.1	4.0	1.6	.62	5.7	4.9
16	2.5	8.7	9.3	9.2	10	7.6	7.6	2.3	2.7	.56	5.5	5.1
17	4.9	8.8	9.5	10	10	5.2	8.7	1.5	6.0	.43	5.6	5.2
18	6.9	9.0	9.5	12	10	4.1	8.2	1.2	2.8	.36	5.2	5.1
19	8.0	9.1	9.3	10	10	3.5	7.7	1.6	4.7	.30	3.4	5.2
20	9.1	9.0	9.3	10	10	3.7	7.7	1.1	5.1	.49	5.9	5.3
21	9.1	9.0	9.5	10	10	5.0	8.2	3.0	5.0	.46	6.1	5.2
22	9.3	8.7	9.5	10	10	5.2	6.3	5.7	5.1	.42	6.3	5.4
23	9.3	8.8	9.5	10	10	5.2	6.5	1.2	3.0	.26	6.9	8.8
24	9.3	9.1	9.6	10	10	7.1	6.9	.94	2.0	.78	7.4	6.7
25	9.1	9.1	9.5	10	9.8	4.3	7.3	.86	2.0	.59	7.5	6.5
26	6.9	9.6	9.5	10	10	3.5	7.6	.86	.82	.53	7.8	6.5
27	4.8	9.8	9.5	10	10	2.0	6.2	.82	.70	.36	8.4	6.7
28	7.4	9.8	9.6	10	9.8	3.0	6.9	.82	.53	.37	8.3	6.8
29	7.3	9.8	9.6	9.5	---	4.2	10	.78	.48	.31	6.5	5.0
30	7.4	9.8	9.5	10	---	5.3	9.6	.78	.54	.25	6.9	1.5
31	7.4	---	9.5	10	---	6.2	---	.74	---	.21	7.1	---
TOTAL	172.5	231.9	297.7	297.9	279.6	224.2	195.8	153.30	55.14	16.12	141.06	162.8
MEAN	5.56	7.73	9.60	9.61	9.99	7.23	6.53	4.95	1.84	.52	4.55	5.43
MAX	9.3	9.8	10	12	10	10	10	10	6.0	1.4	8.4	8.8
MIN	1.7	4.0	9.3	9.0	9.8	2.0	2.1	.74	.46	.21	.11	1.5
AC-FT	342	460	590	591	555	445	388	304	109	32	280	323
CAL YR 1976	TOTAL	2534.16	MEAN	6.92	MAX	100	MIN	.58	AC-FT	5030		
WTR YR 1977	TOTAL	2228.02	MEAN	6.10	MAX	12	MIN	.11	AC-FT	4420		

## CHEYENNE RIVER BASIN

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06402600 CHEYENNE RIVER NEAR BUFFALO GAP, SD

LOCATION.--Lat 43°30'05", long 103°04'23", in SW¼NE¼ sec.29, T.6 S., R.9 E., Custer County, Hydrologic Unit 10120109, on right bank at right end of highway bridge, 5.8 mi (9.3 km) upstream from Cottonwood Creek and 12 mi (19 km) east of Buffalo Gap.

DRAINAGE AREA.--9,810 mi<sup>2</sup> (25,410 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WRD SD-76-1: 1970-75.

GAGE.--Water-stage recorder. Datum of gage is 2,811.45 ft (856.930 m) above mean sea level.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 34 mi (55 km) upstream, see station 06401000.

AVERAGE DISCHARGE.--9 years, 97.5 ft<sup>3</sup>/s (2.761 m<sup>3</sup>/s), 70,640 acre-ft/yr (87.1 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft<sup>3</sup>/s (498 m<sup>3</sup>/s) May 25, 1971, gage height, 11.44 ft (3.487 m); minimum daily, 13 ft<sup>3</sup>/s (0.37 m<sup>3</sup>/s) July 25, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,590 ft<sup>3</sup>/s (45.0 m<sup>3</sup>/s) July 9, gage height, 6.18 ft (1.884 m); minimum daily, 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s) Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	64	70	60	62	60	66	56	26	13	13	54
2	66	69	74	60	64	52	64	52	22	17	10	60
3	71	69	74	59	64	50	58	52	20	34	11	50
4	71	69	72	59	64	70	60	52	19	16	11	52
5	76	64	70	58	64	70	54	50	15	149	15	60
6	82	64	70	60	64	60	54	48	15	69	20	60
7	80	64	70	62	66	62	54	48	21	42	16	60
8	69	64	71	60	66	64	50	50	23	42	17	62
9	64	64	71	58	66	62	46	58	27	880	114	60
10	62	62	72	58	66	64	58	62	44	165	60	62
11	62	60	72	60	64	69	54	82	22	87	62	60
12	64	62	72	60	64	60	89	80	25	69	42	58
13	62	60	72	60	64	58	139	62	36	54	41	69
14	60	60	73	60	64	58	111	64	48	48	106	73
15	60	60	73	60	62	58	78	69	41	46	56	71
16	60	60	74	60	62	56	66	64	56	39	37	73
17	60	64	74	60	64	54	58	58	62	32	29	64
18	64	66	74	60	66	50	54	44	54	22	27	52
19	69	66	70	62	68	52	54	56	41	14	48	58
20	69	66	70	64	70	58	56	52	37	20	32	64
21	71	66	70	66	70	56	54	60	37	19	36	69
22	71	64	68	66	73	54	54	82	44	15	39	69
23	71	64	68	66	73	54	50	64	44	22	56	136
24	71	66	67	66	66	52	50	39	39	25	52	119
25	71	66	67	66	62	54	46	29	36	69	50	73
26	71	66	66	66	60	50	46	30	30	30	52	69
27	66	62	66	66	60	48	46	32	26	32	66	69
28	64	62	62	62	60	62	50	27	26	32	71	69
29	64	63	62	58	---	78	54	27	16	30	62	71
30	62	67	60	58	---	69	71	26	16	25	56	89
31	58	---	60	60	---	64	---	26	---	17	54	---
TOTAL	2077	1923	2154	1900	1818	1828	1844	1601	968	2174	1361	2055
MEAN	67.0	64.1	69.5	61.3	64.9	59.0	61.5	51.6	32.3	70.1	43.9	68.5
MAX	82	69	74	66	73	78	139	82	62	880	114	136
MIN	58	60	60	58	60	48	46	26	15	13	10	50
AC-FT	4120	3810	4270	3770	3610	3630	3660	3180	1920	4310	2700	4080

CAL YR 1976 TOTAL 21006 MEAN 57.4 MAX 280 MIN 13 AC-FT 41670  
WTR YR 1977 TOTAL 21703 MEAN 59.5 MAX 880 MIN 10 AC-FT 43050

## CHEYENNE RIVER BASIN

06402600 CHEYENNE RIVER NEAR BUFFALO GAP, SD--Continued

## WATER-QUALITY RECORDS

LOCATION.--Samples collected 6.0 mi (9.6 km) downstream from discharge station.

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,140 micromhos Jan. 13, 1971; minimum daily, 1,190 micromhos Mar. 22, 1977.

WATER TEMPERATURES: Maximum daily, 32.0°C on several days during July to August, 1969; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,700 micromhos Jan. 11; minimum daily, 1,190 micromhos Mar. 22.

WATER TEMPERATURES: Maximum daily, 27.0°C July 6; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT 13...	0900	61	2600	8.2	10.0	1000	830	260	85
NOV 09...	1300	63	2700	8.0	8.5	970	780	250	83
DEC 06...	0930	70	2600	8.2	.5	1000	780	260	86
JAN 06...	1230	60	1700	8.0	.5	1000	800	280	80
JAN 25...	0930	67	2480	8.6	.0	1100	860	300	80
FEB 24...	1230	67	2150	8.1	.5	940	770	260	71
MAR 22...	0900	53	1580	8.1	4.0	940	760	250	77
APR 21...	1330	54	2500	8.2	18.0	970	800	260	78
MAY 18...	1430	43	3000	8.0	22.5	970	810	260	78
JUN 16...	1500	59	2300	8.0	26.0	900	760	240	74
JUL 15...	1230	48	2600	8.0	25.0	1000	850	280	79
AUG 09...	0945	222	2500	8.1	23.5	920	760	240	78

## CHEYENNE RIVER BASIN

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06402600 CHEYENNE RIVER NEAR BUFFALO GAP, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINIT AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 13...	220	32	3.0	19	207	0	170	1000	140
NOV 09...	210	32	2.9	18	222	0	182	1100	130
DEC 06...	190	29	2.6	16	268	0	220	1100	130
JAN 06...	180	27	2.4	16	284	0	233	1000	120
25...	180	26	2.4	15	269	0	221	1000	120
FEB 24...	170	28	2.4	13	205	0	168	960	110
MAR 22...	200	31	2.8	14	221	0	180	1000	130
APR 21...	200	31	2.8	15	210	0	170	1000	120
MAY 18...	210	32	2.9	14	190	0	160	1000	130
JUN 16...	200	32	2.9	16	170	0	140	1000	130
JUL 15...	230	32	3.1	16	210	0	170	1100	150
AUG 09...	230	35	3.3	17	190	0	160	1100	140

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2500	2400	2380	2450	2300	2100	2150	2120	2500	2470	1790	2000
2	2350	2350	2400	2600	2200	2250	2210	2190	2580	2480	1760	2500
3	2350	2300	2350	2450	2200	2100	2190	2250	2570	1880	1760	1560
4	2400	2300	2350	2450	2100	2400	2160	2240	2580	1820	1750	1520
5	2400	2250	2350	2400	2100	2160	2140	2240	2630	1870	1760	2540
6	2400	2350	2350	2350	1900	2300	2140	2230	2660	2130	1760	2540
7	2400	2300	2350	2350	1900	1840	2140	2180	2620	2140	2450	2500
8	2350	2300	2400	2450	1900	2020	2100	2190	2550	1890	2500	2500
9	2400	2350	2300	2450	1900	1880	2100	2170	2610	1640	2400	2050
10	2420	2350	2300	2650	1900	2040	2090	2150	2620	1390	2400	1760
11	2420	2300	2350	2700	1900	1990	2080	2190	2620	2240	2400	2600
12	2400	2400	2350	2450	1900	2060	1850	2290	2480	2370	2420	1950
13	2400	2500	2300	2400	1900	2330	2080	2240	2470	2420	2500	1700
14	2400	2500	2350	2350	1900	2300	1630	2250	2460	2430	2520	2300
15	2400	2350	2350	2350	1900	2300	1770	2250	2340	2390	2500	2380
16	2420	2300	2300	2200	1950	2040	2000	2230	2340	2370	2520	1850
17	2400	2250	2300	2350	1900	2140	2070	2220	2440	2320	2430	1950
18	2400	2350	2280	2300	1850	1780	2150	2090	2470	2370	2510	1950
19	2420	2350	2300	2300	1900	2210	2150	2080	2470	2410	2500	2550
20	2400	2300	2450	2350	1900	1460	2140	2160	2470	2420	2240	2260
21	2400	2400	2450	2300	1900	2060	2140	2180	2460	2410	2510	1930
22	2400	2400	2400	2450	1850	1190	2140	2170	2480	2440	2520	1900
23	2400	2450	2400	2400	1900	1900	2150	2160	2530	2480	2400	2220
24	2400	2300	2400	2400	1900	2140	2170	2250	2650	2490	2450	2200
25	2400	2250	2330	2400	1950	1620	2140	2250	2570	2360	2450	2050
26	2400	2250	2380	2350	1950	1880	2180	2230	2530	2210	2450	2500
27	2400	2300	2280	2600	1950	2120	2140	2270	2580	2300	2450	2560
28	2400	2450	2320	2600	1950	2100	2140	2280	2580	2300	2490	2500
29	2400	2600	2300	2600	---	2200	2140	2290	2680	2340	2500	2500
30	2400	2400	2400	2600	---	2060	2140	2280	2670	2370	2400	2340
31	2400	---	2350	2450	---	2150	---	2180	---	2340	2480	---

## 06402600 CHEYENNE RIVER NEAR BUFFALO GAP, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (MG/L) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (MG/L) (70302)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS-SOLVED PHOS- PHORUS (P) (MG/L) (00666)	DIS-SOLVED BORON (B) (UG/L) (01020)
OCT 13...	.5	10	1840	2.50	303	.76	.03	.00	330
NOV 09...	.5	10	1920	2.61	327	1.2	.01	.00	300
DEC 06...	.6	13	1940	2.64	367	2.1	.01	.00	290
JAN 06...	.6	15	1840	2.50	298	1.8	.02	.00	270
JAN 25...	.7	13	1850	2.52	335	1.7	.03	.01	260
FEB 24...	.5	6.8	1700	2.31	308	.64	.03	.01	230
MAR 22...	.6	8.0	1790	2.43	256	.68	.01	.00	270
APR 21...	.6	9.4	1790	2.43	261	.65	.00	.00	290
MAY 18...	.7	9.4	1800	2.45	209	.37	.05	.00	290
JUN 16...	.7	9.6	1760	2.39	280	.23	.10	.00	320
JUL 15...	.6	12	1980	2.69	257	.72	.14	.00	340
AUG 09...	.5	8.4	1910	2.60	1140	.42	.17	.00	340

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	5.0	0.0	0.0	0.0	0.0	6.0	10.5	18.0	18.0	23.0	17.0
2	13.0	5.0	0.0	0.0	0.0	0.0	4.5	10.0	18.0	21.0	23.0	18.0
3	14.0	3.0	0.0	0.0	0.0	0.0	5.5	10.5	19.0	21.5	22.0	18.0
4	10.5	3.0	0.0	0.0	0.0	0.0	5.5	10.0	20.0	21.5	23.0	20.0
5	7.0	3.5	0.0	0.0	0.0	0.0	7.0	13.0	20.0	21.5	23.0	20.0
6	6.0	3.5	0.0	0.0	0.0	0.0	8.0	10.0	18.0	27.0	19.0	19.5
7	7.0	2.5	0.0	0.0	0.0	0.0	9.0	9.0	19.5	20.0	21.0	20.0
8	7.5	3.5	0.0	0.0	0.0	2.0	10.0	13.0	17.0	---	20.0	20.0
9	9.0	3.5	0.0	0.0	0.0	3.0	10.0	14.0	19.0	21.0	20.0	13.5
10	10.0	2.5	0.0	0.0	0.0	4.0	12.0	18.0	15.0	19.5	19.0	14.0
11	12.0	1.0	0.0	0.0	0.0	2.0	9.5	16.0	19.0	26.0	20.0	15.5
12	10.0	0.0	0.0	0.0	0.0	1.0	8.0	16.0	22.0	19.0	18.0	16.0
13	10.0	0.0	0.0	0.0	0.0	0.5	7.0	17.0	22.0	21.0	19.0	14.0
14	10.0	0.0	0.0	0.0	0.0	2.5	8.5	17.0	20.0	19.0	19.0	14.5
15	6.0	0.0	0.0	0.0	0.0	3.0	11.0	12.5	21.0	21.0	17.0	16.0
16	6.0	0.0	0.0	0.0	0.0	3.0	13.0	12.0	21.5	24.0	19.0	15.5
17	6.0	0.0	0.0	0.0	0.0	3.0	13.0	12.0	19.0	23.0	19.0	15.5
18	5.0	0.5	0.0	0.0	0.0	5.0	13.0	11.0	19.0	22.0	21.0	13.5
19	3.0	0.0	0.0	0.0	0.0	3.0	13.0	21.0	18.0	22.5	20.0	12.5
20	4.0	0.0	0.0	0.0	0.0	2.5	9.0	16.0	19.0	22.0	20.0	15.0
21	3.0	0.5	0.0	0.0	0.0	3.0	9.5	14.5	20.0	18.5	18.0	17.0
22	3.0	0.0	0.0	0.0	0.0	4.0	10.5	13.0	22.5	22.0	19.5	12.0
23	3.5	0.5	0.0	0.0	0.0	4.0	9.0	14.0	19.0	24.5	19.0	12.0
24	3.0	0.5	0.0	0.0	0.0	5.0	12.0	16.0	23.0	24.0	20.5	11.5
25	2.0	1.0	0.0	0.0	0.0	5.0	9.0	16.0	22.0	21.0	21.0	12.0
26	3.5	0.5	0.0	0.0	0.0	7.0	11.5	15.0	22.5	21.0	21.0	13.0
27	3.0	0.0	0.0	0.0	0.0	7.0	11.0	15.0	21.5	22.0	17.0	13.0
28	3.0	0.0	0.0	0.0	0.0	6.0	12.0	17.0	21.0	26.0	16.5	14.0
29	2.5	0.0	0.0	0.0	---	7.5	12.5	16.0	26.0	23.0	16.5	14.0
30	3.0	0.0	0.0	0.0	---	7.5	13.0	16.0	22.0	23.0	17.0	14.0
31	4.0	---	0.0	0.0	---	6.0	---	19.0	---	21.0	17.0	---



## 06404000 BATTLE CREEK NEAR KEYSTONE, SD

LOCATION.--Lat 43°52'21", long 103°20'10", in SW¼SW¼ sec.18, T.2 S., R.7 E., Pennington County, Hydrologic Unit 10120109, at right downstream end county highway bridge, 0.6 mi (1.0 km) downstream from Iron Creek and 4.5 mi (7.2 km) southeast of Keystone.

DRAINAGE AREA.--66 mi<sup>2</sup> (171 km<sup>2</sup>).

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

GAGE.--Water-stage recorder. Altitude of gage is 3,800 ft (1,160 m), from topographic map. Prior to Nov. 13, 1961, nonrecording gage at site 250 ft (76 m) 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 (64 m) downstream at present datum (destroyed by flood); June 10 to Nov. 20, 1972, nonrecording gage 180 ft (55 m) 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 (55 m) downstream at present datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years (water years 1946, 1962-77), 10.3 ft<sup>3</sup>/s (0.292 m<sup>3</sup>/s), 7,460 acre-ft/yr (9.20 hm<sup>3</sup>/yr); median of yearly mean discharges, 8.6 ft<sup>3</sup>/s (0.24 m<sup>3</sup>/s), 6,200 acre-ft/yr (7.6 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,200 ft<sup>3</sup>/s (742 m<sup>3</sup>/s) June 9, 1972, gage height, 14.5 ft (4.42 m), from floodmarks, site then in use, from rating curve extended above 550 ft<sup>3</sup>/s (15.6 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow for many days in 1961, 1962, 1970, 1974, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27 ft<sup>3</sup>/s (0.76 m<sup>3</sup>/s) Apr. 12, gage height, 3.99 ft (1.216 m), no peak above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s); minimum daily, 0.20 ft<sup>3</sup>/s (0.006 m<sup>3</sup>/s) July 23.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Dec. 19, 20, 22, Dec. 27 to Jan. 19, Jan. 25 to Feb. 8)

3.2	0.14	3.4	1.2	3.6	5.7	3.8	14
3.3	.55	3.5	3.0	3.7	9.4	4.0	28

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.8	.88	1.0	.70	1.9	6.1	6.2	1.7	.94	.90	.70
2	1.4	1.8	1.1	1.0	.70	2.5	5.5	5.8	1.6	.62	.90	.55
3	1.2	1.8	1.1	1.0	.70	2.1	4.9	5.5	1.7	.50	.90	.53
4	1.4	1.8	1.1	1.0	.65	1.6	4.9	5.1	1.1	.57	1.0	.58
5	1.6	1.8	.94	1.0	.70	2.5	5.3	4.6	.94	1.2	5.0	.91
6	2.1	1.8	.80	1.1	.70	2.6	6.9	4.6	.81	1.0	4.0	.70
7	2.6	1.8	1.0	1.2	.75	2.1	12	4.9	.69	.93	3.0	.61
8	2.5	1.8	1.5	1.0	.80	2.5	14	4.6	.67	.71	3.0	.60
9	2.3	1.8	2.1	.80	.81	3.0	14	4.4	.62	.85	4.0	.52
10	1.9	1.7	3.0	.60	.81	3.3	14	3.8	.56	.74	6.0	.45
11	1.9	1.2	1.9	.60	.81	3.0	11	3.8	.48	.48	5.0	.47
12	1.9	1.0	2.1	.60	.88	2.6	20	3.3	2.6	.34	4.0	.66
13	1.6	1.4	1.9	.60	1.0	3.3	22	3.5	5.5	.28	4.0	1.0
14	1.6	1.4	1.9	.80	1.0	4.1	21	3.3	2.5	.28	4.5	.93
15	1.6	1.1	1.9	.50	.94	3.3	17	3.3	1.6	.27	4.0	.72
16	1.6	1.2	1.9	.50	1.0	3.0	16	3.0	1.5	.30	3.0	.62
17	1.7	1.9	2.3	.60	1.2	3.0	14	3.5	3.9	1.0	3.0	.77
18	1.9	2.3	2.5	.60	1.6	2.8	12	3.5	4.0	.30	3.0	.75
19	1.9	2.3	2.5	.60	2.3	2.8	14	4.9	2.9	.30	2.9	.71
20	1.9	1.7	2.0	.60	2.5	2.6	15	4.6	1.9	.30	2.9	.67
21	1.9	1.4	1.2	.60	2.3	3.2	15	5.4	1.6	.30	2.4	.74
22	1.9	1.2	1.2	.60	2.6	3.2	13	5.7	1.2	.30	2.1	.82
23	1.9	1.6	1.2	.60	2.8	4.4	11	4.6	1.1	.20	2.4	7.7
24	1.9	1.9	1.1	.55	2.6	6.2	10	3.5	1.1	6.0	2.9	7.9
25	1.9	1.9	1.1	.85	2.5	6.8	9.4	2.8	.98	3.0	3.1	3.7
26	1.9	1.7	1.2	.80	2.8	5.6	8.7	2.6	1.1	3.0	2.0	2.2
27	1.9	1.1	1.5	.60	1.9	5.2	8.3	2.3	1.2	12	2.1	1.5
28	1.9	.55	1.5	.50	2.1	6.6	7.7	1.8	.90	3.0	1.9	1.4
29	1.9	.42	1.2	.50	---	5.3	7.2	1.7	.68	2.0	1.5	1.3
30	1.9	.74	1.0	.50	---	3.9	7.0	2.2	1.2	1.5	1.3	1.4
31	1.9	---	1.0	.60	---	6.0	---	2.4	---	1.0	1.2	---
TOTAL	56.9	45.91	47.62	22.40	40.15	111.0	346.9	121.2	48.33	44.21	87.90	42.11
MEAN	1.84	1.53	1.54	.72	1.43	3.58	11.6	3.91	1.61	1.43	2.84	1.40
MAX	2.6	2.3	3.0	1.2	2.8	6.8	22	6.2	5.5	12	6.0	7.9
MIN	1.2	.42	.80	.50	.65	1.6	4.9	1.7	.48	.20	.90	.45
AC-FT	113	91	94	44	80	220	688	240	96	88	174	84
CAL YR 1976	TOTAL	4902.83	MEAN	13.4	MAX	617	MIN	.42	AC-FT	9720		
WTR YR 1977	TOTAL	1014.63	MEAN	2.78	MAX	22	MIN	.20	AC-FT	2010		

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

LOCATION.--Lat 43°45'40", long 103°21'49", in SW¼NE¼ sec.26, T.3 S., R.6 E., Custer County, Hydrologic Unit 10120109, on right bank 0.3 mi (0.5 km) downstream from bridge on U.S. Highway 16A, 0.9 mi (1.5 km) east of Game Lodge, 1.5 mi (2.4 km) southwest of junction of State Highway 36 and U.S. Highway 16A, and 11.5 mi (18.5 km) east of Custer.

DRAINAGE AREA.--25.2 mi<sup>2</sup> (65.3 km<sup>2</sup>).

PERIOD OF RECORD.--October 1976 to September 1977.

GAGE.--Water-stage recorder. Altitude of gage is 4,100 ft (1,250 m), from topographic map.

REMARKS.--Records fair except those for winter periods, which are poor. Considerable losses in sinkholes downstream from gage. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63 ft<sup>3</sup>/s (1.78 m<sup>3</sup>/s) July 27, 1977, gage height, 8.11 ft (2.472 m); maximum gage height, 9.33 ft (2.844 m) Jan. 15 (backwater from ice); no flow June 5-9, July 6, 8, 11, 19, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1972, reached a stage of 10.35 ft (3.155 m), from floodmarks, discharge, 709 ft<sup>3</sup>/s (20.1 m<sup>3</sup>/s) from slope-area measurement of peak flow.

Flood of June 15, 1976, reached a stage of 10.90 ft (3.322 m), from floodmarks, discharge, 980 ft<sup>3</sup>/s (27.8 m<sup>3</sup>/s) on basis of slope-area measurement of 10.35 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 63 ft<sup>3</sup>/s (1.78 m<sup>3</sup>/s) at 0130 hours July 27, gage height, 8.11 ft (2.472 m), no other peak above base of 25 ft<sup>3</sup>/s (0.71 m<sup>3</sup>/s); maximum gage height, 9.33 ft (2.844 m) Jan. 15 (backwater from ice); no flow June 5-9, July 6, 8, 11, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.82	1.3	1.4	.65	.74	1.1	1.1	.35	.25	2.4	1.7
2	1.1	.90	1.4	1.4	.68	.74	1.2	1.1	.20	.20	2.1	1.4
3	1.1	.90	1.5	1.4	.72	.74	1.1	.98	.09	.40	2.0	1.1
4	1.2	.90	1.6	1.4	.74	.66	1.1	.50	.02	.50	1.9	1.2
5	1.3	.90	1.6	1.4	.74	.74	1.1	.35	.00	.58	2.7	1.2
6	1.4	.90	1.5	1.5	.74	.82	1.2	.50	.00	.00	2.3	.90
7	1.4	.90	1.5	1.6	.74	.82	1.5	.66	.00	.06	1.9	.74
8	1.4	.98	1.5	1.5	.74	.90	1.6	.50	.00	.00	2.5	.74
9	1.6	.98	1.6	1.4	.74	.82	1.6	.35	.00	1.2	5.0	1.1
10	1.5	.98	1.6	1.2	.74	.82	1.7	.25	.01	.74	5.8	1.1
11	1.5	.98	1.5	1.0	.82	.82	1.7	.50	.04	.00	5.0	.98
12	1.5	.98	1.5	.80	.82	.82	3.6	.82	.14	.04	3.8	.98
13	1.5	.95	1.5	.70	.82	.98	3.1	.82	.66	.13	3.1	1.5
14	1.5	.90	1.5	.60	.74	1.1	2.5	.82	.66	.25	3.1	1.1
15	1.4	.90	1.5	.50	.66	.82	2.7	.66	.45	.25	3.0	.75
16	1.4	.90	1.5	.50	.58	.82	3.4	.82	.85	.20	2.7	.14
17	1.4	.98	1.5	.60	.58	.74	3.3	.82	4.0	.06	2.5	.58
18	1.4	1.1	1.4	.80	.66	.50	2.7	.82	1.4	.02	2.7	.82
19	1.4	1.1	1.4	.90	.66	.66	3.2	1.2	1.2	.00	3.2	.82
20	1.4	1.1	1.4	.90	.66	.82	3.4	.82	.98	.13	2.7	.82
21	1.4	1.1	1.4	.90	.66	.82	2.8	1.1	.98	.45	2.1	.74
22	1.2	1.1	1.4	.90	.74	.74	2.4	1.2	1.1	.18	2.4	.90
23	1.1	1.2	1.4	.90	.66	.90	2.3	.90	.90	.05	2.4	4.6
24	1.1	1.2	1.5	.90	.66	1.1	2.0	.74	.74	2.5	2.2	3.8
25	1.1	1.3	1.6	.82	.58	.98	1.9	.58	.58	1.6	3.0	3.0
26	1.1	1.2	1.6	.74	.58	.90	1.3	.45	.74	.64	2.5	2.4
27	.90	1.1	1.6	.74	.66	1.1	1.1	.30	.82	15	2.6	2.2
28	1.9	1.0	1.6	.66	.66	1.1	1.1	.15	.45	7.3	2.3	1.9
29	.30	1.1	1.6	.66	---	1.1	1.1	.20	.40	4.3	1.7	1.7
30	.82	1.2	1.5	.66	---	1.1	1.1	.35	.35	3.3	2.0	2.1
31	.82	---	1.4	.66	---	1.1	---	.30	---	2.6	2.0	---
TOTAL	39.24	30.55	46.4	30.04	19.43	26.82	59.9	20.66	18.11	42.93	85.6	43.01
MEAN	1.27	1.02	1.50	.97	.69	.87	2.00	.67	.60	1.38	2.76	1.43
MAX	1.9	1.3	1.6	1.6	.82	1.1	3.6	1.2	4.0	15	5.8	4.6
MIN	.30	.82	1.3	.50	.58	.50	1.1	.15	.00	.00	1.7	.14
AC-FT	78	61	92	60	39	53	119	41	36	85	170	85

WTR YR 1977 TOTAL 462.69 MEAN 1.27 MAX 15 MIN .00 AC-FT 918

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LOCATION.--Lat 43°49'41", long 103°11'44", in NE¼SW¼ sec.32, T.2 S., R.8 E., Custer County, Hydrologic Unit 10120109, on right bank 50 ft (15 m) downstream from Chicago and North Western Transportation Company bridge, 0.8 mi (1.3 km) south of Hermosa and 2.9 mi (4.7 km) downstream from Grace Coolidge Creek.

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

GAGE.--Water-stage recorder. Altitude of gage is 3,290 ft (1,000 m), from topographic map. Nonrecording gage, August to December 1903, at site 50 ft (15 m) upstream, July 7, 1949, to Nov. 2, 1950, at site 0.5 mi (0.8 km) upstream, Nov. 3, 1950, to Dec. 6, 1961, at site 170 ft (52 m) downstream, all at different datum. Dec. 7, 1961, to June 10, 1972, water-stage recorder (destroyed by flood), and June 11, 1972, to Aug. 28, 1972, non-recording gage at site 80 ft (24 m) downstream at present datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 9.35 ft<sup>3</sup>/s (0.265 m<sup>3</sup>/s), 6,770 acre-ft/yr (8.35 hm<sup>3</sup>/yr); median of yearly mean discharges, 5.6 ft<sup>3</sup>/s (0.16 m<sup>3</sup>/s), 4,100 acre-ft/yr (5.1 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,400 ft<sup>3</sup>/s (606 m<sup>3</sup>/s) June 10, 1972, gage height, 17.72 ft (5.401 m), from floodmarks, from rating curve extended above 2,800 ft<sup>3</sup>/s (79.3 m<sup>3</sup>/s) on basis of contracted-opening and flow-over-railroad embankment measurement of peak flow; no flow at times in 1954-57, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 142 ft<sup>3</sup>/s (4.02 m<sup>3</sup>/s) July 27, gage height, 4.21 ft (1.283 m), no peak above base of 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s); minimum daily, 1.0 ft<sup>3</sup>/s (0.028 m<sup>3</sup>/s) July 20.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 4 to June 14, Sept. 25-30; stage-discharge  
relation affected by ice Nov. 27 to Dec. 8, Dec. 21 to Jan. 17, Jan. 27, 28,  
Mar. 29)

1.9	0.20	2.2	4.6	2.8	22
2.0	1.3	2.5	12	3.1	38

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	7.2	6.4	5.5	5.7	5.0	6.3	5.6	2.4	3.7	3.0	2.8
2	5.2	7.0	6.5	5.0	5.4	5.2	6.1	5.6	2.5	3.7	3.0	3.2
3	3.4	7.0	6.5	5.5	5.2	5.6	5.9	5.4	1.6	3.8	2.8	3.3
4	3.9	7.1	6.4	5.5	5.1	5.7	6.1	5.2	1.6	2.0	2.8	2.7
5	5.0	7.5	6.2	5.5	4.8	5.5	6.3	5.4	1.6	1.9	3.2	1.4
6	6.3	7.1	6.6	6.0	4.5	5.5	6.1	5.6	1.3	2.0	2.4	1.3
7	6.3	6.9	6.6	6.5	4.4	5.5	5.6	5.4	1.3	3.5	2.6	1.4
8	5.6	7.1	6.8	6.2	4.5	5.2	5.4	5.4	1.3	2.5	3.3	1.3
9	6.7	7.0	6.9	6.0	4.5	5.0	5.2	5.2	1.4	2.8	6.0	1.9
10	6.7	6.9	6.7	5.5	4.6	5.4	5.2	6.1	1.9	3.1	8.0	2.5
11	6.7	7.0	6.4	5.8	4.9	6.6	5.2	6.1	1.2	2.5	4.6	2.5
12	6.3	6.5	7.4	5.8	4.7	5.9	7.4	4.4	1.9	3.3	4.5	2.3
13	6.1	6.2	6.7	6.0	4.3	5.6	6.5	4.4	4.2	4.6	4.5	2.5
14	6.2	6.6	6.1	6.0	4.9	5.6	6.3	5.0	3.6	2.9	5.0	2.1
15	6.2	6.4	6.1	5.5	4.8	5.6	6.3	6.3	2.6	1.5	4.8	2.2
16	5.7	6.7	6.1	5.0	5.0	5.4	6.1	6.5	1.7	1.4	4.8	2.2
17	5.6	6.7	6.1	5.5	5.2	5.4	6.1	6.3	3.9	2.7	4.5	2.1
18	6.9	6.6	5.6	5.6	5.2	5.5	5.9	6.3	1.4	1.6	4.0	2.4
19	7.2	5.7	6.3	5.8	5.3	5.8	6.7	6.2	1.5	1.4	3.8	2.2
20	7.1	5.1	6.3	5.7	5.5	5.8	7.0	5.2	1.5	1.0	4.1	1.7
21	7.3	6.2	6.3	5.8	5.6	5.4	6.5	6.1	1.7	1.6	4.2	1.9
22	7.5	6.2	6.5	5.4	5.7	5.3	6.3	6.5	3.1	1.3	4.6	2.3
23	7.5	5.5	6.5	5.2	5.8	5.0	6.1	5.1	3.8	1.1	4.6	10
24	7.5	5.7	6.5	5.1	5.7	5.1	6.1	4.4	3.3	8.0	2.6	5.5
25	7.6	5.9	6.5	5.1	5.5	5.0	6.1	3.7	3.1	3.9	2.5	4.2
26	7.7	6.0	7.0	5.4	5.4	5.4	6.1	2.6	3.5	1.9	2.0	3.9
27	7.5	6.0	6.5	5.5	5.5	5.2	6.1	2.8	5.0	36	2.1	3.9
28	7.5	6.0	6.5	5.5	4.9	6.7	6.1	2.8	4.5	9.5	2.7	3.6
29	7.2	6.0	6.5	5.4	---	6.5	6.1	2.6	2.8	4.8	2.4	3.5
30	7.2	6.2	6.5	5.6	---	6.5	6.1	3.2	3.0	3.5	1.2	3.8
31	7.0	---	6.0	5.6	---	6.3	---	3.0	---	3.0	2.7	---
TOTAL	200.7	194.0	200.0	173.5	142.6	173.2	183.3	154.4	74.2	126.5	113.3	86.6
MEAN	6.47	6.47	6.45	5.60	5.09	5.59	6.11	4.98	2.47	4.08	3.65	2.89
MAX	7.7	7.5	7.4	6.5	5.8	6.7	7.4	6.5	5.0	36	8.0	10
MIN	3.4	5.1	5.6	5.0	4.3	5.0	5.2	2.6	1.2	1.0	1.2	1.3
AC-FT	398	385	397	344	283	344	364	306	147	251	225	172
CAL YR 1976	TOTAL	6575.4	MEAN	18.0	MAX	860	MIN	1.0	AC-FT	13040		
WTR YR 1977	TOTAL	1822.3	MEAN	4.99	MAX	36	MIN	1.0	AC-FT	3610		

## 06408500 SPRING CREEK NEAR HERMOSA, SD

LOCATION.--Lat 43°56'31", long 103°09'32", in SE½SE½SE¼ sec.21, T.1 S., R.8 E., Pennington County, Hydrologic Unit 10120109, at left upstream end of county highway bridge, 0.3 mi (0.5 km) upstream from Chicago and North Western Transportation Company bridge and 7.5 mi (12.1 km) north of Hermosa.

DRAINAGE AREA.--199 mi<sup>2</sup> (515 km<sup>2</sup>).

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 (995.263 m) above mean sea level. Prior to Mar. 30, 1973, nonrecording gage and crest-stage gage 210 ft (64.0 m) upstream, and Mar. 30 to Sept. 30, 1973, water-stage recorder at present site, both at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Considerable loss in sinkholes in reach 10 to 15 mi (16 to 24 km) above station. Flow slightly regulated by Lake Sheridan, capacity, 12,657 acre-ft (15.6 hm<sup>3</sup>), 24 mi (39 km) above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 5.66 ft<sup>3</sup>/s (0.160 m<sup>3</sup>/s), 4,100 acre-ft/yr (5.06 hm<sup>3</sup>/yr); median of yearly mean discharges, 1.6 ft<sup>3</sup>/s (0.05 m<sup>3</sup>/s), 1,200 acre-ft/yr (1.5 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft<sup>3</sup>/s (379 m<sup>3</sup>/s) June 10, 1972, gage height, 13.12 ft (3.999 m), site and datum then in use, from floodmarks, from rating curve extended above 350 ft<sup>3</sup>/s (9.91 m<sup>3</sup>/s) on basis of contracted-opening measurement of peak flow; no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 340 ft<sup>3</sup>/s (9.63 m<sup>3</sup>/s) June 12, gage height, 5.10 ft (1.554 m); no flow Aug. 26, Sept. 9, 16.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 12, Aug. 2 to Sept. 24; stage-discharge relation affected by ice Nov. 24 to Mar. 4)

2.14	0	2.3	2.9	2.6	16
2.2	.70	2.4	6.4	3.0	51

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	1.8	1.3	1.7	1.5	1.9	3.0	1.7	.88	.28	.16	.18
2	.61	1.7	1.5	1.7	1.6	1.9	5.0	1.7	.88	.28	.28	.28
3	.68	1.7	1.5	1.8	1.7	2.0	7.0	1.7	.88	.28	.28	.28
4	.79	1.7	1.4	1.8	1.8	2.0	9.7	1.8	.88	.48	.41	.28
5	1.1	1.9	1.3	2.0	1.8	2.0	5.2	1.7	.70	.78	1.1	.07
6	1.3	1.8	1.3	2.0	1.9	2.1	2.9	1.6	.54	.88	.55	.04
7	1.5	1.5	1.5	2.4	2.0	2.0	3.3	1.7	.70	1.7	.64	.06
8	1.5	1.5	2.0	2.1	1.7	2.2	5.5	1.8	.70	.57	.61	.06
9	1.5	1.5	2.2	1.8	1.7	2.0	6.5	1.7	.70	.99	.80	.00
10	1.7	1.5	2.2	1.5	1.7	2.2	6.2	1.4	.70	.71	.43	.09
11	1.9	1.6	2.4	1.5	1.7	2.5	4.5	1.5	.54	.69	.51	.09
12	1.8	1.4	2.4	1.5	1.9	1.8	7.5	1.5	37	.54	.40	.09
13	1.6	1.5	2.4	1.5	2.0	1.7	4.3	1.5	14	.70	.49	.28
14	1.7	1.5	2.4	1.4	1.9	1.9	3.2	1.5	.74	.55	.40	.28
15	1.6	1.5	2.4	1.4	1.6	1.8	2.9	1.5	.37	.66	.40	.07
16	1.5	1.4	2.4	1.3	1.6	1.8	2.9	1.5	.39	.88	.46	.00
17	1.7	1.5	2.5	1.4	1.7	1.8	2.5	1.4	.70	.72	.66	.05
18	1.7	1.4	2.3	1.5	1.8	1.9	2.3	1.4	.10	.45	.33	.09
19	1.7	1.2	2.1	1.7	1.9	1.9	2.5	1.9	.14	.29	.17	.09
20	1.9	1.3	1.9	2.2	2.2	2.0	2.3	1.1	.19	.36	.09	.18
21	1.9	1.3	2.0	2.2	1.8	1.7	2.1	1.6	.24	.70	.09	.09
22	1.9	1.3	2.0	2.2	1.7	1.5	2.1	1.4	.21	.63	.09	.20
23	1.7	1.3	2.0	2.2	1.7	1.5	2.0	1.1	.26	.49	.18	3.2
24	1.7	1.3	2.0	2.2	1.7	1.6	1.9	1.1	.18	.83	.09	1.1
25	1.7	1.2	2.1	1.8	1.8	1.5	1.9	.88	.24	.63	.06	.18
26	1.7	1.1	2.3	1.5	1.7	1.5	1.9	.88	.18	1.3	.00	.09
27	1.7	1.0	2.1	1.3	1.7	1.5	1.9	.88	.23	2.1	.33	.18
28	1.8	1.0	1.9	1.2	1.8	1.5	1.9	.88	.18	.32	.54	.18
29	1.9	1.1	1.8	1.2	---	1.5	1.9	.88	.09	.17	.28	.18
30	1.9	1.2	1.7	1.3	---	1.5	1.9	1.1	.33	.03	.18	.28
31	1.7	---	1.7	1.4	---	1.5	---	.88	---	.02	.18	---
TOTAL	47.98	42.7	61.0	52.7	49.6	56.2	108.7	43.18	63.87	20.01	11.19	8.24
MEAN	1.55	1.42	1.97	1.70	1.77	1.81	3.62	1.39	2.13	.65	.36	.27
MAX	1.9	1.9	2.5	2.4	2.2	2.5	9.7	1.9	.37	2.1	1.1	3.2
MIN	.60	1.0	1.3	1.2	1.5	1.5	1.9	.88	.09	.02	.00	.00
AC-FT	95	85	121	105	98	111	216	86	127	40	22	16

CAL YR 1976	TOTAL	2733.07	MEAN	7.47	MAX	342	MIN	.10	AC-FT	5420
WTR YR 1977	TOTAL	565.37	MEAN	1.55	MAX	37	MIN	.00	AC-FT	1120

## CHEYENNE RIVER BASIN

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

LOCATION.--Lat 44°00'49", long 103°49'48", in SW¼ sec.25, T.1 N., R.2 E., Pennington County, Hydrologic Unit 10120110, on right bank 50 ft (15 m) downstream from highway bridge, 250 ft (76 m) downstream from South Fork Castle Creek, 600 ft (183 m) upstream from high-water line of Deerfield Reservoir, 2.5 mi (4.0 km) southwest of Deerfield Dam, and 14 mi (23 km) northwest of Hill City.

DRAINAGE AREA.--83 mi<sup>2</sup> (215 km<sup>2</sup>), approximately.

## 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).

GAGE.--Water-stage recorder and grouted-rock control. Altitude of gage is 5,910 ft (1,800 m), from reservoir elevation. Prior to Aug. 31, 1948, nonrecording gage at site 50 ft (15 m) upstream at datum 2.05 ft (0.625 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Recording rain gage located at Deerfield Dam 2.5 mi (4.0 km) northeast of station.

AVERAGE DISCHARGE.--29 years, 10.1 ft<sup>3</sup>/s (0.286 m<sup>3</sup>/s), 7,320 acre-ft/yr (9.03 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft<sup>3</sup>/s (31.7 m<sup>3</sup>/s) May 22, 1952, gage height, 5.81 ft (1.771 m), from rating curve extended above slope-area measurement at gage height, 5.67 ft (1.728 m); minimum, 1.2 ft<sup>3</sup>/s (0.034 m<sup>3</sup>/s) Apr. 25, 1969; minimum gage height, 1.35 ft (0.411 m) Nov. 12, 1949, Feb. 19, 1954, Mar. 7, 1957, Mar. 29, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27 ft<sup>3</sup>/s (0.765 m<sup>3</sup>/s) Apr. 17, gage height, 2.29 ft (0.698 m); maximum gage height, 2.98 ft (0.908 m) Jan. 13 (backwater from ice), no peak above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s); minimum daily discharge, 7.0 ft<sup>3</sup>/s (0.20 m<sup>3</sup>/s) many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	9.0	8.0	7.0	8.0	9.5	10	18	12	9.8	9.1	9.3
2	8.1	8.8	8.0	7.0	8.0	9.0	10	18	12	9.8	9.1	8.8
3	7.9	9.0	8.0	7.0	8.5	8.5	10	17	12	9.6	9.1	8.8
4	7.9	9.0	8.0	7.0	9.0	9.0	10	17	11	11	9.1	9.1
5	7.9	9.0	7.5	7.0	9.0	9.0	12	18	10	10	10	8.8
6	8.1	9.0	7.5	7.5	9.0	9.5	14	18	10	10	9.3	8.6
7	7.9	9.0	7.5	8.0	9.5	9.5	16	17	10	10	9.8	8.8
8	7.9	10	8.0	8.0	10	10	19	17	10	10	11	8.6
9	7.9	10	8.0	8.0	11	10	20	17	9.8	10	12	8.6
10	7.9	10	8.5	8.0	11	9.5	20	17	9.6	10	12	8.8
11	8.4	9.0	8.5	8.0	11	9.0	16	18	9.3	10	10	8.6
12	8.4	8.0	9.0	8.0	11	9.5	16	16	9.8	9.6	9.6	8.8
13	8.6	8.0	9.5	8.0	11	11	14	16	10	9.1	9.3	9.1
14	8.6	8.0	9.5	8.0	10	12	16	15	12	9.3	9.3	8.8
15	8.1	8.0	9.5	7.5	9.0	12	19	16	12	9.3	9.6	8.8
16	8.1	8.0	9.5	7.5	10	14	21	15	14	9.1	9.3	9.1
17	8.4	8.5	10	7.5	11	14	22	15	16	8.8	9.1	9.3
18	8.1	9.0	9.0	8.0	11	12	20	18	12	8.6	9.1	9.3
19	8.0	9.0	8.5	8.5	11	11	19	20	11	8.6	9.1	9.6
20	9.0	8.5	8.5	8.5	12	10	20	17	12	9.3	9.3	9.3
21	9.0	8.0	8.5	8.5	12	14	22	16	11	9.1	9.1	9.3
22	9.3	8.0	8.5	8.5	11	17	23	16	11	8.6	9.3	9.3
23	8.8	8.5	8.5	8.5	10	18	23	15	11	9.1	9.1	12
24	8.5	9.0	8.5	8.5	10	17	20	15	11	10	8.8	11
25	8.5	8.5	8.5	8.5	10	15	20	14	11	9.8	8.8	9.8
26	8.6	7.5	9.0	8.5	10	16	19	13	11	9.8	8.8	9.3
27	8.6	7.0	8.0	8.5	10	17	20	13	10	11	10	9.3
28	9.0	7.0	7.0	7.0	9.0	14	19	12	10	9.3	9.6	9.3
29	9.0	7.0	7.0	7.0	---	12	19	12	10	9.1	9.1	9.6
30	8.4	7.5	7.0	7.5	---	10	18	12	10	8.8	9.1	9.8
31	8.6	---	7.0	8.0	---	11	---	12	---	9.1	8.8	---
TOTAL	259.6	254.8	258.0	243.0	282.0	369.0	527	490	330.5	295.6	294.7	277.6
MEAN	8.37	8.49	8.32	7.84	10.1	11.9	17.6	15.8	11.0	9.54	9.51	9.25
MAX	9.3	10	10	8.5	12	18	23	20	16	11	12	12
MIN	7.9	7.0	7.0	7.0	8.0	8.5	10	12	9.3	8.6	8.8	8.6
AC-FT	515	505	512	482	559	732	1050	972	656	586	585	551

CAL YR 1976 TOTAL 3540.7 MEAN 9.67 MAX 34 MIN 7.0 AC-FT 7020  
WTR YR 1977 TOTAL 3881.8 MEAN 10.6 MAX 23 MIN 7.0 AC-FT 7700



## CHEYENNE RIVER BASIN

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

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES.--May 1964 to current year.

INSTRUMENTATION.--Recorder with thermograph attachment.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 20.0°C June 4, 5, 25-27; minimum, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	IMMEDIATE COLIFORM (COL. PER 100 ML) (31501)	FECAL COLIFORM (COL. PER 100 ML) (31625)	FECAL STREPTOCOCCI (COL. PER 100 ML) (31673)	HARDNESS (CA,MG) (00900)
OCT 20...	1400	10	455	8.5	.0	11.6	60	40	70	260
NOV 16...	1230	8.0	580	8.5	.0	--	30	86	20	270
DEC 13...	1330	9.3	500	8.4	.0	10.9	>2	8120	818	270
JAN 11...	1045	8.0	560	8.6	.0	11.2	60	40	20	290
FEB 08...	1345	10	530	8.6	.5	--	816	85	85	270
MAR 09...	1245	9.7	550	8.5	.0	11.0	824	ND	840	260
APR 15...	1330	19	460	8.3	4.0	10.3	35	86	60	250
MAY 11...	1130	18	485	7.8	10.0	9.2	835	812	140	270
JUN 07...	1300	10	480	8.6	15.5	8.6	170	40	100	250
JUL 11...	1400	9.8	460	8.6	16.5	9.4	100	80	90	250
AUG 03...	1100	9.1	480	8.3	13.5	9.3	30	20	90	230
31...	1400	8.4	425	8.7	12.5	--	380	814	60	260
SEP 20...	1130	9.1	490	8.4	10.0	9.6	210	210	100	250

DATE	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)
OCT 20...	12	56	29	1.7	1	.0	1.3	301	0	247
NOV 16...	16	58	31	2.5	2	.1	1.5	313	0	257
DEC 13...	8	58	30	1.2	1	.0	1.2	318	0	261
JAN 11...	29	66	31	3.8	3	.1	1.3	321	0	263
FEB 08...	5	58	30	3.0	2	.1	1.2	311	5	263
MAR 09...	5	56	29	1.1	1	.0	1.2	310	0	254
APR 15...	20	57	26	1.4	1	.0	2.0	280	0	230
MAY 11...	22	58	30	1.5	1	.0	1.1	300	0	246
JUN 07...	24	52	30	1.4	1	.0	1.0	280	0	230
JUL 11...	33	49	30	1.5	1	.0	1.0	260	0	210
AUG 03...	0	42	30	1.2	1	.0	1.0	280	0	230
31...	43	53	30	1.4	1	.0	3.9	260	0	210
SEP 20...	13	51	30	1.5	1	.0	1.3	290	0	240

&gt; More than.

B Non-ideal colony count.

ND Not detected.

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DATE	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED SILICA (SiO2) (MG/L) (00955)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)
OCT 20...	5.8	1.4	.2	8.1	246	252	.33	6.64	.29	.02
NOV 16...	8.6	.8	.1	8.5	262	265	.36	5.66	.63	.02
DEC 13...	6.1	.9	.1	8.8	266	263	.36	6.68	.24	.02
JAN 11...	21	1.2	.1	9.2	290	292	.39	6.26	.33	.03
FEB 08...	17	1.3	.2	8.7	266	278	.36	7.18	.24	.03
MAR 09...	8.0	1.2	.0	8.0	--	258	.35	6.76	--	.02
APR 15...	13	1.2	.2	8.6	246	247	.33	12.6	.22	.00
MAY 11...	11	1.1	.2	8.1	256	259	.35	12.4	.13	.01
JUN 07...	12	.8	.1	7.2	209	243	.28	5.64	.03	.02
JUL 11...	7.4	.7	.1	8.0	199	226	.27	5.27	.00	.00
AUG 03...	4.0	.7	.1	8.7	226	226	.31	5.55	.00	.01
31...	7.1	3.4	.1	8.6	234	236	.32	5.31	.02	.00
SEP 20...	7.4	1.1	.1	8.5	242	244	.33	5.95	.08	.01

DATE	TIME	TOTAL	TOTAL	DIS-	SUS-	DIS-	SUS-	DIS-	SUS-	DIS-
		FILT-	NON-	SOLVED	PENDE	SOLVED	PENDE	SOLVED	PENDE	SOLVED
		RABLE	RABLE	GROSS	GROSS	GROSS	GROSS	GROSS	GROSS	GROSS
		RESIDUE	RESIDUE	ALPHA	ALPHA	BETA	BETA	BETA	BETA	BETA
		(MG/L)	(MG/L)	AS	AS	AS	AS	AS SR90	AS SR90	AS SR90
		(00515)	(00530)	U-NAT.	U-NAT.	CS-137	CS-137	/Y90	/Y90	METHOD
				(UG/L)	(UG/L)	(PC/L)	(PC/L)	(PC/L)	(PC/L)	(PC/L)
				(80030)	(80040)	(03515)	(03516)	(80050)	(80060)	(09511)
OCT 20...	1400	260	11	<3.9	.6	3.2	.5	2.8	.5	.05

< Less than.

## CHEYENNE RIVER BASIN

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	TOTAL COPPER (CU) (UG/L) (01042)	TOTAL IRON (FE) (UG/L) (01045)
OCT 20...	1400	1	0	<10	0	<10	370
MAY 11...	1130	1	0	<10	0	<10	770

DATE	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL MAN- GANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL ZINC (ZN) (UG/L) (01092)	CYANIDE (CN) (MG/L) (00720)
OCT 20...	<100	20	.0	1	<10	0	.00
MAY 11...	<100	40	.0	0	<10	7	.00

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	8.5	5.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	10.5	8.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	9.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	6.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	3.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	5.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	5.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	5.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	6.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	6.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	5.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	5.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	3.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
30	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
31	0.5	0.0	---	---	0.0	0.0	0.0	0.0	---	---	0.0	0.0

&lt; Less than.

## CHEYENNE RIVER BASIN

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	PCB IN BOTTOM		ALDRIN IN BOTTOM		CHLOR-DANE IN BOTTOM		DDD IN BOTTOM		DDE IN BOTTOM	
		TOTAL PCB (UG/L) (39516)	MA-TERIAL (UG/KG) (39519)	TOTAL ALDRIN (UG/L) (39330)	MA-TERIAL (UG/KG) (39333)	TOTAL CHLOR-DANE (UG/L) (39350)	MA-TERIAL (UG/KG) (39351)	TOTAL DDD (UG/L) (39360)	MA-TERIAL (UG/KG) (39363)	TOTAL DDE (UG/L) (39365)	MA-TERIAL (UG/KG) (39368)
OCT 20...	1400	.0	0	.00	.0	.0	0	.00	.0	.00	.0
DATE		DDT IN BOTTOM		DI-ELDRIN IN BOTTOM		ENDRIN IN BOTTOM		HEPTA-CHLOR IN BOTTOM		TOTAL HEPTA-CHLOR EPOXIDE	
		TOTAL DDT (UG/L) (39370)	MA-TERIAL (UG/KG) (39373)	TOTAL DI-AZINON (UG/L) (39570)	MA-TERIAL (UG/KG) (39380)	TOTAL ENDRIN (UG/L) (39390)	MA-TERIAL (UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	MA-TERIAL (UG/L) (39410)	TOTAL HEPTA-CHLOR (UG/KG) (39413)	MA-TERIAL (UG/L) (39420)
OCT 20...		.00	.0	.00	.00	.0	.00	.0	.00	.0	.00
DATE		HEPTA-CHLOR EPOXIDE IN BOT-TOM MA-TERIAL		LINDANE IN BOTTOM MA-TERIAL		TOTAL METHYL PARA-THION		TOTAL METHYL TRI-THION		TOX-APHENE IN BOTTOM MA-TERIAL	
		(UG/KG) (39423)	(UG/L) (39340)	(UG/KG) (39343)	(UG/L) (39530)	(UG/L) (39600)	(UG/L) (39790)	(UG/L) (39540)	(UG/L) (39400)	(UG/KG) (39403)	(UG/L) (39786)
OCT 20...		.0	.00	.0	.00	.00	.00	.00	0	0	.00

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	0.0	0.0	13.0	8.5	16.5	9.0	17.0	9.5	15.5	10.0	13.0	10.0
2	0.0	0.0	14.0	6.5	16.5	10.5	18.5	12.0	15.5	10.0	12.0	10.0
3	0.0	0.0	14.0	8.0	18.0	10.0	19.5	12.0	14.0	11.0	15.5	11.0
4	0.0	0.0	11.5	8.5	20.0	11.0	18.0	14.0	13.0	11.0	15.0	11.0
5	0.0	0.0	11.0	5.5	20.0	11.5	20.0	13.5	12.0	11.0	15.5	11.5
6	0.0	0.0	9.5	7.0	19.0	11.0	19.5	13.5	15.5	10.5	15.5	11.5
7	0.0	0.0	14.5	7.0	18.5	12.0	16.5	12.0	16.0	11.0	16.0	11.5
8	0.0	0.0	17.0	10.5	18.0	12.0	14.5	11.5	15.5	11.0	15.0	11.0
9	0.0	0.0	18.0	10.0	19.5	13.5	---	---	16.0	10.0	11.0	8.5
10	3.0	0.0	17.0	11.5	19.0	13.5	---	---	14.0	10.5	12.0	8.5
11	3.0	1.5	15.0	9.0	16.5	10.5	15.5	13.5	14.0	8.0	11.5	9.0
12	3.0	1.0	15.5	9.0	15.5	12.0	17.0	10.0	15.0	9.0	11.5	10.5
13	4.0	1.0	13.5	9.0	14.5	10.5	15.5	13.0	15.0	10.5	11.5	8.5
14	5.0	1.5	14.5	9.0	19.0	11.0	16.0	11.5	15.0	11.0	13.0	8.5
15	4.0	4.0	11.5	8.0	17.0	11.0	18.0	11.5	15.5	13.0	13.0	10.5
16	4.0	4.0	13.5	5.5	13.5	11.0	18.0	12.0	15.0	11.0	13.5	10.0
17	6.0	1.5	14.5	8.0	14.5	9.5	18.0	11.0	15.0	9.5	12.0	10.0
18	5.0	1.5	14.5	8.0	11.0	9.0	17.0	12.0	16.5	12.0	11.5	10.0
19	4.0	1.5	11.0	7.0	14.0	8.0	17.0	14.0	16.0	11.0	11.0	9.0
20	6.5	2.0	10.0	5.5	11.0	10.0	16.0	12.0	15.5	11.0	14.0	10.0
21	7.0	2.0	10.0	8.0	16.5	10.0	16.0	10.0	15.0	10.5	14.0	11.5
22	7.0	2.0	13.0	5.5	15.5	11.0	18.0	12.0	15.5	12.0	11.5	9.0
23	9.5	2.0	14.5	7.0	14.5	10.0	17.0	14.0	16.0	11.5	11.5	10.5
24	10.0	2.0	16.5	10.0	19.5	10.5	16.0	13.5	17.0	12.0	10.5	8.0
25	10.0	2.0	15.0	11.0	20.0	13.5	13.5	12.0	16.5	13.5	11.5	9.0
26	11.0	3.0	14.5	10.0	20.0	14.0	17.0	11.5	15.5	13.0	12.0	8.0
27	9.0	5.0	15.5	9.5	20.0	14.0	17.0	12.0	14.5	11.5	12.0	8.5
28	9.5	5.0	14.0	8.5	18.5	13.0	18.0	13.5	12.0	9.5	13.5	9.5
29	10.0	6.5	14.5	8.0	19.5	12.0	18.0	11.5	15.0	10.5	13.5	10.0
30	14.0	5.5	13.5	9.0	16.0	10.5	16.5	12.0	14.0	10.5	13.5	11.0
31	---	---	15.5	6.5	---	---	14.5	10.0	15.0	11.0	---	---

## CHEYENNE RIVER BASIN

## 06409500 DEERFIELD RESERVOIR NEAR HILL CITY, SD

LOCATION.--Lat 44°01'41", long 103°47'09", in NE¼SW¼ sec.20, T.1 N., R.3 E., at dam on Castle Creek, Hydrologic Unit 10120110, 0.4 mi (0.6 km) upstream from Dutchman Creek and 12.5 mi (20.1 km) northwest of Hill City.

DRAINAGE AREA.--95 mi<sup>2</sup> (246 km<sup>2</sup>), 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 at mean 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. Usable capacity, 15,153 acre-ft (18.7 hm<sup>3</sup>) between elevations 5,839 ft (1,779.7 m), lowest outlet, and 5,908 ft (1,800.8 m), crest of spillway. Dead storage below elevation 5,839 ft (1,779.7 m), 565 acre-ft (0.697 hm<sup>3</sup>). Figures given herein represent usable contents. 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 furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 15,340 acre-ft (18.9 hm<sup>3</sup>) May 22, 1952, elevation, 5,908.50 ft (1,800.911 m), from capacity table extended above elevation 5,908.00 ft (1,800.758 m), crest of spillway; minimum observed, 5 acre-ft (6,160 m<sup>3</sup>) Oct. 2, 1959, elevation, 5,839.10 ft (1,779.758 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 15,161 acre-ft (18.7 hm<sup>3</sup>) Apr. 9-12, elevation, 5,908.02 ft (1,800.764 m); minimum, 13,228 acre-ft (16.3 hm<sup>3</sup>) Oct. 28, elevation, 5,903.18 ft (1,799.289 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	5905.77	14244	
Oct. 31 . . . . .	5903.21	13241	-1003
Nov. 30 . . . . .	5903.77	13457	+216
Dec. 31 . . . . .	5904.76	13843	+386
CAL YR 1976 . . . . .			-341
Jan. 31 . . . . .	5905.94	14312	+469
Feb. 28 . . . . .	5906.91	14704	+392
Mar. 31 . . . . .	5907.98	15145	+441
Apr. 30 . . . . .	5907.93	15124	-21
May 31 . . . . .	5907.44	14921	-203
June 30 . . . . .	5907.23	14835	-86
July 31 . . . . .	5906.05	14356	-479
Aug. 31 . . . . .	5903.99	13542	-814
Sept. 30 . . . . .	5903.80	13468	-74
WTR YR 1977 . . . . .			-776



LOCATION.--Lat 44°01'45", long 103°46'53", in NW¼SE¼ sec.20, T.1 N., R.3 E., Pennington County, Hydrologic Unit 10120110, on left bank 200 ft (61 m) upstream from Dutchman Creek, 1,100 ft (335 m) downstream from Deerfield Dam, and 12.5 mi (20.1 km) northwest of Hill City.

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

GAGE.--Water-stage recorder. Datum of gage is 5,784.52 ft (1,763.122 m) above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 15, 1947, at site 400 ft (122 m) downstream at datum 0.23 ft (0.070 m) higher. Oct. 15, 1947, to Sept. 1, 1948, at site 550 ft (168 m) downstream at datum 1.77 ft (0.540 m) lower, and Sept. 2, 1948, to Nov. 2, 1971, at site 300 ft (91 m) upstream at datum 4.0 ft (1.22 m) higher.

**AVERAGE DISCHARGE.**--31 years, 10.4 ft<sup>3</sup>/s (0.295 m<sup>3</sup>/s), 7,530 acre-ft/yr (9.28 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 200 ft<sup>3</sup>/s (5.66 m<sup>3</sup>/s) May 22, 1952; maximum gage height, 3.87 ft (1.180 m) May 23, 1952 (backwater from spillway overflow), site and datum then in use; no flow at times in 1948. 1950-60.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 42 ft<sup>3</sup>/s (1.19 m<sup>3</sup>/s) Oct. 15-21; minimum daily, 1.6 ft<sup>3</sup>/s (0.045 m<sup>3</sup>/s) Sept. 22, 25, 26.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	4.7	2.3	2.2	2.2	2.3	5.9	27	16	9.8	21	24
2	17	4.6	2.2	2.2	2.2	2.3	6.2	26	15	9.6	22	24
3	17	4.6	2.2	2.2	2.2	2.3	6.4	25	15	9.2	22	24
4	17	3.7	2.2	2.2	2.2	2.2	6.8	25	14	9.2	22	24
5	18	2.4	2.3	2.2	2.2	2.2	6.4	24	14	9.2	22	24
6	18	2.3	2.3	2.2	2.2	2.3	6.1	23	14	8.9	22	24
7	18	2.3	2.3	2.2	2.2	2.3	6.8	23	14	8.7	22	19
8	18	2.3	2.2	2.2	2.2	2.3	8.2	23	15	8.7	22	15
9	18	2.3	2.2	2.2	2.2	2.3	10	22	14	8.7	22	15
10	18	2.4	2.3	2.3	2.2	2.4	12	23	14	8.5	22	15
11	18	2.4	2.3	2.2	2.2	2.3	14	24	13	8.5	22	15
12	22	2.4	2.3	2.1	2.3	2.3	21	24	12	8.5	22	15
13	26	2.3	2.3	2.1	2.3	2.3	24	24	12	8.7	22	16
14	35	2.3	2.3	2.1	2.3	2.3	28	24	12	8.7	22	16
15	42	2.3	2.3	2.2	2.2	2.3	27	24	12	15	22	16
16	42	2.3	2.2	2.2	2.2	2.3	27	23	12	21	22	8.7
17	42	2.4	2.2	2.2	2.2	2.3	28	23	12	21	22	6.5
18	42	2.4	2.2	2.1	2.2	2.3	28	21	12	21	22	6.0
19	42	2.4	2.4	2.2	2.3	2.3	29	20	12	21	22	5.4
20	42	2.4	2.4	2.2	2.2	2.5	26	19	12	21	22	3.4
21	42	2.4	2.2	2.2	2.2	3.2	25	19	12	21	22	1.7
22	36	2.4	2.3	2.2	2.2	4.0	25	19	12	21	22	1.6
23	28	2.3	2.3	2.2	2.2	4.8	26	19	11	21	23	1.7
24	27	2.3	2.3	2.2	2.3	5.9	26	19	11	21	23	1.7
25	27	2.3	2.3	2.2	2.2	7.0	26	19	11	21	23	1.6
26	27	2.3	2.2	2.3	2.2	7.0	26	19	11	21	23	1.6
27	27	2.3	2.3	2.3	2.3	6.6	26	19	11	21	23	1.9
28	16	2.3	2.4	2.2	2.3	7.5	26	19	11	21	23	2.5
29	5.2	2.2	2.4	2.2	---	9.1	27	18	10	22	23	2.6
30	5.2	2.3	2.3	2.2	---	7.2	28	18	9.8	21	24	2.7
31	4.7	---	2.3	2.2	---	6.2	---	17	---	21	24	---
TOTAL	774.1	78.3	70.7	68.1	62.3	114.6	587.8	672	375.8	476.9	692	335.6
MEAN	25.0	2.61	2.28	2.20	2.23	3.70	19.6	21.7	12.5	15.4	22.3	11.2
MAX	42	4.7	2.4	2.3	2.3	9.1	29	27	16	22	24	24
MIN	4.7	2.2	2.2	2.1	2.2	2.2	5.9	17	9.8	8.5	21	1.6
AC-FT	1540	155	140	135	124	227	1170	1330	745	946	1370	666
WTR YR 1976	TOTAL	3906.4	MEAN 10.7	MAX 42	MIN 2.2	AC-FT 7750						
CAL YR 1977	TOTAL	4308.2	MEAN 11.8	MAX 42	MIN 1.6	AC-FT 8550						

## CHEYENNE RIVER BASIN

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

LOCATION.--Lat 44°05'05", long 103°34'48", in SW¼SE¼ sec.36, T.2 N., R.4 E., Pennington County, Hydrologic Unit 10120110, on right bank 0.8 mi (1.3 km) west of Silver City and 3.0 mi (4.8 km) downstream from Slate Creek.

DRAINAGE AREA.--292 mi<sup>2</sup> (756 km<sup>2</sup>).

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

GAGE.--Water-stage recorder. Datum of gage is 4,620.00 ft (1,408.176 m) above mean sea level (Bureau of Reclamation bench mark).

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Deerfield Reservoir on Castle Creek since December 1945 (see station 06409500). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 40.4 ft<sup>3</sup>/s (1.144 m<sup>3</sup>/s), 29,270 acre-ft/yr (36.1 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,060 ft<sup>3</sup>/s (58.3 m<sup>3</sup>/s) May 15, 1965, gage height, 10.44 ft (3.182 m); from rating curve extended above 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; minimum daily, 4.0 ft<sup>3</sup>/s (0.11 m<sup>3</sup>/s) Jan. 20, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 187 ft<sup>3</sup>/s (5.30 m<sup>3</sup>/s) Apr. 25, May 1; gage height, 5.52 ft (1.682 m); minimum daily, 9.0 ft<sup>3</sup>/s (0.25 m<sup>3</sup>/s) Jan. 9, 10.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Nov. 10-17, 21-23, Nov. 26 to Mar. 9, Mar. 12-16, 21-23)

4.3	14	5.0	88
4.5	28	5.5	182
4.7	48		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	24	13	13	18	20	49	179	50	29	36	39
2	32	24	14	12	18	18	39	167	46	28	36	40
3	31	21	14	10	19	15	36	156	44	27	35	39
4	32	22	13	10	19	18	35	148	43	26	37	37
5	33	24	12	10	18	20	36	141	41	30	43	37
6	34	20	11	12	17	20	43	133	39	29	40	36
7	34	19	12	11	18	20	49	124	38	28	39	36
8	33	20	13	10	19	23	57	117	40	26	39	29
9	32	20	13	9.0	20	25	75	109	41	29	47	26
10	32	16	13	9.0	20	26	92	104	39	26	52	25
11	31	15	13	10	20	20	103	100	38	25	50	25
12	31	13	13	12	22	25	109	92	38	24	42	25
13	35	13	13	14	24	30	102	85	38	23	40	26
14	37	14	14	17	20	30	117	84	47	25	39	25
15	46	15	15	15	20	30	131	87	41	26	40	24
16	50	16	17	14	25	30	141	90	51	31	41	24
17	52	25	20	14	30	28	158	83	68	35	43	23
18	52	24	20	16	30	26	157	94	52	35	40	20
19	51	21	18	17	30	28	146	104	45	35	38	20
20	56	19	16	18	30	25	133	86	41	38	38	19
21	54	18	18	18	35	30	132	79	40	38	37	19
22	54	16	18	18	30	30	143	75	38	36	38	18
23	47	25	18	18	25	30	154	71	36	35	39	24
24	42	27	18	18	25	29	165	68	35	37	37	31
25	42	23	18	18	25	34	168	62	35	40	37	23
26	43	20	20	18	23	37	165	60	38	41	37	20
27	42	15	25	17	23	41	163	58	37	46	42	19
28	41	10	20	15	21	45	160	57	33	43	41	18
29	32	10	18	16	---	33	159	55	31	39	40	18
30	26	12	15	17	---	31	168	55	30	37	38	20
31	24	---	14	18	---	55	---	54	---	36	39	---
TOTAL	1213	561	489	444.0	644	872	3385	2977	1233	1003	1240	785
MEAN	39.1	18.7	15.8	14.3	23.0	28.1	113	96.0	41.1	32.4	40.0	26.2
MAX	56	27	25	18	35	55	168	179	68	46	52	40
MIN	24	10	11	9.0	17	15	35	54	30	23	35	18
AC-FT	2410	1110	970	881	1280	1730	6710	5900	2450	1990	2460	1560
CAL YR 1976 TOTAL	15073.0			MEAN 41.2	MAX 483	MIN 8.0	AC-FT 29900					
WTR YR 1977 TOTAL	14846.0			MEAN 40.7	MAX 179	MIN 9.0	AC-FT 29450					

## CHEYENNE RIVER BASIN

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## 06411000 PACTOLA RESERVOIR NEAR SILVER CITY, SD

LOCATION.--Lat 44°04'20", long 103°29'17", in NE&SW¼ sec.2, T.1 N., R.5 E., Pennington County, Hydrologic Unit 10120110, in outlet works of dam on Rapid Creek, 3.8 mi (6.1 km) east of Silver City.

DRAINAGE AREA.--319 mi<sup>2</sup> (826 km<sup>2</sup>).

PERIOD OF RECORD.--August 1956 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is at mean 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 August 22, 1956. Conservation capacity, 54,960 acre-ft (67.8 hm<sup>3</sup>) between elevations 4,456.1 ft (1,358.22 m) and 4,580.2 ft (1,396.04 m). Combined dead and inactive storage below elevation 4,456.1 ft (1,358.22 m) is 1,003 acre-ft (1.24 hm<sup>3</sup>). Flood storage capacity, 43,050 acre-ft (53.1 hm<sup>3</sup>) between elevations 4,580.2 ft (1,396.04 m) and 4,621.5 ft (1,408.63 m), crest of spillway. Surge capacity, 15,780 acre-ft (19.5 hm<sup>3</sup>) between elevations 4,621.5 ft (1,408.63 m) and 4,633.7 ft (1,412.35 m), maximum pool elevation. Figures given herein represent contents above elevation 4,456.1 ft (1,358.22 m). Reservoir provides flood control and water for municipal and irrigation uses.

COOPERATION.--Records of elevations and contents furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 60,970 acre-ft (75.2 hm<sup>3</sup>) May 19, 1964, elevation, 4,585.87 ft (1,397.773 m); minimum observed since initial filling, 42,122 acre-ft (51.9 hm<sup>3</sup>) Sept. 30, 1974, elevation, 4,563.72 ft (1,391.022 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 54,824 acre-ft (67.6 hm<sup>3</sup>) May 2, elevation, 4,580.04 ft (1,395.996 m); minimum, 47,229 acre-ft (58.2 hm<sup>3</sup>) Sept. 27-30, elevation, 4,570.67 ft (1,393.140 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	4575.69	51184	
Oct. 31 . . . . .	4577.27	52483	+1299
Nov. 30 . . . . .	4577.20	52424	-59
Dec. 31 . . . . .	4577.40	52591	+167
CAL YR 1976 . . . . .			+4208
Jan. 31 . . . . .	4577.66	52808	+217
Feb. 28 . . . . .	4577.95	53049	+241
Mar. 31 . . . . .	4578.46	53479	+430
Apr. 30 . . . . .	4579.73	54558	+1079
May 31 . . . . .	4578.58	53580	-978
June 30 . . . . .	4576.26	51649	-1931
July 31 . . . . .	4572.41	48570	-3079
Aug. 31 . . . . .	4571.42	47803	-767
Sept. 30 . . . . .	4570.67	47229	-574
WTR YR 1977 . . . . .			-3955

## CHEYENNE RIVER BASIN

06411500 RAPID CREEK BELOW PACTOLA DAM, SD

LOCATION.--Lat 44°04'36", long 103°28'54", in SW¼NE¼ sec.2, T.1 N., R.5 E., Pennington County, Hydrologic Unit 10120110, on right bank 2,000 ft (610 m) downstream from Pactola Dam, 3.9 mi (6.3 km) upstream from Deer Creek and 13 mi (21 km) west of Rapid City.

DRAINAGE AREA.--320 mi<sup>2</sup> (829 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1928 to September 1932 (combined records of Creek and Dakota Power and Light Co. flume), July 1946 to current year. Prior to October 1953, published as "near Pactola." Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1931(M).

GAGE.--Water-stage recorder; concrete control since Oct. 16, 1962. Datum of gage is 4,406.00 ft (1,342.949 m) above mean sea level, Bureau of Reclamation bench mark. Apr. 19, 1929, to June 30, 1932, nonrecording gage at site 3,500 ft (1,070 m) upstream at different datum. July 24, 1946, to Aug. 24, 1947, nonrecording gage and Aug. 25, 1947, to Nov. 18, 1953, water-stage recorder, at site 2 mi (3 km) upstream at different datum.

REMARKS.--Records good. Flow regulated by dam on Castle Creek since December 3, 1945 (see station 06409500), and completely regulated by Pactola Reservoir 2,000 ft (610 m) upstream since Aug. 22, 1956 (see station 06411000).

AVERAGE DISCHARGE.--35 years, 44.4 ft<sup>3</sup>/s (1.257 m<sup>3</sup>/s), 32,170 acre-ft/yr (39.7 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,170 ft<sup>3</sup>/s (61.5 m<sup>3</sup>/s) May 22, 1952, gage height, 6.74 ft (2.054 m), site and datum then in use; no flow Oct. 11-17, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 188 ft<sup>3</sup>/s (5.32 m<sup>3</sup>/s) May 5-8; minimum daily, 14 ft<sup>3</sup>/s (0.40 m<sup>3</sup>/s) Jan. 31 to Feb. 3.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

7.1	12	7.5	38	8.1	147
7.3	22	7.8	77	8.4	255

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	16	16	16	14	19	36	74	70	81	68	44
2	16	16	16	16	14	23	49	96	70	81	68	38
3	16	16	16	16	14	23	49	181	68	81	62	35
4	16	16	16	16	15	23	49	184	68	77	58	35
5	16	16	16	16	15	23	49	188	70	76	58	34
6	16	16	16	16	15	23	49	188	70	79	58	34
7	16	16	16	16	15	23	50	188	70	88	58	35
8	16	16	16	16	15	23	50	188	70	87	58	35
9	16	16	16	16	15	23	50	156	74	88	53	34
10	16	16	16	16	15	23	50	120	79	87	49	34
11	16	16	16	16	15	23	50	106	76	87	49	34
12	16	16	16	16	15	23	81	96	74	87	49	35
13	16	16	16	16	15	23	150	96	77	87	49	35
14	16	16	16	16	15	24	177	98	83	87	49	35
15	16	16	16	16	15	24	177	98	81	85	42	35
16	16	16	16	16	15	24	177	96	83	85	37	36
17	16	16	16	16	15	24	177	96	81	85	37	35
18	16	16	16	16	16	24	150	96	81	85	37	36
19	16	16	16	16	16	24	128	96	81	85	36	30
20	16	16	16	15	16	24	128	96	79	87	36	28
21	16	16	16	15	16	24	120	96	79	87	36	28
22	16	16	16	15	16	23	98	96	79	76	36	28
23	16	16	16	15	16	23	74	96	77	71	39	28
24	16	16	16	15	16	23	74	96	77	71	45	28
25	16	16	16	15	16	21	74	85	79	71	45	28
26	16	16	16	15	16	23	74	76	83	71	45	28
27	16	16	16	15	16	23	74	76	85	71	45	28
28	16	16	16	15	16	23	74	76	81	70	44	25
29	16	16	16	15	---	23	74	77	81	68	44	17
30	16	16	16	15	---	23	74	77	81	68	44	17
31	16	---	16	14	---	23	---	71	---	68	44	---
TOTAL	506	480	496	483	428	715	2686	3459	2307	2477	1478	952
MEAN	16.3	16.0	16.0	15.6	15.3	23.1	89.5	112	76.9	79.9	47.7	31.7
MAX	26	16	16	16	16	24	177	188	85	88	68	44
MIN	16	16	16	14	14	19	36	71	68	68	36	17
AC-FT	1000	952	984	958	849	1420	5330	6860	4580	4910	2930	1890
CAL YR 1976	TOTAL	13905	MEAN 38.0	MAX 234	MIN 15	AC-FT 27580						
WTR YR 1977	TOTAL	16467	MEAN 45.1	MAX 188	MIN 14	AC-FT 32660						

06411500 RAPID CREEK BELOW PACTOLA DAM, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to September 1972, October 1973 to September 1975.

REMARKS.--There are many days of no samples during the year. Conductance for these periods was estimated based on a discharge-conductance ratio.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 435 micromhos Feb. 8, 17, 22, 1971; minimum daily, 240 micromhos Mar. 28-30, 1971.

WATER TEMPERATURES: Maximum daily, 9.5°C Aug. 27, Sept. 23, 25, 1974; minimum daily, 0.0°C on several days during December 1968.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 370 micromhos on many days; minimum daily, 350 micromhos on many days.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MMOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT									
19...	1315	16	370	8.4	8.0	190	35	42	21
NOV									
16...	1130	15	352	7.0	6.0	180	35	39	20
DEC									
14...	1430	15	330	8.6	4.0	180	42	39	20
JAN									
13...	1445	15	360	8.3	2.5	180	31	40	20
FEB									
11...	1330	14	400	8.3	4.0	190	37	43	21
APR									
12...	1230	93	325	8.1	4.5	180	35	40	20
MAY									
10...	1430	121	400	7.9	6.5	180	35	40	20
JUN									
08...	1300	70	405	--	6.5	180	43	40	20
JUL									
12...	1100	84	395	8.2	6.5	180	40	39	20
AUG									
17...	1200	36	400	8.3	7.5	180	30	40	19
SEP									
26...	1430	27	400	8.2	8.5	180	40	39	20



## CHEYENNE RIVER BASIN

06411500 RAPID CREEK BELOW PACTOLA DAM, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 19...	3.7	4	.1	2.6	182	4	156	44	1.6
NOV 16...	4.4	5	.1	2.8	176	0	144	32	.1
DEC 14...	3.2	4	.1	2.6	168	0	138	43	1.2
JAN 13...	3.1	4	.1	2.5	184	0	151	46	1.2
FEB 11...	3.2	3	.1	2.6	191	0	157	45	1.2
APR 12...	3.2	4	.1	2.6	180	0	150	45	1.5
MAY 10...	2.9	3	.1	2.4	180	0	148	41	1.1
JUN 08...	3.3	4	.1	2.8	170	--	140	46	1.2
JUL 12...	3.5	4	.1	2.6	170	0	140	41	1.1
AUG 17...	4.8	5	.2	2.8	180	0	150	43	1.0
SEP 26...	3.0	3	.1	2.5	170	0	140	42	1.3

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	370	370	360	360	370	370	370	360	360	360	360	360
2	370	370	360	360	370	370	370	360	360	360	360	360
3	370	370	360	360	370	370	370	360	360	360	360	360
4	370	370	360	360	370	370	370	360	360	350	360	360
5	370	370	360	360	370	370	370	360	360	360	360	360
6	370	370	360	360	370	370	370	360	360	360	360	360
7	370	370	360	360	370	370	370	360	360	360	360	360
8	370	370	360	360	370	370	370	360	360	360	360	360
9	370	360	360	360	370	370	370	360	360	350	360	360
10	370	360	360	360	370	370	370	360	360	350	360	360
11	360	360	360	360	370	370	370	360	360	360	360	360
12	360	360	360	360	370	370	370	360	360	360	360	360
13	360	360	360	360	370	370	350	360	360	360	360	360
14	360	360	360	360	370	370	350	360	360	360	360	360
15	360	360	360	360	370	370	350	360	360	360	360	350
16	360	360	360	360	370	370	350	360	360	360	360	350
17	360	360	360	360	370	370	350	360	360	360	360	350
18	360	360	360	360	370	370	350	360	360	360	360	350
19	360	360	360	360	370	370	350	360	360	360	360	360
20	360	360	360	370	370	370	350	360	360	360	360	360
21	360	360	360	370	370	370	350	360	360	360	360	360
22	360	360	360	370	370	370	360	360	360	360	360	360
23	360	360	360	370	370	370	360	360	350	360	360	360
24	360	360	360	370	370	370	360	360	350	360	360	360
25	360	360	360	370	370	370	360	360	350	360	360	360
26	360	360	360	370	370	370	360	360	360	360	360	360
27	360	360	360	370	370	370	360	360	350	350	360	360
28	360	360	360	370	370	370	360	360	350	360	350	360
29	360	360	360	370	---	370	360	360	350	360	360	360
30	370	360	360	370	---	370	360	360	360	360	360	360
31	370	---	360	370	---	370	---	360	---	360	360	---

## CHEYENNE RIVER BASIN

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06411500 RAPID CREEK BELOW PACTOLA DAM, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED BORON (B) (UG/L) (01020)
OCT 19...	.2	8.3	218	.30	9.42	.14	.02	.01	20
NOV 16...	.2	8.5	194	.26	7.86	.02	.01	.01	50
DEC 14...	.2	7.9	200	.27	8.48	.01	.01	.00	20
JAN 13...	.3	8.2	213	.29	8.63	.12	.00	.01	20
FEB 11...	.2	9.0	220	.30	8.32	.10	.01	.01	20
APR 12...	.3	8.6	210	.29	52.7	.03	.00	.02	80
MAY 10...	.2	8.5	205	.28	67.0	.04	.00	.00	20
JUN 08...	.2	8.5	206	.28	38.9	.03	.01	.01	20
JUL 12...	.3	8.8	200	.27	45.4	.05	.00	.00	10
AUG 17...	.2	9.2	209	.28	20.3	.09	.02	.00	20
SEP 26...	.2	9.3	201	.27	14.7	.07	.01	.01	10

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	9.0	---	---	3.5	4.5	---	---	---	12.5	9.0	---
2	---	7.0	---	---	3.5	---	---	---	---	9.0	---	---
3	---	8.0	---	---	---	---	---	---	---	12.0	---	---
4	---	8.0	---	---	3.0	---	---	---	---	9.5	9.0	---
5	---	8.5	---	---	---	---	---	---	---	9.0	9.0	---
6	---	---	---	---	---	---	---	---	---	8.5	8.0	---
7	8.5	---	---	---	---	---	---	---	---	8.5	---	---
8	---	8.0	---	---	---	5.5	---	---	---	8.5	10.0	---
9	---	8.0	---	---	---	---	---	---	---	9.0	---	---
10	---	8.0	---	---	3.5	---	---	---	---	7.5	8.0	---
11	8.5	---	---	---	4.0	---	---	---	---	9.0	9.5	---
12	8.5	---	---	---	---	---	---	6.0	---	7.5	10.0	---
13	8.5	---	---	---	---	---	---	---	5.5	7.0	---	---
14	8.0	---	---	---	---	---	---	---	---	8.0	---	9.0
15	7.5	---	---	---	---	---	---	---	---	8.0	---	8.0
16	---	---	---	---	---	---	---	---	---	9.0	---	8.5
17	---	---	---	---	3.5	---	---	---	---	9.0	7.5	7.5
18	8.0	---	---	---	---	---	---	---	---	9.0	---	7.0
19	7.0	---	---	---	---	---	---	---	---	8.0	---	9.0
20	8.0	---	---	2.5	---	---	---	---	9.0	6.5	7.0	8.5
21	8.0	---	---	---	---	---	---	---	14.0	6.5	7.5	8.0
22	8.5	---	---	---	3.5	---	---	---	---	8.5	---	9.0
23	---	---	---	---	---	---	---	---	10.0	8.0	---	---
24	---	---	---	---	---	---	---	---	10.0	7.0	7.5	---
25	---	---	---	---	---	---	---	---	9.0	7.0	8.0	---
26	7.5	---	---	---	---	---	---	---	9.5	10.0	---	---
27	8.5	---	---	3.0	---	---	---	---	9.5	9.0	---	8.0
28	9.0	---	---	---	---	---	---	---	9.0	9.5	6.5	8.5
29	8.5	---	---	---	---	---	---	---	8.0	9.5	7.0	8.0
30	8.5	---	---	---	---	---	---	---	10.5	9.0	---	7.0
31	---	---	---	---	---	---	---	---	---	9.0	---	---

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

LOCATION.--Lat 44°03'04", long 103°18'47", in NE¼NE¼ sec.18, T.1 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on right bank at bridge on State Highway 40, 1.0 mi (1.6 km) southwest of city limits of Rapid City and 2.8 mi (4.5 km) downstream from Victoria Creek.

DRAINAGE AREA.--371 mi<sup>2</sup> (961 km<sup>2</sup>).

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

GAGE (REVISED).--Water-stage recorder. Concrete control Oct. 17, 1962, to Nov. 2, 1967 (destroyed). Datum of gage is 3,405.39 ft (1,037.963 m) above mean sea level, levels by Corps of Engineers. Prior to Oct. 6, 1947, nonrecording gage, and Oct. 6, 1947, to Nov. 2, 1967, water-stage recorder at present site at datum 2.0 ft (0.61 m) higher. Nov. 3, 1967, to Sept. 30, 1968, nonrecording gage at site 0.2 mi (0.3 km) downstream at datum 1.12 ft (0.341 m) lower.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by dam on Castle Creek since December 1945 (see station 06409500) and by Pactola Reservoir 21 mi (34 km) upstream since August 1956 (see station 06411000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--31 years, 39.3 ft<sup>3</sup>/s (1.113 m<sup>3</sup>/s), 28,470 acre-ft/yr (35.1 hm<sup>3</sup>/yr); median of yearly mean discharges, 33 ft<sup>3</sup>/s (0.93 m<sup>3</sup>/s), 23,900 acre-ft/yr (29 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,200 ft<sup>3</sup>/s (884 m<sup>3</sup>/s) June 9, 1972, gage height, 17.77 ft (5.416 m), present datum, from floodmarks, from rating curve extended above 1,300 ft<sup>3</sup>/s (36.8 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times in 1950-51, 1957-60, 1962-63.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 194 ft<sup>3</sup>/s (5.49 m<sup>3</sup>/s) May 8, gage height, 4.12 ft (1.256 m); minimum daily, 5.6 ft<sup>3</sup>/s (0.16 m<sup>3</sup>/s) Dec. 21.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 7-18; stage-discharge relation affected by  
ice Nov. 13, 21-23, 26-30, Dec. 6, 23, Dec. 30 to Jan. 18, Jan. 28 to  
Feb. 2, Mar. 31, Apr. 1)

2.9	5.6	3.7	92
3.1	18	4.3	211
3.3	38		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	12	14	10	15	7.3	12	74	70	69	62	32
2	20	12	14	10	16	7.3	26	73	70	66	62	31
3	14	12	14	11	14	11	35	160	70	67	60	26
4	13	12	13	11	11	17	35	186	69	69	54	26
5	13	12	13	12	13	18	36	188	66	73	54	25
6	13	11	12	13	7.3	21	39	190	67	69	51	25
7	13	12	11	15	10	19	43	192	69	74	51	25
8	13	12	13	13	13	20	43	192	67	76	51	24
9	13	12	13	11	12	18	43	186	67	77	50	24
10	13	13	11	10	13	18	44	126	67	77	46	24
11	13	13	11	10	13	18	44	120	67	79	44	24
12	12	6.2	13	10	13	18	53	101	70	77	44	25
13	11	9.0	11	11	13	18	114	101	71	77	42	25
14	11	13	12	12	13	18	173	101	69	76	42	25
15	11	14	11	10	11	19	177	97	69	76	42	25
16	11	15	13	12	12	19	177	99	70	74	31	24
17	11	15	13	14	12	19	180	99	71	74	27	24
18	11	15	12	15	13	19	169	94	69	73	26	24
19	11	13	11	16	13	18	132	94	69	73	26	23
20	11	12	10	11	14	17	130	94	69	73	27	17
21	11	7.0	5.6	11	11	17	117	94	69	73	27	17
22	11	6.0	11	6.7	12	18	113	92	69	70	27	17
23	11	10	11	7.3	12	18	76	94	69	63	27	23
24	11	13	11	8.4	11	18	73	94	67	64	32	20
25	11	11	10	7.3	10	18	73	91	67	64	34	18
26	11	8.5	11	6.7	8.4	18	74	76	67	66	34	18
27	11	6.0	14	9.5	12	18	74	74	69	67	36	18
28	11	9.0	11	10	6.7	18	74	73	67	64	35	18
29	11	12	11	12	---	15	74	71	67	64	34	15
30	11	13	11	13	---	15	74	71	67	63	34	11
31	11	---	11	15	---	13	---	73	---	62	32	---
TOTAL	394	340.7	362.6	343.9	334.4	525.6	2527	3470	2054	2189	1244	673
MEAN	12.7	11.4	11.7	11.1	11.9	17.0	84.2	112	68.5	70.6	40.1	22.4
MAX	35	15	14	16	16	21	180	192	71	79	62	32
MIN	11	6.0	5.6	6.7	6.7	7.3	12	71	66	62	26	11
AC-FT	781	676	719	682	663	1040	5010	6880	4070	4340	2470	1330
CAL YR 1976	TOTAL	13584.8	MEAN	37.1	MAX	376	MIN	5.0	AC-FT	26950		
WTR YR 1977	TOTAL	14458.2	MEAN	39.6	MAX	192	MIN	5.6	AC-FT	28680		

## CHEYENNE RIVER BASIN

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06414000 RAPID CREEK AT RAPID CITY, SD

LOCATION.--Lat 44°05'09", long 103°14'31", in SW¼SE¼ sec.35, T.2 N., R.7 E., Pennington County, Hydrologic Unit 10120110, on left bank 300 ft (91 m) upstream from Oskosh Street in Rapid City and 3.6 mi (5.8 m) downstream from Canyon Lake Dam.

DRAINAGE AREA.--410 mi<sup>2</sup> (1,060 km<sup>2</sup>), 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 3,230.00 ft (984.504 m) above mean sea level. Prior to Nov. 30, 1906, nonrecording gage at site 1 mi (1.6 km) downstream at different datum, and June 10, 1972, to Nov. 1, 1972, nonrecording gage at site 800 ft (244 m) downstream at datum 0.80 ft (0.244 m) higher. July 1942 to June 9, 1972, water-stage recorder at site 300 ft (91 m) downstream at datum 0.80 ft (0.244 m) higher (destroyed by flood).

REMARKS.--Records good except those for January, which are fair. Several small diversions above station to municipal park pools and for irrigation of about 320 acres (130 hm<sup>2</sup>). Flow regulated by Pactola Reservoir 25.4 mi (40.9 km) upstream since Aug. 22, 1956 (see station 06411000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--38 years, 62.2 ft<sup>3</sup>/s (1.762 m<sup>3</sup>/s), 45,060 acre-ft/yr (55.6 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft<sup>3</sup>/s (1,420 m<sup>3</sup>/s) June 9, 1972, gage height, 19.66 ft (5.992 m), from floodmarks, on basis of slope-area measurement of peak flow; minimum, 1.6 ft<sup>3</sup>/s (0.045 m<sup>3</sup>/s) Apr. 20, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 12, 13, 1920, reached a stage of 14.4 ft (4.39 m) present datum, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 209 ft<sup>3</sup>/s (5.92 m<sup>3</sup>/s) Apr. 18, gage height, 4.57 ft (1.393 m); maximum gage height, 5.42 ft (1.652 m) Jan. 11 (backwater from ice); minimum daily discharge, 12 ft<sup>3</sup>/s (0.34 m<sup>3</sup>/s) Jan. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	26	34	34	17	28	54	104	87	80	67	56
2	36	27	34	32	19	27	59	99	78	78	67	54
3	25	27	34	32	25	30	67	146	78	83	72	46
4	23	28	34	30	28	31	72	168	74	87	72	40
5	25	28	33	30	28	33	72	174	69	99	89	30
6	30	30	33	30	28	34	72	168	67	94	83	21
7	30	28	33	30	31	34	76	182	65	97	78	28
8	36	30	33	25	33	33	74	185	57	94	69	30
9	36	30	34	25	33	34	78	174	63	97	69	31
10	36	31	36	25	31	42	78	131	57	87	74	28
11	34	30	36	25	31	57	67	121	65	85	67	26
12	31	26	34	12	31	56	106	104	78	80	63	33
13	36	26	34	13	30	50	141	104	89	72	59	37
14	37	34	34	13	30	46	182	109	85	76	59	34
15	27	31	34	16	30	48	191	109	74	80	59	31
16	27	21	34	17	31	48	200	109	83	80	48	28
17	31	31	36	16	30	48	200	106	92	80	39	27
18	33	39	37	16	30	46	200	106	92	69	25	33
19	30	39	37	15	30	46	179	106	89	67	21	36
20	27	36	31	17	28	48	174	101	85	78	30	26
21	28	34	27	17	31	48	168	111	85	78	31	19
22	28	31	30	16	33	48	157	109	83	74	31	30
23	24	37	31	17	34	48	131	106	89	61	33	99
24	24	37	33	17	33	48	126	104	87	63	36	59
25	26	37	34	17	28	50	121	101	83	72	42	46
26	23	35	36	19	26	48	116	92	80	72	39	43
27	26	25	37	20	28	45	114	89	76	85	54	40
28	27	19	40	19	28	44	111	89	80	80	52	40
29	27	19	39	18	---	50	106	87	83	76	52	33
30	26	31	35	17	---	52	104	92	85	74	50	31
31	28	---	30	17	---	52	---	92	---	72	50	---
TOTAL	927	903	1057	647	815	1352	3596	3678	2358	2470	1680	1115
MEAN	29.9	30.1	34.1	20.9	29.1	43.6	120	119	78.6	79.7	54.2	37.2
MAX	50	39	40	34	34	57	200	185	92	99	89	99
MIN	23	19	27	12	17	27	54	87	57	61	21	19
AC-FT	1840	1790	2100	1280	1620	2680	7130	7300	4680	4900	3330	2210

CAL YR 1976 TOTAL 20467 MEAN 55.9 MAX 488 MIN 18 AC-FT 40600  
WTR YR 1977 TOTAL 20598 MEAN 56.4 MAX 200 MIN 12 AC-FT 40860

## CHEYENNE RIVER BASIN

06421500 RAPID CREEK NEAR FARMINGDALE, SD

LOCATION.--Lat 43°56'31", long 102°51'12", in SW¼SW¼SW¼ sec.19, T.1 S., R.11 E., Pennington County, Hydrologic Unit 10120110, on right bank at downstream side of bridge, 2 mi (3.2 km) southeast of Farmingdale and 4.8 mi (7.7 km) downstream from Antelope Creek.

DRAINAGE AREA.--602 mi<sup>2</sup> (1,559 km<sup>2</sup>).

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 2,700 ft (823 m), from topographic map. Prior to Sept. 19, 1947, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Pactola Reservoir 67 mi (108 km) upstream since August 22, 1956 (see station 06411000). Diversions for irrigation of about 10,000 acres (4,050 hm<sup>2</sup>) above station.

AVERAGE DISCHARGE.--31 years, 55.0 ft<sup>3</sup>/s (1.558 m<sup>3</sup>/s), 39,850 acre-ft/yr (49.1 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,320 ft<sup>3</sup>/s (207 m<sup>3</sup>/s) June 10, 1972, gage height, 11.85 ft (3.612 m), from floodmarks, from rating curve extended above 400 ft<sup>3</sup>/s (11.3 m<sup>3</sup>/s) on basis of contracted-opening and flow-over-road measurement of peak flow; no flow at times in 1949, 1952-56, 1958-63, 1969-71.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 613 ft<sup>3</sup>/s (17.4 m<sup>3</sup>/s) Apr. 8, gage height, 8.09 ft (2.466 m); minimum daily, 7.8 ft<sup>3</sup>/s (0.22 m<sup>3</sup>/s) July 4.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 13 to July 2; stage-discharge relation  
affected by ice Nov. 27 to Mar. 12, Mar. 29)

4.5	7.8	5.5	44	7.0	235
4.8	13	6.0	86	7.5	350
5.0	20	6.5	146	8.0	505

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	37	45	30	40	50	98	117	56	24	25	18
2	28	38	45	30	40	50	103	112	51	15	25	26
3	30	37	43	30	45	50	97	109	50	8.7	19	32
4	27	38	42	30	44	55	92	179	49	7.8	15	27
5	24	40	40	30	42	55	95	213	42	19	23	18
6	25	40	40	33	40	60	135	212	38	30	35	15
7	26	40	42	35	44	65	199	215	39	16	31	15
8	34	40	44	30	46	65	357	215	38	20	30	13
9	30	44	45	30	48	70	441	211	40	23	35	11
10	32	43	45	33	50	60	361	191	43	28	32	10
11	30	43	45	36	50	65	258	125	34	30	39	12
12	28	42	45	37	50	70	318	93	35	29	36	13
13	28	50	45	38	50	77	331	75	54	25	34	14
14	30	53	45	35	45	65	294	68	73	22	32	16
15	35	56	45	33	45	62	306	54	62	23	32	17
16	34	56	50	33	50	59	300	51	51	24	30	17
17	28	50	60	35	50	59	273	62	61	25	34	17
18	31	45	55	38	50	57	270	50	71	29	29	16
19	35	49	50	40	50	56	284	80	69	26	20	16
20	38	48	45	40	55	53	251	73	62	23	15	19
21	37	47	45	40	65	56	215	81	55	26	10	18
22	38	51	45	40	60	54	199	121	64	29	8.4	17
23	39	54	45	40	60	53	193	96	54	32	9.0	24
24	39	55	45	40	60	51	146	87	46	34	13	128
25	44	52	45	40	60	49	127	83	46	29	17	52
26	44	48	50	40	60	49	128	73	35	33	20	41
27	44	45	50	35	50	45	118	54	33	31	22	38
28	43	40	45	30	50	47	125	55	28	36	25	37
29	44	40	40	35	---	45	122	50	29	36	28	35
30	44	45	35	35	---	22	118	53	24	29	27	37
31	42	---	30	38	---	28	---	60	---	25	22	---
TOTAL	1059	1366	1391	1089	1399	1702	6354	3318	1432	787.5	772.4	769
MEAN	34.2	45.5	44.9	35.1	50.0	54.9	212	107	47.7	25.4	24.9	25.6
MAX	44	56	60	40	65	77	441	215	73	36	39	128
MIN	24	37	30	30	40	22	92	50	24	7.8	8.4	10
AC-FT	2100	2710	2760	2160	2770	3380	12600	6580	2840	1560	1530	1530

CAL YR 1976 TOTAL 21449.5 MEAN 58.6 MAX 924 MIN 6.2 AC-FT 42550  
WTR YR 1977 TOTAL 21438.9 MEAN 58.7 MAX 441 MIN 7.8 AC-FT 42520



## CHEYENNE RIVER BASIN

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06421500 RAPID CREEK NEAR FARMINGDALE, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953, 1956-58, 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1955 to September 1958, October 1968 to current year.

WATER TEMPERATURES: October 1955 to September 1958, October 1968 to September 1969, October 1971 to September 1975.

REMARKS.--There are many days of no samples throughout the year. Specific conductance for these days was computed using a discharge-conductance ratio.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,650 micromhos Oct. 16, 1956; minimum daily, 420 micromhos Jan. 8, 1958.

WATER TEMPERATURES: Maximum daily, 34.0°C June 12, 1956; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,260 micromhos Aug. 26, 27; minimum daily, 485 micromhos May 7.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT									
08...	1230	161	1200	8.1	11.0	700	530	200	49
NOV									
03...	1415	193	1180	8.3	6.0	700	520	200	48
DEC									
16...	1015	184	1460	8.5	2.0	730	530	210	50
JAN									
06...	1000	166	1500	8.1	.0	800	550	230	54
FEB									
01...	1615	169	1300	7.3	.0	730	500	210	49
MAR									
03...	0900	170	1040	8.4	1.0	730	530	210	49
APR									
06...	1200	318	1460	8.3	9.0	690	520	190	52
MAY									
03...	1015	503	800	8.1	14.5	460	310	130	33
JUN									
02...	0930	127	1300	7.9	19.0	690	520	200	47
30...	0900	108	1280	8.2	17.0	590	430	160	46
AUG									
03...	1130	245	990	8.1	21.0	360	200	96	29
SEP									
01...	1430	213	1220	8.0	18.5	600	420	160	48

## CHEYENNE RIVER BASIN

06421500 RAPID CREEK NEAR FARMINGDALE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 08...	27	8	.4	4.2	212	0	174	530	6.0
NOV 03...	25	7	.4	3.6	218	0	179	530	4.0
DEC 16...	19	5	.3	3.1	244	0	200	550	3.4
JAN 06...	28	7	.4	3.9	297	0	244	610	4.3
FEB 01...	17	5	.3	3.5	276	0	226	520	4.5
MAR 03...	22	6	.4	3.3	238	0	195	570	3.9
APR 06...	49	13	.8	4.9	210	0	170	560	5.4
MAY 03...	19	8	.4	3.3	190	0	160	320	3.3
JUN 02...	28	8	.5	3.9	210	0	170	540	3.8
AUG 30...	71	21	1.3	6.6	190	0	160	560	6.9
SEP 03...	96	36	2.2	8.2	200	0	160	370	12
SEP 01...	48	15	.9	4.9	220	0	180	470	5.9

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	950	970	1050	990	865	710	660	785	935	970	900
2	1050	950	930	1000	920	865	695	670	770	910	990	820
3	1050	970	960	950	950	860	625	675	790	890	1080	830
4	1040	960	960	920	920	860	660	635	815	895	1080	850
5	1050	950	950	890	1000	860	700	525	810	1000	1060	880
6	1060	940	950	900	950	850	600	500	800	1110	1060	920
7	1040	950	940	900	950	815	655	485	820	905	1040	960
8	1060	950	940	900	920	780	600	500	840	910	1020	980
9	1080	950	940	900	890	835	560	510	850	910	870	980
10	1110	960	960	970	970	770	565	520	860	910	870	990
11	1140	960	980	1040	950	1000	560	515	880	920	870	960
12	1140	970	990	880	870	900	565	595	895	920	880	840
13	1080	950	950	890	770	800	580	635	845	930	880	890
14	1100	950	920	900	850	780	600	700	795	935	880	1020
15	1040	940	890	910	860	860	595	805	675	930	880	960
16	1030	950	900	930	840	885	580	705	690	920	950	1200
17	1020	940	920	940	880	910	560	640	805	920	880	920
18	1010	960	940	1000	850	960	545	690	770	910	930	1020
19	1010	950	960	850	900	970	530	730	700	910	960	1170
20	980	950	940	930	880	980	555	730	680	910	990	1030
21	1060	950	910	890	860	980	585	740	710	920	1020	1240
22	910	960	890	910	850	980	580	745	700	930	1060	1240
23	910	970	930	930	820	905	600	730	690	940	1100	1160
24	920	960	960	940	850	900	620	720	675	970	1160	1000
25	920	960	970	930	860	850	640	725	730	905	1220	730
26	1020	960	970	890	870	800	650	750	765	900	1260	730
27	1020	960	960	950	880	750	665	780	800	890	1260	830
28	990	960	940	970	940	720	675	810	850	900	1190	880
29	900	960	980	970	---	720	660	800	890	905	1120	900
30	950	960	980	970	---	710	645	800	900	930	940	950
31	950	---	840	970	---	710	---	775	---	950	980	---

## CHEYENNE RIVER BASIN

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06421500 RAPID CREEK NEAR FARMINGDALE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED BORON (B) (UG/L) (01020)
OCT 08...	.5	9.3	932	1.27	405	.38	.06	.01	90
NOV 03...	.3	8.6	928	1.26	484	.31	.03	.01	90
DEC 16...	.3	8.5	966	1.31	480	.37	.04	.00	90
JAN 06...	.4	9.5	1090	1.48	489	.66	.05	.00	100
FEB 01...	.4	9.2	952	1.29	434	.51	.07	.03	80
MAR 03...	.3	7.9	986	1.34	453	.40	.02	.00	80
APR 06...	.5	8.0	975	1.33	837	.28	.19	.03	110
MAY 03...	.4	9.9	615	.84	835	.29	.12	.01	770
JUN 02...	.4	8.1	935	1.27	321	.07	.05	.02	100
30...	.6	8.0	953	1.30	278	.05	.14	.02	170
AUG 03...	.6	5.4	717	.98	474	.21	.41	.04	130
SEP 01...	.4	8.8	855	1.16	492	.15	.09	.02	110

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	4.0	0.0	0.0	0.0	0.0	---	---	22.0	22.0	23.0	
2	---	4.0	0.0	0.0	0.0	0.0	1.0	19.0	25.0	---	24.0	
3	---	3.0	0.0	0.0	0.0	---	1.0	20.0	---	24.0	20.0	
4	9.0	3.0	0.0	0.0	0.0	0.0	5.0	20.0	25.0	26.5	20.0	
5	---	3.0	0.0	0.0	0.0	---	---	16.0	---	---	20.0	
6	9.0	4.0	0.0	0.0	0.0	0.0	6.5	16.0	27.0	24.0	20.0	
7	10.0	2.0	0.0	0.0	0.0	0.0	8.0	14.0	---	26.0	---	
8	---	---	0.0	0.0	0.0	0.0	---	---	---	---	24.0	
9	9.0	---	0.0	0.0	0.0	0.0	14.0	19.0	25.0	---	24.0	
10	---	---	0.0	0.0	0.0	0.0	14.0	18.0	---	---	---	
11	14.0	1.0	0.0	0.0	0.0	0.0	---	21.0	---	---	---	
12	14.0	0.0	0.0	0.0	0.0	---	7.5	21.5	23.0	24.0	---	
13	13.0	0.0	0.0	0.0	0.0	---	---	22.0	19.0	---	23.0	
14	12.0	0.0	0.0	0.0	0.0	0.0	8.0	---	25.0	20.0	---	
15	12.0	0.0	0.0	0.0	0.0	3.0	10.0	17.5	25.0	---	26.0	
16	---	0.5	0.0	0.0	0.0	4.0	---	19.0	---	---	19.0	
17	---	1.0	0.0	0.0	0.0	7.0	---	20.5	23.0	---	21.0	
18	---	1.0	0.0	0.0	0.0	7.0	9.0	20.0	---	26.0	---	
19	10.0	1.5	0.0	0.0	0.0	---	9.0	17.0	---	---	---	
20	9.0	---	0.0	0.0	0.0	---	11.0	---	21.0	18.0	---	
21	8.0	0.5	0.0	0.0	0.0	6.0	14.0	---	23.0	---	---	
22	7.0	0.0	0.0	0.0	0.0	---	11.0	15.0	---	---	18.0	
23	---	0.0	0.0	0.0	0.0	8.0	---	---	---	---	---	
24	---	0.0	0.0	0.0	0.0	---	---	23.0	26.0	25.0	---	
25	---	0.0	0.0	0.0	0.0	---	6.0	22.0	---	23.0	---	
26	5.0	---	0.0	0.0	0.0	---	15.0	---	24.0	---	20.0	
27	4.0	---	0.0	0.0	0.0	---	15.5	---	28.0	20.0	19.0	
28	5.0	---	0.0	0.0	0.0	7.0	17.0	17.5	---	21.0	---	
29	5.0	---	0.0	0.0	---	---	---	---	---	21.0	20.0	
30	5.0	0.0	0.0	0.0	---	---	15.0	---	---	---	19.5	
31	4.0	---	0.0	0.0	---	---	---	22.0	---	---	19.5	

## CHEYENNE RIVER BASIN

06422500 BOXELDER CREEK NEAR NEMO, SD

LOCATION.--Lat 44°08'38", long 103°27'16", in SE¼SE¼ sec.12, T.2 N., R.5 E., Lawrence County, Hydrologic Unit 10120111, on right bank at ranch 0.2 mi (0.3 km) upstream from county line, 0.9 mi (1.4 km) downstream from Jim Creek and 4.5 mi (7.2 km) southeast of Nemo.

DRAINAGE AREA.--96 mi<sup>2</sup> (249 km<sup>2</sup>), approximately.

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 (1,316.818 m) above mean sea level. July 1945 to July 1947 nonrecording gage at site 100 ft (30 m) 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 (30 m) upstream at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years (water years 1946, 1967-77), 21.9 ft<sup>3</sup>/s (0.620 m<sup>3</sup>/s), 15,870 acre-ft/yr (19.6 hm<sup>3</sup>/yr); median of yearly mean discharges, 20 ft<sup>3</sup>/s (0.57 m<sup>3</sup>/s) 14,500 acre-ft/yr (18 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,100 ft<sup>3</sup>/s (852 m<sup>3</sup>/s) June 9, 1972, gage height, 20.4 ft (6.22 m), site and datum then in use, 22.0 ft (6.71 m), present site and datum, from floodmarks, from rating curve extended above 600 ft<sup>3</sup>/s (17.0 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; minimum daily, 0.70 ft<sup>3</sup>/s (0.020 m<sup>3</sup>/s) Dec. 30, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1911 reached a stage of about 16 ft (4.9 m), present datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 10	2000	125 3.54	2.76 0.841	Apr. 24	0100	158 4.47	2.98 0.908
Apr. 17	2345	*170 4.81	*3.02 0.920				

Minimum daily, 5.0 ft<sup>3</sup>/s (0.14 m<sup>3</sup>/s) for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	7.4	5.5	5.5	6.0	5.5	15	103	23	13	7.4	7.0
2	7.8	7.6	5.5	5.0	6.0	5.5	20	94	23	13	7.4	7.3
3	7.8	7.2	5.5	5.0	6.0	5.5	18	85	22	12	7.4	7.4
4	7.4	6.8	5.5	5.0	5.5	5.5	13	78	21	11	7.6	6.9
5	7.4	8.0	5.0	5.0	5.0	5.5	12	73	20	12	8.1	6.4
6	7.6	7.8	5.0	5.0	5.0	6.0	18	71	19	14	8.3	6.4
7	7.6	6.8	5.5	5.5	5.0	8.3	22	66	18	14	8.4	6.5
8	7.6	7.8	5.5	5.0	5.5	8.6	32	59	18	12	8.1	6.4
9	7.6	8.0	6.0	5.0	6.0	9.2	49	55	19	11	9.1	6.6
10	7.6	7.2	6.0	5.0	6.0	9.5	91	50	18	11	11	6.8
11	7.4	7.0	6.5	5.0	6.5	9.2	93	47	18	9.7	12	7.0
12	7.2	6.0	6.5	5.5	6.5	9.2	84	44	21	9.4	9.6	7.0
13	7.0	5.5	7.0	6.0	6.5	18	76	43	25	9.2	8.5	7.0
14	6.8	5.5	7.0	6.5	6.0	13	93	41	23	10	8.1	7.0
15	6.6	5.5	7.0	6.0	6.0	12	108	41	21	11	7.7	6.8
16	6.6	5.5	7.5	6.0	6.5	13	117	42	23	10	7.9	6.8
17	6.6	6.0	7.5	6.0	6.5	9.2	138	44	45	9.5	7.9	6.8
18	6.6	6.5	7.5	6.0	6.0	9.2	137	52	27	8.9	7.5	6.6
19	6.4	6.5	7.0	6.5	6.0	9.8	115	59	22	8.5	7.1	6.6
20	8.3	6.0	6.5	6.5	6.0	9.2	110	45	20	8.4	7.0	6.6
21	7.6	6.0	6.5	6.5	6.5	11	113	41	20	8.7	7.0	6.6
22	7.6	5.5	6.5	6.5	6.5	13	129	40	19	8.9	7.0	6.6
23	8.0	6.0	6.5	6.5	6.5	9.5	138	36	18	8.7	7.0	12
24	7.4	6.5	6.5	6.5	6.5	12	140	31	18	8.3	6.9	11
25	7.4	6.0	7.0	6.5	6.0	14	134	29	17	9.6	6.8	10
26	8.0	5.5	7.5	6.5	6.0	15	128	27	16	9.9	6.8	8.1
27	7.4	5.0	7.5	6.0	6.0	16	123	26	17	10	7.4	7.6
28	7.2	5.0	7.0	5.5	6.0	18	117	25	15	9.8	7.8	7.4
29	8.0	5.0	6.5	5.0	---	18	112	27	14	8.8	7.7	7.4
30	7.8	5.0	6.5	5.5	---	16	107	25	13	8.0	7.2	7.5
31	7.8	---	6.0	5.5	---	15	---	23	---	7.6	7.0	---
TOTAL	230.4	190.1	199.0	177.5	168.5	338.4	2602	1522	613	315.9	244.7	220.1
MEAN	7.43	6.34	6.42	5.73	6.02	10.9	86.7	49.1	20.4	10.2	7.89	7.34
MAX	8.3	8.0	7.5	6.5	6.5	18	140	103	45	14	12	12
MIN	6.4	5.0	5.0	5.0	5.0	5.5	12	23	13	7.6	6.8	6.4
AC-FT	457	377	395	352	334	671	5160	3020	1220	627	485	437

CAL YR 1976 TOTAL 7679.0 MEAN 21.0 MAX 829 MIN 3.0 AC-FT 15230  
WTR YR 1977 TOTAL 6821.6 MEAN 18.7 MAX 140 MIN 5.0 AC-FT 13530

06423500 CHEYENNE RIVER NEAR WASTA, SD

LOCATION.--Lat 44°04'52", long 102°24'03", in NE¼NE¼NW¼ sec.2, T.1 N., R.14 E., Pennington County, Hydrologic Unit 10120111, on left bank at downstream side of highway bridge, 200 ft (61 m) downstream from Chicago and North Western Transportation Co. bridge, 3.0 mi (4.8 m) east of Wasta, and 8.6 mi (13.8 m) downstream from Boxelder Creek.

DRAINAGE AREA.--12,800 mi<sup>2</sup> (33,200 km<sup>2</sup>), 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 (689.086 m) above mean sea level. Prior to Aug. 1, 1940, nonrecording gage at site 50 ft (15 m) 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 (0.610 m) higher. Oct. 1, 1968, to Sept. 30, 1972, at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 108 mi (174 km) upstream (see station 06401000) since October 1949 and by upstream reservoirs on Rapid Creek since August 1956. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years (water years 1929-31, 1935-77), 356 ft<sup>3</sup>/s (10.08 m<sup>3</sup>/s), 257,900 acre-ft/yr (318 hm<sup>3</sup>/yr); median of yearly mean discharges, 300 ft<sup>3</sup>/s (8.50 m<sup>3</sup>/s), 217,000 acre-ft/yr (270 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,300 ft<sup>3</sup>/s (1,310 m<sup>3</sup>/s) May 6, 1932, gage height, 13.28 ft (4.048 m), present datum, from rating curve extended above 11,000 ft<sup>3</sup>/s (312 m<sup>3</sup>/s) on basis of an incomplete discharge measurement at gage height 10.65 ft (3.246 m), present datum; maximum gage height observed, 14.5 ft (4.42 m), present datum, June 13, 1915; minimum discharge, 0.6 ft<sup>3</sup>/s (0.017 m<sup>3</sup>/s) July 27, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1920 reached a stage of 18 ft (5.5 m), present datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,400 ft<sup>3</sup>/s (238 m<sup>3</sup>/s) Aug. 9, gage height, 7.87 ft (2.399 m); minimum daily, 17 ft<sup>3</sup>/s (0.48 m<sup>3</sup>/s) July 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	106	90	65	40	90	278	240	168	47	76	81
2	79	97	85	70	40	95	432	240	114	36	63	70
3	75	97	85	70	38	95	490	222	102	31	55	71
4	79	97	80	75	36	100	616	223	122	22	53	80
5	83	102	80	80	35	110	490	279	94	17	48	72
6	83	104	80	80	35	150	1420	291	73	134	129	62
7	148	102	85	75	50	190	2610	284	59	160	93	61
8	164	104	90	70	70	225	2960	286	52	90	76	61
9	106	99	100	65	90	300	4450	287	47	56	2110	54
10	88	102	110	65	110	432	3960	271	52	647	509	54
11	85	106	120	60	100	378	2440	243	59	361	566	53
12	88	100	120	55	90	475	2660	197	63	165	231	53
13	81	100	130	55	85	250	2710	179	51	111	154	60
14	79	95	120	50	85	356	1090	177	181	92	119	58
15	79	100	110	50	90	428	868	145	143	65	343	61
16	79	150	100	55	95	286	728	129	109	56	222	66
17	85	200	90	65	100	246	616	129	884	51	130	66
18	88	233	90	75	110	227	475	137	823	45	110	255
19	83	166	85	80	120	184	414	125	289	44	98	145
20	85	138	80	80	110	227	414	140	182	67	86	71
21	92	128	85	80	100	212	378	182	164	291	84	65
22	99	120	90	75	95	212	346	603	145	91	67	74
23	99	130	90	70	95	495	328	353	148	47	63	300
24	102	140	95	65	90	282	306	239	137	59	60	1180
25	102	110	100	55	90	209	283	218	109	103	65	348
26	102	90	100	45	85	136	280	282	93	108	59	185
27	106	85	90	35	85	111	275	398	80	602	63	133
28	106	85	75	35	85	111	260	260	67	1860	81	111
29	102	90	65	40	---	110	251	144	73	368	120	103
30	104	90	60	40	---	131	249	117	56	160	150	108
31	104	---	60	40	---	125	---	164	---	100	98	---
TOTAL	2934	3466	2840	1920	2254	6978	33077	7184	4739	6086	6181	4161
MEAN	94.6	116	91.6	61.9	80.5	225	1103	232	158	196	199	139
MAX	164	233	130	80	120	495	4450	603	884	1860	2110	1180
MIN	75	85	60	35	35	90	249	117	47	17	48	53
AC-FT	5820	6870	5630	3810	4470	13840	65610	14250	9400	12070	12260	8250
CAL YR 1976	TOTAL	75187	MEAN 205	MAX 3480	MIN 30	AC-FT 149100						
WTR YR 1977	TOTAL	81820	MEAN 224	MAX 4450	MIN 17	AC-FT 162300						



## CHEYENNE RIVER BASIN

06425500 ELK CREEK NEAR ELM SPRINGS, SD

LOCATION (REVISED).--Lat 44°14'54", long 102°30'10", in SW¼NW¼ 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 (2.3 km) downstream from Hay Draw, 5.0 mi (8.0 km) southeast of Elm Springs, and 7.0 mi (11.3 km) upstream from mouth.

DRAINAGE AREA.--540 mi<sup>2</sup> (1,400 km<sup>2</sup>), approximately.

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

GAGE (REVISED).--Water-stage recorder. Datum of gage is 2,304.49 ft (702.409 m) above mean sea level. Prior to Nov. 2, 1976, nonrecording gage, and prior to Feb. 1, 1967, at site 350 ft (107 m) downstream at present datum.

REMARKS.--Records good except those for Feb. 12 to Mar. 7, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 23.7 ft<sup>3</sup>/s (0.671 m<sup>3</sup>/s), 17,170 acre-ft/yr (21.2 hm<sup>3</sup>/yr); median of yearly mean discharges, 20 ft<sup>3</sup>/s (0.57 m<sup>3</sup>/s), 14,500 acre-ft/yr (18 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,540 ft<sup>3</sup>/s (242 m<sup>3</sup>/s) Mar. 29, 1952, gage height, 10.61 ft (3.234 m), from floodmarks, site and datum then in use, from rating curve extended above 5,100 ft<sup>3</sup>/s (144 m<sup>3</sup>/s); maximum gage height, 11.0 ft (3.35 m) May 29, 1962, from floodmarks, site and datum then in use; no flow for long periods in each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 17 ft (5.2 m), at former site, in May 1920, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft<sup>3</sup>/s (11 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 10	0830	1550 43.9	8.81 2.685	June 14	2100	*2270 64.3	*9.40 2.865

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	2.0	6.1	44	6.1	.96	.00	.00
2	.00	.00	.00	.00	.00	2.0	14	45	5.6	.74	.00	.00
3	.00	.00	.00	.00	.00	2.0	16	48	5.3	.42	.00	.00
4	.00	.00	.00	.00	.00	4.0	12	52	5.0	.10	.00	.00
5	.00	.00	.00	.00	.00	6.0	12	48	4.5	.08	.00	.00
6	.00	.00	.00	.00	.00	8.0	31	40	3.7	.02	.00	.00
7	.00	.00	.00	.00	.00	9.0	107	37	3.4	.08	.00	.00
8	.00	.00	.00	.00	.00	10	293	34	3.2	.00	.00	.00
9	.00	.00	.00	.00	.00	11	1040	31	2.8	.00	.00	.00
10	.00	.00	.00	.00	.00	10	1260	28	2.5	.00	.00	.00
11	.00	.00	.00	.00	.35	13	684	23	2.5	.00	.00	.00
12	.00	.00	.00	.00	.60	11	482	19	2.8	.00	.00	.00
13	.00	.00	.00	.00	.80	15	449	17	3.4	.00	.00	.00
14	.00	.00	.00	.00	1.0	12	323	15	187	.00	.00	.00
15	.00	.00	.00	.00	.90	9.2	219	13	54	.00	.00	.00
16	.00	.00	.00	.00	1.0	9.2	163	11	12	.00	.00	.00
17	.00	.00	.00	.00	1.0	9.2	127	9.9	17	.00	.00	.00
18	.00	.00	.00	.00	1.5	9.6	92	9.2	11	.00	.00	.00
19	.00	.00	.00	.00	2.0	7.9	71	9.2	9.6	.00	.00	.00
20	.00	.00	.00	.00	5.0	7.2	54	9.6	20	.00	.00	.00
21	.00	.00	.00	.00	7.0	6.7	42	13	19	.00	.00	.00
22	.00	.00	.00	.00	6.0	7.2	35	16	13	.00	.00	.00
23	.00	.00	.00	.00	5.0	6.4	29	15	8.6	.00	.00	2.3
24	.00	.00	.00	.00	4.0	6.1	24	12	6.4	.00	.00	.66
25	.00	.00	.00	.00	3.0	5.6	22	10	5.0	.00	.00	.00
26	.00	.00	.00	.00	2.0	5.9	19	9.6	3.9	.00	.00	.00
27	.00	.00	.00	.00	2.0	5.9	17	9.2	3.0	.00	.00	.00
28	.00	.00	.00	.00	2.0	6.1	29	7.5	2.5	.00	.00	.00
29	.00	.00	.00	.00	---	7.5	37	6.9	1.9	.00	.00	.00
30	.00	.00	.00	.00	---	4.1	43	6.7	1.4	.00	.00	.00
31	.00	---	.00	.00	---	4.3	---	6.9	---	.00	.00	---
TOTAL	.00	.00	.00	.00	45.15	233.1	5752.1	655.7	426.1	2.40	.00	2.96
MEAN	.000	.000	.000	.000	1.61	7.52	192	21.2	14.2	.077	.000	.099
MAX	.00	.00	.00	.00	7.0	15	1260	52	187	.96	.00	2.3
MIN	.00	.00	.00	.00	.00	2.0	6.1	6.7	1.4	.00	.00	.00
AC-FT	.00	.00	.00	.00	90	462	11410	1300	845	4.8	.00	5.9
CAL YR 1976	TOTAL	5377.72	MEAN 14.7	MAX 1550	MIN .00	AC-FT 10670						
WTR YR 1977	TOTAL	7117.51	MEAN 19.5	MAX 1260	MIN .00	AC-FT 14120						

## 06427000 KEYHOLE RESERVOIR NEAR MOORCROFT, WY

LOCATION.--Lat 44°22'55", long 104°46'45", in NW¼NW¼ sec.27, T.51 N., R.66 W., Crook County, Hydrologic Unit 10120201, at reservoir dam on Belle Fourche River 12 mi (19 km) northeast of Moorcroft.

DRAINAGE AREA.--2,000 mi<sup>2</sup> (5,180 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--March 1952 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is at mean 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. Dead storage, below elevation 4,036.0 ft (1,230.17 m), 1,170 acre-ft (1.44 hm<sup>3</sup>). Inactive storage, between elevations 4,036.0 ft (1,230.17 m) and 4,051.0 ft (1,234.74 m), 8,310 acre-ft (10.2 hm<sup>3</sup>). Total capacity below elevation 4,099.3 ft (1,249.47 m), crest of spillway, 199,900 acre-ft (246 hm<sup>3</sup>). Figures given herein represent total contents. The reservoir provides flood control and water for irrigation in Wyoming and near Belle Fourche, S. Dak.

COOPERATION.--Records furnished by the Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 195,800 acre-ft (241 hm<sup>3</sup>) Mar. 8, 1972, elevation, 4,098.87 ft (1,249.336 m); minimum daily contents (since appreciable storage was attained), 6,030 acre-ft (7.43 hm<sup>3</sup>) Mar. 8, 9, 1955, elevation, 4,046.35 ft (1,233.327 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 134,653 acre-ft (166 hm<sup>3</sup>) Apr. 20, 21, 28, elevation, 4,092.56 ft (1,247.412 m); minimum, 103,967 acre-ft (128 hm<sup>3</sup>) Sept. 21, 22, elevation, 4,087.88 ft (1,245.986 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	4091.08	124271	
Oct. 31 . . . . .	4090.76	122128	-2143
Nov. 30 . . . . .	4090.73	121929	-199
Dec. 31 . . . . .	4090.67	121532	-397
CAL YR 1976 . . . . .			-2808
Jan. 31 . . . . .	4090.73	121929	+397
Feb. 28 . . . . .	4090.81	122459	+530
Mar. 31 . . . . .	4091.38	126342	+3883
Apr. 30 . . . . .	4092.54	134509	+8167
May 31 . . . . .	4092.39	133430	-1079
June 30 . . . . .	4092.00	130624	-2806
July 31 . . . . .	4090.40	119743	-10881
Aug. 31 . . . . .	4088.20	105881	-13862
Sept. 30 . . . . .	4087.89	104025	-1856
WTR YR 1977 . . . . .			-20246

## 06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°44'59", long 104°02'49", in NE¼NW¼NW¼ sec.18, T.9 N., R.1 E., Butte County, Hydrologic Unit 10120202, on left bank 0.3 mi (0.5 km) downstream from State line, 3.7 mi (6.0 km) downstream from Oak Creek and 11 mi (18 km) northwest of Belle Fourche, SD.

DRAINAGE AREA.--3,280 mi<sup>2</sup> (8,500 km<sup>2</sup>), 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 (943.57 m) above mean sea level.

REMARKS.--Records good except those for winter periods, which are poor. Diversions above station for irrigation of about 5,400 acres (2,200 hm<sup>2</sup>). Flow regulated by Keyhole Reservoir, usable capacity, 191,600 acre-ft (236 hm<sup>3</sup>), 143 mi (230 km) upstream since Oct. 25, 1952. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--31 years, 88.2 ft<sup>3</sup>/s (2.498 m<sup>3</sup>/s), 63,900 acre-ft/yr (78.8 hm<sup>3</sup>/yr); median of yearly mean discharges, 91 ft<sup>3</sup>/s (2.58 m<sup>3</sup>/s), 65,900 acre-ft/yr (81 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,400 ft<sup>3</sup>/s (125 m<sup>3</sup>/s) June 18, 1962, gage height, 15.59 ft (4.752 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 980 ft<sup>3</sup>/s (27.8 m<sup>3</sup>/s) Apr. 10, gage height, 7.88 ft (2.402 m); minimum daily, 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s) Dec. 5-7, 10, 20.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 22 to Aug. 12; stage-discharge relation  
affected by ice Nov. 12-15, Nov. 25 to Mar. 12)

2.5	18	4.0	175	6.0	531
3.0	61	5.0	335	8.0	1,040

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	40	13	12	15	18	110	131	45	79	246	88
2	30	35	12	12	15	18	130	130	41	71	250	90
3	28	33	12	13	15	18	130	127	40	74	250	85
4	27	33	11	14	15	18	120	119	41	77	258	60
5	25	32	10	14	15	20	110	114	39	74	263	47
6	25	32	10	15	15	30	201	119	37	71	263	40
7	25	31	10	17	18	40	302	116	33	74	266	35
8	26	29	12	15	20	50	398	116	27	64	270	32
9	25	27	12	13	20	60	816	108	24	61	279	30
10	24	26	10	13	20	60	870	98	23	63	287	29
11	24	26	12	14	20	70	773	90	28	68	300	27
12	24	25	12	14	20	80	521	82	82	64	399	26
13	24	28	14	14	20	91	381	78	63	63	413	25
14	24	30	15	14	18	76	304	76	38	56	329	24
15	26	35	15	14	16	64	264	75	34	56	315	23
16	24	41	17	13	18	63	256	75	32	83	333	22
17	24	40	20	14	20	65	248	124	38	157	321	21
18	24	34	19	15	20	69	257	108	49	185	307	20
19	24	30	15	17	20	69	272	116	85	139	302	20
20	25	29	10	19	23	70	262	95	112	122	173	20
21	25	32	13	20	25	70	238	90	123	118	115	20
22	25	32	11	20	20	68	213	82	111	112	102	26
23	26	35	12	20	20	69	194	79	102	113	96	29
24	28	42	11	20	20	70	182	76	102	111	93	73
25	28	40	12	20	20	72	171	72	103	107	90	37
26	28	35	15	20	20	75	165	67	95	105	92	31
27	29	25	15	17	20	70	158	65	91	112	94	29
28	32	20	15	13	18	70	148	62	85	123	95	34
29	32	15	13	14	---	70	142	58	84	121	93	30
30	33	15	13	14	---	80	135	56	88	156	90	29
31	39	---	12	15	---	90	---	51	---	276	87	---
TOTAL	835	927	403	479	526	1853	8471	2855	1895	3155	6871	1102
MEAN	26.9	30.9	13.0	15.5	18.8	59.8	282	92.1	63.2	102	222	36.7
MAX	39	42	20	20	25	91	870	131	123	276	413	90
MIN	24	15	10	12	15	18	110	51	23	56	87	20
AC-FT	1660	1840	799	950	1040	3680	16800	5660	3760	6260	13630	2190
CAL YR 1976	TOTAL	33515	MEAN 91.6	MAX 2220	MIN 10	AC-FT 66480						
WTR YR 1977	TOTAL	29372	MEAN 80.5	MAX 870	MIN 10	AC-FT 58260						

## CHEYENNE RIVER BASIN

83

06429500 COLD SPRINGS CREEK AT BUCKHORN, WY

LOCATION.--Lat 44°09'14", long 104°04'39" (corrected), in NW¼ sec.9, T.48 N., R.60 W., Weston County, Hydrologic Unit 10120303, on right shoulder of Cold Springs Creek road, 155 ft (47 m) upstream from centerline of U.S. Highway 85, and 0.5 mi (0.8 km) northeast of Buckhorn.

DRAINAGE AREA.--19.0 mi<sup>2</sup> (49.2 km<sup>2</sup>).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 6,090 ft (1,855 m), from topographic map.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 8.0 ft<sup>3</sup>/s (0.23 m<sup>3</sup>/s) Dec. 1, 2, 1976; maximum gage height, 6.77 ft (2.063 m) Apr. 4, 1975, backwater from snow; minimum daily discharge, 2.0 ft<sup>3</sup>/s (0.057 m<sup>3</sup>/s) Mar. 28, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 8.0 ft<sup>3</sup>/s (0.23 m<sup>3</sup>/s) Dec. 1, 2; maximum gage height, 6.25 ft (1.905 m) Dec. 11 (backwater from ice); minimum daily discharge, 2.9 ft<sup>3</sup>/s (0.082 m<sup>3</sup>/s) Apr. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.4	8.0	3.5	4.8	4.0	5.0	5.0	4.8	6.0	4.4	5.2
2	5.0	5.4	8.0	4.0	4.8	4.0	4.6	4.8	4.8	6.0	4.3	5.2
3	5.0	5.4	7.3	4.3	4.8	4.0	4.6	4.8	4.8	5.8	4.3	5.2
4	5.0	5.4	6.3	4.8	4.8	4.0	2.9	4.8	4.8	5.4	4.3	5.2
5	5.0	5.4	5.8	4.1	4.8	4.0	4.6	4.8	4.8	5.6	4.4	5.2
6	5.0	5.4	5.8	4.4	4.4	4.0	4.6	5.0	4.8	5.2	4.4	5.2
7	4.8	5.4	5.6	4.8	5.0	4.0	4.6	5.0	4.8	5.0	4.4	5.2
8	4.8	5.4	5.6	4.3	5.2	4.0	5.0	4.8	4.8	5.0	4.4	5.2
9	5.0	5.4	5.2	5.2	5.0	4.5	4.6	4.6	4.8	5.0	4.6	5.4
10	5.0	5.4	5.2	5.2	4.8	4.0	4.6	4.8	4.8	5.0	4.8	5.2
11	5.0	5.2	5.2	5.2	4.6	4.8	4.4	4.8	4.8	4.8	4.8	5.2
12	5.2	5.0	5.2	5.0	4.6	5.0	4.4	4.8	4.8	4.6	4.6	5.2
13	5.2	5.2	5.2	5.2	4.4	6.0	4.4	5.0	5.0	4.6	4.6	5.2
14	5.2	5.4	5.4	5.0	4.3	6.5	4.6	5.2	4.8	4.8	4.6	5.4
15	5.2	5.6	5.2	5.0	4.8	6.0	4.8	5.2	4.8	4.6	4.6	5.5
16	5.2	5.8	5.2	5.0	4.6	5.5	4.6	5.2	5.4	4.6	4.6	5.5
17	5.2	5.8	5.2	5.0	4.6	5.0	4.6	4.8	5.2	4.6	4.6	5.5
18	5.2	5.6	7.0	4.8	4.5	4.8	4.4	4.8	5.0	4.4	4.8	5.5
19	5.4	5.6	7.0	5.0	4.5	5.0	4.3	4.8	4.6	4.4	4.8	5.5
20	5.4	5.6	6.5	5.0	4.5	4.8	4.3	4.8	4.4	4.6	4.8	5.5
21	5.4	5.6	6.0	5.0	4.5	5.0	4.3	4.8	4.4	4.6	5.0	5.5
22	5.4	5.6	5.8	5.0	4.5	5.0	4.4	4.8	4.4	4.4	5.0	6.0
23	5.2	5.6	5.8	5.2	4.5	4.8	4.6	4.8	4.4	4.4	5.0	6.5
24	5.2	5.6	5.6	5.2	4.5	5.0	4.6	4.8	4.8	4.4	5.0	6.5
25	5.2	5.6	5.2	5.4	4.5	4.8	4.6	4.8	6.3	4.3	4.8	6.0
26	5.2	4.0	5.2	4.6	4.5	4.6	4.6	4.8	6.8	4.3	4.8	6.0
27	5.2	5.0	5.2	4.8	4.5	4.8	4.6	4.8	6.5	4.3	5.2	6.0
28	5.4	5.5	3.6	4.8	4.5	4.6	4.6	4.8	6.5	4.3	4.8	6.0
29	5.4	6.0	3.9	4.8	---	4.0	4.8	4.8	6.5	4.3	5.2	6.0
30	5.4	7.0	3.5	4.8	---	4.0	4.8	4.8	6.5	4.4	5.2	6.0
31	5.4	---	3.5	4.8	---	4.0	---	4.8	---	4.4	5.2	---
TOTAL	160.2	164.3	173.2	149.2	129.8	144.5	135.8	150.6	153.9	148.1	146.3	166.7
MEAN	5.17	5.48	5.59	4.81	4.64	4.66	4.53	4.86	5.13	4.78	4.72	5.56
MAX	5.4	7.0	8.0	5.4	5.2	6.5	5.0	5.2	6.8	6.0	5.2	6.5
MIN	4.8	4.0	3.5	3.5	4.3	4.0	2.9	4.6	4.4	4.3	4.3	5.2
AC-FT	318	326	344	296	257	287	269	299	305	294	290	331

CAL YR 1976 TOTAL 1993.3 MEAN 5.45 MAX 8.0 MIN 3.5 AC-FT 3950  
WTR YR 1977 TOTAL 1822.6 MEAN 4.99 MAX 8.0 MIN 2.9 AC-FT 3620

## CHEYENNE RIVER BASIN

06429905 SAND CREEK NEAR RANCH A, NEAR BEULAH, WY

LOCATION.--Lat 44°31'13", long 104°05'00", in SE¼SW¼ sec.5, T.52 N., R.60 W., Crook County, on left bank 1.0 mi (1.6 km) upstream from Bear Gulch, and 1.6 mi (2.6 km) south of Beulah.

DRAINAGE AREA.--267 mi<sup>2</sup> (692 km<sup>2</sup>).

PERIOD OF RECORD.--October 1967 to September 1977.

GAGE.--Water-stage recorder. Altitude of gage is 3,600 ft (1,100 m), from topographic map.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 43 ft<sup>3</sup>/s (1.22 m<sup>3</sup>/s) May 3, 1977; minimum daily, 25 ft<sup>3</sup>/s (0.71 m<sup>3</sup>/s) for many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 700 ft<sup>3</sup>/s (19.8 m<sup>3</sup>/s) June 15, 1976, gage height, 7.77 ft (2.368 m), from slope-area measurement of peak flow at site 3 mi (4.8 km) upstream.

EXTREMES FOR CURRENT PERIOD.--Maximum daily discharge, 43 ft<sup>3</sup>/s (1.22 m<sup>3</sup>/s) May 3; minimum daily, 25 ft<sup>3</sup>/s (0.71 m<sup>3</sup>/s) for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	26	25	27	25	25	25	42	33	33	27	27
2	26	25	25	27	25	26	25	42	33	34	27	27
3	26	26	25	27	25	26	25	43	33	34	27	27
4	26	26	25	27	25	26	25	42	33	33	27	27
5	25	26	25	27	25	26	26	41	33	33	27	26
6	26	26	25	27	25	26	26	38	33	33	28	26
7	25	26	25	26	25	26	27	37	33	32	28	27
8	26	26	25	26	25	25	27	35	34	32	28	27
9	26	26	25	26	25	26	27	34	34	31	27	27
10	26	26	25	26	25	26	27	34	34	31	27	27
11	26	26	25	26	25	25	27	34	34	31	27	27
12	25	26	25	26	25	26	27	34	34	31	27	27
13	26	26	25	26	25	26	27	34	34	30	27	27
14	25	26	25	25	25	26	28	35	34	30	27	27
15	25	26	25	25	25	25	28	39	34	30	29	27
16	26	26	25	25	25	25	28	39	34	29	27	27
17	26	26	26	25	25	26	29	38	35	30	27	27
18	25	26	26	25	25	26	30	36	34	29	27	27
19	26	26	26	26	25	26	30	40	34	29	27	27
20	26	26	25	25	25	25	30	40	34	29	27	27
21	26	25	25	25	25	25	30	38	35	29	27	27
22	26	25	25	25	25	25	29	37	35	28	27	27
23	26	25	25	25	26	26	29	35	35	28	27	28
24	26	25	26	25	25	26	32	34	35	28	27	27
25	27	25	26	25	25	26	33	34	35	28	27	28
26	26	25	26	25	25	26	33	34	35	28	26	28
27	27	25	26	25	25	26	36	34	35	28	26	28
28	27	25	26	25	25	26	36	34	35	27	26	28
29	26	25	26	25	---	27	36	34	34	27	26	28
30	26	25	26	25	---	26	39	34	34	26	27	29
31	26	---	27	25	---	26	---	34	---	26	27	---
TOTAL	803	769	787	795	701	799	877	1139	1022	927	838	816
MEAN	25.9	25.6	25.4	25.6	25.0	25.8	29.2	36.7	34.1	29.9	27.0	27.2
MAX	27	26	27	27	26	27	39	43	35	34	29	29
MIN	25	25	25	25	25	25	25	34	33	26	26	26
AC-FT	1590	1530	1560	1580	1390	1580	1740	2260	2030	1840	1660	1620
WTR YR 1977	TOTAL	10273	MEAN	28.1	MAX	43	MIN	25	AC-FT	20380		



LOCATION.--Lat 44°34'35", long 104°02'58", in SW¼SW¼ sec.7, T.7 N., R.1 E., Butte County, Hydrologic Unit 10120203, on right bank 15 ft (5 m) downstream from State line and 12 mi (19 km) southwest of Belle Fourche, SD.

**GAGE.--**Water-stage recorder. Altitude of gage is 3,440 ft (1,050 m), from topographic map.

REMARKS.--Records fair. Ditch diverts water from left bank of Redwater Creek, 2.0 mi (3.2 km) upstream, for irrigation of about 700 acres (283  $\text{hm}^2$ ). Flow maintained during irrigation season only. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 37 ft<sup>3</sup>/s (1.05 m<sup>3</sup>/s) July 17, 1973; no flow for long periods in each year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	.00	.00	.00	.00	.00	.00	.00	4.5	15	.00	18
2	2.1	.00	.00	.00	.00	.00	.00	.00	1.9	16	.00	19
3	2.9	.00	.00	.00	.00	.00	.00	.00	1.7	16	.00	20
4	1.6	.00	.00	.00	.00	.00	.00	.00	5.1	16	.00	22
5	.55	.00	.00	.00	.00	.00	.00	.00	4.8	15	.00	23
6	.45	.00	.00	.00	.00	.00	.00	.00	4.0	12	.00	25
7	.35	.00	.00	.00	.00	.00	.00	.00	3.9	9.7	.00	22
8	2.6	.00	.00	.00	.00	.00	.00	.00	4.1	16	5.3	12
9	7.9	.00	.00	.00	.00	.00	.00	.00	7.4	17	11	13
10	8.3	.00	.00	.00	.00	.00	.00	.00	7.8	16	15	12
11	5.0	.00	.00	.00	.00	.00	.00	.00	8.9	15	19	10
12	5.1	.00	.00	.00	.00	.00	.00	.00	9.8	14	16	9.8
13	2.6	.00	.00	.00	.00	.00	.00	.00	9.4	18	20	9.7
14	1.9	.00	.00	.00	.00	.00	.00	.00	9.4	19	29	9.5
15	1.9	.00	.00	.00	.00	.00	.00	.00	6.3	18	19	9.4
16	2.9	.00	.00	.00	.00	.00	.00	.00	6.3	16	14	9.2
17	2.1	.00	.00	.00	.00	.00	.00	.00	6.6	16	30	8.1
18	2.6	.00	.00	.00	.00	.00	.00	.00	6.4	16	31	1.7
19	2.4	.00	.00	.00	.00	.00	.00	.00	6.3	16	33	1.7
20	2.5	.00	.00	.00	.00	.00	.00	.00	6.7	16	34	1.5
21	2.4	.00	.00	.00	.00	.00	.00	.00	6.7	11	33	1.4
22	2.4	.00	.00	.00	.00	.00	.00	.00	7.2	12	28	1.2
23	1.9	.00	.00	.00	.00	.00	.00	.00	7.4	13	22	1.2
24	1.5	.00	.00	.00	.00	.00	.00	.00	7.0	16	24	1.1
25	1.3	.00	.00	.00	.00	.00	.00	.00	7.0	18	24	.80
26	.80	.00	.00	.00	.00	.00	.00	.00	7.2	18	23	.60
27	.40	.00	.00	.00	.00	.00	.00	.00	12	9.1	19	.50
28	.03	.00	.00	.00	.00	.00	.00	.00	16	.24	13	2.8
29	.00	.00	.00	.00	---	.00	.00	.00	16	.00	13	5.1
30	.00	.00	.00	.00	---	.00	.00	.00	15	.00	14	5.8
31	.00	---	.00	.00	---	.00	---	.00	---	.00	15	---
TOTAL	68.78	.00	.00	.00	.00	.00	.00	.00	222.8	410.04	504.30	277.10
MEAN	2.22	.000	.000	.000	.000	.000	.000	.000	7.43	13.2	16.3	9.24
MAX	8.3	.00	.00	.00	.00	.00	.00	.00	16	19	34	25
MIN	.00	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00	.50
AC-FT	136	.00	.00	.00	.00	.00	.00	.00	442	813	1000	550
CAL YR 1976	TOTAL	1113.71	MEAN	3.04	MAX 20	MIN	.00	AC-FT	2210			
WTR YR 1977	TOTAL	1483.02	MEAN	4.06	MAX 34	MIN	.00	AC-FT	2940			

## CHEYENNE RIVER BASIN

## 06430500 REDWATER CREEK AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°34'26", long 104°02'54", in NW¼NW¼ sec.18, T.7 N., R.1 E., Butte County, Hydrologic Unit 10120203, on left bank 800 ft (244 m) downstream from State line, 5.7 mi (9.2 km) upstream from Crow Creek, and 12 mi (19 km) southwest of Belle Fourche, SD.

DRAINAGE AREA.--471 mi<sup>2</sup> (1,220 km<sup>2</sup>).

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. Altitude of gage is 3,410 ft (1,040 m), from topographic map. Apr. 25, 1929, to Sept. 30, 1931, and Feb. 28, 1936, to July 31, 1937, nonrecording gage at site 2 mi (3 km) upstream at different datum.

REMARKS.--Records good. Large diversions for irrigation above station. Total flow passing State line may be obtained by adding flow of Murray ditch. (See station 06430000.) Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 36.7 ft<sup>3</sup>/s (1.039 m<sup>3</sup>/s), 26,590 acre-ft/yr (32.8 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,440 ft<sup>3</sup>/s (69.1 m<sup>3</sup>/s) Aug. 22, 1973, gage height, 12.19 ft (3.716 m), from rating curve extended above 1,000 ft<sup>3</sup>/s (27 m<sup>3</sup>/s) on basis of slope-area measurement at gage height 11.95 ft (3.462 m); no flow Aug. 13-15, 1929.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 172 ft<sup>3</sup>/s (4.87 m<sup>3</sup>/s) at 0845 hours Aug. 15, gage height, 3.56 ft (1.085 m), no other peak above base of 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s); minimum daily, 9.6 ft<sup>3</sup>/s (0.27 m<sup>3</sup>/s) Aug. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	43	38	41	37	40	39	79	40	19	35	28
2	39	43	39	43	36	40	38	73	44	19	36	27
3	37	44	38	43	37	41	38	65	39	20	34	26
4	37	45	38	43	37	40	39	70	39	20	35	26
5	37	44	38	44	37	40	40	68	39	21	34	26
6	37	45	38	41	37	40	40	58	39	19	36	26
7	37	43	39	41	37	40	42	56	39	19	40	27
8	35	44	39	40	37	41	43	50	40	10	36	27
9	33	42	39	35	38	41	45	46	38	12	27	27
10	34	43	39	35	38	41	52	46	37	14	15	28
11	36	42	39	35	38	39	52	44	34	14	13	28
12	36	41	39	35	37	39	54	43	34	13	12	28
13	37	42	39	39	38	40	52	44	34	9.7	12	28
14	37	42	39	39	38	40	53	46	38	12	15	28
15	38	40	39	39	38	39	52	68	38	15	58	27
16	38	40	40	39	38	39	53	71	38	20	33	28
17	39	40	40	39	38	40	53	65	38	22	13	27
18	40	40	41	39	38	39	59	58	38	21	13	39
19	40	40	40	39	39	39	57	77	36	21	12	38
20	40	39	39	38	39	39	54	74	35	25	13	38
21	40	40	41	38	47	38	53	68	38	29	12	38
22	41	41	40	38	43	38	52	62	36	28	11	39
23	41	41	40	38	42	39	55	54	36	24	9.7	44
24	41	40	41	38	40	38	60	49	39	22	9.6	41
25	41	40	41	37	39	38	62	47	40	23	10	39
26	43	40	41	37	39	38	62	47	32	26	12	39
27	43	35	41	38	40	38	67	46	28	38	23	39
28	42	40	41	37	40	40	65	48	20	45	24	35
29	43	40	41	36	---	40	55	47	19	42	24	29
30	43	39	40	36	---	42	58	48	17	39	29	30
31	42	---	40	36	---	38	---	47	---	35	26	---
TOTAL	1204	1238	1227	1196	1082	1224	1544	1764	1062	696.7	712.3	950
MEAN	38.8	41.3	39.6	38.6	38.6	39.5	51.5	56.9	35.4	22.5	23.0	31.7
MAX	43	45	41	44	47	42	67	79	44	45	58	44
MIN	33	35	38	35	36	38	38	43	17	9.7	9.6	26
AC-FT	2390	2460	2430	2370	2150	2430	3060	3500	2110	1380	1410	1880
CAL YR 1976	TOTAL	16840.0	MEAN	46.0	MAX	732	MIN	22	AC-FT	33400		
WTR YR 1977	TOTAL	13900.0	MEAN	38.1	MAX	79	MIN	9.6	AC-FT	27570		

## 06431500 SPEARFISH CREEK AT SPEARFISH, SD

LOCATION.--Lat 44°28'57", long 103°51'40", in SE&NW¼ sec.15, T.6 N., R.2 E., Lawrence County, Hydrologic Unit 10120203, on right bank in city park in Spearfish, 500 ft (152 m) downstream from fish hatchery and nearest tributary, and 9.8 mi (15.8 km) upstream from mouth.

DRAINAGE AREA.--168 mi<sup>2</sup> (435 km<sup>2</sup>).

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

REVISED RECORDS.--WSP 1116: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,640 ft (1,110 m), from topographic map. Prior to Dec. 5, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are fair. Regulation by fish hatchery and by hydro-electric plant 0.5 mi (0.8 km) upstream causes diurnal fluctuation, but since storage capacity is small, daily flows are not appreciably affected. Prior to water year 1962 average monthly diversion by Homestake Mining Co. about 7 ft<sup>3</sup>/s (0.20 m<sup>3</sup>/s). Figures of daily discharge do not include diversion by Homestake Mining Co. Several observations of water temperature were made during the year.

COOPERATION.--Figures of monthly diversion are furnished by Homestake Mining Co.

AVERAGE DISCHARGE.--31 years, 51.3 ft<sup>3</sup>/s (1.453 m<sup>3</sup>/s), 37,170 acre-ft/yr (45.8 hm<sup>3</sup>/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,240 ft<sup>3</sup>/s (120 m<sup>3</sup>/s) May 15, 1965, gage height, 10.53 ft (3.210 m), from rating curve extended above 520 ft<sup>3</sup>/s (14.7 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; maximum gage height, 10.54 ft (3.213 m) June 15, 1976; no flow for part of Oct. 18, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 5, 1904, reached a stage of 7.00 ft (2.134 m), site and datum of former gage near Spearfish, 1 mi (2 km) upstream, drainage area, 157 mi<sup>2</sup> (407 km<sup>2</sup>); discharge about 5,000 ft<sup>3</sup>/s (142 m<sup>3</sup>/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 167 ft<sup>3</sup>/s (4.73 m<sup>3</sup>/s) May 2, gage height, 5.65 ft (1.722 m); minimum daily, 34 ft<sup>3</sup>/s (0.96 m<sup>3</sup>/s) Feb. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	49	48	45	48	37	57	162	70	53	51	52
2	50	49	48	47	47	36	56	162	69	51	46	53
3	53	48	47	46	48	37	55	158	70	54	43	52
4	55	47	46	47	47	37	54	153	69	53	48	53
5	53	47	47	40	47	37	53	140	69	54	50	54
6	49	49	44	43	48	37	54	125	69	56	51	55
7	39	48	47	45	47	39	58	117	67	54	51	52
8	40	49	48	42	44	39	64	112	68	55	51	54
9	40	47	48	40	42	39	80	112	66	57	53	55
10	41	47	44	40	43	40	91	111	64	57	53	56
11	42	45	43	40	43	40	84	109	64	58	52	54
12	42	41	43	45	42	41	82	108	67	57	51	55
13	42	44	44	45	42	43	79	105	67	55	51	54
14	43	45	43	45	45	43	89	98	64	67	53	54
15	44	46	43	45	41	42	99	104	63	59	56	53
16	44	46	43	45	34	42	100	104	60	58	52	55
17	45	45	43	45	35	45	102	103	67	55	52	56
18	47	47	44	45	35	43	103	100	63	53	50	56
19	48	48	44	50	35	44	104	106	63	52	50	55
20	48	49	40	50	36	46	98	98	64	53	46	54
21	48	48	45	49	35	45	96	92	61	56	52	54
22	48	47	47	50	35	45	102	90	59	52	50	55
23	47	48	45	48	35	47	102	88	59	52	49	62
24	46	48	45	49	35	48	102	85	57	53	49	63
25	44	48	45	48	35	49	102	82	58	55	48	59
26	45	48	47	51	35	49	106	80	59	53	48	57
27	45	42	49	49	35	53	116	78	58	52	56	56
28	42	43	47	47	35	54	119	77	56	52	54	57
29	42	49	45	43	---	44	134	76	55	51	51	58
30	41	50	42	48	---	41	150	76	56	51	47	57
31	48	---	43	52	---	54	---	73	---	52	54	---
TOTAL	1411	1407	1397	1424	1129	1336	2691	3284	1901	1690	1568	1660
MEAN	45.5	46.9	45.1	45.9	40.3	43.1	89.7	106	63.4	54.5	50.6	55.3
MAX	55	50	49	52	48	54	150	162	70	67	56	63
MIN	39	41	40	40	34	36	53	73	55	51	43	52
AC-FT	2800	2790	2770	2820	2240	2650	5340	6510	3770	3350	3110	3290
MEAN†	57.0	58.9	56.5	59.7	55.2	56.4	101	115	74.1	65.0	61.9	65.3
(†)	707	714	701	849	828	818	672	582	637	646	695	595
AC-FT‡	3510	3500	3470	3670	3070	3470	6010	7090	4410	4000	3800	3880

CAL YR 1976 TOTAL 23009 MEAN 62.9 MAX 1500 MIN 30 AC-FT 45640  
WTR YR 1977 TOTAL 20898 MEAN 57.3 MAX 162 MIN 34 AC-FT 41450

† Diversion, in acre-ft, by Homestake Mining Company  
‡ Adjusted for diversion

## CHEYENNE RIVER BASIN

## 06433000 REDWATER RIVER ABOVE BELLE FOURCHE, SD

LOCATION.--Lat 44°40'02", long 103°50'20", in NW¼SE¼ sec.11, T.8 N., R.2 E., Butte County, Hydrologic Unit 10120203, on right bank at upstream side of bridge on U.S. Highway 212 in Belle Fourche, 0.5 mi (0.8 km) upstream from Hay Creek and 0.9 mi (1.4 km) upstream from mouth.

DRAINAGE AREA.--920 mi<sup>2</sup> (2,383 km<sup>2</sup>).

PERIOD OF RECORD.--November 1945 to current year. Records for water year 1946 incomplete, yearly discharge published in WSP 1309. Prior to October 1960, published as Redwater Creek above Belle Fourche.

REVISED RECORDS.--WSP 1389: 1954 (maximum gage height only).

GAGE.--Water-stage recorder. Altitude of gage is 3,000 ft (910 m), from topographic map. Prior to Dec. 13, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Diversions for irrigation of about 13,000 acres (5,260 hm<sup>2</sup>) above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 135 ft<sup>3</sup>/s (3.823 m<sup>3</sup>/s), 97,810 acre-ft/yr (121 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft<sup>3</sup>/s (464 m<sup>3</sup>/s) June 16, 1962, gage height, 11.69 ft (3.563 m), from rating curve extended above 6,000 ft<sup>3</sup>/s (170 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow for part of Aug. 5, 1960, Aug. 8-10, 1968, and Aug. 13, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 364 ft<sup>3</sup>/s (10.3 m<sup>3</sup>/s) May 2, gage height, 3.76 ft (1.146 m); maximum gage height, 9.63 ft (2.935 m) Dec. 30, backwater from ice; no peak above base of 500 ft<sup>3</sup>/s (14.2 m<sup>3</sup>/s); minimum daily discharge, 1.1 ft<sup>3</sup>/s (0.031 m<sup>3</sup>/s) July 20, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	174	166	145	145	155	162	339	108	26	50	126
2	116	170	171	145	145	155	174	351	87	17	45	132
3	118	158	165	145	145	151	177	342	86	17	23	135
4	126	156	159	150	145	154	186	324	73	18	30	133
5	127	157	159	150	145	157	192	324	71	20	31	125
6	129	149	160	150	145	159	208	297	68	21	43	120
7	141	147	150	160	145	156	222	281	53	21	43	117
8	140	150	148	140	145	154	264	257	31	16	38	116
9	140	157	141	130	145	154	289	246	39	14	38	116
10	141	144	146	120	145	151	263	238	32	14	32	114
11	146	150	144	130	150	154	223	231	48	15	24	114
12	152	144	144	140	150	154	234	227	57	15	15	117
13	145	140	146	150	150	154	244	223	81	13	8.8	125
14	150	140	146	150	150	151	218	215	85	14	3.6	119
15	147	146	146	130	150	154	211	238	78	70	68	116
16	143	144	146	120	150	154	215	264	75	101	114	117
17	147	156	148	130	150	154	218	256	97	95	93	120
18	162	159	156	140	150	154	232	234	97	90	72	118
19	164	156	162	145	150	151	257	240	101	49	67	122
20	167	156	160	170	150	154	242	246	90	1.1	69	120
21	157	154	150	160	155	154	221	223	89	1.7	64	113
22	157	154	141	170	160	154	225	207	91	4.8	69	116
23	159	156	134	170	170	154	255	171	94	2.8	68	133
24	159	159	146	170	160	156	274	141	94	1.1	64	163
25	161	156	148	170	160	159	284	122	93	5.5	75	138
26	156	150	146	170	155	162	282	108	94	11	77	136
27	156	140	146	150	155	165	298	106	87	15	131	135
28	163	130	146	140	155	168	310	98	68	24	153	141
29	170	140	145	140	---	165	316	98	53	35	134	145
30	172	168	140	140	---	160	322	101	33	46	117	159
31	175	---	140	150	---	160	---	110	---	47	112	---
TOTAL	4605	4560	4645	4570	4220	4837	7218	6858	2253	841.0	1971.4	3801
MEAN	149	152	150	147	151	156	241	221	75.1	27.1	63.6	127
MAX	175	174	171	170	170	168	322	351	108	101	153	163
MIN	116	130	134	120	145	151	162	98	31	1.1	3.6	113
AC-FT	9130	9040	9210	9060	8370	9590	14320	13600	4470	1670	3910	7540
CAL YR 1976	TOTAL	69281.0	MEAN 189	MAX 5030	MIN 30	AC-FT 137400						
WTR YR 1977	TOTAL	50379.4	MEAN 138	MAX 351	MIN 1.1	AC-FT 99930						

## CHEYENNE RIVER BASIN

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06433500 HAY CREEK AT BELLE FOURCHE, SD

LOCATION.--Lat 44°40'01", long 103°50'46", in NW¼SW¼ sec.11, T.8 N., R.2 E., Butte County, Hydrologic Unit 10120203, on right bank at intersection of Tenth Avenue and Jackson Street in Belle Fourche, 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--121 mi<sup>2</sup> (313 km<sup>2</sup>).

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

GAGE.--Water-stage recorder. Datum of gage is 3,005.18 ft (915.979 m) above mean sea level (City of Belle Fourche bench mark). Prior to Dec. 8, 1953, nonrecording gage at site 300 ft (91 m) downstream at same datum.

REMARKS.--Records fair. Minor diversion to the stream at times from city reservoir overflow, which enters stream above gage.

AVERAGE DISCHARGE.--24 years, 1.38 ft<sup>3</sup>/s (0.039 m<sup>3</sup>/s), 1,000 acre-ft/yr (1.23 hm<sup>3</sup>/yr); median of yearly mean discharges, 0.80 ft<sup>3</sup>/s (0.02 m<sup>3</sup>/s), 580 acre-ft/yr (715,000 m<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 930 ft<sup>3</sup>/s (26.3 m<sup>3</sup>/s) June 19, 1972, gage height, 9.15 ft (2.789 m); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26 ft<sup>3</sup>/s (0.74 m<sup>3</sup>/s) Apr. 7, gage height, 4.69 ft (1.430 m), no peak above base of 50 ft<sup>3</sup>/s (1.42 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.10	.80	.83	.00	.00	.00	.01
2	.00	.00	.00	.00	.00	.10	.80	.50	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.10	.80	.25	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.10	.98	.25	.00	.00	.00	.00
5	.00	.00	.00	.00	.07	.15	1.8	.25	.02	.00	.00	.00
6	.00	.00	.00	.00	.00	.20	4.8	.60	.05	.21	.00	.00
7	.00	.00	.00	.00	.05	.28	17	.32	.00	.03	.00	.00
8	.00	.00	.00	.00	.11	.32	12	.62	.00	.00	.00	.00
9	.00	.00	.00	.00	.24	.45	11	1.2	.00	.00	.00	.00
10	.00	.00	.00	.00	.21	.50	5.0	.64	.05	.00	.00	.00
11	.00	.00	.00	.00	.14	.40	2.6	.42	.00	.00	.00	.00
12	.00	.00	.00	.00	.21	.40	2.6	.14	.00	.00	.00	.00
13	.00	.00	.00	.00	.32	.32	2.0	.20	.02	.00	.00	.00
14	.00	.00	.00	.00	.30	.24	1.2	.26	.05	.06	.00	.00
15	.00	.00	.00	.00	.30	.21	.85	.14	.01	.00	.45	.00
16	.00	.00	.00	.00	.28	.18	.60	.26	.08	.00	.00	.00
17	.00	.00	.10	.00	.32	.18	1.1	.28	.34	.00	.00	.00
18	.00	.00	.00	.00	.50	.18	.55	.70	.00	.00	.00	.00
19	.00	.00	.00	.00	.32	.21	1.0	1.0	.00	.00	.00	.00
20	.00	.00	.00	.00	.32	.35	.70	.92	.02	.00	.00	.00
21	.00	.00	.00	.00	.32	.32	.45	.55	.03	.00	.00	.00
22	.00	.00	.00	.00	.55	.40	.32	.28	.02	.00	.00	.00
23	.00	.00	.00	.00	.50	.40	.28	.25	.00	.00	.00	.35
24	.00	.00	.00	.00	.40	.45	.73	.18	.00	.00	.00	.10
25	.00	.00	.00	.00	.30	.40	.55	.14	.00	.00	.00	.00
26	.00	.00	.00	.00	.20	.35	.45	.07	.00	.01	.00	.00
27	.00	.00	.00	.00	.10	.35	.45	.18	.00	.01	.16	.00
28	.00	.00	.00	.00	.10	.35	.40	.05	.00	.00	.00	.00
29	.00	.00	.10	.00	---	.30	.55	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.60	.60	.00	.00	.00	.00	.39
31	.00	---	.00	.00	---	.80	---	.00	---	.00	.00	---
TOTAL	.00	.00	.20	.00	6.16	9.69	72.96	11.48	.69	.32	.61	.85
MEAN	.000	.000	.006	.000	.22	.31	2.43	.37	.023	.010	.020	.028
MAX	.00	.00	.10	.00	.55	.80	17	1.2	.34	.21	.45	.39
MIN	.00	.00	.00	.00	.00	.10	.28	.00	.00	.00	.00	.00
AC-FT	.00	.00	.4	.00	12	19	145	23	1.4	.6	1.2	1.7
CAL YR 1976 TOTAL	1262.21			MEAN 3.45	MAX 365	MIN .00	AC-FT 2500					
WTR YR 1977 TOTAL	102.96			MEAN .28	MAX 17	MIN .00	AC-FT 204					



## CHEYENNE RIVER BASIN

## 06434500 INLET CANAL NEAR BELLE FOURCHE, SD

LOCATION.--Lat 44°42'14", long 103°49'23", in NE&NW¼ sec.36, T.9 N., R.2 E., Butte County, Hydrologic Unit 10120202, on right bank 0.5 mi (0.8 km) downstream from Crow Creek, 0.9 mi (1.4 km) downstream from diversion dam on Belle Fourche River, and 2.5 mi (4.0 km) 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 (909.895 m) above mean 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 (1.3 km) upstream at same datum.

REMARKS.--Records good except those for winter periods, which are poor. Records show actual diversions to Belle Fourche Reservoir (see station 06435000), from Belle Fourche River and Crow Creek, except for 2,818 acre-ft (3.47 hm<sup>3</sup>) which was diverted for irrigation from the canal between the station and reservoir.

COOPERATION.--Records of diversion from the canal furnished by Bureau of Reclamation.

AVERAGE DISCHARGE.--32 years, 161 ft<sup>3</sup>/s (4.560 m<sup>3</sup>/s), 116,600 acre-ft/yr (144 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,340 ft<sup>3</sup>/s (37.9 m<sup>3</sup>/s) May 30, 1962; no flow for many days in 1946-49, 1963, 1966, 1971-76.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	212	180	160	170	192	279	519	158	108	272	211
2	138	211	185	160	170	189	308	551	125	82	261	216
3	144	198	190	160	170	189	318	512	113	80	245	213
4	157	195	175	160	170	186	297	499	95	87	257	198
5	153	196	170	160	170	186	290	484	106	90	269	170
6	154	198	170	170	175	187	404	460	106	87	280	151
7	166	198	170	180	175	202	698	443	89	83	276	146
8	165	198	180	160	175	213	801	414	84	77	284	135
9	167	195	180	150	175	215	1060	396	81	83	292	137
10	163	192	180	140	175	216	1160	379	61	87	290	135
11	168	196	181	150	175	222	1100	339	66	87	294	132
12	174	175	183	160	177	212	886	334	93	92	322	128
13	165	170	185	170	185	213	761	322	164	78	391	128
14	166	180	183	170	184	233	624	302	126	91	359	124
15	161	180	186	150	182	222	567	322	134	130	384	118
16	159	178	186	140	183	212	533	369	118	146	427	114
17	158	183	190	150	186	213	527	369	138	162	408	109
18	179	196	190	160	187	217	532	353	140	235	370	111
19	189	202	190	170	182	216	588	366	144	177	362	119
20	187	198	180	190	185	220	575	384	173	107	327	120
21	185	180	175	190	193	213	532	340	206	138	215	119
22	187	177	175	200	205	206	500	309	188	135	187	125
23	190	187	175	200	219	213	496	267	168	137	178	146
24	189	190	176	190	211	216	507	246	168	133	158	203
25	192	200	177	190	203	223	509	216	185	135	179	184
26	191	180	177	190	195	220	503	191	165	134	177	150
27	189	160	182	170	201	220	501	179	150	134	241	146
28	194	150	183	160	200	225	514	172	127	148	267	148
29	202	160	180	160	---	230	503	167	127	156	228	155
30	204	180	170	160	---	237	505	159	108	144	219	170
31	204	---	160	170	---	276	---	168	---	246	205	---
TOTAL	5385	5615	5564	5190	5178	6634	17378	10531	3906	3809	8624	4461
MEAN	174	187	179	167	185	214	579	340	130	123	278	149
MAX	204	212	190	200	219	276	1160	551	206	246	427	216
MIN	138	150	160	140	170	186	279	159	61	77	158	109
AC-FT	10680	11140	11040	10290	10270	13160	34470	20890	7750	7560	17110	8850
CAL YR 1976	TOTAL	67717.00	MEAN	185	MAX	946	MIN	.00	AC-FT	134300		
WTR YR 1977	TOTAL	82275.00	MEAN	225	MAX	1160	MIN	61	AC-FT	163200		

## CHEYENNE RIVER BASIN

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06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to current year.

REMARKS.--No flow June 24-28.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,100 micromhos Feb. 13, 1969; minimum daily, 335 micromhos Feb. 12, 1971.

WATER TEMPERATURES: Maximum daily, 29.0°C July 1, 1971; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,100 micromhos Jan. 4, 5; minimum daily, 705 micromhos Apr. 11.

WATER TEMPERATURES: Maximum daily, 26.0°C June 27, July 5, 7, 18, 19; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA. WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT									
08...	1230	161	1200	8.1	11.0	700	530	200	49
NOV									
03...	1415	193	1180	8.3	6.0	700	520	200	48
DEC									
16...	1015	184	1460	8.5	2.0	730	530	210	50
JAN									
06...	1000	166	1500	8.1	.0	800	550	230	54
FEB									
01...	1615	169	1300	7.3	.0	730	500	210	49
MAR									
03...	0900	170	1040	8.4	1.0	730	530	210	49
APR									
06...	1200	318	1460	8.3	9.0	690	520	190	52
MAY									
03...	1015	503	800	8.1	14.5	460	310	130	33
JUN									
02...	0930	127	1300	7.9	19.0	690	520	200	47
30...	0900	108	1280	8.2	17.0	590	430	160	46
AUG									
03...	1130	245	990	8.1	21.0	360	200	96	29
SEP									
01...	1430	213	1220	8.0	18.5	600	420	160	48

## CHEYENNE RIVER BASIN

06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 08...	27	8	.4	4.2	212	0	174	530	6.0
NOV 03...	25	7	.4	3.6	218	0	179	530	4.0
DEC 16...	19	5	.3	3.1	244	0	200	550	3.4
JAN 06...	28	7	.4	3.9	297	0	244	610	4.3
FEB 01...	17	5	.3	3.5	276	0	226	520	4.5
MAR 03...	22	6	.4	3.3	238	0	195	570	3.9
APR 06...	49	13	.8	4.9	210	0	170	560	5.4
MAY 03...	19	8	.4	3.3	190	0	160	320	3.3
JUN 02...	28	8	.5	3.9	210	0	170	540	3.8
JUN 30...	71	21	1.3	6.6	190	0	160	560	6.9
AUG 03...	96	36	2.2	8.2	200	0	160	370	12
SEP 01...	48	15	.9	4.9	220	0	180	470	5.9

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1200	1180	1270	1160	1300	1320	945	770	1050	1360	990	1160
2	1200	1150	1200	1100	1320	1260	940	770	1080	1360	880	1160
3	1210	1170	1200	1140	1340	1080	965	740	1090	1390	1020	960
4	1210	1180	1160	2100	1300	1240	965	865	1120	1400	1040	1180
5	1200	1170	1200	2100	1340	1110	1050	865	1160	1360	980	980
6	1200	1180	1200	2080	1280	960	1060	870	1150	1380	1060	1200
7	1200	1180	1160	2050	1340	940	1090	865	1190	1400	1060	1200
8	1200	1190	1150	2070	1280	980	1090	865	1260	1410	1040	1200
9	1200	1130	1200	2060	1280	1320	1020	890	1170	1400	870	1220
10	1200	1160	1110	1220	1290	1040	775	885	1170	1410	1040	1220
11	1240	1140	1200	1230	1260	1240	705	920	1110	1410	960	1240
12	1220	1160	1190	1060	1260	1110	755	900	1130	1390	1040	1240
13	1220	1160	1110	1200	1260	1200	765	955	1280	1400	1040	1200
14	1220	1180	1080	1190	1240	1350	795	930	1040	1310	870	1220
15	1270	1120	1080	1130	1240	1190	845	935	1200	1340	930	1250
16	1260	1140	1200	2030	1220	1180	865	860	1160	1270	1030	1260
17	1240	1100	1200	1340	1220	1280	880	920	1030	1300	1030	1220
18	1220	1200	1200	1500	1240	1280	870	930	1150	1280	1040	1220
19	1190	1140	1220	1320	1260	1260	885	955	1120	1190	1040	1230
20	1220	1060	1180	1310	1280	1220	880	935	1230	1180	1020	1250
21	1230	1040	1200	1310	1260	1200	885	945	1200	1030	1100	1160
22	1220	1100	1080	1670	1220	1260	880	935	1120	1160	1170	1060
23	1220	1100	1180	1640	1220	1180	890	950	1150	1170	1200	1240
24	1240	1100	1180	1080	1240	1260	865	980	1190	1170	760	1180
25	1220	1180	1230	1160	1230	1240	835	980	1200	1200	1220	1270
26	1230	1240	1100	1320	1220	920	820	1020	1100	1200	1260	1120
27	1220	1070	1110	1630	1210	1240	785	1040	1090	1210	1240	1180
28	1220	1240	1110	1320	1240	1450	780	1050	1080	1210	1220	1030
29	1240	1260	1120	1060	---	1000	780	1040	1080	1210	1240	1270
30	1240	1260	1200	1300	---	920	780	1040	1200	1230	1260	1180
31	1240	---	1190	1300	---	1030	---	1030	---	1220	1240	---

## CHEYENNE RIVER BASIN

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06434500 INLET CANAL NEAR BELLE FOURCHE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (00950)	DIS- SOLVED SILICA (SiO2) (00955)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (07301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (00631)	TOTAL PHOS- PHORUS (P) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (00666)	DIS- SOLVED BORON (B) (01020)
OCT 08...	.5	9.3	932	1.27	405	.38	.06	.01	90
NOV 03...	.3	8.6	928	1.26	484	.31	.03	.01	90
DEC 16...	.3	8.5	966	1.31	480	.37	.04	.00	90
JAN 06...	.4	9.5	1090	1.48	489	.66	.05	.00	100
FEB 01...	.4	9.2	952	1.29	434	.51	.07	.03	80
MAR 03...	.3	7.9	986	1.34	453	.40	.02	.00	80
APR 06...	.5	8.0	975	1.33	837	.28	.19	.03	110
MAY 03...	.4	9.9	615	.84	835	.29	.12	.01	770
JUN 02...	.4	8.1	935	1.27	321	.07	.05	.02	100
AUG 30...	.6	8.0	953	1.30	278	.05	.14	.02	170
SEP 03...	.6	5.4	717	.98	474	.21	.41	.04	130
01...	.4	8.8	855	1.16	492	.15	.09	.02	110

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	6.0	0.0	0.0	0.0	0.0	4.0	13.0	20.0	23.0	21.0	17.0
2	13.0	5.0	0.0	0.0	0.0	2.0	3.0	14.0	21.0	20.0	22.0	16.0
3	14.0	4.0	0.0	0.0	0.0	1.0	3.0	14.0	19.0	21.0	21.0	16.0
4	11.0	3.0	0.0	0.0	0.0	2.0	2.0	15.0	21.0	25.0	21.0	18.0
5	11.0	3.0	0.0	0.0	0.0	2.0	4.0	13.0	20.0	26.0	20.0	19.0
6	9.0	4.0	0.0	0.0	0.0	4.0	5.0	15.0	21.0	25.0	20.0	22.0
7	8.0	3.0	0.5	0.0	0.0	3.0	6.0	16.0	21.0	26.0	21.0	19.0
8	8.0	3.0	0.5	0.0	0.0	5.0	6.0	15.0	23.0	23.0	23.0	19.0
9	9.0	4.0	1.0	0.0	0.0	4.0	8.0	16.0	22.0	20.0	20.0	21.0
10	10.0	4.0	0.5	0.0	0.5	3.0	11.0	16.0	23.0	22.0	21.0	16.0
11	11.0	3.0	1.0	0.0	1.0	2.0	10.0	15.0	19.0	23.0	20.0	17.0
12	11.0	2.0	1.0	0.0	0.5	2.0	9.0	16.0	19.0	22.0	19.0	17.0
13	10.0	1.0	1.0	0.0	1.0	1.0	8.0	16.0	20.0	23.0	20.0	16.0
14	11.0	0.5	1.0	0.0	1.0	2.0	9.0	17.0	19.0	22.0	20.0	19.0
15	9.0	0.5	1.0	0.0	1.0	1.0	10.0	17.0	19.0	24.0	19.0	20.0
16	8.0	1.0	1.0	0.0	1.5	2.0	12.0	16.0	20.0	23.0	19.0	16.0
17	6.0	1.5	1.0	0.0	2.0	3.0	11.0	17.0	19.0	22.0	19.0	15.0
18	5.0	1.0	1.0	0.0	2.0	1.0	10.0	15.0	19.0	26.0	21.0	13.0
19	4.0	1.0	0.5	0.0	1.5	4.0	9.0	17.0	18.0	26.0	20.0	18.0
20	4.0	1.0	0.0	0.0	2.0	1.0	8.0	17.0	19.0	22.0	20.0	16.0
21	4.0	1.0	0.5	0.0	2.5	1.0	9.0	18.0	---	22.0	20.0	15.0
22	3.0	1.0	0.0	0.0	2.0	3.0	10.0	18.0	22.0	24.0	19.0	13.0
23	3.0	0.5	0.0	0.0	2.0	2.0	13.0	---	---	24.0	20.0	14.0
24	2.0	0.5	0.5	0.0	1.0	3.0	12.0	22.0	25.0	25.0	19.0	11.0
25	2.0	1.0	0.5	0.0	1.0	4.0	11.0	23.0	24.0	22.0	20.0	10.0
26	2.0	0.5	0.5	0.0	1.0	5.0	10.0	22.0	---	21.0	19.0	12.0
27	3.0	0.0	0.5	0.0	2.0	6.0	12.0	23.0	26.0	24.0	17.0	14.0
28	4.0	0.0	0.5	0.0	1.0	4.0	12.0	20.0	22.0	25.0	15.0	14.0
29	4.0	0.0	0.0	0.0	---	---	13.0	18.0	24.0	25.0	19.0	14.0
30	5.0	0.0	0.0	0.0	---	3.0	14.0	19.0	---	21.0	17.0	15.0
31	5.0	---	0.0	0.0	---	1.0	---	19.0	---	22.0	18.0	---

## CHEYENNE RIVER BASIN

06435000 BELLE FOURCHE RESERVOIR NEAR BELLE FOURCHE, SD

LOCATION.--Lat 44°44'12", long 103°40'27", in SW¼SE¼ sec.18, T.9 N., R.4 E., Butte County, Hydrologic Unit 10120202, at dam on Owl Creek, 9.8 mi (15.8 km) northeast of Belle Fourche.

PERIOD OF RECORD.--January 1912 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is at mean 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, 185,170 acre-ft (228 hm<sup>3</sup>) 1949 survey, between elevations 2,927.0 ft (892.15 m), lowest outlet, and 2,975.0 ft (906.78 m), crest of spillway weir. Dead storage below elevation 2,927.0 ft (892.15 m) 6,800 acre-ft (8.38 hm<sup>3</sup>). Figures given herein represent contents above elevation 2,927.0 ft (892.15 m). Water diverted from Belle Fourche River through Inlet Canal (see station 06434500) is stored in Belle Fourche Reservoir for irrigation.

COOPERATION.--Elevations and contents furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 197,400 acre-ft (243 hm<sup>3</sup>) Apr. 30, 1919, May 20, 1920, elevation, 2,974.9 ft (906.75 m); minimum observed, -3,000 acre-ft (-3.70 hm<sup>3</sup>) Sept. 30, 1936, water was lowered below dead storage level of 2,927.0 ft (892.15 m) by opening holes in crib walls.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 130,990 acre-ft (162 hm<sup>3</sup>) May 14, elevation, 2,967.7 ft (904.55 m); minimum, 9,073 acre-ft (11.2 hm<sup>3</sup>) Oct. 1, elevation, 2,935.3 ft (894.68 m).

MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	2935.6	9470	
Oct. 31 . . . . .	2942.2	20950	+11480
Nov. 30 . . . . .	2947.8	34320	+13370
Dec. 31 . . . . .	2951.5	46150	+11830
CAL YR 1976 . . . . .			-32050
Jan. 31 . . . . .	2954.4	57724	+11574
Feb. 28 . . . . .	2957.1	68860	+11136
Mar. 31 . . . . .	2960.3	86264	+17404
Apr. 30 . . . . .	2966.6	123660	+37396
May 31 . . . . .	2966.3	121680	-1980
June 30 . . . . .	2960.5	87388	-34292
July 31 . . . . .	2950.5	42873	-44515
Aug. 31 . . . . .	2940.5	17649	-25224
Sept. 30 . . . . .	2945.1	27397	+9748
WTR YR 1977 . . . . .			+17927



LOCATION.--Lat 44°41'27", long 103°44'14", in NW¼NE¼ sec.3, T.8 N., R.3 E., Butte County, Hydrologic Unit 10120202, on right bank 5 ft (2 m) downstream from bridge on U.S. Highway 212, 2.5 mi (4.0 km) northwest of Fruitdale and 8.8 mi (14.2 km) downstream from point of diversion to Belle Fourche Reservoir.

GAGE.--Water-stage recorder. Altitude of gage is 2,925 ft (892 m), 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 (30 m) 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 winter periods, which are poor. Flow regulated by Keyhole Reservoir since Feb. 12, 1952, usable capacity, 191,600 acre-ft (236 km<sup>3</sup>), 180 mi (290 km) upstream. At a point 8.8 mi (14.2 km) 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 (243 km<sup>2</sup>) above station. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft<sup>3</sup>/s (346 m<sup>3</sup>/s) June 15, 1976, gage height, 13.18 ft (4.017 m); no flow at times in 1945, 1948, 1959-62, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 74 ft<sup>3</sup>/s (2.10 m<sup>3</sup>/s) Apr. 10, gage height, 2.83 ft (0.863 m); no flow for part of each day May 11, 14-17.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 11-30; stage-discharge relation affected  
by ice Nov. 26-30, Dec. 6-15, 20, Dec. 29 to Feb. 20, Mar. 29-31)

1.74	0	2.4	29
1.8	1.0	2.7	52
2.2	18		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	5.9	5.0	4.0	3.5	3.0	3.4	3.0	6.4	4.2	7.7	8.2
2	7.3	5.9	4.6	4.0	3.5	3.0	2.6	3.8	6.8	3.4	8.6	6.8
3	7.3	5.9	4.6	3.5	4.0	3.0	2.2	3.4	5.5	5.0	7.3	5.9
4	7.3	5.9	4.6	3.5	4.0	3.4	1.8	2.6	5.5	9.1	9.5	5.5
5	6.4	5.9	4.6	3.5	4.0	3.4	2.2	2.6	4.2	9.5	12	5.0
6	8.2	5.5	4.5	3.5	3.5	3.4	4.6	3.0	3.4	7.3	10	4.2
7	9.1	5.0	4.5	4.0	3.5	3.4	12	3.4	5.9	10	12	4.6
8	8.2	5.0	4.5	4.0	3.5	3.4	14	3.0	8.6	11	14	5.0
9	7.7	4.6	4.5	3.5	4.0	3.4	11	2.6	11	12	14	4.2
10	7.3	4.6	4.0	3.5	4.0	3.0	44	1.8	11	13	14	4.2
11	6.8	4.6	4.0	3.5	4.0	2.2	23	1.0	11	15	14	3.0
12	6.4	4.2	4.5	3.5	4.0	2.6	9.5	11	8.6	13	14	3.8
13	5.9	3.8	4.5	3.5	4.0	2.6	7.3	1.0	7.7	11	12	4.2
14	5.5	3.8	4.5	4.0	3.5	2.2	5.5	1.30	10	15	12	4.2
15	5.0	3.8	4.5	4.0	3.5	2.2	5.0	1.09	12	16	19	3.8
16	5.5	4.2	5.0	3.5	4.0	2.2	4.6	1.01	11	13	19	3.8
17	17	4.6	5.0	4.0	4.0	1.8	4.2	1.25	14	9.5	15	9.5
18	11	4.6	5.0	4.0	3.5	1.4	3.4	1.40	11	7.7	14	7.7
19	7.3	5.0	4.6	4.0	4.0	1.4	4.6	3.0	9.1	5.0	13	8.6
20	6.4	5.0	4.5	4.5	4.5	1.8	5.0	3.8	6.8	6.8	11	8.6
21	5.9	4.6	4.2	4.5	4.6	1.8	4.2	4.6	11	9.5	9.5	5.0
22	6.8	4.6	4.2	4.0	4.6	1.8	3.4	3.8	8.6	9.5	10	1.0
23	6.8	4.6	4.2	4.0	6.4	1.8	3.4	4.6	9.1	13	10	2.6
24	6.8	4.6	4.2	4.0	5.9	1.4	3.0	1.80	6.8	13	9.1	4.6
25	6.8	5.0	4.2	4.0	6.4	2.2	2.6	1.60	4.2	12	9.5	3.0
26	6.8	5.0	4.2	4.0	3.8	1.0	2.6	1.80	3.4	14	7.3	2.2
27	6.8	5.0	4.2	3.5	3.4	1.0	2.2	2.6	7.3	20	12	1.80
28	6.8	5.0	3.8	3.0	3.0	3.0	2.6	3.4	7.3	18	9.1	1.80
29	6.4	5.0	3.8	3.0	---	3.0	2.6	8.6	6.4	16	7.3	1.4
30	6.4	5.0	3.8	3.5	---	3.0	2.6	9.5	5.5	11	7.7	3.0
31	5.9	---	4.0	3.5	---	3.5	---	8.6	---	7.3	7.3	---
TOTAL	225.1	146.2	136.3	116.5	114.6	76.3	199.1	97.05	239.1	339.8	350.9	135.20
MEAN	7.26	4.87	4.40	3.76	4.09	2.46	6.64	3.13	7.97	11.0	11.3	4.51
MAX	17	5.9	5.0	4.5	6.4	3.5	44	11	14	20	19	9.5
MIN	5.0	3.8	3.8	3.0	3.0	1.0	1.8	1.01	3.4	3.4	7.3	1.80
AC-FT	446	290	270	231	227	151	395	192	474	674	696	268
CAL YR 1976	TOTAL	44898.30	MEAN	123	MAX	9110	MIN	1.0	AC-FT	89060		
WTR YR 1977	TOTAL	2176.15	MEAN	5.96	MAX	44	MIN	.01	AC-FT	4320		

## CHEYENNE RIVER BASIN

06436700 INDIAN CREEK NEAR ARPAN, SD

LOCATION.--Lat 44°48'51", long 103°41'22", in SE¼NE¼ sec.24, T.10 N., R.3 E., Butte County, Hydrologic Unit 10120202, on left bank 3,200 ft (975 m) upstream from North Canal flume, 3.5 mi (5.6 km) northwest of Arpan and 6.9 mi (11.1 km) downstream from Bitter Creek.

DRAINAGE AREA.--315 mi<sup>2</sup> (815 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Altitude of gage is 2,900 ft (880 m), from topographic map.

REMARKS.--Records fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--16 years, 18.9 ft<sup>3</sup>/s (0.535 m<sup>3</sup>/s), 13,690 acre-ft/yr (16.9 hm<sup>3</sup>/yr); median of yearly mean discharges, 14 ft<sup>3</sup>/s (0.40 m<sup>3</sup>/s), 10,100 acre-ft/yr (12 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,700 ft<sup>3</sup>/s (473 m<sup>3</sup>/s) June 15, 1976, gage height, 18.00 ft (5.486 m), from floodmarks, from rating curve extended above 3,000 ft<sup>3</sup>/s (85.0 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft<sup>3</sup>/s (30.3 m<sup>3</sup>/s) at 2400 hours Apr. 8, gage height, 11.90 ft (3.627 m), no other peak above base of 350 ft<sup>3</sup>/s (9.91 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.00	.00	.00	.00	.00	.50	.05	.00	.00	.00	.00
2	.20	.00	.00	.00	.00	.00	.40	.01	.00	.00	.00	.00
3	.35	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00
4	.30	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00
5	.15	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
6	.11	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.27
7	.15	.00	.00	.00	.00	.00	30	.00	.00	.00	.00	.65
8	.15	.00	.00	.00	.00	.00	341	.00	.00	.00	.00	.30
9	.15	.00	.00	.00	.00	.00	854	.00	.00	.00	.00	.02
10	.11	.00	.00	.00	.00	.00	759	.00	.00	.00	.00	.00
11	.08	.00	.00	.00	.00	.00	408	.00	10	.00	.00	.00
12	.05	.00	.00	.00	.00	.00	183	.00	50	.00	.00	.00
13	.02	.00	.00	.00	.00	.00	106	.00	20	.00	.00	.00
14	.01	.00	.00	.00	.00	.00	72	.00	65	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	52	.00	10	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	38	.00	5.0	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	29	.00	5.0	.18	.00	.02
18	.00	.00	.00	.00	.00	.00	23	.00	3.0	7.4	.00	.05
19	.00	.00	.00	.00	.00	.00	23	.00	1.0	3.6	.00	.03
20	.00	.00	.00	.00	.00	.00	20	.00	.05	.99	.00	.00
21	.00	.00	.00	.00	.00	.00	14	.00	.01	.00	.00	.04
22	.00	.00	.00	.00	.00	.00	10	.00	2.0	.00	.00	.01
23	.00	.00	.00	.00	.00	.00	5.0	.00	1.0	.00	.00	.01
24	.00	.00	.00	.00	.00	.15	3.0	.00	.50	.00	.00	.00
25	.00	.00	.00	.00	.00	.80	2.5	.00	.01	.00	.00	.00
26	.00	.00	.00	.00	.00	1.0	2.0	.00	.00	.04	.00	.00
27	.00	.00	.00	.00	.00	3.0	1.0	.00	.00	26	.01	.00
28	.00	.00	.00	.00	.00	4.0	.50	.00	.00	3.2	.01	.00
29	.00	.00	.00	.00	---	1.0	.20	.00	.00	.50	.00	.00
30	.00	.00	.00	.00	---	.50	.10	.00	.00	.10	.00	.00
31	.00	---	.00	.00	---	.50	---	.00	---	.00	.00	---
TOTAL	1.94	.00	.00	.00	.00	10.95	2977.90	.06	172.57	42.01	.02	1.40
MEAN	.063	.000	.000	.000	.000	.35	99.3	.002	5.75	1.36	.001	.047
MAX	.35	.00	.00	.00	.00	4.0	854	.05	65	26	.01	.65
MIN	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
AC-FT	3.8	.00	.00	.00	.00	.22	5910	.1	342	83	.04	2.8
CAL YR 1976	TOTAL	10625.77	MEAN	29.0	MAX	3710	MIN	.00	AC-FT	21080		
WTR YR 1977	TOTAL	3206.85	MEAN	8.79	MAX	854	MIN	.00	AC-FT	6360		

## CHEYENNE RIVER BASIN

97

06436800 HORSE CREEK NEAR VALE, SD

LOCATION.--Lat 44°39'30", long 103°20'17", in SE¼NW¼ sec.13, T.8 N., R.6 E., Butte County, Hydrologic Unit 10120202, on right bank 600 ft (183 m) downstream from Dry Creek, 2.9 mi (4.7 km) upstream from mouth and 4.0 mi (6.4 km) northeast of Vale.

DRAINAGE AREA.--530 mi<sup>2</sup> (1,370 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,688.96 ft (819.595 m) above mean sea level.

REMARKS.--Records good except those for winter periods, which are poor. Natural flow of stream affected by diversions for irrigation above station and by return flow from Belle Fourche Irrigation Project.

AVERAGE DISCHARGE.--15 years, 58.3 ft<sup>3</sup>/s (1.651 m<sup>3</sup>/s), 42,240 acre-ft/yr (52.1 hm<sup>3</sup>/yr); median of yearly mean discharges, 51 ft<sup>3</sup>/s (1.44 m<sup>3</sup>/s), 36,900 acre-ft/yr (45 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft<sup>3</sup>/s (329 m<sup>3</sup>/s) June 16, 1976, gage height, 14.61 ft (4.453 m), from floodmarks, from rating curve extended above 2,000 ft<sup>3</sup>/s (56.6 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; minimum daily, 0.20 ft<sup>3</sup>/s (0.006 m<sup>3</sup>/s) May 7-9, 1962, Jan. 17, 18, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,030 ft<sup>3</sup>/s (29.2 m<sup>3</sup>/s) at 2230 hours Apr. 9, gage height, 8.02 ft (2.444 m); minimum daily, 2.0 ft<sup>3</sup>/s (0.057 m<sup>3</sup>/s) Jan. 9-12, 15, 16, 29-31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	4.5	3.5	3.0	2.5	6.0	15	4.7	117	105	96	110
2	13	4.5	4.0	3.0	2.5	6.0	12	4.5	112	110	94	117
3	12	4.7	4.5	3.0	3.0	6.0	12	4.2	100	110	89	95
4	11	4.2	4.2	3.0	3.5	6.0	15	3.8	92	105	90	78
5	9.9	4.0	4.0	3.0	4.0	6.0	15	3.8	92	109	97	54
6	9.2	4.0	4.0	3.0	4.0	7.0	17	3.8	94	138	101	32
7	9.2	4.0	4.2	3.5	4.0	8.0	44	4.2	101	164	100	21
8	9.2	3.8	4.2	3.0	4.5	10	149	4.2	90	152	108	16
9	9.2	3.8	4.2	2.0	5.0	10	599	4.2	89	144	126	16
10	8.4	3.8	4.2	2.0	5.5	9.0	971	4.0	85	148	125	15
11	8.4	3.6	4.5	2.0	6.0	9.0	720	3.6	76	155	130	13
12	8.1	3.3	4.5	2.0	6.5	8.0	414	3.1	95	140	130	13
13	7.7	3.1	4.5	2.5	6.5	10	217	3.1	110	125	127	13
14	6.6	2.9	4.5	2.5	6.0	9.0	113	3.1	108	138	125	12
15	6.0	2.7	4.5	2.0	6.0	9.0	72	19	96	151	228	11
16	5.7	2.7	4.5	2.0	6.5	8.0	50	70	92	125	184	11
17	5.7	2.7	4.5	2.5	7.0	8.0	35	82	95	105	163	11
18	6.0	3.1	4.5	2.5	6.5	8.4	33	42	89	107	153	11
19	6.0	3.1	4.4	3.0	6.5	7.1	26	39	90	95	148	11
20	6.6	2.9	4.2	3.0	7.0	6.6	24	42	86	101	138	11
21	6.6	2.9	4.2	3.0	7.5	7.4	19	53	97	110	126	11
22	6.0	2.9	4.2	3.0	7.0	8.8	16	55	100	100	129	11
23	6.0	2.5	4.2	3.0	6.0	7.7	13	62	92	107	114	13
24	6.0	2.5	4.2	3.0	6.0	6.9	11	83	95	103	96	18
25	6.0	2.5	4.2	3.0	6.0	7.4	9.6	90	89	89	85	17
26	5.7	2.7	4.5	3.0	6.0	7.4	8.1	104	84	94	89	14
27	5.7	2.3	4.5	3.0	6.0	6.9	6.9	109	103	107	167	12
28	5.7	2.3	4.2	2.5	6.0	8.1	6.6	109	108	103	230	9.9
29	5.2	2.3	4.2	2.0	---	8.1	5.5	112	100	99	147	9.6
30	5.2	3.0	3.5	2.0	---	7.0	4.2	121	94	95	107	13
31	4.7	---	3.0	2.0	---	10	---	122	---	92	108	---
TOTAL	238.7	97.3	130.5	82.0	153.5	242.8	3652.9	1368.3	2871	3626	3950	799.5
MEAN	7.70	3.24	4.21	2.65	5.48	7.83	122	44.1	95.7	117	127	26.7
MAX	18	4.7	4.5	3.5	7.5	10	971	122	117	164	230	117
MIN	4.7	2.3	3.0	2.0	2.5	6.0	4.2	3.1	76	89	85	9.6
AC-FT	473	193	259	163	304	482	7250	2710	5690	7190	7830	1590
CAL YR 1976 TOTAL	38234.0			MEAN 104	MAX 6660	MIN 1.5	AC-FT 75840					
WTR YR 1977 TOTAL	17212.5			MEAN 47.2	MAX 971	MIN 2.0	AC-FT 34140					

## CHEYENNE RIVER BASIN

06436800 HORSE CREEK NEAR VALE, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to September 1969, October 1971 to current year.

WATER TEMPERATURES: October 1968 to September 1969, October 1971 to current year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,080 micromhos Feb. 1-3, 1969; minimum daily, 550 micromhos June 19, 1976.

WATER TEMPERATURES: Maximum daily, 33.0°C June 29, 1974; minimum daily, 0.0°C on many days during winter periods.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,050 micromhos Jan. 30; minimum daily, 1,000 micromhos Apr. 12.

WATER TEMPERATURES: Maximum daily, 29.0°C July 17-19; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT									
01...	1030	18	2170	8.1	12.5	1000	820	220	110
NOV									
02...	1400	4.4	5700	7.6	11.0	2300	2000	380	340
DEC									
03...	0945	4.4	5900	8.2	.5	2400	2000	400	340
JAN									
06...	1115	3.0	7200	7.6	.0	2800	2200	420	420
FEB									
02...	1515	2.5	6000	7.3	.5	2600	2100	430	360
MAR									
04...	0930	5.8	6070	8.1	.0	2200	1900	310	350
APR									
07...	1315	38	4600	8.2	10.0	1700	1400	270	240
MAY									
02...	1400	4.4	2650	8.3	17.5	1500	1300	270	200
JUN									
03...	1300	100	1450	8.0	23.0	780	620	190	73
JUL									
07...	1300	160	1700	8.2	24.5	790	640	190	77
AUG									
04...	0900	89	1520	8.1	18.0	870	720	210	85
SEP									
02...	1335	120	1460	8.1	17.5	780	620	180	81

## CHEYENNE RIVER BASIN

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06436800 HORSE CREEK NEAR VALE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 01...	190	29	2.6	9.5	223	0	183	1200	29
NOV 02...	700	39	6.3	12	393	0	322	3300	120
DEC 03...	720	39	6.4	12	500	0	410	3300	130
JAN 06...	1000	44	8.3	18	706	0	579	3700	190
FEB 02...	780	40	6.7	11	581	0	477	3600	150
MAR 04...	840	45	7.8	13	405	0	332	3300	150
APR 07...	530	41	5.7	11	320	0	260	2300	87
MAY 02...	450	39	5.1	11	290	0	240	2000	76
JUN 03...	92	20	1.4	8.3	190	0	160	760	16
JUL 07...	110	23	1.7	8.9	190	0	160	860	17
AUG 04...	120	23	1.8	8.6	190	0	160	910	20
SEP 02...	140	28	2.2	8.0	200	0	160	880	24

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2300	---	5100	5700	5800	4150	3620	3170	1380	1910	1810	1550
2	2350	3500	5150	5700	5800	4950	3600	3330	1460	1870	1820	1750
3	2450	4300	5200	5800	5800	4500	3510	3470	1450	1870	1860	1750
4	2600	3100	5250	5750	5750	3850	3460	4010	1500	1880	1880	1700
5	2700	2900	5300	5750	5800	4900	3420	3570	1530	1830	1820	1850
6	2850	4400	5300	5700	5800	4900	3400	3420	1540	1940	1850	2050
7	3050	4300	5250	5750	5800	3900	3410	3670	1460	1860	1890	2050
8	3500	4150	5300	5800	5800	4250	3220	3730	1450	1790	1840	2700
9	3500	4650	5300	5850	5800	4150	1480	3850	1730	1790	1900	2700
10	3600	3950	5250	5900	5550	4400	1240	3880	1510	1820	1700	2950
11	3600	3750	5200	5800	5300	4400	1140	4010	1680	1880	1700	3000
12	3800	4200	5300	5750	5250	3650	1000	4030	1610	1850	1820	3000
13	4000	4200	5400	5800	5200	3900	1390	3380	1530	1880	1820	2280
14	3750	5000	5450	5800	5350	4000	1430	4040	1540	1880	1530	3400
15	4000	5000	5500	5800	5400	4000	1620	4030	1580	1840	1660	2400
16	4020	4200	5550	5800	5450	4200	1750	1660	1530	1770	1660	3600
17	4200	5100	5600	5800	5450	2900	1890	1570	1750	1810	1680	2700
18	4300	5000	5600	5800	5500	4400	2430	2230	1620	1770	1680	2400
19	4400	5400	5550	5800	5450	4100	2180	2490	1690	1810	1680	3900
20	4500	5400	5600	5750	5400	4100	1830	2640	1680	1880	1680	4000
21	4400	5200	5600	5700	5400	4400	2320	2620	1640	1870	1680	3900
22	4600	5400	5600	5800	5400	4300	2570	2470	1600	1850	1680	3900
23	4700	5200	5650	5850	5400	3800	2650	2300	1580	1860	1680	3900
24	4800	5200	5700	5900	5400	3800	3030	2080	1680	1800	1680	4000
25	4800	5300	5700	5900	5400	2990	2820	1800	1650	1910	1680	4900
26	4800	5400	5700	5900	5300	3800	3010	1760	1730	1900	1680	4200
27	5000	5600	5700	6000	5200	4200	2980	3630	1620	1930	1680	4300
28	4900	5800	5650	5900	5200	3900	3020	1730	1630	1930	1700	4600
29	5100	5400	5600	6000	---	4000	3030	1640	1700	1950	1720	3100
30	5000	5100	5600	6050	---	3400	3130	1500	1710	2010	1750	3800
31	5200	---	5600	6000	---	3450	---	1560	---	1790	1770	---



## CHEYENNE RIVER BASIN

06436800 HORSE CREEK NEAR VALE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED BORON (B) (UG/L) (01020)
OCT 01...	.4	2.8	1880	2.56	91.4	1.9	.07	.00	360
NOV 02...	.3	2.8	5100	6.94	60.6	12	.01	.00	950
DEC 03...	.4	3.1	5190	7.06	61.7	9.2	.02	.00	1000
JAN 06...	.5	6.1	6190	8.42	50.1	19	1.1	.96	1300
FEB 02...	.4	7.2	5670	7.71	38.3	10	.04	.03	1100
MAR 04...	.3	3.1	5280	7.18	82.7	25	.07	.03	720
APR 07...	.4	2.3	3610	4.91	370	2.4	.12	.01	670
MAY 02...	.5	4.2	3170	4.31	37.7	3.9	.07	.00	630
JUN 03...	.5	7.0	1240	1.69	335	.86	.22	.02	220
JUL 07...	.5	8.4	1370	1.86	592	.91	.15	.04	280
AUG 04...	.5	6.3	1460	1.99	351	.63	.09	.02	290
SEP 02...	.5	6.3	1420	1.93	460	1.4	.10	.00	270

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	4.0	0.0	0.0	0.0	1.0	3.0	21.0	24.0	23.0	24.5	18.0
2	15.0	7.0	0.0	0.0	0.0	0.0	3.5	17.0	24.0	25.0	24.0	19.0
3	12.0	6.0	0.0	0.0	0.0	0.0	3.0	18.0	24.0	26.0	23.0	18.0
4	12.0	6.0	0.0	0.0	0.0	0.0	0.0	17.0	25.0	26.0	24.0	19.0
5	12.0	4.0	0.0	0.0	0.0	1.0	5.0	17.0	24.0	27.0	23.0	24.0
6	12.0	6.0	0.0	0.0	0.0	1.0	5.0	16.0	24.0	26.0	23.5	26.0
7	12.0	4.0	0.0	0.0	0.0	1.0	5.0	17.0	25.0	25.0	24.0	23.0
8	12.0	7.0	0.0	0.0	0.0	2.0	6.0	20.0	25.0	25.0	23.0	17.0
9	15.0	5.0	0.0	0.0	0.0	4.0	7.0	22.0	25.0	25.0	24.0	20.0
10	15.0	4.0	0.0	0.0	0.0	4.0	7.0	24.0	25.0	26.0	23.0	21.0
11	15.0	4.0	0.0	0.0	0.0	3.0	7.0	25.0	25.0	27.0	23.0	20.0
12	15.0	2.0	0.0	0.0	0.0	2.0	8.0	24.0	25.0	25.0	23.0	20.0
13	15.0	2.0	0.0	0.0	0.0	4.0	8.0	25.0	25.0	26.0	22.0	20.0
14	14.0	2.0	0.0	0.0	0.0	4.0	8.0	26.0	25.0	25.0	21.0	21.0
15	14.0	2.0	0.0	0.0	0.0	5.0	8.0	24.0	25.0	26.0	20.0	15.0
16	14.0	2.0	0.0	0.0	0.0	4.0	8.0	20.0	25.0	27.0	21.0	20.0
17	13.0	2.0	0.0	0.0	0.0	6.0	8.0	21.0	25.0	29.0	21.0	20.0
18	13.0	2.0	0.0	0.0	0.0	6.0	9.0	20.0	25.0	29.0	---	15.0
19	12.0	3.0	0.0	0.0	0.0	6.0	9.0	18.0	25.0	29.0	---	17.0
20	11.0	1.0	0.0	0.0	0.0	7.0	9.0	16.0	25.0	28.0	---	20.0
21	10.0	1.0	0.0	0.0	0.0	7.0	9.0	15.0	25.0	26.0	---	16.0
22	9.0	0.0	0.0	0.0	0.0	3.0	10.0	19.0	25.0	27.0	24.0	16.0
23	9.0	0.0	0.0	0.0	0.0	9.0	10.0	21.0	25.0	24.0	24.0	10.0
24	9.0	1.0	0.0	0.0	0.0	9.0	10.0	22.0	25.0	25.0	24.0	17.0
25	8.0	1.0	0.0	0.0	0.0	9.0	10.0	20.0	25.0	23.0	---	17.0
26	8.0	0.0	0.0	0.0	0.0	10.0	10.0	21.0	25.0	26.0	---	19.0
27	7.0	0.0	0.0	0.0	0.0	10.0	10.0	20.0	25.0	25.0	---	19.0
28	7.0	0.0	0.0	0.0	0.0	4.0	10.0	18.0	25.0	26.0	---	20.0
29	7.0	0.0	0.0	0.0	---	1.0	10.0	22.0	24.0	27.0	20.0	18.0
30	7.0	0.0	0.0	0.0	---	1.0	21.0	20.0	23.0	24.0	20.0	16.0
31	6.0	---	0.0	0.0	---	1.0	---	23.0	---	25.0	20.0	---

## CHEYENNE RIVER BASIN

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06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD

LOCATION (REVISED).--Lat 44°30'47", long 103°08'11", in SE¼NW¼ sec.3, T.6 N., R.8 E., Meade County, Hydrologic Unit 10120202, on right bank near upstream end of bridge on State Highway 34, 0.5 mi (0.8 km) upstream from Bear Butte Creek and 20 mi (32 km) northeast of Sturgis.

DRAINAGE AREA.--5,870 mi<sup>2</sup> (15,200 km<sup>2</sup>), 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 (769.964 m) above mean sea level. Prior to Oct. 31, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Keyhole Reservoir, usable capacity, 191,600 acre-ft (236 hm<sup>3</sup>), 246 mi (396 km) upstream since February 1952. At a point 75 mi (121 km) above station, 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 (243 km<sup>2</sup>) above station.

AVERAGE DISCHARGE.--32 years, 270 ft<sup>3</sup>/s (7.646 m<sup>3</sup>/s), 195,600 acre-ft/yr (241 hm<sup>3</sup>/yr); median of yearly mean discharges, 230 ft<sup>3</sup>/s (6.51 m<sup>3</sup>/s), 167,000 acre-ft/yr (210 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,100 ft<sup>3</sup>/s (541 m<sup>3</sup>/s) June 15, 1976, gage height, 16.04 ft (4.889 m), from rating curve extended above 11,000 ft<sup>3</sup>/s (312 m<sup>3</sup>/s); no flow for many days in 1945, 1950, and Aug. 9, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,680 ft<sup>3</sup>/s (75.9 m<sup>3</sup>/s) Apr. 9, gage height, 7.29 ft (2.222 m); minimum daily, 15 ft<sup>3</sup>/s (0.42 m<sup>3</sup>/s) Jan. 8-11, 15, 16, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	56	35	20	25	50	150	236	356	246	226	389
2	97	55	35	20	30	50	234	234	332	256	239	417
3	86	52	35	20	35	50	100	220	314	260	233	352
4	83	50	35	20	30	50	81	205	290	271	233	275
5	78	50	35	20	30	50	77	185	272	304	249	223
6	74	50	35	20	25	60	91	171	256	285	263	158
7	74	50	35	20	25	70	287	154	253	401	267	124
8	74	50	40	15	30	80	1270	140	263	404	274	103
9	74	49	40	15	35	90	2410	133	274	384	330	92
10	76	48	40	15	40	110	2380	126	304	273	366	86
11	75	46	45	15	45	150	1560	118	278	293	374	80
12	69	45	45	20	50	150	1000	126	289	310	373	76
13	63	45	45	20	55	175	814	113	340	287	356	72
14	63	45	45	20	45	121	539	124	348	281	363	68
15	58	50	50	15	40	96	443	130	328	355	523	65
16	54	80	50	15	45	79	382	133	285	360	575	59
17	53	113	50	20	50	72	350	220	278	356	665	56
18	55	90	50	25	45	70	332	226	304	332	533	52
19	55	40	45	25	45	66	325	258	297	269	462	48
20	62	45	45	25	50	58	284	251	278	236	430	51
21	67	45	45	25	60	58	244	259	246	274	400	48
22	67	40	45	25	55	56	225	250	267	271	372	46
23	67	40	45	25	55	55	228	235	267	285	364	60
24	67	45	45	20	55	57	247	249	312	301	340	79
25	67	40	45	20	55	57	261	255	267	320	316	78
26	67	40	50	20	55	63	252	288	256	278	281	63
27	67	35	45	15	55	60	247	291	281	308	380	59
28	66	30	40	20	50	70	242	278	271	301	572	54
29	59	30	30	20	---	70	238	298	236	267	479	53
30	59	35	20	20	---	70	238	321	242	260	384	56
31	57	---	20	25	---	100	---	359	---	229	372	---
TOTAL	2153	1489	1265	620	1215	2413	15531	6586	8584	9257	11594	3442
MEAN	69.5	49.6	40.8	20.0	43.4	77.8	518	212	286	299	374	115
MAX	120	113	50	25	60	175	2410	359	356	404	665	417
MIN	53	30	20	15	25	50	77	113	236	229	226	46
AC-FT	4270	2950	2510	1230	2410	4790	30810	13060	17030	18360	23000	6830
CAL YR 1976 TOTAL	150066		MEAN 410	MAX 15900	MIN 15	AC-FT 297700						
WTR YR 1977 TOTAL	64149		MEAN 176	MAX 2410	MIN 15	AC-FT 127200						

## CHEYENNE RIVER BASIN

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954-58, 1969 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 TEMPERATURES: August 1954 to September 1958, October 1968 to September 1971, October 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,770 micromhos May 25, 1958; minimum daily, 650 micromhos Feb. 15, 1971.

WATER TEMPERATURES: Maximum daily, 30.0°C June 28, July 4, 7, 9, Aug. 7-10, 1970; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,400 micromhos Dec. 2; minimum daily, 780 micromhos May 3.

WATER TEMPERATURES: Maximum daily, 29.5°C June 25; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	HARDNESS (CA, MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DIS-SOLVED CALCIUM (CA) (MG/L) (00915)	DIS-SOLVED MAGNESIUM (MG) (00925)
OCT 01...	1300	123	1950	8.3	15.5	990	820	230	100
NOV 02...	1030	57	2620	8.1	8.0	1200	1000	260	140
DEC 03...	1400	36	3600	8.0	.5	1700	1400	370	200
JAN 06...	1600	20	4000	8.1	.0	1800	1500	390	210
FEB 03...	1145	33	2900	7.3	.5	1300	970	280	140
MAR 04...	1230	50	2700	8.0	.0	1300	1000	240	160
APR 07...	1045	154	2500	8.1	9.5	950	760	200	110
MAY 02...	1115	248	875	8.0	13.0	360	240	81	37
JUN 03...	1000	310	1450	8.0	21.5	770	620	190	72
JUL 07...	1000	400	1650	8.2	23.0	810	660	200	76
AUG 04...	1145	230	1500	8.2	21.0	910	740	220	87
SEP 02...	1100	414	1110	8.2	17.0	750	750	180	73

DATE	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)
OCT 01...	120	21	1.7	13	206	0	169	990	16
NOV 02...	170	23	2.1	16	251	0	206	1300	27
DEC 03...	250	24	2.6	17	416	0	341	1800	35
JAN 06...	260	23	2.6	18	467	0	383	1800	40
FEB 03...	170	22	2.1	15	373	0	306	1300	31
MAR 04...	270	31	3.3	18	299	0	245	1500	46
APR 07...	170	28	2.4	16	240	0	200	1100	31
MAY 02...	44	21	1.0	11	140	0	110	320	9.1
JUN 03...	84	19	1.3	15	190	0	160	740	13
JUL 07...	100	21	1.5	17	190	0	160	880	13
AUG 04...	110	21	1.6	13	200	0	160	920	15
SEP 02...	95	21	1.5	11	190	0	160	780	13

## CHEYENNE RIVER BASIN

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06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (000950)	DIS- SOLVED SILICA (SI02) (MG/L) (000955)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (000631)	TOTAL PHOS- PHORUS (P) (MG/L) (000665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (000666)	DIS- SOLVED BORON (B) (UG/L) (01020)
OCT 01...	.5	5.4	1590	2.16	528	1.4	.04	.00	290
NOV 02...	.5	6.3	2060	2.80	317	2.7	.00	.00	380
DEC 03...	.5	6.5	2900	3.94	282	3.7	.01	.00	550
JAN 06...	.6	7.4	2980	4.05	161	4.2	.02	.01	560
FEB 03...	.7	8.9	2140	2.91	191	2.4	.01	.00	370
MAR 04...	.6	6.1	2420	3.29	327	7.0	.03	.01	330
APR 07...	.6	5.7	1760	2.39	732	1.6	.50	.01	290
MAY 02...	.5	9.6	585	.80	392	.67	.02	.01	110
JUN 03...	.6	6.5	1220	1.66	1020	.94	.72	.02	210
JUL 07...	.6	6.8	1390	1.89	1500	.95	1.0	.03	270
AUG 04...	.6	7.1	1480	2.01	919	1.1	.37	.02	290
SEP 02...	.6	6.7	1270	1.73	1420	1.2	.79	.11	240

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2000	2300	3300	2950	2700	2280	1500	825	1490	1660	1800	1340
2	2100	2300	3400	3000	2500	2900	1590	795	1490	1710	1780	1300
3	2200	2300	3350	2900	2450	2430	1650	780	1530	1680	1780	1600
4	2200	2350	3200	3050	2450	2300	1750	830	1480	1770	1340	1620
5	2200	2300	3000	3000	2400	2200	1790	870	1560	1770	1610	1720
6	2200	2300	3050	3200	2250	2100	2000	885	1530	1730	1680	1180
7	2220	2350	3100	3200	2300	2030	1980	925	1540	1750	1210	1850
8	2240	2350	3050	3300	2300	1800	1960	950	1550	1660	1220	1920
9	2260	2400	3100	3300	2300	2110	1350	1020	1530	1690	1530	1970
10	2270	2400	3100	3350	2250	2580	1110	1040	1520	1670	1780	2050
11	2280	2400	3200	3150	2300	2710	1060	1120	1510	1820	1760	1880
12	2290	2450	3100	3200	2150	3300	1040	1140	1540	1780	1540	1530
13	2300	2600	3100	3200	2050	2250	1150	1160	1560	1490	1780	1720
14	2300	2550	2950	3250	2000	1550	1260	1350	1530	1590	1710	2020
15	2300	2600	2900	3200	2400	2410	1250	1380	1530	1700	1700	2000
16	2300	2900	2850	3050	2600	2700	1150	1680	1530	1650	1660	2120
17	2350	2600	2750	3050	2600	2350	1200	1650	1570	1760	1620	1730
18	2300	2150	2700	3000	2450	2260	1110	1430	1540	1780	1610	2060
19	2300	2000	2750	3000	2480	1520	1060	1960	1560	1770	1600	1570
20	2300	2150	2650	2900	2500	2380	1170	1790	1530	1800	1640	1750
21	2300	2400	2650	2850	2700	2300	1250	1620	1580	1860	1640	2050
22	2400	2650	2750	2850	2700	2310	1400	1770	1590	1860	1640	1780
23	2400	2550	3000	2850	2750	2260	1210	1370	1570	1830	1700	2130
24	2400	2570	2800	2900	2800	2300	1060	1670	1610	1720	1690	2050
25	2400	2580	3100	2750	2900	2240	940	1800	1630	1800	1680	2130
26	2450	2590	2950	2800	3100	2270	890	1550	1620	1810	1600	1920
27	2450	2600	2850	2850	3100	2200	870	1550	1620	1830	1480	2120
28	2450	2850	2650	2800	3100	2050	850	1550	1640	1860	1280	1400
29	2450	2850	2700	2900	---	2000	840	1530	1660	1900	1700	2100
30	2450	3200	2700	2850	---	2000	830	1470	1680	1960	1600	2100
31	2450	---	2900	2900	---	1460	---	1450	---	1950	1680	---

## CHEYENNE RIVER BASIN

06437000 BELLE FOURCHE RIVER NEAR STURGIS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-SOLVED ALUM- INUM (AL) (UG/L) (01106)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	DIS-SOLVED CAD- MIUM (CD) (UG/L) (01025)	DIS-SOLVED CHRO- MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)
OCT 01...	1300	20	50	0	0	1	3	100	1	100
MAY 02...	1115	30	80	0	0	0	12	40	0	30
SEP 02...	1100	40	36	0	0	1	3	30	1	70

DATE	DIS-SOLVED MAN- GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED MOLYB- DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SELE- NIUM (SE) (UG/L) (01145)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON- TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA- DIUM (V) (UG/L) (01085)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	CYANIDE (CN) (MG/L) (00720)
OCT 01...	340	.0	7	7	4	0	2600	.2	6	.01
MAY 02...	280	.8	3	3	1	0	630	.4	0	--
SEP 02...	40	.4	4	3	7	0	2200	--	0	.07

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		4.0	0.0	0.0	---	0.0	0.0	17.5	19.0	---	19.0	15.5
2		3.0	0.0	0.0	---	0.0	1.5	12.0	22.0	---	20.0	15.0
3		2.0	0.0	0.0	0.0	0.0	5.0	14.5	26.0	---	20.0	17.5
4		2.5	0.0	0.0	0.0	---	4.5	16.5	22.0	---	19.5	24.0
5		2.5	0.0	0.0	0.0	---	3.0	12.5	23.5	---	20.0	19.0
6		3.0	0.0	0.0	0.0	---	5.5	14.0	23.5	---	18.5	19.5
7		3.0	0.0	0.0	0.0	0.5	7.5	18.0	27.0	---	21.5	18.0
8		2.0	0.5	0.0	---	0.5	9.5	15.0	24.0	21.0	21.0	18.5
9		2.0	0.5	0.0	0.0	0.5	6.5	23.0	20.5	25.5	19.5	11.0
10		1.5	0.5	0.0	0.0	0.0	9.5	19.5	23.5	22.0	19.0	13.0
11		0.5	0.0	0.0	0.0	0.5	9.5	24.5	20.0	19.0	17.5	19.5
12		0.0	0.0	0.0	0.0	---	8.5	17.0	20.5	19.0	19.0	15.0
13		0.0	0.0	0.0	0.0	0.5	8.5	18.0	18.5	22.0	19.0	20.5
14		0.5	0.0	0.0	0.0	0.5	9.5	18.0	19.0	19.5	19.0	14.0
15		0.0	0.0	0.0	0.0	0.5	11.0	17.5	22.0	20.5	19.0	15.5
16		0.5	0.0	0.0	0.0	1.5	15.5	12.5	21.0	23.0	---	14.0
17		0.5	0.0	0.0	0.0	2.5	15.0	16.0	19.0	24.0	18.0	19.0
18		0.5	0.0	0.0	0.0	3.5	9.5	16.0	18.5	24.5	23.0	15.0
19		0.5	0.0	---	---	2.5	8.5	15.5	22.5	24.0	24.0	10.0
20		0.0	0.0	0.0	0.0	1.5	12.5	13.0	19.0	22.0	19.0	12.0
21		0.0	0.0	0.0	0.0	2.5	9.0	14.0	17.0	20.0	---	15.0
22		0.0	0.0	0.0	0.0	2.5	11.0	13.0	19.0	21.5	21.0	10.0
23		0.0	0.0	---	0.0	6.5	---	23.5	19.5	24.5	19.0	12.5
24		---	0.0	---	0.0	9.5	16.5	19.5	22.0	25.0	---	8.0
25		---	0.0	---	0.0	5.5	12.0	19.5	29.5	21.0	21.0	11.0
26		---	0.0	---	0.0	6.0	12.5	18.5	28.0	20.0	19.5	11.0
27		0.0	0.0	---	0.0	7.0	14.0	20.0	27.5	23.5	18.0	12.0
28		0.0	0.0	---	0.0	---	11.5	23.5	21.5	22.0	19.0	13.0
29		0.0	0.0	---	---	---	14.0	18.5	21.5	21.5	16.5	14.0
30		0.0	0.0	---	---	---	16.0	19.0	17.5	21.0	18.0	12.0
31		---	0.0	---	---	0.5	---	23.0	---	19.0	15.5	---



## CHEYENNE RIVER BASIN

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## 06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD

LOCATION.--Lat 44°22'11", long 102°33'56", in NE¼NE¼ sec.29, T.5 N., R.13 E., Meade County, Hydrologic Unit 10120202, on right bank 10 ft (3 m) downstream from highway bridge, 4.3 mi (6.9 km) northwest of Elm Springs and 4.7 mi (7.6 km) downstream from Hay Creek.

DRAINAGE AREA.--7,210 mi<sup>2</sup> (18,670 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to June 1932, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 786: Drainage area. WSP 926: 1929, 1931(M), 1935, 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,171.60 ft (661.904 m) above mean sea level. Prior to July 27, 1939, nonrecording gage at same site and datum.

REMARKS.--Records good except those for June 15-22, which are fair and those for winter periods, which are poor. Flow regulated by Keyhole Reservoir, usable capacity, 191,600 acre-ft (236 hm<sup>3</sup>), 304 mi (489 km) upstream since February 12, 1952. At a point 133 mi (214 km) above station, water is diverted to Belle Fourche Reservoir (see station 06435000), through Inlet Canal near Belle Fourche (see station 06434500), with other smaller diversions from the main stem and tributaries for irrigation. Total diversion for irrigation of about 60,000 acres (243 km<sup>2</sup>) above station.

AVERAGE DISCHARGE.--46 years (water years 1929-31, 1935-77), 363 ft<sup>3</sup>/s (10.3 m<sup>3</sup>/s), 263,000 acre-ft/yr (324 hm<sup>3</sup>/yr); median of yearly mean discharges, 360 ft<sup>3</sup>/s (10 m<sup>3</sup>/s), 261,000 acre-ft/yr (320 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,100 ft<sup>3</sup>/s (1,280 m<sup>3</sup>/s) June 8, 1964, gage height, 15.90 ft (4.846 m), from rating curve extended above 23,000 ft<sup>3</sup>/s (651 m<sup>3</sup>/s); no flow for many days in 1936-37, 1939-40, 1961-62.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1927 reached a stage of 21.8 ft (6.64 m). Flood in spring of 1933 reached a stage of about 20 ft (6.1 m), from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,700 ft<sup>3</sup>/s (190 m<sup>3</sup>/s) Apr. 9, gage height, 7.17 ft (2.185 m); minimum daily, 15 ft<sup>3</sup>/s (0.42 m<sup>3</sup>/s) Dec. 30 to Jan. 5, Jan. 8-12, 15, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	64	35	15	30	60	63	291	333	236	225	382
2	126	64	40	15	35	60	89	291	333	225	221	382
3	120	64	40	15	40	60	123	287	316	221	217	392
4	113	63	35	15	35	60	83	271	303	236	210	329
5	113	61	30	15	30	70	74	259	283	275	206	271
6	108	61	30	18	25	80	70	236	263	283	213	232
7	106	59	35	20	30	90	206	221	259	465	232	185
8	103	59	35	15	35	100	1020	203	251	392	240	150
9	101	59	35	15	40	110	5930	186	255	333	279	129
10	98	59	35	15	45	120	5000	172	263	341	299	113
11	94	55	35	15	50	123	3060	163	283	308	312	106
12	92	40	35	15	55	126	1890	156	275	308	312	101
13	87	35	35	20	60	115	1230	150	279	295	316	92
14	85	35	35	20	50	87	902	150	333	279	312	85
15	81	30	35	15	45	94	587	138	346	303	329	76
16	76	45	40	16	50	94	470	160	324	368	751	70
17	70	54	45	17	60	87	422	153	299	387	533	65
18	68	61	40	20	55	76	382	221	287	341	412	61
19	66	65	40	25	55	68	382	247	295	267	397	59
20	68	60	35	25	60	63	378	303	283	232	377	59
21	69	45	35	25	70	59	316	299	279	267	350	57
22	72	35	35	25	65	50	279	295	263	255	337	59
23	68	40	35	25	65	49	263	271	275	255	324	143
24	66	50	35	25	65	49	263	251	263	247	312	302
25	66	40	40	25	65	48	279	244	247	263	299	166
26	66	30	45	25	65	48	295	251	247	316	275	120
27	66	20	40	20	65	48	295	279	295	263	279	89
28	66	25	30	15	60	54	295	279	255	259	476	85
29	68	25	20	18	---	55	295	271	244	244	691	81
30	68	30	15	20	---	50	291	283	232	228	504	74
31	64	---	15	25	---	42	---	312	---	228	407	---
TOTAL	2642	1433	1070	594	1405	2295	25232	7293	8463	8920	10647	4515
MEAN	85.2	47.8	34.5	19.2	50.2	74.0	841	235	282	288	343	151
MAX	129	65	45	25	70	126	5930	312	346	465	751	392
MIN	64	20	15	15	25	42	63	138	232	221	206	57
AC-FT	5240	2840	2120	1180	2790	4550	50050	14470	16790	17690	21120	8960
CAL YR 1976 TOTAL	165954			MEAN 453	MAX 26400	MIN 10	AC-FT 329200					
WTR YR 1977 TOTAL	74509			MEAN 204	MAX 5930	MIN 15	AC-FT 147800					

## CHEYENNE RIVER BASIN

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,600 micromhos Jan. 6, 1976; minimum daily, 800 micromhos June 19, 1976.

WATER TEMPERATURES: Maximum daily, 33.5°C June 25, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,800 micromhos Jan. 10; minimum daily, 865 micromhos May 1.

WATER TEMPERATURES: Maximum daily, 33.5°C June 25; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH  (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	
OCT												
19...	1400	66	2650	7.6	4.0	2	820	810	1100	970	240	
NOV												
15...	1115	29	3420	8.3	.5	3	ND	825	1500	1200	300	
DEC												
14...	1100	34	390	8.2	.0	1	82	88	1700	1400	360	
JAN												
10...	1045	14	4300	8.3	.0	3	<1	<3	2100	1700	430	
FEB												
07...	1400	31	3600	7.8	.0	2	84	810	1700	1300	360	
MAR												
07...	1130	89	2700	8.2	1.0	25	810	810	1100	920	220	
APR												
11...	1530	2950	1150	8.0	9.5	3200	650	390	290	220	70	
MAY												
09...	1300	183	1240	8.2	20.0	80	90	90	470	340	110	
JUN												
06...	1130	258	1800	8.5	24.0	30	60	340	760	630	180	
JUL												
06...	1200	266	1650	8.4	25.5	30	180	210	830	710	200	
AUG												
02...	1230	215	1950	8.2	25.0	15	80	220	870	740	200	
29...	1045	764	1750	7.9	18.5	2300	7200	18	620	490	150	
SEP												
19...	1300	61	2120	8.4	17.0	6	812	850	1100	920	230	
DATE		DIS- SOLVED MAG- NE- SIUM (MG) (00925)	DIS- SOLVED SODIUM (NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)
OCT												
19...	130	160	23	2.1	16	201	0	165	1200	22		.5
NOV												
15...	170	240	26	2.7	18	272	0	223	1800	35		.5
DEC												
14...	190	280	26	3.0	17	376	0	308	2000	41		.6
JAN												
10...	240	370	28	3.5	21	501	0	411	2300	58		.7
FEB												
07...	190	250	24	2.7	19	456	0	374	1700	42		.8
MAR												
07...	140	270	34	3.5	15	250	0	205	1400	46		.4
APR												
11...	28	94	40	2.4	9.6	88	0	72	410	10		.4
MAY												
09...	48	67	23	1.3	9.6	160	0	130	450	16		.5
JUN												
06...	75	92	20	1.5	15	160	0	130	760	12		.6
JUL												
06...	80	110	22	1.7	14	150	0	120	850	17		.6
AUG												
02...	90	130	24	1.9	15	160	0	130	940	16		.6
29...	59	120	29	2.1	16	150	0	120	690	14		.6
SEP												
19...	120	160	24	2.1	19	180	0	150	1200	19		.6

< Less than.

B Non-ideal colony count.

ND Not detected.

## CHEYENNE RIVER BASIN

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06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED (SUM OF TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (N03) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)
OCT 19...	4.6	2140	1870	2.91	381	1.6	.67	2.3	10	.01
NOV 15...	4.3	2850	2700	3.88	223	3.7	1.1	4.8	21	.02
DEC 14...	5.4	3320	3080	4.52	305	3.8	1.2	5.0	22	.02
JAN 10...	5.8	4170	3670	5.67	158	5.7	1.8	7.5	33	.02
FEB 07...	9.2	3080	2800	4.19	258	2.9	2.4	5.3	23	.01
MAR 07...	4.4	2400	2220	3.26	577	8.6	1.6	10	45	.06
APR 11...	4.8	712	670	.97	5670	.54	5.1	5.6	25	1.6
MAY 09...	7.7	847	788	1.15	419	.71	.42	1.1	5.0	.03
JUN 06...	5.9	1300	1220	1.77	906	.78	.45	1.2	5.4	.05
JUL 06...	5.4	1460	1350	1.99	1050	1.0	.47	1.5	6.5	.06
AUG 02...	6.7	1610	1480	2.19	935	.93	.62	1.6	6.9	.04
SEP 29...	6.7	1250	1130	1.70	2580	1.8	4.1	5.9	26	5.0
SEP 19...	7.4	2110	1840	2.87	348	1.6	1.5	3.1	14	.04

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)
OCT 19...	1400	--	2000
DEC 14...	1100	--	95
JAN 10...	1045	--	100
FEB 07...	1400	4.8	400
MAR 07...	1130	--	20
APR 11...	1530	5.0	--
MAY 09...	1300	--	51000
JUN 06...	1130	6.9	22000
JUL 06...	1200	--	21000
AUG 02...	1230	--	7600
SEP 29...	1045	66	--

## CHEYENNE RIVER BASIN

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 19...	1400	50	20	30	<10	<9	1	0	0	0	50
FEB 07...	1400	25	3	22	10	10	0	20	10	10	50
APR 11...	1530	8500	--	9	10	9	1	160	150	10	150
JUN 06...	1130	100	--	10	<10	<9	1	10	10	0	<50
AUG 29...	1045	5600	5500	54	10	10	0	140	140	0	10

DATE	SUS- PENDE D COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MAN- GANESE (MN) (UG/L) (01055)
OCT 19...	50	0	10	7	3	200	40	100	96	4	160
FEB 07...	49	1	130	0	130	190	30	100	100	0	1400
APR 11...	150	0	270	270	3	460000	50	200	200	0	13000
JUN 06...	<48	2	30	26	4	3100	20	<100	<96	4	140
AUG 29...	10	0	240	240	5	360000	30	100	99	1	8000

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1950	2200	2400	3650	2900	1950	1620	865	1780	1840	1920	2000
2	2000	2200	2450	3700	2900	2950	1620	870	1500	1860	1650	1900
3	2000	2250	2450	3700	2500	2340	1790	880	1510	1890	1670	1850
4	2000	2250	2500	3700	2200	2390	1760	1000	1520	1880	1670	1680
5	2050	2280	2550	3650	2000	2940	1780	1010	1470	1550	1740	1650
6	2150	2300	2500	3650	2000	3000	1290	1000	1530	1540	1720	1680
7	2150	2350	2600	3700	1950	2940	1400	1530	1520	1540	1750	2200
8	2150	2300	2700	3750	1900	1870	1050	1000	1520	1540	1750	1800
9	2150	2350	2700	3700	1900	1340	1100	1000	1510	1760	1660	1980
10	2200	2350	2650	3800	2000	980	1160	1260	1510	1760	1550	2200
11	2200	2400	2600	3750	2100	1550	1160	1280	1510	1770	1710	2300
12	2200	2350	2650	3700	1900	2040	1160	1280	1510	1780	1720	1650
13	2200	2400	2700	3700	1850	2050	1160	1290	1480	1790	1680	1750
14	2150	2400	2750	3650	1900	2490	1000	1280	1460	1780	1700	2300
15	2200	2350	2850	3650	1850	1960	1620	1740	1480	1770	1750	1900
16	2200	2300	2850	3600	1850	2000	1250	1740	1630	1760	1740	2000
17	2250	2300	2800	3600	1900	2050	1250	1740	1640	1760	1740	2340
18	2200	2350	2900	3550	1900	2040	1250	1730	1640	1740	1720	2050
19	2200	2350	2900	3550	2000	2030	1180	1740	1630	1770	1750	1850
20	2300	2350	3100	3400	1800	2000	1180	1570	1640	1800	1580	1750
21	2300	2350	3050	3450	1900	2060	1170	1570	1630	1790	1500	1800
22	2250	2400	3100	3400	2000	2230	1310	1570	1640	1800	1150	2000
23	2350	2400	3200	3300	1900	2450	1320	1580	1630	1790	1500	2300
24	2350	2350	3250	3200	1950	2200	930	1580	1640	1790	1480	2300
25	2350	2350	3300	3150	2000	2400	930	1580	1630	1780	1180	2350
26	2300	2350	3400	3150	2000	1960	940	1730	1640	1800	1420	1980
27	2250	2400	3450	3200	1850	1960	930	1740	1640	1790	1510	1650
28	2250	2400	3400	3200	1900	1950	960	1740	1640	1800	1540	1800
29	2250	2400	3500	3150	---	2200	880	1740	1640	1960	1640	1120
30	2250	2350	3600	3100	---	2210	890	1740	1640	1970	1540	1040
31	2200	---	3600	3000	---	1960	---	1740	---	1960	1540	---

&lt; Less than.

## CHEYENNE RIVER BASIN

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06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE D MAN- GANESE (MN) (UG/L) (01054)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (MG) (UG/L) (71900)	SUS- PENDE D MERCURY (MG) (UG/L) (71895)	DIS- SOLVED MERCURY (MG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE D SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE D ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)
OCT 19...	30	130	--	--	.0	4	0	4	10	0	10
FEB 07...	100	1300	.2	.2	.0	3	0	3	20	10	10
APR 11...	13000	130	.0	--	.0	4	1	3	780	770	10
JUN 06...	90	50	.0	.0	.0	5	0	5	20	10	10
AUG 29...	8000	50	1.9	1.9	.0	10	8	2	470	470	0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	4.0	0.5	0.0	0.0	0.5	1.0	15.0	18.0	24.0	21.0	20.0
2	12.0	3.0	0.5	0.0	0.0	1.0	1.0	14.0	17.0	21.5	22.5	20.0
3	11.0	3.0	0.0	0.0	0.0	1.0	1.0	15.0	28.0	25.0	25.0	22.0
4	10.0	3.0	0.0	0.0	0.0	1.0	2.0	15.5	25.0	26.0	25.0	21.0
5	7.5	2.0	0.5	0.0	0.0	1.0	3.0	17.0	24.0	23.5	24.0	22.0
6	9.5	2.0	0.5	0.0	0.0	1.0	7.0	18.5	27.5	25.0	26.5	23.0
7	7.0	1.0	0.0	0.0	0.0	1.0	7.0	17.0	27.0	24.0	25.0	22.0
8	8.0	1.0	0.0	0.0	0.0	0.5	7.5	16.5	26.0	28.5	23.0	21.0
9	8.0	0.5	0.5	0.0	0.0	1.0	9.0	16.0	27.0	25.0	24.5	23.0
10	10.0	0.0	0.0	0.0	0.0	1.0	9.5	17.0	27.0	27.5	24.0	22.0
11	9.5	0.0	0.5	0.0	0.0	0.5	10.0	17.5	25.5	22.0	23.0	20.0
12	8.0	0.0	0.5	0.0	0.0	1.0	10.5	18.0	27.0	21.0	26.5	21.0
13	8.0	0.5	0.5	0.0	0.0	0.5	11.0	18.0	27.0	25.0	27.5	22.5
14	11.0	0.5	0.0	0.0	0.0	0.5	11.0	17.0	22.0	28.0	26.5	21.0
15	9.0	1.0	0.0	0.0	0.0	1.0	13.0	17.0	26.0	29.5	23.0	23.0
16	9.0	1.0	0.5	0.0	0.0	4.0	14.0	16.0	23.0	28.5	23.0	22.0
17	5.0	1.5	0.5	0.0	0.0	4.5	17.0	16.0	27.0	30.0	22.0	20.0
18	4.0	1.5	0.5	0.0	0.0	4.0	14.0	17.0	27.5	32.0	24.5	19.0
19	4.0	1.0	0.5	0.0	0.0	4.0	11.0	16.0	25.5	26.5	23.0	18.0
20	5.0	0.5	0.5	0.0	0.0	5.0	12.0	17.0	28.5	27.0	17.0	19.0
21	5.0	0.5	0.0	0.0	0.0	6.0	13.0	17.0	30.0	28.0	26.0	17.0
22	1.0	0.5	0.0	0.0	0.0	6.0	14.0	16.5	27.0	28.0	24.0	19.5
23	2.0	0.5	0.5	0.0	0.0	8.0	14.0	16.0	25.0	25.0	23.5	19.0
24	2.0	0.0	0.5	0.0	0.0	8.5	14.0	17.0	24.0	24.5	25.0	17.0
25	1.0	0.5	0.0	0.0	0.0	10.0	15.0	16.0	33.5	25.0	25.0	18.0
26	4.0	0.0	0.5	0.0	0.0	13.0	15.5	17.0	26.5	25.0	26.0	19.0
27	7.0	0.0	0.5	0.0	0.0	15.0	15.0	17.0	28.0	23.0	20.0	21.0
28	5.0	0.0	0.0	0.0	0.0	10.0	15.5	16.0	24.0	28.0	22.0	22.0
29	4.0	0.0	0.0	0.0	---	4.0	16.5	16.5	23.5	26.0	18.5	19.0
30	6.0	0.5	0.0	0.0	---	2.0	19.0	17.0	21.0	23.0	23.0	14.0
31	4.0	---	0.0	0.0	---	1.0	---	18.5	---	21.0	16.0	---



## CHEYENNE RIVER BASIN

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 19,76 1400	NOV 15,76 1115	DEC 14,76 1100	JAN 10,77 1046	FEB 7,77 1400					
TOTAL CELLS/ML	2000	4100	95	100	400					
DIVERSITY: DIVISION	0.0	0.2	1.4	1.4	0.9					
..CLASS	0.0	0.2	1.8	1.4	0.9					
...ORDER	0.0	0.2	1.8	1.4	0.9					
...FAMILY	1.0	1.1	2.5	2.3	1.2					
....GENUS	1.0	1.1	2.8	2.3	0.0					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	39	1	--	-	14	14	11	3
....CHODATELLA	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	39	1	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
...POLYBLEPHARIDACEAE										
....SPERMATOZOOPSIS	--	-	--	-	--	-	--	-	--	-
...VOLVOCAEAE										
....GONIUM	--	-	--	-	--	-	--	-	--	-
...ZYGNEATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...PENNALES										
....NAVICULACEAE										
....ENTOMONEIS	--	-	--	-	9	9	3	3	11	3
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-
...PENNALES										
....ACHNANTHACEAE										
....ACHNANTHES	1100#	58	3100#	75	--	-	37#	36	47	12
...FRAGILARIACEAE										
....SYNEDRA	--	-	160	4	3	3	3	3	--	-
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	3	3	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	6	6	--	-	*	0
....NAVICULA	--	-	--	-	3	3	--	-	--	-
...NITZSCHACEAE										
....NITZSCHIA	840#	42	740#	18	20#	21	9	8	25	6
...SURIPELLACEAE										
....CYMATOPLEURA	--	-	--	-	--	-	--	-	--	-
....SURIPELLA	--	-	--	-	--	-	9	8	--	-
..CHRYSTOPHYCEAE										
...CHRYSSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	-	--	-	12	12	--	-	--	-
..XANTHOPHYCEAE										
...HETEROCOCCALES										
...CENTRITRACTACEAE										
....CENTRITRACTUS	--	-	--	-	--	-	--	-	--	-

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 19,76 1400	NOV 15,76 1115	DEC 14,76 1100	JAN 10,77 1046	FEB 7,77 1400
TOTAL CELLS/ML	2000	4100	95	100	400
DIVERSITY: DIVISION	0.0	0.2	1.4	1.4	0.9
..CLASS	0.0	0.2	1.8	1.4	0.9
...ORDER	0.0	0.2	1.8	1.4	0.9
...FAMILY	1.0	1.1	2.5	2.3	1.2
....GENUS	1.0	1.1	2.8	2.3	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...HORMOGONALES										
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	310#	76
...LYNGBYA	--	-	--	-	14#	15	--	-	--	-
...OSCILLATORIA	--	-	--	-	--	-	29#	28	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
...CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	--	-	--	-	--	-	--	-
...TRACHELOMONAS	--	-	39	1	26#	27	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## CHEYENNE RIVER BASIN

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAR 7,77 1130	MAY 9,77 1300	JUN 6,77 1130	JUL 6,77 1200	AUG 2,77 1230					
TOTAL CELLS/ML	20	51000	22000	21000	7600					
DIVERSITY: DIVISION	0.4	0.4	0.6	1.1	0.6					
..CLASS	0.4	0.4	0.6	1.2	0.6					
...ORDER	0.4	0.5	1.5	1.5	0.7					
...FAMILY	1.4	0.5	2.0	2.4	2.1					
....GENUS	1.5	0.5	2.1	3.0	3.0					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	500	2	--	-	1100	15
....MICRACTINIACEAE	--	-	* 0		--	-	250	1	--	-
....GOLENKINIA	--	-	* 0		--	-	--	-	--	-
....MICRACTINIUM	--	-	* 0		--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	460	1	670	3	2600	13	280	4
....CHODATELLA	--	-	* 0		--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	* 0		--	-	2500	12	1600#	21
....KIRCHNERIELLA	--	-	--	-	670	3	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	560	7
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	* 0		* 0		4000#	19	1200#	17
....CRUCIGENIA	--	-	--	-	--	-	--	-	370	5
...SCENEDESMUS	--	-	* 0		670	3	2800	13	1300#	17
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	1	7	--	-	--	-	--	-	--	-
...POLYBLEPHARIDACEAE										
....SPERMATOZOOPSIS	--	-	--	-	--	-	130	1	--	-
...VOLVOCAEAE										
....GONIUM	--	-	* 0		--	-	--	-	--	-
...ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	380	2	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...PENNALES										
...NAVICULACEAE										
....ENTOMONEIS	1	7	--	-	--	-	--	-	--	-
...CENTRALES										
....COSCINODISCACEAE										
....CYCLOTILLA	--	-	1100	2	12000#	52	1100	5	190	2
...PENNALES										
....ACHNANTHACEAE										
....ACHNANTHES	1	4	* 0		1200	5	750	4	* 0	
...FRAGILARIACEAE										
....SYNEDRA	--	-	* 0		* 0		--	-	220	3
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
...NAVICULA	1	7	* 0		1200	5	130	1	590	8
...NITZSCHACEAE										
....NITZSCHIA	14#	71	670	1	5500#	25	5400#	26	--	-
...SURIPELLACEAE										
....CYMATOPLEURA	1	4	--	-	--	-	--	-	--	-
...SURIPELLA	--	-	--	-	--	-	--	-	--	-
CHRYSTOPHYCEAE										
...CHRYSONOMADALES										
...OCHROMONADACEAE										
....DINOBYRON	--	-	--	-	--	-	--	-	--	-
...XANTHOPHYCEAE										
...HETEROCOCCALES										
...CENTRITRACTACEAE										
....CENTRITRACTUS	--	-	* 0		--	-	130	1	--	-

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAR 7,77 1130	MAY 9,77 1300	JUN 6,77 1130	JUL 6,77 1200	AUG 2,77 1230
TOTAL CELLS/ML	20	51000	22000	21000	7600
DIVERSITY: DIVISION	0.4	0.4	0.6	1.1	0.6
..CLASS	0.4	0.4	0.6	1.2	0.6
...ORDER	0.4	0.5	1.5	1.5	0.7
...FAMILY	1.4	0.5	2.0	2.4	2.1
...GENUS	1.5	0.5	2.1	3.0	3.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...HORMOGONALES										
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	48000#	94	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	130	1	--	-
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	*	0	250	1	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	*	0	330	2	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	130	1	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## 06438500 CHEYENNE RIVER NEAR PLAINVIEW, SD

LOCATION.--Lat 44°31'16", long 101°59'34", in NE¼SW¼ sec.31, T.7 N., R.18 E., Ziebach County, Hydrologic Unit 10120112, near left bank on downstream side of highway bridge, 1.0 mi (1.6 km) downstream from Ash Creek and 10 mi (16 km) southeast of Plainview.

DRAINAGE AREA.--21,600 mi<sup>2</sup> (55,900 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,877.65 ft (572.308 m) above mean sea level. Prior to Mar. 22, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow slightly regulated by Angostura Reservoir 164 mi (264 km) upstream (see station 06401000) since October 1949 and upstream reservoirs on Rapid Creek since 1956 and Belle Fourche River since 1952. Flow also affected by diversions for irrigation of about 70,000 acres (283 km<sup>2</sup>) and return flow from irrigated areas.

AVERAGE DISCHARGE.--27 years, 619 ft<sup>3</sup>/s (17.53 m<sup>3</sup>/s), 448,500 acre-ft/yr (553 hm<sup>3</sup>/yr); median of yearly mean discharges, 610 ft<sup>3</sup>/s (17.3 m<sup>3</sup>/s), 442,000 acre-ft/yr (540 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,700 ft<sup>3</sup>/s (1,180 m<sup>3</sup>/s) May 26, 1957, from rating curve extended above 18,000 ft<sup>3</sup>/s (510 m<sup>3</sup>/s); maximum gage height, 11.68 ft (3.560 m) May 26, 1965; no flow Dec. 14, 19-21, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood late in May 1920 reached a stage of about 17.5 ft (5.33 m), and flood in May 1927 reached a stage of about 14 ft (4.3 m), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,690 ft<sup>3</sup>/s (274 m<sup>3</sup>/s) Apr. 10, gage height, 7.97 ft (2.429 m); minimum daily, 35 ft<sup>3</sup>/s (0.99 m<sup>3</sup>/s) Jan. 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	305	160	90	60	39	100	325	533	472	247	331	453
2	268	151	90	65	39	100	446	576	513	243	300	434
3	232	143	90	65	40	110	604	626	472	239	286	434
4	206	151	85	70	40	200	687	604	440	236	286	434
5	199	154	85	70	38	346	745	568	402	239	273	385
6	192	157	80	75	36	408	641	576	408	251	273	331
7	189	154	80	80	36	440	1350	576	326	310	296	296
8	196	160	85	75	60	446	2380	568	326	526	331	264
9	247	157	90	70	80	492	5560	547	310	440	511	243
10	209	154	95	70	100	712	8900	526	282	368	1850	232
11	196	145	100	75	110	561	6850	492	331	702	657	228
12	185	110	110	70	100	547	4250	440	351	540	704	239
13	176	110	120	60	95	547	4840	374	326	440	526	202
14	170	100	120	55	90	472	3220	341	351	385	472	199
15	157	95	125	50	90	492	2250	331	326	357	583	196
16	151	100	130	50	90	554	1820	300	453	357	704	196
17	154	180	120	60	95	466	1600	310	479	397	860	196
18	157	170	100	70	100	421	1310	286	1120	368	649	216
19	157	140	95	75	100	402	1060	385	583	320	526	286
20	154	110	90	75	110	368	969	402	554	251	499	247
21	157	100	85	80	120	368	919	499	408	232	459	216
22	166	99	85	80	110	385	815	547	320	385	414	202
23	179	121	90	80	110	341	695	870	346	320	414	646
24	176	129	90	75	100	533	611	634	380	300	391	1110
25	176	120	95	70	100	434	626	479	305	315	385	770
26	176	100	95	60	95	402	626	513	320	421	368	472
27	176	90	100	50	95	346	641	513	305	397	368	341
28	176	85	85	35	95	325	657	604	273	908	374	300
29	176	85	70	35	---	385	626	526	264	1400	634	278
30	166	90	65	37	---	402	611	440	260	533	604	243
31	154	---	60	37	---	397	---	446	---	397	533	---
TOTAL	5778	3820	2900	1979	2313	12502	56634	15432	12006	12824	15861	10289
MEAN	186	127	93.5	63.8	82.6	403	1888	498	400	414	512	343
MAX	305	180	130	80	120	712	8900	870	1120	1400	1850	1110
MIN	151	85	60	35	36	100	325	286	260	232	273	196
AC-FT	11460	7580	5750	3930	4590	24800	112300	30610	23810	25440	31460	20410
CAL YR 1976	TOTAL	221392	MEAN 605	MAX 20700	MIN 34	AC-FT 439100						
WTR YR 1977	TOTAL	152338	MEAN 417	MAX 8900	MIN 35	AC-FT 302200						



## CHEYENNE RIVER BASIN

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06439000 CHERRY CREEK NEAR PLAINVIEW, SD

LOCATION.--Lat 44°44'38", long 102°03'11", in SW¼NE¼ sec.16, T.9 N., R.17 E., Meade County, Hydrologic Unit 10120113, on left bank 5 ft (2 m) downstream from bridge on State Highway 73, 0.2 mi (0.3 km) downstream from small right-bank tributary, 6.2 mi (10.0 km) downstream from Red Owl Creek, and 11 mi (18 km) northeast of Plainview.

DRAINAGE AREA.--1,190 mi<sup>2</sup> (3,080 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 2,158.06 ft (657.777 m) above mean sea level. Prior to June 8, 1948, nonrecording gage at same site and datum.

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

AVERAGE DISCHARGE.--32 years, 44.7 ft<sup>3</sup>/s (1.266 m<sup>3</sup>/s), 32,390 acre-ft/yr (39.9 hm<sup>3</sup>/yr); median of yearly mean discharges, 28 ft<sup>3</sup>/s (0.79 m<sup>3</sup>/s), 20,300 acre-ft/yr (25 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft<sup>3</sup>/s (496 m<sup>3</sup>/s) Apr. 1, 1952, gage height, 22.63 ft (6.898 m); no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 495 ft<sup>3</sup>/s (14.0 m<sup>3</sup>/s) Apr. 12, gage height, 7.12 ft (2.170 m), no peak above base of 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s); no flow for most of year.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 9 to May 5)

3.5	0	4.0	14	5.0	96
3.6	1.5	4.2	25	6.0	240
3.7	3.6	4.5	46	7.0	442
3.8	6.4				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.90	1.5	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.45	.30	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	5.4	.00	.00	21	.00	.00
10	.00	.00	.00	.00	.00	.00	22	.00	.00	54	.00	.00
11	.00	.00	.00	.00	.00	.00	42	.00	18	28	.00	.00
12	.00	.00	.00	.00	.00	.00	442	.00	44	15	.00	.00
13	.00	.00	.00	.00	.00	.00	242	.00	15	9.2	.00	.00
14	.00	.00	.00	.00	.00	.00	142	.00	6.8	5.8	.00	.00
15	.00	.00	.00	.00	.00	.00	101	.00	2.1	3.6	.00	.00
16	.00	.00	.00	.00	.00	.00	85	.00	.38	1.7	.00	.00
17	.00	.00	.00	.00	.00	.00	60	.00	.00	.31	.00	.00
18	.00	.00	.00	.00	.00	.00	44	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	33	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	24	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	18	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	13	.00	19	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	9.9	.00	31	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	7.4	32	21	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	5.6	30	14	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	4.4	25	8.8	.00	.00	.81
27	.00	.00	.00	.00	.00	.00	3.6	17	5.8	.00	.00	3.9
28	.00	.00	.00	.00	.00	.00	2.6	10	2.6	.00	.00	1.0
29	.00	.00	.00	.00	---	.00	1.9	7.1	.75	.00	.00	.00
30	.00	.00	.00	.00	---	.00	1.4	4.4	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	2.8	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	1310.20	130.01	191.03	138.61	.00	5.71
MEAN	.000	.000	.000	.000	.000	.000	43.7	4.19	6.37	4.47	.000	.19
MAX	.00	.00	.00	.00	.00	.00	442	32	44	54	.00	3.9
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	2600	258	379	275	.00	11
CAL YR 1976	TOTAL	1755.20	MEAN	4.80	MAX	294	MIN	.00	AC-FT	3480		
WTR YR 1977	TOTAL	1775.56	MEAN	4.86	MAX	442	MIN	.00	AC-FT	3520		

## CHEYENNE RIVER BASIN

## 06439300 CHEYENNE RIVER AT CHERRY CREEK, SD

LOCATION.--Lat 44°36'10", long 101°29'24", in NE¼NW¼ sec.5, T.7 N., R.22 E., Ziebach County, Hydrologic Unit 10120112, on left bank 0.5 mi (0.8 km) east of village of Cherry Creek, 0.5 mi (0.8 km) downstream from Cherry Creek and 1.7 mi (2.7 km) upstream from Plum Creek.

DRAINAGE AREA.--23,900 mi<sup>2</sup> (61,900 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,699.29 ft (517.944 m) above mean sea level. Prior to Oct. 17, 1960, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 197 mi (317 km) upstream (see station 06401000) since October 1949 and upstream reservoirs on Rapid Creek since 1956 and Belle Fourche River since 1952. Flow also affected by diversions for irrigation of about 70,000 acres (283 km<sup>2</sup>) and return flow from irrigated areas. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--17 years, 824 ft<sup>3</sup>/s (23.34 m<sup>3</sup>/s), 597,500 acre-ft/yr (736 hm<sup>3</sup>/yr); median of yearly mean discharges, 740 ft<sup>3</sup>/s (21.0 m<sup>3</sup>/s), 536,000 acre-ft/yr (660 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,800 ft<sup>3</sup>/s (1,240 m<sup>3</sup>/s) June 16, 1967, gage height, 14.75 ft (4.496 m); no flow Jan. 6 to Feb. 2, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,500 ft<sup>3</sup>/s (297 m<sup>3</sup>/s) Apr. 7, gage height, 8.29 ft (2.527 m), from graph based on gage readings; minimum daily, 35 ft<sup>3</sup>/s (0.99 m<sup>3</sup>/s) Jan. 30, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	342	153	100	60	37	95	299	613	455	231	366	543
2	303	153	100	60	40	95	266	607	505	236	299	494
3	255	146	100	60	42	100	404	607	521	199	273	489
4	218	146	95	65	43	150	671	600	455	195	284	474
5	195	148	95	65	42	250	762	532	422	234	266	400
6	180	151	90	70	40	450	784	526	400	218	237	350
7	180	151	90	75	40	500	4180	537	358	305	234	300
8	175	148	85	80	50	600	10100	526	326	413	280	250
9	201	151	85	75	75	869	10000	510	310	537	307	230
10	237	153	85	75	85	783	10200	516	310	427	1770	220
11	202	134	90	85	100	740	8720	455	371	463	1080	210
12	186	118	100	80	120	494	8060	436	338	885	762	220
13	172	118	110	60	110	639	3180	400	338	600	712	240
14	158	110	115	55	100	450	2970	350	342	450	532	200
15	151	100	120	52	100	392	2910	326	375	400	1140	190
16	143	100	130	50	100	499	2630	310	825	370	678	180
17	148	150	140	50	95	450	1220	303	537	380	1100	180
18	153	160	130	60	95	396	986	299	450	420	901	200
19	156	180	110	70	95	358	986	379	1450	380	626	250
20	156	150	100	70	100	330	986	383	633	300	572	300
21	153	110	100	75	110	310	986	450	504	250	526	150
22	156	100	95	85	120	326	952	543	715	300	489	141
23	164	95	95	85	120	291	692	638	659	400	455	1260
24	175	120	90	85	110	288	652	1030	418	350	418	1500
25	180	140	90	80	110	479	613	548	379	300	392	1810
26	180	130	100	70	100	346	639	678	338	350	375	652
27	180	110	110	60	100	295	652	665	318	436	375	469
28	180	100	110	50	95	248	699	595	307	413	392	326
29	177	95	100	40	---	314	589	607	269	2160	437	251
30	172	95	80	35	---	338	595	516	237	807	822	214
31	164	---	70	35	---	371	---	436	---	474	652	---
TOTAL	5792	3915	3110	2017	2374	12246	77383	15921	13865	13883	17752	12693
MEAN	187	131	100	65.1	84.8	395	2579	514	462	448	573	423
MAX	342	180	140	85	120	869	10200	1030	1450	2160	1770	1810
MIN	143	95	70	35	37	95	266	299	237	195	234	141
AC-FT	11490	7770	6170	4000	4710	24290	153500	31580	27500	27540	35210	25180
CAL YR 1976	TOTAL	233605	MEAN 638	MAX 24000	MIN 35	AC-FT 463400						
WTR YR 1977	TOTAL	180951	MEAN 496	MAX 10200	MIN 35	AC-FT 358900						

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued  
(National stream-quality accounting network station)  
(National pesticide water-monitoring network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1975 to September 1976.

WATER TEMPERATURES: January 1975 to September 1976.

SUSPENDED SEDIMENT DISCHARGE: October 1971 to September 1976 (discontinued).

INSTRUMENTATION.--Water-quality monitor since June 16, 1977. Monitor inoperative July 1 to Aug. 25.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,400 micromhos Jan. 27, 28, 1975; minimum daily, 620 micromhos Apr. 25, 1975.

WATER TEMPERATURES: Maximum daily, 35.0°C Aug. 26, 1975; minimum daily, 0.0°C on many days during winter periods.  
SEDIMENT CONCENTRATIONS: Maximum daily mean, 66,000 mg/L May 25, 1976; minimum daily mean, 80 mg/L Nov. 15-17, 1972.

SEDIMENT LOADS: Maximum daily, 2,530,000 tons (2,300,000 tonnes) June 12, 1972; minimum daily 15 tons (14 tonnes) Dec. 14, 1973.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (000061)	SPECIFIC CONDUCTANCE (MICROMHOS) (000095)	PH (UNITS) (000400)	TEMPERATURE (DEG C) (000010)	TURBIDITY (JTU) (000070)	FECAL COLIFORM (7UM-MF) (COL./100 ML) (31625)	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARDNESS (CA, MG) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)
OCT 20...	1045	152	2170	8.2	4.5	55	85	820	960	830	220
NOV 17...	1400	150	2430	8.3	1.0	40	810	70	1000	840	240
DEC 14...	1600	114	2500	8.4	.0	5	81	30	1200	920	290
JAN 13...	1045	59	2780	8.0	.0	3	82	84	1300	980	330
FEB 09...	1100	75	2900	8.6	.0	3	82	84	1100	750	270
MAR 10...	1115	538	2050	8.3	.5	420	85	856	710	540	170
APR 07...	1145	649	1280	8.6	14.0	3900	820	870	280	140	78
MAY 05...	1000	550	1310	8.5	16.0	20	89	810	500	380	120
JUN 02...	1030	505	1810	8.3	21.5	460	500	150	680	570	160
JUN 29...	1030	274	1870	8.1	23.0	270	200	130	740	640	180
JUL 27...	1030	376	1770	7.9	21.5	1300	4100	6400	690	590	170
AUG 25...	1000	390	1630	8.1	21.5	95	ND	ND	760	650	190

DATE	DIS-SOLVED MAGNESIUM (MG) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)
OCT 20...	99	210	32	3.0	15	151	0	124	1200	68	.4
NOV 17...	100	240	34	3.3	14	212	0	174	1300	88	.5
DEC 14...	110	230	30	2.9	15	319	0	262	1200	92	.6
JAN 13...	110	250	30	3.0	15	359	0	294	1300	100	.7
FEB 09...	100	210	29	2.8	13	398	3	331	1100	90	.6
MAR 10...	69	160	33	2.6	9.5	200	0	160	810	58	.5
APR 07...	21	140	51	3.6	7.9	170	0	140	400	18	.6
MAY 05...	48	100	30	2.0	10	140	0	110	550	28	.5
JUN 02...	69	150	32	2.5	15	140	0	110	840	28	.6
JUN 29...	70	150	30	2.4	15	120	0	98	860	35	.6
JUL 27...	65	150	32	2.5	14	130	0	110	830	24	.5
AUG 25...	70	140	28	2.2	14	140	0	110	920	35	.6

B Non-ideal colony count.  
ND Not detected.

## CHEYENNE RIVER BASIN

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (MG/L) (00630)	TOTAL KJEL-DAHL NITRO-GEN (MG/L) (00625)	TOTAL NITRO-GEN (MG/L) (00600)	TOTAL NITRO-GEN (MG/L) (71887)	TOTAL PHOS-PHORUS (MG/L) (00665)	TOTAL ORGANIC CARBON (MG/L) (00680)	TOTAL PHYTO-PLANK-TON (CELLS PER ML) (60050)
OCT 20...	4.8	2000	1890	2.72	821	.41	.60	1.0	4.5	.11	3.6	7800
NOV 17...	2.1	2200	2090	2.99	891	.43	.43	.86	3.8	.10	--	--
DEC 14...	7.4	2340	2100	3.18	720	2.2	.88	3.1	14	.05	--	140
JAN 13...	12	2490	2300	3.39	397	2.4	.89	3.3	15	.18	3.4	84
FEB 09...	5.7	2180	1990	2.96	441	1.6	.41	2.0	8.9	.13	--	150
MAR 10...	5.3	1530	1380	2.08	2220	2.5	.27	2.8	12	.32	--	--
APR 07...	12	796	762	1.08	1400	1.5	3.6	5.1	23	4.4	1.7	--
MAY 05...	5.1	990	931	1.35	1470	.03	.90	.93	4.1	.02	--	--
JUN 02...	8.2	1460	1340	1.99	1990	.65	1.4	2.1	9.1	.86	--	4700
JUN 29...	6.7	1500	1380	2.04	1110	.19	.83	1.0	4.5	.36	7.4	5600
JUL 27...	7.8	1420	1330	1.93	1440	.83	2.6	3.4	15	2.4	--	--
AUG 25...	7.7	1550	1450	2.11	1630	.39	.89	1.3	5.7	.25	--	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 20...	1045	19	9	10	<10	--	--	10	--	--	<50
JAN 13...	1045	11	0	11	10	9	1	0	0	0	<50
APR 07...	1145	20	--	9	10	7	3	100	90	10	100
JUN 29...	1030	26	--	10	10	9	1	20	--	10	<50

DATE	SUS-PENDED COBALT (CO) (UG/L) (01036)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS-PENDED COPPER (CU) (UG/L) (01041)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS-PENDED LEAD (PB) (UG/L) (01050)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MAN-GANESE (MN) (UG/L) (01055)
OCT 20...	--	--	10	--	--	3600	--	100	--	--	200
JAN 13...	<50	0	10	6	4	140	30	100	99	1	310
APR 07...	100	0	150	150	5	120000	130	200	180	24	2700
JUN 29...	<50	0	20	16	4	7300	30	<100	<89	11	280

DATE	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)
OCT 20...	80	120	.0	--	--	2	0	2	20	20	0
JAN 13...	10	300	.0	.0	.0	5	0	5	10	0	10
APR 07...	2700	10	.0	--	.0	8	5	3	400	380	20
JUN 29...	--	8	.0	--	.0	4	0	4	40	40	4

&lt; Less than.

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	ALDRIN		CHLOR-DANE		DDD		DDE		TOTAL DDT (UG/L) (39370)
		TOTAL ALDRIN (UG/L) (39330)	BOTTOM MA- TERIAL (UG/KG) (39333)	TOTAL CHLOR- DANE (UG/L) (39350)	BOTTOM MA- TERIAL (UG/KG) (39351)	TOTAL DDD (UG/L) (39360)	BOTTOM MA- TERIAL (UG/KG) (39363)	TOTAL DDE (UG/L) (39365)	BOTTOM MA- TERIAL (UG/KG) (39368)	
NOV 17...	1400	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	1100	ND	--	ND	--	ND	--	ND	--	ND
MAY 05...	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 25...	1000	ND	--	ND	--	ND	--	ND	--	ND
DATE		DI-AZINON		DI-ELDRIN		ENDRIN		ETHION		TOTAL HEPTA- CHLOR (UG/L) (39410)
		TOTAL DI- AZINON (UG/L) (39570)	BOTTOM MA- TERIAL (UG/KG) (39571)	TOTAL DI- ELDRIN (UG/L) (39380)	BOTTOM MA- TERIAL (UG/KG) (39383)	TOTAL ENDRIN (UG/L) (39390)	BOTTOM MA- TERIAL (UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	BOTTOM MA- TERIAL (UG/KG) (39399)	
NOV 17...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 05...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 25...	--	ND	--	ND	--	ND	--	ND	--	ND
DATE		HEPTA-CHLOR		LINDANE		MALA-THION		METHOX-YCHLOR		TOTAL METHYL PARA- THION (UG/L) (39600)
		TOTAL HEPTA- CHLOR (UG/L) (39420)	BOTTOM MA- TERIAL (UG/KG) (39413)	TOTAL LINDANE (UG/L) (39340)	BOTTOM MA- TERIAL (UG/KG) (39343)	TOTAL MALA- THION (UG/L) (39530)	BOTTOM MA- TERIAL (UG/KG) (39531)	TOTAL METH- OXY- CHLOR (UG/L) (39480)	BOTTOM MA- TERIAL (UG/KG) (39481)	
NOV 17...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 05...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 25...	--	ND	--	.01	--	ND	--	ND	--	ND
DATE		METHYL PARA-THION		PARA-THION		SIMA-ZINE		TOX-APHENE		TOTAL TRI- THION (UG/L) (39786)
		TOTAL METHYL TRI- THION (UG/L) (39790)	BOTTOM MA- TERIAL (UG/KG) (39601)	TOTAL PARA- THION (UG/L) (39540)	BOTTOM MA- TERIAL (UG/KG) (39541)	TOTAL COUL- SON COND. (UG/L) (39025)	BOTTOM MATERI- AL (UG/ KG DRY SOLIDS) (39046)	TOTAL TOX- APHENE (UG/L) (39400)	BOTTOM MA- TERIAL (UG/KG) (39403)	
NOV 17...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 05...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 25...	--	ND	--	ND	--	ND	--	ND	--	ND
DATE		2,4-D		2,4,5-T		SILVEX				
		TOTAL 2,4-D (UG/L) (39730)	BOTTOM MA- TERIAL (UG/KG) (39731)	TOTAL 2,4,5-T (UG/L) (39740)	BOTTOM MA- TERIAL (UG/KG) (39741)	TOTAL SILVEX (UG/L) (39760)	BOTTOM MA- TERIAL (UG/KG) (39761)			
NOV 17...	--	ND	--	ND	--	ND	--			--
FEB 09...	--	ND	--	ND	--	ND	--			--
MAY 05...	ND	ND	ND	ND	ND	ND	ND			ND
AUG 25...	--	ND	--	ND	--	ND	--			--

ND Not detected.



## CHEYENNE RIVER BASIN

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2360			---	2680	1720	---	1300	1730	---		
2	2350			---	2700	1840	---	1310	1830	---		
3	2360			---	2790	2100	---	1290	1830	---		
4	2350			---	2630	2100	---	---	1830	---		
5	2350			---	2600	2110	---	1300	1820	---		
6	2350			---	2690	1880	---	1230	1820	1970		
7	2360			---	2690	1870	1160	1230	1830	---		
8	2350			---	---	1870	1130	1230	1820	---		
9	2350			---	---	1870	950	1480	1850	---		
10	2350			---	2800	1890	950	1480	1820	---		
11	2400			---	2580	1560	950	1460	1820	---		
12	---			---	2350	1550	1160	1460	1820	---		
13	---			2770	2340	1530	1190	1460	1830	---		
14	---			2680	2280	1560	1170	1470	1830	---		
15	---			2830	2270	1620	1370	1460	1790	---		
16	---			2800	2260	1890	1370	1770	1800	---		
17	---			3150	1920	1890	1360	1770	1590	---		
18	---			2980	1430	1900	1370	1760	1590	---		
19	---			2990	1420	1900	1410	1770	1810	---		
20	---			---	1490	1900	1400	1830	1800	---		
21	---			---	1500	---	1410	1840	1810	---		
22	---			2410	1500	1710	1470	1830	1800	---		
23	---			2410	1600	1730	1470	1440	1800	---		
24	---			2550	1530	1720	1490	1440	1800	---		
25	---			2570	1720	1720	1510	1450	1800	---		
26	---			---	1720	---	1530	1720	1790	---		
27	---			2520	1720	1720	1320	1730	1800	---		
28	---			2560	1720	1730	1320	1730	---	---		
29	---			---	---	---	1320	1630	---	---		
30	---			2640	---	---	1310	1630	---	---		
31	---			2680	---	---	---	1680	---	---		

## SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1					---	---			---	---	1610	1580
2					---	---			---	---	1620	1590
3					---	---			---	---	1620	1590
4					---	---			---	---	1670	1620
5					---	---			---	---	1710	1640
6					---	---			---	---	1740	1680
7					---	---			---	---	1780	1720
8					---	---			---	---	1830	1770
9					---	---			---	---	1850	1810
10					---	---			---	---	1920	1860
11					---	---			---	---	1960	1900
12					---	---			---	---	2010	1980
13					---	---			---	---	2020	1920
14					---	---			---	---	2070	1990
15					---	---			---	---	2110	2020
16					1870	1640			---	---	2190	2110
17					1570	1390			---	---	2250	2190
18					1650	1580			---	---	2270	2230
19					1700	1110			---	---	2320	2260
20					1100	1070			---	---	2380	2300
21					1210	1110			---	---	2390	2370
22					1540	1020			---	---	2420	2370
23					1320	583			---	---	2380	1350
24					1610	1150			---	---	1330	1240
25					1720	1620			1660	1620	1490	1270
26					1790	1720			1670	1610	1410	1210
27					1820	1770			1630	1630	1230	1190
28					1870	1760			1680	1630	1320	1240
29					1830	1790			1670	1620	1400	1330
30					---	---			1670	1620	1470	1410
31					---	---			1630	1580	---	---
MONTH					1870	583			1680	1580	2420	1190

## CHEYENNE RIVER BASIN

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06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	0.0	0.0	0.0	0.0	---	16.0	18.0	---		
2	---	---	0.0	0.0	0.0	0.0	---	15.0	21.5	---		
3	---	---	0.0	0.0	0.0	0.0	---	17.0	22.0	---		
4	---	---	0.0	0.0	0.0	0.0	---	---	28.0	---		
5	---	---	0.0	0.0	0.0	0.0	---	16.0	24.0	---		
6	---	---	0.0	0.0	0.0	0.0	---	15.0	29.0	34.0		
7	---	---	0.0	0.0	0.0	0.0	14.0	16.0	31.0	32.0		
8	---	---	0.0	0.0	0.0	0.0	13.0	14.0	24.0	30.0		
9	---	---	0.0	0.0	0.0	0.0	12.0	15.0	21.0	---		
10	---	---	0.0	0.0	0.0	0.5	16.0	18.0	29.0	---		
11	---	---	0.0	0.0	0.0	0.0	11.0	18.0	30.0	---		
12	---	---	0.0	0.0	0.0	5.5	12.0	23.0	29.0	---		
13	---	---	0.0	0.0	0.0	8.0	14.0	23.0	24.0	---		
14	---	---	0.0	0.0	0.0	9.5	15.0	20.0	30.0	---		
15	---	---	0.0	0.0	0.0	9.0	12.0	22.0	28.0	---		
16	---	---	0.0	0.0	0.0	8.0	14.0	22.0	23.5	---		
17	---	1.0	0.0	0.0	0.0	9.5	15.0	21.0	30.0	---		
18	---	---	0.0	0.0	0.0	8.5	16.0	23.0	25.0	---		
19	---	---	0.0	0.0	0.0	8.0	15.0	22.0	25.0	---		
20	4.5	---	0.0	0.0	0.0	9.0	14.0	20.5	29.0	---		
21	---	---	0.0	0.0	0.0	---	14.0	21.0	31.0	---		
22	---	---	0.0	0.0	0.0	5.5	16.0	24.0	28.0	---		
23	---	---	0.0	0.0	0.0	6.5	16.0	24.0	29.0	---		
24	---	---	0.0	0.0	0.0	8.0	19.0	23.0	33.0	---		
25	---	---	0.0	0.0	0.0	7.5	17.0	23.0	22.0	---		
26	---	---	0.0	0.0	0.0	5.5	16.0	22.0	35.0	---		
27	---	0.0	0.0	0.0	0.0	5.5	16.0	24.0	25.0	---		
28	---	0.0	0.0	0.0	0.0	---	16.0	20.0	---	---		
29	---	0.0	0.0	0.0	---	---	19.0	22.0	23.0	---		
30	---	0.0	0.0	0.0	---	---	18.0	22.0	---	---		
31	---	---	0.0	0.0	---	---	---	15.0	---	---		

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1									---	---	19.5	16.5
2									---	---	19.5	17.5
3									---	---	25.5	17.5
4									---	---	28.5	21.5
5									---	---	29.5	21.5
6									---	---	28.5	22.5
7									---	---	25.0	20.0
8									---	---	27.0	15.5
9									---	---	21.5	13.5
10									---	---	24.5	14.5
11									---	---	22.5	16.0
12									---	---	22.0	16.5
13									---	---	22.0	13.0
14									---	---	25.0	15.5
15									---	---	25.0	16.0
16									---	---	25.5	16.5
17									---	---	26.0	18.0
18									---	---	20.5	16.0
19									---	---	22.0	14.5
20									---	---	23.0	14.5
21									---	---	20.0	16.0
22									---	---	20.5	14.0
23									---	---	17.5	14.5
24									---	---	16.5	12.5
25									28.5	22.5	17.0	14.5
26									26.0	21.5	18.5	14.0
27									22.0	19.0	19.5	14.5
28									24.5	17.0	20.5	14.5
29									25.0	19.0	17.5	14.5
30									25.5	20.0	14.0	11.0
31									21.5	18.5	---	---
MONTH									28.5	17.0	29.5	11.0

## CHEYENNE RIVER BASIN

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 20.76 1045	DEC 14.76 1600	JAN 13.77 1045	FEB 9.77 1100
TOTAL CELLS/ML	7800	140	84	150
DIVERSITY: DIVISION	0.2	1.3	0.2	1.0
..CLASS	0.2	1.3	0.2	1.0
...ORDER	1.1	1.7	0.2	1.2
...FAMILY	2.0	2.3	1.7	3.1
....GENUS	2.4	2.3	1.7	3.2

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...OOCYSTACEAE								
....ANKISTRODESMUS	170	2	--	--	3	4	11	7
....CHLORELLA	--	--	--	--	--	--	--	--
....CHODATELLA	--	--	--	--	--	--	--	--
....KIRCHNERIELLA	--	--	2	1	--	--	--	--
...SCENEDESMACEAE								
....ACTINASTRUM	--	--	--	--	--	--	--	--
....CRUCIGENIA	--	--	--	--	--	--	--	--
....SCENEDESMUS	--	--	--	--	--	--	29#	20
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	43	1	--	--	--	--	--	--
..ZYGNEMALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	--	--	--	--	--	--	--
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	1800#	23	15	10	--	--	4	2
....MELOSIRA	1000	13	--	--	--	--	--	--
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	2800#	35	--	--	--	--	--	--
...CYMBELLACEAE								
....CYMBELLA	--	--	--	--	--	--	--	--
...DIATOMACEAE								
....DIATOMA	--	--	--	--	*	0	11	7
...FRAGILARIACEAE								
....FRAGILARIA	170	2	--	--	--	--	--	--
....SYNEDRA	--	--	--	--	9	11	18	13
...GOMPHONEMACEAE								
....GOMPHONEMA	--	--	--	--	--	--	15	10
...NAVICULACEAE								
....AMPHIPLEURA	--	--	--	--	--	--	4	2
....NAVICULA	430	5	23#	16	3	4	15	10
...NITZSCHACEAE								
....NITZSCHIA	1400#	18	13	9	24#	29	11	7
...SURIACEAE								
....SURIELLA	--	--	19	13	45#	54	26#	17
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
....ANACYSTIS	--	--	--	--	--	--	--	--
...HORMOGONALES								
...OSCILLATORIA								
....OSCILLATORIA	--	--	63#	45	--	--	--	--
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	--	6	4	--	--	--	--
...EUGLENACEAE								
....EUGLENA	--	--	--	--	--	--	4	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06439300 CHEYENNE RIVER AT CHERRY CREEK, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 5,77 1000	JUN 2,77 1030	JUN 29,77 1030	JUL 27,77 1030
TOTAL CELLS/ML	4000	4700	5600	3000
DIVERSITY: DIVISION	1.0	0.8	0.8	1.0
..CLASS	1.0	0.8	0.8	1.0
...ORDER	1.8	1.6	1.1	1.6
...FAMILY	2.2	2.2	1.4	2.1
....GENUS	2.4	2.4	2.2	2.1

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...OOCYSTACEAE								
....ANKISTRODESMUS	260	7	420	9	250	4	280	10
....CHLORELLA	29	1	--	--	--	--	--	--
....CHODATELLA	120	3	--	--	--	--	--	--
....KIRCHNERIELLA	--	--	--	--	--	--	--	--
...SCENEDESMACEAE								
....ACTINASTRUM	--	--	--	--	1900#	33	--	--
....CRUCIGENIA	120	3	--	--	--	--	--	--
....SCENEDESMUS	58	1	--	--	2400#	42	850#	29
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	58	1	--	--	--	--	--	--
..ZYGNEATALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	--	--	--	250	4	--	--
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	1100#	27	140	3	--	--	850#	29
....MELOSIRA	--	--	2000#	42	--	--	--	--
...PENNIALES								
....ACHNANTHACEAE								
....ACHNANTHES	--	--	140	3	--	--	--	--
...CYMBELLACEAE								
....CYMBELLA	--	--	140	3	--	--	--	--
...DIATOMACEAE								
....DIATOMA	88	2	--	--	--	--	--	--
...FRAGILARIACEAE								
....FRAGILARIA	--	--	140	3	--	--	140	5
....SYNEDRA	58	1	--	--	120	2	--	--
...GOMPHONEMACEAE								
....GOMPHONEMA	--	--	--	--	--	--	--	--
...NAVICULACEAE								
....AMPHIPLEURA	--	--	--	--	--	--	--	--
....NAVICULA	29	1	--	--	370	7	--	--
...NITZSCHACEAE								
....NITZSCHIA	1800#	44	1300#	27	--	--	850#	29
...SURIRELLACEAE								
....SURIRELLA	29	1	140	3	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
....ANACYSTIS	290	7	--	--	--	--	--	--
...HORMOGONIALES								
...OSCILLATORIAEAE								
....OSCILLATORIA	--	--	--	--	--	--	--	--
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
...CRYPTOMONODACEAE								
....CRYPTOMONAS	--	--	--	--	250	4	--	--
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	--	280	6	120	2	--	--

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## CHEYENNE RIVER BASIN

06439500 CHEYENNE RIVER NEAR EAGLE BUTTE, SD

LOCATION.--Lat 44°41'44", long 101°13'08", in NE&SE4 sec.32, T.9 N., R.24 E., Haakon County, Hydrologic Unit 10120112, at discontinued gaging station on downstream side near center of bridge on State Highway 63, 0.5 mi (0.8 km) upstream from Hermaphrodite Creek and 21 mi (33.8 km) south of Eagle Butte.

DRAINAGE AREA.--24,500 mi<sup>2</sup> (63,500 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Station is affected by backwater from Oahe Dam; discharge records not available.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT									
20...	1130	--	2250	8.2	5.0	990	860	230	100
NOV									
17...	1500	--	2450	8.3	1.0	1000	850	240	100
DEC									
14...	1635	--	2910	8.4	.0	1200	950	300	110
JAN									
13...	1220	--	2050	8.0	.0	1300	1000	330	120
FEB									
09...	1250	--	2000	8.4	.0	790	710	220	58
MAR									
10...	1215	--	1900	8.1	.5	680	530	160	68
APR									
07...	1230	--	1170	8.2	14.0	280	150	80	20
MAY									
05...	1000	--	1140	8.5	16.0	470	360	110	48
JUN									
02...	1215	--	1860	8.3	21.5	630	510	150	62
29...	1130	--	1920	8.3	23.0	730	640	170	73
JUL									
27...	1140	--	1630	8.0	21.5	680	570	170	62
AUG									
25...	1045	--	1800	8.1	22.0	720	610	180	65



## CHEYENNE RIVER BASIN

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06439500 CHEYENNE RIVER NEAR EAGLE BUTTE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (009330)	PERCENT SODIUM (009332)	SODIUM AD- SORP- TION RATIO (009331)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (009335)	BICAR- BONATE (HCO3) (MG/L) (004440)	CAR- BONATE (CO3) (MG/L) (004445)	ALKA- LINITY AS CACO3 (MG/L) (004110)	DIS- SOLVED SULFATE (SO4) (MG/L) (009445)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (009440)
OCT									
20...	210	31	2.9	15	150	0	123	1100	61
NOV									
17...	230	33	3.1	14	194	0	159	1300	72
DEC									
14...	240	30	3.0	15	313	0	257	1300	94
JAN									
13...	260	30	3.1	16	371	0	304	1400	110
FEB									
09...	97	21	1.5	7.1	101	0	83	840	31
MAR									
10...	160	34	2.7	9.0	180	0	148	800	51
APR									
07...	130	49	3.4	7.0	160	0	130	400	26
MAY									
05...	100	31	2.0	9.9	140	0	115	520	26
JUN									
02...	160	35	2.8	15	150	0	120	810	28
29...	150	30	2.4	15	110	0	90	880	36
JUL									
27...	150	32	2.5	18	130	0	110	880	23
AUG									
25...	140	29	2.3	14	130	0	110	890	34

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (009550)	DIS- SOLVED SILICA (SiO2) (MG/L) (009555)	DIS- SOLVED (SUM OF TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED BORON (B) (UG/L) (01020)
OCT									
20...	.5	5.3	1800	2.45	--	.38	.11	.00	350
NOV									
17...	.4	2.3	2060	2.80	--	.34	.03	.01	330
DEC									
14...	.6	7.8	2230	3.03	--	2.0	.02	.01	350
JAN									
13...	.6	11	2440	3.32	--	2.6	.10	.06	370
FEB									
09...	.4	2.6	1310	1.78	--	.67	.06	.02	170
MAR									
10...	.4	4.6	1350	1.84	--	2.5	--	--	190
APR									
07...	.5	11	760	1.03	--	1.4	6.7	.02	140
MAY									
05...	.5	5.0	889	1.21	--	.02	.04	.00	170
JUN									
02...	.6	12	1320	1.80	--	1.2	2.3	.00	260
29...	.6	5.4	1390	1.89	--	.01	.15	.01	300
JUL									
27...	.4	4.2	1370	1.86	--	--	4.3	.00	280
AUG									
25...	.6	7.9	1400	1.90	--	.34	.31	.03	280

## 06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE¼ sec.1, T.111 N., R.80 W., 5th principal meridian, Hughes County, Hydrologic Unit 10130105, in Pier A of Control Tower No. 1 of powerhouse intake structure of dam on Missouri River, 6.0 mi (9.7 km) northwest of Pierre, 7.1 mi (11.4 km) upstream from Bad River, and at mile 1,072.3 (1,725.3 km).

DRAINAGE AREA.--243,500 mi<sup>2</sup> (630,700 km<sup>2</sup>), 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 at mean sea level. Prior to Jan. 14, 1959, 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.

REMARKS.--Reservoir is formed by an earthfill dam; storage began in August 1958. Maximum capacity, 23,630,000 acre-ft (29,100 hm<sup>3</sup>) below elevation 1,620.0 ft (493.78 m), top of spillway gates. Normal maximum, 22,530,000 acre-ft (27,800 hm<sup>3</sup>) below 1,617.0 ft (492.86 m), of which about 2,390,000 acre-ft (2,950 hm<sup>3</sup>) is designated for flood control. Inactive storage, 5,538,000 acre-ft (6,830 hm<sup>3</sup>) below elevation 1,540.0 ft (469.39 m). Dead storage, 2,000 acre-ft (2.47 hm<sup>3</sup>) below elevation 1,425.0 ft (434.34 m), 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 (486.61 m), 8 gates, 50 by 23.5 ft (15.2 X 7.2 m) each; design capacity, 300,000 ft<sup>3</sup>/s (8,500 m<sup>3</sup>/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.--Elevation and contents furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 22,681,000 acre-ft (28,000 hm<sup>3</sup>) Aug. 22, 1975, elevation, 1,617.9 ft (493.14 m), affected by wind; minimum since initial filling, 16,131,000 acre-ft (19,900 hm<sup>3</sup>) Sept. 30, 1977, elevation, 1,596.9 ft (486.74 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 19,497,000 acre-ft (24,000 hm<sup>3</sup>) Mar. 13, elevation, 1,608.3 ft (490.21 m), affected by ice; maximum elevation, 1,608.6 ft (490.30 m) Mar. 29 (affected by ice); minimum contents, 16,131,000 acre-ft (19,900 hm<sup>3</sup>) Sept. 30, elevation, 1,596.9 ft (486.74 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	1603.9	18122000	
Oct. 31 . . . . .	1603.5	18013000	-109000
Nov. 30 . . . . .	1604.0	18139000	+126000
Dec. 31 . . . . .	1603.9	18110000	-29000
CAL YR 1976 . . . . .			-364000
Jan. 31 . . . . .	1604.6	18349000	+239000
Feb. 28 . . . . .	1607.4	19214000	+865000
Mar. 31 . . . . .	1608.2	19450000	+236000
Apr. 30 . . . . .	1607.5	19266000	-184000
May 31 . . . . .	1606.3	18826000	-440000
June 30 . . . . .	1605.5	18528000	-298000
July 31 . . . . .	1602.6	17770000	-758000
Aug. 31 . . . . .	1599.0	16682000	-1088000
Sept. 30 . . . . .	1596.9	16131000	-551000
WTR YR 1977 . . . . .			-1991000

NOTE.--Reservoir frozen over Jan. 6 to Mar. 30.

## MISSOURI RIVER MAIN STEM

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06440000 MISSOURI RIVER AT PIERRE, SD  
(National stream-quality accounting network station)

LOCATION.--Lat 44°22'25", long 100°22'20", in SE¼ sec.21, T.5 N., R.31 E., Hughes County, Hydrologic Unit 10140102, at discontinued gaging station, near right bank on downstream side of pier of Chicago and North Western Transportation Company bridge, 1.3 mi (2.1 km) upstream from Bad River, 5.8 mi (9.3 km) downstream from Oahe Dam, and at mile 1,006.5 (1,716 km).

DRAINAGE AREA.--243,500 mi<sup>2</sup> (630,700 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1971 to current year.

WATER TEMPERATURES: July 1971 to current year.

COOPERATION.--Flow completely regulated by Lake Oahe (station 06439980) 5.8 mi (9.3 km) upstream. Discharge furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 850 micromhos Dec. 2, 1974; minimum daily, 530 micromhos Dec. 24, 1974.

WATER TEMPERATURES: Maximum daily, 24.0°C July 31, Aug. 3, 1977; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 740 micromhos Mar. 31; minimum daily, 670 micromhos Feb. 10, 14.

WATER TEMPERATURES: Maximum daily, 24.0°C July 31, Aug. 3; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT												
14...	1300	29500	700	8.4	15.5	--	--	--	220	73	55	21
26...	1400	29100	710	8.4	11.0	2	B1	B6	220	80	52	21
NOV												
15...	1300	49100	720	8.5	8.0	--	--	--	220	66	55	21
23...	1400	34000	740	8.7	8.0	3	ND	B2	210	62	52	20
DEC												
16...	1315	31200	740	8.7	4.5	--	--	--	220	70	56	20
27...	1430	10200	740	8.7	3.0	10	B1	B12	230	74	56	23
JAN												
12...	1300	48200	740	8.6	1.0	--	--	--	230	69	57	22
31...	1500	22600	730	8.6	.5	2	ND	B1	230	66	55	22
FEB												
16...	1300	40400	750	8.2	2.0	--	--	--	230	70	57	22
28...	1330	26000	730	8.4	2.0	2	B6	B3	230	62	55	22
MAR												
22...	1420	44800	740	8.3	3.5	--	--	--	230	72	57	22
31...	1615	4900	780	8.5	4.0	8	ND	B1	250	89	61	23
APR												
25...	1300	52600	740	8.7	6.0	--	--	--	230	70	56	22
28...	1245	24200	740	8.8	7.5	1	B1	B11	250	84	60	23
MAY												
23...	1300	39800	740	8.6	12.5	--	--	--	240	80	58	22
25...	1400	48400	730	8.5	12.5	10	B1	B17	240	85	60	22
JUN												
14...	1530	47600	720	8.1	16.0	--	--	--	240	82	59	22
30...	0830	5110	715	8.2	18.0	8	B18	46	240	86	59	23
JUL												
18...	1310	55600	710	8.2	20.5	--	--	--	220	68	55	21
AUG												
01...	1415	35000	700	8.2	23.0	2	B5	B9	230	70	54	22
19...	1015	20600	700	8.3	20.0	--	--	--	220	68	55	21
30...	1330	41700	720	8.3	21.0	2	B5	B8	220	68	55	21
SEP												
15...	1425	20600	730	8.3	19.0	--	--	--	230	72	55	22

B Non-ideal colony count.  
ND Not detected.

## MISSOURI RIVER MAIN STEM

06440000 MISSOURI RIVER AT PIERRE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORPTION RATIO (00931)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	ALKA-LINITY AS CAC03 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED (RESI-DUE AT 180 C) (MG/L) (70300)
OCT												
14...	62	37	1.8	4.6	184	0	151	190	11	.5	6.0	--
26...	66	39	2.0	4.5	150	8	136	200	9.6	.5	6.0	459
NOV												
15...	62	37	1.8	4.6	180	6	158	200	8.8	.6	5.9	--
23...	64	39	1.9	4.5	169	7	150	200	8.7	.5	5.9	459
DEC												
16...	63	38	1.8	4.5	167	9	152	210	9.0	.5	5.9	--
27...	64	37	1.8	4.4	190	3	161	190	9.3	.5	6.1	465
JAN												
12...	63	37	1.8	4.3	196	2	164	200	9.3	.6	6.4	--
31...	62	37	1.8	4.3	198	0	162	180	9.3	.5	6.4	463
FEB												
16...	61	36	1.7	4.6	199	0	163	180	15	.5	6.4	--
28...	64	37	1.8	4.5	194	4	166	190	11	.5	6.3	461
MAR												
22...	65	37	1.9	4.6	196	0	160	200	9.1	.6	6.9	--
31...	65	36	1.8	4.8	193	0	158	220	9.7	.6	6.8	496
APR												
25...	65	37	1.9	4.6	190	3	160	200	11	.6	7.1	--
28...	66	36	1.8	4.5	190	3	160	210	9.7	.6	6.6	468
MAY												
23...	65	37	1.8	4.7	190	0	160	200	11	.6	6.5	--
25...	66	37	1.9	5.2	190	0	160	210	9.6	.6	6.7	464
JUN												
14...	65	37	1.8	4.4	190	0	160	210	12	.6	6.7	--
30...	65	36	1.8	4.4	190	0	160	200	11	.6	6.5	449
JUL												
18...	65	38	1.9	4.2	190	0	156	190	10	.6	7.0	--
AUG												
01...	67	39	1.9	4.2	190	0	160	190	11	.5	7.2	454
19...	67	39	2.0	4.4	190	0	160	200	13	.6	7.4	--
30...	62	37	1.8	4.4	190	0	160	190	9.7	.6	7.4	466
SEP												
15...	56	34	1.6	4.4	190	0	160	190	9.5	.6	7.7	--

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED PHOS-PHORUS (P) (MG/L) (00666)	DIS-SOLVED BORON (B) (UG/L) (01020)
OCT											
14...	441	.60	35100	--	.10	--	--	--	.08	.00	120
26...	442	.62	36100	.15	--	.34	.49	2.2	.02	--	--
NOV											
15...	453	.62	60100	--	.13	--	--	--	.01	.00	120
23...	446	.62	42100	.10	--	.17	.27	1.2	.02	--	--
DEC											
16...	461	.63	38800	--	.11	--	--	--	.01	.00	110
27...	450	.63	12800	.20	--	.32	.52	2.3	.01	--	--
JAN											
12...	462	.63	60100	--	.15	--	--	--	.02	.01	120
31...	437	.63	28300	.12	--	2.1	2.2	9.8	.03	--	--
FEB											
16...	446	.61	48700	--	.30	--	--	--	.01	.01	120
28...	453	.63	32400	.13	--	.07	.20	.89	.03	--	--
MAR											
22...	463	.63	56000	--	.13	--	--	--	--	--	120
31...	486	.67	6560	.10	--	.23	.33	1.5	.03	--	--
APR											
25...	464	.63	65900	--	.11	--	--	--	.02	.03	120
28...	477	.64	30600	.07	--	.05	.12	.53	.02	--	--
MAY											
23...	462	.63	49600	--	.08	--	--	--	.01	.00	120
25...	474	.63	60600	.08	--	.13	.21	.93	.03	--	--
JUN											
14...	475	.65	61000	--	.23	--	--	--	.02	.01	120
30...	463	.61	6200	.07	--	.38	.45	2.0	.00	--	--
JUL											
18...	447	.61	67100	--	.08	--	--	--	.00	.00	120
AUG											
01...	450	.62	42900	.16	--	.18	.34	1.5	.00	--	--
19...	462	.63	25700	--	.06	--	--	--	.01	.00	120
30...	444	.63	52500	.07	--	.15	.22	.97	.02	--	--
SEP											
15...	440	.60	24500	--	.15	--	--	--	.02	.00	120

06440000 MISSOURI RIVER AT PIERRE, SD--Continued  
 WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L) (00680)		TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)	
OCT					
26...	1400	2.8		140	
NOV					
23...	1400	--		92	
DEC					
27...	1430	--		540	
JAN					
31...	1500	2.9		700	
FEB					
28...	1330	--		79	
APR					
28...	1245	2.8		--	
MAY					
25...	1400	--		130	
JUN					
30...	0830	--		3300	
AUG					
01...	1415	3.0		--	

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT											
26...	1400	2	0	3	<10	<10	0	0	0	0	<50
JAN											
31...	1500	2	0	3	<10	<10	0	0	0	0	<50
APR											
28...	1245	1	--	3	10	--	0	0	--	0	<50
AUG											
01...	1415	2	--	3	10	7	3	0	0	0	<50

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	680	700	700	720	690	700	720	730	710	710	710	690
2	680	700	700	720	690	690	720	730	710	710	710	690
3	680	700	700	690	690	690	720	730	710	710	710	690
4	680	700	700	700	690	700	720	730	710	710	710	690
5	680	700	700	700	690	700	730	730	710	710	710	690
6	680	700	700	690	680	700	720	740	720	710	710	680
7	690	700	700	690	680	690	720	740	720	710	710	680
8	680	700	700	700	680	690	710	730	710	710	710	680
9	680	700	700	700	680	690	710	730	710	700	700	680
10	690	700	700	700	670	690	720	730	720	710	710	680
11	680	700	700	700	680	690	710	740	720	700	700	680
12	680	700	700	700	690	690	710	730	690	710	700	680
13	680	700	700	700	680	690	710	730	710	720	710	690
14	690	700	700	700	670	690	710	730	710	710	710	690
15	690	700	700	700	680	690	710	730	710	710	710	690
16	680	700	700	700	680	700	710	720	710	700	700	690
17	690	700	700	700	690	700	710	720	710	710	700	680
18	690	700	700	700	680	700	710	720	710	710	700	690
19	690	700	690	700	680	690	710	720	710	710	700	680
20	690	700	690	700	680	700	710	730	710	700	700	680
21	690	700	700	700	690	700	710	720	710	700	700	690
22	690	700	700	700	680	700	710	720	710	700	700	690
23	690	700	700	700	680	700	710	720	710	700	700	680
24	690	700	700	710	690	700	710	720	710	700	710	690
25	690	700	690	710	710	700	710	720	700	700	710	680
26	690	700	700	710	700	700	710	720	700	700	710	690
27	690	700	700	700	700	720	710	720	700	700	710	690
28	690	690	700	700	700	710	710	730	700	700	710	690
29	690	700	700	700	---	710	710	720	700	700	700	690
30	690	700	720	720	---	730	710	720	700	700	700	690
31	690	---	700	700	---	740	---	720	---	710	700	---

< Less than.



## MISSOURI RIVER MAIN STEM

06440000 MISSOURI RIVER AT PIERRE, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MAN- GANESE (MN) (UG/L) (01055)
OCT 26...	<49	1	10	8	2	110	30	<100	<98	2	20
JAN 31...	<49	1	<10	<7	3	80	90	<100	<99	1	20
APR 28...	--	0	10	--	3	90	70	100	--	3	10
AUG 01...	<50	0	<10	<9	1	60	60	<100	<79	21	40

DATE	SUS- PENDE MAN- GANESE (MN) (UG/L) (01054)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDE MERCURY (HG) (UG/L) (71895)	DIS- SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)
OCT 26...	10	10	.0	.0	.0	1	0	1	10	10	0
JAN 31...	20	0	.4	.4	.0	1	0	1	10	10	0
APR 28...	--	0	.0	--	.0	2	--	2	10	--	10
AUG 01...	30	8	.0	.0	.0	2	--	1	4	4	0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	10.0	5.5	0.0	1.0	2.0	4.0	8.5	16.0	21.0	23.0	20.0
2	17.0	9.5	5.0	0.0	1.0	1.5	3.5	8.0	17.0	23.0	22.5	20.5
3	16.5	9.0	6.0	0.0	2.0	1.0	3.5	8.5	16.0	20.5	24.0	21.0
4	14.5	8.0	5.5	2.0	1.5	1.0	4.5	9.5	16.5	20.5	23.0	21.0
5	15.0	8.5	4.0	0.0	2.0	2.0	5.5	8.0	16.5	20.0	23.0	22.0
6	14.0	8.0	4.5	0.0	1.0	4.0	6.0	8.0	17.5	20.0	22.5	20.0
7	14.5	8.0	3.0	1.5	2.0	7.0	6.5	9.5	19.0	20.5	23.0	20.0
8	15.0	9.0	3.5	0.0	1.0	5.0	7.0	10.5	17.0	20.5	21.5	20.5
9	14.5	9.0	3.0	0.0	2.0	3.0	8.0	9.5	16.5	18.5	23.0	20.5
10	15.5	8.5	3.0	0.0	3.5	3.5	8.0	11.0	17.0	19.0	21.0	21.5
11	15.0	8.0	5.0	0.0	3.5	2.5	6.0	10.5	17.5	18.0	23.0	19.5
12	14.5	8.5	3.0	0.0	4.0	2.0	4.5	10.0	16.0	20.5	22.0	19.5
13	15.0	9.0	4.0	1.0	5.0	3.5	4.5	11.0	19.0	20.0	23.0	19.0
14	13.0	9.0	4.0	0.0	1.0	3.0	5.5	11.5	17.5	21.5	23.0	18.5
15	12.0	8.0	4.0	0.0	2.0	4.5	8.0	10.5	16.5	20.0	22.5	18.5
16	12.5	8.5	4.0	0.0	3.0	4.0	6.5	10.0	17.0	20.5	22.0	19.0
17	11.0	9.0	4.0	0.0	2.5	4.0	9.0	10.5	17.5	22.5	22.0	20.0
18	10.5	8.0	4.0	0.5	3.0	4.0	5.5	12.0	20.0	22.0	22.0	18.5
19	11.5	8.0	3.0	2.0	3.0	3.5	5.5	11.5	21.5	21.0	21.5	19.0
20	10.5	9.0	3.0	1.0	3.5	3.0	5.5	13.5	19.5	21.0	21.0	19.0
21	10.5	6.0	3.0	3.0	3.5	4.0	6.0	11.5	19.0	21.0	21.5	18.5
22	10.5	7.0	2.5	2.5	3.0	4.5	8.0	12.5	17.5	22.0	20.0	19.5
23	10.0	7.0	3.0	2.0	2.0	4.0	7.5	13.5	19.0	22.0	20.0	19.0
24	9.5	8.0	2.5	3.0	1.0	6.0	6.5	14.0	19.0	22.0	19.0	18.5
25	9.5	8.0	2.5	2.0	1.0	4.0	7.5	14.5	18.0	21.0	19.5	18.5
26	9.0	6.0	2.5	0.0	1.5	5.0	8.0	13.5	19.0	20.0	21.0	18.5
27	9.5	5.0	2.0	0.0	2.0	5.0	8.5	12.5	20.5	21.0	21.0	18.5
28	10.5	5.0	1.5	1.0	2.0	5.0	9.0	16.5	21.5	22.0	21.5	18.0
29	10.5	4.5	1.5	2.0	---	4.0	7.5	16.5	21.0	23.0	20.5	18.0
30	10.5	4.5	2.0	0.0	---	3.0	9.0	12.5	21.5	21.0	21.0	15.5
31	11.0	---	1.0	0.0	---	3.5	---	16.5	---	24.0	21.0	---

&lt; Less than.

06440000 MISSOURI RIVER AT PIERRE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 26,76 1400	NOV 23,76 1400	DEC 27,76 1430	JAN 31,77 1500	FEB 28,77 1330					
TOTAL CELLS/ML	140	92	540	700	79					
DIVERSITY: DIVISION	1.0	1.3	0.5	0.3	0.2					
..CLASS	1.1	1.3	0.5	0.3	0.2					
..ORDER	1.8	1.5	0.9	0.4	0.6					
...FAMILY	2.5	2.2	1.0	0.4	2.3					
....GENUS	2.6	2.6	1.1	0.4	2.3					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	39#	28	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	5	3	--	-	--	-	6	1	--	-
...PHACOTACEAE										
....PHACOTUS	10	7	--	-	--	-	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCEAE										
....CYCLOTELLA	10	7	--	-	5	1	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	6	8
...STEPHANODISCUS	--	-	6	6	--	-	--	-	--	-
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	5	3	3	3	--	-	--	-	3	4
....COCONEIS	10	7	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	*	0	*	0	--	-	--	-
...CYMBELLACEAE										
....AMPHORA	--	-	3	3	--	-	--	-	--	-
....CYMBELLA	--	-	3	3	*	0	--	-	--	-
...DIATOMACEAE										
....DIATOMA	--	-	3	3	5	1	--	-	19#	24
...FRAGILARIACEAE										
....ASTERIONELLA	*	0	24#	26	--	-	25	4	32#	40
....FRAGILARIA	--	-	--	-	12	2	--	-	--	-
....SYNEDRA	*	0	9	10	5	1	--	-	--	-
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	10	7	--	-	*	0	*	0	3	4
...NITZSCHACEAE										
....NITZSCHIA	49#	34	--	-	--	-	--	-	13#	16
...CHRYSTOPHYCEAE										
...CHRYSONOMADALES										
...OCHROMONADACEAE										
....OCHROMONAS	5	3	--	-	--	-	--	-	--	-

## MISSOURI RIVER MAIN STEM

06440000 MISSOURI RIVER AT PIERRE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 26,76 1400	NOV 23,76 1400	DEC 27,76 1430	JAN 31,77 1500	FEB 28,77 1330	
TOTAL CELLS/ML	140	92	540	700	79	
DIVERSITY: DIVISION	1.0	1.3	0.5	0.3	0.2	
..CLASS	1.1	1.3	0.5	0.3	0.2	
..ORDER	1.8	1.5	0.9	0.4	0.6	
...FAMILY	2.5	2.2	1.0	0.4	2.3	
....GENUS	2.6	2.6	1.1	0.4	2.3	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCCOCCALES						
....CHROCCOCCAEAE						
....AGMENELLUM	--	-	--	-	40	7
....ANACYSTIS	--	-	--	-	7	1
...MORMOGONALES					6	1
...NOSTOCACEAE						
....ANABAENA	--	-	35#	39	--	-
...OSCILLATORIACEAE					--	-
....OSCILLATORIA	--	-	--	-	450#	83
EUGLENOPHYTA (EUGLENOIDS)					660#	94
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
....CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	3	3	--	-
...CRYPTOMONODACEAE					--	-
....CRYPTOMONAS	--	-	3	3	5	1
..EUGLENOPHYCEAE					--	-
...EUGLENALES						
....EUGLENACEAE						
....TRACHELOMONAS	--	-	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...CERATIAEAE						
....CERATIUM	--	-	--	-	--	-
...GLENODINIAEAE						
....GLENODINIUM	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## MISSOURI RIVER MAIN STEM

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06440000 MISSOURI RIVER AT PIERRE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 25.77 1400	JUN 30.77 0830	AUG 1.77 1415	AUG 30.77 1330
TOTAL CELLS/ML	130	3300	1600	210
DIVERSITY: DIVISION	0.0	0.8	0.9	1.7
..CLASS	0.0	1.5	1.6	2.0
..ORDER	0.0	1.5	1.7	2.4
...FAMILY	1.0	1.5	1.7	2.4
....GENUS	1.0	1.5	1.7	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
.....ANKISTRODESMUS	--	-	--	-	--	-	16	8
.....OOCYSTIS	--	-	--	-	190	12	43#	21
...SCENEDESMACEAE								
....SCENEDESMUS	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CARTERIA	--	-	--	-	27	2	--	-
....CHLAMYDOMONAS	--	-	--	-	--	-	27	13
...PHACOTACEAE								
....PHACOTUS	--	-	--	-	--	-	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINODISACEAE								
.....CYCLOTELLA	--	-	--	-	--	-	--	-
.....MELOSIRA	--	-	--	-	--	-	*	0
....STEPHANODISCUS	--	-	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
....AMPHORA	--	-	--	-	--	-	--	-
....CYMBELLA	3	3	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	110#	82	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	3	3	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	10	8	830#	25	82	5	5	3
...NITZSCHACEAE								
....NITZSCHIA	7	5	--	-	--	-	--	-
..CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
....OCHROMONADACEAE								
.....OCHROMONAS	--	-	--	-	--	-	--	-

## MISSOURI RIVER MAIN STEM

06440000 MISSOURI RIVER AT PIERRE, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 25,77 1400	JUN 30,77 0830	AUG 1,77 1415	AUG 30,77 1330
TOTAL CELLS/ML	130	3300	1600	210
DIVERSITY: DIVISION	0.0	0.8	0.9	1.7
..CLASS	0.0	1.5	1.6	2.0
...ORDER	0.0	1.5	1.7	2.4
...FAMILY	1.0	1.5	1.7	2.4
....GENUS	1.0	1.5	1.7	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....AGMENELLUM	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	32#	15
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
....CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	820#	53	65#	31
...CRYPTOMONODACEAE	--	-	1700#	50	--	-	--	-
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	--	-	830#	25	440#	28	16	8
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
...CERATIACEAE								
....CERATIUM	--	-	--	-	--	-	5	3
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%



## 06441000 BAD RIVER NEAR MIDLAND, SD

LOCATION.--Lat 44°04'01", long 101°09'36", in NE&NW¼ 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 (0.6 km) southwest of Midland, 2.0 mi (3.2 km) upstream from Mitchell Creek, and 3.7 mi (6.0 km) upstream from Ash Creek.

DRAINAGE AREA.--1,460 mi<sup>2</sup> (3,780 km<sup>2</sup>), 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 (563.618 m) above mean 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 (6.8 km) downstream at datum 15.72 ft (4.791 m) lower. June 15 to July 26, 1967, nonrecording gage at site 30 ft (9 m) upstream and July 27, 1967, to June 14, 1971, water-stage recorder at site 60 ft (18 m) upstream, both at present datum.

REMARKS.--Records fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 63.2 ft<sup>3</sup>/s (1.790 m<sup>3</sup>/s), 45,790 acre-ft/yr (56.5 hm<sup>3</sup>/yr); median of yearly mean discharges, 38 ft<sup>3</sup>/s (1.08 m<sup>3</sup>/s), 27,500 acre-ft/yr (34 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft<sup>3</sup>/s (833 m<sup>3</sup>/s) June 15, 1967, gage height, 24.44 ft (7.449 m), from floodmarks, 20.10 ft (6.126 m), from floodmarks, at former site and datum, from rating curve extended above 16,000 ft<sup>3</sup>/s (453 m<sup>3</sup>/s); no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft<sup>3</sup>/s (14.2 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 9	1300	*1880 53.2	*12.93 3.941	Aug. 9	1400	910 25.8	9.84 2.999
Apr. 15	0100	1580 44.7	12.05 3.673				

Minimum discharge, no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	22	4.9	23	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	34	4.3	12	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	40	3.7	6.9	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	55	2.8	3.5	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	49	2.2	1.9	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	51	1.4	.82	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	624	1.1	.52	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	1420	.82	.30	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	1810	.74	.14	.00	457	.00
10	.00	.00	.00	.00	.00	.00	1650	.66	.06	.00	155	.00
11	.00	.00	.00	.00	.00	.00	1210	.40	.01	.00	21	.00
12	.00	.00	.00	.00	.00	.00	885	.21	.63	.00	8.4	.00
13	.00	.00	.00	.00	.00	.00	1020	.17	4.5	.00	3.3	.00
14	.00	.00	.00	.00	.00	.00	1410	.11	2.0	.00	1.2	.00
15	.00	.00	.00	.00	.00	.00	865	.04	.82	.00	.46	.00
16	.00	.00	.00	.00	.00	.00	297	.00	.52	.00	.08	.00
17	.00	.00	.00	.00	.00	.00	180	.00	.35	.00	.00	.00
18	.00	.00	.00	.00	.00	4.3	132	.00	.11	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	108	1.4	.04	.00	.00	.00
20	.00	.00	.00	.00	.00	54	77	27	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	8.4	55	11	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.59	40	6.0	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.52	30	3.1	.00	.00	.00	51
24	.00	.00	.00	.00	.00	17	22	91	.00	.00	.00	196
25	.00	.00	.00	.00	.00	117	18	33	.00	.00	.00	23
26	.00	.00	.00	.00	.00	113	14	70	.00	.00	.00	7.9
27	.00	.00	.00	.00	.00	54	11	34	.00	.00	.00	15
28	.00	.00	.00	.00	.00	37	8.2	104	.00	.00	.00	9.0
29	.00	.00	.00	.00	---	126	6.7	59	.00	.00	.00	3.9
30	.00	.00	.00	.00	---	141	5.8	35	.00	.00	.00	1.9
31	.00	---	.00	.00	---	62	---	24	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	758.81	12149.7	522.05	58.12	.00	646.44	307.70
MEAN	.000	.000	.000	.000	.000	24.5	405	16.8	1.94	.000	20.9	10.3
MAX	.00	.00	.00	.00	.00	141	1810	104	23	.00	457	196
MIN	.00	.00	.00	.00	.00	.00	5.8	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	1510	24100	1040	115	.00	1280	610

CAL YR 1976	TOTAL	349.60	MEAN	.96	MAX	38	MIN	.00	AC-FT	693
WTR YR 1977	TOTAL	14442.82	MEAN	39.6	MAX	1810	MIN	.00	AC-FT	28650

## BAD RIVER BASIN

06441500 BAD RIVER NEAR FORT PIERRE, SD

LOCATION.--Lat 44°19'36", long 100°23'02", in NW¼NW¼ sec.10, T.4 N., R.31 E., Stanley County, Hydrologic Unit 10140102, on right bank at downstream side of highway bridge, 2.1 mi (3.4 km) south of Fort Pierre, 4.3 mi (6.9 km) downstream from Willow Creek, and 6.0 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--3,107 mi<sup>2</sup> (8,047 km<sup>2</sup>).

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 (435.203 m) above mean sea level. Prior to July 10, 1951, nonrecording gage at same site and datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--49 years, 148 ft<sup>3</sup>/s (4.191 m<sup>3</sup>/s), 107,200 acre-ft/yr (132 hm<sup>3</sup>/yr); median of yearly mean discharges, 99 ft<sup>3</sup>/s (2.80 m<sup>3</sup>/s), 71,700 acre-ft/yr (88 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,800 ft<sup>3</sup>/s (1,240 m<sup>3</sup>/s) June 18, 1967, gage height, 29.55 ft (9.007 m); no flow for long periods in each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1927 reached a stage of 30.89 ft (9.415 m), from floodmarks, discharge, about 55,000 ft<sup>3</sup>/s (1,560 m<sup>3</sup>/s). Flood in July 1905 reached a stage about 2 ft (0.610 m) higher than that in April 1927.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft<sup>3</sup>/s (56.6 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 29	1600	3580 101	12.65 3.856	June 22	0700	*6740 191	*17.94 5.468
Apr. 10	2300	2110 59.8	9.84 2.999	Sept. 23	1900	3780 107	12.39 3.776

Minimum discharge, no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	1210	16	84	2.0	.04	.00
2	.00	.00	.00	.00	.00	.00	1100	15	66	.23	.01	.00
3	.00	.00	.00	.00	.00	.00	745	14	35	360	.00	.00
4	.00	.00	.00	.00	.00	.00	574	12	39	113	.00	.00
5	.00	.00	.00	.00	.00	.00	452	7.9	13	31	.00	.00
6	.00	.00	.00	.00	.00	.00	429	4.6	13	19	.00	.00
7	.00	.00	.00	.00	.00	.00	568	2.7	4.9	38	.00	.00
8	.00	.00	.00	.00	.00	.00	601	1.3	3.0	8.8	.00	.00
9	.00	.00	.00	.00	.00	22	1420	.99	.99	6.6	.00	.00
10	.00	.00	.00	.00	.00	262	1920	1.1	.76	10	.00	.00
11	.00	.00	.00	.00	.00	307	1970	1.3	.31	267	.00	.00
12	.00	.00	.00	.00	.00	329	1660	.49	495	36	248	.00
13	.00	.00	.00	.00	.00	182	1330	.28	258	9.2	88	.00
14	.00	.00	.00	.00	.00	338	1140	.19	167	92	35	1.2
15	.00	.00	.00	.00	.00	422	1420	.10	104	9.2	16	.13
16	.00	.00	.00	.00	.00	432	1420	.15	41	27	9.8	.03
17	.00	.00	.00	.00	.00	495	706	.20	14	20	4.6	.00
18	.00	.00	.00	.00	.00	529	492	.10	7.1	5.8	1.6	.00
19	.00	.00	.00	.00	.00	432	372	.08	3.6	1.8	.36	.00
20	.00	.00	.00	.00	.00	314	274	.01	1.3	5.0	.13	.00
21	.00	.00	.00	.00	.00	206	221	.10	.49	7.1	.08	.00
22	.00	.00	.00	.00	.00	225	163	6.6	3580	2.0	.02	.00
23	.00	.00	.00	.00	.00	367	121	7.5	942	.76	.03	1180
24	.00	.00	.00	.00	.00	589	95	1.4	422	.28	.01	1140
25	.00	.00	.00	.00	.00	649	79	.13	234	62	.02	268
26	.00	.00	.00	.00	.00	512	64	.08	130	11	.36	177
27	.00	.00	.00	.00	.00	512	50	.05	74	2.2	.13	140
28	.00	.00	.00	.00	.00	798	41	45	35	.87	.08	117
29	.00	.00	.00	.00	---	3160	33	35	6.6	.23	.09	57
30	.00	.00	.00	.00	---	2600	29	26	3.3	.10	.02	35
31	.00	---	.00	.00	---	1020	---	137	---	.08	.00	---
TOTAL	.00	.00	.00	.00	.00	14702.00	20699	337.35	6778.35	1148.25	404.38	3115.36
MEAN	.000	.000	.000	.000	.000	474	690	10.9	226	37.0	13.0	104
MAX	.00	.00	.00	.00	.00	3160	1970	137	3580	360	248	1180
MIN	.00	.00	.00	.00	.00	.00	29	.01	.31	.08	.00	.00
AC-FT	.00	.00	.00	.00	.00	29160	41060	669	13440	2280	802	6180

CAL YR 1976 TOTAL 4598.52 MEAN 12.6 MAX 1060 MIN .00 AC-FT 9120  
WTR YR 1977 TOTAL 47184.69 MEAN 129 MAX 3580 MIN .00 AC-FT 93590

MEDICINE KNOLL CREEK BASIN

137

06442000 MEDICINE KNOLL CREEK NEAR BLUNT, SD

LOCATION.--Lat 44°33'46", long 99°54'50", in NW¼ sec.31, T.113 N., R.75 W., Sully County, Hydrologic Unit 10140103, on left bank at downstream side of highway bridge, 4.8 mi (7.7 km) northeast of Blunt and 5.5 mi (8.8 km) upstream from South Fork Medicine Knoll Creek.

DRAINAGE AREA.--317 m<sup>2</sup> (821 km<sup>2</sup>).

PERIOD OF RECORD.--March 1950 to current year. Prior to October 1959, published as Medicine Creek near Blunt.

REVISED RECORDS.--WRD SD-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,611.08 ft (491.057 m) above mean sea level. Prior to Oct. 31, 1950, nonrecording gage at same site and datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--27 years, 4.53 ft<sup>3</sup>/s (0.128 m<sup>3</sup>/s), 3,280 acre-ft/yr (4.04 hm<sup>3</sup>/yr); median of yearly mean discharges, 0.90 ft<sup>3</sup>/s (0.03 m<sup>3</sup>/s), 650 acre-ft/yr (0.80 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,830 ft<sup>3</sup>/s (51.8 m<sup>3</sup>/s) Apr. 5, 1952, gage height, 12.34 ft (3.761 m), from floodmarks; maximum gage height, 13.2 ft (4.02 m) between Mar. 26-29, 1950, from floodmarks (backwater from ice); no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--No flow during year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1976 TOTAL 13.79 MEAN .038 MAX 2.6 MIN .00 AC-FT 27  
WTR YR 1977 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 AC-FT .0

## MEDICINE CREEK BASIN

06442500 MEDICINE CREEK AT KENNEBEC, SD

LOCATION.--Lat 43°54'17", long 99°52'35", in NW¼NE¼ sec.18, T.105 N., R.75 W., Lyman County, Hydrologic Unit 10140104, on right bank 4 ft (1 m) downstream from highway bridge, 0.5 mi (0.8 km) west of Kennebec and 0.5 mi (0.8 km) downstream from small right-bank tributary.

DRAINAGE AREA.--465 mi<sup>2</sup> (1,200 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,659.64 ft (505.858 m) above mean sea level. Prior to Dec. 28, 1954, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 14.3 ft<sup>3</sup>/s (0.405 m<sup>3</sup>/s), 10,360 acre-ft/yr (12.8 hm<sup>3</sup>/yr); median of yearly mean discharges, 6.5 ft<sup>3</sup>/s (0.18 m<sup>3</sup>/s), 4,700 acre-ft/yr (5.8 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,970 ft<sup>3</sup>/s (254 m<sup>3</sup>/s) Mar. 28, 1960, gage height, 16.71 ft (5.093 m); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1952 reached a stage of 17.0 ft (5.18 m), from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 18	--	300 8.50	-- --	June 26	1800	148 4.19	3.29 1.003
Mar. 26	1400	621 17.6	6.94 2.115	July 3	1300	349 9.88	5.11 1.558
Mar. 30	0800	*2390 67.7	*12.81 3.904	July 21	0500	181 5.13	3.66 1.116
June 14	0400	187 5.30	3.71 1.131	July 25	2000	184 5.21	3.69 1.125
June 24	0900	119 3.37	2.97 0.905				

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	400	.71	1.1	8.2	4.4	.00
2	.00	.00	.00	.00	.00	.00	411	.44	.63	6.5	1.5	.00
3	.00	.00	.00	.00	.00	.00	363	.38	.71	233	.63	.00
4	.00	.00	.00	.00	.00	.00	253	.20	.20	51	.15	.00
5	.00	.00	.00	.00	.00	.00	172	.05	.00	11	.00	.00
6	.00	.00	.00	.00	.00	.00	105	.00	.00	5.1	.00	.00
7	.00	.00	.00	.00	.00	.00	60	.00	.00	4.4	.00	.00
8	.00	.00	.00	.00	.00	.00	47	.00	.00	1.9	.00	.00
9	.00	.00	.00	.00	.00	.00	74	.00	.00	2.6	.00	.00
10	.00	.00	.00	.00	.00	.00	63	.00	.00	3.7	.00	.00
11	.00	.00	.00	.00	.00	.00	42	.00	.00	7.2	.00	.00
12	.00	.00	.00	.00	.00	.00	38	.00	1.1	6.5	.00	.00
13	.00	.00	.00	.00	.00	10	31	.00	39	2.4	.00	.00
14	.00	.00	.00	.00	.00	45	27	.00	149	1.0	.00	.00
15	.00	.00	.00	.00	.00	90	22	.00	63	.44	.00	.00
16	.00	.00	.00	.00	.00	100	21	.00	34	.09	.09	.00
17	.00	.00	.00	.00	.00	150	20	.00	23	.00	.80	.00
18	.00	.00	.00	.00	.00	250	16	.00	17	.00	.14	.00
19	.00	.00	.00	.00	.00	300	16	.00	13	.00	.00	.00
20	.00	.00	.00	.00	.00	184	17	.00	16	.71	.00	.00
21	.00	.00	.00	.00	.00	66	15	.09	12	137	.00	.00
22	.00	.00	.00	.00	.00	84	12	.56	20	38	.00	.00
23	.00	.00	.00	.00	.00	111	12	1.7	20	18	.00	.00
24	.00	.00	.00	.00	.00	209	8.6	3.5	98	14	.00	.00
25	.00	.00	.00	.00	.00	421	5.9	1.4	54	100	.00	.00
26	.00	.00	.00	.00	.00	561	4.2	6.0	82	113	.00	.00
27	.00	.00	.00	.00	.00	376	2.9	6.2	54	52	.00	.00
28	.00	.00	.00	.00	.00	198	2.0	3.5	28	26	.00	.00
29	.00	.00	.00	.00	---	695	1.6	2.2	18	13	.00	.00
30	.00	.00	.00	.00	---	1940	1.2	1.6	11	9.0	.00	.00
31	.00	---	.00	.00	---	984	---	1.6	---	6.2	.00	---
TOTAL	.00	.00	.00	.00	.00	6774.00	2263.4	30.13	754.74	871.94	7.71	.00
MEAN	.000	.000	.000	.000	.000	219	75.4	.97	25.2	28.1	.25	.000
MAX	.00	.00	.00	.00	.00	1940	411	6.2	149	233	4.4	.00
MIN	.00	.00	.00	.00	.00	.00	1.2	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	13440	4490	60	1500	1730	15	.00

CAL YR 1976 TOTAL 37.90 MEAN .10 MAX 7.4 MIN .00 AC-FT 75  
WTR YR 1977 TOTAL 10701.92 MEAN 29.3 MAX 1940 MIN .00 AC-FT 21230

06442700 LAKE SHARPE NEAR FORT THOMPSON, SD

LOCATION.--Lat 44°02'18", long 99°26'45", in SE¼ sec.27, T.107 N., R.72 W., Lyman County, Hydrologic Unit 10140101, at left approach wall of powerhouse at Big Bend Dam on Missouri River, 2.5 mi (4.0 km) south of Fort Thompson, and at mile 987.4 (1,588.7 km).

DRAINAGE AREA.--249,300 mi<sup>2</sup> (645,700 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--July 1963 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is at mean sea level.

REMARKS.--Reservoir is formed by earth-fill dam; closure made July 1963; intentional storage began November 1963. Maximum capacity, 1,900,000 acre-ft (2,340 hm<sup>3</sup>) below elevation, 1,423.0 ft (433.73 m), top of spillway gates. Normal maximum, 1,725,000 acre-ft (2,130 hm<sup>3</sup>) below elevation 1,420.0 ft (432.82 m). Inactive storage, 1,465,000 acre-ft (1,810 hm<sup>3</sup>) below elevation 1,415.0 ft (431.29 m). 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 (422.15 m) surmounted by 8 taintor gates, each 40 by 38 ft (12.2 X 11.6 m); design capacity, 390,000 ft<sup>3</sup>/s (11,000 m<sup>3</sup>/s). Normal releases are through 8 power units (completed in July 1966), with a generating capacity of 58,500 kilowatts each. Maximum release through powerplant about 100,000 ft<sup>3</sup>/s (2,830 m<sup>3</sup>/s). Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevation and contents furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,829,000 acre-ft (2,260 hm<sup>3</sup>) Apr. 22, 1971, elevation, 1,421.9 ft (433.40 m), affected by wind; minimum since initial filling, 1,448,000 acre-ft (1,790 hm<sup>3</sup>) Sept. 17, 1967, elevation, 1,414.7 ft (431.20 m), affected by wind.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,803,000 acre-ft (2,220 hm<sup>3</sup>) Nov. 25, elevation, 1,421.0 ft (433.12 m); maximum elevation, 1,421.1 ft (433.15 m) Oct. 3, June 26, July 25; minimum contents, 1,694,000 acre-ft (2,090 hm<sup>3</sup>) Aug. 27, elevation, 1,419.2 ft (432.57 m), affected by wind.

MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	1420.1	1744000	
Oct. 31 . . . . .	1420.7	1778000	+34000
Nov. 30 . . . . .	1420.6	1765000	-13000
Dec. 31 . . . . .	1420.7	1774000	+9000
CAL YR 1976 . . . . .			+16000
Jan. 31 . . . . .	1420.8	1781000	+7000
Feb. 28 . . . . .	1420.4	1748000	-33000
Mar. 31 . . . . .	1420.9	1776000	+28000
Apr. 30 . . . . .	1420.4	1758000	-18000
May 31 . . . . .	1420.7	1776000	+18000
June 30 . . . . .	1420.5	1766000	-10000
July 31 . . . . .	1420.9	1792000	+26000
Aug. 31 . . . . .	1420.8	1779000	-13000
Sept. 30 . . . . .	1420.2	1755000	-24000
WTR YR 1977 . . . . .			+11000

NOTE.--Reservoir frozen over Nov. 29 to Apr. 1.



## CROW CREEK BASIN

06442950 CROW CREEK NEAR GANN VALLEY, SD

LOCATION.--Lat 43°59'29", long 99°13'07", in NE&NW¼ sec.15, T.106 N., R.70 W., Buffalo County, Hydrologic Unit 10140105, near center of span at downstream side of highway bridge, 6.4 mi (10.3 km) upstream from Smith Creek, 6.9 mi (11.1 km) downstream from Elm Creek, and 12.0 mi (19.3 km) southwest of Gann Valley.

DRAINAGE AREA.--670 mi<sup>2</sup> (1,740 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1971 to current year.

GAGE (REVISED).--Water-stage recorder and concrete control. Datum of gage is 1,434.73 ft (437.306 m), above mean sea level.

REMARKS.--Records fair. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--6 years, 20.3 ft<sup>3</sup>/s (0.575 m<sup>3</sup>/s), 14,710 acre-ft/yr (18.1 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft<sup>3</sup>/s (58.9 m<sup>3</sup>/s) Mar. 13, 1972, gage height, 13.17 ft (4.014 m); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 12	1500	*794 22.5	*8.24 2.512	Apr. 20	1300	247 7.00	5.11 1.558
Mar. 29	1900	316 8.95	5.64 1.719				

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	84	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	53	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	42	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	38	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	32	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	26	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	25	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	12	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	7.7	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	5.4	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	50	3.5	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	500	2.5	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	203	1.4	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	328	1.5	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	260	.83	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	247	.50	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	184	.30	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	130	13	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	98	25	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	74	132	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	53	64	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	43	50	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	33	30	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	30	15	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	28	10	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	34	5.0	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	43	4.0	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	36	2.0	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	181	1.0	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	93	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	102	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	2750.00	686.63	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	88.7	22.9	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	500	132	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	5450	1360	.00	.00	.00	.00	.00
CAL YR 1976 TOTAL	0.00		MEAN .000	MAX .00	MIN .00	AC-FT 0						
WTR YR 1977 TOTAL	3436.63		MEAN 9.42	MAX 500	MIN .00	AC-FT 6820						

## WHITE RIVER BASIN

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06445980 WHITE CLAY CREEK NEAR OGLALA, SD

LOCATION.--Lat 43°08'46", long 102°40'58", in SE¼SE¼ 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 (6.9 km) southeast of Oglala, 5.5 mi (8.8 km) upstream from Oglala Dam, and 11 mi (18 km) northwest of Pine Ridge.

DRAINAGE AREA.--340 mi<sup>2</sup> (880 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 3,001.54 ft (914.869 m) above mean sea level.

REMARKS.--Records good except those for winter periods, which are poor. Some storage and possible regulation above station. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--12 years, 10.8 ft<sup>3</sup>/s (0.306 m<sup>3</sup>/s), 7,820 acre-ft/yr (9.64 hm<sup>3</sup>/yr); median of yearly mean discharges, 9.0 ft<sup>3</sup>/s (0.25 m<sup>3</sup>/s), 6,500 acre-ft/yr (8.0 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 659 ft<sup>3</sup>/s (18.7 m<sup>3</sup>/s) June 16, 1967, gage height, 14.74 ft (4.493 m); maximum gage height, 15.02 ft (4.578 m) Mar. 11, 1966 (backwater from ice); no flow at times in 1965, 1970, 1973-75.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 130 ft<sup>3</sup>/s (3.68 m<sup>3</sup>/s) June 19, gage height, 8.68 ft (2.646 m), no peak above base of 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s); minimum daily, 0.44 ft<sup>3</sup>/s (0.012 m<sup>3</sup>/s) Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	4.0	2.0	3.0	6.0	6.0	16	13	19	7.9	3.4	2.4
2	1.4	4.0	2.5	3.0	6.0	6.0	17	13	17	7.2	2.1	2.1
3	.64	4.0	2.5	3.5	6.0	6.0	14	13	15	6.5	1.4	2.0
4	.55	4.0	2.5	4.0	6.0	7.0	20	13	13	5.7	1.1	1.9
5	1.2	4.0	2.0	3.5	6.0	8.0	19	12	12	5.3	1.5	4.4
6	3.0	4.0	2.0	4.0	5.5	8.0	19	12	11	7.3	1.5	1.4
7	2.6	4.0	2.5	5.0	6.0	10	23	12	11	4.3	1.2	8.6
8	2.4	4.0	3.0	4.5	6.0	15	25	13	10	3.8	3.3	5.9
9	1.9	3.9	3.0	4.0	6.0	20	28	14	9.8	4.3	9.6	3.4
10	2.0	3.0	3.0	3.5	6.0	25	27	13	9.2	3.6	2.6	3.3
11	1.9	2.0	3.0	3.5	6.0	15	29	13	8.3	3.1	5.6	2.2
12	1.8	2.0	3.0	3.5	6.0	15	32	12	8.5	2.7	6.9	1.2
13	1.9	2.0	3.0	4.0	6.0	15	42	12	9.1	2.1	6.9	1.3
14	1.8	2.0	3.0	4.0	5.5	13	34	11	8.3	2.1	6.8	.81
15	2.4	1.5	3.0	3.5	5.5	12	28	10	8.1	2.1	6.2	.64
16	2.1	2.0	3.0	3.5	5.5	11	26	9.9	16	1.5	5.4	.50
17	2.5	2.5	4.0	4.0	6.0	10	24	9.8	26	1.1	5.4	.64
18	2.9	3.0	3.5	4.0	6.0	10	22	9.7	43	.81	5.4	.72
19	2.5	3.0	2.5	5.5	6.0	10	21	9.8	53	.50	12	.64
20	3.3	2.5	2.0	5.0	6.5	15	20	9.7	29	14	8.9	.55
21	3.9	2.0	2.5	5.0	7.0	20	19	12	22	18	7.0	.55
22	4.0	2.0	2.5	5.0	7.0	30	18	14	20	34	5.7	.44
23	3.6	2.0	2.5	5.0	7.0	40	17	15	17	20	4.9	1.1
24	3.5	2.5	2.5	5.0	7.0	50	16	15	15	15	3.8	4.6
25	3.8	2.5	2.5	5.0	6.5	50	16	15	14	13	3.4	6.3
26	4.3	2.0	3.5	5.0	6.5	40	15	27	12	11	3.5	4.6
27	4.5	1.5	4.5	5.0	6.5	20	14	116	11	9.9	4.2	3.9
28	4.2	1.5	4.0	4.5	6.0	15	14	71	9.9	9.1	4.2	3.4
29	3.9	2.0	4.0	4.5	---	15	14	40	9.4	11	3.9	3.6
30	4.0	2.0	3.0	4.5	---	15	14	27	8.8	6.9	3.3	3.9
31	4.0	---	3.0	5.0	---	15	---	21	---	4.9	2.4	---
TOTAL	84.59	81.4	89.5	132.0	172.0	547.0	648	607.9	475.4	238.71	143.5	129.19
MEAN	2.73	2.71	2.89	4.26	6.14	17.6	21.6	19.6	15.8	7.70	4.63	4.31
MAX	4.5	4.0	4.5	5.5	7.0	50	42	116	53	34	12	4.4
MIN	.55	1.5	2.0	3.0	5.5	6.0	14	9.7	8.1	.50	1.1	.44
AC-FT	168	161	178	262	341	1080	1290	1210	943	473	285	256
CAL YR 1976	TOTAL	2158.85	MEAN	5.90	MAX	30	MIN	.55	AC-FT	4280		
WTR YR 1977	TOTAL	3349.19	MEAN	9.18	MAX	116	MIN	.44	AC-FT	6640		

## WHITE RIVER BASIN

06446000 WHITE RIVER NEAR OGLALA, SD

LOCATION.--Lat 43°15'17", long 102°49'29", in SW¼NE¼ sec.24, T.38 N., R.47 W., Shannon County, Hydrologic Unit 10140201, on right bank at downstream side of bridge, 3.0 mi (4.8 km) downstream from Blacktail Creek and 7.0 mi (11.3 km) northwest of Oglala.

DRAINAGE AREA.--2,200 mi<sup>2</sup> (5,700 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 2,853.54 ft (869.759 m) above mean sea level. Prior to May 6, 1947, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Some diversions for irrigation above station. Several observations of water temperature were made during the period.

AVERAGE DISCHARGE.--34 years, 54.1 ft<sup>3</sup>/s (1.532 m<sup>3</sup>/s), 39,200 acre-ft/yr (48.3 hm<sup>3</sup>/yr); median of yearly mean discharges, 45 ft<sup>3</sup>/s (1.27 m<sup>3</sup>/s), 32,600 acre-ft/yr (40 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,200 ft<sup>3</sup>/s (147 m<sup>3</sup>/s) June 21, 1947, gage height, 23.50 ft (7.163 m), from rating curve extended above 2,800 ft<sup>3</sup>/s (79.3 m<sup>3</sup>/s) on basis of velocity-area studies; maximum gage height, 23.61 ft (7.196 m) June 16, 1967; no flow at times in 1952, 1954, 1957, 1961, 1964, 1965, 1970-76.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 630 ft<sup>3</sup>/s (17.8 m<sup>3</sup>/s) Apr. 14, gage height, 11.91 ft (3.630 m); maximum gage height, 12.51 ft (3.813 m) Oct. 24, backwater from earthen dam, no peak above base of 800 ft<sup>3</sup>/s (22.7 m<sup>3</sup>/s); no flow Oct. 30, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	.06	2.5	2.0	.40	12	38	43	57	12	13	27
2	.50	.02	2.5	1.5	.40	12	39	40	49	9.1	11	26
3	.48	.09	3.0	1.5	.45	12	46	37	44	7.0	9.8	26
4	.42	.14	3.0	1.5	.45	13	74	37	40	5.5	8.4	25
5	.35	.08	2.5	1.5	.50	14	68	35	37	4.2	8.1	376
6	.59	.08	2.5	1.5	.60	15	72	32	32	4.8	8.4	67
7	.81	.07	3.0	1.5	.70	20	107	30	28	3.5	7.9	37
8	.81	.11	3.0	1.5	.80	28	107	30	24	4.3	7.9	27
9	1.2	.18	3.5	1.0	.90	28	98	42	22	6.4	17	22
10	6.1	.13	3.5	1.0	2.5	28	96	82	21	12	25	18
11	6.1	.11	4.0	.85	3.0	31	96	43	18	13	134	17
12	6.0	.09	4.0	.75	3.5	31	148	32	17	13	178	12
13	6.1	.04	4.0	.70	4.0	35	377	26	24	11	68	9.2
14	5.9	.08	4.5	.70	5.0	37	576	22	34	11	41	8.0
15	5.7	.30	4.5	.70	6.5	37	344	21	22	10	48	6.8
16	4.4	.33	5.0	.70	7.5	37	318	20	26	9.8	37	5.0
17	2.1	.35	5.0	.65	8.5	37	123	18	155	8.5	28	4.5
18	1.2	.37	5.0	.60	8.5	34	87	18	72	7.8	28	15
19	.87	1.1	5.0	.60	9.0	33	77	18	43	7.6	46	15
20	.69	1.4	4.5	.60	9.5	33	97	18	39	15	43	11
21	.61	1.5	3.5	.55	10	40	72	18	40	25	113	8.2
22	3.5	1.5	3.0	.45	12	46	59	24	58	20	54	5.2
23	4.9	1.7	2.5	.40	12	31	54	40	64	13	40	8.2
24	8.4	1.9	2.0	.40	12	37	50	44	38	17	46	18
25	10	1.8	2.0	.40	12	37	47	102	27	14	43	24
26	22	1.7	2.0	.40	12	36	45	98	24	11	39	18
27	.11	1.5	2.5	.40	12	32	43	80	24	10	37	13
28	.07	1.5	2.5	.35	12	41	42	57	22	9.6	31	7.8
29	.05	2.0	2.5	.35	---	37	43	68	18	8.4	27	4.1
30	.00	2.5	2.0	.35	---	35	43	69	16	10	27	6.3
31	.00	---	2.0	.40	---	32	---	57	---	14	27	---
TOTAL	100.59	22.73	101.0	25.80	166.70	931	3486	1301	1135	327.5	1251.5	867.3
MEAN	3.24	.76	3.26	.83	5.95	30.0	116	42.0	37.8	10.6	40.4	28.9
MAX	22	2.5	5.0	2.0	12	46	576	102	155	25	178	376
MIN	.00	.02	2.0	.35	.40	12	38	18	16	3.5	7.9	4.1
AC-FT	200	45	200	51	331	1850	6910	2580	2250	650	2480	1720
CAL YR 1976	TOTAL	7858.30	MEAN 21.5	MAX 363	MIN .00	AC-FT 15590						
WTR YR 1977	TOTAL	9716.12	MEAN 26.6	MAX 576	MIN .00	AC-FT 19270						

## 06447000 WHITE RIVER NEAR KADOKA, SD

LOCATION.--Lat 43°45'09", long 101°31'28", in SE¼SE¼ sec.30, T.3 S., R.22 E., Black Hills meridian, Jackson County, Hydrologic Unit 10140202, near center of span on downstream side of bridge on State Highway 73, 5.0 mi (8.0 km) upstream from Pass Creek, 5.5 mi (8.8 km) downstream from Cottonwood Creek, and 5.8 mi (9.3 km) south of Kadoka.

DRAINAGE AREA.--5,000 mi<sup>2</sup> (13,000 km<sup>2</sup>), 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 (646.840 m) above mean 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 (0.5 km) downstream at same datum. Mar. 9, 1955, to May 17, 1957, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Some diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 279 ft<sup>3</sup>/s (7.901 m<sup>3</sup>/s), 202,100 acre-ft/yr (249 hm<sup>3</sup>/yr); median of yearly mean discharges, 270 ft<sup>3</sup>/s (7.65 m<sup>3</sup>/s), 196,000 acre-ft/yr (240 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft<sup>3</sup>/s (615 m<sup>3</sup>/s) June 7, 1951, gage height, 13.83 ft (4.215 m), site then in use, from rating curve extended above 16,000 ft<sup>3</sup>/s (453 m<sup>3</sup>/s); no flow at times in many years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1942, reached a stage of 16.24 ft (4.950 m) from floodmarks, discharge, about 32,000 ft<sup>3</sup>/s (906 m<sup>3</sup>/s), from rating curve extended above 16,000 ft<sup>3</sup>/s (453 m<sup>3</sup>/s). Floods of Mar. 8, 1905, and in spring of 1927 were 1 or 2 ft (0.3 or 0.6 m) higher than flood of June 4, 1942, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft<sup>3</sup>/s (102 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 7	0200	6180 175	9.95 3.033	July 20	1000	4980 141	9.11 2.777
Apr. 12	2100	*8050 228	*10.89 3.319	Aug. 10	0200	4740 134	8.95 2.728

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	.40	.00	.00	.00	85	396	102	206	140	161	103
2	4.1	.40	.00	.00	.00	80	1160	98	218	103	113	108
3	2.2	10	.00	.00	.00	80	1790	93	161	100	81	86
4	.40	9.5	.00	.00	.00	85	1650	86	131	90	60	50
5	.40	5.5	.00	.00	.00	90	1510	88	120	80	40	35
6	.00	6.4	.00	.00	.00	90	2780	76	110	70	30	30
7	.00	5.7	.00	.00	.00	100	5230	83	88	60	20	25
8	.00	5.0	.00	.00	.00	200	4140	95	78	50	20	24
9	62	2.0	.00	.00	.00	300	3440	108	215	50	865	170
10	28	1.2	.00	.00	.00	280	2520	146	90	45	2900	76
11	24	.00	.00	.00	1.0	200	2050	93	51	341	1080	49
12	22	.00	.00	.00	5.0	180	4740	72	45	303	703	31
13	20	.05	.00	.00	10	150	6110	70	39	167	529	26
14	18	.20	.00	.00	40	190	2300	86	36	118	440	22
15	12	.50	.00	.00	60	1000	1220	81	95	98	390	20
16	8.0	.70	.00	.00	75	1190	910	76	98	78	440	23
17	5.0	.95	.00	.00	75	933	860	88	330	90	469	26
18	4.0	.80	.00	.00	80	888	664	60	1980	105	294	27
19	3.0	.70	.00	.00	80	657	613	66	1050	68	176	29
20	3.0	.60	.00	.00	90	560	423	108	651	3440	123	18
21	2.0	.50	.00	.00	90	511	312	519	340	2060	110	17
22	2.0	.40	.00	.00	95	541	278	2390	266	830	100	12
23	2.0	.45	.00	.00	100	955	232	1260	218	330	90	104
24	2.0	.20	.00	.00	95	1640	216	529	379	215	80	790
25	1.0	.10	.00	.00	95	1100	200	487	191	825	98	750
26	1.0	.05	.00	.00	90	748	173	706	130	120	118	290
27	.80	.00	.00	.00	85	475	149	1180	170	215	88	161
28	.60	.00	.00	.00	85	577	131	1130	362	1140	120	110
29	.60	.00	.00	.00	---	769	118	790	162	2170	155	68
30	.50	.00	.00	.00	---	368	110	420	128	695	137	100
31	.50	---	.00	.00	---	696	---	270	---	200	143	---
TOTAL	233.20	52.30	.00	.00	1251.00	15718	46425	11456	8158	14396	10173	3380
MEAN	7.52	1.74	.000	.000	44.7	507	1548	370	272	464	328	113
MAX	62	10	.00	.00	100	1640	6110	2390	1980	3440	2900	790
MIN	.00	.00	.00	.00	.00	80	110	60	36	45	20	12
AC-FT	463	104	.00	.00	2480	31180	92080	22720	16180	28550	20180	6700

CAL YR 1976	TOTAL	52771.60	MEAN 144	MAX 3880	MIN .00	AC-FT 104700
WTR YR 1977	TOTAL	111242.50	MEAN 305	MAX 6110	MIN .00	AC-FT 220600

## WHITE RIVER BASIN

06447500 LITTLE WHITE RIVER NEAR MARTIN, SD

LOCATION.--Lat 43°10'00", long 101°37'47", in NW¼ sec.19, T.37 N., R.36 W., Bennett County, Hydrologic Unit 10140203, on right bank 70 ft (21 m) downstream from highway culvert and 5.4 mi (8.7 km) east of Martin.

DRAINAGE AREA.--310 mi<sup>2</sup> (803 km<sup>2</sup>), approximately, of which about 230 mi<sup>2</sup> (596 km<sup>2</sup>) probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year. Prior to October 1965, published as South Fork White River near Martin.

GAGE.--Water-stage recorder. Altitude of gage is 3,045 ft (928 m), by barometer. Prior to Aug. 14, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 19.3 ft<sup>3</sup>/s (0.547 m<sup>3</sup>/s), 13,980 acre-ft/yr (17.2 hm<sup>3</sup>/s); median of yearly mean discharges, 18 ft<sup>3</sup>/s (0.51 m<sup>3</sup>/s), 13,000 acre-ft/yr (16 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,190 ft<sup>3</sup>/s (33.7 m<sup>3</sup>/s) July 19, 1965, gage height, 12.90 ft (3.932 m), from rating curve extended above 340 ft<sup>3</sup>/s (9.63 m<sup>3</sup>/s) on basis of computation of peak flow through culvert and flow-over-road measurement of peak flow; maximum gage height, 13.21 ft (4.026 m) Mar. 11, 1966 (backwater from ice); minimum daily discharge, 0.6 ft<sup>3</sup>/s (0.017 m<sup>3</sup>/s) Aug. 14, 16, 18, 1940; no flow for part of each day Oct. 19, 20, 22, 1962, regulation caused by construction work above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 5, 1932, reached a stage of 13.3 ft (4.05 m), from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 100 ft<sup>3</sup>/s (2.8 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 10	0100	*334 9.46	*7.57 2.307	June 17	1500	219 6.20	6.08 1.853
Apr. 13	1500	291 8.24	7.04 2.146	Aug. 12	0100	143 4.05	4.91 1.500

Minimum daily, 4.0 ft<sup>3</sup>/s (0.11 m<sup>3</sup>/s) Jan. 28, Mar. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	12	8.0	5.0	6.0	12	20	35	22	23	12	9.5
2	7.2	12	9.0	5.0	7.0	11	25	36	19	20	12	9.5
3	7.2	12	9.0	5.5	8.0	11	38	35	17	17	11	9.5
4	7.1	12	9.0	5.0	8.0	10	50	31	17	15	10	9.5
5	7.2	12	9.5	5.0	8.0	10	90	27	16	13	10	9.5
6	7.8	12	9.5	5.5	7.5	11	60	24	15	12	9.9	9.9
7	8.9	12	9.0	5.0	8.0	12	45	26	14	12	9.7	9.5
8	10	12	9.0	5.0	10	15	168	29	14	10	9.9	9.7
9	9.9	12	9.5	5.0	10	13	289	32	13	11	18	9.5
10	9.9	12	9.0	4.5	10	12	319	36	13	11	98	9.4
11	9.7	11	9.5	4.5	9.5	12	268	34	12	11	136	9.4
12	9.4	10	9.5	5.0	9.5	13	255	30	12	10	107	9.4
13	9.1	9.0	9.5	5.0	9.5	13	286	26	13	9.5	36	9.9
14	8.9	10	9.5	5.0	9.0	14	210	23	13	9.2	27	9.9
15	8.9	10	9.5	4.5	9.0	14	141	21	12	8.7	23	9.7
16	8.7	11	10	4.5	9.5	14	114	20	16	8.4	20	9.5
17	8.9	10	11	4.5	9.5	13	89	20	117	8.4	18	9.9
18	8.9	11	11	5.0	9.5	12	80	19	55	8.6	17	11
19	9.1	10	10	5.0	9.5	5.0	69	18	147	8.6	15	11
20	9.7	9.0	10	5.5	10	4.5	60	17	64	9.2	14	13
21	10	9.0	10	5.5	20	4.0	58	20	27	9.7	13	13
22	10	8.0	10	5.0	40	4.0	58	29	25	11	12	13
23	11	9.0	10	5.0	30	4.6	58	48	30	11	31	14
24	11	10	10	5.0	20	4.4	51	45	32	11	17	14
25	11	8.0	10	5.0	15	4.5	45	37	29	12	12	16
26	11	7.0	10	5.0	14	18	40	32	32	12	11	16
27	11	6.5	11	4.5	13	20	38	40	47	14	11	16
28	11	6.5	11	4.0	13	18	35	27	45	14	11	15
29	12	7.0	8.0	4.5	---	15	32	23	34	13	10	15
30	12	7.0	6.0	4.5	---	14	33	26	28	13	10	15
31	12	---	5.0	5.0	---	14	---	27	---	13	9.9	---
TOTAL	295.9	299.0	291.0	152.0	342.0	352.0	3124	893	950	369.3	761.4	345.2
MEAN	9.55	9.97	9.39	4.90	12.2	11.4	104	28.8	31.7	11.9	24.6	11.5
MAX	12	12	11	5.5	40	20	319	48	147	23	136	16
MIN	7.1	6.5	5.0	4.0	6.0	4.0	20	17	12	8.4	9.7	9.4
AC-FT	587	593	577	301	678	698	6200	1770	1880	733	1510	685

CAL YR 1976 TOTAL 5005.0 MEAN 13.7 MAX 93 MIN 2.0 AC-FT 9930  
WTR YR 1977 TOTAL 8174.8 MEAN 22.4 MAX 319 MIN 4.0 AC-FT 16210



## WHITE RIVER BASIN

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06448000 LAKE CREEK ABOVE REFUGE, NEAR TUTHILL, SD

LOCATION.--Lat 43°05'07", long 101°36'04", in NE¼ sec.19, T.36 N., R.36 W., Bennett County, Hydrologic Unit 10140203, on left wingwall at upstream side of culvert, 80 ft (24 m) downstream from west boundary of LaCreek game refuge and 7.5 mi (12.1 km) southwest of Tuthill.

DRAINAGE AREA.--58 mi<sup>2</sup> (150 km<sup>2</sup>), approximately, of which about 23 mi<sup>2</sup> (60 km<sup>2</sup>) probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,090 ft (942 m), by barometer. Prior to Aug. 9, 1938, nonrecording gage and Aug. 9, 1938, to Sept. 30, 1940, water-stage recorder at site 110 ft (34 m) upstream at same datum.

REMARKS.--Records good except those for winter periods, which are poor. A few small diversions for irrigation of hay meadows above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 19.5 ft<sup>3</sup>/s (0.552 m<sup>3</sup>/s), 14,130 acre-ft/yr (17.4 hm<sup>3</sup>/yr); median of yearly mean discharges, 20 ft<sup>3</sup>/s (0.57 m<sup>3</sup>/s), 14,500 acre-ft/yr (18 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 154 ft<sup>3</sup>/s (4.36 m<sup>3</sup>/s) Mar. 9, 1966, gage height, 2.83 ft (0.863 m); maximum gage height, 3.75 ft (1.143 m) Feb. 12, 1971 (backwater from ice); no flow for part of June 5, 1939.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 50 ft<sup>3</sup>/s (1.42 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 17	--	ice jam	*3.06 0.933	May 22	0400	68 1.93	2.00 0.610
Mar. 24	2000	*127 3.60	2.60 0.792				

Minimum daily discharge, 13 ft<sup>3</sup>/s (0.37 m<sup>3</sup>/s) Oct. 14, 15, June 25, 26, July 5, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	19	17	15	20	24	40	24	19	15	15	15
2	15	19	17	15	21	24	40	22	18	14	15	15
3	15	19	17	15	23	23	40	21	18	14	16	16
4	15	20	17	15	23	23	42	21	17	14	16	16
5	16	21	16	15	22	24	46	19	17	13	18	16
6	19	20	16	16	22	27	51	20	16	14	18	15
7	20	20	17	16	23	30	55	41	16	14	17	15
8	17	19	17	15	25	36	57	31	16	14	19	15
9	16	18	18	15	27	34	60	28	17	17	35	14
10	15	18	19	15	27	32	60	25	16	16	38	14
11	14	17	19	15	26	30	55	22	17	15	34	15
12	14	17	19	15	26	28	55	20	17	14	25	16
13	14	18	20	16	26	26	50	18	17	14	20	17
14	13	18	20	16	25	25	39	18	16	14	24	16
15	13	19	21	15	25	25	32	17	15	14	23	15
16	14	20	21	15	26	25	36	17	16	14	21	16
17	15	21	22	15	27	25	29	17	20	14	20	17
18	16	20	20	16	26	27	26	17	17	13	18	18
19	17	20	20	17	26	30	28	18	16	15	17	17
20	18	19	20	19	26	40	33	17	15	18	17	16
21	18	19	21	19	26	45	29	32	15	19	18	17
22	19	19	22	19	26	45	26	55	15	18	18	17
23	18	20	22	18	28	64	25	35	14	18	21	18
24	17	22	23	17	28	96	24	24	14	17	18	17
25	16	21	23	17	27	79	23	19	13	17	17	17
26	18	18	24	17	26	51	23	30	13	17	16	17
27	19	15	24	16	25	52	21	28	14	23	17	17
28	19	15	23	15	24	62	20	22	15	21	17	17
29	19	16	22	15	---	50	26	20	15	17	16	18
30	19	16	20	16	---	41	28	20	14	15	16	31
31	19	---	16	18	---	38	---	19	---	15	16	---
TOTAL	512	563	613	498	702	1181	1119	737	478	487	616	500
MEAN	16.5	18.8	19.8	16.1	25.1	38.1	37.3	23.8	15.9	15.7	19.9	16.7
MAX	20	22	24	19	28	96	60	55	20	23	38	31
MIN	13	15	16	15	20	23	20	17	13	13	15	14
AC-FT	1020	1120	1220	988	1390	2340	2220	1460	948	966	1220	992
CAL YR 1976 TOTAL	5921.7			MEAN 16.2	MAX 42	MIN 7.0	AC-FT 11750					
WTR YR 1977 TOTAL	8006.0			MEAN 21.9	MAX 96	MIN 13	AC-FT 15880					

## 06449000 LAKE CREEK BELOW REFUGE, NEAR TUTHILL, SD

LOCATION.--Lat 43°08'46", long 101°30'38", in SW¼ sec.30, T.37 N., R.35 W., Bennett County, Hydrologic Unit 10140203, on left bank 400 ft (122 m) downstream from east boundary of LaCreek game refuge, 1.2 mi (1.9 km) southwest of Tuthill and 5.5 mi (8.8 km) upstream from mouth.

DRAINAGE AREA.--120 mi<sup>2</sup> (311 km<sup>2</sup>), approximately, of which about 60 mi<sup>2</sup> (155 km<sup>2</sup>) probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,055 ft (931 m), by barometer. Prior to Aug. 4, 1938, nonrecording gage at same site and datum.

REMARKS.--Records fair. Flow regulated by series of lakes above gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 15.0 ft<sup>3</sup>/s (0.425 m<sup>3</sup>/s), 10,870 acre-ft/yr (13.4 hm<sup>3</sup>/yr); median of yearly mean discharges, 16 ft<sup>3</sup>/s (0.45 m<sup>3</sup>/s), 11,600 acre-ft/yr (14 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 178 ft<sup>3</sup>/s (5.04 m<sup>3</sup>/s) June 18, 1967, gage height, 5.17 ft (1.576 m); maximum gage height, 5.67 ft (1.728 m) Mar. 28, 1975 (backwater from ice); no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 140 ft<sup>3</sup>/s (3.96 m<sup>3</sup>/s) Apr. 12, gage height, 4.71 ft (1.436 m); maximum gage height, 5.69 ft (1.734 m) Mar. 29 (backwater from ice); no flow Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	2.1	.25	.70	2.8	2.0	50	68	53	17	1.5	1.9
2	.00	2.2	.30	.70	2.9	2.0	61	66	53	17	1.5	1.7
3	.62	2.6	.30	2.0	2.9	2.0	62	66	54	17	1.3	2.4
4	.07	2.4	.25	4.0	2.9	3.0	64	69	55	17	1.5	3.5
5	.46	2.6	.20	5.0	2.9	3.0	67	64	54	16	1.5	3.7
6	.20	2.9	.20	5.0	2.9	4.0	71	62	54	16	1.5	3.4
7	.39	3.0	.30	5.0	3.0	4.0	72	64	54	16	1.5	2.9
8	.49	2.6	.40	5.0	3.1	3.8	74	63	54	13	1.6	2.5
9	.21	1.9	.50	5.0	3.2	5.4	81	61	54	6.0	2.1	1.6
10	.17	2.3	.50	4.5	3.2	7.3	89	60	53	5.2	3.3	1.5
11	.16	2.9	.50	4.5	3.2	10	104	58	52	4.5	2.9	1.5
12	.24	2.7	.50	4.5	3.2	15	138	56	52	3.9	2.9	1.5
13	.24	2.9	.50	4.5	2.8	20	134	54	52	3.4	2.7	1.4
14	.36	3.2	.50	4.0	2.5	25	133	53	52	2.5	3.1	1.3
15	.42	3.2	.50	4.0	3.3	28	134	54	51	3.0	3.0	1.3
16	.10	3.0	.60	4.0	3.5	28	134	50	50	4.9	3.3	1.2
17	.04	3.1	.60	4.0	3.3	30	132	50	51	4.5	3.3	1.4
18	.26	2.5	.60	4.0	3.1	30	127	49	51	3.2	3.3	1.1
19	.14	2.2	.70	4.0	2.8	32	125	47	51	1.4	3.5	1.2
20	.46	2.3	.70	3.5	2.7	35	123	46	50	1.1	3.4	.94
21	.27	2.8	.70	3.4	2.4	38	117	47	44	2.3	3.3	.78
22	.29	2.9	.80	3.4	3.1	40	109	47	34	2.7	3.3	.77
23	.72	3.0	.80	3.3	2.5	43	102	46	34	2.8	6.2	.67
24	.75	3.1	.90	3.2	2.0	43	96	47	34	4.1	9.9	.57
25	.79	3.1	.90	3.0	1.9	42	92	50	34	3.9	9.3	.62
26	1.0	1.0	1.0	2.8	2.2	43	90	50	34	4.1	7.8	.64
27	1.7	.10	1.0	2.8	1.9	44	80	51	34	3.9	6.6	1.2
28	1.6	.20	.90	2.5	2.0	42	73	50	34	3.6	5.7	1.7
29	1.9	.20	.70	2.5	---	40	74	53	33	3.1	7.8	1.8
30	1.9	.25	.60	2.8	---	42	74	54	26	2.6	11	1.5
31	1.8	---	.70	2.8	---	46	---	53	---	1.7	5.7	---
TOTAL	17.79	69.25	17.90	110.40	78.2	752.5	2882	1708	1391	207.4	125.3	48.19
MEAN	.57	2.31	.58	3.56	2.79	24.3	96.1	55.1	46.4	6.69	4.04	1.61
MAX	1.9	3.2	1.0	5.0	3.5	46	138	69	55	17	11	3.7
MIN	.00	.10	.20	.70	1.9	2.0	50	46	26	1.1	1.3	.57
AC-FT	35	137	36	219	155	1490	5720	3390	2760	411	249	96
CAL YR 1976	TOTAL	4375.47	MEAN 12.0	MAX 39	MIN .00	AC-FT 8680						
WTR YR 1977	TOTAL	7407.93	MEAN 20.3	MAX 138	MIN .00	AC-FT 14690						

## WHITE RIVER BASIN

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## 06449100 LITTLE WHITE RIVER NEAR VETAL, SD

LOCATION.--Lat 43°06'03", long 101°13'49", in NE¼NW¼ sec.17, T.36 N., R.33 W., Bennett County, Hydrologic Unit 10140203, on left bank 120 ft (37 m) downstream from highway bridge, 0.3 mi (0.5 km) downstream from small right-bank tributary, 10.8 mi (17.4 km) southeast of Vetal, and 15.3 mi (24.6 km) upstream from Spring Creek.

DRAINAGE AREA.--590 mi<sup>2</sup> (1,530 km<sup>2</sup>), approximately, of which about 415 mi<sup>2</sup> (1,075 km<sup>2</sup>) 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 (847.554 m) above mean sea level. Prior to Nov. 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Some small diversions for irrigation and some storage in several small lakes above station. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--18 years, 59.8 ft<sup>3</sup>/s (1.694 m<sup>3</sup>/s), 38,110 acre-ft/yr (47.0 hm<sup>3</sup>/yr); median of yearly mean discharges, 51 ft<sup>3</sup>/s (1.44 m<sup>3</sup>/s), 36,900 acre-ft/yr (45 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 ft<sup>3</sup>/s (37.7 m<sup>3</sup>/s) Mar. 13, 1966, gage height, 7.75 ft (2.362 m); minimum daily, 9.0 ft<sup>3</sup>/s (0.25 m<sup>3</sup>/s) Dec. 24, 25, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)		Gage height (ft) (m)		Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)		Gage height (ft) (m)	
Apr. 6	2000	401	11.4	5.62	1.713	May 7	1300	153	4.33	4.29	1.308
Apr. 13	0730	*508	14.4	*6.01	1.832	May 27	0315	169	4.79	4.36	1.329
Apr. 20	0100	387	11.0	5.53	1.686						

Minimum daily discharge, 11 ft<sup>3</sup>/s (0.31 m<sup>3</sup>/s) Mar. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	21	21	20	18	12	80	125	93	90	19	37
2	14	21	21	21	19	12	150	120	93	76	19	33
3	14	22	22	21	20	12	250	118	97	74	19	32
4	14	22	23	20	20	11	240	117	94	70	20	31
5	14	23	23	20	19	11	216	114	95	69	19	31
6	16	23	22	20	20	12	259	113	93	69	19	28
7	16	22	22	21	22	20	315	135	94	68	19	25
8	15	22	23	21	22	30	310	124	95	68	19	23
9	14	22	23	20	23	28	288	121	96	67	45	23
10	16	22	24	20	23	25	304	115	92	47	31	23
11	17	21	24	20	22	22	459	110	93	42	28	22
12	18	20	25	20	21	22	473	107	91	40	24	22
13	18	20	25	21	21	24	472	103	94	38	22	22
14	18	21	26	21	20	25	471	94	91	37	47	21
15	18	22	26	20	20	25	464	91	91	34	55	20
16	18	23	27	19	20	25	399	90	96	34	48	21
17	19	23	27	19	21	24	361	91	120	34	59	23
18	19	22	28	19	20	22	332	78	103	34	61	23
19	19	22	27	19	19	22	333	83	97	32	60	20
20	20	22	26	20	22	20	309	75	96	26	40	18
21	20	21	27	21	25	25	276	99	111	26	35	18
22	20	21	27	21	24	40	245	104	139	24	35	17
23	20	22	28	21	14	60	182	82	103	24	38	18
24	20	23	28	21	13	109	162	74	88	29	37	18
25	20	22	28	20	13	100	151	73	83	34	39	17
26	21	20	29	20	13	90	145	82	95	26	50	17
27	21	18	30	18	12	90	140	119	97	30	59	17
28	21	18	29	15	12	110	132	94	96	29	56	17
29	21	19	25	15	---	100	131	90	96	24	55	21
30	21	20	20	16	---	65	131	96	96	21	54	61
31	21	---	20	17	---	60	---	95	---	19	41	---
TOTAL	558	640	776	607	538	1253	8180	3132	2918	1335	1172	719
MEAN	18.0	21.3	25.0	19.6	19.2	40.4	273	101	97.3	43.1	37.8	24.0
MAX	21	23	30	21	25	110	473	135	139	90	61	61
MIN	14	18	20	15	12	11	80	73	83	19	19	17
AC-FT	1110	1270	1540	1200	1070	2490	16230	6210	5790	2650	2320	1430
CAL YR 1976	TOTAL	14117	MEAN 38.6	MAX 116	MIN 14	AC-FT 28000						
WTR YR 1977	TOTAL	21828	MEAN 59.8	MAX 473	MIN 11	AC-FT 43300						

## WHITE RIVER BASIN

06449500 LITTLE WHITE RIVER NEAR ROSEBUD, SD

LOCATION.--Lat 43°19'32", long 100°53'00", in SW¼NW¼ sec.28, T.39 N., R.30 W., Todd County, Hydrologic Unit 10140203, on left bank at downstream side of bridge on U.S. Highway 18, 0.3 mi (0.5 km) downstream from Scabby Creek, 0.7 mi (1.1 km) downstream from Soldier Creek, and 6.4 mi (10.3 km) north of Rosebud.

DRAINAGE AREA.--1,020 mi<sup>2</sup> (2,640 km<sup>2</sup>), approximately, of which about 760 mi<sup>2</sup> (1,970 km<sup>2</sup>) 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: 1943, drainage area. WSP 1309: 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 2,294.99 ft (699.513 m) above mean sea level. Prior to May 11, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Some small diversions for irrigation and some storage in several small lakes above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years, 110 ft<sup>3</sup>/s (3.115 m<sup>3</sup>/s), 79,700 acre-ft/yr (98.3 hm<sup>3</sup>/yr); median of yearly mean discharges, 110 ft<sup>3</sup>/s (3.12 m<sup>3</sup>/s), 79,700 acre-ft/yr (98 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,640 ft<sup>3</sup>/s (131 m<sup>3</sup>/s) June 11, 1967, gage height, 14.09 ft (4.295 m), from rating curve extended above 1,300 ft<sup>3</sup>/s (36.8 m<sup>3</sup>/s); minimum daily, 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s) Jan. 4, 1949, Feb. 20, 1955.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 330 ft<sup>3</sup>/s (9.34 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Apr. 4	1200	506 14.3	4.93 1.503	June 16	2400	1350 38.2	7.24 2.207
Apr. 8	1500	595 16.9	5.17 1.576	Aug. 8	2300	584 16.5	5.27 1.606
Apr. 12	1400	662 18.7	5.49 1.673	Sept.30	0100	*1380 39.1	*7.28 2.219

Minimum daily discharge, 40 ft<sup>3</sup>/s (1.13 m<sup>3</sup>/s) Jan. 10, 11, 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	70	55	45	50	50	144	180	161	116	55	91
2	60	67	55	45	55	50	272	179	153	106	73	82
3	53	67	60	45	60	55	462	176	154	100	88	70
4	55	58	60	45	65	55	473	173	153	98	64	70
5	53	61	60	45	60	60	386	172	147	98	57	65
6	60	65	55	50	60	70	379	162	142	100	57	62
7	70	73	55	50	65	85	488	189	140	100	54	68
8	60	76	55	50	65	100	554	191	138	98	77	61
9	65	81	55	45	70	120	514	199	138	101	211	54
10	60	58	60	40	75	121	502	185	137	104	108	54
11	57	70	60	40	75	80	521	178	135	90	98	54
12	54	65	60	45	75	72	634	168	140	80	79	57
13	61	74	60	45	70	98	582	154	141	77	70	59
14	60	58	65	50	70	117	583	151	143	73	73	56
15	61	80	65	50	70	105	591	143	135	71	88	52
16	58	78	65	45	65	102	580	138	186	67	98	52
17	65	82	70	45	70	116	490	148	324	53	100	58
18	62	78	70	50	70	100	459	159	182	44	100	68
19	64	76	70	60	70	91	448	165	156	70	100	61
20	70	73	60	60	70	92	485	159	139	60	102	59
21	70	73	55	65	70	83	391	217	142	60	91	60
22	78	70	55	65	75	117	360	281	145	49	79	60
23	70	55	60	65	70	116	304	201	151	60	76	59
24	71	65	65	70	70	158	236	170	125	71	73	58
25	68	60	65	65	60	231	212	147	112	73	68	58
26	64	50	65	60	60	216	198	161	104	49	70	57
27	65	45	70	50	60	200	194	189	113	78	91	57
28	64	45	65	40	55	240	193	184	118	82	93	58
29	71	50	60	40	---	271	192	156	117	65	86	67
30	68	55	55	45	---	146	195	150	118	53	88	533
31	65	---	45	45	---	98	---	161	---	58	82	---
TOTAL	1956	1978	1875	1560	1850	3615	12022	5386	4389	2404	2649	2320
MEAN	63.1	65.9	60.5	50.3	66.1	117	401	174	146	77.5	85.5	77.3
MAX	78	82	70	70	75	271	634	281	324	116	211	533
MIN	53	45	45	40	50	50	144	138	104	44	54	52
AC-FT	3880	3920	3720	3090	3670	7170	23850	10680	8710	4770	5250	4600
CAL YR 1976	TOTAL	28198	MEAN	77.0	MAX	382	MIN	40	AC-FT	55930		
WTR YR 1977	TOTAL	42004	MEAN	115	MAX	634	MIN	40	AC-FT	83310		

## WHITE RIVER BASIN

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06450500 LITTLE WHITE RIVER BELOW WHITE RIVER, SD

LOCATION.--Lat 43°36'04", long 100°44'52", in SW¼NW¼ sec.23, T.42 N., R.29 W., Mellette County, Hydrologic Unit 10140203, on left bank at downstream side of bridge on U.S. Highway 83, 1.3 mi (2.1 km) downstream from Pine Creek and 2.0 mi (3.2 km) north of town of White River.

DRAINAGE AREA.--1,570 mi<sup>2</sup> (4,070 km<sup>2</sup>), approximately, of which about 1,310 mi<sup>2</sup> (3,390 km<sup>2</sup>) 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.

GAGE.--Water-stage recorder. Datum of gage is 1,912.78 ft (583.015 m) above mean sea level. Prior to June 8, 1968, at site 0.8 mi (1.3 km) downstream at datum 4.50 ft (1.372 m) lower.

REMARKS.--Records good except those for winter periods, which are poor. Diurnal fluctuations caused by small power-plant 2.2 mi (3.5 km) upstream. Several small diversions for irrigation and some storage in several small lakes above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 127 ft<sup>3</sup>/s (3.597 m<sup>3</sup>/s), 92,010 acre-ft/yr (113 hm<sup>3</sup>/yr); median of yearly mean discharges, 120 ft<sup>3</sup>/s (3.40 m<sup>3</sup>/s), 86,900 acre-ft/yr (107 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft<sup>3</sup>/s (388 m<sup>3</sup>/s) June 12, 1967, gage height, 10.02 ft (3.054 m), site and datum then in use; maximum gage height, 11.21 ft (3.417 m) June 7, 1968, site and datum then in use; maximum gage height at present site and datum, 15.46 ft (4.712 m) June 7, 1968, from floodmarks; no flow for parts of several days in 1952, 1954, 1956; minimum daily discharge, 7 ft<sup>3</sup>/s (0.20 m<sup>3</sup>/s) July 31, Aug. 31, Sept. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,460 ft<sup>3</sup>/s (41.3 m<sup>3</sup>/s) Sept. 30, gage height, 5.42 ft (1.652 m); maximum gage height, 6.21 ft (1.893 m) Mar. 9 (backwater from ice); minimum daily discharge, 36 ft<sup>3</sup>/s (1.02 m<sup>3</sup>/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	64	46	50	45	60	338	202	113	110	59	113
2	47	60	50	50	50	60	548	199	110	110	59	89
3	47	67	55	50	60	60	759	197	113	107	50	88
4	43	61	65	50	70	65	668	186	130	89	59	89
5	44	62	65	50	70	65	572	176	136	99	70	89
6	36	59	65	55	65	65	832	179	150	99	64	78
7	49	70	60	55	65	70	1050	213	150	113	75	65
8	52	68	60	55	70	80	1020	262	160	97	81	65
9	51	70	60	55	75	100	1070	378	160	107	252	61
10	51	68	65	50	80	120	1310	249	182	113	123	62
11	46	63	65	45	80	100	995	198	167	104	129	63
12	45	60	65	45	80	80	939	186	152	84	127	62
13	52	80	70	50	75	75	888	168	139	67	83	63
14	59	75	70	55	75	90	827	157	139	79	70	69
15	53	80	70	55	75	120	797	155	131	69	78	71
16	49	85	70	50	70	130	751	159	114	84	96	67
17	54	85	75	45	75	120	620	166	199	156	109	68
18	60	85	75	45	75	151	548	182	130	94	99	84
19	56	82	75	50	75	168	501	156	95	91	107	88
20	54	74	70	60	75	154	531	198	98	119	106	79
21	56	64	65	70	75	143	453	272	107	107	97	75
22	54	65	60	70	80	141	392	898	78	94	86	92
23	63	60	60	70	85	171	348	320	114	89	82	88
24	60	65	65	65	85	394	280	146	116	139	100	74
25	53	78	70	55	80	515	250	116	104	153	96	80
26	57	61	70	50	70	368	232	116	86	240	88	81
27	68	55	80	50	70	393	221	130	97	153	99	77
28	62	50	85	45	70	651	214	139	113	232	120	79
29	63	45	85	45	---	866	207	122	113	186	113	80
30	59	45	70	40	---	418	215	119	99	91	99	435
31	62	---	60	40	---	229	---	119	---	69	109	---
TOTAL	1651	2006	2066	1620	2020	6222	18376	6463	3795	3544	2985	2674
MEAN	53.3	66.9	66.6	52.3	72.1	201	613	208	127	114	96.3	89.1
MAX	68	85	85	70	85	866	1310	898	199	240	252	435
MIN	36	45	46	40	45	60	207	116	78	67	50	61
AC-FT	3270	3980	4100	3210	4010	12340	36450	12820	7530	7030	5920	5300
CAL YR 1976 TOTAL	28550			78.0	320	22	AC-FT	56630				
WTR YR 1977 TOTAL	53422			146	1310	36	AC-FT	106000				



## WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD

LOCATION.--Lat 43°44'54", long 99°33'22", in SE¼SW¼ sec.3, T.103 N., R.73 W., Lyman County, Hydrologic Unit 10140204, on left bank at downstream side of bridge on State Highway 47, 1.5 mi (2.4 km) downstream from Wagner Draw, 1.8 mi (2.9 km) upstream from high-water line of Lake Francis Case, and 8.8 mi (14.2 km) southwest of Oacoma.

DRAINAGE AREA.--10,200 mi<sup>2</sup> (26,400 km<sup>2</sup>), 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 (419.798 m) above mean sea level. See WSP 1709, 1729, or 1917 for history of changes prior to Feb. 27, 1960.

REMARKS.--Records good except those for winter periods, which are poor. Some diversions for irrigation above station. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--49 years, 524 ft<sup>3</sup>/s (14.84 m<sup>3</sup>/s), 379,600 acre-ft/yr (468 hm<sup>3</sup>/yr); median of yearly mean discharges, 450 ft<sup>3</sup>/s (12.7 m<sup>3</sup>/s), 326,000 acre-ft/yr (400 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,900 ft<sup>3</sup>/s (1,470 m<sup>3</sup>/s) Mar. 30, 1952, gage height, 15.40 ft (4.694 m), site and datum then in use; maximum gage height, 17.6 ft (5.36 m) Mar. 31, 1950, site and datum then in use, from floodmarks, ice jam; no flow Aug. 14-28, 1971, July 16-23, 1974, Aug. 29 to Sept. 9, Sept. 13, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,500 ft<sup>3</sup>/s (156 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 11	1000	---	---	Apr. 14	1200	*12100 343	9.79 2.984
Mar. 26	0600	6430 182	7.99 2.435	May 25	0200	6630 188	7.80 2.377
Mar. 30	2000	9010 255	8.83 2.691	June 13	2200	7900 224	8.31 2.533
Apr. 8	1300	8940 253	9.30 2.835				

Minimum daily, 5.0 ft<sup>3</sup>/s (0.142 m<sup>3</sup>/s) Nov. 27, 28.

REVISIONS.--Revised daily discharges, in cubic feet per second, for month of September 1976, are given below. These figures supersede those published in the report for 1976.

Month	Total	Mean	Max	Min	Ac-ft
Sept. 10... 3.6	Sept. 14... 5.7	Sept. 18... 1.3	Sept. 22... 53	Sept. 25... 26	Sept. 28... 26
11... 5.9	15... 16	19... 11	23... 36	26... 37	29... 23
12... 1.7	16... 12	20... 110	24... 26	27... 36	30... 25
13... .10	17... 2.6	21... 86			
September 1976	543.90	18.1	110	.00	1080
Wtr Yr 1976	66436.90	182	2850	.00	131800

## WHITE RIVER BASIN

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06452000 WHITE RIVER NEAR OACOMA, SD--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	35	7.0	9.0	12	400	3590	309	1650	345	1880	186
2	25	25	7.0	10	12	400	1980	275	1010	327	1190	174
3	24	23	7.0	11	12	380	1400	267	904	1100	808	154
4	19	22	7.0	10	10	380	1950	259	746	600	572	145
5	19	22	7.0	10	10	360	4780	255	596	275	440	160
6	20	23	7.0	10	12	350	3530	240	602	252	300	159
7	22	24	7.0	10	16	350	3030	237	494	226	240	151
8	23	25	8.0	9.0	20	400	6790	248	345	180	205	135
9	21	24	8.0	9.0	20	500	6520	263	125	202	171	127
10	21	22	8.0	9.0	18	1000	6210	350	125	220	106	113
11	21	18	8.0	8.0	18	3000	5930	450	135	219	156	102
12	21	15	8.0	8.0	16	3220	5400	641	751	212	971	98
13	23	15	9.0	8.0	16	1580	4850	489	5260	212	2190	85
14	18	16	9.0	8.0	18	1770	9550	393	6040	154	1320	77
15	14	16	9.0	7.0	20	1730	6410	355	3830	122	1020	95
16	15	16	10	7.0	30	1370	4060	309	1750	95	776	118
17	30	17	10	7.0	50	1780	3180	288	929	87	718	113
18	37	17	9.0	8.0	70	2620	2760	248	1010	168	530	102
19	36	16	9.0	9.0	90	2220	2490	244	920	186	489	93
20	30	16	8.0	9.0	150	1810	2910	244	1080	151	403	84
21	26	14	8.0	10	250	1610	2790	600	1640	137	634	87
22	21	14	8.0	12	300	1270	2290	784	1070	627	435	87
23	28	12	8.0	12	350	1250	1880	614	1060	2120	350	87
24	32	14	9.0	12	350	1150	1290	3450	808	1790	296	85
25	39	10	9.0	11	370	2230	920	4970	697	2630	279	85
26	43	8.0	9.0	10	370	5230	669	2530	620	1210	215	87
27	48	5.0	9.0	10	380	2930	542	1550	602	683	177	318
28	53	5.0	8.0	10	400	2960	450	1060	554	560	150	956
29	46	6.0	8.0	10	---	6470	414	768	506	435	165	627
30	48	6.0	8.0	11	---	7780	364	1930	403	400	148	445
31	45	---	8.0	12	---	5510	---	1370	---	3420	154	---
TOTAL	894	501.0	254.0	296.0	3390	64010	98929	25990	36262	19345	17488	5335
MEAN	28.8	16.7	8.19	9.55	121	2065	3298	838	1209	624	564	178
MAX	53	35	10	12	400	7780	9550	4970	6040	3420	2190	956
MIN	14	5.0	7.0	7.0	10	350	364	237	125	87	106	77
AC-FT	1770	994	504	587	6720	127000	196200	51550	71930	38370	34690	10580
CAL YR 1976 TOTAL	65554.90		MEAN 179	MAX 2850	MIN 0	AC-FT 130000						
WTR YR 1977 TOTAL	272694.00		MEAN 747	MAX 9550	MIN 5.0	AC-FT 540900						

## WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued  
(National stream-quality accounting network station)  
(National pesticide water-monitoring network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-53, 1969, 1972 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1976.

WATER TEMPERATURES: October 1974 to September 1976.

SUSPENDED SEDIMENT DISCHARGE: October 1971 to September 1976 (discontinued).

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,880 micromhos Sept. 2, 1976; minimum daily, 370 micromhos Mar. 17, 1975.

WATER TEMPERATURES: Maximum daily, 30.0°C July 30, 1975, July 10, 1976; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 72,300 mg/L Apr. 15, 1974; minimum daily mean, 0 mg/L July 17-23, 1974, Aug. 29 to Sept. 9, Sept. 13, 1976.

SEDIMENT LOADS: Maximum daily, 1,220,000 tons (1,110,000 tonnes) May 29, 1973; 0 ton (0 tonne) July 17-23, 1974, Aug. 29 to Sept. 9, Sept. 13, 1976.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (JTU) (00070)	FECAL COLIFORM (COL./100 ML) (31625)	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARDNESS (CA, MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)
OCT 07...	1130	20	500	8.7	9.0	70	850	890	69	0	24
NOV 05...	1045	20	410	8.2	2.0	140	860	8160	120	0	40
DEC 03...	1210	7.1	870	8.2	.0	8	ND	830	300	0	100
JAN 03...	1230	11	740	8.1	.0	8	82	830	210	0	69
27...	1115	10	630	8.2	.0	10	84	45	190	0	61
MAR 02...	1100	400	395	8.0	.0	1200	840	8260	39	0	13
14...	1600	1630	500	7.9	2.5	4700	8700	2700	93	0	30
APR 15...	1245	5800	490	8.7	15.0	9200	300	1100	--	--	--
MAY 17...	1115	299	640	8.8	19.0	230	850	240	140	0	46
JUN 17...	1100	971	500	8.0	22.5	900	500	1600	140	8	45
JUL 14...	1315	158	600	8.4	28.0	310	360	150	130	0	44
SEP 09...	1130	120	475	8.5	15.0	4300	1900	3400	47	0	17
DATE	DIS-SOLVED MAGNESIUM (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADJUSTMENT RATIO (00931)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)
OCT 07...	2.2	72	67	3.8	5.3	214	0	176	48	7.0	.5
NOV 05...	4.7	40	41	1.6	4.9	182	0	149	47	7.3	.4
DEC 03...	12	90	39	2.3	8.0	452	0	371	120	18	.9
JAN 03...	8.5	50	33	1.5	8.0	324	0	266	48	6.1	.6
27...	8.3	48	35	1.5	9.1	300	0	246	48	7.7	.6
MAR 02...	1.5	86	81	6.0	3.1	181	0	148	66	4.9	.5
14...	4.5	89	66	4.0	4.0	121	0	99	170	6.3	.4
APR 15...	--	--	--	--	--	150	0	120	83	3.2	.5
MAY 17...	5.7	71	51	2.6	8.6	220	0	180	120	7.5	.6
JUN 17...	6.5	41	37	1.5	8.4	160	0	130	97	4.1	.4
JUL 14...	5.5	76	53	2.9	9.0	190	0	156	130	7.6	.6
SEP 09...	1.2	100	80	6.3	5.0	210	4	180	79	6.6	.6

B Non-ideal colony count.  
ND Not detected..

## WHITE RIVER BASIN

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06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SILICA (SiO2) (MG/L) (00955)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)
OCT 07...	40	306	305	.42	17.0	.31	.67	.98	4.3	.18
NOV 05...	46	292	280	.40	16.0	.01	.52	.53	2.3	.39
DEC 03...	89	618	661	.84	11.8	2.2	.33	2.5	11	.17
JAN 03...	89	445	439	.61	13.2	1.2	.48	1.7	7.4	.18
27...	70	409	401	.56	11.3	1.2	.86	2.1	9.1	.17
MAR 02...	24	309	288	.42	334	.73	1.1	1.8	8.1	1.7
14...	13	380	377	.52	1670	1.1	--	--	--	7.6
APR 15...	20	--	--	--	--	.81	7.1	7.9	35	1.5
MAY 17...	30	388	398	.53	313	.01	1.9	1.9	8.5	.57
JUN 17...	18	301	299	.41	789	.55	3.6	4.2	18	1.5
JUL 14...	31	407	397	.55	174	.00	1.4	1.4	6.2	.74
SEP 09...	33	328	350	.45	106	1.5	3.8	5.3	23	9.0

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)
OCT 07...	1130	4.7	4000
NOV 05...	1045	--	3500
DEC 03...	1210	--	480
JAN 03...	1230	--	270
27...	1115	3.9	630
MAR 02...	1100	--	14
APR 15...	1245	65	--
MAY 17...	1115	15	67000
JUN 17...	1100	--	8000
JUL 14...	1315	--	110000

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 07...	1130	22	4	18	<10	<10	0	0	0	0	<50
JAN 27...	1115	9	0	9	10	10	0	0	0	0	<50
MAY 17...	1115	15	--	11	<10	<9	1	0	--	0	<50

DATE	TIME	SUS- PENDE D COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MAN- GANESE (MN) (UG/L) (01055)
OCT 07...		<50	0	10	4	6	3800	80	<100	<100	0	100
JAN 27...		<50	0	<10	<7	3	580	90	<100	<100	0	20
MAY 17...		<50	0	20	13	7	4600	70	<100	<95	5	200

DATE	TIME	SUS- PENDE D MAN- GANESE (MN) (UG/L) (01054)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDE D MERCURY (HG) (UG/L) (71895)	DIS- SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE D SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE D ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)
OCT 07...	90	10	10	.0	.0	.0	2	1	1	20	20	0
JAN 27...	0	20	20	1.2	1.2	.0	1	0	1	10	0	10
MAY 17...	200	0	0	.2	--	.0	2	0	3	20	10	9

DATE	TIME	TOTAL ALDRIN (UG/L) (39330)	ALDRIN IN MA- TERIAL (UG/KG) (39333)	TOTAL CHLOR- DANE (UG/L) (39350)	CHLOR- DANE IN MA- TERIAL (UG/KG) (39351)	TOTAL DDD (UG/L) (39360)	DDD IN MA- TERIAL (UG/KG) (39363)	TOTAL DDE (UG/L) (39365)	DDE IN MA- TERIAL (UG/KG) (39368)	TOTAL DDT (UG/L) (39370)
NOV 05...	1115	ND	--	ND	--	ND	--	ND	--	ND
MAR 02...	1100	ND	--	ND	--	ND	--	ND	--	ND
MAY 17...	1115	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 12...	1130	ND	--	ND	--	ND	--	ND	--	ND

DATE	TIME	DDT IN MA- TERIAL (UG/KG) (39373)	TOTAL DI- AZINON (UG/L) (39570)	DI- AZINON IN MA- TERIAL (UG/KG) (39571)	TOTAL DI- ELDRIN (UG/L) (39380)	DI- ELDRIN IN MA- TERIAL (UG/KG) (39383)	TOTAL ENDRIN (UG/L) (39390)	ENDRIN IN MA- TERIAL (UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	ETHION IN MA- TERIAL (UG/KG) (39399)	TOTAL HEPTA- CHLOR (UG/L) (39410)
NOV 05...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
MAR 02...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
MAY 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 12...	--	ND	--	ND	--	ND	--	ND	--	ND	ND

< Less than.  
ND Not detected.



## 06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG) (39601)	TOTAL METHYL TRI- THION (UG/L) (39790)	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG) (39791)	TOTAL PARA- THION (UG/L) (39540)	PARA- THION IN BOTTOM MA- TERIAL (UG/KG) (39541)	SIMA- ZINE IN TOTAL COUL- SON COND. (UG/L) (39025)	SIMA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS) (39046)	TOTAL TOX- APHENE (UG/L) (39400)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG) (39403)	TOTAL TRI- THION (UG/L) (39786)
NOV 05...	--	ND	--	ND	--	ND	--	ND	--	ND
MAR 02...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 12...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	TRI- THION IN BOTTOM MA- TERIAL (UG/KG) (39787)	TOTAL ATRA- ZINE (UG/L) (39630)	ATRA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS) (39631)	TOTAL 2,4-D (UG/L) (39730)	2,4-D IN BOTTOM MA- TERIAL (UG/KG) (39731)	TOTAL 2,4,5-T (UG/L) (39740)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG) (39741)	TOTAL SILVEX (UG/L) (39760)	SILVEX IN BOTTOM MA- TERIAL (UG/KG) (39761)
NOV 05...	--	ND	--	ND	--	ND	--	ND	--
MAR 02...	--	ND	--	ND	--	ND	--	ND	--
MAY 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 12...	--	ND	--	ND	--	ND	--	ND	--

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	380	---	---	580	450	470	---	---	550	480	490
2	---	380	---	---	610	430	450	550	490	520	480	460
3	---	380	720	610	560	---	---	550	490	---	470	500
4	---	---	1020	980	360	400	520	550	520	---	500	---
5	---	---	---	600	570	410	480	550	---	520	450	---
6	---	---	1080	640	---	---	440	550	530	530	450	555
7	---	---	1080	680	610	400	410	550	540	540	---	550
8	410	---	1260	740	560	440	430	---	540	510	490	525
9	420	---	1270	---	480	400	500	550	530	580	480	520
10	420	---	1440	---	600	390	---	540	370	---	510	540
11	420	---	1530	640	610	420	430	560	460	580	510	---
12	410	---	---	590	600	---	410	590	---	560	530	490
13	420	---	1640	620	---	---	400	500	460	570	610	570
14	410	---	1960	600	470	570	460	560	430	620	---	550
15	410	---	2060	590	470	590	460	---	410	620	450	540
16	420	---	1920	580	470	550	490	560	440	610	455	510
17	420	---	1520	660	420	510	---	570	450	---	455	640
18	420	---	1600	630	370	490	470	560	560	630	450	---
19	420	---	---	610	310	460	470	560	---	970	460	630
20	420	---	1510	660	---	---	540	550	570	660	445	600
21	420	---	1550	600	270	470	490	660	490	760	---	580
22	420	---	1730	630	270	510	490	---	480	800	460	590
23	410	---	2210	---	---	510	520	650	490	700	525	620
24	410	---	1180	560	270	510	---	650	480	---	575	620
25	410	---	---	590	270	590	520	580	490	540	550	---
26	380	---	---	---	360	590	510	500	---	520	500	660
27	380	---	580	---	---	---	540	480	490	520	460	700
28	380	---	550	590	460	530	550	490	480	500	---	700
29	380	---	560	580	---	630	560	---	480	520	495	490
30	380	---	610	---	---	550	560	---	560	---	465	510
31	380	---	580	580	---	490	---	540	---	---	480	---
TOTAL	9770	1140	31160	14560	10550	12290	12570	13950	12230	14450	13185	14140

ND Not detected.

## WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG) (39413)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L) (39420)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG) (39423)	TOTAL LINDANE (UG/L) (39340)	LINDANE IN BOTTOM MA- TERIAL (UG/KG) (39343)	TOTAL MALA- THION (UG/L) (39530)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG) (39531)	TOTAL METH- OXY- CHLOR (UG/L) (39480)	METHOX- YCHLOR IN BOT- TOM MA- TERIAL (UG/KG) (39481)	TOTAL METHYL PARA- THION (UG/L) (39600)
NOV 05...	--	ND	--	ND	--	ND	--	ND	--	ND
MAR 02...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 12...	--	ND	--	ND	--	ND	--	ND	--	ND

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	0.0	0.0	0.0	0.0	4.0	---	19.0	17.0	21.0	16.0
2	---	---	0.0	0.0	0.0	0.0	5.0	17.0	19.0	21.0	21.0	15.0
3	---	---	0.0	0.0	0.0	0.0	---	17.0	20.0	---	21.0	16.0
4	---	---	0.0	0.0	0.0	0.0	5.0	18.0	24.0	---	20.0	---
5	---	2.0	0.0	0.0	0.0	0.0	4.0	17.0	---	23.0	19.0	---
6	---	---	0.0	0.0	0.0	0.0	5.0	15.0	22.0	23.0	19.0	20.0
7	9.0	---	0.0	0.0	0.0	1.0	5.0	16.0	23.0	22.0	---	19.0
8	---	---	0.0	0.0	0.0	1.0	9.0	---	22.0	20.0	22.0	20.0
9	---	---	0.0	0.0	0.0	1.0	11.0	16.0	18.0	20.0	---	15.0
10	---	---	0.0	0.0	0.0	1.0	---	16.0	19.0	---	18.0	13.0
11	---	---	0.0	0.0	0.0	1.0	6.0	16.0	19.0	20.0	14.0	---
12	---	---	0.0	0.0	0.0	1.0	12.0	16.0	---	20.0	19.5	17.0
13	---	---	0.0	0.0	0.0	1.0	13.0	16.0	19.0	23.0	18.0	16.0
14	---	---	0.0	0.0	0.0	2.5	13.0	15.0	18.0	28.0	---	14.0
15	---	---	0.0	0.0	0.0	1.0	15.0	---	19.0	22.0	19.0	14.0
16	---	---	0.0	0.0	0.0	2.0	13.0	15.0	23.0	24.0	20.0	15.0
17	---	---	0.0	0.0	0.0	2.0	---	19.0	22.5	---	20.0	14.0
18	---	---	0.0	0.0	0.0	5.0	13.0	19.0	22.0	25.0	19.0	---
19	---	---	0.0	0.0	0.0	2.0	12.5	19.0	---	24.0	21.0	13.0
20	---	---	0.0	0.0	0.0	---	13.0	19.0	20.0	22.0	20.0	13.0
21	---	---	0.0	0.0	0.0	2.0	12.0	19.0	21.0	23.0	---	15.0
22	---	---	0.0	0.0	0.0	1.0	12.0	---	21.0	23.0	19.0	12.0
23	---	---	0.0	0.0	0.0	1.0	12.0	17.0	23.0	23.0	18.0	15.0
24	---	---	0.0	0.0	0.0	6.0	---	17.0	23.0	---	18.0	12.0
25	---	---	0.0	0.0	0.0	3.0	12.0	21.0	23.0	22.0	20.0	---
26	---	---	0.0	0.0	0.0	6.0	13.0	21.0	---	22.0	22.0	12.0
27	---	---	0.0	0.0	0.0	---	13.0	20.0	23.0	21.0	20.0	12.0
28	---	---	0.0	0.0	0.0	6.0	13.0	18.0	22.0	22.0	---	14.0
29	---	---	0.0	0.0	---	6.0	17.0	---	21.0	22.0	17.0	14.0
30	---	---	0.0	0.0	---	6.0	16.0	---	19.0	---	19.0	13.0
31	---	---	0.0	0.0	---	6.0	---	18.0	---	---	19.0	---

ND Not detected.

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 7,76 1130	NOV 5,76 1045	DEC 3,76 1210	JAN 4,77 0000	JAN 27,77 1115
TOTAL CELLS/ML	4000	3500	480	270	630
DIVERSITY: DIVISION	0.2	0.9	1.3	1.2	1.5
..CLASS	0.2	0.9	1.3	1.2	1.5
...ORDER	0.3	1.2	1.6	2.0	2.2
...FAMILY	1.0	1.2	2.0	2.2	2.2
....GENUS	1.9	1.2	2.4	2.2	2.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	* 0		--	--	--	--	--	--	--	--
...COELASTRACEAE										
....COELASTRUM	--	--	--	--	--	--	--	--	--	--
...HYDRODICTYACEAE										
....PEDIATRUM	--	--	--	--	--	--	--	--	--	--
...OOCYSTACEAE										
....ANKISTRODESMUS	* 0		--	--	24 5	35 13		9 1		
....DICTYOSPHAERIUM	--	--	--	--	--	--	--	* 0		
....KIRCHNERIELLA	210 5		--	--	--	--	--	--	--	--
....OOCYSTIS	310 8		--	--	--	--	--	--	--	--
....SELENASTRUM	--	--	--	--	--	--	--	--	--	--
....TETRAEDRON	--	--	--	--	5 1	--	--	--	--	--
....WESTELLA	--	--	--	--	--	--	--	--	--	--
...SCENEDESMACEAE										
....ACTINASTRUM	150 4		--	--	--	--	--	--	--	--
....CRUCIGENIA	--	--	--	--	--	--	--	--	--	--
....SCENEDESMUS	2500# 62		770# 22		220# 45	--	--	9 1		
....TETRASTRUM	620# 15		--	--	38 8	--	--	18 3		
...TETRASPORALES										
...COCCOMYXACEAE										
....CHLOROSARCINA	--	--	--	--	--	--	--	--	--	--
...PALMELLACEAE										
....ASTEROCOCCUS	--	--	--	--	--	--	--	9 1		
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	39 1		390 11		7 1	32 12		290# 46		
....CHLOROGONIUM	--	--	--	--	--	--	--	5 1		
...PHACOTACEAE										
....PTEROMONAS	39 1		--	--	--	--	--	--	--	--
...ZYGNEMALES										
...DESMIDIACEAE										
....STAUSTRUM	--	--	--	--	--	--	--	--	--	--
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	* 0		--	--	19 4	46# 17		130# 20		
....MELOSIRA	--	--	--	--	--	--	--	--	--	--
....STEPHANODISCUS	--	--	--	--	--	--	--	--	--	--
...PENNALES										
....ACHNANTHACEAE										
....COCONEIS	--	--	--	--	* 0	--	--	--	--	--
....CYMBELLACEAE										
....EPITHEMIA	--	--	--	--	--	--	--	--	--	--
...DIATOMACEAE										
....DIATOMA	--	--	--	--	--	--	--	--	--	--
...FRAGILARIACEAE										
....SYNEDRA	--	--	--	--	--	--	--	--	--	--
...NAVICULACEAE										
....NAVICULA	--	--	--	--	7 1	12 4	--	--	--	--
...NITZSCHACEAE										
....CYLINDROTHECA	--	--	--	--	5 1	--	--	--	--	--
....NITZSCHIA	140 3		2300# 67		96# 20	120# 46		18 3		

## WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 7,76 1130	NOV 5,76 1045	DEC 3,76 1210	JAN 4,77 0000	JAN 27,77 1115
TOTAL CELLS/ML	4000	3500	480	270	630
DIVERSITY: DIVISION	0.2	0.9	1.3	1.2	1.5
..CLASS	0.2	0.9	1.3	1.2	1.5
...ORDER	0.3	1.2	1.6	2.0	2.2
...FAMILY	1.0	1.2	2.0	2.2	2.2
....GENUS	1.9	1.2	2.4	2.2	2.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCCOCCALES										
....CHROCCOCCACEAE										
.....AGMENELLUM	--	-	--	-	--	-	23	9	--	-
.....ANACYSTIS	--	-	--	-	--	-	--	-	37	6
...HORMOGONALES										
...NOSTOCACEAE										
.....ANABAENA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
...LYNGBYA	--	-	--	-	60	13	--	-	--	-
...OSCILLATORIA	--	-	--	-	--	-	--	-	110#	17
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
....CRYPTOMONODACEAE										
.....CRYPTOMONAS	--	-	--	-	--	-	--	-	5	1
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%  
 \* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## WHITE RIVER BASIN

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06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAR 2,77 1100	MAY 17,77 1115	JUN 17,77 1100	JUL 14,77 1315	AUG 12,77 1130					
TOTAL CELLS/ML	14	67000	8000	110000	38000					
DIVERSITY: DIVISION	0.0	1.2	1.2	0.7	0.5					
...CLASS	0.0	1.2	1.2	0.7	0.5					
...ORDER	0.0	1.5	1.2	0.8	0.6					
...FAMILY	0.0	2.6	1.3	2.2	1.2					
...GENUS	0.0	2.7	1.3	2.8	1.8					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	690	1	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	18000#	28	--	-	21000#	18	*	0
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	19000#	28	--	-	17000	15	*	0
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	1100	2	140	2	690	1	1400	4
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	*	0
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	850	1	--	-	5700	5	4300	11
....SELENASTRUM	--	-	--	-	--	-	--	-	*	0
....TETRAEDRON	--	-	*	0	--	-	--	-	--	-
....WESTELLA	--	-	*	0	--	-	--	-	570	1
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	8200	7	*	0
...SCENEDESMUS	--	-	4000	6	5000#	63	40000#	35	25000#	67
....TETRASTRUM	--	-	570	1	--	-	5500	5	2900	7
..TETRASPORALES										
...COCCOMYXACEAE										
....CHLOROSARCINA	--	-	2300	3	--	-	--	-	--	-
...PALMELLACEAE										
....ASTEROCOCCUS	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
....CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-
...PHACOTACEAE										
....PTEROMONAS	--	-	--	-	--	-	--	-	--	-
..ZYGNEATALES										
...DESMIDIACEAE										
....STAUSTRUM	--	-	--	-	--	-	0		--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	2600	4	--	-	--	-	1400	4
....MELOSIRA	--	-	*	0	--	-	2300	2	290	1
....STEPHANODISCUS	--	-	--	-	--	-	690	1	--	-
...PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....EPITHEMIA	14#	100	--	-	--	-	--	-	--	-
...DIATOMACEAE										
....DIATOMA	--	-	1100	2	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	*	0	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	*	0	--	-	690	1	--	-
...NITZSCHIA										
....NITZSCHIA	--	-	2700	4	570	7	--	-	290	1



## WHITE RIVER BASIN

06452000 WHITE RIVER NEAR OACOMA, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAR 2.77 1100	MAY 17.77 1115	JUN 17.77 1100	JUL 14.77 1315	AUG 12.77 1130
TOTAL CELLS/ML	14	67000	8000	110000	38000
DIVERSITY: DIVISION	0.0	1.2	1.2	0.7	0.5
..CLASS	0.0	1.2	1.2	0.7	0.5
...ORDER	0.0	1.5	1.2	0.8	0.6
...FAMILY	0.0	2.6	1.3	2.2	1.2
....GENUS	0.0	2.7	1.3	2.8	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCALES										
....CHROCOCCACEAE										
.....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
.....ANACYSTIS	--	-	13000#	20	2300#	29	1100	1	1600	4
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	9800	9	--	-
...OSCILLATORIA										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	*	0
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDAE										
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## 06452500 LAKE FRANCIS CASE AT PICKSTOWN, SD

LOCATION.--Lat 43°04'05", long 98°33'15", in SE¼ sec.5, T.9S N., R.6S 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 (1.6 km) upstream from Randall Creek, and at mile 880.0 (1,415.9 km).

DRAINAGE AREA.--263,500 mi<sup>2</sup> (682,500 km<sup>2</sup>), 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 at mean 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, 5,816,000 acre-ft (7,170 hm<sup>3</sup>) below elevation 1,375.0 ft (419.10 m), top of spillway gates. Normal maximum, 4,834,000 acre-ft (5,960 hm<sup>3</sup>) below elevation 1,365.0 ft (416.05 m). Inactive storage, 1,336,000 acre-ft (1,650 hm<sup>3</sup>) below elevation 1,310.0 ft (399.29 m). No dead storage; elevation of invert of lowest outlet is 1,227.0 ft (373.99 m). 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 (12.2 m) wide by 29 ft (8.8 m) high; spillway capacity, 490,000 ft<sup>3</sup>/s (13,900 m<sup>3</sup>/s) at pool elevation 1,375 ft (419.10 m). Crest of spillway is at elevation 1,346 ft (410.26 m). Normal releases are through 12 tunnels 22 ft (6.7 m) in diameter. Installation of power units in 8 of these tunnels was completed in January 1956; maximum release through power tunnels is 46,000 ft<sup>3</sup>/s (1,300 m<sup>3</sup>/s); maximum release through 4 other tunnels is 130,000 ft<sup>3</sup>/s (3,680 m<sup>3</sup>/s) at pool elevation 1,375 ft (419.10 m). Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevations and contents furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,087,000 acre-ft (6,270 hm<sup>3</sup>) June 20, 1962, elevation, 1,364.2 ft (415.81 m), affected by wind; minimum since initial filling, 1,450,000 acre-ft (1,790 hm<sup>3</sup>) Oct. 23, 1956, elevation, 1,311.5 ft (399.75 m), affected by wind.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,154,000 acre-ft (5,120 hm<sup>3</sup>) Apr. 23, 27, elevation, 1,359.6 ft (414.41 m); minimum, 2,469,000 acre-ft (3,040 hm<sup>3</sup>) Dec. 6, 7, elevation, 1,337.7 ft (407.73 m), affected by wind.

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	1355.3	3762000	
Oct. 31 . . . . .	1347.5	3133000	-629000
Nov. 30 . . . . .	1339.0	2541000	-592000
Dec. 31 . . . . .	1341.0	2677000	+136000
CAL YR 1976 . . . . .			-81000
Jan. 31 . . . . .	1349.3	3279000	+602000
Feb. 28 . . . . .	1352.2	3508000	+229000
Mar. 31 . . . . .	1359.2	4110000	+602000
Apr. 30 . . . . .	1358.7	4075000	-35000
May 31 . . . . .	1357.4	3955000	-120000
June 30 . . . . .	1353.7	3644000	-311000
July 31 . . . . .	1352.2	3507000	-137000
Aug. 31 . . . . .	1352.8	3565000	+58000
Sept. 30 . . . . .	1351.2	3426000	-139000
WTR YR 1977 . . . . .			-336000

NOTE.--Reservoir frozen over Dec. 21 to Mar. 26.

## MISSOURI RIVER MAIN STEM

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD

LOCATION.--Lat 43°03'54", long 98°33'11", in NW¼NE¼ sec.8, T.9S N., R.6S W., Charles Mix County, Hydrologic Unit 10170101, in powerhouse of Fort Randall Dam on Missouri River at Pickstown, 0.8 mi (1.3 km) upstream from Randall Creek, and at mile 879.8 (1,415.6 km).

DRAINAGE AREA.--263,500 mi<sup>2</sup> (682,500 km<sup>2</sup>), approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1947 to current year. Prior to October 1969 published as "below Fort Randall Dam".

GAGE.--Totalizing flowmeters on each turbine in Fort Randall powerhouse. Prior to Nov. 10, 1965, water-stage recorder at site 7.0 mi (11.3 km) downstream at datum 1,230.00 ft (374.904 m) above mean sea level and Nov. 10, 1965, to June 30, 1969, at datum 5.00 ft (1.524 m) lower (Corps of Engineers bench mark).

REMARKS.--Records good. Flow completely regulated by Lake Francis Case. (See station 06452500.) Many diversions for irrigation above station.

COOPERATION.--Daily discharge determined from flow through turbines furnished by Corps of Engineers.

AVERAGE DISCHARGE.--30 years, 25,090 ft<sup>3</sup>/s (710.5 m<sup>3</sup>/s), 18,177,000 acre-ft/yr (22.4 km<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 447,000 ft<sup>3</sup>/s (12,700 m<sup>3</sup>/s) Apr. 12, 1952; maximum gage height, 20.82 ft (6.346 m) Apr. 12, 1952 (site and datum then in use); minimum daily discharge, 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s) Mar. 29, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1943 reached a stage of about 16.5 ft (5.03 m). Maximum stage known, in April 1881, was about 5 ft (1.5 m) higher than that of April 1943, both at site 7.0 mi (11.3 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge during year, 41,700 ft<sup>3</sup>/s (1,180 m<sup>3</sup>/s) Aug. 2; minimum daily, 8,200 ft<sup>3</sup>/s (232 m<sup>3</sup>/s) Mar. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36100	33500	39100	21400	14800	11800	25400	20400	26400	28900	35000	27700
2	31700	35500	36100	21600	15300	12600	25500	30600	27200	27900	41700	27800
3	27200	35600	33600	22400	13100	12500	15800	29100	30700	25100	35500	27500
4	30800	33800	30300	21100	13500	12500	30300	27200	30400	28900	35600	27700
5	34500	35500	25300	19300	14200	11800	28000	29300	24000	30100	33400	28100
6	35900	35300	27200	18800	14200	11600	26400	29600	29300	30400	31900	27700
7	35800	35700	23600	18600	14400	12000	26900	29300	28700	32100	28900	28800
8	34600	35900	18200	17200	14100	12000	29300	25500	28500	31900	31300	29200
9	33800	34300	22000	18000	14200	11700	28200	26800	30700	29800	27300	27600
10	28700	32500	21100	18300	14300	11800	13800	26800	32600	29300	29200	27100
11	33900	33200	17900	18200	14300	12100	30200	25500	35000	32900	29200	28000
12	30800	32600	15900	18700	16000	11300	30500	24600	33600	31300	28800	29500
13	32000	33500	17700	18200	14600	8200	29400	24400	27600	29100	29100	29100
14	34400	29600	18500	18300	11300	8900	29300	27900	26000	30800	29100	27900
15	36500	33900	19200	17900	8900	9100	27400	24700	26400	31200	32000	29000
16	27500	38000	16900	17600	8800	9900	26800	29500	27700	31800	30200	29800
17	19300	36900	17300	18400	8800	12500	14000	31200	28200	29000	27500	30700
18	38800	34000	16600	17800	9100	18400	27200	30700	23800	33300	29200	29000
19	37200	34300	17600	17500	8700	21000	27200	32600	20600	32800	31900	30700
20	36600	33800	18400	17100	8600	23200	27500	32800	31900	32700	30300	26200
21	33500	31300	16900	16000	10900	23800	23800	27100	28600	32300	31000	30200
22	33200	34600	21400	16900	10800	24100	23900	18300	31900	32000	33500	30300
23	34200	35100	23600	13100	11000	23900	20800	20400	33200	32100	27900	28000
24	31200	35600	18900	13500	10800	27600	16000	23600	23800	28500	28700	29100
25	32900	32900	19500	11900	8700	29500	25800	25200	24400	32900	28500	27800
26	34700	33100	20000	11100	9100	30000	24500	27300	23400	33300	28400	30500
27	37500	34300	18200	12900	9000	23200	27200	27000	31200	31400	27400	32000
28	36200	30900	17200	15200	10500	28300	31300	25100	33900	33100	27000	31500
29	35300	34400	14700	14800	---	22600	31700	25000	35500	29500	27200	30700
30	32800	38600	17400	10000	---	19100	29800	23800	31700	29000	29400	22900
31	28300	---	20200	14700	---	21900	---	26900	---	29000	27000	---
TOTAL	1025900	1028200	660500	526500	332000	528900	773900	828200	866900	952400	943100	862100
MEAN	33090	34270	21310	16980	11860	17060	25800	26720	28900	30720	30420	28740
MAX	38800	38600	39100	22400	16000	30000	31700	32800	35500	33300	41700	32000
MIN	19300	29600	14700	10000	8600	8200	13800	18300	20600	25100	27000	22900
AC-FT	2035000	2039000	1310000	1044000	658500	1049000	1535000	1643000	1719000	1889000	1871000	1710000
CAL YR 1976	TOTAL	11288900	MEAN	30840	MAX	41400	MIN	9700	AC-FT	22390000		
WTR YR 1977	TOTAL	9328600	MEAN	25560	MAX	41700	MIN	8200	AC-FT	18500000		

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued  
(National stream-quality accounting network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

DISSOLVED OXYGEN: October 1974 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1973.

REMARKS.--Water is supplied to the monitor from the raw water intake located in the penstocks. This location is 121 ft (37 m) below the normal pool surface. Depth of observation is 1,227 ft (374 m) above mean sea level. Records prior to October 1974 are on file in the District office, Corps of Engineers, Omaha, NE. In addition to the water-quality monitor, samples were collected once a month.

COOPERATION.--Records of specific conductance, water temperature, dissolved oxygen and pH were furnished by Corps of Engineers.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily mean, 850 micromhos Mar. 10, 1975; minimum daily mean, 606 micromhos Dec. 7, 1976.

WATER TEMPERATURES: Maximum daily mean, 25.5°C Aug. 9, 12-16, 25, 1975, July 31 to Aug. 2, Aug. 5, 10, 1977; minimum daily mean, 0.0°C Jan. 21-26, 1975.

DISSOLVED OXYGEN: Maximum daily mean, 13.2 mg/L Jan. 2, 3, Feb. 5-11, 14-21, 1975; minimum daily mean, 6.7 mg/L Aug. 6, 8, 1977.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily mean, 756 micromhos June 29; minimum daily mean, 606 micromhos Dec. 7.

WATER TEMPERATURES: Maximum daily mean, 25.5°C July 31 to Aug. 2, Aug. 5, 10; minimum daily mean, 1.0°C on many days during December to January.

DISSOLVED OXYGEN: Maximum daily mean, 12.8 mg/L Feb. 8, 9, 13, 15, 16; minimum daily mean 6.7 mg/L Aug. 6, 8.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)
OCT											
26...	1400	40200	660	8.1	12.0	10	--	--	220	73	54
NOV											
17...	0800	39700	710	8.1	7.0	8	ND	B8	230	72	59
DEC											
14...	1300	26600	780	8.4	2.5	10	B2	B2	250	59	62
JAN											
20...	1400	21200	690	8.0	3.0	10	ND	ND	220	61	52
FEB											
24...	1400	16100	760	7.8	4.0	3	ND	ND	240	76	58
MAR											
22...	1500	32400	530	7.9	4.0	4	ND	ND	240	83	60
APR											
21...	1500	26400	660	8.2	9.0	4	ND	B2	230	70	56
MAY											
19...	1500	35100	610	8.1	11.0	1	B6	20	250	98	67
JUN											
28...	1400	41800	620	8.2	20.5	6	B5	20	230	85	60
JUL											
19...	1500	40100	720	8.0	23.0	3	B6	20	230	69	57
AUG											
29...	1500	38700	590	7.9	23.0	7	B4	B13	230	78	59
SEP											
19...	1400	39800	710	8.0	21.0	2	B4	B60	220	66	56

B Non-ideal colony count.  
ND Not detected.

## MISSOURI RIVER MAIN STEM

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED MAG- NE- SIUM (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS-SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CAC03 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO- RIDE (F) (MG/L) (00950)
OCT 26...	20	63	38	1.9	3.7	176	0	144	210	9.2	.5
NOV 17...	19	72	40	2.1	4.4	187	0	153	200	10	.5
DEC 14...	23	67	36	1.8	5.5	232	0	190	190	9.2	.4
JAN 20...	21	57	36	1.7	3.9	189	0	155	230	14	.4
FEB 24...	23	65	37	1.8	4.6	199	0	163	200	9.9	.5
MAR 22...	22	66	37	1.9	4.4	192	0	160	210	9.2	.5
APR 21...	21	65	38	1.9	4.5	190	0	160	190	9.1	.6
MAY 19...	19	64	36	1.8	4.5	180	0	150	200	9.4	.6
JUN 28...	20	67	38	1.9	4.7	180	0	150	210	9.7	.6
JUL 19...	20	75	41	2.2	5.0	190	0	160	210	9.8	.6
AUG 29...	21	63	36	1.8	5.0	190	0	160	210	12	.6
SEP 19...	20	66	39	1.9	5.0	190	0	160	200	9.9	.6

DATE	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (N03) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)
OCT 26...	6.0	452	453	.61	49100	.04	.16	.20	.89	.02
NOV 17...	5.8	459	463	.62	49200	.00	.15	.15	.66	.01
DEC 14...	4.5	429	476	.58	30800	.01	.41	.42	1.9	.02
JAN 20...	2.4	429	474	.58	24600	.02	.35	.37	1.6	1.8
FEB 24...	5.2	481	464	.65	20900	.02	.20	.22	.97	.00
MAR 22...	5.3	526	472	.72	46000	.07	.37	.44	1.9	.01
APR 21...	5.5	458	445	.62	32600	.12	.19	.31	1.4	.01
MAY 19...	5.7	444	459	.60	42100	.10	.33	.43	1.9	.00
JUN 28...	4.8	452	465	.61	51000	.08	.24	.32	1.4	.01
JUL 19...	5.7	473	477	.64	51200	.06	.08	.14	.62	.01
AUG 29...	7.8	480	472	.65	50200	.03	.26	.29	1.3	.02
SEP 19...	8.5	468	460	.64	50300	.07	.14	.21	.93	.01



## MISSOURI RIVER MAIN STEM

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06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued  
 WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

						TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)					
				DATE	TIME							
				OCT 26...	1400	2.7	72					
				DEC 14...	1300	--	310					
				JAN 20...	1400	3.3	--					
				FEB 24...	1400	--	2600					
				APR 21...	1500	3.1	--					
				MAY 19...	1500	--	310					
				JUN 28...	1400	--	740					
				JUL 19...	1500	2.4	110					
DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)	
OCT 26...	1400	2	0	2	<10	<10	0	0	0	0	<50	
JAN 20...	1400	1	0	1	<10	<10	0	0	0	0	<50	
APR 21...	1500	2	--	2	<10	--	0	10	0	10	<50	
JUL 19...	1500	1	--	2	<10	<9	1	0	--	0	<50	
DATE		SUS- PENDE D COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MAN- GANESE (MN) (UG/L) (01055)
OCT 26...	<48	2	<10	<9	1	130	10	<100	<100	0	10	
JAN 20...	<50	0	10	10	0	130	0	<100	<97	3	10	
APR 21...	--	0	10	--	0	280	10	<100	--	5	10	
JUL 19...	<50	0	10	8	2	340	60	<100	<91	9	20	
DATE		SUS- PENDE D MAN- GANESE (MN) (UG/L) (01054)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDE D MERCURY (HG) (UG/L) (71895)	DIS- SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE D SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE D ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)
OCT 26...	10	0	.0	.0	.0	.0	1	0	1	0	0	0
JAN 20...	0	20	.1	.1	.0	.0	1	0	1	20	20	0
APR 21...	0	10	.0	--	.0	.0	2	1	1	10	0	10
JUL 19...	10	10	.1	.0	.1	.1	2	--	1	20	20	0

&lt; Less than.

## MISSOURI RIVER MAIN STEM

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	661	614	612	670	733	701	702	707	716	725	701	708
2	659	612	611	681	740	703	706	705	715	708	703	710
3	659	612	610	678	735	702	706	710	718	700	706	708
4	659	614	610	683	730	703	706	707	722	695	700	709
5	658	615	607	686	721	703	705	706	720	695	705	710
6	659	616	607	684	717	707	703	706	725	699	707	708
7	659	617	606	689	708	705	703	707	724	695	705	708
8	658	614	607	692	695	703	703	707	718	695	708	711
9	659	612	610	693	695	704	706	708	707	697	705	707
10	658	613	608	696	694	707	707	709	719	696	700	710
11	656	614	609	697	695	706	708	706	723	700	707	713
12	659	617	623	697	696	706	707	708	717	698	704	706
13	658	616	629	702	691	705	706	713	717	697	704	709
14	660	616	632	704	688	704	707	713	720	703	704	709
15	658	617	636	709	686	705	705	715	722	697	705	704
16	655	616	634	712	681	706	704	714	727	702	708	709
17	645	618	639	715	683	705	705	715	730	700	707	715
18	638	616	643	717	685	705	706	719	740	698	704	714
19	636	616	647	720	685	704	705	717	735	700	707	715
20	628	616	646	719	686	701	708	719	738	705	710	715
21	622	616	648	719	687	704	709	717	730	701	702	712
22	619	616	651	722	689	706	709	718	740	700	706	717
23	618	616	657	723	691	704	710	717	738	704	702	709
24	616	617	661	725	692	703	709	709	742	701	695	717
25	618	616	662	728	693	704	708	716	750	696	705	718
26	616	616	664	732	696	707	707	711	745	698	707	713
27	618	613	661	730	698	705	707	713	744	700	702	709
28	617	612	662	728	700	704	708	715	750	704	706	718
29	614	613	660	726	---	704	708	715	756	703	703	717
30	613	613	665	724	---	703	708	715	735	702	704	711
31	614	---	668	728	---	703	---	717	---	700	709	---

PH (UNITS), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				---	8.5	8.4	8.3	8.2	8.3	7.6	8.0	8.1
2				---	8.5	8.4	8.3	8.3	8.3	7.5	8.0	8.1
3				---	8.5	8.4	8.3	8.3	8.3	7.5	8.0	8.1
4				---	8.5	8.4	8.3	8.2	8.3	7.5	8.0	8.1
5				---	8.5	8.4	8.3	8.2	8.3	7.5	8.0	8.2
6				---	8.5	8.4	8.3	8.2	8.2	7.5	8.0	8.2
7				---	8.5	8.5	8.3	8.2	8.2	7.5	8.0	8.2
8				---	8.5	8.5	8.2	8.2	8.2	7.5	8.0	8.2
9				---	8.5	8.5	8.2	8.2	8.2	7.5	8.0	8.2
10				---	8.5	8.5	8.2	8.2	8.2	7.5	8.0	8.2
11				---	8.5	8.5	8.2	8.3	8.2	7.5	8.0	8.2
12				---	8.5	8.5	8.2	8.3	8.1	7.5	8.0	8.3
13				---	8.5	8.4	8.2	8.3	8.1	7.5	8.0	8.3
14				---	8.5	8.3	8.2	8.3	8.1	7.5	8.0	8.3
15				---	8.5	8.3	8.0	8.3	8.1	7.8	8.0	8.3
16				---	8.5	8.3	8.0	8.3	8.1	7.8	8.0	8.3
17				---	8.5	8.3	8.0	8.3	8.1	7.8	8.0	8.3
18				---	8.5	8.3	8.0	8.4	8.1	7.8	8.0	8.3
19				---	8.5	8.3	8.0	8.4	7.8	7.8	8.0	8.3
20				---	8.5	8.4	8.0	8.4	7.8	7.8	8.0	8.3
21				---	8.5	8.4	8.0	8.4	7.8	7.8	8.0	8.3
22				---	8.5	8.4	8.0	8.4	7.7	7.8	8.0	8.3
23				---	8.5	8.4	8.1	8.4	7.7	7.8	8.0	8.3
24				---	8.5	8.4	8.1	8.4	7.7	7.8	8.0	8.3
25				---	8.5	8.4	8.1	8.4	7.7	7.8	8.0	8.3
26				---	8.5	8.3	8.1	8.4	7.6	7.8	8.0	8.3
27				8.5	8.5	8.3	8.1	8.4	7.6	7.8	8.0	8.3
28				8.5	8.4	8.3	8.2	8.4	7.6	8.0	8.0	8.3
29				8.5	---	8.3	8.2	8.4	7.6	8.0	8.0	8.3
30				8.5	---	8.3	8.2	8.4	7.6	8.0	8.1	8.3
31				8.5	---	8.3	---	8.4	---	8.0	8.1	---

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.5	11.5	3.0	1.0	2.5	2.5	3.5	8.5	17.0	22.5	25.5	23.5
2	20.0	11.5	3.0	1.0	2.5	2.5	3.5	8.0	17.0	23.0	25.5	23.5
3	19.5	11.0	2.5	1.0	2.5	2.5	4.0	8.0	16.0	23.0	24.5	23.5
4	19.5	10.5	2.5	1.0	2.0	2.5	4.0	8.0	17.0	22.5	24.5	23.5
5	19.0	10.5	2.0	1.0	2.0	2.5	3.5	9.5	17.5	22.0	25.5	23.5
6	19.0	10.5	2.0	1.0	2.5	2.5	3.0	8.0	18.0	22.0	25.0	23.5
7	18.5	10.0	1.5	1.0	2.5	2.5	3.5	9.0	17.5	23.0	24.5	23.5
8	18.5	9.5	1.5	1.0	2.5	2.5	4.0	8.0	18.0	23.5	25.0	23.5
9	18.5	9.5	1.0	1.0	2.0	2.5	4.0	8.0	17.0	22.0	25.0	23.0
10	18.0	9.5	1.0	1.0	2.5	2.5	4.5	8.0	18.0	22.5	25.5	23.0
11	18.0	9.0	1.0	1.0	2.5	2.5	4.5	7.5	19.0	23.5	24.5	23.0
12	18.0	9.0	1.0	1.0	2.5	2.5	4.5	8.5	18.5	23.0	25.0	23.0
13	17.5	8.0	1.0	1.0	2.0	2.5	4.5	9.0	18.0	23.5	25.0	23.0
14	17.0	8.0	1.5	1.0	2.0	2.5	4.5	9.0	18.0	23.5	24.5	23.0
15	17.0	7.5	1.0	1.0	2.0	2.5	4.5	9.0	17.0	23.0	24.5	22.5
16	16.0	7.0	1.0	1.0	2.0	2.5	4.5	10.0	18.0	23.5	24.5	22.5
17	16.0	7.0	1.0	1.0	2.5	2.5	4.5	10.5	19.0	23.5	24.5	22.0
18	15.5	7.0	1.0	1.0	2.5	2.5	4.5	10.5	20.0	23.5	24.0	22.0
19	15.0	7.0	1.0	1.0	2.5	2.5	4.5	11.0	19.0	24.0	24.5	22.0
20	15.0	7.0	1.0	1.0	2.5	2.5	5.0	11.5	20.0	24.5	24.5	22.0
21	14.5	6.0	1.5	1.0	2.5	2.5	5.5	12.0	19.5	24.0	24.0	22.0
22	14.5	6.0	1.0	1.0	2.5	2.5	6.0	12.0	20.5	24.5	24.5	22.0
23	14.0	6.0	1.0	1.0	2.5	2.5	6.5	12.0	20.0	24.0	24.0	21.5
24	13.5	6.0	1.0	1.0	2.5	2.5	7.5	12.5	20.5	24.5	23.5	21.5
25	13.0	5.5	1.0	1.0	2.5	2.5	8.0	12.5	21.0	24.5	24.5	21.5
26	12.5	5.5	1.5	1.5	2.5	2.5	8.0	12.5	20.5	24.5	24.5	21.0
27	13.0	5.0	1.0	1.0	2.5	2.5	8.5	12.5	20.0	24.5	24.0	21.0
28	12.0	4.5	1.0	1.5	2.5	2.5	8.5	14.0	22.0	24.5	23.5	21.0
29	12.0	4.0	1.0	1.5	---	3.0	8.5	14.0	22.5	24.5	23.5	21.0
30	12.0	4.0	1.0	2.0	---	3.0	8.5	14.5	22.5	25.0	24.0	20.5
31	11.5	---	1.0	2.0	---	3.0	---	15.5	---	25.5	24.0	---

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	9.3	10.0	11.1	11.9	12.3	11.5	11.1	10.3	7.8	6.8	7.0
2	8.1	9.4	10.1	11.1	11.9	12.1	11.5	11.1	10.1	7.7	6.8	7.0
3	8.1	9.3	10.1	11.1	12.2	12.0	11.5	11.1	10.0	7.4	6.8	7.0
4	8.0	9.4	10.1	11.3	12.2	12.0	11.5	11.1	9.9	7.3	6.8	7.2
5	8.1	9.4	10.2	11.4	12.4	12.0	11.6	11.0	9.9	7.2	6.8	7.2
6	8.2	9.4	10.2	11.3	12.4	12.0	11.5	10.9	9.5	7.1	6.7	7.2
7	8.1	9.4	10.2	11.3	12.6	12.1	11.5	11.0	9.5	7.0	6.8	7.2
8	8.1	9.4	10.2	11.4	12.8	12.0	11.5	10.9	9.5	7.1	6.7	7.3
9	8.1	9.5	10.4	11.4	12.8	12.1	11.4	10.7	9.2	7.0	6.8	7.4
10	8.1	9.5	10.3	11.5	12.7	12.0	11.4	10.9	9.0	7.0	6.9	7.6
11	8.1	9.5	10.3	11.5	12.7	12.1	11.3	10.6	8.9	6.9	6.9	7.6
12	8.1	9.6	10.4	11.6	12.7	11.9	11.3	10.8	9.4	7.0	6.9	7.7
13	8.1	9.6	10.5	11.6	12.8	12.0	11.4	10.9	9.1	7.0	7.0	7.8
14	8.1	9.6	10.7	11.6	12.7	11.9	11.4	10.8	9.1	7.0	6.9	7.9
15	8.3	9.6	10.8	11.6	12.8	11.9	11.3	10.6	9.1	6.9	6.9	8.0
16	8.4	9.6	10.8	11.7	12.8	11.9	11.2	10.5	8.8	6.9	6.9	8.0
17	8.6	9.6	11.0	11.8	12.7	11.9	11.5	10.4	8.8	6.9	6.9	8.1
18	8.7	9.7	10.9	11.8	12.7	11.9	11.3	10.4	8.9	6.9	7.0	8.3
19	8.8	9.7	10.9	11.8	12.5	11.9	11.3	10.3	8.8	6.9	6.9	8.3
20	8.9	9.7	11.0	11.8	12.5	11.9	11.5	10.5	8.7	6.9	6.9	8.2
21	9.0	9.7	11.0	11.9	12.7	11.9	11.5	10.4	8.7	6.8	7.0	8.3
22	9.0	9.8	11.2	11.9	12.4	11.7	11.4	10.4	8.7	6.9	7.0	8.1
23	9.0	9.8	11.3	12.0	12.4	11.6	11.4	10.4	8.7	6.9	6.9	8.3
24	9.1	9.8	11.3	12.1	12.4	11.7	11.4	10.4	8.6	6.9	7.0	8.3
25	9.1	9.8	11.3	12.1	12.4	11.8	11.4	10.7	8.4	6.9	7.1	8.4
26	9.2	9.8	11.4	12.2	12.3	11.7	11.4	10.8	8.3	6.9	7.1	8.2
27	9.2	9.9	11.4	12.2	12.3	11.7	11.4	10.8	8.2	6.8	7.1	8.1
28	9.2	9.9	11.4	12.1	12.4	11.6	11.3	10.7	8.1	6.9	7.1	8.1
29	9.3	10.0	11.4	12.0	---	11.4	11.1	10.6	8.1	6.9	7.1	8.0
30	9.3	10.0	11.5	12.0	---	11.4	11.1	10.3	7.9	6.8	7.1	8.0
31	9.3	---	11.6	11.9	---	11.4	---	10.3	---	6.9	7.1	---

## MISSOURI RIVER MAIN STEM

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 26,76 1400	NOV 17,76 0800	DEC 14,76 1300	FEB 24,77 1400
TOTAL CELLS/ML	72	780	310	2600
DIVERSITY: DIVISION	1.5	0.2	0.2	0.0
..CLASS	1.5	0.2	0.2	0.5
..ORDER	1.5	0.7	0.3	0.5
...FAMILY	1.5	0.7	0.3	0.6
....GENUS	1.5	0.7	0.3	0.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-
...PHACOTACEAE								
....PHACOTUS	--	-	25	3	--	-	--	-
...ZYGNEMATALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	-	--	-	--	-	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....COSCINODISCUS	--	-	70	9	--	-	--	-
....CYCLOTELLA	32#	44	4	1	--	-	26	1
....STEPHANODISCUS	--	-	--	-	2	1	--	-
...PENNALES								
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	670#	87	290#	96	2400#	89
....SYNEDRA	--	-	--	-	--	-	*	0
...NAVICULACEAE								
....NAVICULA	--	-	--	-	--	-	--	-
....NEIDIUM	--	-	--	-	--	-	--	-
...NITZSCHACEAE								
....NITZSCHIA	--	-	--	-	--	-	*	0
..CHRYSTOPHYCEAE								
...CHRYSOMONADALES								
...OCHROMONADACEAE								
....DINOBYRON	--	-	--	-	--	-	230	9
....OCHROMONAS	--	-	--	-	--	-	--	-

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 26,76 1400	NOV 17,76 0800	DEC 14,76 1300	FEB 24,77 1400				
TOTAL CELLS/ML	72	780	310	2600				
DIVERSITY: DIVISION	1.5	0.2	0.2	0.0				
..CLASS	1.5	0.2	0.2	0.5				
..ORDER	1.5	0.7	0.3	0.5				
...FAMILY	1.5	0.7	0.3	0.6				
....GENUS	1.5	0.7	0.3	0.6				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCCOCCALES								
....CHROCCOCCAEAE								
.....ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
....OSCILLATORIAEAE								
.....LYNGBYA	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-
...RIVULARIAEAE								
....RAPIDIOPSIS	20#	28	--	-	--	-	--	-
...CHROCCOCCALES								
....CHROCCOCCAEAE								
.....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
....CRYPTOCHRYSIDACEAE								
.....CHROOMONAS	--	-	--	-	9	3	--	-
....CRYPTOMONODACEAE								
.....CRYPTOMONAS	--	-	4	1	--	-	--	-
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....TRACHELOMONAS	20#	28	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
....GYMNODINIACEAE								
.....GYMNODINIUM	--	-	--	-	--	-	*	0
...PERIDINIALES								
....GLENODINIACEAE								
.....GLENODINIUM	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%



## MISSOURI RIVER MAIN STEM

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 19,77 1500	JUN 28,77 1400	JUL 19,77 1500	AUG 29,77 1500				
TOTAL CELLS/ML	310	740	110	1300				
DIVERSITY: DIVISION	0.4	1.2	1.0	1.4				
..CLASS	1.2	1.2	1.0	1.4				
...ORDER	1.2	1.2	1.2	1.7				
...FAMILY	1.4	1.2	1.4	1.7				
....GENUS	1.6	1.2	1.4	2.2				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	5	4	12	1
....OOCYSTIS	--	-	530#	72	--	-	47	3
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	--	-	160	12
...PHACOTACEAE								
....PHACOTUS	--	-	--	-	75#	70	--	-
..ZYGNEATALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	-	--	-	--	-	12	1
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINODISCACEAE								
....COSCINODISCUS	--	-	--	-	--	-	--	-
....CYCLOTELLA	--	-	23	3	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-
...PENNALES								
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	--	-	*	0
...DIATOMACEAE								
....DIATOMA	5	1	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	210#	65	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	5	1	--	-	5	4	--	-
....NEIDIUM	--	-	--	-	--	-	12	1
...NITZSCHACEAE								
....NITZSCHIA	2	1	--	-	--	-	*	0
..CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
...OCHROMONADACEAE								
....DINOBYRON	18	6	--	-	--	-	--	-
....OCHROMONAS	55#	18	--	-	--	-	--	-

06453000 MISSOURI RIVER AT FORT RANDALL DAM, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 19,77 1500	JUN 28,77 1400	JUL 19,77 1500	AUG 29,77 1500				
TOTAL CELLS/ML	310	740	110	1300				
DIVERSITY: DIVISION	0.4	1.2	1.0	1.4				
..CLASS	1.2	1.2	1.0	1.4				
...ORDER	1.2	1.2	1.2	1.7				
....FAMILY	1.4	1.2	1.4	1.7				
....GENUS	1.6	1.2	1.4	2.2				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCCOCCALES								
....CHROCCOCCAEAE								
.....ANACYSTIS	--	-	120#	16	--	-	660#	49
...HORMOGONALES								
....OSCILLATORIAEAE								
.....LYNGBYA	--	-	--	-	--	-	*	0
....OSCILLATORIA	21	7	--	-	--	-	--	-
...RIVULARIAEAE								
....RAPIDIOPSIS	--	-	--	-	--	-	--	-
..CHROCCOCCALES								
...CHROCCOCCAEAE								
....GOMPHOSPHAERIA	--	-	--	-	--	-	170	13
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
....CRYPTOCHRYSIDAEAE								
.....CHROOMONAS	--	-	69	9	14	13	*	0
...CRYPTOMONODACEAE								
....CRYPTOMONAS	--	-	--	-	9	9	--	-
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....TRACHELOMONAS	--	-	--	-	--	-	240#	18
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
....GYMNODINIAEAE								
.....GYMNODINIUM	--	-	--	-	--	-	--	-
...PERIDINIALES								
....GLENODINIAEAE								
.....GLENODINIUM	2	1	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%



## 06467000 LEWIS AND CLARK LAKE NEAR YANKTON, SD

LOCATION.--Lat 42°50'56", long 97°28'54", in SW¼ sec.7, T.33 N., R.1 W., Cedar County, NE, Hydrologic Unit 10170101, in powerhouse of Gavins Point Dam on Missouri River, 3.75 mi (6.0 km) southwest of Yankton, 13.6 mi (21.9 km) upstream from James River, 32.5 mi (52.3 km) downstream from Niobrara River, and at mile 811.0 (1,304.9 km).

DRAINAGE AREA.--279,500 mi<sup>2</sup> (723,900 km<sup>2</sup>), 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 at mean 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, 541,000 acre-ft (667 hm<sup>3</sup>) below elevation 1,210.0 ft (368.81 m), top of spillway gates. Normal maximum, 477,000 acre-ft (588 hm<sup>3</sup>) below elevation 1,208.0 ft (368.20 m). Inactive storage, 156,000 acre-ft (192 hm<sup>3</sup>) below elevation 1,195.0 ft (364.24 m). Dead storage, 18,000 acre-ft (22.2 hm<sup>3</sup>) below elevation 1,180.0 ft (359.66 m) crest of spillway. Figures given herein represent elevations at powerhouse and total contents adjusted for wind effect.

The spillway consists of 14 taintor gates, each 40 ft (12.2 m) wide by 30 ft (9.1 m) high; spillway capacity, 280,000 ft<sup>3</sup>/s (7,930 m<sup>3</sup>/s) at pool elevation 1,210.0 ft (368.81 m). Crest of spillway is at elevation 1,180.0 ft (359.66 m). Normal releases are through 3 power units, installation completed in January 1957; maximum release through power units is 35,000 ft<sup>3</sup>/s (991 m<sup>3</sup>/s) at pool elevation, 1,210.0 ft (368.81 m). Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevations and contents furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 565,000 acre-ft (697 hm<sup>3</sup>) Apr. 1, 1960, elevation, 1,210.7 ft (369.02 m), affected by wind; minimum since initial filling, 61,950 acre-ft (76.4 hm<sup>3</sup>) Apr. 23, 1956, elevation, 1,188.1 ft (362.13 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 479,000 acre-ft (591 hm<sup>3</sup>) Dec. 28, elevation, 1,208.8 ft (368.44 m); minimum, 364,000 acre-ft (449 hm<sup>3</sup>) May 17, elevation, 1,204.7 ft (367.19 m).

## MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 . . . . .	1208.2	462000	
Oct. 31 . . . . .	1208.1	461000	-1000
Nov. 30 . . . . .	1207.5	440000	-21000
Dec. 31 . . . . .	1207.6	441000	+1000
CAL YR 1976 . . . . .			-25000
Jan. 31 . . . . .	1207.7	447000	+6000
Feb. 28 . . . . .	1205.3	380000	-67000
Mar. 31 . . . . .	1205.7	396000	+16000
Apr. 30 . . . . .	1205.6	386000	-10000
May 31 . . . . .	1205.6	389000	+3000
June 30 . . . . .	1207.4	436000	+47000
July 31 . . . . .	1207.2	430000	-6000
Aug. 31 . . . . .	1208.1	457000	+27000
Sept. 30 . . . . .	1208.2	463000	+6000
WTR YR 1977 . . . . .			+1000

NOTE.--Reservoir frozen over Dec. 3 to Mar. 26.

## MISSOURI RIVER MAIN STEM

06467500 MISSOURI RIVER AT YANKTON, SD

LOCATION.--Lat 42°51'58", long 97°23'37", in SW¼SW¼ sec.18, T.93 N., R.55 W., Yankton County, Hydrologic Unit 10170101, near left bank in downstream end of left pier of Meridian Highway Bridge on U.S. Highway 81, 5.2 mi (8.4 km) downstream from Gavins Point Dam, 6.0 mi (9.7 km) upstream from James River, and at mile 805.8 (1,296.5 km).

DRAINAGE AREA.--279,500 mi<sup>2</sup> (723,900 km<sup>2</sup>), 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 date (except winter months prior to 1932), are contained in reports of the U.S. Weather Bureau.

GAGE.--Water-stage recorder. Datum of gage is 1,139.68 ft (347.374 m) above mean 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 (6.096 m) higher.

REMARKS.--Records good. Flow completely regulated by Lewis and Clark Lake 5.2 mi (8.4 km) upstream since July 1955 (see station 06467000). Many diversions for irrigation and water supply above station. Corps of Engineers gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--47 years, 26,090 ft<sup>3</sup>/s (738.9 m<sup>3</sup>/s), 18,900,000 acre-ft/yr (23.3 km<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480,000 ft<sup>3</sup>/s (13,600 m<sup>3</sup>/s) Apr. 13, 1952; maximum gage height, 35.5 ft (10.82 m) Apr. 13, 14, 1952 (present datum); minimum daily discharge, 2,700 ft<sup>3</sup>/s (76.5 m<sup>3</sup>/s) Nov. 15, 16, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 50.5 ft (15.39 m) Apr. 5, 1881 (ice jam), present datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 42,000 ft<sup>3</sup>/s (1,190 m<sup>3</sup>/s) Dec. 2, gage height, 19.99 ft (6.093 m); maximum gage height, 20.22 ft (6.163 m) Oct. 1; minimum daily, 14,500 ft<sup>3</sup>/s (411 m<sup>3</sup>/s) Feb. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38400	36000	41500	19200	15000	14700	30100	31600	31500	32900	36700	30900
2	37600	36400	41700	19200	15000	15300	28800	31700	31500	32900	36200	31100
3	37500	36200	39300	19400	15600	14900	28500	31800	31400	33000	36200	31100
4	37300	36200	34700	19900	15700	14800	28600	31700	31400	33000	36500	31000
5	37400	36000	30200	19600	16700	14700	28300	30900	31300	33700	34800	30900
6	36800	36100	26600	18800	16800	14900	29100	30800	31100	34200	33700	31000
7	36700	36200	23600	19400	17100	15000	29800	30800	31500	34100	33600	30800
8	36200	36200	22300	19600	17700	15000	30200	30800	32700	34500	33900	30900
9	35400	36500	20800	19900	18600	14600	30100	30300	33300	33300	32000	31100
10	35700	36800	20600	20000	19600	15400	30600	30200	33500	33800	31000	31200
11	35800	36700	20800	20000	19900	15100	30600	30300	34400	33800	31500	31600
12	35900	37000	20300	20000	19700	14900	30300	31200	34200	33300	32700	30900
13	36200	36700	20300	20300	16000	14900	30100	31900	33000	33400	33800	30500
14	35800	36700	20400	20000	14500	14900	30500	32100	33000	32700	34000	31300
15	36300	36600	19900	20100	14900	14900	30000	32200	33300	33100	34700	32400
16	36200	36900	20100	20300	15000	14900	30000	32600	33000	33500	32200	32000
17	36300	36900	20100	19900	15000	17000	30000	32700	33000	33400	31300	31900
18	36200	37000	20100	20800	14900	20600	30000	33200	31700	33400	32200	31800
19	35800	37200	19900	20300	14900	23700	30000	33300	31200	33900	32600	31600
20	35700	37100	20100	20200	15000	27300	30000	32100	32100	34200	33300	31800
21	35500	37200	20500	19900	15000	28200	29400	32400	32500	34100	33400	31800
22	35600	37200	19400	19900	15100	28100	29500	31200	32600	32700	33100	32400
23	35800	37000	19900	17300	15000	30400	29300	30600	30100	31800	33100	33000
24	35500	37100	19500	15300	14800	30900	30000	30900	29800	32500	33100	32900
25	35700	37100	19500	15000	14900	30100	29700	30900	30000	32500	32200	32800
26	36000	37000	19600	15100	14900	29800	30100	30900	30000	32700	31100	32600
27	35600	37000	19300	15100	14900	30000	30000	31100	31800	33500	31000	32500
28	35600	37000	19200	15000	14900	30100	30600	31000	32100	35100	31100	32700
29	35800	36800	16100	15000	---	28100	31200	31200	31200	35100	32200	32600
30	36200	38000	19400	15000	---	26300	31700	31400	31600	35900	32400	32400
31	36000	---	19600	15000	---	29600	---	31300	---	36700	31000	---
TOTAL	1122500	1102800	715300	574500	447100	649100	897100	975100	959800	1042700	1026600	951500
MEAN	36210	36760	23070	18530	15970	20940	29900	31450	31990	33640	33120	31720
MAX	38400	38000	41700	20800	19900	30900	31700	33300	34400	36700	36700	33000
MIN	35400	36000	16100	15000	14500	14600	28300	30200	29800	31800	31000	30500
AC-FT	2226000	2187000	1419000	1140000	886800	1287000	1779000	1934000	1904000	2068000	2036000	1887000
CAL YR 1976	TOTAL	12252100	MEAN	33480	MAX	41700	MIN	16100	AC-FT	24300000		
WTR YR 1977	TOTAL	10464100	MEAN	28670	MAX	41700	MIN	14500	AC-FT	20760000		



## JAMES RIVER BASIN

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06471000 JAMES RIVER AT COLUMBIA, SD

LOCATION.--Lat 45°37'05", long 98°19'30", in NE&NW¼ sec.29, T.125 N., R.62 W., Brown County, Hydrologic Unit 10160003, on left bank 10 ft (3 m) downstream from highway bridge, 0.8 mi (1.3 km) northwest of Columbia, 2.4 mi (3.9 km) upstream from Chicago and North Western Transportation Company bridge, 3.6 mi (5.8 km) upstream from Elm River, and 9.4 mi (15.1 km) downstream from Columbia Road Dam.

DRAINAGE AREA.--7,050 mi<sup>2</sup> (18,300 km<sup>2</sup>), approximately, of which about 3,000 mi<sup>2</sup> (7,770 km<sup>2</sup>) is probably noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,275.01 ft (388.623 m) above mean sea level. Prior to Oct. 5, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 168 mi (270 km) upstream since May 1953.

AVERAGE DISCHARGE.--32 years, 104 ft<sup>3</sup>/s (2.945 m<sup>3</sup>/s), 75,350 acre-ft/yr (92.9 hm<sup>3</sup>/yr); median of yearly mean discharges, 57 ft<sup>3</sup>/s (1.61 m<sup>3</sup>/s), 41,300 acre-ft/yr (51 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,420 ft<sup>3</sup>/s (153 m<sup>3</sup>/s) May 24, 25, 1950, gage height, 16.89 ft (5.148 m), from graph based on gage readings; maximum gage height, 17.09 ft (5.209 m) Apr. 22, 1969; maximum daily reverse flow, 1,860 ft<sup>3</sup>/s (52.7 m<sup>3</sup>/s) Apr. 8, 1952, backwater from Elm River.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12 ft<sup>3</sup>/s (0.34 m<sup>3</sup>/s) Mar. 18, gage height, 5.21 ft (1.588 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	2.1	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	3.2	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	1.3	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.52	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	2.6	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	3.7	.02	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	1.7	.09	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	1.4	.04	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	1.2	.04	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	1.3	.04	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	1.2	.04	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.52	.04	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.31	.02	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.95	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.31	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	22.42	.42	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.72	.014	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	3.7	.09	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	44	.8	.00	.00	.00	.00	.00
CAL YR 1976 TOTAL	23381.47			MEAN 63.9	MAX	334	MIN .00	AC-FT 46380				
WTR YR 1977 TOTAL	22.84			MEAN .063	MAX	3.7	MIN .00	AC-FT 45				

## JAMES RIVER BASIN

06471000 JAMES RIVER AT COLUMBIA, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-64, 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

WATER TEMPERATURES: October 1966 to current year.

REMARKS.--No flow Oct. 1 to Mar. 12, Apr. 2-19, Apr. 27 to Sept. 30.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,500 micromhos Mar. 1, 1974; minimum daily, 240 micromhos Mar. 17, 1972.

WATER TEMPERATURES: Maximum daily, 32.0°C June 29, July 10, 1970; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,100 micromhos Apr. 25, 26; minimum daily, 460 micromhos Mar. 13.

WATER TEMPERATURES: Maximum daily, 15.0°C Apr. 23; minimum daily, 1.0°C Mar. 17, 21, 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
MAR 31...	1315	.38	610	8.0	3.5	240	150	60	21
APR 21...	0920	.15	1080	9.1	9.0	340	260	75	36

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	680					
2						---	---					
3						---	---					
4						---	---					
5						---	---					
6						---	---					
7						---	---					
8						---	---					
9						---	---					
10						---	---					
11						---	---					
12						---	---					
13						460	---					
14						470	---					
15						550	---					
16						610	---					
17						550	---					
18						770	---					
19						760	---					
20						790	970					
21						740	1000					
22						700	1030					
23						690	1090					
24						760	1090					
25						690	1100					
26						700	1100					
27						720	---					
28						720	---					
29						720	---					
30						690	---					
31						680	---					

## JAMES RIVER BASIN

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06471000 JAMES RIVER AT COLUMBIA, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CAC03 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
MAR 31...	37	24	1.0	15	103	0	84	210	28
APR 21...	71	30	1.7	19	88	4	79	350	39

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED BORON (B) (UG/L) (01020)
MAR 31...	.1	11	441	.60	.45	1.7	.57	.46	190
APR 21...	.3	9.7	648	.88	.27	.06	.12	.08	240

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	5.0					
2						---	---					
3						---	---					
4						---	---					
5						---	---					
6						---	---					
7						---	---					
8						---	---					
9						---	---					
10						---	---					
11						---	---					
12						---	---					
13						7.0	---					
14						8.0	---					
15						4.0	---					
16						7.0	---					
17						1.0	---					
18						7.0	---					
19						5.0	---					
20						3.0	14.0					
21						1.0	9.0					
22						2.0	13.0					
23						1.0	15.0					
24						5.0	12.0					
25						8.0	10.0					
26						7.0	14.0					
27						8.0	---					
28						7.0	---					
29						8.0	---					
30						4.0	---					
31						3.5	---					

## JAMES RIVER BASIN

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼SE¼ sec.33, T.129 N., R.62 W., Dickey County, ND, Hydrologic Unit 10160004, on left bank 0.4 mi (0.6 km) upstream from State line, 7.8 mi (12.6 km) northeast of Frederick, SD, and 15.7 mi (25.3 km) upstream from mouth.

DRAINAGE AREA.--750 mi<sup>2</sup> (1,940 km<sup>2</sup>), approximately, of which about 270 mi<sup>2</sup> (699 km<sup>2</sup>) is probably noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,365 ft (416 m), from topographic map. Prior to June 14, 1962, nonrecording gage at site 0.4 mi (0.6 km) downstream at datum 0.94 ft (0.287 m) lower.

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

AVERAGE DISCHARGE.--21 years, 18.1 ft<sup>3</sup>/s (0.513 m<sup>3</sup>/s), 13,110 acre-ft/yr (16.2 hm<sup>3</sup>/yr); median of yearly mean discharges, 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s), 7,240 acre-ft/yr (8.9 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft<sup>3</sup>/s (168 m<sup>3</sup>/s) Apr. 11, 1969; maximum gage height, 16.05 ft (4.892 m) Apr. 11, 1969 (backwater from ice); no flow for long periods in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft<sup>3</sup>/s (1.05 m<sup>3</sup>/s) Mar. 13, gage height, 4.30 ft (1.311 m); maximum gage height, 5.10 ft (1.554 m) Mar. 20 (backwater from ice), no peak above base of 50 ft<sup>3</sup>/s (1.42 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	6.1	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	6.7	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	5.1	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	5.3	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	3.3	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	2.1	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	1.4	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	1.6	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	1.4	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.99	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	13	.82	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	19	.67	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	5.6	.67	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	1.3	.60	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.67	.47	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.37	.47	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.25	.29	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	1.0	.25	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	10	.19	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	20	.05	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	25	.09	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	22	.06	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	20	.04	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	17	.02	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	13	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	11	.02	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	10	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	9.9	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	6.4	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	205.49	45.70	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	6.63	1.52	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	25	6.7	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	408	91	.00	.00	.00	.00	.00
CAL YR 1976 TOTAL	3387.43			MEAN 9.26	MAX 458	MIN .00	AC-FT 6720					
WTR YR 1977 TOTAL	251.19			MEAN .69	MAX 25	MIN .00	AC-FT 498					

## 06471500 ELM RIVER AT WESTPORT, SD

LOCATION.--Lat 45°39'22", long 98°29'48", in SW¼NW¼ sec.12, T.12S N., R.64 W., Brown County, Hydrologic Unit 10160004, on right bank 12 ft (3.7 m) downstream from highway bridge, 0.5 mi (0.8 km) north of Westport, 0.7 mi (1.1 km) upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, 9.3 mi (15.0 km) downstream from Willow Creek, and 30.4 mi (48.9 km) upstream from mouth.

DRAINAGE AREA.--1,680 mi<sup>2</sup> (4,350 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,309.3 ft (399.07 m) above mean sea level. Prior to Aug. 6, 1951, and Apr. 8 to Sept. 9, 1952, nonrecording gage 12 ft (3.7 m) upstream at same datum. Aug. 6, 1951, to Apr. 7, 1952, water-stage recorder at present site and datum.

REMARKS.--Records good. Flow regulated for Aberdeen municipal water supply by Elm Lake and other small reservoirs upstream, combined capacity, about 16,000 acre-ft (19.7 hm<sup>3</sup>). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 45.1 ft<sup>3</sup>/s (1.277 m<sup>3</sup>/s), 32,670 acre-ft/yr (40.3 hm<sup>3</sup>/yr); median of yearly mean discharges, 22 ft<sup>3</sup>/s (0.62 m<sup>3</sup>/s), 15,900 acre-ft/yr (20 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft<sup>3</sup>/s (357 m<sup>3</sup>/s) Apr. 10, 1969, gage height, 22.11 ft (6.739 m); no flow for many days in most years prior to 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 67 ft<sup>3</sup>/s (1.90 m<sup>3</sup>/s) Mar. 17, gage height, 4.96 ft (1.512 m); no peak above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s); minimum daily, 0.20 ft<sup>3</sup>/s (0.006 m<sup>3</sup>/s) Oct. 17.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Dec. 3-9, Jan. 2, 3, 5-7, 14-16, 28-30)

4.0	0.10	4.4	5.8	4.8	31
4.1	.70	4.5	9.7	5.1	62
4.2	1.6	4.6	15	5.5	120
4.3	3.2				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	8.5	5.8	4.3	3.4	6.5	6.3	5.4	2.5	6.8	9.1	4.9
2	2.2	7.3	4.6	4.3	3.0	6.9	3.8	5.6	2.1	6.7	16	5.5
3	2.1	4.3	4.6	4.3	3.4	6.9	3.3	6.7	1.9	6.9	19	5.5
4	1.9	3.0	4.6	4.3	3.8	6.5	2.8	6.8	1.5	7.9	16	5.8
5	1.6	4.0	4.6	4.3	3.8	6.5	2.4	5.4	1.4	8.3	7.8	5.5
6	1.5	3.8	4.4	4.4	3.8	6.9	2.6	5.0	1.1	7.5	3.1	5.2
7	1.4	3.8	4.4	4.3	3.8	7.3	2.7	5.5	.96	7.3	2.6	4.9
8	1.3	3.6	4.6	4.3	4.1	7.7	2.8	5.1	.88	9.4	2.1	4.3
9	1.1	3.6	4.6	3.6	4.1	7.3	2.9	4.7	.93	11	1.6	3.4
10	.92	3.6	4.6	3.6	4.3	7.7	2.6	6.5	1.0	11	1.2	3.2
11	.77	3.6	4.6	3.8	4.3	8.1	2.1	3.1	1.9	11	.85	2.8
12	.70	3.6	4.9	3.8	4.3	9.3	2.3	2.1	1.7	11	.59	2.3
13	.56	3.6	4.9	3.8	4.6	11	2.2	1.7	2.0	11	.41	2.3
14	.56	3.6	4.9	3.8	4.6	13	2.1	1.5	3.7	9.7	.38	2.5
15	.37	3.6	4.6	3.8	4.6	16	1.8	1.3	4.4	9.8	1.3	2.8
16	.25	3.6	4.6	4.0	4.6	14	1.5	1.5	4.5	11	1.6	2.8
17	.20	3.4	4.6	4.3	4.6	37	1.4	4.6	4.5	11	7.5	2.5
18	.37	3.8	4.9	4.1	4.6	41	2.9	3.6	3.8	10	15	2.7
19	.49	4.6	4.6	4.6	4.9	20	3.5	2.1	3.7	9.3	18	1.9
20	.49	4.9	5.2	4.3	5.2	13	3.5	1.6	3.6	9.1	19	1.7
21	.63	4.3	4.9	4.6	5.5	8.8	3.2	1.4	3.7	9.1	19	2.7
22	1.1	4.1	5.2	4.1	5.2	6.4	2.7	2.5	5.2	8.8	19	3.8
23	2.0	4.3	4.9	4.3	5.8	21	2.3	2.6	6.1	9.0	18	5.8
24	22	4.3	5.5	4.3	6.5	43	1.8	2.7	6.2	9.2	14	5.5
25	21	5.2	5.5	4.3	6.9	40	1.3	7.6	5.5	9.4	15	5.8
26	21	4.3	5.5	4.3	6.9	46	1.1	5.4	5.4	9.2	16	6.2
27	20	5.2	5.5	4.3	6.9	25	1.5	4.0	5.6	8.7	16	6.5
28	20	4.9	5.8	3.5	6.9	13	6.2	3.3	5.4	8.9	13	6.2
29	21	4.9	4.9	3.0	---	13	6.4	2.6	5.5	10	11	6.5
30	21	4.9	4.3	3.0	---	13	5.9	2.6	6.3	11	7.7	7.3
31	15	---	4.3	3.0	---	11	---	3.2	---	8.4	4.9	---
TOTAL	186.11	130.2	150.9	124.7	134.4	492.8	87.9	117.7	102.97	287.4	296.73	128.8
MEAN	6.00	4.34	4.87	4.02	4.80	15.9	2.93	3.80	3.43	9.27	9.57	4.29
MAX	22	8.5	5.8	4.6	6.9	46	6.4	7.6	6.3	11	19	7.3
MIN	.20	3.0	4.3	3.0	3.0	6.4	1.1	1.3	.88	6.7	.38	1.7
AC-FT	369	258	299	247	267	977	174	233	204	570	589	255

CAL YR 1976 TOTAL 7390.81 MEAN 20.2 MAX 441 MIN .20 AC-FT 14660  
WTR YR 1977 TOTAL 2240.61 MEAN 6.14 MAX 46 MIN .20 AC-FT 4440



## JAMES RIVER BASIN

06472000 JAMES RIVER NEAR STRATFORD, SD

LOCATION.--Lat 45°15'30", long 98°23'28", in NE¼NE¼NE¼ sec.3, T.120 N., R.63 W., Spink County, Hydrologic Unit 10160003, on right bank 30 ft (9 m) downstream from highway bridge, 6.7 mi (10.8 km) southwest of Stratford and 9.0 mi (14.5 km) upstream from Mud Creek.

DRAINAGE AREA.--9,990 mi<sup>2</sup> (25,900 km<sup>2</sup>), approximately, of which about 3,920 mi<sup>2</sup> (10,200 km<sup>2</sup>) is probably non-contributing.

PERIOD OF RECORD.--March 1950 to September 1972, October 1976 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,254.29 ft (382.308 m) above mean sea level. Prior to May 17, 1950, nonrecording gage at site 20.9 mi (33.6 km) upstream at different datum. May 17, 1950, to Aug. 5, 1951, nonrecording gage at site 60 ft (18 m) upstream at present datum.

REMARKS.--Records fair. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 285 mi (459 km) upstream since May 1953. Occasional backwater from Mud Creek. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--23 years, 124 ft<sup>3</sup>/s (3.512 m<sup>3</sup>/s), 89,840 acre-ft/yr (111 hm<sup>3</sup>/yr); median of yearly mean discharges, 80 ft<sup>3</sup>/s (2.27 m<sup>3</sup>/s), 58,000 acre-ft/yr (72 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,580 ft<sup>3</sup>/s (158 m<sup>3</sup>/s) May 14 or 15, 1950, estimated on basis of records at site 20.9 mi (33.6 km) upstream; maximum gage height, 18.18 ft (5.541 m) Apr. 19, 1969 (backwater from Mud Creek); no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 29 ft<sup>3</sup>/s (0.82 m<sup>3</sup>/s) Apr. 10-13; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	20	2.4	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	23	2.2	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	25	2.9	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	26	3.5	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	25	3.7	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	25	3.6	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	25	3.5	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	27	3.4	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	28	3.2	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	29	2.9	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	29	2.3	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	3.5	29	1.8	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	7.1	29	1.4	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	8.7	27	.95	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	6.8	26	.58	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	5.2	24	.26	.24	.00	.00	.00
17	.00	.00	.00	.00	.00	4.1	23	.17	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	2.9	21	.13	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	1.8	20	.06	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	1.8	19	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	1.9	17	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	1.6	14	.03	.04	.00	.00	.00
23	.00	.00	.00	.00	.00	1.3	12	.04	.11	.00	.00	.00
24	.00	.00	.00	.00	.00	1.1	9.8	.04	.05	.00	.00	.00
25	.00	.00	.00	.00	.00	1.1	8.5	.00	.01	.00	.00	.00
26	.00	.00	.00	.00	.00	1.1	7.4	.05	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	1.1	6.4	.11	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	2.3	5.3	.06	.00	.00	.00	.00
29	.00	.00	.00	.00	---	4.3	4.4	.01	.00	.00	.00	.00
30	.00	.00	.00	.00	---	8.6	3.5	.02	.00	.00	.00	.00
31	.00	---	.00	.00	---	15	---	.03	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	81.30	588.3	39.34	.45	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	2.62	19.6	1.27	.015	.000	.000	.000
MAX	.00	.00	.00	.00	.00	15	29	3.7	.24	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	161	1170	78	.9	.00	.00	.00

WTR YR 1977 TOTAL 709.39 MEAN 1.94 MAX 29 MIN .00 AC-FT 1410

06472500 MUD CREEK NEAR STRATFORD, SD

LOCATION.--Lat 45°16'13", long 98°17'16", in NW¼NW¼NW¼ sec.27, T.121 N., R.62 W., Brown County, Hydrologic Unit 10160005, near right bank at downstream side of highway bridge, 3.3 mi (5.3 km) south of Stratford and 14.7 mi (23.7 km) upstream from mouth.

DRAINAGE AREA.--730 mi<sup>2</sup> (1,890 km<sup>2</sup>), approximately, of which about 270 mi<sup>2</sup> (699 km<sup>2</sup>) is probably noncontributing.

PERIOD OF RECORD.--September 1955 to September 1969, October 1976 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,270 ft (387 m) from topographic map. Prior to Oct. 1, 1964, water-stage recorder at site 4.3 mi (6.9 km) downstream at different datum. Oct. 1, 1964, to Aug. 24, 1965, nonrecording gage, Aug. 25, 1965, to Sept. 30, 1969, water-stage recorder, and Oct. 1, 1969, to Sept. 30, 1976, crest-stage gage, all at present site and datum.

REMARKS.--Records fair. One observation of water temperature and specific conductance was made during the year.

AVERAGE DISCHARGE.--15 years (water years 1956-69, 1977), 9.34 ft<sup>3</sup>/s (0.264 m<sup>3</sup>/s), 6,770 acre-ft/yr (8.35 hm<sup>3</sup>/yr); median of yearly mean discharges, 2.0 ft<sup>3</sup>/s (0.06 m<sup>3</sup>/s), 1,400 acre-ft/yr (1.7 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft<sup>3</sup>/s (33.4 m<sup>3</sup>/s) Apr. 10, 1969, gage height, 7.92 ft (2.414 m); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.35 ft<sup>3</sup>/s (0.010 m<sup>3</sup>/s) time and date unknown, gage height, 2.30 ft (0.701 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.28	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	.03	1.18	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.001	.039	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.02	.28	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.06	2.3	.00	.00	.00	.00	.00

WTR YR 1977 TOTAL 1.21 MEAN .003 MAX .28 MIN .00 AC-FT 2.4

## JAMES RIVER BASIN

06473000 JAMES RIVER AT ASHTON, SD

LOCATION.--Lat 44°59'54", long 98°28'50", in NW¼NW¼NE¼ 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 (1.4 km) east of Ashton, 6.1 mi (9.8 km) upstream from Snake Creek, and 14.2 mi (22.8 km) upstream from Turtle Creek.

DRAINAGE AREA.--11,000 mi<sup>2</sup> (28,500 km<sup>2</sup>), approximately, of which about 4,190 mi<sup>2</sup> (10,900 km<sup>2</sup>) is probably noncontributing.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1209: 1947.

GAGE.--Water-stage recorder. Datum of gage is 1,244.4 ft (379.29 m) above mean 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 (274 m) upstream all at present datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 285 mi (459 km) upstream since May 1953. Occasional backwater and reverse flow caused by Snake Creek during most years. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--32 years, 150 ft<sup>3</sup>/s (4.248 m<sup>3</sup>/s), 108,700 acre-ft/yr (134 hm<sup>3</sup>/yr); median of yearly mean discharges, 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s), 72,400 acre-ft/yr (89 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,680 ft<sup>3</sup>/s (161 m<sup>3</sup>/s) Apr. 24, 1969, gage height, 20.63 ft (6.288 m); maximum gage height, 21.17 ft (6.453 m) Apr. 13, 1969 (backwater from Snake Creek); maximum daily reverse flow, 2,100 ft<sup>3</sup>/s (59.5 m<sup>3</sup>/s) Apr. 9, 1969 (backwater from Snake Creek).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 98 ft<sup>3</sup>/s (2.775 m<sup>3</sup>/s) Mar. 16; maximum gage height, 5.21 ft (1.588 m) Mar. 16 (backwater from ice); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	3.7	18	1.7	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	3.4	16	1.5	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	2.6	13	1.4	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	1.8	13	1.3	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.75	10	1.1	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.20	12	.89	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	2.0	9.2	.75	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	6.2	5.8	.61	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	8.2	4.0	.47	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	10	1.8	.36	.00	.00	.00
11	.00	.00	.00	.00	.00	5.0	11	2.1	.32	.04	.00	.00
12	.00	.00	.00	.00	.00	20	13	1.4	.20	.12	.00	.00
13	.00	.00	.00	.00	.00	40	14	1.6	.04	.16	.00	.00
14	.00	.00	.00	.00	.00	75	14	1.3	.00	.16	.00	.00
15	.00	.00	.00	.00	.00	95	15	1.0	17	.04	.00	.00
16	.00	.00	.00	.00	.00	96	16	.20	18	.00	.00	.00
17	.00	.00	.00	.00	.00	75	16	1.3	19	.00	.00	.00
18	.00	.00	.00	.00	.00	50	17	2.2	14	.00	.00	.00
19	.00	.00	.00	.00	.00	40	16	2.2	9.4	.00	.00	.00
20	.00	.00	.00	.00	.00	24	17	2.2	4.5	.00	.00	.00
21	.00	.00	.00	.00	.00	19	16	1.7	.96	.00	.00	.00
22	.00	.00	.00	.00	.00	12	15	2.0	.36	.00	.00	.00
23	.00	.00	.00	.00	.00	6.4	16	2.6	5.1	.00	.00	.00
24	.00	.00	.00	.00	.00	5.1	15	2.6	6.1	.00	.00	.00
25	.00	.00	.00	.00	.00	3.7	16	2.6	4.1	.00	.00	.00
26	.00	.00	.00	.00	.00	3.9	18	2.6	2.0	.00	.00	.00
27	.00	.00	.00	.00	.00	3.4	18	2.6	.82	.00	.00	.00
28	.00	.00	.00	.00	.00	2.8	20	2.2	.28	.00	.00	.00
29	.00	.00	.00	.00	---	5.8	19	2.3	.00	.00	.00	.00
30	.00	.00	.00	.00	---	6.5	17	2.4	.00	.00	.00	.00
31	.00	---	.00	.00	---	3.7	---	2.6	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	592.30	357.85	144.50	112.26	.52	.00	.00
MEAN	.000	.000	.000	.000	.000	19.1	11.9	4.66	3.74	.017	.000	.000
MAX	.00	.00	.00	.00	.00	96	20	18	19	.16	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.20	.20	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	1170	710	287	223	1.0	.00	.00

CAL YR 1976 TOTAL 27838.89 MEAN 76.1 MAX 392 MIN .00 AC-FT 55220  
WTR YR 1977 TOTAL 1207.43 MEAN 3.31 MAX 96 MIN .00 AC-FT 2390

## 06473750 WOLF CREEK NEAR REE HEIGHTS, SD

LOCATION.--Lat 44°36'25", long 99°13'54", in SW¼SW¼ sec.11, T.113 N., R.70 W., Hand County, Hydrologic Unit 10160009, near right bank on downstream side of highway bridge, 0.3 mi (0.5 km) downstream from small left-bank tributary, 6.5 mi (10.5 km) north of Ree Heights, and 13.8 mi (22.2 km) upstream from Lake Louise dam.

DRAINAGE AREA.--265 mi<sup>2</sup> (686 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--September 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,614.16 ft (491.996 m) above mean sea level.

REMARKS.--Records good. Flow regulated by small reservoir 0.5 mi (0.8 km) upstream, capacity, about 1,100 acre-ft (1.36 hm<sup>3</sup>).

AVERAGE DISCHARGE.--18 years, 3.90 ft<sup>3</sup>/s (0.110 m<sup>3</sup>/s), 2,830 acre-ft/yr (3.49 hm<sup>3</sup>/yr); median of yearly mean discharges, 0.13 ft<sup>3</sup>/s (0.004 m<sup>3</sup>/s), 94 acre-ft/yr (0.12 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 990 ft<sup>3</sup>/s (28.0 m<sup>3</sup>/s) Apr. 5, 1969, gage height, 9.33 ft (2.844 m); maximum gage height, 9.57 ft (2.917 m) Mar. 14, 1966 (backwater from ice); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.14 ft<sup>3</sup>/s (0.004 m<sup>3</sup>/s) Mar. 30, gage height, 4.89 ft (1.490 m), no peak above base of 40 ft<sup>3</sup>/s (1.13 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.04	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.21	.02	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.007	.001	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.09	.02	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.4	.04	.00	.00	.00	.00	.00
CAL YR 1976	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	.00	AC-FT	.00		
WTR YR 1977	TOTAL	0.23	MEAN	.001	MAX	.09	MIN	.00	AC-FT	.5		

## JAMES RIVER BASIN

06474000 TURTLE CREEK NEAR TULARE, SD

LOCATION.--Lat 44°44'06", long 98°35'09", in SE¼SE¼ sec.25, T.115 N., R.65 W., Spink County, Hydrologic Unit 10160009, on left bank at downstream side of highway bridge, 3.9 mi (6.3 km) west of Tulare and 8.9 mi (14.3 km) downstream from Wolf Creek.

DRAINAGE AREA.--1,120 mi<sup>2</sup> (2,900 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--August 1953 to September 1956, September 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft (396 m), by barometer. Prior to Oct. 6, 1965, nonrecording gage at same site and datum.

REMARKS.--Records fair. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--15 years, 12.8 ft<sup>3</sup>/s (0.362 m<sup>3</sup>/s), 9,270 acre-ft/yr (11.4 hm<sup>3</sup>/yr); median of yearly mean discharges, 1.1 ft<sup>3</sup>/s (0.03 m<sup>3</sup>/s), 800 acre-ft/yr (0.99 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 6,000 ft<sup>3</sup>/s (170 m<sup>3</sup>/s) Apr. 5, 1969; maximum gage height, 18.51 ft (5.642 m) Apr. 5, 1969 (backwater from ice); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22 ft<sup>3</sup>/s (0.62 m<sup>3</sup>/s) Mar. 25, gage height, 4.07 ft (1.240 m); maximum gage height, 5.25 ft (1.600 m) Mar. 15 (backwater from ice), no peak above base of 50 ft<sup>3</sup>/s (1.42 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.88	.04	.01	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.59	.03	.01	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.43	.03	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.36	.02	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.33	.02	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.28	.02	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.24	.02	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.22	.01	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.20	.01	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.17	.01	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.15	.01	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.14	.01	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	2.5	.09	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	1.4	.08	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.88	.08	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.85	.09	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.82	.10	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.76	.10	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.68	.10	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.59	.09	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.51	.08	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	13	.07	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	4.2	.07	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	1.7	.06	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	1.4	.05	.01	.00	.00	.00	.00
29	.00	.00	.00	.00	---	3.6	.05	.01	.00	.00	.00	.00
30	.00	.00	.00	.00	---	2.6	.04	.01	.00	.00	.00	.00
31	.00	---	.00	.00	---	1.5	---	.01	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	37.59	5.46	.27	.02	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	1.21	.18	.009	.001	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.13	.88	.04	.01	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.75	.11	.5	.04	.00	.00	.00
CAL YR 1976	TOTAL	11.43	MEAN	.031	MAX	.33	MIN	.00	AC-FT	23		
WTR YR 1977	TOTAL	43.34	MEAN	.12	MAX	13	MIN	.00	AC-FT	86		



## 06474300 MEDICINE CREEK NEAR ZELL, SD

LOCATION.--Lat 44°45'52", long 98°42'13", in NW¼NW¼ sec.19, T.115 N., R.65 W., Spink County, Hydrologic Unit 10160009, on downstream side at center of bridge on State Highway 26, 3.8 mi (6.1 km) upstream from Cottonwood Lake and 9.2 mi (14.8 km) south of Zell.

DRAINAGE AREA.--210 mi<sup>2</sup> (540 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--September 1959 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,320 ft (402 m), from topographic map.

REMARKS.--Records fair. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--18 years, 5.66 ft<sup>3</sup>/s (0.160 m<sup>3</sup>/s), 4,100 acre-ft/yr (5.06 hm<sup>3</sup>/yr); median of yearly mean discharges, 1.7 ft<sup>3</sup>/s (0.05 m<sup>3</sup>/s), 1,200 acre-ft/yr (1.5 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,210 ft<sup>3</sup>/s (62.6 m<sup>3</sup>/s) Apr. 5, 1969, gage height, 12.41 ft (3.783 m); no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 40 ft<sup>3</sup>/s (1.13 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 13	--	*90 2.55	*a7.02 2.140	Mar. 15	1500	67 1.90	6.04 1.841

a Backwater from ice.  
No flow for many days.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Mar. 11-14; shifting-control method  
used Mar. 15 to Apr. 1)

2.32	0	2.6	0.30	3.1	4.1	5.0	46
2.4	.04	2.7	.70	3.5	9.5	6.0	102
2.5	.10	2.8	1.2	4.0	18		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	12	.06	.02	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	9.2	.06	.02	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	12	.06	.01	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	9.4	.06	.02	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	6.7	.05	.02	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	3.7	.03	.02	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	3.1	.03	.02	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	1.8	.04	.02	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	1.4	.04	.02	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	1.0	.02	.02	.00	.00	.00
11	.00	.00	.00	.00	.00	10	.66	.02	.02	.00	.00	.00
12	.00	.00	.00	.00	.00	30	.66	.01	.02	.00	.00	.00
13	.00	.00	.00	.00	.00	50	.46	.00	.02	.00	.00	.00
14	.00	.00	.00	.00	.00	75	.46	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	51	.46	.00	.02	.00	.00	.00
16	.00	.00	.00	.00	.00	33	.46	.00	.01	.00	.00	.00
17	.00	.00	.00	.00	.00	26	.34	.01	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	21	.58	.02	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	17	.42	.02	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	14	.38	.02	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	9.7	.30	.04	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	6.3	.28	.05	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	4.5	.26	.02	.00	.00	.00	.15
24	.00	.00	.00	.00	.00	2.7	.20	.02	.00	.00	.00	.04
25	.00	.00	.00	.00	.00	1.7	.18	.02	.00	.00	.00	.02
26	.00	.00	.00	.00	.00	1.6	.14	.02	.00	.00	.00	.01
27	.00	.00	.00	.00	.00	1.3	.09	.02	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	1.0	.08	.02	.00	.00	.00	.00
29	.00	.00	.00	.00	---	4.1	.08	.01	.00	.00	.00	.00
30	.00	.00	.00	.00	---	11	.08	.02	.00	.00	.00	.02
31	.00	---	.00	.00	---	11	---	.03	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	381.90	66.87	.82	.28	.00	.00	.24
MEAN	.000	.000	.000	.000	.000	12.3	2.23	.026	.009	.000	.000	.008
MAX	.00	.00	.00	.00	.00	75	12	.06	.02	.00	.00	.15
MIN	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	757	133	1.6	.6	.00	.00	.5

CAL YR 1976	TOTAL	48.36	MEAN	.13	MAX	6.5	MIN	.00	AC-FT	96
WTR YR 1977	TOTAL	450.11	MEAN	1.23	MAX	75	MIN	.00	AC-FT	893

06475000 JAMES RIVER NEAR REDFIELD, SD

LOCATION.--Lat 44°55'13", long 98°25'52" in SW¼NW¼ sec.28, T.117 N., R.63 W., Spink County, Hydrologic Unit 10160006, on right bank at downstream side of highway bridge, 5.2 mi (8.4 km) northeast of Redfield and 5.2 mi (8.4 km) downstream from Turtle Creek.

DRAINAGE AREA.--14,800 mi<sup>2</sup> (38,300 km<sup>2</sup>), approximately, of which about 4,600 mi<sup>2</sup> (11,900 km<sup>2</sup>) is probably noncontributing.

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,236.3 ft (376.82 m) above mean sea level. Prior to July 26, 1951, nonrecording gage at same site and datum.

REMARKS.--Records fair. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 303 mi (488 km) upstream since May 1953. Low flow affected by wind at times. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--27 years, 177 ft<sup>3</sup>/s (5.013 m<sup>3</sup>/s), 128,200 acre-ft/yr (158 hm<sup>3</sup>/yr); median of yearly mean discharges, 120 ft<sup>3</sup>/s (3.40 m<sup>3</sup>/s), 86,900 acre-ft/yr (107 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,310 ft<sup>3</sup>/s (207 m<sup>3</sup>/s) Apr. 13, 1969, gage height, 24.93 ft (7.599 m); no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 350 ft<sup>3</sup>/s (9.91 m<sup>3</sup>/s) Mar. 13; maximum gage height, 10.19 ft (3.106 m) Mar. 13 (backwater from ice); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	37	7.2	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	22	8.2	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	28	10	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	18	11	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	14	4.1	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	23	3.6	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	22	3.2	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	30	3.4	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	32	3.7	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	31	3.6	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	21	2.7	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	30	22	1.8	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	200	27	1.6	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	270	36	1.5	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	300	29	2.2	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	305	32	.53	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	280	32	.56	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	250	27	.86	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	220	30	.17	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	200	32	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	180	28	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	160	33	.00	.56	.00	.00	.00
23	.00	.00	.00	.00	.00	131	22	.56	.50	.00	.00	.00
24	.00	.00	.00	.00	.00	124	18	1.6	.12	.00	.00	.00
25	.00	.00	.00	.00	.00	79	17	1.5	.74	.00	.00	.00
26	.00	.00	.00	.00	.00	46	16	1.4	.27	.00	.00	.00
27	.00	.00	.00	.00	.00	41	14	.92	.12	.00	.00	.00
28	.00	.00	.00	.00	.00	33	13	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	39	14	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	28	13	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	44	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	2960.00	733	75.90	2.31	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	95.5	24.4	2.45	.077	.000	.000	.000
MAX	.00	.00	.00	.00	.00	305	37	11	.74	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	13	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	5870	1450	151	4.6	.00	.00	.00
CAL YR 1976	TOTAL	29672.41	MEAN 81.1	MAX 406	MIN .00	AC-FT	58860					
WTR YR 1977	TOTAL	3771.21	MEAN 10.3	MAX 305	MIN .00	AC-FT	7480					

## 06476000 JAMES RIVER AT HURON, SD

LOCATION.--Lat 44°21'49", long 98°11'56", in SW¼SE¼NE¼ sec.6, T.110 N., R.61 W., Beadle County, Hydrologic Unit 10160006, on right bank 15 ft (5 m) upstream from city dam at Huron, 135 ft (41 m) downstream from Chicago and North Western Transportation Co. bridge and 165 ft (50 m) upstream from bridge on business loop U.S. Highway 14.

DRAINAGE AREA.--16,800 mi<sup>2</sup> (43,500 km), approximately, of which about 12,010 mi<sup>2</sup> (31,100 km<sup>2</sup>) probably contributes directly to surface runoff.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to September 1932, August 1943 to current year. Monthly discharge only for some periods, published in WSP 1309. Gage-height records collected at site about 100 ft (30 m) 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 U.S. Weather Bureau.

GAGE.--Water-stage recorder and concrete dam. Datum of gage is 1,223.44 ft (372.905 m) above mean sea level. Aug. 29, 1928, to Mar. 15, 1929, nonrecording gage at site 100 ft (30 m) downstream at about same datum. Mar. 16, 1929, to June 30, 1932, nonrecording gage 165 ft (50 m) downstream at present datum. Aug. 3, 1943, to Oct. 17, 1951, nonrecording gage at site 15 ft (5 m) downstream at present datum.

REMARKS.--Records fair. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 365 mi (587 km) upstream since May 1953. Satellite telemeter at station.

AVERAGE DISCHARGE.--38 years, 225 ft<sup>3</sup>/s (6.372 m<sup>3</sup>/s), 163,000 acre-ft/yr (201 hm<sup>3</sup>/yr); median of yearly mean discharges, 130 ft<sup>3</sup>/s (3.68 m<sup>3</sup>/s), 94,200 acre-ft/yr (120 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,000 ft<sup>3</sup>/s (255 m<sup>3</sup>/s) Apr. 13, 1969, gage height, 16.70 ft (5.090 m); no flow for long periods in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood between Apr. 11 and 13, 1881, reached a stage of 19.8 ft (6.04 m), from U.S. Weather Bureau publication. Flood of Mar. 22, 1922, reached a stage of 16.5 ft (5.03 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,950 ft<sup>3</sup>/s (55.2 m<sup>3</sup>/s) Mar. 14; maximum gage height, 11.93 ft (3.636 m) Mar. 14 (backwater from ice); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	112	21	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	105	6.4	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	100	.42	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	109	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	92	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	79	3.1	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	73	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	51	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	21	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	150	6.5	.00	.00	.00	.00	.00
13	.00	.00	1.3	.00	.00	1850	4.8	.00	.00	.00	.00	.00
14	.00	.00	2.8	.00	.00	1900	3.0	.00	.00	.00	.00	.00
15	.00	.00	1.1	.00	.00	1810	18	.00	.00	.00	.00	.00
16	.00	.00	.45	.00	.00	1400	30	.00	.00	.00	.00	.00
17	.00	.00	.42	.00	.00	1100	26	.00	.00	.00	.00	.00
18	.00	.00	.39	.00	.00	950	51	.00	.00	.00	.00	.00
19	.00	.00	.37	.00	.00	650	40	.00	.00	.00	.00	.00
20	.00	.00	.27	.00	.00	550	51	.00	.00	.00	.00	.00
21	.00	.00	.21	.00	.00	400	44	.00	.00	.00	.00	.00
22	.00	.00	.15	.00	.00	330	32	.00	.00	.00	.00	.00
23	.00	.00	.09	.00	.00	270	45	.00	.00	.00	.00	.00
24	.00	.00	.02	.00	.00	230	39	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	210	34	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	190	29	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	170	28	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	150	23	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	140	7.0	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	130	5.1	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	120	---	.00	---	.00	.00	---
TOTAL	.00	.00	7.57	.00	.00	12700.00	1258.40	30.92	.00	.00	.00	.00
MEAN	.000	.000	.24	.000	.000	410	41.9	1.00	.000	.000	.000	.000
MAX	.00	.00	2.8	.00	.00	1900	112	21	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	15	.00	.00	25190	2500	61	.00	.00	.00	.00

CAL YR 1976 TOTAL 26539.76 MEAN 72.5 MAX 331 MIN .00 AC-FT 52640  
WTR YR 1977 TOTAL 13996.89 MEAN 38.3 MAX 1900 MIN .00 AC-FT 27760

## JAMES RIVER BASIN

06476000 JAMES RIVER AT HURON, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-52, 1956 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1956 to October 1970, September 1971 to current year.

WATER TEMPERATURES: September 1956 to October 1970, September 1971 to current year.

REMARKS.--No flow Oct. 1 to Dec. 12, Dec. 25 to Mar. 11, Apr. 10, 11, May 4, 5, May 6 to Sept. 30.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,170 micromhos Mar. 14, 1965; minimum daily, 175 micromhos Mar. 30, Apr. 2, 1960.

WATER TEMPERATURES: Maximum daily, 31.0°C June 2, 1968; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,800 micromhos Feb. 4, 5, 10-12; minimum daily, 180 micromhos Mar. 18.

WATER TEMPERATURES: Maximum daily, 27.0°C July 19, 20; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
FEB									
28...	1000	.00	1440	7.8	.0	520	200	100	66
MAR									
15...	1045	1740	470	7.6	1.0	140	42	31	14
31...	0900	120	500	7.6	5.0	130	47	32	12
APR									
30...	1545	4.0	720	8.4	17.0	220	89	52	22
MAY									
31...	1300	.00	--	--	22.5	370	210	100	28
JUL									
22...	1515	.00	960	8.9	26.0	320	120	68	36
AUG									
22...	1500	.00	1060	9.0	--	320	130	67	37
SEP									
07...	1400	.00	1060	8.9	25.0	340	120	70	39

06476000 JAMES RIVER AT HURON, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (000930)	PERCENT SODIUM (000932)	SODIUM AD- SORP- TION RATIO (000931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (000935)	BICAR- BONATE (HCO3) (MG/L) (000440)	CAR- BONATE (CO3) (MG/L) (000445)	ALKA- LINITY AS CAC03 (MG/L) (000410)	DIS- SOLVED SULFATE (SO4) (MG/L) (000945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (000940)
FEB 28...	130	34	2.5	19	392	0	322	410	65
MAR 15...	31	32	1.2	6.9	114	0	94	92	17
31...	37	36	1.4	8.9	100	0	82	110	22
APR 30...	62	36	1.8	12	160	0	130	180	29
MAY 31...	36	17	.8	6.6	190	--	160	230	34
JUL 22...	100	39	2.4	18	240	3	200	270	50
AUG 22...	120	43	2.9	20	230	0	190	310	50
SEP 07...	120	42	2.9	20	230	15	210	330	52

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	1180	1300	1520	1750	1490	440	670	830	920	1000	1060
2	1060	1180	1320	1520	1750	1470	460	670	830	920	1000	1080
3	1070	1180	1340	1530	1770	1460	490	680	840	920	1000	1080
4	1070	1180	1360	1550	1800	1450	510	690	850	930	1010	1090
5	1080	1180	1380	1550	1800	1460	520	700	850	920	1020	1090
6	1100	1180	1400	1560	1770	1460	530	710	850	930	1010	1090
7	1090	1180	1400	1560	1750	1460	550	720	860	930	1000	1100
8	1090	1180	1400	1580	1750	1460	560	720	860	940	1000	1100
9	1100	1180	1420	1600	1790	1460	560	720	870	940	1010	1090
10	1100	1180	1420	1610	1800	1480	640	730	870	950	1010	1090
11	1120	1180	1430	1620	1800	1490	640	740	880	940	1020	1100
12	1120	1180	1440	1630	1800	1520	640	750	880	940	1020	1120
13	1100	1180	1440	1650	1770	560	640	750	880	950	1020	1110
14	1130	1200	1440	1650	1750	390	630	760	880	950	1030	1120
15	1150	1210	1440	1670	1730	200	640	770	890	950	1020	1120
16	1150	1210	1440	1700	1700	410	640	770	890	960	1020	1120
17	1150	1230	1440	1730	1670	240	650	780	890	960	1030	1120
18	1150	1240	1450	1760	1650	180	650	790	890	950	1030	1110
19	1160	1230	1460	1760	1600	230	660	800	900	960	1040	1120
20	1160	1240	1460	1770	1600	260	640	800	900	970	1040	1120
21	1160	1240	1460	1750	1570	320	630	810	910	970	1040	1120
22	1160	1230	1480	1750	1550	320	640	800	910	980	1030	1120
23	1160	1240	1480	1770	1500	370	640	800	910	970	1040	1120
24	1160	1240	1480	1760	1500	380	640	800	910	980	1050	1120
25	1180	1240	1480	1780	1520	400	650	810	910	980	1050	1130
26	1180	1230	1490	1780	1500	420	650	810	910	990	1050	1140
27	1180	1240	1490	1770	1500	440	660	820	910	990	1060	1140
28	1190	1250	1490	1740	1520	450	650	820	910	990	1060	1140
29	1180	1260	1490	1750	---	430	670	820	920	990	1060	1160
30	1180	1280	1500	1750	---	410	670	830	920	1000	1060	---
31	1180	---	1500	1750	---	420	---	830	---	1000	1060	---



## JAMES RIVER BASIN

06476000 JAMES RIVER AT HURON, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS-SOLVED PHOS- PHORUS (P) (MG/L) (00666)	DIS-SOLVED BORON (B) (UG/L) (01020)
FEB 28...	.2	8.4	993	1.35	.00	.13	--	--	390
MAR 15...	.1	4.4	255	.35	1200	.44	--	--	130
MAR 31...	.2	6.1	281	.38	91.0	.65	.30	.20	150
APR 30...	.2	.6	437	.59	4.72	.01	.19	.04	220
MAY 31...	.1	24	555	.75	.00	.53	.21	.06	270
JUL 22...	.3	10	674	.92	.00	.03	.23	.08	390
AUG 22...	.3	14	732	1.00	.00	.00	.28	.11	480
SEP 07...	.5	15	775	1.05	.00	.00	.29	.12	510

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	3.0	0.0	0.0	0.0	0.0	5.0	17.0	20.0	24.0	25.0	19.0
2	15.0	3.0	0.0	0.0	0.0	0.0	4.0	16.0	20.0	24.0	25.0	20.0
3	15.0	3.0	0.0	0.0	0.0	0.0	5.0	17.0	21.0	24.0	25.0	19.0
4	14.0	3.0	0.0	0.0	0.0	0.0	5.0	17.0	21.0	26.0	24.0	19.0
5	14.0	3.0	0.0	0.0	0.0	0.0	5.0	17.0	22.0	26.0	24.0	19.0
6	14.0	3.0	0.0	0.0	0.0	0.0	5.0	17.0	23.0	26.0	23.0	19.0
7	13.0	3.0	0.0	0.0	0.0	0.0	7.0	18.0	24.0	26.0	24.0	19.0
8	12.0	3.0	0.0	0.0	0.0	0.0	8.0	18.0	25.0	26.0	24.0	20.0
9	10.0	3.0	0.0	0.0	0.0	0.0	10.0	19.0	25.0	26.0	23.0	20.0
10	11.0	3.0	0.0	0.0	0.0	0.0	10.0	19.0	24.0	25.0	21.0	20.0
11	12.0	3.0	0.0	0.0	0.0	0.0	12.0	20.0	24.0	24.0	21.0	20.0
12	12.0	3.0	0.0	0.0	0.0	0.0	12.0	19.0	24.0	24.0	21.0	19.0
13	12.0	3.0	0.0	0.0	0.0	0.0	12.0	19.0	24.0	25.0	20.0	18.0
14	12.0	3.0	0.0	0.0	0.0	0.0	12.0	19.0	23.0	25.0	20.0	18.0
15	8.0	3.0	0.0	0.0	0.0	0.0	15.0	19.0	23.0	24.0	20.0	18.0
16	8.0	3.0	0.0	0.0	0.0	0.0	15.0	20.0	23.0	26.0	19.0	18.0
17	7.0	3.0	0.0	0.0	0.0	0.0	15.0	20.0	24.0	26.0	20.0	18.0
18	7.0	3.0	0.0	0.0	0.0	0.0	15.0	20.0	23.0	26.0	20.0	18.0
19	6.0	5.0	0.0	0.0	0.0	0.0	15.0	20.0	23.0	27.0	20.0	18.0
20	5.0	3.0	0.0	0.0	0.0	0.0	15.0	20.0	23.0	27.0	21.0	17.0
21	5.0	3.0	0.0	0.0	0.0	0.0	12.0	20.0	23.0	26.0	21.0	17.0
22	4.0	2.0	0.0	0.0	0.0	0.0	13.0	20.0	22.0	26.0	20.0	16.0
23	4.0	2.0	0.0	0.0	0.0	0.0	15.0	20.0	22.0	25.0	20.0	16.0
24	4.0	2.0	0.0	0.0	0.0	0.0	14.0	20.0	22.0	26.0	20.0	16.0
25	3.0	2.0	0.0	0.0	0.0	2.0	13.0	20.0	23.0	26.0	20.0	16.0
26	3.0	2.0	0.0	0.0	0.0	2.0	15.0	21.0	25.0	26.0	20.0	15.0
27	3.0	2.0	0.0	0.0	0.0	2.0	15.0	21.0	26.0	25.0	20.0	15.0
28	3.0	2.0	0.0	0.0	0.0	2.0	16.0	21.0	25.0	24.0	20.0	15.0
29	3.0	0.0	0.0	0.0	---	4.0	16.0	21.0	25.0	25.0	20.0	15.0
30	3.0	0.0	0.0	0.0	---	4.0	17.0	21.0	24.0	25.0	20.0	15.0
31	4.0	---	0.0	0.0	---	5.0	---	21.0	---	25.0	---	---

## 06476500 SAND CREEK NEAR ALPENA, SD

LOCATION.--Lat 44°09'15", long 98°26'06", in NE¼NE¼ sec.19, T.108 N., R.63 W., Jerauld County, Hydrologic Unit 10160006, on left bank 5 ft (2 m) downstream from highway bridge, 4.0 mi (6.4 km) southwest of Alpena, 7.0 mi (11.3 km) upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 10.5 mi (16.9 km) upstream from interlink with Cain Creek.

DRAINAGE AREA.--240 mi<sup>2</sup> (622 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--March 1950 to current year.

REVISED RECORDS.--WSP 1309: 1950(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,315 ft (401 m), by barometer. Prior to Sept. 17, 1951, non-recording gage at same site and datum.

REMARKS.--Records good except those for period of no gage-height record, Oct. 20 to Apr. 19, which are poor. Three observations of water temperature were made during the year.

AVERAGE DISCHARGE.--27 years, 9.37 ft<sup>3</sup>/s (0.265 m<sup>3</sup>/s), 6,790 acre-ft/yr (8.37 hm<sup>3</sup>/yr); median of yearly mean discharges, 6.0 ft<sup>3</sup>/s (0.17 m<sup>3</sup>/s), 4,300 acre-ft/yr (5.3 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,240 ft<sup>3</sup>/s (63.4 m<sup>3</sup>/s) Mar. 28, 1960, gage height, 13.35 ft (4.069 m); maximum gage height, 14.1 ft (4.30 m) Mar. 28, 1950 (backwater from ice); no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 158 ft<sup>3</sup>/s (4.47 m<sup>3</sup>/s) at 2300 hours Mar. 15, gage height, 9.82 ft (2.993 m), no other peak above base of 50 ft<sup>3</sup>/s (1.416 m<sup>3</sup>/s); no flow for many days.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 10-20)

7.4	0	7.7	0.88	8.1	9.1	9.5	70
7.5	.12	7.8	1.7	8.5	22	10.0	140
7.6	.40	7.9	3.1	9.0	40		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	11	1.5	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	14	1.4	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	13	1.2	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	12	1.1	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	11	.88	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	9.5	.71	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	8.5	.61	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	7.5	.61	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	6.5	.52	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.50	6.0	.44	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	1.0	5.4	.33	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	4.0	4.8	.27	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	15	4.5	.21	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	60	4.3	.14	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	115	4.8	.07	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	90	6.0	.03	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	60	7.0	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	50	8.0	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	40	7.3	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	28	6.7	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	22	6.1	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	19	5.8	.06	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	16	5.7	.10	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	11	5.0	.10	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	8.5	4.8	.08	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	7.0	3.9	.06	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	6.0	2.9	.04	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	5.5	2.3	.03	.00	.00	.00	.00
29	.00	.00	.00	.00	---	7.0	2.0	.01	.00	.00	.00	.00
30	.00	.00	.00	.00	---	9.0	1.8	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	10	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	584.50	198.1	10.50	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	18.9	6.60	.34	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	115	14	1.5	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	1.8	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	1160	393	21	.00	.00	.00	.00
CAL YR 1976	TOTAL	44.86	MEAN	.12	MAX	2.4	MIN	.00	AC-FT	89		
WTR YR 1977	TOTAL	793.10	MEAN	2.17	MAX	115	MIN	.00	AC-FT	1570		

## 06477000 JAMES RIVER NEAR FORESTBURG, SD

LOCATION.--Lat 43°58'26", long 98°04'14", in SW¼SW¼NW¼ sec.20, T.106 N., R.60 W., Sanborn County, Hydrologic Unit 10160011, on right bank 5.0 ft (2 m) downstream from highway bridge, 3.8 mi (6.1 km) southeast of Forestburg, 5.4 mi (8.7 km) downstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 6.1 mi (9.8 km) downstream from Sand Creek.

DRAINAGE AREA.--18,600 mi<sup>2</sup> (48,200 km<sup>2</sup>), approximately, of which about 13,810 mi<sup>2</sup> (35,800 km<sup>2</sup>) contributes directly to surface runoff.

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,208.34 ft (368.302 m) above mean 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 winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 408 mi (656 km) upstream since May 1953. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--27 years, 271 ft<sup>3</sup>/s (7.675 m<sup>3</sup>/s), 196,300 acre-ft/yr (242 hm<sup>3</sup>/yr); median of yearly mean discharges, 140 ft<sup>3</sup>/s (3.96 m<sup>3</sup>/s), 101,000 acre-ft/yr (120 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft<sup>3</sup>/s (354 m<sup>3</sup>/s) Apr. 9, 1969, gage height, 17.16 ft (5.230 m); no flow at times in 1950, 1955, 1959, 1961, 1970, 1976, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in March 1920 and March 1922 reached a stage of about 18 ft (5.49 m), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,050 ft<sup>3</sup>/s (115 m<sup>3</sup>/s) Mar. 15, gage height, 13.85 ft (4.221 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	247	38	6.1	2.4	.09	.26
2	.00	.00	.00	.00	.00	.00	233	30	5.6	2.2	.06	.29
3	.00	.00	.00	.00	.00	.00	214	26	5.0	2.2	.02	.36
4	.00	.00	.00	.00	.00	.00	197	22	4.7	2.0	.01	.21
5	.00	.00	.00	.00	.00	.00	188	20	4.4	1.6	.00	.21
6	.00	.00	.00	.00	.00	.00	178	19	3.7	1.7	.00	.13
7	.00	.00	.00	.00	.00	.00	160	17	3.1	1.6	.00	.11
8	.00	.00	.00	.00	.00	.00	148	15	2.5	1.4	.00	.08
9	.00	.00	.00	.00	.00	.00	138	13	2.2	1.0	.00	.05
10	.00	.00	.00	.00	.00	.00	129	12	2.1	.98	.00	.07
11	.00	.00	.00	.00	.00	25	107	9.9	2.1	1.8	.00	.04
12	.00	.00	.00	.00	.00	600	79	9.1	2.1	1.5	.00	.03
13	.00	.00	.00	.00	.00	1400	60	8.3	2.4	1.1	.00	.01
14	.00	.00	.00	.00	.00	2300	54	7.7	2.4	.85	.00	.00
15	.00	.00	.00	.00	.00	3960	53	7.1	2.7	.76	.06	.00
16	.00	.00	.00	.00	.00	3940	58	6.8	4.0	.63	.06	.00
17	.00	.00	.00	.00	.00	3630	64	6.7	4.1	.54	.08	.00
18	.00	.00	.00	.00	.00	3170	78	6.3	3.3	.30	.08	.00
19	.00	.00	.00	.00	.00	2610	92	6.4	2.5	.12	.03	.00
20	.00	.00	.00	.00	.00	1970	121	6.5	2.1	.31	.02	.00
21	.00	.00	.00	.00	.00	1400	136	8.6	2.7	.52	.00	.05
22	.00	.00	.00	.00	.00	979	140	12	3.1	.46	.00	.13
23	.00	.00	.00	.00	.00	661	123	10	3.0	.39	.08	.40
24	.00	.00	.00	.00	.00	520	99	10	2.9	.46	.21	.36
25	.00	.00	.00	.00	.00	418	88	8.9	2.7	.64	.25	.46
26	.00	.00	.00	.00	.00	338	80	8.6	2.7	.56	.23	.35
27	.00	.00	.00	.00	.00	294	70	8.4	2.6	.40	.36	.32
28	.00	.00	.00	.00	.00	266	58	7.8	2.4	.35	.47	.27
29	.00	.00	.00	.00	---	288	50	7.1	1.9	.37	.42	.19
30	.00	.00	.00	.00	---	306	43	7.2	2.3	.20	.26	.40
31	.00	---	.00	.00	---	284	---	7.1	---	.10	.17	---
TOTAL	.00	.00	.00	.00	.00	29359.00	3485	382.5	93.4	29.44	2.96	4.78
MEAN	.000	.000	.000	.000	.000	947	116	12.3	3.11	.95	.095	.16
MAX	.00	.00	.00	.00	.00	3960	247	38	6.1	2.4	.47	.46
MIN	.00	.00	.00	.00	.00	.00	43	6.3	1.9	.10	.00	.00
AC-FT	.00	.00	.00	.00	.00	58230	6910	759	185	58	5.9	9.5
CAL YR 1976	TOTAL	27947.29	MEAN	76.4	MAX	302	MIN	.00	AC-FT	55430		
WTR YR 1977	TOTAL	33357.08	MEAN	91.4	MAX	3960	MIN	.00	AC-FT	66160		

## JAMES RIVER BASIN

193

06477500 FIRESTEEL CREEK NEAR MOUNT VERNON, SD

LOCATION.--Lat 43°46'30", long 98°14'33", in SW¼SW¼ sec.26, T.104 N., R.62 W., Davison County, Hydrologic Unit 10160011 (corrected), near center of span on downstream side of highway bridge, 4.5 mi (7.2 km) north of Mount Vernon, 5.2 mi (8.4 km) downstream from West Firesteel Creek, and 12 mi (19 km) northwest of Mitchell.

DRAINAGE AREA.--540 mi<sup>2</sup> (1,400 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,297.22 ft (395.393 m) above mean sea level. Prior to Nov. 28, 1972, nonrecording gage and crest-stage gage.

REMARKS.--Records fair except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 22.4 ft<sup>3</sup>/s (0.634 m<sup>3</sup>/s), 16,230 acre-ft/yr (20.0 hm<sup>3</sup>/yr); median of yearly mean discharges, 8.4 ft<sup>3</sup>/s (0.24 m<sup>3</sup>/s), 6,100 acre-ft/yr (7.5 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,610 ft<sup>3</sup>/s (187 m<sup>3</sup>/s) Apr. 4, 1969, gage height, 15.34 ft (4.676 m); maximum gage height, 17.12 ft (5.218 m) Apr. 3, 1969 (backwater from ice); no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 900 ft<sup>3</sup>/s (25.5 m<sup>3</sup>/s) time unknown, Mar. 14; maximum gage height, 8.86 ft (2.701 m) Mar. 14 (backwater from ice); no other peak above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s), no flow for many days.

Rating table (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Mar. 15 to Apr. 25, Sept. 6-30; stage-discharge relation affected by ice Feb. 6 to Mar. 14)

2.43	0	2.8	1.6	3.2	15	5.0	174
2.5	.04	2.9	3.0	3.5	34	6.0	342
2.6	.35	3.0	5.5	4.0	72	7.0	557
2.7	.89						

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	10	2.5	.71	.00	.00	.25
2	.00	.00	.00	.00	.00	.00	13	2.6	.60	.00	.00	.35
3	.00	.00	.00	.00	.00	.00	14	2.2	.45	.00	.00	.35
4	.00	.00	.00	.00	.00	.00	12	1.8	.40	.00	.00	.20
5	.00	.00	.00	.00	.00	.00	7.2	2.5	.25	.00	.00	.10
6	.00	.00	.00	.00	.00	.00	9.8	3.5	.35	.00	.00	.04
7	.00	.00	.00	.00	.00	.00	8.9	2.0	.25	.00	.00	.06
8	.00	.00	.00	.00	.00	.00	9.4	1.7	.10	.00	.00	.03
9	.00	.00	.00	.00	.00	.00	8.5	1.5	.05	.00	.00	.02
10	.00	.00	.00	.00	.00	1.0	8.1	1.1	.03	.00	.00	.02
11	.00	.00	.00	.00	.00	3.0	6.4	.95	.05	.00	.00	.01
12	.00	.00	.00	.00	.00	50	5.0	.65	.04	.00	.00	.03
13	.00	.00	.00	.00	.00	450	4.2	.83	.08	.00	.00	.02
14	.00	.00	.00	.00	.00	750	3.8	.55	.35	.00	.00	.02
15	.00	.00	.00	.00	.00	469	4.0	1.1	.55	.00	.00	.01
16	.00	.00	.00	.00	.00	229	3.5	.89	.50	.00	.06	.02
17	.00	.00	.00	.00	.00	121	5.0	.71	.35	.00	.08	.01
18	.00	.00	.00	.00	.00	88	4.2	1.0	.13	.00	.05	.02
19	.00	.00	.00	.00	.00	69	3.5	.95	.01	.00	.05	.02
20	.00	.00	.00	.00	.00	44	11	.89	.04	.00	.06	.02
21	.00	.00	.00	.00	.00	40	16	1.1	.10	.00	.13	.02
22	.00	.00	.00	.00	.00	23	19	2.2	.16	.00	3.2	.13
23	.00	.00	.00	.00	.00	18	44	1.4	.13	.00	28	.05
24	.00	.00	.00	.00	.00	14	40	1.4	.10	.00	23	.02
25	.00	.00	.00	.00	.00	7.2	29	1.1	.08	.00	6.4	.02
26	.00	.00	.00	.00	.00	5.9	18	1.0	.25	.00	2.8	.02
27	.00	.00	.00	.00	.00	5.2	13	.89	.16	.00	2.4	.02
28	.00	.00	.00	.00	.00	7.2	8.1	.95	.02	.00	1.0	.00
29	.00	.00	.00	.00	---	9.4	4.5	.95	.00	.00	.89	.01
30	.00	.00	.00	.00	---	14	3.8	.95	.00	.00	.55	.02
31	.00	---	.00	.00	---	9.4	---	.83	---	.00	.30	---
TOTAL	.00	.00	.00	.00	.00	2427.30	346.9	42.69	6.29	.00	68.97	1.91
MEAN	.000	.000	.000	.000	.000	78.3	11.6	1.38	.21	.000	2.22	.064
MAX	.00	.00	.00	.00	.00	750	44	3.5	.71	.00	28	.35
MIN	.00	.00	.00	.00	.00	.00	3.5	.55	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	4810	688	85	12	.00	137	3.8

CAL YR 1976 TOTAL 25.08 MEAN .069 MAX 1.3 MIN .00 AC-FT 50  
WTR YR 1977 TOTAL 2894.06 MEAN 7.93 MAX 750 MIN .00 AC-FT 5740

## JAMES RIVER BASIN

06478052 ENEMY CREEK NEAR MITCHELL, SD

LOCATION.--Lat 43°38'33", long 97°59'09", in NE¼NE¼ sec.13, T.102 N., R.60 W., Davison County, Hydrologic Unit 10160011, on left bank 3 ft (0.9 m) downstream from highway bridge, 4.5 mi (7.2 km) southeast of Mitchell, and 7.3 mi (11.7 km) above mouth.

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,280 ft (390 m), from topographic map.

REMARKS.--Records good below 6.0 ft (1.83 m) and fair above. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR CURRENT PERIOD.--Water year 1976: Maximum discharge, 0.90 ft<sup>3</sup>/s (0.025 m<sup>3</sup>/s) Feb. 15, gage height, 5.13 ft (1.564 m); maximum gage height, 5.14 ft (1.567 m) Mar. 12; no flow for many days.

Water year 1977: Maximum discharge, 159 ft<sup>3</sup>/s (4.50 m<sup>3</sup>/s) Mar. 13, gage height, 8.17 ft (2.490 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.02	.31	.28	.09	.02	.00	.00	.00	.00
2	.00	.00	.00	.02	.14	.23	.08	.02	.00	.00	.00	.00
3	.00	.00	.00	.02	.12	.16	.06	.01	.00	.00	.00	.00
4	.00	.00	.00	.02	.10	.14	.07	.01	.00	.00	.00	.00
5	.00	.00	.00	.02	.10	.14	.07	.01	.00	.00	.00	.00
6	.00	.00	.00	.02	.10	.13	.07	.00	.00	.00	.00	.00
7	.00	.00	.00	.02	.10	.14	.06	.00	.00	.00	.00	.00
8	.00	.00	.00	.02	.14	.16	.06	.00	.00	.00	.00	.00
9	.00	.00	.00	.02	.30	.21	.06	.00	.00	.00	.00	.00
10	.00	.00	.00	.02	.65	.25	.06	.00	.00	.00	.00	.00
11	.00	.00	.00	.03	.55	.26	.09	.00	.00	.00	.00	.00
12	.00	.00	.00	.03	.57	.53	.09	.00	.00	.00	.00	.00
13	.00	.00	.00	.03	.39	.34	.07	.00	.00	.00	.00	.00
14	.00	.00	.00	.03	.37	.33	.07	.00	.00	.00	.00	.00
15	.00	.00	.00	.04	.62	.33	.07	.00	.00	.00	.00	.00
16	.00	.00	.00	.04	.50	.31	.10	.00	.00	.00	.00	.00
17	.00	.00	.00	.04	.39	.32	.06	.00	.00	.00	.00	.00
18	.00	.00	.00	.05	.41	.38	.05	.00	.00	.00	.00	.00
19	.00	.00	.00	.05	.48	.39	.06	.00	.00	.00	.00	.00
20	.00	.00	.01	.05	.41	.33	.06	.00	.00	.00	.00	.00
21	.00	.00	.10	.07	.31	.34	.05	.00	.00	.00	.00	.00
22	.00	.00	.22	.08	.29	.25	.04	.00	.00	.00	.00	.00
23	.00	.00	.36	.08	.40	.29	.06	.00	.00	.00	.00	.00
24	.00	.00	.10	.07	.45	.44	.14	.00	.00	.00	.00	.00
25	.00	.00	.03	.09	.43	.39	.17	.00	.00	.00	.00	.00
26	.00	.00	.02	.09	.45	.36	.10	.00	.00	.00	.00	.00
27	.00	.00	.02	.08	.40	.32	.06	.00	.00	.00	.00	.00
28	.00	.00	.02	.10	.38	.24	.04	.00	.00	.00	.00	.00
29	.00	.00	.01	.19	.36	.16	.03	.00	.00	.00	.00	.00
30	.00	.00	.03	.38	---	.12	.02	.00	.00	.00	.00	.00
31	.00	---	.02	.25	---	.10	---	.00	---	.00	.00	---
TOTAL	.00	.00	.94	2.07	10.22	8.37	2.11	.07	.00	.00	.00	.00
MEAN	.000	.000	.030	.067	.35	.27	.070	.002	.000	.000	.000	.000
MAX	.00	.00	.36	.38	.65	.53	.17	.02	.00	.00	.00	.00
MIN	.00	.00	.00	.02	.10	.10	.02	.00	.00	.00	.00	.00
AC-FT	.00	.00	1.9	4.1	20	17	4.2	.1	.00	.00	.00	.00

WTR YR 1976 TOTAL 23.78 MEAN .065 MAX .65 MIN .00 AC-FT 47



06478052 ENEMY CREEK NEAR MITCHELL, SD--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	1.0	.08	.12	1.6	.00	3.0
2	.00	.00	.00	.00	.00	.00	.89	.06	.09	.97	.00	3.6
3	.00	.00	.00	.00	.00	.00	.75	.05	.05	.82	.00	2.2
4	.00	.00	.00	.00	.00	.00	.67	.05	.02	.55	.00	1.2
5	.00	.00	.00	.00	.00	.00	.65	.03	.00	.26	.00	1.3
6	.00	.00	.00	.00	.00	.00	.57	.02	.00	.13	.00	.93
7	.00	.00	.00	.00	.00	.00	.58	.01	.00	.09	.00	.92
8	.00	.00	.00	.00	.00	.00	.54	.00	.00	.04	.00	.60
9	.00	.00	.00	.00	.00	.00	.46	.00	.00	.01	.00	.55
10	.00	.00	.00	.00	.00	.00	.47	.00	.00	.02	.00	.60
11	.00	.00	.00	.00	.00	10	.36	.00	.00	.02	.00	.60
12	.00	.00	.00	.00	.00	71	.30	.00	.00	.01	.00	3.1
13	.00	.00	.00	.00	.00	64	.27	.00	.00	.00	.00	15
14	.00	.00	.00	.00	.00	22	.29	.00	.00	.00	.00	22
15	.00	.00	.00	.00	.00	7.5	.34	.00	.00	.00	.00	13
16	.00	.00	.00	.00	.00	3.8	.34	.00	.00	.00	.00	7.0
17	.00	.00	.00	.00	.00	2.2	.25	.00	.00	.00	.00	3.6
18	.00	.00	.00	.00	.00	1.3	.27	.00	.00	.00	.00	2.3
19	.00	.00	.00	.00	.00	.67	.15	.00	.00	.00	.00	.90
20	.00	.00	.00	.00	.00	.37	.44	4.3	.00	.00	.00	.73
21	.00	.00	.00	.00	.00	.33	.63	4.7	.00	.00	.00	.60
22	.00	.00	.00	.00	.00	.27	.47	.85	.00	.00	.00	.66
23	.00	.00	.00	.00	.00	.25	.46	.41	.32	.00	.00	8.9
24	.00	.00	.00	.00	.00	.23	.39	.25	.44	.00	.69	6.7
25	.00	.00	.00	.00	.00	.30	.32	.19	.25	.00	.25	2.8
26	.00	.00	.00	.00	.00	.33	.23	.16	.13	.00	.12	.90
27	.00	.00	.00	.00	.00	.41	.18	.15	.08	.00	3.4	.40
28	.00	.00	.00	.00	.00	.77	.14	.11	.04	.00	.71	.26
29	.00	.00	.00	.00	---	2.2	.12	.13	.25	.00	.15	.20
30	.00	.00	.00	.00	---	1.6	.10	.23	1.8	.00	.82	.29
31	.00	---	.00	.00	---	1.3	---	.19	---	.00	3.5	---
TOTAL	.00	.00	.00	.00	.00	190.83	12.63	11.97	3.59	4.52	9.64	104.84
MEAN	.000	.000	.000	.000	.000	6.16	.42	.39	.12	.15	.31	3.49
MAX	.00	.00	.00	.00	.00	71	1.0	4.7	1.8	1.6	3.5	22
MIN	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.20
AC-FT	.00	.00	.00	.00	.00	379	25	24	7.1	9.0	19	208
CAL YR 1976	TOTAL	22.84	MEAN	.062	MAX	.65	MIN	.00	AC-FT	45		
WTR YR 1977	TOTAL	338.02	MEAN	.93	MAX	71	MIN	.00	AC-FT	670		

06478500 JAMES RIVER NEAR SCOTLAND, SD

LOCATION.--Lat 43°11'09", long 97°38'07", in SW¼SW¼ sec.30, T.97 N., R.57 W., Hutchinson County, Hydrologic Unit 10160011, on right bank 5.0 ft (2 m) downstream from highway bridge, 0.3 mi (0.5 km) upstream from Dawson Creek and 5.2 mi (8.4 km) northeast of Scotland.

DRAINAGE AREA.--21,550 mi<sup>2</sup> (55,810 km<sup>2</sup>), approximately, of which about 16,760 mi<sup>2</sup> (43,400 km<sup>2</sup>) contributes directly to surface runoff.

## 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.

GAGE.--Water-stage recorder and rock and earth control. Datum of gage is 1,168.51 ft (356.162 m) above mean sea level. Prior to Nov. 28, 1972, at site 0.25 mi (0.4 km) downstream at present datum.

REMARKS.--Records good. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm<sup>3</sup>), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm<sup>3</sup>), 527 mi (848 km) upstream since May 1953. Occasional backwater caused by Dawson Creek; reverse flow occurred for part of May 15, 1961, from information by local residents.

AVERAGE DISCHARGE.--49 years, 368 ft<sup>3</sup>/s (10.42 m<sup>3</sup>/s), 266,600 acre-ft/yr (329 hm<sup>3</sup>/yr); median of yearly mean discharges, 180 ft<sup>3</sup>/s (5.10 m<sup>3</sup>/s), 130,000 acre-ft/yr (160 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft<sup>3</sup>/s (430 m<sup>3</sup>/s) Apr. 3, 1962, gage height, 18.74 ft (5.712 m); no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,400 ft<sup>3</sup>/s (68.0 m<sup>3</sup>/s) Mar. 26, gage height, 12.27 ft (3.740 m); minimum daily, 1.9 ft<sup>3</sup>/s (0.054 m<sup>3</sup>/s) Jan. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	6.0	5.6	5.0	5.7	18	610	92	29	23	3.5	11
2	4.6	6.3	5.6	4.8	6.1	18	528	95	27	20	3.3	12
3	4.4	5.9	5.8	4.3	6.5	18	492	91	24	19	2.9	13
4	4.4	5.6	5.9	4.0	6.3	18	443	81	22	17	3.6	15
5	4.2	5.8	6.2	4.0	6.5	17	415	72	20	14	4.0	15
6	4.2	5.8	6.9	3.9	6.9	16	374	63	20	13	3.7	14
7	4.2	5.6	6.9	3.7	7.5	16	322	60	20	13	3.5	14
8	4.2	5.5	6.9	3.7	8.2	17	296	55	18	12	3.7	13
9	4.2	5.6	7.2	3.4	8.7	19	263	49	18	11	7.7	12
10	4.2	5.2	7.3	3.0	9.1	24	244	44	16	12	7.1	12
11	4.2	5.5	7.2	2.6	9.4	48	220	38	15	14	6.7	12
12	4.3	5.6	7.3	2.4	10	93	208	35	14	15	5.9	14
13	4.4	5.4	7.3	2.2	11	126	186	30	15	16	5.4	59
14	4.6	5.1	7.5	2.0	12	126	174	28	14	16	4.9	50
15	4.5	5.0	7.7	2.2	12	450	158	24	14	15	4.6	59
16	4.2	5.1	7.9	1.9	12	966	150	19	15	13	4.6	66
17	4.0	5.3	7.7	2.2	12	1390	140	17	20	11	4.5	68
18	4.6	5.5	7.9	2.5	13	1760	129	17	22	10	4.3	68
19	5.5	5.6	8.2	2.6	14	1890	118	17	21	8.5	5.1	66
20	5.7	5.6	7.9	3.3	14	2000	126	19	19	8.3	5.5	55
21	5.7	5.6	7.3	3.2	15	2100	134	24	20	9.3	6.0	47
22	5.7	5.6	7.3	3.6	16	2180	135	33	16	8.5	5.9	40
23	6.0	5.6	7.5	4.0	17	2260	138	39	20	8.4	6.0	43
24	6.1	5.6	7.1	4.5	19	2340	154	35	20	8.9	6.2	102
25	6.1	5.8	6.9	5.0	18	2380	146	30	23	8.4	6.7	87
26	5.7	5.9	6.9	5.5	18	2380	106	26	28	7.3	7.7	54
27	5.9	5.9	6.7	5.7	18	2330	83	29	27	6.5	8.0	44
28	6.0	5.6	6.7	5.5	18	2180	77	32	27	6.1	8.2	38
29	5.9	5.6	6.5	5.5	---	1850	83	33	27	5.5	8.1	36
30	6.0	5.7	6.1	5.5	---	1280	89	34	27	4.9	9.0	39
31	5.9	---	5.7	5.5	---	828	---	32	---	4.3	10	---
TOTAL	154.4	167.9	215.6	117.2	329.9	31138	6741	1295	618	358.9	176.3	1178
MEAN	4.98	5.60	6.95	3.78	11.8	1004	225	41.8	20.6	11.6	5.69	39.3
MAX	6.1	6.3	8.2	5.7	19	2380	610	95	29	23	10	102
MIN	4.0	5.0	5.6	1.9	5.7	16	77	17	14	4.3	2.9	11
AC-FT	306	333	428	232	654	61760	13370	2570	1230	712	350	2340
CAL YR 1976	TOTAL	36956.7	MEAN	101	MAX	450	MIN	1.4	AC-FT	73300		
WTR YR 1977	TOTAL	42490.2	MEAN	116	MAX	2380	MIN	1.9	AC-FT	84280		

## JAMES RIVER BASIN

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06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued  
(National stream-quality accounting network station)  
(National pesticide water-monitoring network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-64, 1967-73, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: January 1953 to September 1969, October 1974 to current year.

REMARKS.--Prior to October 1969, continuous temperature thermograph at station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,660 micromhos Jan. 9, 1977; minimum daily, 300 micromhos Mar. 19, 1977.

WATER TEMPERATURES: Maximum, 32.0°C Aug. 1, 2, 1957; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,660 micromhos Jan. 9; minimum daily, 300 micromhos Mar. 19.

WATER TEMPERATURES: Maximum daily, 28.0°C July 17-20; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	
OCT 26...	1145	5.6	1240	8.2	5.0	8	--	--	700	470	150	
NOV 16...	1430	5.3	2350	7.8	5.0	4	ND	ND	1100	850	260	
DEC 14...	1145	7.5	2140	7.8	3.0	8	ND	B3	1300	1100	320	
JAN 20...	1200	3.5	3010	8.0	.0	50	ND	ND	1500	1100	400	
FEB 24...	1100	20	1500	8.2	.0	5	B10	30	910	640	230	
MAR 22...	1245	2190	340	7.1	4.0	40	--	--	110	36	30	
APR 21...	1145	131	1060	8.1	14.0	20	B160	B420	460	310	110	
MAY 19...	1130	16	1380	8.1	23.0	10	B120	380	590	360	140	
JUN 28...	1145	28	810	8.3	26.0	20	115	190	690	480	160	
JUL 19...	1230	8.7	1900	8.0	29.0	15	60	100	730	490	170	
AUG 29...	1300	8.2	1340	8.1	22.5	20	50	80	690	470	160	
SEP 19...	1145	66	1330	8.0	18.5	20	100	400	550	370	130	
DATE		DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LILITY AS CAC03 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)
OCT 26...	80	140	30	2.3	12	283	0	232	670	73	.4	
NOV 16...	110	140	21	1.8	26	313	0	257	1000	64	.5	
DEC 14...	120	150	20	1.8	23	194	0	159	1300	64	.4	
JAN 20...	130	170	19	1.9	25	508	0	417	1300	78	.7	
FEB 24...	81	110	20	1.6	17	322	0	264	810	48	.5	
MAR 22...	9.3	19	25	.8	8.6	94	0	77	75	9.1	.1	
APR 21...	46	92	29	1.9	15	190	0	160	430	38	.3	
MAY 19...	59	120	30	2.1	17	280	0	230	560	54	.4	
JUN 28...	71	150	31	2.5	18	260	0	210	660	81	.5	
JUL 19...	75	160	31	2.6	20	300	0	250	690	88	.5	
AUG 29...	70	110	25	1.8	20	270	0	220	610	65	.4	
SEP 19...	54	74	22	1.4	23	210	0	170	530	25	.3	

B Non-ideal colony count.  
NI) Not detected

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

DATE	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL-DAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL NITROGEN (N03) (MG/L) (71887)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL PHYTOPLANKTON (CELLS PER ML) (60050)
OCT 26...	13	1330	1280	1.81	20.1	.03	1.0	1.0	4.6	.11	13	18000
NOV 16...	19	1950	1770	2.65	27.9	.00	.80	.80	3.5	.08	--	--
DEC 14...	16	2030	2090	2.76	41.1	.03	.85	.88	3.9	.11	--	15000
JAN 20...	17	2370	2370	3.22	22.4	.02	.77	.79	3.5	.01	4.5	27000
FEB 24...	9.7	1600	1470	2.18	86.4	.19	.68	.87	3.9	.04	--	16000
MAR 22...	5.7	224	203	.30	1330	.55	1.6	2.2	9.5	.47	--	--
APR 21...	3.2	921	830	1.25	326	.03	1.5	1.5	6.8	.10	11	--
MAY 19...	4.0	1180	1090	1.60	51.0	.04	1.6	1.6	7.3	.33	--	370000
JUN 28...	18	1410	1290	1.92	107	.01	2.2	2.2	9.8	.49	--	61000
JUL 19...	20	1500	1370	2.04	35.2	.01	1.6	1.6	7.1	.36	13	120000
AUG 29...	22	1270	1190	1.73	28.1	.03	1.6	1.6	7.2	.31	--	--
SEP 19...	15	1010	955	1.37	180	.02	1.1	1.1	5.0	.21	--	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUSPENDED ARSENIC (AS) (UG/L) (01001)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CADMIUM (CD) (UG/L) (01027)	SUSPENDED CADMIUM (CD) (UG/L) (01026)	DIS-SOLVED CADMIUM (CD) (UG/L) (01025)	TOTAL CHROMIUM (CR) (UG/L) (01034)	SUSPENDED CHROMIUM (CR) (UG/L) (01031)	DIS-SOLVED CHROMIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 26...	1145	2	0	2	<10	<10	0	0	0	0	<50
JAN 20...	1200	1	1	0	10	10	0	0	0	0	<50
APR 21...	1145	2	--	2	10	--	0	10	10	0	<50
JUL 19...	1230	14	--	15	10	9	1	0	--	0	<50

DATE	SUSPENDED COBALT (CO) (UG/L) (01036)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUSPENDED COPPER (CU) (UG/L) (01041)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUSPENDED LEAD (PB) (UG/L) (01050)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MANGANESE (MN) (UG/L) (01055)
OCT 26...	<50	0	<10	<9	1	190	20	100	100	0	430
JAN 20...	<50	0	10	10	0	250	0	100	95	5	2200
APR 21...	--	2	10	--	0	1100	50	100	--	4	1900
JUL 19...	<48	2	10	8	2	1000	60	100	92	8	2800

DATE	SUSPENDED MANGANESE (MN) (UG/L) (01054)	DIS-SOLVED MANGANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUSPENDED MERCURY (HG) (UG/L) (71895)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELENIUM (SE) (UG/L) (01147)	SUSPENDED SELENIUM (SE) (UG/L) (01146)	DIS-SOLVED SELENIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUSPENDED ZINC (ZN) (UG/L) (01091)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)
OCT 26...	220	210	.1	.1	.0	1	0	1	10	0	10
JAN 20...	900	1300	.0	.0	.1	1	0	1	20	10	10
APR 21...	500	1400	.0	--	.0	2	1	1	20	10	10
JUL 19...	100	2700	.2	.0	.2	--	--	0	20	10	10

&lt; Less than.

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

		ALDRIN IN		CHLOR-DANE IN		DDD IN		DDE IN		
		TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL
DATE	TIME	ALDRIN	MA-TERIAL	CHLOR-DANE	MA-TERIAL	DDD	MA-TERIAL	DDE	MA-TERIAL	DDT
		(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)
		(39330)	(39333)	(39350)	(39351)	(39360)	(39363)	(39365)	(39368)	(39370)
NOV 16...	1430	ND	--	ND	--	ND	--	ND	--	ND
FEB 24...	1100	ND	--	ND	--	ND	--	ND	--	ND
MAY 19...	1130	ND	--	ND	--	ND	--	ND	--	ND
AUG 29...	1300	ND	--	ND	--	ND	--	ND	--	ND
		DDT IN	DI-AZINON IN	DI-ELDRIN IN		ENDRIN IN		ETHION IN		
		BOTTOM	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL
DATE		MA-TERIAL	MA-TERIAL	DI-ELDRIN	MA-TERIAL	ENDRIN	MA-TERIAL	ETHION	MA-TERIAL	HEPTA-CHLOR
		(UG/KG)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)
		(39373)	(39570)	(39571)	(39380)	(39390)	(39393)	(39398)	(39399)	(39410)
NOV 16...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 24...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 19...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 29...	--	ND	--	ND	--	ND	--	ND	--	ND
		HEPTA-CHLOR IN	HEPTA-CHLOR	LINDANE IN		MALA-THION IN		METHOX-YCHLOR IN		TOTAL
		BOTTOM	EPOXIDE	TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	METHYL
DATE		MA-TERIAL	EPOXIDE	LINDANE	MA-TERIAL	MALA-THION	MA-TERIAL	METH-OXY-CHLOR	MA-TERIAL	PARA-THION
		(UG/KG)	(UG/L)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)
		(39413)	(39420)	(39340)	(39343)	(39530)	(39531)	(39480)	(39481)	(39600)
NOV 16...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 24...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 19...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 29...	--	ND	--	ND	--	ND	--	ND	--	ND
		METHYL	METHYL	PARA-THION IN		SIMA-ZINE	SIMA-ZINE	TOX-APHENE IN		TOTAL
		PARA-THION	TRI-THION	TOTAL	BOTTOM	TOTAL	IN	TOTAL	BOTTOM	TRI-THION
DATE		IN BOT-TOM	IN BOT-TOM	PARA-THION	MA-TERIAL	COUL-SON	MATERI-AL	TOX-APHENE	MA-TERIAL	THION
		MA-TERIAL	MA-TERIAL	(UG/L)	(UG/KG)	COND.	(UG/ SOLIDS)	(UG/L)	(UG/KG)	(UG/L)
		(UG/KG)	(UG/L)	(UG/L)	(UG/KG)	(UG/L)	(39046)	(39400)	(39403)	(39786)
NOV 16...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 24...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 19...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 29...	--	ND	--	ND	--	ND	--	ND	--	ND
		TRI-THION IN	ATRA-ZINE IN	2,4-D IN		2,4,5-T IN		SILVEX IN		
		BOTTOM	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	TOTAL	BOTTOM	
DATE		MA-TERIAL	MATERI-AL	2,4-D	MA-TERIAL	2,4,5-T	MA-TERIAL	SILVEX	MA-TERIAL	
		(UG/KG)	(UG/ SOLIDS)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	(UG/L)	(UG/KG)	
		(39787)	(39630)	(39730)	(39731)	(39740)	(39741)	(39760)	(39761)	
NOV 16...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 24...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 19...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 29...	--	ND	--	ND	--	ND	--	ND	--	ND

ND Not detected.



## JAMES RIVER BASIN

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1600	1940	2000	2610	1900	2000	720	1500	1700	1980	1930	1860
2	1610	1920	2070	2100	1960	1940	790	1500	1690	2030	1890	1840
3	1570	1970	2050	1850	1500	2500	860	1520	1650	2040	1890	1790
4	1600	1970	2110	2050	1520	2500	920	1530	1640	2050	1890	1760
5	1610	2010	1700	1750	2250	2500	930	1520	1640	2050	1900	1770
6	1620	2010	2170	1710	2150	2500	1000	1510	1670	2050	1910	1800
7	1620	2010	2000	2050	2240	2600	1060	1510	1700	2050	1910	1800
8	1630	2050	1750	2650	2250	610	1100	1510	1750	2030	1900	1760
9	1630	2060	1700	2660	1970	2600	1100	1540	1730	2020	1750	1750
10	1640	1900	2050	2230	2220	1710	1110	1520	1750	2010	1750	1800
11	1650	2100	2260	1790	1670	1790	1080	1520	1760	2000	1590	1770
12	1690	2200	1850	2360	1680	1500	1100	1510	1760	2000	1580	1760
13	1640	2150	2400	1600	1580	1510	1120	1540	1770	2000	1620	1720
14	1670	2100	2250	1540	1590	1400	1140	1530	1770	2000	1690	1950
15	1700	2070	2220	1560	2560	980	1170	1540	1800	2000	1690	1990
16	1550	2140	2340	2060	2550	420	1240	1570	1800	2000	1750	1890
17	1710	2000	2340	1920	1950	320	1240	1570	1790	2000	1750	860
18	1700	2090	2250	1730	1910	310	1240	1580	1800	2000	1790	1060
19	1740	1900	2340	1550	2160	300	1250	1580	1810	2000	1790	1360
20	1730	1750	2350	1490	2160	340	1300	1570	1810	2010	1790	1030
21	1740	2100	2500	1480	1020	360	1290	1530	1810	2000	1780	1220
22	1750	2250	2280	1340	980	360	1330	1530	1810	2000	1710	1360
23	1760	2250	2400	1320	1360	360	1320	1560	1810	1980	1700	1400
24	1760	2250	2250	1510	1200	370	1390	1560	1860	1980	1660	1480
25	1840	2150	2200	1420	1150	360	1400	1580	1870	1990	1650	1530
26	1480	2200	2170	1550	1150	360	1380	1560	1860	1980	1650	1580
27	1810	2300	2250	1600	1460	380	1400	1570	1860	1980	1750	1590
28	1600	2310	2270	2300	1480	405	1460	1560	1850	1980	1750	840
29	1490	2300	2500	2360	---	445	1460	1550	1890	1980	1790	835
30	1500	2300	2650	1690	---	635	1490	1590	1950	1960	1790	765
31	1900	---	2650	1660	---	---	---	1630	---	1950	1850	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	8.0	0.0	0.0	0.0	1.0	7.0	18.0	22.0	22.0	23.0	---
2	14.0	7.0	0.0	0.0	0.0	2.0	7.0	18.0	21.0	22.0	24.0	14.0
3	14.0	6.0	0.0	0.0	0.0	2.0	7.0	18.0	23.0	24.0	24.0	14.0
4	14.0	5.0	0.0	0.0	0.0	2.0	5.0	18.0	24.0	27.0	24.0	14.0
5	14.0	4.0	0.0	0.0	0.0	2.0	3.0	18.0	25.0	27.0	23.0	14.0
6	13.0	4.0	0.0	0.0	0.0	2.0	5.0	18.0	23.0	27.0	23.0	13.0
7	11.0	4.0	0.0	0.0	0.0	3.0	8.0	18.0	23.0	26.0	24.0	11.0
8	10.0	5.0	0.0	0.0	0.0	3.0	10.0	18.0	23.0	24.0	24.0	10.0
9	10.0	6.0	0.0	0.0	0.0	3.0	11.0	18.0	22.0	26.0	22.0	10.0
10	12.0	4.0	0.0	0.0	0.0	3.0	16.0	19.0	21.0	26.0	22.0	12.0
11	13.0	3.0	0.0	0.0	0.0	4.0	15.0	19.0	21.0	24.0	22.0	13.0
12	13.0	3.0	0.0	0.0	0.0	4.0	15.0	19.0	21.0	25.0	22.0	13.0
13	12.0	3.0	0.0	0.0	0.0	4.0	15.0	21.0	20.0	26.0	23.0	12.0
14	14.0	4.0	0.0	0.0	0.0	4.0	15.0	21.0	20.0	26.0	23.0	14.0
15	10.0	4.0	0.0	0.0	0.0	3.0	16.0	21.0	21.0	26.0	22.0	10.0
16	8.0	4.0	0.0	0.0	0.0	2.0	17.0	20.0	22.0	26.0	21.0	8.0
17	7.0	5.0	0.0	0.0	0.0	2.0	17.0	20.0	22.0	28.0	21.0	7.0
18	6.0	5.0	0.0	0.0	0.0	4.0	17.0	23.0	22.0	28.0	20.0	6.0
19	5.0	5.0	0.0	0.0	0.0	4.0	16.0	22.0	23.0	28.0	20.0	5.0
20	6.0	5.0	0.0	0.0	0.0	5.0	14.0	22.0	22.0	28.0	20.0	6.0
21	5.0	4.0	0.0	0.0	0.0	4.0	12.0	20.0	22.0	25.0	22.0	5.0
22	5.0	4.0	0.0	0.0	0.0	4.0	15.0	20.0	22.0	25.0	22.0	5.0
23	6.0	4.0	0.0	0.0	0.0	4.0	15.0	19.0	23.0	25.0	22.0	6.0
24	5.0	4.0	0.0	0.0	0.0	7.0	15.0	21.0	25.0	25.0	22.0	5.0
25	5.0	5.0	0.0	0.0	0.0	8.0	15.0	22.0	24.0	25.0	22.0	5.0
26	5.0	4.0	0.0	0.0	0.0	8.0	15.0	23.0	25.0	24.0	23.0	5.0
27	4.0	2.0	0.0	0.0	0.0	9.0	15.0	22.0	26.0	24.0	24.0	4.0
28	5.0	1.0	0.0	0.0	0.0	9.0	17.0	22.0	23.0	24.0	20.0	5.0
29	5.0	1.0	0.0	0.0	---	8.0	17.0	20.0	24.0	24.0	20.0	5.0
30	5.0	1.0	0.0	0.0	---	6.0	16.0	21.0	22.0	24.0	20.0	5.0
31	5.0	---	0.0	0.0	---	5.0	---	20.0	---	23.0	20.0	---

## JAMES RIVER BASIN

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06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 26,76 1145	NOV 16,76 1430	DEC 14,76 1145	JAN 20,77 1200	FEB 24,77 1100
TOTAL CELLS/ML	18000	18000	15000	27000	16000
DIVERSITY: DIVISION	0.9	0.9	1.5	0.1	0.9
..CLASS	0.9	1.1	1.9	0.3	0.9
...ORDER	0.9	1.9	2.2	0.3	1.1
...FAMILY	1.0	2.1	2.3	0.3	1.1
....GENUS	1.2	2.2	2.4	0.3	1.1

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
...PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	* 0		--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	4500# 26		5500# 36		520 2		* 0	
....CHODATELLA	--	-	--	-	* 0		--	-	--	-
....CLOSTERIOPSIS	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	* 0		--	-	--	-
....KIRCHNERIELLA	--	-	--	-	210 1		--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	470 3	
....SELENASTRUM	580 3		--	-	--	-	--	-	--	-
....TETRAEDRON	2300 13		--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
....CRUCIGENIA	580 3		900 5		* 0		--	-	--	-
....SCENEDESMUS	--	-	230 1		* 0		--	-	--	-
....TETRASTRUM	--	-	--	-	* 0		--	-	--	-
...VOLVOCELES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	--	-	8200# 47		420 3		--	-	350 2	
...POLYBLEPHARIDACEAE										
....SPERMATOZOOPSIS	--	-	--	-	--	-	--	-	--	-
...ZYGNEATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
....STAUSTRUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCAEAE										
....CYCLOTELLA	14000# 77		110 1		840 6		--	-	13000# 80	
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
...PENNALES										
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	110 1		--	-	--	-	--	-
...NITZSCHIAEAE										
....HANTZSCHIA	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	--	-	900 5		3900# 26		780 3		470 3	
..CHRYSOPHYCEAE										
...CHRYSONOMADALES										
...CHROMULINACEAE										
....CHROMULINA	--	-	--	-	210 1		--	-	--	-
....CHRYSOCOCCLUS	--	-	2000 12		--	-	25000# 95		--	-
...OCHROMONADACEAE										
....UROGLENA	--	-	--	-	840 6		--	-	--	-
..BACILLARIOPHYCEAE										
...PENNALES										
...NAVICULACEAE										
...PLAGIOTROPIS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## JAMES RIVER BASIN

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 26,76 1145	NOV 16,76 1430	DEC 14,76 1145	JAN 20,77 1200	FEB 24,77 1100					
TOTAL CELLS/ML	18000	18000	15000	27000	16000					
DIVERSITY: DIVISION	0.9	0.9	1.5	0.1	0.9					
..CLASS	0.9	1.1	1.9	0.3	0.9					
...ORDER	0.9	1.9	2.2	0.3	1.1					
...FAMILY	1.0	2.1	2.3	0.3	1.1					
....GENUS	1.2	2.2	2.4	0.3	1.1					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
....ANACYSTIS	--	-	--	-	* 0	--	-	--	-	
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIAEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIA	--	-	110	1	--	-	--	-	1500	10
...SPIRULINA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE	--	-	--	-	--	-	--	-	--	-
...RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	280	2	--	-	--	-
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	110	1	--	-	--	-	350	2
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	110	1	--	-	--	-	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	580	3	230	1	2800#	19	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	* 0	--	-	--	-	
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	* 0	--	-	--	-	

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## JAMES RIVER BASIN

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06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 19,77 1130	JUN 28,77 1145	JUL 19,77 1230	AUG 29,77 1300
TOTAL CELLS/ML	370000	61000	120000	31000
DIVERSITY: DIVISION	1.1	1.9	0.8	1.2
..CLASS	1.1	2.0	0.8	1.2
..ORDER	1.1	2.4	1.7	2.0
...FAMILY	1.8	2.9	1.8	2.2
....GENUS	2.1	3.5	2.0	2.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
...SCHROEDERIA	--	-	--	-	* 0		--	-
...HYDRODICTYACEAE								
...PEDIASTRUM	* 0		--	-	--	-	--	-
...MICRACTINIACEAE								
...GOLENKINIA	--	-	--	-	* 0		220	1
...OOCYSTACEAE								
....ANKISTRODESMUS	* 0		1300	2	1100	1	880	3
....CHODATELLA	--	-	--	-	--	-	--	-
....CLOSTERIOPSIS	* 0		--	-	--	-	--	-
....DICTYOSPHAERIUM	8200	2	3900	6	--	-	--	-
....KIRCHNERIELLA	7600	2	330	1	3200	3	--	-
....OOCYSTIS	--	-	--	-	* 0		--	-
....SELENASTRUM	--	-	--	-	--	-	--	-
....TETRAEDRON	* 0		330	1	970	1	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	2400	1	1300	2	--	-	--	-
....CRUCIGENIA	5500	1	7900	13	3900	3	5300#	17
....SCENEDESMUS	8900	2	2000	3	1100	1	4400	14
....TETRASTRUM	4500	1	--	-	--	-	1100	4
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CARTERIA	--	-	--	-	* 0		8800#	29
....CHLAMYDOMONAS	--	-	2000	3	--	-	440	1
...POLYBLEPHARIDACEAE								
....SPERMATOOZOPSIS	--	-	330	1	* 0		--	-
...ZYGNEMATALES								
...DESMIDIACEAE								
....COSMARIUM	--	-	--	-	* 0		--	-
....STAUSTRUM	* 0		--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCAEAE								
....CYCLOTELLA	* 0		2600	4	* 0		4600	15
....STEPHANODISCUS	--	-	--	-	--	-	220	1
...PENNALES								
...FRAGILARIACEAE								
....SYNEDRA	--	-	3600	6	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	* 0		330	1	* 0		--	-
....NAVICULA	--	-	--	-	* 0		--	-
...NITZSCHIAEAE								
....HANTZSCHIA	--	-	--	-	* 0		--	-
....NITZSCHIA	47000	13	12000#	20	2900	2	2200	7
..CHRYSOPHYCEAE								
...CHRYSOMONADALES								
...CHROMULINACEAE								
....CHROMULINA	--	-	--	-	--	-	--	-
....CHRYSOCCUS	--	-	--	-	--	-	--	-
...OCHROMONADACEAE								
....UROLENA	--	-	--	-	--	-	--	-
..BACILLARIOPHYCEAE								
...PENNALES								
...NAVICULACEAE								
....PLAGIOTROPIS	* 0		--	-	* 0		--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM; MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## JAMES RIVER BASIN

06478500 JAMES RIVER NEAR SCOTLAND, SD--Continued

DATE TIME	MAY 19,77 1130	JUN 28,77 1145	JUL 19,77 1230	AUG 29,77 1300
TOTAL CELLS/ML	370000	61000	120000	31000
DIVERSITY: DIVISION	1.1	1.9	0.8	1.2
..CLASS	1.1	2.0	0.8	1.2
..ORDER	1.1	2.4	1.7	2.0
...FAMILY	1.8	2.9	1.8	2.2
....GENUS	2.1	3.5	2.0	2.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....CHROCOCCACEAE								
.....ANACYSTIS	--	-	--	-	62000#	52	--	-
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	37000	10	--	-	--	-	--	-
....ANABAENOPSIS	22000	6	--	-	--	-	--	-
...OSCILLATORIA								
....LYNGBYA	--	-	3900	6	38000#	32	--	-
...OSCILLATORIA	220000#	59	12000#	19	830	1	--	-
...SPIRULINA	*	0	--	-	--	-	--	-
...RIVULARIACEAE								
...RAPHIDIOPSIS	*	0	--	-	--	-	--	-
...CHROCOCCALES								
...CHROCOCCACEAE								
...GOMPHOSPHAERIA	2700	1	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	2300	4	*	0	--	-
...CRYPTOMONODACEAE								
....CRYPTOMONAS	*	0	--	-	*	0	--	-
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	*	0	330	1	1200	1	880	3
....LEPOCINCLIS	*	0	--	-	--	-	--	-
....PHACUS	--	-	--	-	830	1	--	-
...TRACHELOMONAS	*	0	4600	8	*	0	1800	6
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
...GLENODINIACEAE								
...GLENODINIUM	--	-	--	-	--	-	--	-
...PERIDINIACEAE								
...PERIDINIUM	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%



## VERMILLION RIVER BASIN

205

06478540 LITTLE VERMILLION RIVER NEAR SALEM, SD  
(Hydrologic bench-mark station)

LOCATION.--Lat 43°47'39", long 97°22'02", in SW¼ sec.19, T.104 N., R.54 W., McCook County, Hydrologic Unit 10170102, on right wingwall at downstream end of culvert on county highway, 2.0 mi (3.2 km) upstream from small left-bank tributary and 5.2 mi (8.4 km) northeast of Salem.

DRAINAGE AREA.--51.0 mi<sup>2</sup> (132 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and concrete dam.

REMARKS.--Records good. One observation of water temperature was made during the year.

AVERAGE DISCHARGE.--11 years, 1.63 ft<sup>3</sup>/s (0.046 m<sup>3</sup>/s), 1,180 acre-ft/yr (1.45 hm<sup>3</sup>/yr); median of yearly mean discharges, 1.1 ft<sup>3</sup>/s (0.03 m<sup>3</sup>/s), 800 acre-ft/yr (0.99 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 596 ft<sup>3</sup>/s (16.9 m<sup>3</sup>/s) Apr. 7, 1969, gage height, 7.58 ft (2.310 m); maximum gage height, 8.53 ft (2.600 m) Apr. 5, 1969 (backwater from ice); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 223 ft<sup>3</sup>/s (6.32 m<sup>3</sup>/s) at 1600 hours Mar. 12; gage height, 6.38 ft (1.945 m), no other peak above base of 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s); no flow for many days.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

3.70	0	4.1	1.4	4.4	11	5.5	92
3.8	.09	4.2	2.8	4.6	23	6.0	160
3.9	.20	4.3	5.5	5.0	47	6.5	255
4.0	.53						

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	5.4	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	49	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	199	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	158	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	86	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	39	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	9.8	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	1.0	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	547.59	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	17.7	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	199	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	1090	.00	.00	.00	.00	.00	.00
CAL YR 1976	TOTAL	16.35	MEAN	.045	MAX	3.0	MIN	.00	AC-FT	32		
WTR YR 1977	TOTAL	547.59	MEAN	1.50	MAX	199	MIN	.00	AC-FT	1090		

## VERMILLION RIVER BASIN

06478690 WEST FORK VERMILLION RIVER NEAR PARKER, SD

LOCATION.--Lat 43°24'55", long 97°12'18", in NE¼NE¼ sec.10, T.99 N., R.54 W., Turner County, Hydrologic Unit 10170102, on left downstream wingwall of bridge, 3.7 mi (6.0 km) northwest of Parker and 13.9 mi (22.4 km) upstream from confluence with East Fork Vermillion River.

DRAINAGE AREA.--370 mi<sup>2</sup> (958 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,340 ft (408 m), from topographic map. Prior to Oct. 11, 1973, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records fair except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--16 years, 18.4 ft<sup>3</sup>/s (0.521 m<sup>3</sup>/s), 13,330 acre-ft/yr (16.4 hm<sup>3</sup>/yr); median of yearly mean discharges, 7.6 ft<sup>3</sup>/s (0.22 m<sup>3</sup>/s), 5,500 acre-ft/yr (6.8 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,340 ft<sup>3</sup>/s (123 m<sup>3</sup>/s) Mar. 28, 1962, gage height, 12.33 ft (3.758 m); no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 314 ft<sup>3</sup>/s (8.89 m<sup>3</sup>/s) at 2000 hours Mar. 15, gage height, 5.62 ft (1.713 m), no other peak above base of 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s); no flow for many days.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 10 to May 4, July 22 to Sept. 30; stage-discharge relation affected by ice Nov. 23 to Mar. 12)

1.0	0.01	1.3	1.1	2.0	17	4.0	142
1.1	.15	1.4	2.2	2.5	35	5.0	243
1.2	.49	1.6	6.6	3.0	63	6.0	382

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.05	.00	.00	.00	.00	26	.68	.08	.01	.00	.00
2	.02	.05	.00	.00	.00	.00	13	.63	.08	.01	.00	.00
3	.02	.05	.00	.00	.00	.00	9.2	.49	.06	.02	.01	.00
4	.02	.05	.00	.00	.00	.00	8.5	.45	.06	.05	.01	.00
5	.02	.05	.00	.00	.00	.00	8.0	.37	.06	.04	.01	.00
6	.02	.05	.00	.00	.00	.10	6.8	.37	.05	.04	.01	.00
7	.04	.05	.00	.00	.00	1.0	6.6	.37	.05	.02	.01	.00
8	.04	.05	.00	.00	.00	7.0	5.6	.26	.05	.02	.01	.00
9	.05	.05	.00	.00	.00	30	5.2	.26	.05	.02	.02	.00
10	.05	.05	.00	.00	.00	60	4.9	.17	.05	.02	.02	.00
11	.05	.05	.00	.00	.00	120	4.5	.17	.05	.02	.02	.00
12	.05	.05	.00	.00	.00	180	4.2	.11	.05	.02	.01	.00
13	.04	.05	.00	.00	.00	201	3.8	.10	.05	.02	.01	.00
14	.05	.05	.00	.00	.00	218	3.8	.06	.05	.02	.01	.00
15	.04	.05	.00	.00	.00	293	3.8	.04	.04	.02	.08	.00
16	.05	.05	.00	.00	.00	251	3.8	.05	.02	.02	.06	.80
17	.05	.05	.00	.00	.00	156	2.7	.04	.02	.02	.05	4.5
18	.05	.05	.00	.00	.00	98	2.2	.04	.02	.02	.04	5.6
19	.05	.05	.00	.00	.00	65	2.3	.04	.02	.02	.02	5.6
20	.05	.05	.00	.00	.00	56	2.2	.04	.02	.02	.02	5.6
21	.05	.05	.00	.00	.00	40	2.9	.04	.02	.02	.02	5.6
22	.04	.05	.00	.00	.00	30	3.1	.06	.05	.02	.02	6.6
23	.05	.03	.00	.00	.00	23	3.6	.10	.05	.02	.02	8.0
24	.05	.02	.00	.00	.00	18	2.3	.13	.05	.02	.02	9.7
25	.05	.01	.00	.00	.00	16	1.9	.15	.05	.02	.02	10
26	.05	.00	.00	.00	.00	14	1.3	.13	.05	.01	.02	10
27	.05	.00	.00	.00	.00	15	1.2	.13	.05	.00	.02	10
28	.05	.00	.00	.00	.00	16	1.2	.13	.02	.00	.00	10
29	.05	.00	.00	.00	---	24	.93	.13	.02	.00	.00	11
30	.05	.00	.00	.00	---	44	.93	.11	.01	.00	.00	17
31	.05	---	.00	.00	---	44	---	.10	---	.00	.00	---
TOTAL	1.32	1.16	.00	.00	.00	2020.10	146.46	5.95	1.30	.56	.56	120.00
MEAN	.043	.039	.000	.000	.000	65.2	4.88	.19	.043	.018	.018	4.00
MAX	.05	.05	.00	.00	.00	293	26	.68	.08	.05	.08	17
MIN	.02	.00	.00	.00	.00	.00	.93	.04	.01	.00	.00	.00
AC-FT	2.6	2.3	.00	.00	.00	4010	291	12	2.6	1.1	1.1	238

CAL YR 1976 TOTAL 2423.23 MEAN 6.62 MAX 125 MIN .00 AC-FT 4810  
WTR YR 1977 TOTAL 2297.41 MEAN 6.29 MAX 293 MIN .00 AC-FT 4560

## 06479000 VERMILLION RIVER NEAR WAKONDA, SD

LOCATION.--Lat 42°59'27", long 96°57'49", in SW¼NW¼ sec.2, T.94 N., R.52 W., Clay County, Hydrologic Unit 10170102, on left bank 40 ft (12 m) downstream from bridge on State Highway 19, 4.3 mi (6.9 km) downstream from Frog Creek, 7.4 mi (11.9 km) southeast of Wakonda, and 29.6 mi (47.6 km) upstream from mouth.

DRAINAGE AREA.--1,680 mi<sup>2</sup> (4,351 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,150.9 ft (350.79 m) above mean sea level, levels by Corps of Engineers. Prior to Sept. 2, 1954, nonrecording gage and crest-stage gage at site 40 ft (12 m) upstream at same datum. Since Dec. 27, 1951, supplementary nonrecording gage on relief bridge.

REMARKS.--Records poor. At times during periods of high stage, part of flow leaves main channel through levee breaks and bypasses gage through overflow channel on left bank. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 107 ft<sup>3</sup>/s (3.030 m<sup>3</sup>/s), 77,520 acre-ft/yr (95.6 hm<sup>3</sup>/yr); median of yearly mean discharges, 77 ft<sup>3</sup>/s (2.18 m<sup>3</sup>/s), 55,800 acre-ft/yr (69 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,880 ft<sup>3</sup>/s (280 m<sup>3</sup>/s) Apr. 8, 1969; maximum gage height, 17.17 ft (5.233 m) Apr. 6, 1969; no flow at times in 1951, 1956-59, 1975-77.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 355 ft<sup>3</sup>/s (10.1 m<sup>3</sup>/s) Mar. 15, gage height, 8.00 ft (2.438 m); maximum gage height, 8.80 ft (2.682 m) Mar. 14 (backwater from ice), no peak above base of 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.27	.00	16	32	9.7	1.3	.14	.15	.00
2	.00	.00	.00	.21	.00	16	32	11	1.6	.15	.15	.00
3	.00	.00	.01	.18	.00	16	30	13	1.1	.15	.15	.00
4	.00	.00	.03	.15	.00	17	27	14	.80	.12	.15	.00
5	.00	.00	.02	.15	.00	17	27	15	.70	.12	.12	.00
6	.00	.00	.02	.15	.00	17	26	16	.50	.09	.12	.00
7	.00	.00	.01	.12	.00	18	24	6.8	.55	.09	.09	.00
8	.00	.00	.01	.15	.00	19	22	2.8	.65	.09	.12	.00
9	.00	.00	.01	.09	.00	32	21	1.6	.65	.06	.12	.00
10	.00	.00	.01	.06	.00	28	21	.75	.75	.06	.12	.00
11	.00	.00	.02	.03	.00	28	18	1.3	1.1	.06	.12	.00
12	.00	.00	.05	.03	.00	30	18	2.0	1.2	.06	.09	.00
13	.00	.00	.12	.03	.70	45	17	1.3	1.4	.09	.06	11
14	.00	.00	.25	.03	4.3	300	18	.80	1.2	.09	.06	13
15	.00	.00	.40	.03	3.9	283	18	.80	1.1	.12	.06	4.1
16	.00	.00	.59	.03	3.8	264	16	.88	1.2	.09	.00	5.1
17	.00	.01	.65	.03	4.0	224	15	.79	3.4	.09	.00	3.9
18	.00	.01	.75	.02	4.7	235	15	.65	6.0	.06	.00	3.6
19	.00	.01	.93	.01	5.2	185	15	.55	.70	.00	.00	3.0
20	.00	.01	.80	.01	5.2	140	16	1.6	.18	.00	.00	2.5
21	.00	.00	.50	.00	5.5	107	18	17	.21	.06	.00	2.1
22	.00	.00	.50	.00	6.0	81	19	42	.70	.06	.00	1.8
23	.00	.00	.50	.00	7.0	73	18	42	3.0	.06	.00	1.7
24	.00	.01	.50	.00	11	61	18	23	3.0	2.4	.00	1.3
25	.00	.01	.50	.00	13	52	18	1.6	3.0	4.1	.00	1.1
26	.00	.01	.50	.00	18	46	16	.60	2.1	.35	.00	.80
27	.00	.01	.55	.00	17	41	14	22	.35	.65	.00	.70
28	.00	.00	.55	.00	17	37	13	21	.18	.21	.00	.60
29	.00	.00	.55	.00	---	36	11	2.8	.18	.18	.00	.60
30	.00	.00	.50	.00	---	34	9.7	1.8	.15	.18	.00	.75
31	.00	---	.40	.00	---	33	---	.93	---	.15	.00	---
TOTAL	.00	.08	10.23	1.78	126.30	2531	582.7	276.05	38.95	10.13	1.68	57.65
MEAN	.000	.003	.33	.057	4.51	81.6	19.4	8.90	1.30	.33	.054	1.92
MAX	.00	.01	.93	.27	18	300	32	42	6.0	4.1	.15	13
MIN	.00	.00	.00	.00	.00	16	9.7	.55	.15	.00	.00	.00
AC-FT	.00	.2	20	3.5	251	5020	1160	548	77	20	3.3	114
CAL YR 1976	TOTAL	11893.84	MEAN	32.5	MAX	452	MIN	.00	AC-FT	23590		
WTR YR 1977	TOTAL	3636.55	MEAN	9.96	MAX	300	MIN	.00	AC-FT	7210		

## BIG SIOUX RIVER BASIN

06479438 BIG SIOUX RIVER NEAR WATERTOWN, SD

LOCATION.--Lat 45°00'22", long 97°09'53", in NE¼NE¼NE¼ sec.16, T.118 N., R.52 W., Codington County, Hydrologic Unit 10170202, on left bank at downstream side of county highway bridge, 4.9 mi (7.9 km) downstream from Mahoney Creek, 6.5 mi (10.5 km) upstream from inlet-outlet to Lake Kampeska, and 7.5 mi (12.1 km) northwest of Watertown.

DRAINAGE AREA.--241 mi<sup>2</sup> (624 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,725.81 ft (526.027 m) above mean sea level (South Dakota Department of Transportation bench mark).

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--5 years, 10.3 ft<sup>3</sup>/s (0.292 m<sup>3</sup>/s), 7,460 acre-ft/yr (9.20 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 528 ft<sup>3</sup>/s (15.0 m<sup>3</sup>/s) June 16, 1977, gage height, 8.77 ft (2.673 m); maximum gage height, 9.52 ft (2.902 m) Mar. 13, 1977 (backwater from ice); no flow at times in 1974-77.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 300 ft<sup>3</sup>/s (8.50 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 13	1400	450 12.7	*a9.52 2.902	June 16	1200	*528 15.0	8.77 2.673

No flow Dec. 8 to Mar. 8  
a Ice jam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.15	.03	.00	.00	.00	67	9.5	4.7	7.1	.34	.81
2	.17	.12	.02	.00	.00	.00	59	7.8	4.0	6.5	.39	.55
3	.09	.04	.03	.00	.00	.00	44	7.0	2.4	5.5	.40	.56
4	.09	.09	.03	.00	.00	.00	33	6.2	1.8	5.0	.66	.31
5	.11	.19	.03	.00	.00	.00	28	4.9	.80	4.5	.56	.26
6	.11	.22	.02	.00	.00	.00	26	4.5	.44	3.8	.40	.34
7	.28	.19	.01	.00	.00	.00	22	3.8	.23	3.2	.44	.29
8	.57	.17	.00	.00	.00	.00	20	3.3	.19	2.6	.40	.32
9	.55	.19	.00	.00	.00	.10	18	2.9	.09	2.7	.38	.22
10	.61	.16	.00	.00	.00	1.0	16	3.5	.09	2.5	.28	.13
11	.62	.15	.00	.00	.00	10	14	2.2	.06	4.0	.28	.12
12	.63	.12	.00	.00	.00	75	13	1.1	.12	3.0	.19	.21
13	.09	.11	.00	.00	.00	400	12	.64	.06	2.2	.17	.15
14	.13	.09	.00	.00	.00	300	13	1.3	.09	1.4	.19	.14
15	.06	.08	.00	.00	.00	246	16	.74	1.1	1.4	.42	.17
16	.05	.08	.00	.00	.00	192	14	.39	244	1.3	.42	.14
17	.10	.09	.00	.00	.00	122	13	.37	259	.99	.34	.16
18	.18	.10	.00	.00	.00	86	17	.38	133	1.4	.32	.22
19	.20	.11	.00	.00	.00	57	26	.25	93	.90	.59	.09
20	.27	.12	.00	.00	.00	42	59	7.2	59	.57	.59	.09
21	.23	.11	.00	.00	.00	29	59	9.1	40	.51	.56	.28
22	.21	.09	.00	.00	.00	24	55	8.0	32	.43	.69	.48
23	.24	.08	.00	.00	.00	19	49	6.3	26	.96	.48	1.8
24	.31	.07	.00	.00	.00	18	34	38	20	1.3	.36	3.4
25	.31	.09	.00	.00	.00	16	26	45	16	1.2	.51	1.8
26	.31	.08	.00	.00	.00	18	21	26	13	.88	.38	1.5
27	.30	.07	.00	.00	.00	20	17	17	11	.65	.24	1.3
28	.30	.06	.00	.00	.00	24	14	13	9.5	.50	.44	1.1
29	.29	.05	.00	.00	---	27	12	11	8.7	.49	.73	.95
30	.28	.04	.00	.00	---	47	11	8.0	7.7	.58	.40	1.6
31	.20	---	.00	.00	---	86	---	6.8	---	.33	2.4	---
TOTAL	8.06	3.31	.17	.00	.00	1859.10	828	256.17	988.07	68.39	14.95	19.49
MEAN	.26	.11	.005	.000	.000	60.0	27.6	8.26	32.9	2.21	.48	.65
MAX	.63	.22	.03	.00	.00	400	67	45	259	7.1	2.4	3.4
MIN	.05	.04	.00	.00	.00	.00	11	.25	.06	.33	.17	.09
AC-FT	16	6.6	.3	.00	.00	3690	1640	508	1960	136	30	39

CAL YR 1976 TOTAL 1964.75 MEAN 5.37 MAX 229 MIN .00 AC-FT 3900  
WTR YR 1977 TOTAL 4045.71 MEAN 11 MAX 400 MIN .00 AC-FT 8020

## 209

LOCATION.--Lat 44°54'17", long 97°03'31", in NE¼NW¼ sec.34, T.117 N., R.52 W., Codington County, Hydrologic Unit 10170202, on right bank 5 ft (2 m) downstream from bridge, 4.7 mi (7.6 km) upstream from mouth, and 2.8 mi (4.5 km) east of Watertown.

GAGE.--Water-stage recorder. Datum of gage is 1,721.24 ft (524.634 m) above mean sea level (South Dakota Department of Transportation bench mark).

REMARKS.--Records good except those for period of no gage-height record, Jan. 10 to Apr. 6, and winter periods, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,220 ft<sup>3</sup>/s (34.6 m<sup>3</sup>/s) May 29, 1972, gage height, 6.23 ft (1.899 m); maximum gage height, 9.86 ft (3.005 m) Mar. 15, 1972 (backwater from ice); no flow for many days each year.

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)		Gage height (ft) (m)		Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)		Gage height (ft) (m)	
Mar. 12	1900	400	11.3	*a7.39	2.252	June 16	1500	*708	20.1	5.57	1.698

No flow for many days.  
a Ice jam.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Dec. 21, July 13 to Aug. 22; stage-  
discharge relation affected by ice Dec. 22 to Mar. 18)

3.4	0	3.7	6.5	4.2	95
3.5	.12	3.8	15	4.5	195
3.6	1.0	4.0	50	5.0	415

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.10	.04	.00	.00	.00	20	2.5	.11	.53	.05	.10
2	.00	.09	.04	.00	.00	.00	15	3.0	.11	.42	.05	4.5
3	.00	.05	.04	.00	.00	.00	12	3.0	.11	.25	.05	3.1
4	.00	.04	.05	.00	.00	.00	9.0	3.0	.11	.14	.12	1.5
5	.00	.06	.07	.00	.00	.00	7.0	2.5	.08	.06	.23	.55
6	.00	.09	.09	.00	.00	.00	6.0	2.0	.03	.03	.16	.18
7	.00	.10	.08	.00	.00	.00	5.3	2.0	.02	.02	2.8	.01
8	.00	.10	.06	.00	.00	.00	6.1	2.0	.08	.00	.21	.00
9	.00	.10	.05	.00	.00	1.0	5.6	1.5	.10	.00	.07	.00
10	.00	.10	.06	.00	.00	10	5.2	1.0	.11	.00	.02	.00
11	.00	.11	.02	.00	.00	30	5.0	1.0	.14	.26	.02	.00
12	.00	.10	.07	.00	.00	275	5.0	1.0	.25	.09	.00	.00
13	.00	.09	.08	.00	.00	250	4.7	.50	.25	.05	.00	.00
14	.00	.08	.08	.00	.00	150	4.1	.40	.14	.11	.00	.00
15	.00	.08	.09	.00	.00	80	4.1	.35	6.5	.10	.00	.00
16	.00	.10	.10	.00	.00	50	5.9	.35	227	.06	.00	.00
17	.00	.10	.11	.00	.00	26	11	.40	98	.04	.00	.00
18	.00	.10	.12	.00	.00	20	21	.28	27	.03	.00	.00
19	.00	.15	.15	.00	.00	16	19	.25	11	.01	.00	.00
20	.00	.15	.09	.00	.00	12	18	.28	7.7	.01	.00	.00
21	.00	.15	.07	.00	.00	11	24	.30	4.7	.02	.00	.00
22	.03	.14	.05	.00	.00	10	21	.50	7.7	.01	.00	.02
23	.05	.12	.03	.00	.00	9.5	12	.30	9.5	.01	.00	38
24	.06	.11	.02	.00	.00	9.0	8.9	.28	7.7	.04	.00	33
25	.08	.15	.02	.00	.00	8.5	7.7	.25	8.3	.07	.00	19
26	.10	.21	.03	.00	.00	9.0	6.5	.25	5.9	.07	.00	9.3
27	.10	.15	.03	.00	.00	10	5.3	.28	3.5	.07	.00	6.4
28	.10	.10	.02	.00	.00	13	4.7	.25	3.0	.07	.00	4.4
29	.10	.06	.01	.00	---	17	4.1	.18	2.3	.07	.00	2.5
30	.10	.05	.00	.00	---	20	3.5	.18	1.2	.07	.00	3.9
31	.10	---	.00	.00	---	25	---	.12	---	.06	.40	---
TOTAL	.82	3.13	1.77	.00	.00	1062.00	286.7	30.20	432.64	2.77	4.18	126.46
MEAN	.026	.10	.057	.000	.000	34.3	9.56	.97	14.4	.089	.13	4.22
MAX	.10	.21	.15	.00	.00	275	24	3.0	227	.53	2.8	38
MIN	.00	.04	.00	.00	.00	.00	3.5	.12	.02	.00	.00	.00
AC-FT	1.6	6.2	3.5	.00	.00	2110	569	60	858	5.5	8.3	251
CAL YR 1976	TOTAL	2611.31	MEAN 7.13	MAX 300	MIN .00	AC-FT 5180						
WTR YR 1977	TOTAL	1950.67	MEAN 5.34	MAX 275	MIN .00	AC-FT 3870						



## BIG SIOUX RIVER BASIN

06479529 STRAY HORSE CREEK NEAR CASTLEWOOD, SD

LOCATION.--Lat 44°43'52", long 96°57'23", in NE¼NE¼NW¼ sec.33, T.115 N., R.51 W., Hamlin County, Hydrologic Unit 10170202, on right bank at downstream side of bridge on State Highway 22, 3.5 mi (5.6 km) east of Castlewood, 6.4 mi (10.3 km) upstream from mouth, and 7.0 mi (11.3 km) north of Dempster.

DRAINAGE AREA.--73.7 mi<sup>2</sup> (191 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,703.88 ft (519.343 m) above mean sea level (South Dakota Department of Transportation bench mark).

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--9 years, 9.67 ft<sup>3</sup>/s (0.274 m<sup>3</sup>/s), 7,010 acre-ft/yr (8.64 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft<sup>3</sup>/s (396 m<sup>3</sup>/s) Apr. 7, 1969, gage height, 14.65 ft (4.465 m), from rating curve extended above 3,500 ft<sup>3</sup>/s (99.1 m<sup>3</sup>/s) on basis of contracted-opening measurement of peak flow; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 175 ft<sup>3</sup>/s (4.96 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 12	0630	900 25.5	*a10.45 3.185	June 16	0730	*1750 49.6	10.22 3.115

No flow for many days.  
a Ice jam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	4.8	.60	.00	1.3	.00	.85
2	.00	.00	.00	.00	.00	.00	3.9	.49	.00	.88	.00	1.2
3	.00	.00	.00	.00	.00	.00	2.9	.41	.00	.78	.00	.70
4	.00	.00	.00	.00	.00	.00	2.5	.44	.00	.63	.04	.55
5	.00	.00	.00	.00	.00	.00	2.4	.41	.00	.47	.07	.50
6	.00	.00	.00	.00	.00	.00	2.0	.27	.00	.47	.09	.70
7	.00	.00	.00	.00	.00	.00	1.6	.18	.00	.46	.08	.85
8	.00	.00	.00	.00	.00	1.0	1.5	.21	.00	.28	.07	.70
9	.00	.00	.00	.00	.00	1.5	1.3	.20	.00	.18	.07	.45
10	.00	.00	.00	.00	.00	2.5	1.2	.14	.00	.18	.10	.32
11	.00	.00	.00	.00	.00	50	.95	.06	.00	.40	.09	.24
12	.00	.00	.00	.00	.00	550	.75	.04	.00	.30	.07	.21
13	.00	.00	.00	.00	.00	150	.63	.00	.00	.20	.05	.21
14	.00	.00	.00	.00	.00	90	.62	.00	.00	.24	.06	.18
15	.00	.00	.00	.00	.00	75	.70	.00	.45	.19	.09	.14
16	.00	.00	.00	.00	.00	52	.71	.00	528	.14	.16	.14
17	.00	.00	.00	.00	.00	37	5.1	.00	99	.09	.23	.10
18	.00	.00	.00	.00	.00	30	5.9	.00	32	.04	.23	.10
19	.00	.00	.00	.00	.00	17	4.1	.00	16	.01	.25	.07
20	.00	.00	.00	.00	.00	9.3	4.2	.00	9.1	.00	.28	.04
21	.00	.00	.00	.00	.00	5.4	5.7	.00	5.4	.00	.31	.04
22	.00	.00	.00	.00	.00	4.1	5.0	.11	5.2	.00	.31	.50
23	.00	.00	.00	.00	.00	3.7	4.7	.20	15	.00	.35	4.2
24	.00	.00	.00	.00	.00	3.9	3.1	.10	9.6	.00	.37	5.8
25	.00	.00	.00	.00	.00	4.1	2.3	.02	5.4	.00	.42	.07
26	.00	.00	.00	.00	.00	5.0	1.8	.00	3.6	.00	.54	.01
27	.00	.00	.00	.00	.00	5.2	1.6	.00	2.3	.00	.65	.00
28	.00	.00	.00	.00	.00	4.2	1.2	.00	1.8	.00	.70	.00
29	.00	.00	.00	.00	---	4.6	1.0	.00	1.5	.00	.60	.00
30	.00	.00	.00	.00	---	6.0	.73	.00	1.4	.01	.72	2.4
31	.00	---	.00	.00	---	6.0	---	.00	---	.00	1.0	---
TOTAL	.00	.00	.00	.00	.00	1117.50	74.89	3.88	735.75	7.25	8.00	21.27
MEAN	.000	.000	.000	.000	.000	36.0	2.50	.13	24.5	.23	.26	.71
MAX	.00	.00	.00	.00	.00	550	5.9	.60	528	1.3	1.0	5.8
MIN	.00	.00	.00	.00	.00	.00	.62	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	2220	149	7.7	1460	14	16	42

CAL YR 1976	TOTAL	3208.59	MEAN 8.77	MAX 700	MIN .00	AC-FT 6360
WTR YR 1977	TOTAL	1968.54	MEAN 5.39	MAX 550	MIN .00	AC-FT 3900



06479640 HIDEWOOD CREEK NEAR ESTELLINE, SD

LOCATION.--Lat 44°36'42", long 96°54'17", in SW¼NW¼ sec.12, T.113 N., R.51 W., Hamlin County, Hydrologic Unit 10170202, on left bank at upstream side of highway bridge, 2.7 mi (4.3 km) north of Estelline, 2.8 mi (4.5 km) southeast of Dempster, and 4.7 mi (7.6 km) upstream from mouth.

DRAINAGE AREA.--164 mi<sup>2</sup> (425 km<sup>2</sup>), approximately.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,665 ft (507 m), from topographic map.

REMARKS.--Records fair except those for winter periods, which are poor. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--9 years, 21.7 ft<sup>3</sup>/s (0.615 m<sup>3</sup>/s), 15,720 acre-ft/yr (19.4 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,630 ft<sup>3</sup>/s (103 m<sup>3</sup>/s) Apr. 7, 1969, gage height, 11.36 ft (3.463 m); maximum gage height, 11.55 ft (3.520 m) Apr. 8, 1969 (backwater from collapsed bridge), no flow at times in 1969, 1971, 1974-77.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 300 ft<sup>3</sup>/s (8.50 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 12	0900	*950 26.9	*a8.99 2.740	June 16	1900	653 18.5	7.63 2.326

No flow for many days.  
a Ice jam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.10	.00	.00	.00	.00	46	3.4	.27	2.5	.00	5.5
2	.01	.16	.00	.00	.00	.00	35	2.8	.07	.22	.00	.49
3	.00	.12	.00	.00	.00	.00	25	2.6	.02	.00	.00	.00
4	.00	.08	.00	.00	.00	.00	19	2.2	.00	.00	.00	.00
5	.00	.07	.00	.00	.00	.00	11	2.1	.00	.00	.00	.00
6	.02	.07	.00	.00	.00	.00	10	2.2	.00	.00	.00	.00
7	.06	.04	.00	.00	.00	.00	9.2	1.6	.00	.00	.00	.00
8	.14	.05	.00	.00	.00	.00	7.1	1.3	.00	.00	.00	.00
9	.17	.09	.00	.00	.00	.02	6.2	.82	.00	.00	.00	.00
10	.18	.04	.00	.00	.00	1.0	5.2	.56	.00	.00	.00	.00
11	.27	.03	.00	.00	.00	200	4.8	.28	.00	.00	.00	.00
12	.27	.00	.00	.00	.00	800	4.5	.16	.00	.00	.00	.00
13	.25	.00	.00	.00	.00	450	4.3	.07	.00	.00	.00	.00
14	.20	.00	.00	.00	.00	281	4.3	.01	.00	.00	.00	.00
15	.20	.00	.00	.00	.00	165	4.8	.00	7.1	.00	.00	.00
16	.10	.00	.00	.00	.00	78	5.1	.00	412	.00	.00	.00
17	.20	.00	.00	.00	.00	46	5.0	.00	383	.00	.00	.00
18	.22	.00	.00	.00	.00	37	5.0	.00	134	.00	.00	.00
19	.26	.00	.00	.00	.00	37	5.2	.00	82	.00	.00	.00
20	.31	.00	.00	.00	.00	32	7.2	.00	53	.00	.00	.00
21	.27	.00	.00	.00	.00	32	13	.01	35	.00	.00	.00
22	.22	.00	.00	.00	.00	23	21	.10	28	.00	.00	.00
23	.25	.00	.00	.00	.00	26	28	.27	24	.00	.00	12
24	.34	.00	.00	.00	.00	25	23	.30	18	.00	.00	73
25	.34	.00	.00	.00	.00	14	17	.19	15	.00	.00	23
26	.27	.00	.00	.00	.00	32	13	.15	11	.00	.00	8.6
27	.27	.00	.00	.00	.00	29	9.0	.17	8.6	.00	.00	3.5
28	.28	.00	.00	.00	.00	18	6.1	.25	6.3	.00	.00	1.9
29	.34	.00	.00	.00	---	18	4.8	.20	4.9	.00	.00	.93
30	.26	.00	.00	.00	---	69	3.9	.22	5.5	.00	.00	7.4
31	.17	---	.00	.00	---	66	---	.35	---	.00	12	---
TOTAL	5.97	.85	.00	.00	.00	2479.02	362.7	22.31	1227.76	2.72	12.00	136.32
MEAN	.19	.028	.000	.000	.000	80.0	12.1	.72	40.9	.088	.39	4.54
MAX	.34	.16	.00	.00	.00	800	46	3.4	412	2.5	12	73
MIN	.00	.00	.00	.00	.00	.00	3.9	.00	.00	.00	.00	.00
AC-FT	12	1.7	.00	.00	.00	4920	719	44	2440	5.4	24	270
CAL YR 1976	TOTAL	4769.38	MEAN 13.0	MAX 600	MIN .00	AC-FT 9460						
WTR YR 1977	TOTAL	4249.65	MEAN 11.6	MAX 800	MIN .00	AC-FT 8430						

## BIG SIOUX RIVER BASIN

06479910 SIXMILE CREEK NEAR BROOKINGS, SD

LOCATION.--Lat 44°20'46", long 96°44'51", in NE&SE& sec.7, T.110 N., R.49 W., Brookings County, Hydrologic Unit 10170202, on left bank 8 ft (2 m) downstream from bridge, 0.7 mi (1.1 km) upstream from Interstate Highway 29 and 2.7 mi (4.3 km) northeast of Brookings.

DRAINAGE AREA.--54.0 mi<sup>2</sup> (140 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--September 1970 to current year. February 1951 to August 1970 (gage heights and discharge measurements only in files of Corps of Engineers).

REVISED RECORDS.--WRD SD-76-1: 1975.

GAGE.--Water-stage recorder. Datum of gage is 1,618.57 ft (493.340 m) above mean sea level (levels by Corps of Engineers). Prior to Sept. 1, 1970, at datum 3.00 ft (0.914 m) higher, and Sept. 1, 1970, to Nov. 2, 1975, at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--7 years, 4.82 ft<sup>3</sup>/s (0.136 m<sup>3</sup>/s), 3,490 acre-ft/yr (4.30 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 423 ft<sup>3</sup>/s (12.0 m<sup>3</sup>/s) June 16, 1977, gage height, 9.14 ft (2.786 m); maximum gage height, 9.67 ft (2.947 m) Mar. 12, 1977 (backwater from ice); no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 12	1330	350 9.91	*a9.67 2.947	June 16	1130	*423 12.0	9.14 2.786

No flow for many days.  
a Ice jam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.12	.00	.00	.00	.05	6.0	.75	.14	.50	.00	2.1
2	.00	.11	.00	.00	.00	.06	6.8	.64	.07	.41	.00	1.6
3	.00	.08	.00	.00	.00	.07	5.4	.57	.00	.30	.00	.98
4	.00	.02	.00	.00	.00	.07	5.0	.60	.00	.23	.00	.80
5	.00	.11	.00	.00	.00	.06	10	.64	.00	.22	.00	.57
6	.00	.13	.00	.00	.00	.07	3.4	.56	.00	.20	.00	.39
7	.00	.14	.00	.00	.00	.15	2.9	.32	.00	.17	.00	.30
8	.00	.14	.00	.00	.00	1.0	2.4	.28	.00	.14	.00	.25
9	.00	.16	.00	.00	.00	5.0	2.1	.27	.00	.13	.00	.22
10	.00	.15	.00	.00	.00	20	2.1	.20	.00	.12	.00	.14
11	.00	.20	.00	.00	.00	90	2.1	.17	.00	.18	.00	.09
12	.00	.14	.00	.00	.00	280	1.9	.17	.00	.16	.00	.12
13	.00	.15	.00	.00	.00	150	2.1	.15	.00	.13	.00	.09
14	.00	.14	.00	.00	.00	65	2.4	.16	.00	.10	.00	.04
15	.00	.19	.00	.00	.00	40	3.4	.12	.05	.09	.00	.02
16	.00	.20	.00	.00	.00	27	2.9	.07	254	.08	.00	.00
17	.00	.22	.00	.00	.00	22	2.4	.11	279	.07	.00	.02
18	.00	.22	.00	.00	.00	16	2.1	.08	174	.06	.00	.09
19	.00	.25	.00	.00	.00	12	2.1	.04	89	.05	.00	.07
20	.00	.26	.00	.00	.00	9.2	2.7	.19	55	.04	.00	.04
21	.00	.18	.00	.00	.00	10	6.4	.31	36	.04	.00	.22
22	.00	.14	.00	.00	.00	6.4	5.0	.65	28	.03	.00	.39
23	.00	.11	.00	.00	.01	6.0	4.3	.92	25	.03	.00	1.6
24	.00	.12	.00	.00	.02	4.3	3.5	.74	20	.02	.00	4.6
25	.04	.13	.00	.00	.03	3.7	2.7	.43	14	.02	.00	4.6
26	.09	.11	.00	.00	.04	2.9	2.2	.28	8.2	.01	.00	2.1
27	.11	.08	.00	.00	.05	2.4	1.7	.27	4.0	.01	.00	1.1
28	.12	.05	.00	.00	.06	3.1	1.4	.28	1.8	.01	.17	.69
29	.14	.03	.00	.00	---	6.0	1.1	.27	.84	.00	.22	.64
30	.14	.01	.00	.00	---	7.8	.90	.23	.67	.00	.44	.87
31	.13	---	.00	.00	---	6.8	---	.22	---	.00	1.5	---
TOTAL	.77	4.09	.00	.00	.21	797.13	99.40	10.69	989.77	3.55	2.33	24.74
MEAN	.025	.14	.000	.000	.008	25.7	3.31	.34	33.0	.11	.075	.82
MAX	.14	.26	.000	.000	.06	280	10	.92	279	.50	1.5	4.6
MIN	.00	.01	.00	.00	.00	.05	.90	.04	.00	.00	.00	.00
AC-FT	1.5	8.1	.00	.00	.4	1580	197	21	1960	7.0	4.6	49
CAL YR 1976	TOTAL	1323.02	MEAN 3.61	MAX 200	MIN .00	AC-FT 2620						
WTR YR 1977	TOTAL	1932.68	MEAN 5.30	MAX 280	MIN .00	AC-FT 3830						

## BIG SIOUX RIVER BASIN

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06480000 BIG SIOUX RIVER NEAR BROOKINGS, SD

LOCATION.--Lat 44°10'48", long 96°44'55", in NW¼NW¼ sec.8, T.108 N., R.49 W., Moody County, Hydrologic Unit 10170203, on right bank 3 ft (1 m) downstream from highway bridge, 2.2 mi (3.5 km) downstream from Medary Creek and 9.5 mi (15.3 km) southeast of Brookings.

DRAINAGE AREA.--4,420 mi<sup>2</sup> (11,450 km<sup>2</sup>), approximately, of which about 1,970 mi<sup>2</sup> (5,100 km<sup>2</sup>) is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,551.91 ft (473.022 m) above mean sea level. Prior to May 30, 1959, nonrecording gage at present site and datum.

REMARKS.--Records good except those for period of no gage-height record, Nov. 12 to Apr. 1, and for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 149 ft<sup>3</sup>/s (4,220 m<sup>3</sup>/s), 108,000 acre-ft/yr (133 hm<sup>3</sup>/yr); median of yearly mean discharges, 110 ft<sup>3</sup>/s (3.12 m<sup>3</sup>/s), 79,700 acre-ft/yr (98 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,900 ft<sup>3</sup>/s (960 m<sup>3</sup>/s) Apr. 9, 1969, gage height, 14.77 ft (4.502 m); no flow at times in 1956, 1959, 1976, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,750 ft<sup>3</sup>/s (49.6 m<sup>3</sup>/s) time unknown, Mar. 13; maximum gage height, 10.02 ft (3.054 m) Mar. 13 (backwater from ice), no other peak above base of 1,000 ft<sup>3</sup>/s (283 m<sup>3</sup>/s); no flow Dec. 30 to Mar. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.11	.03	.00	.00	.00	160	49	14	113	13	52
2	.01	.11	.03	.00	.00	.00	151	46	15	95	13	44
3	.01	.08	.07	.00	.00	.00	136	42	17	82	11	45
4	.01	.07	.12	.00	.00	.00	133	41	19	71	13	36
5	.01	.11	.15	.00	.00	.00	117	38	18	62	16	28
6	.02	.13	.14	.00	.00	.00	106	35	17	56	15	27
7	.02	.14	.12	.00	.00	.00	105	31	13	51	15	20
8	.02	.15	.10	.00	.00	.05	96	29	10	46	11	14
9	.02	.16	.10	.00	.00	.50	91	27	9.1	41	11	10
10	.02	.13	.11	.00	.00	4.0	87	24	8.0	38	9.2	7.4
11	.02	.10	.11	.00	.00	30	81	23	6.0	36	7.9	5.1
12	.02	.09	.12	.00	.00	800	74	21	4.8	34	6.4	4.0
13	.02	.09	.13	.00	.00	1700	71	20	6.2	32	4.7	3.2
14	.02	.08	.14	.00	.00	1600	71	18	4.7	29	3.9	2.4
15	.02	.08	.15	.00	.00	1500	75	16	11	26	5.9	2.8
16	.02	.09	.16	.00	.00	1400	69	15	223	26	7.9	2.6
17	.03	.10	.17	.00	.00	1000	66	13	547	25	5.1	2.6
18	.04	.10	.18	.00	.00	700	64	12	622	23	6.5	6.7
19	.04	.10	.12	.00	.00	550	62	10	734	20	7.1	9.1
20	.04	.09	.08	.00	.00	450	64	12	864	19	9.3	10
21	.04	.09	.04	.00	.00	350	76	14	843	21	12	15
22	.04	.08	.04	.00	.00	250	84	18	666	19	14	23
23	.05	.07	.05	.00	.00	220	84	20	502	18	17	33
24	.07	.08	.05	.00	.00	200	78	16	361	26	18	42
25	.05	.09	.06	.00	.00	190	72	12	259	25	17	44
26	.07	.08	.07	.00	.00	180	68	10	192	19	20	40
27	.08	.07	.07	.00	.00	180	65	9.7	156	17	15	58
28	.07	.06	.02	.00	.00	170	60	10	132	16	17	71
29	.11	.05	.01	.00	---	170	56	10	112	15	12	59
30	.11	.04	.00	.00	---	160	52	12	114	14	13	64
31	.11	---	.00	.00	---	160	---	12	---	13	37	---
TOTAL	1.22	2.82	2.74	.00	.00	11964.55	2574	665.7	6499.8	1128	383.9	780.9
MEAN	.039	.094	.088	.000	.000	386	85.8	21.5	217	36.4	12.4	26.0
MAX	.11	.16	.18	.00	.00	1700	160	49	864	113	37	71
MIN	.01	.04	.00	.00	.00	.00	52	9.7	4.7	13	3.9	2.4
AC-FT	2.4	5.6	5.4	.00	.00	23730	5110	1320	12890	2240	761	1550
CAL YR 1976 TOTAL	17040.06			MEAN 46.6	MAX 1080	MIN .00	AC-FT 33800					
WTR YR 1977 TOTAL	24003.63			MEAN 65.8	MAX 1700	MIN .00	AC-FT 47610					

## BIG SIOUX RIVER BASIN

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD

LOCATION.--Lat 43°47'25", long 96°44'42", in NW¼NW¼ sec.29, T.104 N., R.49 W., Minnehaha County, Hydrologic Unit 10170203, on left bank at downstream side of highway bridge, 0.2 mi (0.3 km) downstream from confluence of divided channels and 3.0 mi (4.8 km) southwest of Dell Rapids.

DRAINAGE AREA.--5,060 mi<sup>2</sup> (13,100 km<sup>2</sup>), approximately, of which about 1,970 mi<sup>2</sup> (5,100 km<sup>2</sup>) is probably noncontributing.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,455.99 ft (443.786 m) above mean 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 (0.012 m) lower.

REMARKS.--Records good except those for winter periods, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--29 years, 248 ft<sup>3</sup>/s (7.023 m<sup>3</sup>/s), 179,700 acre-ft/yr (222 hm<sup>3</sup>/yr); median of yearly mean discharges, 190 ft<sup>3</sup>/s (5.38 m<sup>3</sup>/s), 138,000 acre-ft/yr (170 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,300 ft<sup>3</sup>/s (1,170 m<sup>3</sup>/s) Apr. 9, 1969, gage height, 16.47 ft (5.020 m); no flow Aug. 25 to Oct. 17, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,450 ft<sup>3</sup>/s (69.4 m<sup>3</sup>/s) Mar. 14; maximum gage height, 11.58 ft (3.530 m) Mar. 14 (backwater from ice), no peak above base of 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s); no flow Oct. 1-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	4.5	3.1	1.4	.10	1.0	197	76	27	155	21	27
2	.00	4.4	2.9	1.4	.11	1.4	188	72	25	140	20	32
3	.00	4.3	2.8	1.5	.23	2.2	185	77	25	136	19	33
4	.00	4.2	3.0	1.7	.20	2.2	172	81	24	125	19	36
5	.00	4.2	3.7	1.5	.04	1.8	152	75	24	108	19	40
6	.00	4.0	3.0	1.7	.20	1.0	152	69	23	99	18	41
7	.00	3.7	2.5	1.5	2.7	.80	140	61	24	99	19	39
8	.00	3.4	2.1	1.7	3.6	.50	133	58	23	85	19	39
9	.00	3.2	1.9	1.7	2.3	1.5	130	55	23	74	19	34
10	.00	3.1	1.9	1.4	1.8	.80	123	51	22	68	17	34
11	.00	2.8	2.0	.92	2.2	550	115	49	22	67	18	33
12	.00	2.4	2.0	.74	1.9	1850	109	47	22	59	18	35
13	.00	2.4	2.2	.53	.94	2150	107	44	23	56	18	33
14	.00	2.5	2.4	.38	.78	2350	109	43	22	49	18	32
15	.00	2.6	2.5	.37	.34	2250	106	41	24	45	39	33
16	.00	3.0	2.7	.25	.18	2220	104	40	24	42	29	32
17	.00	3.9	2.9	.07	.35	1630	99	39	28	40	23	32
18	.15	2.8	3.0	.02	.20	1350	97	39	147	38	22	32
19	2.8	3.2	2.7	.03	.00	1000	91	40	459	37	22	30
20	2.8	3.4	2.4	.70	.00	654	95	43	550	32	22	32
21	2.6	3.2	2.2	.29	.00	442	107	39	592	30	21	32
22	2.6	3.4	2.0	.21	.10	371	105	46	641	29	21	32
23	2.8	3.3	1.8	.37	2.4	326	94	39	646	29	23	37
24	3.4	3.6	1.6	.30	3.5	281	97	37	540	48	25	51
25	3.9	3.6	1.5	.40	4.6	250	107	35	407	31	23	31
26	4.4	3.9	.1.7	.23	3.5	219	103	34	316	30	23	29
27	4.6	3.7	1.9	.24	2.2	203	97	33	258	28	23	32
28	5.1	3.6	2.1	.23	1.8	193	86	32	208	28	23	36
29	5.1	3.5	1.8	.16	---	208	86	31	185	26	23	40
30	4.8	3.2	1.6	.03	---	189	81	30	155	24	24	54
31	4.6	---	1.3	.04	---	186	---	28	---	22	24	---
TOTAL	49.65	103.0	71.2	22.01	36.27	18964.40	3567	1484	5509	1879	672	1053
MEAN	1.60	3.43	2.30	.71	1.30	612	119	47.9	184	60.6	21.7	35.1
MAX	5.1	4.5	3.7	1.7	4.6	2350	197	81	646	155	39	54
MIN	.00	2.4	1.3	.02	.00	.50	81	28	22	22	17	27
AC-FT	98	204	141	44	72	37620	7080	2940	10930	3730	1330	2090
CAL YR 1976 TOTAL	24698.23			MEAN 67.5	MAX 1420	MIN .00	AC-FT 48990					
WTR YR 1977 TOTAL	33410.53			MEAN 91.5	MAX 2350	MIN .00	AC-FT 66270					

## 06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-62, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1970, October 1973 to current year.

WATER TEMPERATURES: October 1967 to September 1971, October 1974 to September 1975.

SUSPENDED SEDIMENT DISCHARGE: October 1967 to September 1976.

REMARKS.--No flow Oct. 1-17, Feb. 19-21. There are many days of no samples during the year. Conductance was computed during these periods using a discharge-conductance ratio.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,100 micromhos Jan. 27, 1977; minimum daily, 140 micromhos Apr. 9, 1969.

WATER TEMPERATURES: Maximum daily, 33.5°C July 7, 12, 16, 20, 1974; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 619 mg/L Apr. 19, 1974; minimum daily mean, 0 mg/L Aug. 25 to Sept. 30, 1976.

SEDIMENT LOADS: Maximum daily, 40,600 tons (36,800 tonnes) Apr. 9, 1969; minimum daily, 0 ton (0 tonne) Aug. 8, 9, 14, Aug. 24 to Sept. 30, 1976.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,100 micromhos Jan. 27; minimum daily, 245 micromhos Aug. 15.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED OXYGEN (MG/L) (00300)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	IMME- DIATE COLI- FORM (COL. PER 100 ML) (31501)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS AC-FT) (70303)
NOV												
08...	1245	3.4	1290	8.2	2.0	15	16.5	43	810	83	954	1.30
19...	1030	3.2	1230	8.5	1.5	10	15.8	44	810	86	800	1.09
DEC												
03...	1310	2.9	820	8.3	.5	20	16.8	44	80	50	994	1.35
JAN												
25...	1130	.34	1720	8.5	.0	6	--	34	ND	ND	1320	1.80
FEB												
03...	1230	.12	1160	7.5	.0	5	--	57	82	ND	1460	1.99
16...	1145	.16	1900	8.0	.0	4	--	28	ND	ND	1540	2.09
MAR												
08...	1200	.48	1420	7.6	.0	8	9.0	21	87	88	1250	1.70
14...	1445	2320	175	7.2	.0	40	12.7	83	--	--	126	.17
APR												
06...	1245	155	820	8.2	5.0	9	15.4	33	100	70	630	.86
26...	1145	104	780	--	14.5	8	9.8	24	70	45	610	.83
MAY												
05...	1045	77	990	7.9	17.0	8	--	36	100	70	708	.96
16...	1300	38	840	7.8	21.0	10	8.1	24	30	150	583	.79
JUN												
02...	1115	25	870	8.0	22.5	25	6.7	44	8765	81090	628	.85
JUL												
07...	1240	101	750	7.8	27.5	15	6.6	36	360	210	510	.69
21...	1210	30	830	7.7	25.0	10	6.1	34	560	320	565	.77
AUG												
02...	1240	20	590	8.0	24.5	20	6.2	31	680	440	483	.66
SEP												
06...	1145	39	800	7.9	21.5	15	7.6	32	100	70	504	.69
13...	1110	33	750	7.7	17.0	15	6.7	32	820	610	503	.68

B Non-ideal colony count.

ND Not detected.



## BIG SIOUX RIVER BASIN

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD--Continued

DATE	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	SUS- PENDE D SOLIDS (MG/L) (70299)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
NOV											
08...	8.76	33	.23	.00	.19	1.2	1.4	1.6	.12	.11	--
19...	6.91	7	.03	--	.03	1.5	1.5	1.5	.08	--	6.6
DEC											
03...	7.78	44	.56	.38	.25	.95	1.2	1.8	.05	.00	7.1
JAN											
25...	1.21	6	.43	--	.67	1.0	1.7	2.1	.12	--	8.4
FEB											
03...	.47	4	.59	.58	.74	.76	1.5	2.1	.14	.04	8.3
16...	.67	7	.60	--	.22	.73	.95	1.6	.10	--	8.7
MAR											
08...	1.62	4	1.1	.83	.48	.62	1.1	2.2	.11	--	4.0
14...	789	92	.88	.85	.83	2.6	3.4	4.3	.59	--	15
APR											
06...	264	22	.59	.55	.39	1.0	1.4	2.0	.21	.07	8.3
26...	171	25	.03	--	.15	.71	.86	.89	.11	--	5.7
MAY											
05...	147	28	.01	.01	.03	1.7	1.7	1.7	.15	.08	9.0
16...	59.8	49	.13	--	.01	1.3	1.3	1.4	.17	--	8.0
JUN											
02...	42.4	63	.09	.05	.19	1.6	1.8	1.9	.32	.15	8.0
JUL											
07...	139	52	.01	.01	.11	1.1	1.2	1.2	.38	.25	9.6
21...	45.8	27	.04	--	.15	.66	.81	.85	.29	--	7.4
AUG											
02...	26.1	128	.03	--	.03	1.2	1.2	1.2	.34	.15	9.3
SEP											
06...	53.6	24	.01	--	.01	.76	.77	.78	.21	.04	7.0
13...	44.8	32	.04	--	.03	.04	.07	.11	.17	--	5.7

DATE	TIME	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)
NOV									
08...	1245	570	380	120	65	64	19	1.2	8.4
DEC									
03...	1310	600	460	130	68	50	15	.9	7.3
FEB									
03...	1230	940	540	210	100	80	15	1.1	12
MAR									
08...	1200	630	340	150	62	56	16	1.0	8.6
14...	1445	70	19	18	6.0	2.2	6	.1	6.7
APR									
06...	1245	410	200	100	40	29	13	.6	6.3
MAY									
05...	1045	480	230	110	49	43	16	.9	6.7
JUN									
02...	1115	430	190	100	43	35	15	.7	6.4
JUL									
07...	1240	370	130	90	34	25	13	.6	7.7
AUG									
02...	1240	340	130	84	32	28	15	.7	6.7
SEP									
06...	1145	350	160	78	38	34	17	.8	6.3

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	BICARBONATE (HCO <sub>3</sub> ) (MG/L) (00440)	CARBONATE (CO <sub>3</sub> ) (MG/L) (00445)	ALKALINITY AS CACO <sub>3</sub> (MG/L) (00410)	DIS-SOLVED SULFATE (SO <sub>4</sub> ) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)	DIS-SOLVED SILICA (SIO <sub>2</sub> ) (MG/L) (00955)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED BORON (B) (UG/L) (01020)
NOV 08...	226	0	185	510	25	.3	4.7	909	270
DEC 03...	180	0	148	520	22	.4	4.6	893	250
FEB 03...	483	0	396	690	33	.6	11	1380	270
MAR 08...	352	0	289	360	21	.4	7.8	843	250
14...	62	0	51	22	4.1	.1	3.9	98	60
APR 06...	260	0	210	240	26	.2	16	588	100
MAY 05...	300	0	246	260	39	.4	3.8	660	140
JUN 02...	290	0	240	240	30	.4	16	614	140
JUL 07...	290	0	240	150	23	.3	22	495	130
AUG 02...	260	0	210	160	25	.3	9.8	474	120
SEP 06...	230	0	190	190	31	.3	5.7	497	140

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1000	1340	1580	2010	2000	850	1020	970	700	780	800
2	---	1020	1280	1580	2010	2000	860	1040	970	720	775	780
3	---	1040	1330	1620	2010	2000	900	1040	1000	760	785	810
4	---	1020	1340	1650	2000	2000	910	1060	1000	760	800	805
5	---	1050	1320	1550	2000	2000	910	1060	1000	780	820	805
6	---	1040	1310	1700	2000	2000	920	1040	1010	790	840	800
7	---	1070	1280	1710	2000	2000	930	1030	1030	800	850	820
8	---	1100	1240	1750	2000	2000	920	1020	1020	810	850	805
9	---	1080	1320	1770	2000	1800	990	1010	1020	820	860	800
10	---	1100	1320	1800	1990	1050	990	1020	1030	830	870	810
11	---	1110	1310	1840	2000	500	990	1020	1040	820	880	820
12	---	1100	1330	1880	2000	420	900	1020	1030	835	890	745
13	---	1120	1360	2000	2000	400	900	1020	1050	840	895	765
14	---	1120	1340	2000	2000	370	895	1030	1040	840	890	765
15	---	1110	1360	2000	2000	320	890	1020	1020	850	245	755
16	---	1140	1370	2050	2000	320	900	1020	990	860	760	760
17	---	1130	1360	2000	2000	272	900	1040	1000	880	725	770
18	1000	1140	1360	2000	2000	290	900	1040	970	870	740	770
19	1000	1160	1400	2050	2000	325	910	1030	500	890	700	800
20	1040	1150	1410	2000	2000	400	900	1000	470	900	680	800
21	1020	1160	1430	2000	2000	435	900	980	450	900	690	810
22	1000	1180	1450	2000	2000	500	900	970	410	900	690	830
23	1020	1220	1470	2000	2000	545	915	960	400	900	660	820
24	1040	1200	1470	2000	2000	600	950	970	430	800	700	820
25	1020	1200	1480	2000	2000	620	950	980	490	760	740	830
26	1000	1200	1480	2000	2000	660	950	950	520	760	755	840
27	1000	1200	1480	2100	2000	600	950	930	570	720	760	840
28	990	1200	1500	2000	2000	700	970	945	620	760	780	830
29	990	1200	1500	2000	---	750	990	945	670	780	780	840
30	1000	1200	1540	2000	---	800	1010	950	700	810	800	840
31	1000	---	1560	2030	---	820	---	930	---	805	820	---

## BIG SIOUX RIVER BASIN

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL COPPER (CU) (UG/L) (01042)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL MAN- GANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	TOTAL ZINC (ZN) (UG/L) (01092)
NOV 19...	1030	1	<10	90	<100	90	--	--	0
JAN 25...	1130	1	<10	60	<100	210	.0	6	10
FEB 16...	1145	1	<10	120	<100	150	.0	6	10
MAR 14...	1445	3	<10	2800	<100	320	.0	1	30
APR 26...	1145	3	10	330	100	310	.0	2	10
MAY 16...	1300	4	10	410	<100	440	.0	1	20
JUL 21...	1210	9	10	680	<100	350	.0	2	20
SEP 13...	1110	2	<10	640	<100	340	.0	0	10

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	0.0	0.0	0.0	0.0	7.0	---	25.0	27.0	28.0	---
2		---	0.0	0.0	0.0	---	5.0	22.0	27.0	23.0	24.0	17.0
3		---	0.0	0.0	0.0	---	---	18.0	---	32.0	27.0	25.0
4		---	0.0	0.0	0.0	---	---	21.0	24.0	34.0	29.0	25.0
5		---	0.0	0.0	0.0	0.0	---	23.0	30.0	32.0	21.0	22.0
6		---	0.0	0.0	0.0	---	10.0	23.0	27.0	---	21.0	28.0
7		---	0.0	0.0	0.0	---	14.0	23.0	27.0	31.0	26.0	27.0
8		---	0.0	0.0	0.0	4.0	11.0	---	29.0	28.0	29.0	24.0
9		---	0.0	0.0	0.0	4.0	20.0	20.0	18.0	23.0	28.0	22.0
10		---	0.0	0.0	0.0	5.0	---	22.0	29.0	27.0	---	24.0
11		---	0.0	0.0	0.0	---	21.0	24.0	23.0	28.0	27.0	22.0
12		---	0.0	0.0	0.0	5.0	16.0	25.0	24.0	30.0	27.0	20.0
13		---	0.0	0.0	0.0	7.0	17.0	25.0	24.0	24.0	20.0	22.0
14		---	0.0	0.0	0.0	6.0	17.0	23.0	24.0	26.0	25.0	24.0
15		---	0.0	0.0	0.0	6.0	21.0	---	25.0	25.0	18.0	23.0
16		---	0.0	0.0	0.0	---	22.0	25.0	29.0	25.0	24.0	19.0
17		---	0.0	0.0	0.0	3.0	22.0	25.0	27.0	30.0	21.0	22.0
18		---	0.0	0.0	0.0	4.0	21.0	---	26.0	27.0	19.0	14.0
19		---	0.0	0.0	0.0	4.0	16.0	22.0	26.0	33.0	---	18.0
20		3.0	0.0	0.0	0.0	---	---	---	25.0	27.0	25.0	---
21		---	0.0	0.0	0.0	3.0	---	20.0	23.0	24.0	---	16.0
22		---	0.0	0.0	0.0	4.0	19.0	---	22.0	23.0	23.0	18.0
23		4.0	0.0	0.0	0.0	5.0	18.0	22.0	25.0	33.0	18.0	---
24		3.0	0.0	0.0	0.0	---	---	23.0	27.0	---	23.0	17.0
25		3.0	0.0	0.0	0.0	---	19.0	24.0	28.0	29.0	20.0	---
26		0.0	0.0	0.0	0.0	8.0	22.0	---	25.0	24.0	24.0	16.0
27		0.0	0.0	0.0	0.0	---	25.0	24.0	26.0	22.0	24.0	20.0
28		---	0.0	0.0	0.0	---	22.0	26.0	26.0	30.0	---	16.0
29		0.0	0.0	0.0	---	7.0	19.0	27.0	25.0	26.0	24.0	17.0
30		---	0.0	0.0	---	---	21.0	25.0	24.0	30.0	24.0	---
31		---	0.0	0.0	---	7.0	---	24.0	---	27.0	25.0	---

&lt; Less than.

## 06481500 SKUNK CREEK AT SIOUX FALLS, SD

LOCATION.--Lat 43°32'01", long 96°47'26", in NW¼SW¼ sec.24, T.101 N., R.50 W., Minnehaha County, Hydrologic Unit 10170203, on right bank 5 ft (2 m) downstream from bridge on Marion Road, 1.3 mi (2.1 km) upstream from mouth, 1.8 mi (2.9 km) downstream from small right-bank tributary, and 4.0 mi (6.4 km) southwest of Sioux Falls.

DRAINAGE AREA.--570 mi<sup>2</sup> (1,480 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--May 1948 to September 1971 (published as "near Sioux Falls"). October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,405.10 ft (428.274 m) above mean sea level (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 (3.1 km) upstream at datum 10.19 ft (3.106 m) higher.

REMARKS.--Records good except those for period of no gage-height record, Nov. 17 to Mar. 17, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 44.6 ft<sup>3</sup>/s (1.263 m<sup>3</sup>/s), 32,310 acre-ft/yr (39.8 hm<sup>3</sup>/yr); median of yearly mean discharges, 21 ft<sup>3</sup>/s (0.59 m<sup>3</sup>/s), 15,200 acre-ft/yr (19 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft<sup>3</sup>/s (833 m<sup>3</sup>/s) June 17, 1957, gage height, 17.78 ft (5.419 m), site and datum then in use, from rating curve extended above 8,100 ft<sup>3</sup>/s (229 m<sup>3</sup>/s) on basis of slope-area measurement of peak flow; no flow at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 150 ft<sup>3</sup>/s (4.25 m<sup>3</sup>/s) Mar. 12; maximum gage height, 4.41 ft (1.344 m) Mar. 12, from floodmarks, no peak above base of 500 ft<sup>3</sup>/s (14.2 m<sup>3</sup>/s); no flow Jan. 28 to Feb. 7.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 15 to May 1; stage-discharge relation  
affected by ice Nov. 27 to Mar. 12)

1.59	0.01	1.8	0.66	2.1	3.4	2.9	41
1.6	.04	1.9	1.1	2.2	5.9	3.5	104
1.7	.33	2.0	1.9	2.4	13		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.51	.48	.08	.00	.03	3.8	1.3	.70	.11	.20	.81
2	.08	.52	.54	.08	.00	.04	5.6	1.2	.57	.11	.07	1.0
3	.07	.42	.60	.09	.00	.05	7.5	1.8	.49	.09	.06	1.1
4	.06	.39	.65	.09	.00	.05	4.8	2.2	.48	.05	.11	1.2
5	.05	.39	.76	.10	.00	.04	4.1	2.1	.48	.03	.14	1.6
6	.04	.42	.73	.10	.00	.04	4.2	1.8	.40	.30	.18	1.8
7	.04	.45	.66	.11	.00	.04	4.1	1.6	.38	.24	.24	1.5
8	.06	.45	.60	.12	.01	.15	3.4	1.3	.38	.09	.11	1.5
9	.12	.48	.65	.11	.02	1.0	2.9	1.2	.36	.02	.21	2.0
10	.09	.48	.70	.09	.03	5.0	2.2	1.1	.31	.09	.18	1.5
11	.06	.51	.72	.07	.04	30	2.8	1.0	.32	.46	.25	1.4
12	.09	.51	.74	.05	.05	120	2.7	1.0	.36	.27	.18	2.7
13	.15	.51	.76	.04	.05	100	2.7	.93	.38	.20	.19	1.8
14	.66	.51	.79	.03	.04	95	3.0	.97	.38	.26	.30	1.4
15	.48	.51	.81	.03	.03	82	2.9	.87	.42	.26	4.7	1.4
16	.36	.58	.83	.03	.02	34	2.6	.79	.48	.16	2.0	2.1
17	.24	.60	.86	.02	.02	15	3.0	.69	.56	.24	1.7	2.1
18	.24	.65	.90	.02	.03	12	4.5	.46	.57	.15	2.6	2.0
19	.24	.70	.55	.02	.04	9.8	3.9	.45	.50	.11	1.9	1.5
20	.24	.65	.30	.02	.07	7.6	4.0	.52	.66	.12	1.5	1.3
21	.24	.60	.15	.03	.10	5.6	3.1	.66	1.2	.06	1.5	1.3
22	.27	.57	.16	.03	.09	5.6	3.0	1.3	.59	.15	1.3	1.4
23	.30	.55	.17	.03	.09	5.2	2.6	1.2	.65	.08	1.2	1.7
24	.30	.61	.18	.03	.08	4.4	2.4	.92	.57	.06	1.1	1.9
25	.39	.70	.19	.03	.07	3.9	2.2	.74	.53	.12	1.0	1.9
26	.45	.64	.20	.02	.06	3.9	2.1	.69	.49	.14	.95	1.8
27	.45	.59	.21	.01	.05	4.4	1.7	.96	.54	.18	.92	2.1
28	.51	.54	.18	.00	.04	5.0	1.5	.96	.59	.20	.89	2.0
29	.48	.49	.14	.00	---	4.7	1.4	.87	.51	.19	.79	1.9
30	.39	.45	.11	.00	---	4.3	1.4	.94	.14	.19	.69	31
31	.36	---	.08	.00	---	4.0	---	.92	---	.14	.59	---
TOTAL	7.60	15.98	15.40	1.48	1.03	562.84	96.1	33.44	14.99	4.87	27.75	78.71
MEAN	.25	.53	.50	.048	.037	18.2	3.20	1.08	.50	.16	.90	2.62
MAX	.66	.70	.90	.12	.10	120	7.5	2.2	1.2	.46	4.7	31
MIN	.04	.39	.08	.00	.00	.03	1.4	.45	.14	.02	.06	.81
AC-FT	15	32	31	2.9	2.0	1120	191	66	30	9.7	55	156

CAL YR 1976 TOTAL 3321.43 MEAN 9.07 MAX 192 MIN .01 AC-FT 6590  
WTR YR 1977 TOTAL 860.19 MEAN 2.36 MAX 120 MIN .00 AC-FT 1710





## BIG SIOUX RIVER BASIN

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06482020 BIG SIOUX RIVER AT NORTH CLIFF AVENUE, AT SIOUX FALLS, SD--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1973 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED OXYGEN (MG/L) (00300)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	IMME- DIATE COLI- FORM (COL. PER 100 ML) (31501)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)
OCT											
01...	1115	21	2430	7.0	21.0	7	7.0	52	4800	830	1300
NOV											
08...	1115	21	1560	7.1	11.0	6	9.1	70	B1	ND	1220
19...	1215	23	2650	7.5	15.0	8	10.1	75	ND	B9	1500
DEC											
03...	1100	20	2750	8.3	9.0	9	9.6	110	390	140	1900
JAN											
25...	1345	22	2600	8.3	10.0	8	5.4	91	B8	ND	1450
FEB											
03...	1445	21	2850	7.7	12.0	7	10.8	130	ND	ND	1630
16...	1400	20	3050	8.9	10.0	9	11.2	84	B7	B2	1680
MAR											
08...	1430	44	2300	7.5	11.5	85	9.9	320	E2000	E2700	1480
14...	1215	1980	240	7.3	.5	60	14.8	90	--	--	164
APR											
06...	1500	182	1020	8.2	7.5	8	14.0	44	--	--	721
26...	1350	107	1060	--	17.0	7	10.5	35	280	ND	787
MAY											
05...	0830	81	1000	7.8	17.0	9	--	38	2500	25	671
16...	1500	38	1960	7.7	23.0	10	10.0	45	B5	B3	1240
JUN											
02...	1325	32	2250	7.6	25.0	8	8.6	61	6100	95	1330
JUL											
07...	1030	128	840	7.8	26.0	15	7.0	36	860	560	604
21...	1350	47	1460	7.3	27.0	8	7.0	45	7500	1800	880
AUG											
02...	1030	34	1260	7.5	23.5	15	5.6	86	--	--	904
22...	1030	34	1220	7.5	21.5	15	6.8	57	9800	7870	770
SEP											
06...	1330	47	1240	7.6	24.0	15	8.4	48	760	570	774
13...	1245	56	1080	7.4	21.0	25	5.6	86	20000	15200	764

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL COPPER (CU) (UG/L) (01042)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL MAN- GANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	TOTAL ZINC (ZN) (UG/L) (01092)
NOV									
19...	1215	2	<10	230	<100	160	--	--	20
JAN									
25...	1345	1	10	210	<100	160	.8	1	50
FEB									
16...	1400	2	<10	270	<100	200	.1	1	40
MAR									
14...	1215	5	<10	5100	<100	600	.1	0	40
APR									
26...	1350	3	10	600	<100	310	.0	2	30
MAY									
16...	1500	3	10	370	<100	290	.0	1	20
JUL									
21...	1350	5	10	720	<100	360	.2	1	30
AUG									
22...	1030	3	10	940	<100	570	.0	0	40
SEP									
13...	1245	2	<10	1100	<100	360	.0	2	30

E Estimated value.

ND Not detected.

&lt; Less than.

## BIG SIOUX RIVER BASIN

06482020 BIG SIOUX RIVER AT NORTH CLIFF AVENUE, AT SIOUX FALLS, SD--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	SUS- PENDE D SOLIDS (MG/L) (70299)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (N03) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT 01...	1.77	73.7	21	2.0	.00	17	17	19	84	15	21
NOV 08...	1.66	69.2	25	2.0	17	.00	16	18	80	5.3	17
19...	2.04	93.2	5	1.9	15	1.0	16	18	79	13	16
DEC 03...	2.58	103	90	2.4	15	.00	14	16	73	12	25
JAN 25...	1.97	86.1	15	1.3	19	.00	18	19	85	11	25
FEB 03...	2.22	92.4	7	1.1	20	.00	20	21	93	13	24
16...	2.28	90.7	9	2.1	18	2.0	20	22	98	12	27
MAR 08...	2.01	176	236	.03	16	12	28	28	120	10	94
14...	.22	877	198	.92	1.1	3.1	4.2	5.1	23	.74	20
APR 06...	.98	354	26	.88	2.1	1.4	3.5	4.4	19	1.5	11
26...	1.07	227	37	1.0	3.9	.00	3.8	4.8	21	2.1	8.7
MAY 05...	.91	147	24	.33	3.2	.60	3.8	4.1	18	1.5	8.9
16...	1.69	127	7	4.3	9.6	3.4	13	17	77	7.6	12
JUN 02...	1.81	115	54	2.1	8.6	2.4	11	13	58	7.9	11
JUL 07...	.82	209	24	.82	1.1	1.7	2.8	3.6	16	1.6	12
21...	1.20	112	24	2.1	6.8	5.2	12	14	62	.08	11
AUG 02...	1.23	83.0	141	.25	8.6	10	19	19	85	7.5	27
22...	1.05	70.7	29	.62	8.2	2.8	11	12	51	4.8	11
SEP 06...	1.05	98.2	28	1.6	4.7	.00	4.3	5.9	26	8.8	12
13...	1.04	116	40	1.1	6.8	4.2	11	12	54	7.5	15

DATE	TIME	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)
OCT 01...	1115	350	210	84	34	300	63	7.0
JAN 25...	1345	610	390	150	57	350	54	6.2
APR 26...	1350	430	240	100	44	90	31	1.9
JUL 21...	1350	300	170	74	29	180	55	4.5

DATE	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)
OCT 01...	21	174	0	143	250	460	14	1250
JAN 25...	29	264	0	217	400	510	13	1640
APR 26...	9.9	230	--	189	260	110	4.7	732
JUL 21...	14	170	0	140	190	260	16	847

## 06482610 SPLIT ROCK CREEK AT CORSON, SD

LOCATION.--Lat 43°36'59", long 96°33'54", in NE¼NW¼ sec.26, T.102 N., R.48 W., Minnehaha County, Hydrologic Unit 10170203, on left bank 6 ft (2 m) downstream from highway bridge, 0.3 mi (0.5 km) east of Corson and 3.4 mi (5.5 km) upstream from mouth.

DRAINAGE AREA.--475 mi<sup>2</sup> (1,230 km<sup>2</sup>), approximately.

PERIOD OF RECORD.--October 1965 to current year. February 1951 to September 1965 (gage heights and discharge measurements only in files of Corps of Engineers).

GAGE.--Water-stage recorder. Datum of gage is 1,304.22 ft (397.526 m) above mean sea level (levels by Corps of Engineers). Prior to Aug. 15, 1964, nonrecording gage at datum 0.15 ft (0.046 m) higher and Aug. 15, 1964, to Sept. 3, 1970, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 52.0 ft<sup>3</sup>/s (1.473 m<sup>3</sup>/s), 37,670 acre-ft/yr (46.4 hm<sup>3</sup>/yr); median of yearly mean discharges, 40 ft<sup>3</sup>/s (1.13 m<sup>3</sup>/s), 29,000 acre-ft/yr (36 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,800 ft<sup>3</sup>/s (504 m<sup>3</sup>/s) Apr. 8, 1969, gage height, 15.00 ft (4.572 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1951, 15.41 ft (4.697 m) June 17, 1957, discharge, 19,300 ft<sup>3</sup>/s (547 m<sup>3</sup>/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft<sup>3</sup>/s (14 m<sup>3</sup>/s) and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)	Date	Time	Discharge (ft <sup>3</sup> /s) (m <sup>3</sup> /s)	Gage height (ft) (m)
Mar. 12	1615	1700	48.1	*Aug. 14	2.481		
July 24	0545	1800	51.0	6.71	2.045	Aug. 15	1830
						*2470	70.0
						7.52	2.292

Minimum daily discharge, no flow Jan. 28 to Feb. 6.  
a Ice jam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	4.8	2.0	.90	.00	.35	3.6	13	8.1	10	12	11
2	3.5	4.8	2.4	.93	.00	.50	35	11	6.8	6.6	9.1	16
3	3.4	4.5	2.8	.97	.00	.80	35	13	6.6	6.9	7.1	23
4	3.1	4.0	3.3	1.0	.00	1.0	34	16	6.2	4.7	6.2	29
5	2.8	3.5	3.7	1.1	.00	.80	31	16	5.1	3.7	5.6	21
6	2.8	3.6	3.2	1.1	.00	2.0	24	16	3.8	6.7	5.0	16
7	2.7	3.7	2.7	1.2	.02	3.8	26	15	3.6	9.3	5.1	14
8	2.6	3.8	2.8	1.2	.03	4.5	23	13	3.5	6.5	5.4	12
9	2.6	4.0	3.0	1.1	.04	7.5	21	12	2.1	4.1	6.7	12
10	2.6	4.2	3.2	.90	.06	30	20	11	1.8	5.0	7.0	10
11	3.0	4.3	3.3	.65	.10	700	19	10	1.9	5.9	6.5	9.6
12	3.0	4.5	3.3	.45	.20	1250	19	9.3	1.4	5.7	4.6	27
13	3.3	4.7	3.4	.30	.17	804	19	9.0	1.5	4.6	4.2	36
14	3.0	4.8	3.4	.20	.14	608	20	7.9	2.1	4.3	3.7	22
15	2.8	5.0	3.2	.13	.12	381	21	7.3	3.0	3.3	726	18
16	2.2	5.2	3.0	.09	.14	229	20	5.0	14	2.9	423	15
17	2.2	5.5	2.7	.06	.16	126	19	4.4	14	4.2	126	13
18	2.6	5.7	2.4	.05	.20	74	18	4.4	8.9	4.0	58	12
19	2.6	6.0	2.0	.05	.25	50	17	4.4	7.2	2.6	32	12
20	2.8	6.2	1.5	.06	.30	37	19	28	5.7	1.6	22	13
21	3.4	5.4	1.2	.07	.40	30	24	16	4.9	1.7	27	11
22	3.2	4.8	1.0	.07	.50	21	23	40	4.2	1.7	19	13
23	3.4	4.0	1.1	.08	.55	20	23	29	3.4	1.4	20	21
24	4.8	4.3	1.3	.08	.52	18	19	22	9.9	529	61	71
25	6.4	4.7	1.4	.08	.48	14	18	19	18	156	29	54
26	6.4	4.3	1.5	.05	.45	12	18	16	16	51	24	33
27	5.2	3.7	1.4	.01	.40	8.5	18	16	13	25	23	21
28	5.2	3.3	1.3	.00	.38	6.0	16	16	11	95	21	16
29	4.8	2.8	1.2	.00	---	8.0	15	13	8.8	29	16	16
30	4.4	2.4	1.1	.00	---	6.4	13	10	9.3	20	13	210
31	4.4	---	1.0	.00	---	6.5	---	10	---	15	12	---
TOTAL	108.6	132.5	70.8	12.88	5.61	4460.65	630.6	432.7	205.8	1027.4	1740.2	807.6
MEAN	3.50	4.42	2.28	.42	.20	144	21.0	14.0	6.86	33.1	56.1	26.9
MAX	6.4	6.2	3.7	1.2	.55	1250	35	40	18	529	726	210
MIN	2.2	2.4	1.0	.00	.00	.35	3.6	4.4	1.4	1.4	3.7	9.6
AC-FT	215	263	140	26	11	8850	1250	858	408	2040	3450	1600
CAL YR 1976	TOTAL	8894.59	MEAN	24.3	MAX	700	MIN	.02	AC-FT	17640		
WTR YR 1977	TOTAL	9635.34	MEAN	26.4	MAX	1250	MIN	.00	AC-FT	19110		

## BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA

LOCATION.--Lat 42°49'42", long 96°33'45", in NW¼SW¼ sec.31, T.93 N., R.48 W., Plymouth County, Hydrologic Unit 10170203, on left bank at west edge of Akron, 0.6 mi (1.0 km) downstream from bridge on State Highway 48, and 2.3 mi (3.7 km) upstream from Union Creek.

DRAINAGE AREA.--9,030 mi<sup>2</sup> (23,390 km<sup>2</sup>), approximately, of which about 1,970 mi<sup>2</sup> (5,100 km<sup>2</sup>) 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.

GAGE.--Water-stage recorder. Datum of gage is 1,118.90 ft (341.041 m) above mean sea level. Prior to Dec. 3, 1934, nonrecording gage at bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for the winter months, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--49 years, 820 ft<sup>3</sup>/s (23.22 m<sup>3</sup>/s), 594,100 acre-ft/yr (733 hm<sup>3</sup>/yr); median of yearly mean discharges, 710 ft<sup>3</sup>/s (20.1 m<sup>3</sup>/s), 514,000 acre-ft/yr (630 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,800 ft<sup>3</sup>/s (2,290 m<sup>3</sup>/s) Apr. 9, 1969, gage height, 22.99 ft (7.007 m); minimum daily, 4.0 ft<sup>3</sup>/s (0.11 m<sup>3</sup>/s) Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,270 ft<sup>3</sup>/s (149 m<sup>3</sup>/s) at 1300 hours Mar. 15, gage height, 13.60 ft (4.145 m), no other peak above base of 3,500 ft<sup>3</sup>/s (99.1 m<sup>3</sup>/s); minimum daily, 4.0 ft<sup>3</sup>/s (0.11 m<sup>3</sup>/s) Jan. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	55	32	14	5.8	37	574	239	169	375	284	166
2	40	56	30	13	6.0	38	549	224	151	307	208	160
3	38	60	32	12	5.9	40	529	225	136	279	162	157
4	45	55	33	11	5.7	41	523	227	128	237	132	143
5	40	54	34	10	5.5	43	501	251	118	215	114	138
6	39	55	33	9.8	5.4	45	472	268	103	212	103	138
7	40	55	32	9.2	7.5	47	460	277	93	200	93	151
8	40	53	29	8.5	10	50	440	245	86	178	85	156
9	40	55	27	7.9	15	55	417	217	80	183	92	179
10	39	59	25	7.2	20	60	388	198	74	180	87	140
11	41	55	26	6.6	25	70	356	187	73	176	89	126
12	42	53	28	6.0	28	85	337	177	69	186	79	444
13	40	52	30	5.6	30	1000	342	168	69	166	74	175
14	41	51	32	5.1	28	3880	346	159	66	179	67	146
15	41	50	34	4.8	26	4940	355	151	65	164	62	161
16	40	51	36	4.3	25	4120	348	146	67	144	61	190
17	40	52	39	4.0	23	3350	337	135	104	134	407	269
18	41	53	41	4.1	24	2960	320	130	117	138	1720	158
19	46	54	42	4.2	26	2530	337	125	116	123	1600	141
20	47	51	40	4.5	27	2100	328	137	126	113	974	135
21	48	48	38	4.7	28	1800	319	131	159	128	621	126
22	47	46	36	4.9	30	1430	317	146	194	116	438	124
23	49	44	34	5.1	31	1150	356	147	260	102	349	122
24	52	45	31	5.4	32	980	337	167	400	121	308	123
25	52	44	32	5.1	32	869	308	192	529	160	266	126
26	55	42	33	4.8	33	770	305	189	587	206	247	127
27	53	39	36	4.5	34	706	285	256	609	258	248	154
28	55	37	34	4.8	36	643	274	297	557	247	229	170
29	57	34	28	5.0	---	618	260	198	476	165	211	174
30	57	33	22	5.3	---	604	247	179	448	160	195	188
31	55	---	17	5.6	---	599	---	176	---	287	186	---
TOTAL	1401	1491	996	207.0	604.8	35660	11267	5964	6229	5839	9791	4907
MEAN	45.2	49.7	32.1	6.68	21.6	1150	376	192	208	188	316	164
MAX	57	60	42	14	36	4940	574	297	609	375	1720	444
MIN	38	33	17	4.0	5.4	37	247	125	65	102	61	122
AC-FT	2780	2960	1980	411	1200	70730	22350	11830	12360	11580	19420	9730
CAL YR 1976	TOTAL	126702.0	MEAN	346	MAX	3230	MIN	17	AC-FT	251300		
WTR YR 1977	TOTAL	84356.8	MEAN	231	MAX	4940	MIN	4.0	AC-FT	167300		

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued  
(National stream-quality accounting network station)  
(National pesticide water-monitoring network station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,310 micromhos Jan. 20, 1977; minimum daily, 300 micromhos Feb. 17, 1976.

WATER TEMPERATURES: Maximum daily, 31.0°C Feb. 19, 1975, July 23, 1976; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,310 micromhos Jan. 20; minimum daily, 320 micromhos Mar. 15.

WATER TEMPERATURES: Maximum daily, 30.0°C June 5; minimum daily, 0.0°C on many days during winter period.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (JTU) (00070)	FECAL COLIFORM (7UM-MF) (COL./100 ML) (31625)	FECAL STREPTOCOCCI (KF AGAR) (COL. PER 100 ML) (31673)	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	
OCT 27...	1030	55	1460	8.1	2.0	5	--	--	470	230	110	
NOV 29...	1130	34	1800	7.9	.0	10	B12	110	530	240	130	
DEC 27...	1130	36	440	7.7	.0	7	ND	400	610	350	150	
JAN 24...	1000	5.5	2080	8.2	.0	10	B2	813	670	240	190	
FEB 22...	1130	30	1140	7.8	.0	4	ND	88	550	260	140	
MAR 14...	1430	4060	320	--	5.0	170	--	--	110	16	28	
APR 25...	1000	307	860	8.1	14.5	20	B10	60	430	210	100	
MAY 25...	1400	191	630	8.2	25.5	30	240	B590	420	220	97	
JUN 27...	1400	604	490	8.6	28.0	45	B740	B1030	210	77	52	
JUL 25...	1100	137	910	8.2	25.5	35	--	--	350	140	82	
AUG 25...	1015	268	530	8.0	20.0	55	860	720	250	81	62	
SEP 26...	1050	125	800	8.6	15.0	30	310	600	360	140	90	
DATE		DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORPTION RATIO (00931)	DIS-SOLVED POTAS-SIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CAC03 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)
OCT 27...	48	140	39	2.8	11	295	0	242	310	180		.6
NOV 29...	51	140	36	2.6	10	364	0	299	330	210		.6
DEC 27...	57	190	40	3.4	12	320	0	262	350	250		.6
JAN 24...	47	180	36	3.0	14	519	0	426	330	210		.6
FEB 22...	49	190	42	3.5	13	359	0	294	340	250		.7
MAR 14...	9.6	15	21	.6	8.4	114	--	94	41	18		.2
APR 25...	43	58	22	1.2	7.2	260	0	210	240	63		.4
MAY 25...	43	74	27	1.6	8.5	240	0	200	250	87		.5
JUN 27...	19	23	19	.7	6.5	160	0	130	82	25		.3
JUL 25...	34	68	29	1.6	8.3	250	0	210	180	80		.5
AUG 25...	22	29	20	.8	8.1	200	0	160	99	35		.3
SEP 26...	33	74	30	1.7	8.1	260	3	220	170	99		.4

B Non-ideal colony count.  
ND Not detected.



## BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL-DAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL NITROGEN (N03) (MG/L) (71887)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL PHYTOPLANKTON (CELLS PER ML) (60050)
OCT 27...	7.0	965	952	1.31	143	.00	2.7	2.7	12	1.3	8.8	59000
NOV 29...	9.7	1210	1060	1.65	111	1.8	3.5	5.3	23	3.0	--	18000
DEC 27...	11	1300	1180	1.77	126	1.7	6.3	8.0	35	1.7	--	17000
JAN 24...	18	1320	1250	1.80	19.6	.91	5.6	6.5	29	3.5	1.5	1900
FEB 22...	15	1200	1170	1.63	97.2	1.2	4.0	5.2	23	3.9	--	--
MAR 14...	5.6	193	182	.26	2120	1.6	4.9	6.5	29	1.3	--	--
APR 25...	.4	684	640	.93	567	.00	2.0	2.0	8.9	.71	12	--
MAY 25...	7.0	716	685	.97	369	.03	2.8	2.8	13	.60	--	220000
JUN 27...	5.7	343	292	.47	559	.01	2.2	2.2	9.8	.92	--	120000
JUL 25...	4.9	584	581	.79	216	.03	2.0	2.0	9.0	.72	12	240000
AUG 25...	4.1	366	358	.50	265	.03	2.4	2.4	11	.82	--	--
SEP 26...	16	624	622	.85	211	.01	--	--	--	.85	--	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CADMIUM (CD) (UG/L) (01027)	SUS-PENDED CADMIUM (CD) (UG/L) (01026)	DIS-SOLVED CADMIUM (CD) (UG/L) (01025)	TOTAL CHROMIUM (CR) (UG/L) (01034)	SUS-PENDED CHROMIUM (CR) (UG/L) (01031)	DIS-SOLVED CHROMIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 27...	1030	3	0	6	<10	<10	0	0	0	0	<50
JAN 24...	1000	5	2	3	<10	<10	0	0	0	0	<50
APR 25...	1000	5	--	4	<10	--	1	0	--	0	<50
JUL 25...	1100	15	--	10	<10	<9	1	10	--	10	<50

DATE	SUS-PENDED COBALT (CO) (UG/L) (01036)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS-PENDED COPPER (CU) (UG/L) (01041)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL LEAD (PB) (UG/L) (01051)	SUS-PENDED LEAD (PB) (UG/L) (01050)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MANGANESE (MN) (UG/L) (01055)
OCT 27...	<49	1	<10	<10	0	300	10	<100	<100	0	150
JAN 24...	<50	0	<10	<9	1	690	30	<100	<99	1	2000
APR 25...	--	0	<10	--	2	1300	50	100	--	3	290
JUL 25...	<50	0	10	9	1	2600	20	<100	<95	5	630

DATE	SUS-PENDED MANGANESE (MN) (UG/L) (01054)	DIS-SOLVED MANGANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELENIUM (SE) (UG/L) (01147)	SUS-PENDED SELENIUM (SE) (UG/L) (01146)	DIS-SOLVED SELENIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)
OCT 27...	60	90	.0	.0	.0	1	0	1	10	10	0
JAN 24...	1000	970	.0	.0	.1	4	1	3	40	30	10
APR 25...	--	20	.2	--	.0	2	--	2	20	--	10
JUL 25...	630	4	.0	.0	.0	2	--	0	30	30	2

&lt; Less than.

## BIG SIOUX RIVER BASIN

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06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ALDRIN (UG/L) (39330)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG) (39333)	TOTAL CHLOR- DANE (UG/L) (39350)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG) (39351)	TOTAL DDD (UG/L) (39360)	DDD IN BOTTOM MA- TERIAL (UG/KG) (39363)	TOTAL DDE (UG/L) (39365)	DDE IN BOTTOM MA- TERIAL (UG/KG) (39368)	TOTAL DDT (UG/L) (39370)	
NOV 29...	1130	ND	--	ND	--	ND	--	ND	--	ND	
FEB 22...	1130	ND	--	ND	--	ND	--	ND	--	ND	
AUG 25...	1015	ND	--	ND	--	ND	--	ND	--	ND	
DATE		DDT IN BOTTOM MA- TERIAL (UG/KG) (39373)	TOTAL DI- AZINON (UG/L) (39570)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG) (39571)	TOTAL DI- ELDRIN (UG/L) (39380)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG) (39383)	TOTAL ENDRIN (UG/L) (39390)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	ETHION IN BOTTOM MA- TERIAL (UG/KG) (39399)	TOTAL HEPTA- CHLOR (UG/L) (39410)
NOV 29...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
FEB 22...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
AUG 25...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
DATE		HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG) (39413)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L) (39420)	HEPTA- CHLOR IN BOT- TOM MA- TERIAL (UG/KG) (39423)	TOTAL LINDANE (UG/L) (39340)	LINDANE IN BOTTOM MA- TERIAL (UG/KG) (39343)	TOTAL MALA- THION (UG/L) (39530)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG) (39531)	TOTAL METHOXY- CHLOR (UG/L) (39480)	METHOXY- CHLOR IN BOT- TOM MA- TERIAL (UG/KG) (39481)	TOTAL METHYL THION (UG/L) (39600)
NOV 29...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
FEB 22...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
AUG 25...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
DATE		METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG) (39601)	TOTAL METHYL THION (UG/L) (39790)	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG) (39791)	TOTAL PARA- THION (UG/L) (39540)	PARA- THION IN BOTTOM MA- TERIAL (UG/KG) (39541)	SIMA- ZINE IN TOTAL COUL- SON COND. (UG/L) (39025)	SIMA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS) (39046)	TOTAL TOX- APHENE (UG/L) (39400)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG) (39403)	TOTAL TRI- THION (UG/L) (39786)
NOV 29...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
FEB 22...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
AUG 25...	--	ND	--	ND	--	ND	--	ND	--	ND	ND
DATE		TRI- THION IN BOTTOM MA- TERIAL (UG/KG) (39787)	TOTAL ATRA- ZINE (UG/L) (39630)	ATRA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS) (39631)	TOTAL 2,4-D (UG/L) (39730)	2,4-D IN BOTTOM MA- TERIAL (UG/KG) (39731)	TOTAL 2,4,5-T (UG/L) (39740)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG) (39741)	TOTAL SILVEX (UG/L) (39760)	SILVEX IN BOTTOM MA- TERIAL (UG/KG) (39761)	
NOV 29...	--	ND	--	ND	--	ND	--	ND	--	ND	--
FEB 22...	--	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 25...	--	ND	--	ND	--	ND	--	ND	--	ND	--

ND Not detected.

## BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	1380	1800	2200	2050	1520	880	980	1020	605	550	825
2	1500	1480	1810	2040	2070	1510	900	990	1020	690	710	825
3	1530	1420	1850	2000	2150	1500	900	1000	1020	715	565	810
4	1320	1400	1850	1900	2030	1500	960	1040	1040	800	620	790
5	1540	1390	1850	1800	1960	1440	1000	1040	1060	820	660	820
6	1440	1330	1850	1800	1850	1600	1000	1030	1080	865	740	845
7	1440	1310	1860	1900	1900	1550	1000	1060	1090	860	850	860
8	1320	1400	1720	1990	1850	1280	1020	950	1080	850	905	880
9	1390	1360	1750	2020	1770	1180	1000	950	1090	850	865	950
10	1420	1280	1780	2070	1710	660	980	940	1090	850	830	850
11	1300	1300	1860	1860	1710	560	980	970	1070	860	850	850
12	1390	1530	1960	1850	1730	560	990	1000	1080	880	860	720
13	1360	1450	1950	1800	1640	490	1030	1010	1080	830	850	615
14	1340	1450	1910	1800	1580	570	1010	1020	1110	950	860	820
15	1250	1530	1800	1750	1720	320	1020	1040	1140	980	925	825
16	1440	1530	1700	1800	1950	360	1020	1040	1120	950	990	1030
17	1400	1530	1750	1900	2290	330	1020	1040	1040	890	1000	970
18	1440	1520	1770	2100	2210	330	1020	1050	1080	850	330	1000
19	1460	1590	1750	2250	2170	350	1030	1060	930	920	325	885
20	1460	1570	1770	2310	2060	390	1050	1100	920	995	390	850
21	1460	1530	1800	2250	1980	410	1070	930	1020	1020	475	870
22	1450	1500	1800	2050	1950	420	1010	1040	1080	960	515	910
23	1400	1510	1860	2030	1410	490	1010	1080	900	945	570	965
24	1400	1500	2000	2000	1700	540	1100	1100	1090	865	610	940
25	1430	1550	2100	2020	1650	620	1070	1120	960	1000	605	990
26	660	1560	2170	2060	1600	660	1000	1230	570	530	695	1020
27	1520	1650	2100	2050	1570	700	995	1020	540	650	760	1020
28	1400	1740	1850	2000	1590	750	950	670	550	960	770	1050
29	1260	1810	1750	2190	---	800	975	900	570	645	770	1090
30	1500	1800	1900	2290	---	860	980	950	590	780	805	1040
31	1040	---	2050	2290	---	870	---	980	---	690	800	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	6.0	1.0	0.0	0.0	0.0	7.0	19.0	19.0	20.0	22.0	20.0
2	14.0	8.0	1.0	0.0	0.0	0.0	7.0	17.0	20.0	20.0	22.0	18.0
3	17.0	7.0	1.0	0.0	0.0	0.0	6.0	17.0	21.0	24.0	24.0	19.0
4	16.0	5.0	1.0	0.0	0.0	0.0	4.0	18.0	23.0	23.0	24.0	21.0
5	13.0	2.0	2.0	0.0	0.0	0.0	5.0	18.0	30.0	28.0	24.0	20.0
6	9.0	1.0	1.0	0.0	0.0	0.0	5.0	20.0	22.0	29.0	21.0	21.0
7	9.0	2.0	1.0	0.0	0.0	0.0	10.0	17.0	21.0	27.0	22.0	22.0
8	8.0	2.0	1.0	0.0	0.0	0.0	13.0	20.0	22.0	26.0	24.0	23.0
9	10.0	1.0	1.0	0.0	0.0	0.0	16.0	21.0	20.0	24.0	24.0	19.0
10	12.0	3.0	1.0	0.0	0.0	0.0	17.0	17.0	17.0	22.0	23.0	17.0
11	13.0	2.0	1.0	0.0	0.0	0.0	17.0	17.0	23.0	24.0	19.0	19.0
12	14.0	0.0	1.0	0.0	0.0	0.0	18.0	19.0	22.0	24.0	19.0	19.0
13	13.0	0.0	1.0	0.0	0.0	0.0	16.0	20.0	20.0	25.0	23.0	17.0
14	12.0	0.0	1.0	0.0	0.0	0.0	14.0	20.0	18.0	27.0	22.0	17.0
15	10.0	3.0	1.0	0.0	0.0	4.0	17.0	22.0	21.0	25.0	21.0	18.0
16	9.0	1.0	2.0	0.0	0.0	2.0	20.0	19.0	21.0	25.0	20.0	20.0
17	7.0	3.0	2.0	0.0	0.0	3.0	19.0	20.0	20.0	27.0	20.0	19.0
18	5.0	3.0	2.0	0.0	0.0	3.0	20.0	22.0	20.0	27.0	17.0	20.0
19	4.0	2.0	2.0	0.0	0.0	2.0	17.0	21.0	21.0	27.0	17.0	16.0
20	3.0	2.0	1.0	0.0	0.0	2.0	15.0	19.0	22.0	27.0	19.0	14.0
21	3.0	2.0	1.0	0.0	0.0	1.0	12.0	18.0	22.0	24.0	21.0	17.0
22	2.0	1.0	1.0	0.0	0.0	1.0	19.0	17.0	20.0	23.0	21.0	16.0
23	4.0	1.0	1.0	0.0	0.0	2.0	18.0	21.0	23.0	25.0	20.0	16.0
24	4.0	2.0	1.0	0.0	0.0	4.0	15.0	27.0	24.0	27.0	19.0	15.0
25	3.0	2.0	2.0	0.0	0.0	7.0	14.0	24.0	25.0	25.0	20.0	16.0
26	4.0	3.0	1.0	0.0	0.0	9.0	17.0	22.0	26.0	24.0	21.0	14.0
27	2.0	0.0	2.0	0.0	0.0	---	15.0	21.0	27.0	22.0	24.0	15.0
28	2.0	1.0	1.0	0.0	0.0	---	17.0	20.0	26.0	24.0	24.0	15.0
29	3.0	1.0	1.0	0.0	---	9.0	19.0	21.0	23.0	27.0	20.0	16.0
30	5.0	1.0	1.0	0.0	---	7.0	20.0	22.0	22.0	29.0	21.0	15.0
31	6.0	---	1.0	0.0	---	4.0	---	21.0	---	26.0	21.0	---

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 27,76 1030	NOV 29,76 1130	DEC 27,76 1130	JAN 24,77 1000
TOTAL CELLS/ML	59000	18000	17000	1900
DIVERSITY: DIVISION	1.2	0.1	0.6	0.8
..CLASS	1.2	0.1	0.6	0.8
...ORDER	1.4	0.4	0.9	1.3
...FAMILY	1.5	0.4	1.0	1.4
....GENUS	1.5	0.4	1.0	1.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	360	2	--	-	--	-
....COELASTRACEAE	--	-	--	-	--	-	--	-
....COELASTRUM	--	-	--	-	--	-	--	-
....HYDRODICTYACEAE	--	-	--	-	--	-	--	-
....PEDIASTRUM	--	-	--	-	--	-	--	-
....MICRACTINIACEAE	--	-	--	-	--	-	--	-
....GOLENKINIA	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	1000	6	--	-
....OOCYSTACEAE								
....ANKISTRODESMUS	1400	2	--	-	*	0	*	0
....CHODATELLA	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
....FRANCEIA	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-
....SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	4400	8	--	-	290	2	*	0
....TETRASTRUM	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	--	-	--	-	290	2	250	13
...CHLOROCOCCALES								
...OOCYSTACEAE								
...GLOEOACTINIUM	--	-	--	-	--	-	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	43000#	72	17000#	94	15000#	85	1300#	70
....MELOSIRA	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-
...PENNALES								
...FRAGILARIACEAE								
....SYNEDRA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	--	-	--	-
....NAVICULA	--	-	360	2	--	-	*	0
...NITZSCHIACEAE								
....HANTZSCHIA	--	-	--	-	--	-	--	-
....NITZSCHIA	2000	3	360	2	580	3	160	9
...SURIPELLACEAE								
....CYMATOPLEURA	--	-	--	-	--	-	82	4
....SURIPELLA	--	-	--	-	*	0	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
....AGMENELLUM	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE								
....LYNGBYA	3000	5	--	-	--	-	--	-
...OSCILLATORIA	--	-	--	-	360	2	--	-
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
...GOMPHOSPHAERIA	--	-	--	-	--	-	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM; MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	OCT 27,76 1030	NOV 29,76 1130	DEC 27,76 1130	JAN 24,77 1000
TOTAL CELLS/ML	59000	18000	17000	1900
DIVERSITY: DIVISION	1.2	0.1	0.6	0.8
..CLASS	1.2	0.1	0.6	0.8
...ORDER	1.4	0.4	0.9	1.3
...FAMILY	1.5	0.4	1.0	1.4
....GENUS	1.5	0.4	1.0	1.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDAE								
....CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	--	-	82	4
...CRYPTOMONODACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	--	-
....TRACHELONAS	5600	10	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
....GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%



06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 25,77 1400	JUN 27,77 1400	JUL 25,77 1100	AUG 25,77 1015
TOTAL CELLS/ML	220000	120000	240000	290000
DIVERSITY: DIVISION	0.9	1.5	1.2	1.7
..CLASS	0.9	1.5	1.2	1.7
...ORDER	1.0	1.9	1.4	2.4
...FAMILY	2.5	2.3	1.8	2.7
....GENUS	3.2	2.8	2.4	3.1

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	* 0	--	--	-
...COELASTRACEAE								
....COELASTRUM	10000	4	--	-	--	-	--	-
...HYDRODICTYACEAE								
...PEDIASTRUM	26000	12	--	-	* 0	--	--	-
...MICRACTINIACEAE								
....GOLENKINIA	--	-	--	-	1500	1	12000	4
....MICRACTINIUM	22000	10	4700	4	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	7000	3	3900	3	1500	1	8300	3
....CHODATELLA	1300	1	780	1	* 0	--	--	-
....DICTYOSPHAERIUM	7000	3	--	-	1500	1	--	-
....FRANCEIA	--	-	--	-	--	-	3300	1
....KIRCHNERIELLA	* 0	--	2300	2	8100	3	1700	1
....OOCYSTIS	1700	1	--	-	--	-	--	-
....TETRAEDRON	6700	3	--	-	--	-	--	-
....TREUBARIA	* 0	--	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	25000	11	10000	9	2900	1	13000	5
....CRUCIGENIA	--	-	--	-	1500	1	--	-
...SCENEDESMUS	71000#	32	20000#	17	17000	7	13000	5
....TETRASTRUM	1300	1	--	-	4400	2	6600	2
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	1300	1	4700	4	--	-	5000	2
...CHLOROCOCCALES								
...OOCYSTACEAE								
...GLOEOACTINIUM	--	-	--	-	25000	10	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	25000	11	48000#	41	7000	3	84000#	29
....MELOSIRA	--	-	3100	3	2900	1	6600	2
....STEPHANODISCUS	--	-	--	-	--	-	* 0	0
...PENNALES								
...FRAGILARIACEAE								
....SYNEDRA	--	-	2300	2	--	-	3300	1
...NAVICULACEAE								
....GYROSIGMA	* 0	--	--	-	--	-	--	-
....NAVICULA	--	-	--	-	--	-	--	-
...NITZSCHIIACEAE								
....HANTZSCHIA	--	-	--	-	* 0	--	--	-
....NITZSCHIA	5700	3	--	-	2600	1	18000	6
...SURIPELLACEAE								
....CYMATOPLEURA	--	-	--	-	--	-	--	-
....SURIPELLA	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
....AGMENELLUM	11000	5	--	-	140000#	58	--	-
....ANACYSTIS	--	-	7800	7	11000	5	74000#	26
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	25000	9
...OSCILLATORIIACEAE								
....LYNGBYA	--	-	10000	9	10000	4	--	-
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
...GOMPHOSPHERIA	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

## BIG SIOUX RIVER BASIN

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

## PHYTOPLANKTON ANALYSES

DATE TIME	MAY 25,77 1400	JUN 27,77 1400	JUL 25,77 1100	AUG 25,77 1015
TOTAL CELLS/ML	220000	120000	240000	290000
DIVERSITY: DIVISION	0.9	1.5	1.2	1.7
..CLASS	0.9	1.5	1.2	1.7
...ORDER	1.0	1.9	1.4	2.4
...FAMILY	2.5	2.3	1.8	2.7
....GENUS	3.2	2.8	2.4	3.1
ORGANISM	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT
EUGLENOPHYTA (EUGLENOIDS)				
..CRYPTOPHYCEAE				
...CRYPTOMONIDALES				
....CRYPTOCHRYSIDACEAE				
.....CHROOMONAS	-- -	-- -	-- -	-- -
....CRYPTOMONODACEAE				
.....CRYPTOMONAS	* 0	-- -	-- -	-- -
..EUGLENOPHYCEAE				
...EUGLENALES				
....EUGLENACEAE				
.....EUGLENA	-- -	-- -	* 0	6600 2
.....TRACHELOMONAS	-- -	-- -	-- -	6600 2
PYRRHOPHYTA (FIRE ALGAE)				
..DINOPHYCEAE				
...PERIDINIALES				
....GLENODINIACEAE				
.....GLENODINIUM	* 0	-- -	-- -	-- -

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

\* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

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 floodflow analyses.

## Crest-stage partial-record stations

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

## Annual maximum discharge at crest-stage partial-record stations

					Annual maximum		
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
Minnesota River basin							
05289950	Little Minnesota River tributary at Sisseton, SD	Lat 45°39'38", long 97°04'21", in NW¼ sec.32, T.126 N., R.51 W., Roberts County, Hydrologic Unit 07020001, at culvert on State Highway 10, 0.6 mile (1.0 km) west of Sisseton.	4.21	1970-77	6-16-77	4.99	40
05290300	North Fork Whetstone River tributary near Wilmot, SD	Lat 45°26'02", long 96°57'33", in SE¼ sec.18, T.123 N., R.50 W., Roberts County, Hydrologic Unit 07020001, at culvert on county highway, 6.0 miles (9.7 km) northwest of Wilmot.	.96	1970-77	7-30-77	3.86	29
05292600	North Fork Yellow Bank River tributary near Stockholm, SD	Lat 45°06'28", long 96°49'19", in SE¼SE¼SE¼ sec.16, T.119 N., R.50 W., Grant County, Hydrologic Unit 07020001, at culvert on State Highway 20, 1.0 mile (1.6 km) northwest of Stockholm.	8.15	1970-77	6-16-77	8.71	349
Spring Creek basin							
06354845	Spring Creek tributary near Greenway, SD	Lat 45°54'45", long 99°36'48", in SW¼ sec.12, T.128 N., R.73 W., McPherson County, Hydrologic Unit 10130102, at culvert on State Highway 47, 4.8 miles (7.7 km) east of Greenway.	.99	1970-77	3-12-77	<sup>a</sup> 4.00	<sup>b</sup> 10
Grand River basin							
06355400	North Fork Grand River tributary near Lodgepole, SD	Lat 45°55'45", long 102°39'04", in NW¼ sec.28, T.23 N., R.12 E., Perkins County, Hydrologic Unit 10130301, at culvert on county highway, 9.0 miles (14.5 km) north of Lodgepole.	3.07	1970-77	6-12-70	5.28	127
					7-12-71	6.21	219
					5-28-72	4.04	42
					6- 2-73	4.49	67
					6- 1-74	3.95	38
					4-28-75	5.00	104
					6-15-76	3.14	3.3
					9- 7-77	4.45	65
06356150	North Jack Creek near Ludlow, SD	Lat 45°47'15", long 103°23'43", in SW¼NW¼NW¼ sec.16, T.21 N., R.6 E., Harding County, Hydrologic Unit 10130302, at culvert on U.S. Highway 85, 3.4 miles (5.5 km) southwest of Ludlow.	1.69	1970-77	4- 7-77	<sup>a</sup> 3.71	<sup>b</sup> 7.5
06356600	South Fork Grand River tributary near Bison, SD	Lat 45°35'54", long 102°39'28", in NE¼ sec.21, T.19 N., R.12 E., Perkins County, Hydrologic Unit 10130302, at culvert on county highway, 10 miles (16 km) northwest of Bison.	<sup>c</sup> 1.0	1970-77	7- 6-77	5.30	70
Deadman Creek basin							
06358520	Deadman Creek tributary near Mobridge, SD	Lat 45°28'12", long 100°29'46", in NW¼ sec.1, T.17 N., R.29 E., Dewey County, Hydrologic Unit 10130102, at culvert on county highway, 5.5 miles (8.8 km) southwest of Mobridge.	.30	1956-77	9-23-77	5.56	23

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
Blue Blanket Creek basin							
06358540	Blue Blanket Creek tributary near Glenham, SD	Lat 45°32'12", long 100°12'01", in NW¼NW¼NW¼ sec.30, T.124 N., R.77 W., Walworth County, Hydro- logic Unit 10130102, at culvert on U.S. Highway 12, 3.5 miles (5.6 km) east of Glenham.	0.62	1970-77	1977	<3.11	<4.5
Moreau River basin							
06358550	Battle Creek tributary near Castle Rock, SD	Lat 45°02'57", long 103°32'56", in NE¼ sec.31, T.13 N., R. 5 E., Butte County, Hydrologic Unit 10130304, at culvert on U.S. Highway 85, 8.7 miles (14.0 km) northwest of Castle Rock.	1.57	1969-77	7- 4-77	4.50	53
06358600	South Fork Moreau River tributary near Redig, SD	Lat 45°11'55", long 103°34'05", in SE¼SE¼ sec.1, T.14 N., R.4 E., Butte County, Hydrologic Unit 10130304, at culvert on former U.S. Highway 85, 5 miles (8 km) south of Redig, 26.2 miles (42.2 km) south of Buffalo.	2.33	1956, 1958-77	4- 7-77	<sup>a</sup> 2.42	<sup>b</sup> 35
06359300	Deep Creek tribu- tary near Maurine, SD	Lat 45°01'34", long 102°32'29", in SW¼SE¼ sec.4, T.12 N., R.13 E., Meade County, Hydrologic Unit 10130305, at culvert on U.S. Highway 212, 2.6 miles (4.2 km) east of Maurine.	1.26	1970-77	5-26-77	2.69	.3
06359700	Thunder Butte Creek tributary near Meadow, SD	Lat 45°26'39", long 102°05'21", in SE¼ sec.12, T.17 N., R.16 E., Perkins County, Hydrologic Unit 10130306, at culvert on State Highway 20, 8.5 miles (13.7 km) southeast of Meadow, 15.7 miles (25.3 km) west of Glad Valley.	<sup>c</sup> 3.0	1970-77	7- 6-77	4.60	40
06359800	Thunder Butte Creek tributary near Glad Valley, SD	Lat 45°26'39", long 102°01'01", in SW¼ sec.10, T.17 N., R.17 E., Perkins County, Hydrologic Unit 10130306, at culvert on State Highway 20, 12.2 miles (19.6 km) west of Glad Valley.	<sup>c</sup> 8.0	1970-77	7- 6-77	6.13	579
06359850	Elm Creek tribu- tary near Dupree, SD	Lat 45°03'12", long 101°38'39", in SW¼ sec.26, T.13 N., R.20 E., Ziebach County, Hydrologic Unit 10130306, at culvert on U.S. Highway 212, 1.8 miles (2.9 km) west of Dupree.	<sup>c</sup> 5.0	1970-77	6-21-77	5.07	245
06360350	Little Moreau River tributary near Firesteel, SD	Lat 45°24'16", long 101°13'30", in NE¼SE¼ sec.25, T.17 N., R.23 E., Dewey County, Hydrologic Unit 10130306, at culvert on State Highway 63, 3.5 miles (5.6 km) southeast of Firesteel.	<sup>c</sup> 2.75	1970-77	6-15-77	3.48	15
Swan Creek basin							
06361020	Swan Lake Creek tributary near Bowdle, SD	Lat 45°26'57", long 99°44'34", in SW¼ sec.23, T.123 N., R.74 W., Walworth County, Hydrologic Unit 10130105, at culvert on U.S. Highway 12, 3.7 miles (6.0 km) west of Bowdle.	27.1	1970-77	3- -77	<2.95	<3.2
Cheyenne River basin							
06396200	Fiddle Creek near Edgemont, SD	Lat 43°18'16", long 103°59'46", in SE¼ sec.33, T.8 S., R. 1 E., Fall River County, Hydrologic Unit 10120106, at culvert on U.S. Highway 18 and 85A, 9 miles (14 km) west of Edgemont.	.64	1956-77	8- 9-77	2.93	44

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

					Annual maximum		
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
Cheyenne River basin - Continued							
06396300	Cottonwood Creek tributary near Edgemont, SD	Lat 43°17'48", long 103°52'02", in SW¼ sec.3, T.9 S., R.2 E., Fall River County, Hydrologic Unit 10120106, at culvert on U.S. Highway 18 and 85A, 2.5 miles (4.0 km) west of Edgemont.	0.09	1956-77	7- 8-56	3.83	25
					6- -57	3.37	14
					7-20-58	4.38	41
					7-13-59	3.77	23
					1960	<2.98	<6.0
					7-20-61	3.27	12
					9- -62	4.28	38
					6-20-63	d4.30	38
					6-21-64	4.21	35
					7-14-66	3.77	23
					6-15-67	3.71	22
					6-25-68	4.21	35
					7-18-69	5.37	75
					7-12-70	e2.93	9.2
					5-22-71	d3.10	13
					1972	<2.63	<4.0
					9- 2-73	3.10	13
8-10-74	4.10	40					
7- 9-75	3.04	12					
7-20-76	3.04	12					
8- 9-77	4.42	51					
06396350	Red Canyon Creek tributary near Pringle, SD	Lat 43°32'22", long 103°39'20", in SW¼ sec.9, T.6 S., R.4 E., Custer County, Hydrologic Unit 10120109, at culvert on State Highway 89, 0.5 mile (0.8 km) northwest of Argyle, and 5.5 miles (8.8 km) southwest of Pringle.	.20	1970-77	1977	<2.64	b<1.0
					06399300	Hat Creek tributary near Ardmore, SD	Lat 43°05'42", long 103°40'25", in NW¼ sec.16, T.11 S., R.4 E., Fall River County, Hydrologic Unit 10120108, at culvert on State Highway 71, 5.0 miles (8.0 km) north of Ardmore.
06400900	Horsehead Creek tributary near Smithwick, SD	Lat 43°17'16", long 103°19'08", in NW¼ sec.8, T.9 S., R.7 E., Fall River County, Hydrologic Unit 10120106, at culvert on U.S. Highway 18 and 385, 12 miles (19 km) southeast of Hot Springs, and 5.3 miles (8.5 km) west of Smithwick.	1.52	1969-77			
					06402100	Fall River tributary at Hot Springs, SD	Lat 43°24'58", long 103°29'18", in NW¼NE¼ sec.26, T.7 S., R.5 E., Fall River County, Hydrologic Unit 10120109, at culvert on State Highway 71, 0.5 mile (0.8 km) south of Hot Springs.
06403800	Battle Creek tributary near Keystone, SD	Lat 43°55'28", long 103°27'44", in NW¼NE¼NE¼ sec.36, T.1 S., R.5 E., Pennington County, Hydrologic Unit 10120109, at culvert on U.S. Highway 16, 2.8 miles (4.5 km) northwest of Keystone.	d.63	1956-77			
					06406100	Battle Creek tributary near Hermosa, SD	Lat 43°50'10", long 103°09'43", in SE¼NE¼ sec.33, T.2 S., R.8 E., Custer County, Hydrologic Unit 10120109, at culvert on county highway, 1.3 miles (2.1 km) east of Hermosa.
06406800	Newton Fork near Hill City, SD	Lat 43°58'03", long 103°38'24", in NE¼NE¼ sec.16, T.1 S., R.4 E., Pennington County, Hydrologic Unit 10120109, at culvert on Forest Service Road 17, 3.9 miles (6.3 km) northwest of Hill City.	8.17	1969-77			

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
Cheyenne River basin - Continued							
06406900	Palmer Creek near Hill City, SD	Lat 43°56'12", long 103°30'36", in NE¼SE¼NW¼ sec.27, T.1 S., R.5 E., Pennington County, Hydrologic Unit 10120109, at culvert on U.S. Highway 16, 3.0 miles (4.8 km) east of Hill City.	<sup>d</sup> 13.3	1956-77	8- 8-77	3.96	-
06408850	Silver Creek near Rochford, SD	Lat 44°07'24", long 103°41'53", in NE¼NE¼ sec.24, T.2 N., R.3 E., Pennington County, Hydrologic Unit 10120110, at culvert on Forest Service Road 291, 0.3 mile (0.5 km) upstream from mouth, and 1.1 miles (1.8 km) east of Rochford.	6.23	1969-77	4-27-77	3.68	6.9
06408900	Heeley Creek near Hill City, SD	Lat 43°58'57", long 103°50'02", in NW¼NW¼ sec.12, T.1 S., R.2 E., Pennington County, Hydrologic Unit 10120110, at culvert on Forest Service Road 291, 2.8 miles (4.5 km) south of Deerfield, and 13.5 miles (21.7 km) northwest of Hill City.	4.88	1969-77	8- 8-77	3.08	4.6
06421750	Rapid Creek tributary near Farmingdale, SD	Lat 43°56'30", long 102°48'43", in SE¼SW¼ sec.21, T.1 S., R.11 E., Pennington County, Hydrologic Unit 10120110, at culvert on State Highway 40, 3.8 miles (6.1 km) southeast of Farmingdale.	1.50	1970-77	4- 8-77	<sup>a</sup> 3.51	<sup>b</sup> 5.0
06423400	Bull Creek tributary near Wall, SD	Lat 43°53'55", long 102°14'18", in NW¼SW¼ sec.5, T.2 S., R.16 E., Pennington County, Hydrologic Unit 10120111, at culvert on U.S. Highway 16A, 6.2 miles (10.0 km) south of Wall.	.39	1970-77	4- 8-77	<sup>a</sup> 3.61	<sup>b</sup> <5.0
06434800	Owl Creek tributary near Belle Fourche, SD	Lat 44°49'32", long 103°51'06", in NE¼SE¼ sec.15, T.10 N., R.2 E., Butte County, Hydrologic Unit 10120202, at culvert on U.S. Highway 85, 10.2 miles (16.4 km) north of Belle Fourche.	3.06	1970-77	6-10-72 6-21-77	<sup>d</sup> 3.44 2.72	<sup>d</sup> 102 30
06437100	Boulder Creek near Deadwood, SD	Lat 44°23'28", long 103°39'38", in NE¼SW¼ sec.17, T.5 N., R.4 E., Lawrence County, Hydrologic Unit 10120202, at culvert on U.S. Highway 14A, 3.5 miles (5.6 km) east of Deadwood.	1.32	1956-77	4- 9-77	<sup>a</sup> 4.61	<sup>b</sup> 35
06439050	Cherry Creek tributary near Avance, SD	Lat 44°48'33", long 102°03'18", in SW¼ sec.21, T.10 N., R.17 E., Meade County, Hydrologic Unit 10120113, at culvert on State Highway 73, 12.5 miles (20.1 km) southeast of Avance.	.60	1956-77	8-27-77	4.12	60
06439080	Cherry Creek tributary No. 3 near Avance, SD	Lat 44°51'03", long 102°03'36", in SW¼ sec.3, T.10 N., R.17 E., Meade County, Hydrologic Unit 10120113, at bridge on State Highway 73, 11 miles (17.7 km) southeast of Avance.	4.58	1956-77	6-22-77	2.76	20
06439100	Beaver Creek near Faith, SD	Lat 44°56'21", long 102°02'37", in SW¼ sec.3, T.11 N., R.17 E., Meade County, Hydrologic Unit 10120113, at bridge on State Highway 73, 6 miles (10 km) south of Faith.	37.1	1956-77	5-21-77	7.97	330

See footnotes at end of the table.



## Annual maximum discharge at crest-stage partial-record stations--Continued

					Annual maximum		
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
Cheyenne River basin - Continued							
06439400	Plum Creek tributary near Milesville, SD	Lat 44°21'34", long 101°25'42", in S½ sec.26, T.5 N., R.22 E., Haakon County, Hydrologic Unit 10120112, at culvert on State Highway 34, 14.5 miles (23.3 km) southeast of Milesville.	0.5	1970-77	4- 9-75 3-12-77	a4.92 a4.13	b10 b7.0
Bad River basin							
06440700	Brady Creek tributary near Philip, SD	Lat 43°55'14", long 101°39'40", in NE¼NE¼ sec.36, T.1 S., R.20 E., Jackson County, Hydrologic Unit 10140102, at culvert on State Highway 73, 8.1 miles (13.0 km) south of Philip.	4.84	1970-77	4- -77		b<5
06441200	Powell Creek tributary near Fort Pierre, SD	Lat 44°22'39", long 100°35'16", in NW¼SW¼ sec.23, T.5 N., R.29 E., Stanley County, Hydrologic Unit 10140102, at culvert on U.S. Highway 14, 10.2 miles (16.4 km) west of Fort Pierre.	.40	1970-77	6-21-77	5.37	75
Hilgers Gulch basin							
06441530	Hilgers Gulch tributary near Pierre, SD	Lat 44°23'52", long 100°18'57", in SE¼SW¼SE¼ sec.22, T.111 N., R.79 W., Hughes County, Hydrologic Unit 10140101, at culvert on U.S. Highway 14 and 83, 1 mile (2 km) upstream from mouth, and 3 miles (5 km) northeast of Pierre.	1.33	1968-77	8- 4-77	3.47	2.2
06441580	Hilgers Gulch at Pierre, SD	Lat 44°22'10", long 100°20'30", in SE¼SW¼ sec.33, T.111 N., R.79 W., Hughes County, Hydrologic Unit 10140101, on right bank at culvert on Church Street, 0.7 mile (1.1 km) upstream from mouth, in city of Pierre.	6.49	1967-77	9-23-77	5.78	4.5
Mush Creek basin							
06441650	Mush Creek near Pierre, SD	Lat 44°20'13", long 100°12'42", in NE¼ sec.16, T.110 N., R.78 W., Hughes County, Hydrologic Unit 10140101, at bridge on State Highway 34, 7.5 miles (12.1 km) east of Pierre.	14.2	1956-77	7- 2-77	4.91	1,070
Unnamed Missouri River tributary							
06442050	Missouri River tributary near DeGrey, SD	Lat 44°17'45", long 99°58'58", in SW¼ sec.28, T.110 N., R.76 W., Hughes County, Hydrologic Unit 10140101, at culvert on State Highway 34, 3.2 miles (5.1 km) northwest of DeGrey.	1.73	1956-77	7- 2-77	3.51	295
Medicine Creek basin							
06442350	North Fork Medicine Creek near Vivian, SD	Lat 43°57'06", long 100°19'25", in SW¼ sec.28, T.106 N., R.79 W., Lyman County, Hydrologic Unit 10140104, at bridge on U.S. Highway 83, 2.5 miles (4.0 km) northwest of Vivian.	d47.0	1956-77	3-29-77	a6.06	b75
06442400	Medicine Creek tributary No. 2 near Vivian, SD	Lat 44°02'03", long 100°19'28", in NE¼ sec.32, T.107 N., R.79 W., Lyman County, Hydrologic Unit 10140104, at culvert on U.S. Highway 83, 8 miles (13 km) northwest of Vivian.	9.21	1956-77	3-29-77	a5.74	b35

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
Crow Creek basin							
06442850	Elm Creek tribu- tary near Ree Heights, SD	Lat 44°25'05", long 99°12'17", in NW¼SW¼ sec.13, T.111 N., R.70 W., Hand County, Hydrologic Unit 10140105, at culvert on county highway, 6.5 miles (10.5 km) south of Ree Heights.	.70	1969-77	9-23-77	2.92	9.3
06442960	Smith Creek trib- utary near Gann Valley, SD	Lat 44°01'34", long 98°43'41", in NE¼SE¼ sec.34, T.107 N., R.66 W., Jerauld County, Hydrologic Unit 10140105, at culvert on county highway, 8.7 miles (14.0 km) southwest of Wessington Springs and 13.0 miles (20.9 km) east of Gann Valley.	5.85	1972-77	3-12-77	a6.94	b50
White River basin							
06445990	South Fork Black- tail Creek tributary near Oelrichs, SD	Lat 43°11'18", long 103°08'20", in NW¼ sec.14, T.10 S., R.8 E., Fall River County, Hydrologic Unit 10140201, at culvert on U.S. Highway 18, 4.2 miles (6.8 km) east of Oelrichs.	c3.60	1969-77	8-22-77	2.83	
06446250	Porcupine Creek tributary near Rockyford, SD	Lat 43°26'05", long 102°25'45", in SE¼SE¼ sec.17, T.40 N., R.43 W., Shannon County, Hydrologic Unit 10140201, at culvert on county road, 5 miles (8 km) southeast of village of Rockyford.	1.65	1968, 1970-77	8- 9-77	8.42	353
06446400	Cain Creek tribu- tary at Imlay, SD	Lat 43°42'59", long 102°23'23", in SE¼NW¼ sec.12, T.4 S., R.14 E., Pennington County, Hydrologic Unit 10140201, at bridge on State Highway 40, 0.5 mile (0.8 km) east of Imlay.	d15.8	1956-77	4-12-77	4.61	275
06446550	White River tributary near Interior, SD	Lat 43°44'51", long 101°56'50", in SE¼ sec.27, T.3 S., R.18 E., Jackson County, Hydrologic Unit 10140202, in Badlands National Monument, at culvert on U.S. Highway 16A, 2.3 miles (3.7 km) northeast of Interior.	.32	1956-77	5-26-77	4.65	82
06446800	Cottonwood Creek near Wanblee, SD	Lat 43°34'35", long 101°32'15", in NW¼NW¼ sec.31, T.42 N., R.35 W., Washabaugh County, Hydrologic Unit 10140202, at culvert on State Highway 40, 6.2 miles (10.0 km) east of Wanblee.	c1.7	1971-77	7-31-75 9-23-77	4.87 7.93	d46 142
06447200	Black Pipe Creek tributary near Norris, SD	Lat 43°27'42", long 101°08'05", in NW¼NW¼ sec.8, T.40 N., R.32 W., Mellette County, Hydrologic Unit 10140202, at culvert on State Highway 63, 3.2 miles (5.1 km) east of Norris.	4.19	1971-77	7-24-77	8.59	192
06447490	Little White River tributary near Martin, SD	Lat 43°10'20", long 101°41'02", in SE¼SW¼ sec.15, T.37 N., R.37 W., Bennett County, Hydrologic Unit 10140203, at culvert on U.S. Highway 18, 2.3 miles (3.7 km) east of Martin.	c8.9	1971-77	8-13-77	3.07	18
06449700	Little Oak Creek near Mission, SD	Lat 43°19'45", long 100°42'33", in NW¼ sec.25, T.39 N., R.29 W., Todd County, Hydrologic Unit 10140203, at culvert on U.S. Highway 83, 3.2 miles (5.1 km) northwest of Mission.	2.58	1956-77	7-20-72 5-27-73 5-29-74 1975 7- 3-76 5- 9-77	d3.50 d2.20 1.85 - 1.87 11.87	103 30 13 5 14 970

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
White River basin - Continued							
06451750	Cottonwood Creek tributary near Winner, SD	Lat 43°23'11", long 100°01'13", in NW¼ sec.24, T.99 N., R.78 W., Tripp County, Hydrologic Unit 10140204, at culvert on U.S. Highway 18, 7.5 miles (12.1 km) west of Winner.	4.0	1971-77	5-27-73 4-12-74 6-21-75 5- 6-77	4.18 3.70 4.22 4.93	d <sub>90</sub> d <sub>28</sub> d <sub>96</sub> 184
Fivemile Creek basin							
06452250	Fivemile Creek tributary near Iona, SD	Lat 43°29'23", long 99°26'08", in SE¼ sec.11, T.99 N., R.73 W., Gregory County, Hydrologic Unit 10140101, at culvert on State Highway 47, 3.8 miles (6.1 km) south of Iona.	2.35	1970-77	4-20-77	2.72	36
Choteau Creek basin							
06453150	Choteau Creek tributary near Tripp, SD	Lat 43°14'20", long 98°02'35", in NE¼NW¼ sec.10, T.97 N., R.61 W., Hutchinson County, Hydrologic Unit 10170101, at culvert on U.S. Highway 18, 3.7 miles (6.0 km) west of Tripp.	.54	1970-77	3-12-77	<sup>a</sup> 3.22	<sup>b</sup> 8.0
06453250	Choteau Creek tributary near Wagner, SD	Lat 43°04'54", long 98°19'04", in NE¼NW¼ sec.5, T.95 N., R.63 W., Charles Mix County, Hydrologic Unit 10170101, at culvert on State Highway 46, 1.1 miles (1.8 km) west of Wagner.	15.6	1970-77	8- 9-77	5.49	129
James River basin							
06471050	Elm River tribu- tary near Leola, SD	Lat 45°50'40", long 98°46'03", in NE¼SE¼ sec.3, T.127 N., R.66 W., McPherson County, Hydrologic Unit 10160004, at culvert on county highway, 12.2 miles (19.6 km) northeast of Leola.	18.0	1956-77	3-12-77	<sup>a</sup> 4.59	<sup>b</sup> 40
06471400	Willow Creek trib- utary near Leola, SD	Lat 45°44'10", long 98°45'45", in SW¼ sec.11, T.126 N., R.66 W., McPherson County, Hydrologic Unit 10160004, at culvert on former State Highway 10, 8.5 miles (13.7 km) northeast of Leola.	6.69	1956-77	3-12-77	<sup>a</sup> 2.60	<sup>b</sup> 20
06471750	Snake Creek tribu- tary (formerly Foot Creek trib- utary) near Leola, SD	Lat 45°41'01", long 98°55'55", in SE¼ sec.32, T.126 N., R.67 W., McPherson County, Hydrologic Unit 10160003, at culvert on State Highway 45, 2.5 miles (4.0 km) south of Leola.	4.49	1971-77	3-11-77	<sup>a</sup> 3.82	<sup>b</sup> 20
06472200	Mud Creek tribu- tary near Groton, SD	Lat 45°26'37", long 98°02'22", in SW¼ sec.22, T.123 N., R.60 W., Brown County, Hydrologic Unit 10160005, at culvert on U.S. Highway 12, 3.2 miles (5.1 km) east of Groton.	<sup>d</sup> 56.7	1960-69, 1974-77	3-12-77	<sup>a</sup> 4.22	<sup>b</sup> <5.0
06472250	Mud Creek tribu- tary No. 2 near Groton, SD	Lat 45°26'36", long 98°02'52", in SE¼ sec.21, T.123 N., R.60 W., Brown County, Hydrologic Unit 10160005, at culvert on U.S. Highway 12, 2.7 miles (4.3 km) east of Groton.	<sup>d</sup> 75.8	1960-77	4-18-77	1.82	2.5
06473300	Preachers Run tributary at Ipswich, SD	Lat 45°27'08", long 99°01'45", in SE¼ sec.21, T.123 N., R.68 W., Edmunds County, Hydrologic Unit 10160008, at culvert on county highway, 0.3 mile (0.5 km) north of U.S. Highway 12, at Ipswich.	7.88	1971-77	3-12-77	<sup>a</sup> <3.80	<sup>b</sup> 15

See footnotes at end of the table.

## DISCHARGE AT PARTIAL-RECORD STATIONS

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)
James River basin - Continued							
06473350	South Fork Snake Creek tributary near Seneca, SD	Lat 45°03'00", long 99°23'36", in SE¼NE¼ sec.9, T.118 N., R.71 W., Faulk County, Hydrologic Unit 10160008, at culvert on U.S. Highway 212, 5.3 miles (8.5 km) east of Seneca.	4.54	1971-77	3-12-77	<sup>a</sup> 4.07	<sup>b</sup> 25
06473400	North Fork Snake Creek tributary near Wecota, SD	Lat 45°09'26", long 99°07'26", in NE¼NE¼ sec.3, T.119 N., R.69 W., Faulk County, Hydrologic Unit 10160008, at culvert on county highway, 1.1 miles (1.8 km) south of Wecota.	2.69	1971-77	3-12-77	<sup>a</sup> 5.16	<sup>b</sup> 30
06473820	Shaefer Creek near Orient, SD	Lat 44°46'46", long 99°02'39", in NW¼NW¼ sec.17, T.115 N., R.68 W., Hand County, Hydrologic Unit 10160009, on downstream side of bridge on county highway, 8.5 miles (13.7 km) southeast of Orient.	<sup>d</sup> 51.3	1956-77	3-12-77	<1.86	<11
06473850	Shaefer Creek tributary near Orient, SD	Lat 44°43'49", long 98°59'17", in SE¼NE¼ sec.34, T.115 N., R.68 W., Hand County, Hydrologic Unit 10160009, at culvert on State Highway 45, 13 miles (21 km) southeast of Orient.	5.17	1956-77	3-12-77	<sup>a</sup> 4.83	<sup>b</sup> <20
06473880	Shaefer Creek tributary near Miller, SD	Lat 44°42'20", long 98°59'17", in NE¼ sec.10, T.114 N., R.68 W., Hand County, Hydrologic Unit 10160009, at culvert on State Highway 45, 13 miles (21 km) north of Miller.	<sup>d</sup> 5.95	1956-77	3-12-77	<sup>a</sup> 5.47	<sup>b</sup> 35
06475500	Dry Run near Frankfort, SD	Lat 44°56'17", long 98°19'43", in NW¼NW¼ sec.20, T.117 N., R.62 W., Spink County, Hydrologic Unit 10160006, at highway bridge, 400 ft (120 m) downstream from small right-bank tributary, 4.4 miles (7.1 km) north of Frankfort, and 8.1 miles (13.0 km) upstream from mouth.	225	1955-69†, 1977 1970-77		-	(f)
06475550	Dry Run tributary near Frankfort, SD	Lat 44°55'45", long 98°18'31", in W¼NW¼SW¼ sec.21, T.117 N., R.62 W., Spink County, Hydrologic Unit 10160006, at culvert on county highway, 0.6 mile (1.0 km) upstream from mouth, and 3.5 miles (5.6 km) north of Frankfort.	4.19	1967-77	3-12-77	<sup>a</sup> 4.21	<sup>b</sup> 20
06475850	Foster Creek tributary near Carpenter, SD	Lat 44°37'59", long 98°03'42", in SE¼SE¼ sec.32, T.114 N., R.60 W., Spink County, Hydrologic Unit 10160006, at culvert on State Highway 28, 7.3 miles (11.7 km) west of Carpenter.	4.93	1972-77	3-12-77	<sup>a</sup> 5.41	<sup>b</sup> 35
06475950	Shue Creek tribu- tary near Yale, SD	Lat 44°27'48", long 97°59'18", in NW¼SW¼ sec.36, T.112 N., R.60 W., Beadle County, Hydrologic Unit 10160006, at culvert on county highway, 2 miles (3 km) north of Yale.	6.90	1968-77	3-12-77	<sup>a</sup> 4.50	<sup>b</sup> 30
06477140	Rock Creek tribu- tary near Roswell, SD	Lat 44°02'24", long 97°42'34", in SW¼SW¼ sec.29, T.107 N., R.57 W., Miner County, Hydrologic Unit 10160011, at culvert on county highway, 2.2 miles (3.5 km) north of Roswell.	5.67	1970-77	3-12-77	<sup>a</sup> 7.15	<sup>b</sup> 180

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

					Annual maximum		
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
James River basin - Continued							
06477150	Rock Creek near Fulton, SD	Lat 43°45'39", long 97°54'25", in NW¼NW¼ sec.3, T.103 N., R.59 W., Hanson County, Hydrologic Unit 10160011, near right bank on downstream wingwall of highway bridge, 4.9 miles (7.9 km) northwest of Fulton and 9.5 miles (15.3 km) upstream from mouth.	270	1966-72†, 1973-77	3-16-77	a9.20	b800
06477400	Firesteel Creek tributary near Wessington Springs, SD	Lat 44°04'26", long 98°34'52", in NW¼ sec.13, T.107 N., R.65 W., Jerauld County, Hydrologic Unit 10160011, at culvert on State Highway 34, 0.8 mile (1.3 km) west of Wessington Springs.	.22	1968-77	3-12-77	a3.60	b15
06478050	Enemy Creek tributary near Mount Vernon, SD	Lat 43°36'19", long 98°15'55", in NE¼SE¼ sec.28, T.102 N., R.62 W., Davison County, Hydrologic Unit 10160011, at culvert on county highway, 7.3 miles (11.7 km) south of Mount Vernon.	d3.38	1969-77	8-27-77	4.76	45
06478200	Coffee Creek tributary near Parkston, SD	Lat 43°27'26", long 97°59'42", in SE¼SE¼ sec.24, T.100 N., R.61 W., Hutchinson County, Hydrologic Unit 10160011, at culvert on State Highway 37, 4.2 miles (6.8 km) north of Parkston.	d.81	1968-77	6-17-77	2.75	15
06478260	North Branch Dry Creek near Parkston, SD	Lat 43°22'13", long 97°50'51" (revised), in NE¼NW¼ sec.29, T.99 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, at bridge on county highway, 7.5 miles (12.1 km) southeast of Parkston.	d54.1	1956-77	8-29-77	2.32	21
06478280	South Branch Dry Creek near Parkston, SD	Lat 43°21'22", long 97°49'35", in NW¼ sec.33, T.99 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, at bridge on county highway, 8.3 miles (13.4 km) southeast of Parkston.	d25.8	1956-77	3-12-77	a2.54	b8.0
06478300	Dry Creek near Parkston, SD	Lat 43°22'18", long 97°49'23", in SE¼ sec.21, T.99 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, at bridge on county highway, 8.5 miles (13.7 km) southeast of Parkston.	d99.2	1956-77	3-12-77	a3.73	b30
06478400	Lonetree Creek tributary near Kaylor, SD	Lat 43°17'18", long 97°50'10", in NE¼SE¼ sec.20, T.98 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, at culvert on county highway, 7.2 miles (11.6 km) north of Kaylor.	d3.65	1970-77	6-22-77	3.33	33
Vermillion River basin							
06478630	West Fork Vermillion River near DeSmet, SD	Lat 44°12'54", long 97°33'04", in NW¼SW¼ sec.27, T.109 N., R.56 W., Kingsbury County, Hydrologic Unit 10170102, at culvert on State Highway 25, 11.5 miles (18.5 km) south of DeSmet.	5.34	1970-77	6-16-70 3-13-71 6-19-72 4-17-75 3-12-76 3-12-77	3.21 a4.76 4.62 3.80 a3.92 a5.15	5.6 b10 32 13 b7.0 b40
06478650	West Fork Vermillion River tributary near Monroe, SD	Lat 43°28'35", long 97°15'39", in SW¼SW¼ sec.17, T.100 N., R.54 W., Turner County, Hydrologic Unit 10170102, at culvert on county highway, 3.2 miles (5.1 km) north of Marion, and 2.2 miles (3.5 km) west of Monroe.	2.74	1969-77	3-12-77	a4.36	b<5.0

See footnotes at end of the table.

## Annual maximum discharge at crest-stage partial-record stations--Continued

					Annual maximum		
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
Vermillion River basin - Continued							
06478800	Saddlerock Creek near Canton, SD	Lat 43°12'20", long 96°43'37", in NW¼SW¼ sec.23, T.97 N., R.50 W., Lincoln County, Hydrologic Unit 10170102, at bridge on county highway, 9.6 miles (15.4 km) southwest of Canton.	13.0	1956-77	3- -77	<2.97	<sup>b</sup> <5.0
06478820	Saddlerock Creek tributary near Beresford, SD	Lat 43°12'21", long 96°45'51", in NE¼NW¼NW¼ sec.21, T.97 N., R.50 W., Lincoln County, Hydrologic Unit 10170102, at culvert on county highway, 9 miles (14 km) north of Beresford.	2.22	1956-77 <sup>g</sup>	3-12-77	<3.61	<sup>b</sup> <5.0
06478840	Saddlerock Creek near Beresford, SD	Lat 43°12'55", long 96°49'33", in SE¼SE¼ sec.14, T.97 N., R.51 W., Lincoln County, Hydrologic Unit 10170102, at bridge on county highway, 9.5 miles (15.3 km) northwest of Beresford.	<sup>d</sup> 23.1	1956-70, 1972-77	5-22-77	3.26	41
06478950	Ash Creek near Beresford, SD	Lat 43°05'01", long 96°50'08", in NE¼NW¼ sec.2, T.95 N., R.51 W., Clay County, Hydrologic Unit 10170102, at culvert on State Highway 46, 2.1 miles (3.4 km) west of Beresford.	5.00	1969-77	9-12-77	5.03	303
06479020	Smoky Run near Irene, SD	Lat 43°04'56", long 97°19'12", in SE¼SE¼SE¼ sec.34, T.96 N., R.55 W., Yankton County, Hydrologic Unit 10170102, at culvert on State Highway 46, 0.1 mile (0.2 km) west of Mayfield, and 8.0 miles (12.9 km) west of Irene.	4.96	1969-77	3-12-77	<sup>a</sup> 3.65	<sup>b</sup> 7.5
Big Sioux River basin							
06479260	Big Sioux River tributary No. 3 near Summit, SD	Lat 45°13'30", long 97°06'27", in SE¼ sec.25, T.121 N., R.52 W., Grant County, Hydrologic Unit 10170202, at culvert on county highway, 6.5 miles (10.5 km) southwest of Summit, 11.5 miles (18.5 km) southeast of Waubay.	6.61	1956-77	6-16-77	4.40	106
06479350	Soo Creek tributary near South Shore, SD	Lat 45°06'22", long 97°01'12", in NW¼NE¼ sec.24, T.119 N., R.52 W., Codington County, Hydrologic Unit 10170202, at culvert on State Highway 20, 3.8 miles (6.1 km) west of South Shore.	1.56	1970-77	6-16-77	8.80	279
06479550	Dolph Creek tributary near Lake Norden, SD	Lat 44°35'15", long 97°19'37", in SW¼SW¼ sec.16, T.113 N., R.54 W., Hamlin County, Hydrologic Unit 10170201 (corrected), at culvert on State Highway 28, 5.4 miles (8.7 km) west of Lake Norden.	5.91	1970-77	6-16-77	4.07	23
06479750	Peg Munky Run near Estelline, SD	Lat 44°34'22", long 96°51'15", in N¼ sec.29, T.113 N., R.50 W., Deuel County, Hydrologic Unit 10170202, at bridge on State Highway 28, 2.5 miles (4.0 km) east of Estelline.	25.2	1956-77	6-16-77	3.50	25
06479800	North Deer Creek near Estelline, SD	Lat 44°27'44", long 96°47'13", in SE¼ sec.35, T.112 N., R.50 W., Brookings County, Hydrologic Unit 10170202, at bridge on U.S. Highway 77, 9.8 miles (15.8 km) southeast of Estelline.	48.3	1956-77	6-16-77	5.02	65

See footnotes at end of the table.



## Annual maximum discharge at crest-stage partial-record stations--Continued

					Annual maximum		
Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
Big Sioux River basin - Continued							
06479810	North Deer Creek tributary near Brookings, SD	Lat 44°22'44", long 96°47'14", in NW¼SW¼NW¼ sec.36, T.111 N., R.50 W., Brookings County, Hydrologic Unit 10170202, at culvert on U.S. Highway 77, 4.5 miles (7.2 km) north of Brookings.	0.33	1969-77	6-15-77	9.7	170
06479950	Deer Creek near Brookings, SD	Lat 44°23'03", long 96°37'19", in SW¼ sec.29, T.111 N., R.48 W., Brookings County, Hydrologic Unit 10170202, at culvert on county highway, 9.8 miles (15.8 km) northeast of Brookings.	4.04	1956-77	6-16-77	7.23	350
06480720	Bachelor Creek tributary near Wentworth, SD	Lat 44°00'28", long 97°00'02", in NE¼NE¼NW¼ sec.7, T.106 N., R.51 W., Lake County, Hydrologic Unit 10170203, at culvert on State Highway 34, 1.8 miles (2.9 km) northwest of Wentworth.	1.03	1969-77	3-12-77	<sup>a</sup> 5.37	<sup>b</sup> 5.0
06482600	West Pipestone Creek tributary near Garretson, SD	Lat 43°42'12", long 96°36'43", in SE¼SE¼ sec.20, T.103 N. R.48 W., Minnehaha County, Hydrologic Unit 10170203, at culvert on county highway, 5.3 miles (8.5 km) west of Garretson.	2.16	1969-77	7-24-77	6.39	141
06485550	West Union Creek near Alcester, SD	Lat 42°56'18", long 96°38'00", in SW¼SE¼ sec.21, T.94 N., R.49 W., Union County, Hydrologic Unit 10170203, at culvert on county highway, 5.7 miles (9.2 km) south of Alcester.	3.48	1969-77	9-12-77	3.93	276

&lt; Less than.

‡ Operated as a continuous-record gaging station.

a Backwater from ice.

b Estimated.

c Approximate.

d Revised.

e Prior to Apr. 28, 1970, at datum 0.32 ft lower.

f No evidence of any flow during the water year.

g Prior to Aug. 7, 1968, at different site and datum.

## Revisions to records published for crest-stage partial-record stations discontinued prior to September 30, 1976

06358620	Sand Creek tributary near Redig, SD	<u>Drainage area</u> --0.04 mi <sup>2</sup> (revised).
06406750	Sunday Gulch near Hill City, SD	<u>Drainage area</u> --6.56 mi <sup>2</sup> (revised).
06432200	Polo Creek near Whitewood, SD	<u>Drainage area</u> --10.3 mi <sup>2</sup> (revised).
06432230	Miller Creek near Whitewood, SD	<u>Drainage area</u> --5.23 mi <sup>2</sup> (revised).
06436770	Dry Creek tributary near Newell, SD	<u>Drainage area</u> --0.20 mi <sup>2</sup> (revised).
06441750	Missouri River tributary near Canning, SD	<u>Drainage area</u> --0.19 mi <sup>2</sup> (revised).
06442380	Medicine Creek tributary near Vivian, SD	<u>Drainage area</u> --0.29 mi <sup>2</sup> (revised).
06449750	West Branch Horse Creek near Mission, SD	<u>Drainage area</u> --6.31 mi <sup>2</sup> (revised).
06473800	Matter Creek tributary near Orient, SD	<u>Drainage area</u> --7.63 mi <sup>2</sup> (revised).
06479370	Big Sioux River tributary near Wallace, SD	<u>Drainage area</u> --0.41 mi <sup>2</sup> (revised).
06482870	Little Beaver Creek tributary near Canton, SD	<u>Drainage area</u> --0.31 mi <sup>2</sup> (revised).

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)
06442950 - CROW CR NEAR GANN VALLEY SD (LAT 43 59 29 LONG 099 13 07)											
MAR , 1977						APR , 1977					
17...	1430	146	10.0	10.0	320	11...	1515	3.3	7.0	17.0	760
24...	1220	32	7.0	21.0	440	21...	1540	46	14.0	18.0	460
06445980 - WHITE CLAY CR NEAR OGLALA SD (LAT 43 08 46 LONG 102 40 58)											
OCT , 1976						APR , 1977					
15...	0945	1.6	5.0	6.0	550	18...	1200	21	11.0	12.5	500
NOV						MAY					
11...	1045	2.0	.5	-3.0	490	16...	1130	9.9	14.0	15.0	580
DEC						JUN					
08...	0815	3.0	.0	2.0	750	14...	1500	8.4	24.5	26.0	600
JAN , 1977						JUL					
04...	1115	4.1	.0	-6.0	680	13...	1200	2.3	36.0	24.0	650
27...	0945	5.2	.0	3.5	750	AUG					
FEB						11...	0915	5.3	13.0	13.0	560
22...	--	7.4	.5	4.0	530	SEP					
22...	1230	7.4	.5	4.0	530	08...	1045	6.3	32.5	20.5	480
06449100 - LITTLE WHITE R NEAR VETAL SD (LAT 43 06 03 LONG 101 13 49)											
OCT , 1976						APR , 1977					
05...	0905	15	6.0	6.0	290	14...	1005	469	8.0	17.0	230
NOV						19...	1230	315	10.0	5.0	270
03...	0815	22	1.5	4.5	270	MAY					
DEC						17...	1105	105	22.0	21.0	350
01...	0845	21	.0	-3.0	270	JUN					
28...	1015	29	1.0	3.0	170	14...	1135	94	20.0	21.0	400
JAN , 1977						JUL					
25...	1015	20	.5	-1.0	330	12...	1100	41	22.0	25.5	350
FEB						AUG					
23...	0845	14	.5	-1.5	240	10...	1020	30	16.0	12.5	280
MAR						SEP					
24...	0915	91	6.5	7.5	290	07...	1050	27	21.5	31.0	335
06449400 - ROSEBUD CR AT ROSEBUD SD (LAT 43 14 09 LONG 100 51 12)											
OCT , 1976						APR , 1977					
05...	1330	4.4	7.0	10.0	360	19...	1425	14	10.0	5.0	340
NOV						MAY					
03...	1105	6.1	5.0	6.0	360	17...	1440	8.6	21.0	22.0	360
DEC						JUN					
01...	1200	7.0	1.5	1.0	210	15...	0750	7.8	21.5	21.0	350
28...	1300	5.7	4.0	2.0	180	JUL					
JAN , 1977						12...	1530	6.8	25.5	28.5	330
25...	1350	6.8	1.5	4.5	310	AUG					
FEB						10...	1500	12	17.5	11.0	300
24...	1040	11	2.5	3.0	330	SEP					
MAR						30...	1250	66	13.5	12.0	380
16...	0815	8.3	2.0	2.0	330						
APR											
11...	1020	13	11.5	14.0	330						
13...	0835	13	8.0	9.5	340						

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)
06471898 - MOCCASIN CR NEAR WARNER SD (LAT 45 17 55 LONG 098 29 42)											
MAR , 1977						JUL , 1977					
17...	1550	29	.5	5.0	820	12...	1120	1.2	20.5	24.0	1570
30...	1510	17	2.0	-5.5	930	AUG					
APR						17...	1225	.97	19.0	22.0	1770
20...	1510	4.6	15.0	17.0	1670	SEP					
JUN						13...	1010	1.8	15.0	19.5	1580
14...	0940	.78	21.5	17.0	1420						
06472000 - JAMES R NEAR STRATFORD SD (LAT 45 14 30 LONG 098 23 28)											
MAR , 1977						MAY , 1977					
17...	1400	3.9	6.5	8.0	760	17...	1210	.20	25.0	26.0	1260
30...	1210	4.3	2.5	.0	1200						
APR											
19...	1455	20	15.0	14.0	1000						
06473000 - JAMES R AT ASHTON SD (LAT 45 00 02 LONG 098 28 57)											
MAR , 1977						JUN , 1977					
16...	1340	46	1.0	8.5	150	13...	1625	.04	24.5	26.5	1520
30...	0945	6.5	1.0	-1.5	570	JUL					
APR						12...	0740	.10	19.5	17.5	1260
19...	1100	15	13.0	11.0	1010						
MAY											
17...	1020	.44	21.0	22.0	1450						
06473700 - SNAKE CR NEAR ASHTON SD (LAT 45 01 50 LONG 098 34 26)											
MAR , 1977						APR , 1977					
16...	1540	142	1.0	4.5	110	19...	1315	2.3	13.0	12.0	1140
30...	0830	24	1.5	-1.5	460						
06474000 - TURTLE CR NEAR TULARE SD (LAT 44 44 06 LONG 098 35 09)											
MAR , 1977						APR , 1977					
15...	1515	.61	2.0	8.0	420	18...	1515	.09	12.5	11.0	1000
29...	1415	4.5	7.0	5.5	780						
06474300 - MEDICINE CR NEAR ZELL SD (LAT 44 45 52 LONG 098 42 13)											
MAR , 1977						MAY , 1977					
15...	1410	59	4.0	9.0	150	16...	1455	.01	20.5	23.5	1910
29...	1305	4.2	6.5	5.5	790	JUN					
APR						13...	1255	.02	21.5	24.5	1960
18...	1420	.63	12.5	10.0	1270						
06475000 - JAMES R NEAR REDFIELD SD (LAT 44 55 13 LONG 098 25 52)											
MAR , 1977						MAY , 1977					
16...	1150	304	2.0	5.5	390	16...	1715	.22	27.0	31.0	1340
29...	1430	45	7.0	6.0	590						
APR											
19...	0920	31	13.0	10.0	1120						
06478052 - ENEMY CR NEAR MITCHELL SD (LAT 43 38 33 LONG 097 59 09)											
MAR , 1977						SEP , 1977					
16...	1115	3.1	3.0	7.0	410	14...	1730	21	20.0	24.0	210
23...	1520	.27	7.0	7.0	630						

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS  
 WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)
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06478390 - WOLF CR NEAR CLAYTON SD (LAT 43 22 18 LONG 097 36 12)

FEB , 1977					
25...	1420	.24	.0	2.5	1120
MAR					
17...	1010	99	3.5	6.5	380
24...	1005	13	5.0	10.0	860
APR					
21...	1700	6.5	16.5	--	--
MAY					
18...	1330	.31	26.5	28.0	1100
JUN					
17...	1245	2.4	24.5	24.5	2150
AUG					
17...	1130	3.1	21.0	19.5	920

06479529 - STRAY HORSE CR NEAR CASTLEWOOD SD (LAT 44 43 52 LONG 096 57 23)

MAR , 1977					
17...	1515	29	1.0	4.5	340
APR					
08...	1000	1.5	7.0	14.0	840
MAY					
02...	1615	.49	18.5	19.0	1000
JUN					
29...	1045	1.5	21.5	23.0	670
AUG					
04...	1020	.02	19.0	21.0	1000
30...	1750	1.2	17.0	--	1070

06479640 - HIDEWOOD CR NEAR ESTELLINE SD (LAT 44 36 42 LONG 096 54 17)

NOV , 1976					
01...	1340	.08	8.0	15.0	1330
MAR , 1977					
16...	1535	69	1.5	8.0	290
APR					
08...	1200	6.5	8.0	17.0	1020
MAY					
02...	1530	2.9	17.0	21.0	1390
31...	1630	.32	21.0	23.5	1000

## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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06334500 - LITTLE MISSOURI R AT CAMP CROOK SD (LAT 45 32 49 LONG 103 58 23)

OCT , 1976				APR , 1977			
06...	2.9	8.0	11.5	05...	51	8.5	8.0
NOV				MAY			
04...	4.2	4.5	14.0	04...	46	17.0	17.0
DEC				JUN			
01...	6.0	.5	-2.0	01...	8.4	19.5	22.0
JAN , 1977				29...	6.9	21.0	27.0
04...	6.3	.0	-1.0	AUG			
FEB				02...	.38	17.5	29.5
02...	2.5	.5	-8.0	31...	.95	13.5	13.5
MAR							
02...	19	.0	-.0				

06355500 - NORTH FORK GRAND R NEAR WHITE BUTTE SD (LAT 45 48 10 LONG 102 21 45)

NOV , 1976				MAY , 1977			
17...	2.2	.5	-1.0	04...	.19	20.5	24.0
DEC				JUN			
14...	2.6	.0	7.0	01...	12	23.0	30.5
JAN , 1977				28...	20	22.5	22.0
12...	.92	.0	-25.0	AUG			
FEB				24...	3.6	21.5	24.5
08...	.46	.0	8.0	SEP			
MAR				21...	1.6	15.0	13.5
09...	8.0	.5	13.5				
APR							
06...	23	.0	21.0				

06356000 - SOUTH FORK GRAND R AT BUFFALO SD (LAT 45 34 34 LONG 103 32 38)

OCT , 1976				MAY , 1977			
06...	2.2	7.0	10.5	02...	4.1	.0	-4.0
NOV				MAY			
04...	2.2	1.0	9.0	04...	2.9	17.0	24.0
DEC				JUN			
01...	2.3	.5	-2.0	01...	2.4	23.0	23.0
JAN , 1977				29...	2.1	22.0	21.5
04...	1.5	.0	-5.0	AUG			
FEB				02...	1.3	21.5	34.0
02...	1.4	.0	-8.0				

06356500 - SOUTH FORK GRAND R NEAR CASH SD (LAT 45 38 56 LONG 102 38 27)

OCT , 1976				MAY , 1977			
06...	11	6.5	11.5	04...	12	16.0	18.5
NOV				JUN			
16...	9.8	.0	8.5	01...	12	20.0	24.0
DEC				28...	10	23.0	23.5
14...	9.1	.0	5.0	JUL			
JAN , 1977				26...	5.9	1.8	18.0
11...	2.8	.0	-10.0	AUG			
FEB				24...	4.8	19.0	20.5
08...	.89	.0	-1.5	SEP			
MAR				21...	15	14.0	13.5
09...	40	2.5	14.0				
APR							
06...	47	5.0	19.0				

MISCELLANEOUS TEMPERATURE MEASUREMENTS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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06359500 - MOREAU R NEAR FAITH SD (LAT 45 11 52 LONG 102 09 22)

OCT , 1976				MAY , 1977			
05...	5.1	5.5	6.0	04...	14	19.0	21.5
NOV				31...	12	26.5	30.0
16...	8.2	1.0	12.5	JUN			
DEC				27...	15	29.5	32.5
13...	5.4	.0	6.0	JUL			
JAN , 1977				26...	6.1	29.0	29.0
12...	1.2	.0	-10.0	AUG			
FEB				24...	.66	24.5	29.5
07...	.00	.0	8.0	SEP			
MAR				20...	2.7	24.5	26.0
08...	50	.5	20.0				
APR							
06...	56	5.0	4.0				

06392900 - BEAVER CR AT MALLO CAMP NEAR FOUR CORNERS WY (LAT 44 05 04 LONG 104 03 41)

OCT , 1976				MAY , 1977			
14...	.23	2.5	4.0	17...	.84	8.0	11.0
NOV				JUN			
19...	.55	.5	7.5	16...	1.4	12.0	22.5
DEC				JUL			
08...	.43	.5	2.0	14...	2.1	14.5	37.5
FEB , 1977				AUG			
15...	.36	1.0	.5	12...	1.2	9.0	12.5
MAR				SEP			
14...	.54	1.0	1.5	14...	1.6	10.0	23.0
MAY							
06...	1.4	9.0	11.0				

06392950 - STOCKADE BEAVER CR NEAR NEWCASTLE WY (LAT 43 51 30 LONG 104 06 23)

OCT , 1976				APR , 1977			
14...	14	9.5	10.0	20...	11	10.0	9.5
NOV				MAY			
09...	15	6.5	11.0	17...	7.1	15.5	18.0
DEC				JUN			
10...	14	1.5	3.0	16...	14	20.0	19.5
JAN , 1977				JUL			
12...	15	.5	-4.5	14...	10	16.5	28.5
FEB				AUG			
15...	14	2.5	.5	12...	10	13.0	15.5
MAR				SEP			
14...	15	4.0	11.0	14...	12	11.5	20.0

06395000 - CHEYENNE R AT EDMONT SD (LAT 43 18 20 LONG 103 49 14)

OCT , 1976				APR , 1977			
14...	.25	14.0	13.0	19...	22	11.0	10.5
NOV				MAY			
08...	17	8.5	16.0	17...	8.8	14.5	14.5
DEC				JUN			
07...	2.8	.0	-1.0	15...	20	33.5	30.0
JAN , 1977				JUL			
05...	2.1	.0	-5.0	14...	42	23.5	23.0
26...	.14	.0	-2.0	AUG			
FEB				10...	213	16.5	17.0
23...	32	.5	2.0	SEP			
MAR				07...	3.1	29.5	32.5
23...	90	8.5	26.0				



## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
06400000 - MAT CR NEAR EDMONT SD (LAT 43 14 46 LONG 103 35 16)							
MAR , 1977				JUN , 1977			
23...	1.2	9.0	15.0	15...	6.8	23.5	22.0
APR							
14...	159	7.5	6.0				
19...	.35	8.0	7.5				
06400497 - CASCADE SPRINGS NEAR HOT SPRINGS SD (LAT 43 20 20 LONG 103 33 08)							
JAN , 1977				SEP , 1977			
26...	19	19.5	1.5	07...	19	21.0	30.5
MAY							
17...	20	20.5	24.5				
06402000 - FALL R AT HOT SPRINGS SD (LAT 43 25 50 LONG 103 28 33)							
OCT , 1976				APR , 1977			
14...	23	22.5	9.5	19...	21	22.5	7.0
NOV				MAY			
08...	20	--	16.0	16...	20	26.5	23.0
DEC				JUN			
07...	21	20.5	4.0	16...	21	24.5	19.0
JAN , 1977				JUL			
05...	21	--	.0	15...	21	25.5	23.0
25...	20	21.0	2.5	AUG			
FEB				11...	20	28.0	27.0
23...	19	21.5	6.0	SEP			
MAR				07...	19	25.0	23.5
23...	24	21.5	6.5				
06402500 - BEAVER CR NEAR BUFFALO GAP SD (LAT 43 27 56 LONG 103 18 22)							
OCT , 1976				APR , 1977			
15...	2.4	9.0	18.5	21...	8.5	11.0	14.0
NOV				MAY			
08...	4.0	7.0	13.5	18...	1.1	15.0	20.0
DEC				JUN			
06...	9.8	3.0	-2.5	16...	2.9	20.5	23.5
JAN , 1977				JUL			
06...	9.2	.0	-2.0	15...	.69	20.0	20.0
25...	10	2.5	3.0	AUG			
FEB				09...	2.8	22.0	29.5
24...	10	4.5	2.0	SEP			
MAR				09...	4.4	9.5	13.0
22...	5.2	9.0	16.0				
06404000 - BATTLE CR NEAR KEYSTONE SD (LAT 43 52 18 LONG 103 20 09)							
OCT , 1976				APR , 1977			
12...	2.0	11.0	19.0	22...	12	15.0	17.0
NOV				MAY			
10...	1.9	3.5	3.0	19...	5.0	20.0	20.0
DEC				JUN			
09...	2.2	.0	15.0	13...	48	23.0	20.0
JAN , 1977				JUL			
07...	1.2	.5	8.0	15...	.28	21.0	27.5
24...	.62	.0	-2.0	AUG			
FEB				18...	3.2	22.5	28.0
25...	2.8	1.0	2.0	SEP			
MAR				12...	.50	17.5	20.0
21...	3.5	.5	6.5				

MISCELLANEOUS TEMPERATURE MEASUREMENTS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (000010)	AIR TEMPER- ATURE (DEG C) (000020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (000010)	AIR TEMPER- ATURE (DEG C) (000020)
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06405000 - GRACE COOLIDGE CR NEAR CUSTER SD (LAT 43 45 40 LONG 103 21 42)

OCT , 1976				APR , 1977			
12...	1.6	12.0	27.5	22...	2.8	13.0	15.5
NOV				MAY			
10...	1.0	3.0	4.5	19...	1.2	15.5	19.0
DEC				JUN			
09...	1.7	.0	13.0	13...	.70	17.0	17.0
JAN , 1977				JUL			
07...	1.6	.0	6.0	15...	.32	21.5	31.0
24...	.95	.0	.0	27...	7.5	20.5	28.0
FEB				AUG			
25...	.71	1.0	4.0	19...	3.4	20.0	28.0
MAR				SEP			
21...	.84	2.0	7.5	12...	.99	16.5	25.0

06406000 - BATTLE CR AT HERMOSA SD (LAT 43 49 41 LONG 103 11 44)

OCT , 1976				APR , 1977			
15...	6.4	9.0	19.0	20...	6.4	12.5	15.0
NOV				MAY			
10...	6.9	5.0	6.5	19...	6.3	16.0	14.0
DEC				JUN			
09...	6.8	3.0	3.5	13...	5.0	17.0	17.5
JAN , 1977				JUL			
07...	6.3	1.0	4.5	15...	1.6	22.5	26.5
24...	5.3	.5	-2.0	AUG			
FEB				19...	4.0	20.5	27.5
25...	5.3	3.0	3.5	SEP			
MAR				12...	2.3	16.5	16.0
21...	5.4	5.5	7.0				

06408500 - SPRING CR NEAR HERMOSA SD (LAT 43 56 30 LONG 103 09 33)

OCT , 1976				APR , 1977			
12...	1.6	11.5	27.0	22...	2.2	11.5	18.0
NOV				MAY			
10...	1.5	3.5	2.5	19...	1.9	15.0	18.0
DEC				JUN			
09...	2.2	.0	15.0	13...	8.1	75.0	16.0
JAN , 1977				JUL			
07...	2.4	.0	2.0	15...	.61	20.5	21.5
24...	2.2	.0	-2.0	AUG			
FEB				18...	.40	20.0	22.5
25...	1.8	1.0	5.0	SEP			
MAR				12...	.14	14.5	16.5
21...	1.8	2.0	6.5				

06410000 - CASTLE CR BELOW DEERFIELD DAM SD (LAT 44 01 45 LONG 103 46 53)

OCT , 1976				MAY , 1977			
20...	42	8.0	7.0	12...	25	8.5	28.0
NOV				JUN			
16...	2.3	3.5	2.0	07...	15	9.5	23.0
DEC				JUL			
13...	2.3	2.0	-5	11...	8.4	10.0	19.5
JAN , 1977				AUG			
13...	2.0	3.0	.0	03...	22	8.5	19.0
FEB				31...	24	8.0	14.5
08...	2.2	3.0	2.0	SEP			
MAR				20...	2.0	13.5	24.0
09...	2.3	5.5	5.0				
APR							
15...	27	4.0	9.0				

## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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06410500 - RAPID CR ABOVE PACTOLA RES NEAR SILVER CITY SD (LAT 44 05 05 LONG 103 34 48)

OCT , 1976				APR , 1977			
19... 47	1.0	2.5		12... 106	2.0	3.0	
NOV				JUN			
16... 17	.0	3.0		08... 41	14.5	21.5	
DEC				JUL			
14... 14	1.0	3.5		12... 2.5	20.0	27.5	
JAN , 1977				AUG			
14... 17	.5	-3.0		17... 42	16.0	20.0	
FEB				SEP			
11... 19	.0	.0		26... 20	9.0	14.0	
MAR							
08... 22	.5	13.5					

06412500 - RAPID CR ABOVE CANYON LAKE NEAR RAPID CITY SD (LAT 44 03 04 LONG 103 18 47)

NOV , 1976				MAY , 1977			
17... 15	3.5	19.5		12... 101	13.0	18.5	
DEC				JUN			
15... 9.8	.5	1.0		09... 68	19.0	31.0	
JAN , 1977				JUL			
11... 6.9	.0	.0		13... 77	17.0	31.0	
FEB				AUG			
10... 11	1.0	12.0		17... 29	13.5	25.0	
MAR				SEP			
10... 18	1.5	4.0		29... 15	14.5	16.5	
APR							
08... 43	8.0	27.0					

06414000 - RAPID CR AT RAPID CITY SD (LAT 44 05 09 LONG 103 14 31)

NOV , 1976				MAY , 1977			
17... 29	9.5	22.0		12... 108	15.0	18.5	
DEC				JUN			
15... 33	4.5	6.0		09... 69	22.0	34.5	
JAN , 1977				JUL			
11... 25	.0	-12.0		13... 71	20.0	35.0	
FEB				AUG			
10... 30	3.5	3.5		16... 45	22.0	27.5	
MAR				SEP			
10... 33	4.5	3.0		29... 36	14.5	13.5	
APR							
08... 69	10.5	17.5					

06422500 - BOXELDER CR NEAR NEMO SD (LAT 44 08 38 LONG 103 27 16)

OCT , 1976				APR , 1977			
19... 6.0	5.5	12.0		08... 27	6.0	29.5	
NOV				MAY			
16... 5.4	.0	3.0		10... 49	14.0	13.0	
DEC				JUN			
14... 6.9	.5	-1.0		08... 18	20.0	19.0	
JAN , 1977				JUL			
14... 6.4	.5	15.0		12... 9.2	24.5	22.0	
FEB				AUG			
11... 6.4	.0	3.0		18... 7.6	21.0	25.0	
MAR				SEP			
08... 7.9	1.0	11.0		26... 8.4	9.0	17.0	

## MISCELLANEOUS TEMPERATURE MEASUREMENTS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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06423500 - CHEYENNE R NEAR WASTA SD (LAT 44 04 52 LONG 102 24 03)

OCT , 1976				APR , 1977			
19...	84	.0	-1.0	11...	2320	9.0	9.0
NOV				MAY			
18...	227	2.0	8.0	11...	255	20.5	22.0
DEC				JUN			
15...	110	.0	4.0	14...	189	27.5	30.5
JAN , 1977				JUL			
13...	52	.0	-10.0	05...	16	32.0	33.0
FEB				29...	369	22.0	28.0
09...	86	.0	-1.0	SEP			
MAR				20...	71	16.0	25.0
08...	215	1.5	8.0				

06425500 - ELK CR NEAR ELM SPRINGS SD (LAT 44 14 54 LONG 102 30 10)

MAR , 1977				MAY , 1977			
08...	12	20.0	5.0	11...	24	13.0	15.0
APR				JUN			
11...	680	8.0	6.0	14...	4.2	25.0	30.5

06428500 - BELLE FOURCHE R AT WY-SD STATE LINE (LAT 44 44 59 LONG 104 02 49)

OCT , 1976				APR , 1977			
06...	27	10.0	9.0	06...	169	6.5	12.0
NOV				07...	--	8.5	--
04...	32	5.0	20.0	MAY			
04...	32	1.0	--	03...	127	20.5	27.0
DEC				18...	95	16.5	--
02...	12	.0	5.0	31...	53	23.0	22.5
08...	19	.0	--	JUN			
JAN , 1977				30...	93	22.0	21.0
05...	14	.0	-15.0	JUL			
08...	--	.0	--	08...	42	20.0	--
31...	15	.0	-3.0	AUG			
FEB				03...	252	21.0	21.0
08...	19	.0	--	11...	256	18.0	--
MAR				29...	94	18.5	21.5
01...	15	.5	8.0	SEP			
16...	44	.5	--	08...	31	20.5	--
APR				30...	32	12.0	--
01...	85	1.0	--				

06429500 - COLD SPRINGS CR NEAR BUCKHORN WY (LAT 44 09 14 LONG 104 04 39)

OCT , 1976				APR , 1977			
14...	5.1	3.5	7.0	20...	4.2	9.0	11.0
NOV				MAY			
09...	5.4	3.5	8.0	17...	4.7	8.5	10.5
DEC				JUN			
08...	5.0	.5	8.5	16...	4.7	11.0	18.0
JAN , 1977				JUL			
12...	7.0	.0	6.0	14...	4.8	15.0	21.5
FEB				AUG			
15...	4.4	.0	3.0	12...	4.6	11.5	33.0
MAR				SEP			
14...	6.7	.0	2.0	14...	5.3	10.5	23.0

## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
06429905 - SAND CR NEAR RANCH A NEAR BEULAH WY (LAT 44 31 13 LONG 104 05 00)							
OCT , 1976				APR , 1977			
07... 25		9.0	9.5	07... 26		12.5	15.0
NOV				MAY			
02... 26		8.5	13.0	05... 41		12.5	19.5
30... 25		6.0	3.0	JUN			
JAN , 1977				28... 34		13.5	22.0
03... 27		4.0	1.0	AUG			
31... 25		6.0	.0	01... 28		14.5	29.0
06430000 - MURRAY DITCH AT WY-SD STATE LINE (LAT 44 34 35 LONG 104 02 58)							
OCT , 1976				AUG , 1977			
07... .35		9.0	12.0	29... 13		17.0	26.0
JUN , 1977							
28... 17		20.5	23.0				
06430500 - REDWATER CR AT WY-SD STATE LINE (LAT 44 34 26 LONG 104 02 54)							
OCT , 1976				APR , 1977			
06... --		9.0	--	07... 42		11.0	13.0
07... 37		11.0	12.0	MAY			
NOV				05... 69		11.0	13.5
03... 44		6.0	14.5	31... 46		17.0	23.0
30... 40		4.5	1.0	JUN			
JAN , 1977				28... 21		18.5	20.0
03... 44		.5	.5	AUG			
31... 38		4.5	.0	01... 35		18.0	30.5
MAR				29... 23		16.0	26.0
01... 41		5.0	4.5				
06431500 - SPEARFISH CR AT SPEARFISH SD (LAT 44 28 57 LONG 103 51 40)							
OCT , 1976				APR , 1977			
07... 43		6.0	5.0	07... 57		6.0	20.0
NOV				MAY			
02... 49		4.0	19.5	05... 136		9.0	19.0
30... 48		2.5	2.0	31... 76		7.5	20.0
JAN , 1977				JUN			
03... 44		.5	-4.0	27... 61		13.0	--
31... 51		1.5	2.5	AUG			
MAR				01... 53		11.0	32.5
01... 26		1.5	-5.5	30... 52		10.0	17.0
06433000 - REDWATER RIVER ABOVE BELLE FOURCHE, S. DAK. (LAT 44 40 02 LONG 103 50 20)							
OCT , 1976				APR , 1977			
08... 140		9.0	10.0	07... 221		8.0	9.0
NOV				MAY			
05... 160		6.0	8.5	05... 330		10.0	17.5
DEC				JUN			
01... 183		1.0	2.0	02... 87		20.5	25.0
JAN , 1977				30... 32		17.5	21.0
05... 155		.0	-3.0	AUG			
20... 184		.0	6.0	03... 22		21.5	31.5
FEB				30... 115		18.0	21.0
01... 145		.5	1.0				
MAR							
03... 152		1.5	-6.5				
06433500 - HAY CR AT BELLE FOURCHE SD (LAT 44 40 01 LONG 103 50 46)							
MAR , 1977				MAY , 1977			
02... .07		.0	-1.5	05... .22		10.5	20.5
APR							
05... 3.0		6.5	5.0				

MISCELLANEOUS TEMPERATURE MEASUREMENTS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (000010)	AIR TEMPER- ATURE (DEG C) (000020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (000061)	TEMPER- ATURE (DEG C) (000010)	AIR TEMPER- ATURE (DEG C) (000020)
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06436000 - BELLE FOURCHE R NEAR FRUITDALE SD (LAT 44 41 27 LONG 103 44 14)

OCT , 1976	06...	8.7	10.0	8.5	APR , 1977	06...	5.4	13.5	16.0
NOV	05...	6.4	5.0	10.0	MAY	03...	3.3	23.0	27.0
DEC	02...	4.5	1.0	6.0	JUN	02...	7.8	26.0	29.0
JAN , 1977	05...	3.5	.0	-7.0		30...	4.9	24.0	21.0
FEB	01...	3.4	.0	-5.0	AUG	03...	6.2	24.0	26.5
MAR	03...	3.6	1.0	-3.5		30...	7.0	21.5	25.0

06438500 - CHEYENNE R NR PLAINVIEW SD (LAT 44 31 16 LONG 101 59 34)

OCT , 1976	19...	157	25.0	-1.0	MAY , 1977	03...	608	17.0	24.0
NOV	16...	99	1.0	12.0		31...	444	22.0	30.0
DEC	13...	117	.0	-2.0	JUN	27...	323	28.0	29.0
JAN , 1977	11...	75	.0	-10.0	JUL	25...	299	21.5	28.5
FEB	07...	36	.0	7.0	AUG	23...	434	20.0	22.5
MAR	08...	436	4.5	20.0	SEP	20...	236	16.0	24.0
APR	05...	843	5.0	4.0					

06439000 - CHERRY CR NEAR PLAINVIEW SD (LAT 44 44 38 LONG 102 03 11)

MAY , 1977	03...	.29	18.5	26.0	JUN , 1977	27...	5.8	28.5	32.5
	31...	2.6	25.0	30.0					

06441000 - BAD R NEAR MIDLAND SD (LAT 44 04 01 LONG 101 09 36)

MAR , 1977	25...	76	4.0	16.0	JUN , 1977	13...	4.8	17.0	19.5
APR	11...	1200	12.0	6.0	AUG	09...	300	12.0	23.0
	14...	1420	14.0	17.0					
	18...	136	14.0	17.0					

06442500 - MEDICINE CR AT KENNEBEC SD (LAT 43 54 17 LONG 099 52 35)

MAR , 1977	14...	43	.0	3.0	JUN , 1977	16...	32	22.0	25.0
	18...	392	5.0	15.0	JUL	14...	.86	27.5	24.5
	23...	93	2.0	.0					
APR	11...	40	7.0	14.0					
	22...	12	12.0	15.0					

06446000 - WHITE R NEAR OGLALA SD (LAT 43 15 17 LONG 102 49 29)

OCT , 1976	15...	5.8	11.0	6.0	APR , 1977	18...	86	11.0	9.0
NOV	11...	.12	--	-3.0	MAY	16...	20	17.5	21.0
DEC	08...	3.1	.5	6.0	JUN	14...	40	24.5	28.0
JAN , 1977	04...	1.4	.0	-5.0	JUL	13...	12	23.0	36.0
	27...	.36	.0	6.0	SEP	08...	26	22.5	37.0
FEB	22...	12	.5	6.0					
MAR	24...	37	2.0	12.0					



## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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## 06447000 - WHITE R NEAR KADOKA SD (LAT 43 45 09 LONG 101 31 28)

OCT , 1976				MAY , 1977			
04... .20	11.0	9.0		16... 66	15.0	21.0	
NOV				JUN			
02... .43	9.0	20.5		13... 35	18.0	20.0	
FEB , 1977				JUL			
22... 96	.5	4.0		11... 494	22.5	28.5	
MAR				AUG			
14... 191	2.0	17.5		09... 553	21.5	28.5	
25... 1200	6.0	11.0		SEP			
APR				06... 30	24.0	27.5	
11... 1790	12.0	6.0					
13... 6210	11.0	19.0					
18... 649	12.0	13.5					

## 06447500 - LITTLE WHITE R NEAR MARTIN SD (LAT 43 10 00 LONG 101 37 47)

OCT , 1976				APR , 1977			
04... 6.7	12.0	10.0		12... 246	7.5	5.0	
NOV				13... 286	8.0	17.0	
02... 11	6.0	11.5		19... 70	10.0	5.0	
30... 6.9	.0	2.0		MAY			
DEC				16... 19	16.5	18.0	
28... 10	1.0	3.0		JUN			
JAN , 1977				14... 12	21.0	18.5	
25... 5.2	.0	-3.0		JUL			
FEB				12... 9.8	20.0	19.5	
22... 41	.5	13.0		AUG			
MAR				09... 13	23.0	26.0	
14... 13	1.0	20.0		SEP			
24... 3.9	5.0	18.0		07... 9.5	21.0	23.5	

## 06448000 - LAKE CR ABOVE REFUGE NEAR TUTHILL SD (LAT 43 05 07 LONG 101 36 04)

OCT , 1976				APR , 1977			
04... 15	12.0	10.0		12... 51	6.0	5.0	
NOV				19... 25	8.0	5.0	
02... 19	7.0	15.0		MAY			
30... 16	.0	2.0		17... 16	12.5	12.5	
DEC				JUN			
27... 24	1.0	8.0		14... 16	20.0	20.0	
JAN , 1977				JUL			
24... 16	.0	-1.0		12... 14	18.0	23.0	
FEB				AUG			
22... 26	3.0	9.0		10... 35	17.0	11.0	
MAR				SEP			
24... 86	4.0	22.0		06... 15	23.5	29.0	

## 06449000 - LAKE CR BELOW REFUGE NEAR TUTHILL SD (LAT 43 08 46 LONG 101 30 38)

OCT , 1976				APR , 1977			
04... .03	12.0	10.0		12... 136	9.5	6.0	
NOV				14... 137	10.0	14.5	
02... 2.7	10.0	14.0		18... 126	11.0	10.0	
30... .24	.5	1.5		MAY			
DEC				17... 50	15.0	14.0	
27... 2.1	1.0	9.0		JUN			
JAN , 1977				13... 74	20.0	20.0	
24... 3.4	2.0	.0		JUL			
FEB				11... 4.4	27.5	27.5	
22... 2.3	4.0	9.5		AUG			
MAR				10... 3.2	18.5	11.0	
15... 28	2.0	5.0		SEP			
24... 43	4.0	24.0		06... 3.2	26.0	29.0	

MISCELLANEOUS TEMPERATURE MEASUREMENTS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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06449500 - LITTLE WHITE R NEAR ROSEBUD SD (LAT 43 19 32 LONG 100 53 00)

OCT , 1976				APR , 1977			
05...	53	6.0	8.0	11...	522	12.5	14.0
NOV				13...	584	6.5	6.5
03...	67	3.0	6.0	20...	485	10.0	8.0
DEC				MAY			
01...	53	.0	-1.0	17...	161	21.5	22.0
29...	60	.0	-2.0	JUN			
JAN , 1977				15...	130	21.0	21.0
25...	65	.0	.5	JUL			
FEB				12...	78	27.5	28.0
24...	67	.0	1.0	AUG			
MAR				10...	108	18.0	16.0
16...	103	2.0	2.0	SEP			
23...	116	4.0	16.0	07...	68	25.0	25.0

06450500 - LITTLE WHITE R BELOW WHITE RIVER SD (LAT 43 36 04 LONG 100 44 52)

OCT , 1976				APR , 1977			
06...	44	15.0	13.0	11...	967	12.0	10.0
NOV				20...	560	10.5	14.5
03...	67	6.0	12.5	MAY			
DEC				18...	164	20.0	23.0
01...	46	.0	3.0	JUN			
29...	84	.0	-2.0	15...	137	21.0	25.0
JAN , 1977				JUL			
25...	55	.0	1.5	13...	61	24.0	29.0
FEB				AUG			
24...	84	.0	2.0	11...	131	14.5	11.0
MAR				SEP			
23...	149	2.0	7.0	08...	60	21.0	25.0

06464500 - KEYA PAHA R AT WEWELA SD (LAT 43 01 42 LONG 099 46 45)

OCT , 1976				APR , 1977			
06...	4.5	15.0	10.0	12...	347	11.0	10.0
NOV				21...	634	9.5	12.5
04...	8.9	.0	-2.5	MAY			
DEC				16...	156	20.5	18.0
02...	7.0	.0	-2.5	JUN			
30...	8.4	.0	-15.0	16...	177	21.0	20.0
JAN , 1977				JUL			
26...	2.2	.0	-8.0	13...	49	27.0	34.5
FEB				AUG			
25...	17	.0	-.5	11...	70	18.0	21.5
MAR				SEP			
01...	9.4	.0	.5	08...	25	22.0	31.5
17...	122	2.0	4.0				
23...	84	7.0	14.5				

06467500 - MISSOURI R AT YANKTON SD (LAT 42 51 58 LONG 097 23 37)

NOV , 1976				JUN , 1977			
05...	36000	8.5	15.5	17...	33100	20.0	18.0
17...	36900	5.0	16.5	JUL			
DEC				05...	33700	25.5	34.5
17...	23400	2.0	5.0	15...	33200	23.0	26.5
MAR , 1977				AUG			
09...	13500	2.5	15.0	04...	36900	24.5	29.0
APR				10...	31300	24.0	18.5
27...	30100	12.5	29.5	SEP			
MAY				02...	30800	21.0	15.0
12...	31200	16.5	25.0	08...	30700	22.0	28.0
JUN				21...	32200	19.5	18.0
01...	33200	21.0	--				

## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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## 06471200 - MAPLE R AT ND-SU STATE LINE (LAT 45 56 20 LONG 098 27 08)

MAR , 1977				APR , 1977			
17...	.63	1.0	2.0	20...	.25	15.0	15.0
31...	6.9	1.5	2.0				

## 06471500 - ELM R AT WESTPORT SD (LAT 45 39 22 LONG 098 29 48)

OCT , 1976				APR , 1977			
06...	1.4	5.0	.0	20...	3.5	15.0	11.0
NOV				MAY			
02...	6.6	4.0	2.0	18...	3.5	22.0	23.0
DEC				JUN			
01...	5.8	.0	-4.5	14...	4.0	25.0	24.0
28...	6.1	.0	-6.5	JUL			
JAN , 1977				12...	10	25.0	28.5
26...	4.2	.0	-17.0	AUG			
FEB				17...	11	25.0	24.0
23...	5.6	.0	-4.5	SEP			
MAR				13...	2.3	20.5	24.5
17...	26	.0	3.0				
31...	12	.5	-4.5				

## 06476500 - SAND CR NEAR ALPENA SD (LAT 44 09 15 LONG 098 26 06)

MAR , 1977				APR , 1977			
15...	91	2.0	8.0	20...	6.7	15.0	--
22...	19	5.0	10.0				

## 06477000 - JAMES R NEAR FORESTBURG SD (LAT 43 58 26 LONG 098 04 14)

MAR , 1977				JUN , 1977			
15...	4020	1.0	4.0	14...	2.4	24.0	22.0
23...	668	2.0	3.5	JUL			
APR				27...	.36	22.0	24.0
21...	133	16.5	--	AUG			
MAY				16...	.07	19.5	20.5
17...	6.7	21.0	22.0				

## 06477500 - FIRESTEEL CR NEAR MOUNT VERNON SD (LAT 43 46 30 LONG 098 14 33)

MAR , 1977				MAY , 1977			
14...	658	3.0	4.5	17...	.48	27.0	27.5
23...	19	5.0	5.0	JUN			
APR				16...	.18	29.0	--
14...	5.0	14.2	--	SEP			
20...	7.0	15.5	--	14...	.02	26.0	26.0

## 06478690 - WEST FORK VERMILLION R NEAR PARKER SD (LAT 43 24 55 LONG 097 12 18)

OCT , 1976				MAY , 1977			
22...	.04	3.0	5.0	16...	.05	22.0	26.0
NOV				JUN			
10...	.07	2.0	4.5	14...	.05	22.0	--
MAR , 1977				AUG			
17...	151	4.5	7.0	15...	.08	16.5	17.5
APR							
19...	2.5	14.5	15.0				

MISCELLANEOUS TEMPERATURE MEASUREMENTS  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
06479000 - VERMILLION R NEAR WAKONDA SD (LAT 42 59 27 LONG 096 57 49)							
DEC , 1976				JUN , 1977			
16...	.59	1.0	1.5	17...	3.8	24.5	22.5
JAN , 1977				JUL			
20...	.01	.0	-1.0	28...	.21	30.0	31.0
MAR				AUG			
15...	265	5.0	11.0	15...	.05	23.0	19.0
APR				SEP			
25...	18	17.0	17.5	15...	4.0	20.0	22.5
MAY							
16...	.91	19.0	20.5				
06479438 - BIG SIOUX R NEAR WATERTOWN SD (LAT 45 00 22 LONG 097 09 53)							
OCT , 1976				MAY , 1977			
04...	.10	14.0	15.0	03...	6.9	16.0	18.0
NOV				JUN			
02...	.10	5.0	5.0	01...	4.8	17.5	19.0
MAR , 1977				28...	9.8	20.0	16.5
17...	127	.5	4.0	AUG			
APR				03...	.44	19.5	22.0
07...	22	3.5	5.0	31...	1.3	20.0	--
06479515 - WILLOW CR NEAR WATERTOWN SD (LAT 44 54 17 LONG 097 03 31)							
NOV , 1976				MAY , 1977			
01...	.10	9.5	13.0	03...	2.3	18.5	17.5
DEC				JUN			
09...	.04	.0	-11.0	01...	.11	24.0	24.5
MAR , 1977				28...	2.5	23.0	21.0
17...	25	.5	3.5	AUG			
APR				03...	.00	28.0	28.0
07...	5.1	10.0	11.0	31...	1.6	20.5	--
06479910 - SIXMILE CR NEAR BROOKINGS SD (LAT 44 20 46 LONG 096 44 51)							
NOV , 1976				MAY , 1977			
01...	.13	7.5	14.0	02...	.67	17.5	18.0
MAR , 1977				31...	.23	23.0	23.0
01...	.05	.0	-4.0	JUN			
16...	26	4.0	8.0	27...	3.4	27.0	25.0
23...	2.4	.5	--	AUG			
APR				30...	.16	17.0	--
06...	2.8	7.5	10.5				
06480000 - BIG SIOUX RIVER NEAR BROOKINGS SD (LAT 44 10 48 LONG 096 44 55)							
OCT , 1976				MAY , 1977			
04...	.01	15.0	12.0	02...	47	15.5	16.0
NOV				31...	12	20.0	20.5
01...	.09	8.0	12.0	JUN			
DEC				27...	154	25.0	23.5
08...	.19	.0	-2.0	AUG			
MAR , 1977				02...	12	26.5	28.0
16...	1390	.5	<.9	30...	17	21.0	--
APR							
06...	109	3.5	5.5				

## MISCELLANEOUS TEMPERATURE MEASUREMENTS

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)	DATE	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	AIR TEMPER- ATURE (DEG C) (00020)
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06481500 - SKUNK CR AT SIOUX FALLS SD (LAT 43 32 01 LONG 096 47 26)

OCT , 1976				APR , 1977			
06...	.04	8.5	6.0	13...	2.8	15.5	13.5
NOV				MAY			
02...	.52	13.5	7.5	04...	2.3	19.5	20.0
24...	.61	4.0	9.5	JUN			
DEC				03...	.52	21.0	21.5
10...	.70	.0	-4.0	30...	.18	23.0	23.5
JAN , 1977				AUG			
05...	.10	.0	-9.5	05...	.13	23.0	22.0
FEB				SEP			
22...	.09	.0	4.0	02...	1.0	17.5	--
MAR							
07...	.04	.0	2.5				
15...	82	3.0	6.0				

06482610 - SPLITROCK CR AT CORSON SD (LAT 43 36 59 LONG 096 33 54)

OCT , 1976				APR , 1977			
06...	2.9	7.5	-2.0	13...	19	15.0	15.0
NOV				MAY			
02...	4.7	7.5	11.5	04...	17	19.5	21.0
DEC				JUN			
10...	3.2	.0	-4.0	02...	6.6	27.0	27.0
JAN , 1977				30...	10	19.0	16.5
05...	1.1	.0	-13.0	AUG			
MAR				05...	6.3	21.0	18.0
07...	4.0	.0	2.0	SEP			
15...	352	3.5	8.0	02...	15	17.5	--

## BEADLE COUNTY

442112098174001. Local number, 110N62W 9BCCC.

LOCATION.--Lat 44°21'12", long 98°17'40", Hydrologic Unit 10160006, at southwest corner of city well field, 3.5 mi (5.6 km) west of Huron.

Owner: City of Huron.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Drilled unused public supply artesian well, diameter 12 in (0.305 m), depth 74 ft (22.6 m), perforated 38 to 74 ft (11.6 to 22.6 m).

DATUM.--Land-surface datum is 1,306.93 ft (398.352 m) above mean sea level. Measuring point: Top of platform 2.00 ft (0.610 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.81 ft (3.295 m) below land-surface datum, Feb. 5, 1954, lowest, 43.60 ft (13.289 m) below land-surface datum, Aug. 27, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
INSTANTANEOUS OBSERVATIONS AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	37.70	34.97	32.48	---	28.28	26.70	25.30	24.85	27.36	36.42	---	39.23
10	37.10	34.30	32.05	29.60	27.88	26.80	25.15	24.85	29.71	39.38	---	38.62
15	36.70	33.90	31.50	29.52	27.66	26.28	24.94	25.43	32.95	41.08	---	37.95
20	36.55	33.52	31.30	29.14	27.40	26.05	24.74	26.60	35.15	42.14	---	37.51
25	35.85	32.90	30.70	28.80	26.80	25.80	24.86	26.74	34.24	---	---	36.95
EOM	35.50	32.50	30.21	28.55	27.00	25.54	25.15	26.49	35.25	---	39.87	36.68

WTR YR 1977 HIGH 24.74 APR 20 LOW 42.14 JUL 20

443000098005001. Local number, 112N60W22AAAA.

LOCATION.--Lat 44°30'00", long 98°00'50", Hydrologic Unit 10160006, 5 mi (8 km) north of Yale.

Owner: South Dakota Department of Natural Resource Development.

AQUIFER.--Tulare.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 1.25 in (0.0318 m), depth 99 ft (30.2 m), cased to 99 ft (30.2 m).

DATUM.--Altitude of land-surface datum is 1,332 ft (406 m). Measuring point: Top of casing 1.20 ft (0.366 m) above land-surface datum.

PERIOD OF RECORD.--June 1960, March 1962 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.90 ft (6.675 m) below land-surface datum, July 1963; lowest measured, 27.8 ft (8.47 m) below land-surface datum, Nov. 30, 1976.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1	27.36	JAN 20	27.6	APR 5	27.3	JUN 6	27.24	JUN 23	27.5	AUG 31	27.42
NOV 30	27.8	FEB 4	27.43	APR 21	27.16	JUN 8	27.3	JUL 28	27.1	SEP 15	27.6

443758098225701. Local number, 113N63W 2BBBB.

LOCATION.--Lat 44°37'58", long 98°22'57", Hydrologic Unit 10160006, 1.0 mi (1.6 km) east of Hitchcock.

Owner: U.S. Bureau of Reclamation.

AQUIFER.--Tulare.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 4 in (0.102 m), depth 71 ft (21.6 m), perforated 19 to 71 ft (5.8 to 21.6 m).

DATUM.--Land-surface datum is 1,307.81 ft (398.620 m) above mean sea level. Measuring point: Top of casing 2.20 ft (0.671 m) above land-surface datum (since August 1973).

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.09 ft (7.647 m) below land-surface datum, Oct. 11, 1973; lowest measured, 28.03 ft (8.544 m) below land-surface datum, Feb. 16, 1953.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 3	26.36	FEB 1	26.44	MAY 2	26.53	JUN 3	26.50	AUG 30	26.66	SEP 28	26.73
DEC 2	26.39	APR 6	26.53								



## BON HOMME COUNTY

425643097571001. Local number, 94N60W21BCCC.

LOCATION.--Lat 42°56'43", long 97°57'10", Hydrologic Unit 10170101, 7 mi (11 km) southwest of Tyndall.

Owner: U.S. Geological Survey.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 3 in (0.08 m), depth 64 ft (19.5 m), sandpoint 56 to 64 ft (17.1 to 19.5 m).

DATUM.--Land-surface datum is 1,334.52 ft (406.762 m) above mean sea level. Measuring point: Top of recorder platform 2.50 ft (0.762 m) above land-surface datum.

PERIOD OF RECORD.--1966-68, 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.66 ft (5.688 m) below land-surface datum, June 10, 1972; lowest, 27.22 ft (8.297 m) below land-surface datum, Aug. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
INSTANTANEOUS OBSERVATIONS AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	25.55	25.81	26.05	26.26	26.43	26.57	26.71	26.79	26.97	26.46	27.16	26.92
10	25.58	25.85	26.09	26.27	26.44	26.55	26.69	26.81	26.99	26.66	27.22	26.99
15	25.65	25.85	26.09	26.30	26.48	26.60	26.75	26.84	26.84	26.76	26.24	27.05
20	25.69	25.90	26.11	26.33	26.51	26.60	26.77	26.87	26.32	26.89	26.53	27.11
25	25.71	25.95	26.16	26.38	26.51	26.62	26.79	26.93	26.18	27.01	26.76	27.14
EOM	25.77	26.00	26.22	26.40	26.56	26.68	26.79	26.95	26.29	27.09	26.87	27.17

WTR YR 1977 HIGH 25.55 OCT 5 LOW 27.22 AUG 10

## BROWN COUNTY

451947098355201. Local number, 121N65W 1AAAA (Three Wells No. 1, West).

LOCATION.--Lat 45°19'47", long 98°35'52", Hydrologic Unit 10160003, 5 mi (8 km) west of Warner.

Owner: U.S. Bureau of Reclamation.

AQUIFER.--Middle James.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 1 in (0.025 m), depth 144 ft (43.9 m), perforated 60 to 144 ft (18.3 to 43.9 m).

DATUM.--Land-surface datum is 1,336.73 ft (407.435 m) above mean sea level. Measuring point: Top of casing 2.20 ft (0.671 m) above land-surface datum.

PERIOD OF RECORD.--February 1952 to March 1958, September 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.96 ft (7.913 m) below land-surface datum, Sept. 13, 1967; lowest measured, 32.8 ft (10.00 m) below land-surface datum, Aug. 15, 1977.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 3	30.99	JUN 9	32.0	JUL 5	31.8	AUG 1	32.5	AUG 30	32.14	SEP 19	32.3
APR 6	30.68	JUN 20	31.6	JUL 18	32.0	AUG 15	32.8	SEP 6	32.5	SEP 27	31.76
JUN 2	31.15										

451946098292201. Local number, 122N64W36CCDD (Warner Pt 12).

LOCATION.--Lat 45°19'46", long 98°29'22", Hydrologic Unit 10160003, at Warner.

Owner: U.S. Bureau of Reclamation.

AQUIFER.--Lake Sediments.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 4 in (0.102 m), depth 48 ft (14.6 m), perforated 6 to 48 ft (1.8 to 14.6 m).

DATUM.--Land-surface datum is 1,298.70 ft (395.844 m) above mean sea level. Measuring point: Top of casing 2.00 ft (0.610 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.01 ft (4.270 m) below land-surface datum, July 1, 1953; lowest measured, 24.44 ft (7.449 m) below land-surface datum, Apr. 1, 1968.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 3	23.33	FEB 2	23.43	APR 6	22.97	JUN 2	22.20	AUG 30	22.66	SEP 27	22.85
DEC 1	23.40	MAR 1	23.38	MAY 3	22.59						

## GROUND-WATER LEVELS

## CAMPBELL COUNTY

454327100013601. Local number, 126N76W15CCCC (R-83).

LOCATION.--Lat 45°43'27", long 100°01'36", Hydrologic Unit 10130106, 2 mi (3 km) east of Mound City.

Owner: U.S. Geological Survey.

AQUIFER.--Grand.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 1.25 in (0.0318 m), depth 237 ft (72.2 m), screened 234 to 237 ft (71.3 to 72.2 m).

DATUM.--Altitude of land-surface datum is 1,688 ft (515 m). Measuring point: Top of casing 4.60 ft (1.402 m) above land-surface datum.

PERIOD OF RECORD.--May 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.27 ft (4.654 m) below land-surface datum, Jan. 17, 1973; lowest measured, 34.25 ft (10.439 m) below land-surface datum, Sept. 28, 1977.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	20.49	DEC 22	20.14	FEB 16	18.85	APR 13	18.66	JUN 8	25.17	AUG 3	33.58
NOV 23	20.54	JAN 18	18.40	MAR 16	18.92	MAY 10	18.57	JUL 6	27.40	SEP 28	34.25

## CLAY COUNTY

430223096590001. Local number, 95N52W21AAAA (CU-66A).

LOCATION.--Lat 43°02'23", long 96°59'00", Hydrologic Unit 10170102, 5 mi (8 km) south of Centerville.

Owner: South Dakota Department of Natural Resource Development.

AQUIFER.--Lower Vermillion-Missouri.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in (0.051 m), depth 84 ft (25.6 m), cased to 84 ft (25.6 m), open end.

DATUM.--Altitude of land-surface datum is 1,231 ft (375 m). Measuring point: Top of casing 2.20 ft (0.671 m) above land-surface datum.

PERIOD OF RECORD.--July 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 52.40 ft (15.972 m) below land-surface datum, Apr. 25, 1969; lowest measured, 60.94 ft (18.575 m) below land-surface datum, Aug. 29, 1977.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	60.32	DEC 21	60.36	FEB 24	60.23	APR 21	60.21	JUN 22	60.10	AUG 29	60.94
NOV 22	60.53	JAN 25	60.35	MAR 30	60.14	MAY 24	60.20	JUL 19	60.53	SEP 21	60.63

## HAND COUNTY

444828098433901. Local number, 115N66W 2AAAA (Cottonwood Deep).

LOCATION.--Lat 44°48'28", long 98°43'39", Hydrologic Unit 10160009, 2 mi (3 km) west of Cottonwood Lake.

Owner: U.S. Bureau of Reclamation.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.101 m), depth 62 ft (18.9 m), perforated 40 to 62 ft (12.2 to 18.9 m).

DATUM.--Land-surface datum is 1,359.65 ft (414.421 m) above mean sea level. Measuring point: Top of casing 3.30 ft (1.006 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.20 ft (6.157 m) below land-surface datum, July 31, 1953; lowest measured, 27.76 ft (8.461 m) below land-surface datum, Sept. 27, 1977.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	27.26	DEC 1	27.44	MAR 1	27.65	MAY 2	27.71	AUG 29	27.69
NOV 2	27.45	FEB 1	27.54	APR 6	27.69	JUN 2	27.69	SEP 27	27.76



## GROUND-WATER LEVELS

## SPINK COUNTY

444219098300801. Local number, 114N64W11BBBB.

LOCATION.--Lat 44°42'19", long 98°30'08", Hydrologic Unit 10160006, 2 mi (3 km) south of Tulare.

Owner: U.S. Bureau of Reclamation.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.101 m), depth 60 ft (18.3 m), perforated 20 to 60 ft (6.1 to 18.3 m).

DATUM.--Land-surface datum is 1,310.8 ft (399.5 m) above mean sea level. Measuring point: Top of casing 3.22 ft (0.98 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.19 ft (0.972 m) below land-surface datum, Aug. 20, 1959; lowest, 27.89 ft (8.502 m) below land-surface datum, Aug. 31, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
INSTANTANEOUS OBSERVATIONS AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	15.10	14.29	14.09	---	13.46	13.22	12.18	11.53	12.52	16.07	---	24.26
10	14.92	14.24	13.98	13.59	13.39	13.15	12.02	11.68	12.76	16.57	---	24.07
15	14.78	14.13	13.86	13.56	13.42	13.01	11.93	11.89	13.15	23.30	---	23.74
20	14.67	14.12	13.85	13.49	13.38	12.74	11.84	13.02	12.63	---	---	23.00
25	14.55	14.14	13.72	13.47	13.20	12.53	11.75	12.74	13.06	---	---	21.98
EOM	14.43	14.10	---	13.46	13.29	12.42	11.62	12.26	14.54	---	27.89	---

WTR YR 1977 HIGH 11.47 MAY 4 LOW 27.89 AUG 31

444458098385501. Local number, 115N65W28AAAA (PT 9).

LOCATION.--Lat 44°44'58", long 98°38'55", Hydrologic Unit 10160009, 7 mi (11 km) west of Tulare.

Owner: U.S. Bureau of Reclamation.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Drilled unused irrigation water-table well, diameter 8 in (0.203 m), depth 105 ft (32.0 m), perforated 58 to 105 ft (17.7 to 32.0 m).

DATUM.--Land-surface datum is 1,340.43 ft (408.563 m) above mean sea level. Measuring point: Top of recorder platform 3.20 ft (0.975 m) above land-surface datum.

PERIOD OF RECORD.--July 1952 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.06 ft (6.724 m) below land-surface datum, June 20, 1953; lowest, 36.46 ft (11.113 m) below land-surface datum, Aug. 20, 1964.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
INSTANTANEOUS OBSERVATIONS AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	32.43	30.82	30.23	29.87	29.66	29.43	---	28.05	27.99	---	---	33.45
10	32.08	30.68	30.14	29.84	29.64	29.40	28.45	28.00	28.16	---	---	33.28
15	31.75	30.62	30.07	29.80	29.62	29.26	28.35	27.96	28.37	---	---	33.05
20	31.49	30.50	30.02	29.77	29.58	29.10	28.25	28.00	28.57	---	---	32.77
25	31.23	30.39	29.96	29.74	29.50	28.93	28.17	28.04	28.84	---	---	32.40
EOM	30.97	30.30	29.90	29.70	29.48	28.69	28.09	28.01	---	---	33.58	---

WTR YR 1977 HIGH 27.96 MAY 15 LOW 33.62 AUG 29

## UNION COUNTY

430405096463201. Local number, 95N50W 8ABBD.

LOCATION.--Lat 43°04'05", long 96°46'32", Hydrologic Unit 10170102, at Beresford.

Owner: J. J. Dolan.

AQUIFER.--Glacial Outwash.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 24 in (0.610 m), depth 42 ft (12.8 m).

DATUM.--Altitude of land-surface datum is 1,515 ft (462 m). Measuring point: Top of casing 2.50 ft (0.762 m) above land-surface datum.

PERIOD OF RECORD.--August 1936 to 1944, 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.51 ft (0.155 m) below land-surface datum, Apr. 11, 1947; lowest measured, 14.77 ft (4.502 m) below land-surface datum, May 2, 1957.

## WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	10.03	DEC 28	10.45	FEB 22	10.70	APR 13	8.07	JUN 21	7.77	AUG 31	9.47
NOV 24	10.28	JAN 31	10.76	MAR 29	8.75	MAY 26	7.40	JUL 29	8.79	SEP 20	6.05

## GROUND-WATER LEVELS

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## YANKTON COUNTY

425240097252001. Local number, 93N56W14AA.

LOCATION.--Lat 42°52'40", long 97°25'20", Hydrologic Unit 10170101, at Yankton.

Owner: John Kayser.

AQUIFER.--Niobrara Formation.

WELL CHARACTERISTICS.--Bored stock artesian well, diameter 18 in (0.457 m), depth 80 ft (24.4 m).

DATUM.--Altitude of land-surface datum is 1,200 ft (366 m). Measuring point: Base of pump 4.50 ft (1.372 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.40 ft (11.095 m) below land-surface datum, June 16, 1961; lowest measured, 51.16 ft (15.594 m) below land-surface datum, Nov. 17, 1960.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	43.48	DEC 22	43.72	FEB 25	44.02	APR 22	41.14	JUN 23	42.16	AUG 30	44.04
NOV 23	43.52	JAN 26	44.44	MAR 31	42.14	MAY 25	41.62	JUL 20	42.22	SEP 22	43.19

## WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	TOTAL DEPTH OF WELL (FT) (72008)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	HARDNESS (CA, MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)
AURORA COUNTY									
433135098440701	101N66W28AAAA	217FLRV	953	77-08-31	2250	7.3	16.0	1300	1100
433524098261801	102N63W31CBCA	211CDLL	480	77-08-31	2200	7.9	12.7	450	130
434257098292001	103N64W15DDCC2	211CDLL	280	77-09-01	2480	7.9	12.0	110	0
434330098423601	103N66W148CDB	211N8RR	360	77-08-31	2150	7.8	12.5	81	0
434345098425601	103N66W15AAAA	211DKOT	876	77-08-31	2420	7.5	16.2	1000	910
435116098235701	105N63W33CDBB	211DKOT	750	77-09-01	2380	7.5	15.0	1200	1100
441103098293501	108N64W 30DDD	211DKOT	927	77-09-01	2700	7.8	16.0	540	400
BROWN COUNTY									
451431098061001	121N61W36DDDD	112PLSC	20	76-10-05	8600	7.1	11.0	1900	1000
		112PLSC	20	77-04-28	7400	7.2	6.0	1900	1000
451759098333501	121N63W15AAA8	--	36	76-10-05	2350	7.3	10.0	270	0
		--	36	77-04-28	2220	7.3	8.0	290	0
451436098233201	121N63W34DDDD	112PLSC	100	76-10-05	2000	7.5	9.0	460	170
		112PLSC	100	77-04-28	1660	7.6	9.0	490	170
451947098355504	121N65W 1AAAA4	112PLSC	40	76-10-06	2650	7.2	8.5	1700	1400
		112PLSC	40	77-04-27	2650	7.3	9.0	1800	1500
451436098393501	121N65W34CCCC	112JMESD	344	77-04-27	1470	7.2	7.0	530	230
452312098210401	122N63W12DDD	112PLSC	60	76-10-05	3500	7.3	11.5	220	0
		112PLSC	60	77-04-27	3140	7.3	9.0	220	0
452312098283002	122N64W13AAAA2	112PLSC	64	76-10-06	3900	7.5	8.0	320	0
		112PLSC	64	77-04-27	3800	7.5	8.5	330	0
452915098271501	123N63W 8BBBB	112PLSC	30	76-10-06	4200	7.2	10.0	1600	1200
		112PLSC	30	77-04-25	4800	7.2	9.0	1900	1500
452456098233101	123N63W34DDD	112PLSC	51	76-10-05	2180	7.3	11.0	720	360
		112PLSC	51	77-04-27	2000	7.1	8.5	740	380
453428098194202	124N62W 8BBBB2	112PLSC	24	76-10-06	430	7.6	11.0	220	0
		112PLSC	24	77-04-26	410	7.6	8.0	230	7
454431098271301	124N63W 5CCCC	112PLSC	34	76-10-06	720	7.4	8.5	330	48
		112PLSC	34	77-04-26	655	7.4	8.0	320	45
453800098222002	125N63W13CCCC2	112PLSC	34	76-10-06	10000	7.6	7.5	2300	2000
		--	34	77-04-26	7000	7.2	7.5	2200	1900
CLARK COUNTY									
444105097370501	114N57W13DAAB	--	270	76-11-23	2350	7.3	9.0	1300	1100
444501097504901	115N58W30ABBB	112PLSC	230	76-11-23	2100	7.8	10.0	260	0
444356097544101	115N59W348DBA	--	89	76-10-01	1690	7.0	--	780	520
445302097432101	116N57W 6DCAD	112PLSC	506	76-11-23	3300	7.6	11.0	360	0
450818097410801	119N57W 4DCCD	112PLSC	127	76-11-17	1200	7.0	4.0	670	150
450523097393001	119N57W27ADDA	112PLSC	110	76-11-17	1730	7.2	9.0	1000	720
HAND COUNTY									
444234099174001	114N70W 6DDDB	--	259	77-08-25	2300	7.7	13.0	130	0
444829099081401	115N69W 4ABBB	--	60	77-08-29	1800	7.6	10.0	230	0
444743099111801	115N69W 6CCCC	--	30	77-08-26	3000	7.5	13.0	2000	1700
444743099111301	115N69W 6CCDC	--	190	77-08-26	1360	7.7	12.0	130	0
444652099095201	115N69W 8CCD	--	80	77-08-26	1950	7.6	11.0	410	0
444602099112301	115N69W18CCCB	--	99	77-08-26	1120	7.7	13.0	170	0
444654099144401	115N70W10CDC	--	25	77-08-31	1020	7.6	11.0	540	220
444652099140001	115N70W10DDDC	--	90	77-08-26	720	7.6	12.0	160	0
445157099023801	116N68W17BBAB	--	56	77-08-29	920	7.6	9.0	410	100
445157099033301	116N68W18BAAB	--	48	77-08-29	2350	7.9	13.0	130	0
445103099033002	116N68W19BAA2	--	220	77-08-29	2750	8.1	15.0	130	0
445009099022001	116N68W29BAAC	--	96	77-08-29	3400	7.9	10.5	1200	600
445112099060701	116N69W14CDDC	--	45	77-08-29	730	7.4	9.0	260	0
445021099083901	116N69W21CCD	--	60	77-08-29	980	7.8	10.5	81	0
444957099064801	116N69W27ACDA	--	70	77-08-29	900	7.3	11.5	360	11
444929099093401	116N69W29CDD	--	38	77-08-29	4200	7.5	9.0	2000	1600
444929099093402	116N69W29CDD2	--	38	77-08-29	1750	7.4	11.0	380	99
444914099110801	116N69W318BDD	--	8.0	77-08-31	890	7.5	10.0	440	150



QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED CALCIUM (CA) (MG/L) (00915)	DIS-SOLVED MAGNE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORPTION RATIO (00931)	DIS-SOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CAC03 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)
AURORA COUNTY											
433135098440701	77-08-31	360	86	110	16	1.4	24	170	0	140	1100
433524098261801	77-08-31	120	37	360	62	7.4	27	390	0	320	910
434257098292001	77-09-01	27	9.8	570	91	24	13	550	0	450	810
434330098423601	77-08-31	21	7.0	770	95	37	12	680	0	560	220
434345098425601	77-08-31	290	76	200	29	2.7	27	170	0	140	1200
435116098235701	77-09-01	340	83	130	19	1.6	26	170	0	140	1200
441103098293501	77-09-01	140	45	420	62	7.9	21	170	0	140	1200
BROWN COUNTY											
451431098061001	76-10-05	300	280	1800	67	18	19	1070	0	878	4700
	77-04-28	310	270	1800	67	18	20	1030	0	845	4600
451759098333501	76-10-05	78	19	410	76	11	11	557	0	457	370
	77-04-28	83	21	410	74	10	11	560	0	459	400
451436098233201	76-10-05	130	34	200	47	4.0	18	363	0	298	310
	77-04-28	140	33	200	46	4.0	17	380	0	312	290
451947098355504	76-10-06	450	140	37	4	.4	14	361	0	296	1200
	77-04-27	490	150	41	5	.4	15	360	0	295	1400
451436098393501	77-04-27	160	31	130	34	2.5	14	360	0	300	260
452312098210401	76-10-05	64	15	700	87	20	12	897	0	736	290
	77-04-27	63	15	710	87	21	12	890	0	730	330
452312098283002	76-10-06	87	24	720	82	18	15	603	0	495	80
	77-04-27	92	24	710	82	17	16	600	0	492	82
452915098271501	76-10-06	390	160	580	43	6.2	17	509	0	417	2000
	77-04-25	450	200	610	40	6.0	18	500	0	410	2200
452456098233101	76-10-05	200	53	230	41	3.7	14	437	0	358	750
	77-04-27	210	53	230	40	3.7	15	440	0	361	690
453428098194202	76-10-06	57	19	3.6	3	.1	6.3	271	0	222	11
	77-04-26	60	19	3.3	3	.1	6.3	270	0	220	11
454431098271301	76-10-06	85	28	25	14	.6	4.2	341	0	280	76
	77-04-26	85	27	24	14	.6	4.0	340	0	280	67
453800098222002	76-10-06	380	340	1200	52	11	27	431	0	354	3700
	77-04-26	320	350	1200	53	11	25	450	0	370	3600
CLARK COUNTY											
444105097370501	76-11-23	370	99	140	18	1.7	14	301	0	247	1300
444501097504901	76-11-23	65	24	460	79	12	10	358	0	294	860
444356097544101	76-10-01	190	72	120	24	1.9	30	322	--	264	750
445302097432101	76-11-23	90	33	760	82	17	9.8	644	0	528	1100
450818097410801	76-11-17	180	53	30	9	.5	15	636	0	522	260
450523097393001	76-11-17	280	81	57	11	.8	11	385	0	316	830
HAND COUNTY											
444234099174001	77-08-25	34	9.8	500	89	19	11	680	0	560	250
444829099081401	77-08-29	63	18	340	75	9.7	10	490	0	400	410
444743099111801	77-08-26	350	270	140	13	1.4	11	410	0	340	1700
444743099111301	77-08-26	36	9.6	280	81	11	7.7	480	0	390	180
444652099095201	77-08-26	86	48	300	60	6.4	12	610	0	500	410
444602099112301	77-08-26	46	13	180	69	6.0	8.1	510	0	420	90
444654099144401	77-08-31	140	47	32	11	.6	16	400	0	330	250
444652099140001	77-08-26	46	11	120	60	4.1	8.2	360	0	300	120
445157099023801	77-08-29	100	38	32	14	.7	5.5	370	0	300	140
445157099033301	77-08-29	35	10	500	89	19	8.3	680	0	560	420
445103099033002	77-08-29	32	11	550	90	21	12	420	0	340	490
445009099022001	77-08-29	300	120	410	41	5.1	20	780	0	640	1100
445112099060701	77-08-29	67	22	52	30	1.4	8.1	390	0	320	63
445021099083901	77-08-29	23	5.6	210	83	10	8.3	420	0	340	170
444957099064801	77-08-29	96	28	69	29	1.6	9.6	420	0	340	150
444929099093401	77-08-29	400	240	380	29	3.7	16	440	0	360	2000
444929099093402	77-08-29	110	25	260	59	5.8	12	340	0	280	570
444914099110801	77-08-31	110	40	34	14	.7	6.9	350	0	290	210

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	BROMIDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL NITRATE (N) (MG/L) (00620)	TOTAL NITRITE (N) (MG/L) (00615)
AURORA COUNTY												
433135098440701	77-08-31	160		2.4	--	--	8.8	--	1940	2.64	--	--
433524098261801	77-08-31	16		.8	--	--	8.7	--	1680	2.28	--	--
434257098292001	77-09-01	60		1.4	.5	.07	9.2	1750	1780	2.38	--	--
434330098423601	77-08-31	660		1.9	--	--	13	--	2050	2.79	--	--
434345098425601	77-08-31	86		2.1	.4	.01	10	2090	1990	2.84	--	--
435116098235701	77-09-01	76		2.4	--	--	10	--	1950	2.65	--	--
441103098293501	77-09-01	89		1.7	--	--	12	--	2010	2.73	--	--
BROWN COUNTY												
451431098061001	76-10-05	140		.4	--	--	26	--	7810	--	--	--
	77-04-28	160		.4	--	--	26	--	7710	--	--	--
451759098333501	76-10-05	240		.3	--	--	26	--	1440	--	--	--
	77-04-28	250		.3	--	--	28	--	1480	--	--	--
451436098233201	76-10-05	210		.3	--	--	28	--	1110	--	--	--
	77-04-28	200		.3	--	--	30	--	1100	--	--	--
451947098355504	76-10-06	90		.2	--	--	23	--	2140	--	--	--
	77-04-27	70		.2	--	--	25	--	2370	--	--	--
451436098393501	77-04-27	170		.3	--	--	32	--	979	--	--	--
452312098210401	76-10-05	530		.2	--	--	28	--	2100	--	--	--
	77-04-27	510		.2	--	--	30	--	2110	--	--	--
452312098283002	76-10-06	940		.3	--	--	25	--	2190	--	--	--
	77-04-27	920		.4	--	--	27	--	2170	--	--	--
452915098271501	76-10-06	300		.3	--	--	27	--	3730	--	--	--
	77-04-25	360		.5	--	--	29	--	4120	--	--	--
452456098233101	76-10-05	95		.2	--	--	27	--	1590	--	--	--
	77-04-27	92		.2	--	--	29	--	1540	--	--	--
453428098194202	76-10-06	2.0		.3	--	--	26	--	261	--	--	--
	77-04-26	2.1		.4	--	--	27	--	263	--	--	--
454431098271301	76-10-06	20		.2	--	--	26	--	439	--	--	--
	77-04-26	15		.3	--	--	28	--	420	--	--	--
453800098222002	76-10-06	600		.3	--	--	23	--	6500	--	--	--
	77-04-26	470		.5	--	--	25	--	6220	--	--	--
CLARK COUNTY												
444105097370501	76-11-23	28		.3	--	--	23	--	2130	2.90	--	--
444501097504901	76-11-23	76		.4	--	--	22	--	1720	2.34	--	--
444356097544101	76-10-01	37		--	--	--	--	--	--	--	--	--
445302097432101	76-11-23	190		.2	1.3	.03	26	2670	2550	3.63	--	--
450818097410801	76-11-17	2.9		.2	--	--	27	--	902	1.23	--	--
450523097393001	76-11-17	14		.3	--	--	29	--	1500	2.04	--	--
HAND COUNTY												
444234099174001	77-08-25	310		.4	--	--	30	--	1480	2.01	--	--
444829099081401	77-08-29	90		.4	--	--	28	--	1200	1.63	--	--
444743099111801	77-08-26	67		.5	--	--	31	--	2900	3.94	--	--
444743099111301	77-08-26	130		.7	--	--	25	--	910	1.24	--	--
444652099095201	77-08-26	97		.5	--	--	28	--	1330	1.81	--	--
444602099112301	77-08-26	55		.5	--	--	28	--	674	.92	--	--
444654099144401	77-08-31	15		.1	--	--	26	--	730	.99	--	--
444652099140001	77-08-26	7.0		.4	--	--	30	--	522	.71	--	--
445157099023801	77-08-29	34		.2	--	--	23	--	560	.76	--	--
445157099033301	77-08-29	150		.6	--	--	26	--	1490	2.03	--	--
445103099033002	77-08-29	370		2.2	--	--	11	--	1690	2.30	--	--
445009099022001	77-08-29	230		.2	--	--	27	--	2620	3.56	--	--
445112099060701	77-08-29	6.1		.2	--	--	27	--	440	.60	--	--
445021099083901	77-08-29	10		.4	--	--	27	--	663	.90	--	--
444957099064801	77-08-29	10		.3	--	--	29	--	602	.82	--	--
444929099093401	77-08-29	180		.4	--	--	28	--	3640	4.95	--	--
444929099093402	77-08-29	45		.4	--	--	29	--	1220	1.66	--	--
444914099110801	77-08-31	7.1		.2	--	--	29	--	612	.83	--	--

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL AMMONIA NITRO-GEN (N) (MG/L) (00610)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED PHOS-PHORUS (P) (MG/L) (00666)	DIS-SOLVED ORTHO-PHOS-PHORUS (P) (MG/L) (00671)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYLLIUM (BE) (UG/L) (01010)
AURORA COUNTY											
433135098440701	77-08-31	--	.01	--	--	.00	--	--	--	--	--
433524098261801	77-08-31	--	.00	--	--	.00	--	--	--	--	--
434257098292001	77-09-01	--	.00	--	--	--	.05	10	0	200	--
434330098423601	77-08-31	--	.02	--	--	.01	--	--	--	--	--
434345098425601	77-08-31	--	.00	--	--	--	.00	10	0	1200	--
435116098235701	77-09-01	--	.00	--	--	.00	--	--	--	--	--
441103098293501	77-09-01	--	.00	--	--	.00	--	--	--	--	--
BROWN COUNTY											
451431098061001	76-10-05	--	2.8	--	--	.06	.07	--	--	--	--
	77-04-28	--	3.1	--	--	.06	.08	--	--	--	--
451759098333501	76-10-05	--	2.9	--	--	.05	.04	--	--	--	--
	77-04-28	--	.01	--	--	.04	.05	--	--	--	--
451436098233201	76-10-05	--	.26	--	--	.05	.03	--	--	--	--
	77-04-28	--	.22	--	--	.02	.03	--	--	--	--
451947098355504	76-10-06	--	.19	--	--	.01	.03	--	--	--	--
	77-04-27	--	.02	--	--	.01	.03	--	--	--	--
451436098393501	77-04-27	--	.06	--	--	.01	.05	--	--	--	--
452312098210401	76-10-05	--	3.8	--	--	.12	.11	--	--	--	--
	77-04-27	--	.07	--	--	.10	.09	--	--	--	--
452312098283002	76-10-06	--	.29	--	--	.07	.07	--	--	--	--
	77-04-27	--	.13	--	--	.05	.07	--	--	--	--
452915098271501	76-10-06	--	.02	--	--	.11	.05	--	--	--	--
	77-04-25	--	.03	--	--	.01	.05	--	--	--	--
452456098233101	76-10-05	--	.03	--	--	.03	.04	--	--	--	--
	77-04-27	--	.02	--	--	.04	.05	--	--	--	--
453428098194202	76-10-06	--	.27	--	--	.21	.16	--	--	--	--
	77-04-26	--	.05	--	--	.14	.11	--	--	--	--
454431098271301	76-10-06	--	1.0	--	--	.06	.04	--	--	--	--
	77-04-26	--	.03	--	--	.04	.05	--	--	--	--
453800098222002	76-10-06	--	1.7	--	--	.03	.04	--	--	--	--
	77-04-26	--	.73	--	--	.00	.04	--	--	--	--
CLARK COUNTY											
444105097370501	76-11-23	--	.34	--	--	.00	--	--	--	--	--
444501097504901	76-11-23	--	3.8	--	--	.34	--	--	--	--	--
444356097544101	76-10-01	--	--	--	--	--	--	--	--	--	--
445302097432101	76-11-23	--	4.7	--	--	--	.18	10	0	0	--
450818097410801	76-11-17	--	1.7	--	--	.55	--	--	--	--	--
450523097393001	76-11-17	--	.84	--	--	.00	--	--	--	--	--
HAND COUNTY											
444234099174001	77-08-25	--	.01	--	--	.11	.05	--	--	--	--
444829099081401	77-08-29	--	.08	--	--	.11	.09	--	--	--	--
444743099111801	77-08-26	--	28	--	--	.06	.06	--	--	--	--
444743099111301	77-08-26	--	.09	--	--	.23	.13	--	--	--	--
444652099095201	77-08-26	--	11	--	--	.15	.13	--	--	--	--
444602099112301	77-08-26	--	.01	--	--	.03	.02	--	--	--	--
444654099144401	77-08-31	--	1.2	--	--	.09	.07	--	--	--	--
444652099140001	77-08-26	--	.01	--	--	.09	.05	--	--	--	--
445157099023801	77-08-29	--	.94	--	--	.04	.03	--	--	--	--
445157099033301	77-08-29	--	.04	--	--	.11	.09	--	--	--	--
445103099033002	77-08-29	--	.02	--	--	.03	.01	--	--	--	--
445009099022001	77-08-29	--	4.9	--	--	.03	.03	--	--	--	--
445112099060701	77-08-29	--	.08	--	--	.03	.02	--	--	--	--
445021099083901	77-08-29	--	.04	--	--	.10	.06	--	--	--	--
444957099064801	77-08-29	--	.40	--	--	.04	.01	--	--	--	--
444929099093401	77-08-29	--	39	--	--	.04	.02	--	--	--	--
444929099093402	77-08-29	--	.01	--	--	.05	.03	--	--	--	--
444914099110801	77-08-31	--	.05	--	--	.02	.02	--	--	--	--

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GERMANIUM (GE) (UG/L) (01125)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED MANGANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED MOLYBDENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SELENIUM (SE) (UG/L) (01145)
AURORA COUNTY											
433135098440701	77-08-31	5800	--	--	--	--	180	--	--	--	--
433524098261801	77-08-31	930	--	--	--	--	40	--	--	--	0
434257098292001	77-09-01	80	--	--	17	260	20	.0	0	3	0
434330098423601	77-08-31	240	--	--	--	--	60	--	--	--	--
434345098425601	77-08-31	3800	--	--	7	180	160	.0	2	3	0
435116098235701	77-09-01	2000	--	--	--	--	140	--	--	--	--
441103098293501	77-09-01	670	--	--	--	--	120	--	--	--	--
BROWN COUNTY											
451431098061001	76-10-05	530	--	--	--	--	1800	--	--	--	--
	77-04-28	760	--	--	--	--	2400	--	--	--	--
451759098333501	76-10-05	700	--	--	--	--	260	--	--	--	--
	77-04-28	880	--	--	--	--	280	--	--	--	--
451436098233201	76-10-05	20	--	--	--	--	430	--	--	--	--
	77-04-28	20	--	--	--	--	370	--	--	--	--
451947098355504	76-10-06	60	--	--	--	--	1900	--	--	--	--
	77-04-27	20	--	--	--	--	1700	--	--	--	--
451436098393501	77-04-27	2200	--	--	--	--	510	--	--	--	--
452312098210401	76-10-05	300	--	--	--	--	500	--	--	--	--
	77-04-27	470	--	--	--	--	530	--	--	--	--
452312098283002	76-10-06	40	--	--	--	--	290	--	--	--	--
	77-04-27	30	--	--	--	--	310	--	--	--	--
452915098271501	76-10-06	3600	--	--	--	--	1400	--	--	--	--
	77-04-25	4200	--	--	--	--	1700	--	--	--	--
452456098233101	76-10-05	1300	--	--	--	--	970	--	--	--	--
	77-04-27	2000	--	--	--	--	920	--	--	--	--
453428098194202	76-10-06	110	--	--	--	--	260	--	--	--	--
	77-04-26	130	--	--	--	--	250	--	--	--	--
454431098271301	76-10-06	1100	--	--	--	--	1000	--	--	--	--
	77-04-26	1000	--	--	--	--	1000	--	--	--	--
453800098222002	76-10-06	1100	--	--	--	--	2600	--	--	--	--
	77-04-26	1100	--	--	--	--	2200	--	--	--	--
CLARK COUNTY											
444105097370501	76-11-23	370	--	--	--	--	4800	--	--	--	--
444501097504901	76-11-23	3400	--	--	--	--	180	--	--	--	--
444356097544101	76-10-01	--	--	--	--	--	--	--	--	--	--
445302097432101	76-11-23	1400	--	--	6	120	150	.0	0	5	0
450818097410801	76-11-17	11000	--	--	--	--	1100	--	--	--	--
450523097393001	76-11-17	110	--	--	--	--	2600	--	--	--	--
HAND COUNTY											
444234099174001	77-08-25	270	--	--	--	--	590	--	--	--	--
444829099081401	77-08-29	50	--	--	--	--	250	--	--	--	--
444743099111801	77-08-26	40	--	--	--	--	30	--	--	--	--
444743099111301	77-08-26	1600	--	--	--	--	540	--	--	--	--
444652099095201	77-08-26	200	--	--	--	--	660	--	--	--	--
444602099112301	77-08-26	1400	--	--	--	--	220	--	--	--	--
444654099144401	77-08-31	300	--	--	--	--	780	--	--	--	--
444652099140001	77-08-26	1200	--	--	--	--	440	--	--	--	--
445157099023801	77-08-29	120	--	--	--	--	60	--	--	--	--
445157099033301	77-08-29	3700	--	--	--	--	250	--	--	--	--
445103099033002	77-08-29	2100	--	--	--	--	40	--	--	--	--
445009099022001	77-08-29	160	--	--	--	--	1300	--	--	--	--
445112099060701	77-08-29	760	--	--	--	--	700	--	--	--	--
445021099083901	77-08-29	160	--	--	--	--	310	--	--	--	--
444957099064801	77-08-29	170	--	--	--	--	1000	--	--	--	--
444929099093401	77-08-29	60	--	--	--	--	40	--	--	--	--
444929099093402	77-08-29	400	--	--	--	--	1700	--	--	--	--
444914099110801	77-08-31	1100	--	--	--	--	580	--	--	--	--

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED BISMUTH (BI) (UG/L) (01015)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CADMIUM (CD) (UG/L) (01025)	DIS-SOLVED CHROMIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)
AURORA COUNTY							
433135098440701	77-08-31	--	240	--	--	--	--
433524098261801	77-08-31	--	3300	--	--	--	--
434257098292001	77-09-01	--	4600	1	20	0	1
434330098423601	77-08-31	--	5200	--	--	--	--
434345098425601	77-08-31	--	500	0	0	0	0
435116098235701	77-09-01	--	350	--	--	--	--
441103098293501	77-09-01	--	960	--	--	--	--
BROWN COUNTY							
451431098061001	76-10-05	--	1200	--	--	--	--
	77-04-28	--	1200	--	--	--	--
451759098333501	76-10-05	--	920	--	--	--	--
	77-04-28	--	930	--	--	--	--
451436098233201	76-10-05	--	980	--	--	--	--
	77-04-28	--	960	--	--	--	--
451947098355504	76-10-06	--	80	--	--	--	--
	77-04-27	--	100	--	--	--	--
451436098393501	77-04-27	--	780	--	--	--	--
452312098210401	76-10-05	--	2200	--	--	--	--
	77-04-27	--	2300	--	--	--	--
452312098283002	76-10-06	--	1800	--	--	--	--
	77-04-27	--	1900	--	--	--	--
452915098271501	76-10-06	--	310	--	--	--	--
	77-04-25	--	320	--	--	--	--
452456098233101	76-10-05	--	820	--	--	--	--
	77-04-27	--	820	--	--	--	--
453428098194202	76-10-06	--	30	--	--	--	--
	77-04-26	--	30	--	--	--	--
454431098271301	76-10-06	--	80	--	--	--	--
	77-04-26	--	80	--	--	--	--
453800098222002	76-10-06	--	790	--	--	--	--
	77-04-26	--	760	--	--	--	--
CLARK COUNTY							
444105097370501	76-11-23	--	820	--	--	--	--
444501097504901	76-11-23	--	1800	--	--	--	--
444356097544101	76-10-01	--	--	--	--	--	--
445302097432101	76-11-23	--	1500	0	10	1	1
450818097410801	76-11-17	--	150	--	--	--	--
450523097393001	76-11-17	--	440	--	--	--	--
HAND COUNTY							
444234099174001	77-08-25	--	930	--	--	--	--
444829099081401	77-08-29	--	1800	--	--	--	--
444743099111801	77-08-26	--	240	--	--	--	--
444743099111301	77-08-26	--	1900	--	--	--	--
444652099095201	77-08-26	--	880	--	--	--	--
444602099112301	77-08-26	--	660	--	--	--	--
444654099144401	77-08-31	--	50	--	--	--	--
444652099140001	77-08-26	--	480	--	--	--	--
445157099023801	77-08-29	--	170	--	--	--	--
445157099033301	77-08-29	--	1700	--	--	--	--
445103099033002	77-08-29	--	4600	--	--	--	--
445009099022001	77-08-29	--	890	--	--	--	--
445112099060701	77-08-29	--	140	--	--	--	--
445021099083901	77-08-29	--	740	--	--	--	--
444957099064801	77-08-29	--	200	--	--	--	--
444929099093401	77-08-29	--	1000	--	--	--	--
444929099093402	77-08-29	--	1100	--	--	--	--
444914099110801	77-08-31	--	110	--	--	--	--



QUALITY OF GROUND WATER  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRONTIUM (SR) (UG/L) (01080)	DIS-SOLVED TITANIUM (TI) (UG/L) (01100)	DIS-SOLVED TANTANIUM (TI) (UG/L) (01150)	DIS-SOLVED VANADIUM (V) (UG/L) (01085)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED ZIRCONIUM (ZR) (UG/L) (01160)	CYANIDE (CN) (MG/L) (00720)
AURORA COUNTY									
433135098440701	77-08-31	--	--	--	--	--	--	--	--
433524098261801	77-08-31	--	--	--	--	--	--	--	--
434257098292001	77-09-01	0	700	--	--	.0	0	--	--
434330098423601	77-08-31	--	--	--	--	--	--	--	--
434345098425601	77-08-31	0	8300	--	--	1.4	10	--	--
435116098235701	77-09-01	--	--	--	--	--	--	--	--
441103098293501	77-09-01	--	--	--	--	--	--	--	--
BROWN COUNTY									
451431098061001	76-10-05	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
451759098333501	76-10-05	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
451436098233201	76-10-05	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
451947098355504	76-10-06	--	--	--	--	--	--	--	--
	77-04-27	--	--	--	--	--	--	--	--
451436098393501	77-04-27	--	--	--	--	--	--	--	--
452312098210401	76-10-05	--	--	--	--	--	--	--	--
	77-04-27	--	--	--	--	--	--	--	--
452312098283002	76-10-06	--	--	--	--	--	--	--	--
	77-04-27	--	--	--	--	--	--	--	--
452915098271501	76-10-06	--	--	--	--	--	--	--	--
	77-04-25	--	--	--	--	--	--	--	--
452456098233101	76-10-05	--	--	--	--	--	--	--	--
	77-04-27	--	--	--	--	--	--	--	--
453428098194202	76-10-06	--	--	--	--	--	--	--	--
	77-04-26	--	--	--	--	--	--	--	--
454431098271301	76-10-06	--	--	--	--	--	--	--	--
	77-04-26	--	--	--	--	--	--	--	--
453800098222002	76-10-06	--	--	--	--	--	--	--	--
	77-04-26	--	--	--	--	--	--	--	--
CLARK COUNTY									
444105097370501	76-11-23	--	200	--	--	--	610	--	--
444501097504901	76-11-23	--	960	--	--	--	40	--	--
444356097544101	76-10-01	--	--	--	--	--	--	--	--
445302097432101	76-11-23	0	1200	--	--	.9	0	--	--
450818097410801	76-11-17	--	770	--	--	--	20	--	--
450523097393001	76-11-17	--	1700	--	--	--	70	--	--
HAND COUNTY									
444234099174001	77-08-25	--	--	--	--	--	--	--	--
444829099081401	77-08-29	--	--	--	--	--	--	--	--
444743099111801	77-08-26	--	--	--	--	--	--	--	--
444743099111301	77-08-26	--	--	--	--	--	--	--	--
444652099095201	77-08-26	--	--	--	--	--	--	--	--
444602099112301	77-08-26	--	--	--	--	--	--	--	--
444654099144401	77-08-31	--	--	--	--	--	--	--	--
444652099140001	77-08-26	--	--	--	--	--	--	--	--
445157099023801	77-08-29	--	--	--	--	--	--	--	--
445157099033301	77-08-29	--	--	--	--	--	--	--	--
445103099033002	77-08-29	--	--	--	--	--	--	--	--
445009099022001	77-08-29	--	--	--	--	--	--	--	--
445112099060701	77-08-29	--	--	--	--	--	--	--	--
445021099083901	77-08-29	--	--	--	--	--	--	--	--
444957099064801	77-08-29	--	--	--	--	--	--	--	--
444929099093401	77-08-29	--	--	--	--	--	--	--	--
444929099093402	77-08-29	--	--	--	--	--	--	--	--
444914099110801	77-08-31	--	--	--	--	--	--	--	--



QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	LOCAL IDENTIFIER	GEOLOGIC UNIT	TOTAL DEPTH OF WELL (FT) (72008)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICRO-MHOS) (00095)	PH (00400)	TEMPERATURE (DEG C) (00010)	HARDNESS (CA, MG) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)
HAND COUNTY									
444141099204901	114N71W11COCH	--	140	77-08-30	2400	7.6	10.5	130	0
444314099265401	114N72W 1888B	--	136	77-08-25	950	7.5	13.0	190	0
444248099303501	114N72W 4C88B	--	125	77-08-25	1550	7.5	10.0	360	0
HYDE COUNTY									
444138099295201	114N72W 9DC	--	112	77-08-25	1850	7.3	12.0	230	0
444056099272901	114N72W14D8C	--	54	77-08-25	2450	7.5	12.5	1200	890
444051099345201	114N73W14D8C	--	24	77-08-30	2400	7.3	13.0	1100	810
444020099391801	114N73W19ADD0	--	160	77-08-30	1040	7.8	11.0	210	0
444018099365201	114N73W21ADD	--	130	77-08-24	2800	7.2	10.0	1400	910
443947099353101	114N73W2688BB	--	70	77-08-24	2000	7.3	8.0	760	410
443931099391401	114N73W298CBC	--	300	77-08-24	3800	8.1	7.0	70	0
443931099391402	114N73W298CBC2	--	180	77-08-30	2600	7.6	11.5	490	0
444458099235201	115N71W29AAB	--	245	77-08-25	2900	7.8	12.0	140	0
444406099232402	115N71W338BA2	--	33	77-08-25	580	7.6	12.5	250	0
MINER COUNTY									
435251097301201	105N56W24CDBA	217CRCSL	406	77-09-01	1990	--	10.0	790	510
435251097301202	105N56W24CDBA2	211NBRR	203	77-09-01	2240	--	10.0	660	360
435428097393701	105N57W10CDDD	112PLSC	18	77-07-29	3010	--	9.5	1300	990
435337097472701	105N58W21AAAA	112PLSC	160	77-09-01	2750	--	11.5	1000	870
435755097392501	106N57W27ABAB	112PLSC	26	77-07-28	9580	--	10.5	3100	2800
440007097510201	106N58W 7C88B	112FLYD	89	77-07-28	--	--	13.0	590	510
435928097484001	106N58W17ADAA	112FLYD	143	77-07-28	--	--	10.0	950	720
440557097495001	107N58W 6DDAD	112FLYD	82	77-07-28	--	--	10.0	1100	820
440127097495001	107N58W31DDDD	112FLYD	105	77-07-28	--	--	10.0	630	400
440218097494801	107N58W328BBB	112FLYD	123	77-07-28	--	--	10.0	790	520
MOODY COUNTY									
434508096372701	103N48W 5CACA	400SOUX	--	76-10-14	920	7.2	--	480	170
		400SOUX	--	77-04-19	810	7.4	--	450	140
434414096380301	103N48W 7DAC	112PLSC	--	76-10-14	790	7.2	10.5	390	73
434432096364201	103N48W 8ADA	112PLSC	--	76-10-14	1120	6.8	--	620	92
		112PLSC	--	77-04-19	1060	7.1	--	590	51
434435096374802	103N48W 8BBCB2	400SOUX	--	76-10-14	1450	7.1	--	860	560
		400SOUX	--	77-04-20	1350	7.2	--	820	530
434357096364201	103N48W 8DDDD	400SOUX	--	76-10-13	820	7.1	--	390	27
434429096361801	103N48W 98DCB	400SOUX	--	76-10-14	760	7.3	--	390	100
434400096362201	103N48W 9CCDA	400SOUX	--	76-10-13	1700	6.9	--	830	390
434400096362201	103N48W 9CCDA	400SOUX	--	77-04-20	1650	7.0	--	840	350
434332096371501	103N48W17ACCC	400SOUX	--	76-10-13	840	7.2	--	440	120
		400SOUX	--	77-04-20	820	7.4	--	470	150
434339096381101	103N48W18ACA	400SOUX	--	76-10-13	1920	7.2	--	1100	810
		400SOUX	--	77-04-20	1740	7.5	--	1100	790
		400SOUX	--	77-04-20	1740	7.5	--	1100	--
SPINK COUNTY									
443731098203001	115N63W 10DDD	112PLSC	--	76-10-08	800	7.5	10.5	140	0
		112PLSC	--	77-04-28	750	7.6	9.0	160	0
445000098225501	116N63W27AADA	112PLSC	--	76-10-08	1840	7.0	11.0	950	670
		112PLSC	--	77-04-28	3100	7.1	8.0	2000	1700
445535098304501	117N64W2688BB	112PLSC	--	76-10-08	9500	6.8	9.5	2500	2000
		112PLSC	--	77-04-27	8900	7.1	9.5	2800	2100
445900098135001	118N61W31CCCC	112PLSC	--	76-10-05	3100	7.2	10.5	1200	670
		112PLSC	--	77-04-28	3200	7.2	8.5	1200	690
450315098194502	118N62W 888BB2	112PLSC	--	76-10-05	4500	7.2	11.0	2300	2000
		112PLSC	--	77-04-28	4200	7.1	8.5	2400	2100
450920098122501	119N61W 6AAAA	112PLSC	--	76-10-05	1830	7.5	11.0	180	0
		112PLSC	--	77-04-28	440	7.3	8.5	140	0
451023098381001	120N65W358BBB	112PLSC	--	76-10-06	790	7.8	--	300	57
		112PLSC	--	77-04-27	730	7.4	9.0	300	0

QUALITY OF GROUND WATER  
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (CO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LITY AS CAC03 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)
HAND COUNTY												
444141099204901	77-08-30	36	10	510	88	19	11	720	0	590	250	
444314099265401	77-08-25	54	14	150	62	4.7	8.9	440	0	360	160	
444248099303501	77-08-25	84	36	220	56	5.1	8.9	560	0	460	330	
HYDE COUNTY												
444138099295201	77-08-25	65	17	340	75	9.7	9.0	740	0	610	260	
444056099272901	77-08-25	330	96	160	22	2.0	14	400	0	330	1100	
444051099345201	77-08-30	280	96	140	22	1.8	11	350	0	290	940	
444020099391801	77-08-30	58	16	160	61	4.8	9.1	450	0	370	190	
444018099365201	77-08-24	260	180	150	19	1.8	9.2	590	0	480	970	
443947099353101	77-08-24	160	87	210	37	3.3	9.9	430	0	350	780	
443931099391401	77-08-24	19	5.4	680	95	35	8.5	480	0	390	290	
443931099391402	77-08-30	130	39	480	68	9.5	14	640	0	530	940	
444458099235201	77-08-25	40	9.7	610	90	22	12	630	0	520	100	
444406099232402	77-08-25	64	22	31	21	.9	5.3	310	0	250	72	
MINER COUNTY												
435251097301201	77-09-01	220	59	190	34	2.9	13	340	--	280	860	
435251097301202	77-09-01	180	50	300	49	5.1	16	360	--	300	1000	
435428097393701	77-07-29	270	140	310	35	3.8	11	320	--	260	1500	
435337097472701	77-09-01	290	72	300	38	4.1	20	180	--	150	1300	
435755097392501	77-07-28	420	510	1500	51	12	26	420	--	340	5700	
440007097510201	77-07-28	150	53	240	46	4.3	16	99	--	81	900	
435928097484001	77-07-28	230	91	310	41	4.4	17	280	--	230	1200	
440557097495001	77-07-28	300	76	420	46	5.6	17	300	--	250	1700	
440127097495001	77-07-28	160	55	390	57	6.8	14	280	--	230	1100	
440218097494801	77-07-28	210	65	390	51	6.0	15	330	--	270	1200	
MOODY COUNTY												
434508096372701	76-10-14	140	32	16	7	.3	3.8	376	0	308	220	
	77-04-19	130	30	16	7	.3	3.7	370	0	300	170	
434414096380301	76-10-14	87	41	22	11	.5	2.4	382	0	313	41	
434432096364201	76-10-14	140	65	17	6	.3	3.1	641	0	526	44	
	77-04-19	140	59	16	6	.3	3.9	660	0	540	36	
434435096374802	76-10-14	230	70	23	5	.3	4.2	368	0	302	580	
	77-04-20	220	66	23	6	.4	4.1	360	0	300	570	
434357096364201	76-10-13	100	35	20	10	.4	4.4	447	0	367	79	
434429096361801	76-10-14	100	35	20	10	.4	3.1	358	0	294	94	
434400096362201	76-10-13	170	99	31	7	.5	8.2	538	0	441	88	
434400096362201	77-04-20	180	96	34	8	.5	9.2	600	0	490	110	
434332096371501	76-10-13	130	27	18	8	.4	4.0	391	0	321	130	
	77-04-20	140	28	17	7	.3	3.9	390	0	320	170	
434339096381101	76-10-13	300	91	32	6	.4	5.5	387	0	317	860	
	77-04-20	300	87	33	6	.4	5.6	390	0	320	860	
	77-04-20	290	91	34	6	.4	5.5	--	--	--	820	
SPINK COUNTY												
443731098203001	76-10-08	35	13	130	65	4.8	8.5	384	0	315	53	
	77-04-28	39	14	120	61	4.2	8.4	420	0	344	62	
445000098225501	76-10-08	240	86	40	8	.6	11	343	0	281	680	
	77-04-28	500	180	110	11	1.1	16	360	0	295	1800	
445535098304501	76-10-08	440	350	1800	60	16	36	700	0	574	4800	
	77-04-27	440	410	1800	58	15	38	790	0	650	5000	
445900098135001	76-10-05	320	88	380	41	4.9	19	604	0	495	1400	
	77-04-28	320	92	370	40	4.7	19	600	0	492	1300	
450315098194502	76-10-05	600	200	340	24	3.1	29	449	0	368	2600	
	77-04-28	630	210	340	23	3.0	30	460	0	377	2500	
450920098122501	76-10-05	46	15	350	80	11	7.4	661	0	542	140	
	77-04-28	39	11	34	32	1.2	12	240	0	197	23	
451023098381001	76-10-06	76	27	59	29	1.5	8.3	298	0	244	84	
	77-04-27	78	25	53	27	1.3	7.8	370	0	300	79	

## QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)	BROMIDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED (RESIDUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL NITRATE (N) (MG/L) (00620)	TOTAL NITRITE (N) (MG/L) (00615)
HAND COUNTY											
444141099204901	77-08-30	270	.5	--	--	30	--	1480	2.01	--	--
444314099265401	77-08-25	9.3	.2	--	--	29	--	644	.88	--	--
444248099303501	77-08-25	22	.3	--	--	28	--	1020	1.39	--	--
HYDE COUNTY											
444138099295201	77-08-25	100	.4	--	--	28	--	1190	1.62	--	--
444056099272901	77-08-25	93	.3	--	--	26	--	2050	2.79	--	--
444051099345201	77-08-30	59	.1	--	--	25	--	1810	2.46	--	--
444020099391801	77-08-30	13	.3	--	--	29	--	701	.95	--	--
444018099365201	77-08-24	180	.4	--	--	27	--	2090	2.84	--	--
443947099353101	77-08-24	71	.3	--	--	27	--	1570	2.14	--	--
443931099391401	77-08-24	630	.5	--	--	31	--	1910	2.60	--	--
443931099391402	77-08-30	21	.2	--	--	25	--	1970	2.68	--	--
444458099235201	77-08-25	620	.8	--	--	27	--	1740	2.37	--	--
444406099232402	77-08-25	3.4	.2	--	--	29	--	381	.52	--	--
MINER COUNTY											
435251097301201	77-09-01	22	.7	--	--	23	--	1560	2.12	--	--
435251097301202	77-09-01	22	1.1	--	--	23	--	1770	2.41	--	--
435428097393701	77-07-29	32	--	--	--	--	2730	--	3.71	--	--
435337097472701	77-09-01	160	--	--	--	--	2230	--	3.03	--	--
435755097392501	77-07-28	300	--	--	--	--	9610	--	13.1	--	--
440007097510201	77-07-28	72	--	--	--	--	1540	--	2.09	--	--
435928097484001	77-07-28	90	--	--	--	--	2320	--	3.16	--	--
440557097495001	77-07-28	36	--	--	--	--	2850	--	3.88	--	--
440127097495001	77-07-28	98	--	--	--	--	1950	--	2.65	--	--
440218097494801	77-07-28	50	--	--	--	--	2230	--	3.03	--	--
MOODY COUNTY											
434508096372701	76-10-14	1.5	.7	.0	.00	24	--	625	.85	.25	.00
	77-04-19	1.3	.7	.1	.00	23	--	558	.76	.09	.00
434414096380301	76-10-14	7.3	.8	.0	.00	25	--	435	.59	4.5	.00
434432096364201	76-10-14	18	.5	.0	.00	26	--	714	.97	18	.01
	77-04-19	12	.6	.1	.00	22	--	681	.93	15	.01
434435096374802	76-10-14	3.6	.6	.0	.01	17	--	1110	1.51	.61	.00
	77-04-20	3.3	.6	.1	.02	16	--	1080	1.47	.06	.00
434357096364201	76-10-13	7.5	1.2	.0	.00	25	--	498	.67	3.0	.00
434429096361801	76-10-14	3.4	.7	.0	.00	27	--	472	.64	2.9	.00
434400096362201	76-10-13	96	.5	.1	.05	24	--	1100	1.50	77	.01
434400096362201	77-04-20	110	.5	.9	.00	25	--	1090	1.48	53	.01
434332096371501	76-10-13	1.3	.4	.0	.00	22	--	529	.72	.12	.00
	77-04-20	1.5	.4	.0	.00	23	--	577	.78	.15	.00
434339096381101	76-10-13	8.6	.4	.0	.01	22	--	1520	2.05	.09	.01
	77-04-20	7.3	.4	.1	.02	23	--	1510	2.05	.06	.01
	77-04-20	7.4	.4	--	--	--	--	--	--	--	--
SPINK COUNTY											
443731098203001	76-10-08	8.6	.4	--	--	26	--	473	.64	--	--
	77-04-28	6.9	.5	--	--	27	--	486	--	--	--
445000098225501	76-10-08	38	.4	--	--	25	--	1300	1.77	--	--
	77-04-28	54	.4	--	--	27	--	2880	--	--	--
445535098304501	76-10-08	660	.2	--	--	25	--	8460	11.5	--	--
	77-04-27	570	.4	--	--	27	--	8680	--	--	--
445900098135001	76-10-05	110	.2	--	--	24	--	2650	3.60	--	--
	77-04-28	100	.2	--	--	26	--	2530	--	--	--
450315098194502	76-10-05	88	.2	--	--	25	--	4130	5.62	--	--
	77-04-28	92	.2	--	--	29	--	4090	--	--	--
450920098122501	76-10-05	180	.4	--	--	27	--	1100	1.50	--	--
	77-04-28	9.0	.2	--	--	15	--	269	--	--	--
451023098381001	76-10-06	25	.4	--	--	28	--	464	.63	--	--
	77-04-27	17	.4	--	--	29	--	476	--	--	--

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL AMMONIA NITRO-GEN (N) (MG/L) (00610)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED PHOS-PHORUS (P) (MG/L) (00666)	DIS-SOLVED ORTHO-PHOS-PHORUS (P) (MG/L) (00671)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	DIS-SOLVED BARIUM (BA) (UG/L) (01005)	DIS-SOLVED BERYLLIUM (BE) (UG/L) (01010)
HAND COUNTY											
444141099204901	77-08-30	--	.19	--	--	.05	.04	--	--	--	--
444314099265401	77-08-25	--	.02	--	--	.03	.04	--	--	--	--
444248099303501	77-08-25	--	3.1	--	--	.16	.08	--	--	--	--
HYDE COUNTY											
444138099295201	77-08-25	--	.07	--	--	.06	.04	--	--	--	--
444056099272901	77-08-25	--	6.3	--	--	.02	.02	--	--	--	--
444051099345201	77-08-30	--	20	--	--	.08	.04	--	--	--	--
444020099391801	77-08-30	--	.23	--	--	.02	.02	--	--	--	--
444018099365201	77-08-24	--	3.7	--	--	.01	.05	--	--	--	--
443947099353101	77-08-24	--	3.2	--	--	.03	.03	--	--	--	--
443931099391401	77-08-24	--	2.2	--	--	.07	.07	--	--	--	--
443931099391402	77-08-30	--	.02	--	--	.03	.02	--	--	--	--
444458099235201	77-08-25	--	1.0	--	--	.03	.04	--	--	--	--
444406099232402	77-08-25	--	.00	--	--	.09	.06	--	--	--	--
MINER COUNTY											
435251097301201	77-09-01	--	--	--	--	--	--	--	--	--	--
435251097301202	77-09-01	--	--	--	--	--	--	--	--	--	--
435428097393701	77-07-29	--	--	--	.04	--	--	--	--	--	--
435337097472701	77-09-01	--	--	--	.16	--	--	--	--	--	--
435755097392501	77-07-28	--	--	--	.01	--	--	--	--	--	--
440007097510201	77-07-28	--	--	--	.87	--	--	--	--	--	--
435928097484001	77-07-28	--	--	--	.18	--	--	--	--	--	--
440557097495001	77-07-28	--	--	--	.04	--	--	--	--	--	--
440127097495001	77-07-28	--	--	--	.11	--	--	--	--	--	--
440218097494801	77-07-28	--	--	--	.11	--	--	--	--	--	--
MOODY COUNTY											
434508096372701	76-10-14	.25	.25	.03	--	--	--	<10	--	10	<3
	77-04-19	.09	.09	.05	--	--	--	--	--	--	--
434414096380301	76-10-14	4.5	4.5	.00	--	--	--	<10	--	70	<2
434432096364201	76-10-14	18	19	.00	--	--	--	20	--	100	<3
	77-04-19	15	15	.00	--	--	--	--	--	--	--
434435096374802	76-10-14	.61	.57	.03	--	--	--	30	--	<4	<4
	77-04-20	.06	.06	.01	--	--	--	--	--	--	--
434357096364201	76-10-13	3.0	.27	.00	--	--	--	<10	--	10	<2
434429096361801	76-10-14	2.9	2.7	.00	--	--	--	10	--	70	<2
434400096362201	76-10-13	77	71	.01	--	--	--	70	--	100	<9
434400096362201	77-04-20	53	52	.00	--	--	--	--	--	--	--
434332096371501	76-10-13	.12	.11	.20	--	--	--	40	--	70	<5
	77-04-20	.15	.12	.36	--	--	--	--	--	--	--
434339096381101	76-10-13	.10	.10	.51	--	--	--	90	--	7	<5
	77-04-20	.07	.09	.52	--	--	--	--	--	--	--
	77-04-20	--	--	--	--	--	--	10	--	--	--
SPINK COUNTY											
443731098203001	76-10-08	--	1.6	--	--	.07	.08	--	--	--	--
	77-04-28	--	.02	--	--	.09	.08	--	--	--	--
445000098225501	76-10-08	--	.10	--	--	.08	.04	--	--	--	--
	77-04-28	--	.01	--	--	.02	.05	--	--	--	--
445535098304501	76-10-08	--	.12	--	--	.05	.05	--	--	--	--
	77-04-27	--	1.2	--	--	.02	.05	--	--	--	--
445900098135001	76-10-05	--	.21	--	--	.04	.03	--	--	--	--
	77-04-28	--	.00	--	--	.00	.05	--	--	--	--
450315098194502	76-10-05	--	.01	--	--	.11	.04	--	--	--	--
	77-04-28	--	.00	--	--	.01	.05	--	--	--	--
450920098122501	76-10-05	--	.00	--	--	.50	.10	--	--	--	--
	77-04-28	--	.00	--	--	.24	.22	--	--	--	--
451023098381001	76-10-06	--	1.9	--	--	.01	.06	--	--	--	--
	77-04-27	--	.85	--	--	.00	.03	--	--	--	--

&lt; Less than.

QUALITY OF GROUND WATER

277

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS- SOLVED BISMUTH (BI) (01015)	DIS- SOLVED BORON (B) (01020)	DIS- SOLVED CAD- MIUM (CD) (01025)	DIS- SOLVED CHRO- MIUM (CR) (01030)	DIS- SOLVED COBALT (CO) (01035)	DIS- SOLVED COPPER (CU) (01040)
HAND COUNTY							
444141099204901	77-08-30	--	900	--	--	--	--
444314099265401	77-08-25	--	470	--	--	--	--
444248099303501	77-08-25	--	630	--	--	--	--
HYDE COUNTY							
444138099295201	77-08-25	--	830	--	--	--	--
444056099272901	77-08-25	--	250	--	--	--	--
444051099345201	77-08-30	--	110	--	--	--	--
444020099391801	77-08-30	--	480	--	--	--	--
444018099365201	77-08-24	--	510	--	--	--	--
443947099353101	77-08-24	--	220	--	--	--	--
443931099391401	77-08-24	--	2600	--	--	--	--
443931099391402	77-08-30	--	930	--	--	--	--
444458099235201	77-08-25	--	1500	--	--	--	--
444406099232402	77-08-25	--	100	--	--	--	--
MINER COUNTY							
435251097301201	77-09-01	--	570	--	--	--	--
435251097301202	77-09-01	--	960	--	--	--	--
435428097393701	77-07-29	--	690	--	--	--	--
435337097472701	77-09-01	--	770	--	--	--	--
435755097392501	77-07-28	--	1400	--	--	--	--
440007097510201	77-07-28	--	680	--	--	--	--
435928097484001	77-07-28	--	770	--	--	--	--
440557097495001	77-07-28	--	1400	--	--	--	--
440127097495001	77-07-28	--	1500	--	--	--	--
440218097494801	77-07-28	--	1500	--	--	--	--
MOODY COUNTY							
434508096372701	76-10-14	<5	230	0	<5	<5	<3
	77-04-19	--	180	--	--	--	--
434414096380301	76-10-14	<5	30	0	<5	<5	<2
434432096364201	76-10-14	<7	20	0	<7	<7	<3
	77-04-19	--	60	--	--	--	--
434435096374802	76-10-14	<8	360	0	<8	<8	<4
	77-04-20	--	300	--	--	--	--
434357096364201	76-10-13	<5	400	0	<5	<5	<2
434429096361801	76-10-14	<4	50	0	<4	<4	11
434400096362201	76-10-13	<9	130	0	<9	<9	<9
434400096362201	77-04-20	--	70	--	--	--	--
434332096371501	76-10-13	<5	260	0	<5	<5	<2
	77-04-20	--	270	--	--	--	--
434339096381101	76-10-13	<11	400	0	<11	<11	<5
	77-04-20	--	480	--	--	--	--
	77-04-20	--	--	--	--	--	--
SPINK COUNTY							
443731098203001	76-10-08	--	590	--	--	--	--
	77-04-28	--	600	--	--	--	--
445000098225501	76-10-08	--	210	--	--	--	--
	77-04-28	--	200	--	--	--	--
445535098304501	76-10-08	--	1300	--	--	--	--
	77-04-27	--	770	--	--	--	--
445900098135001	76-10-05	--	490	--	--	--	--
	77-04-28	--	490	--	--	--	--
450315098194502	76-10-05	--	1300	--	--	--	--
	77-04-28	--	1300	--	--	--	--
450920098122501	76-10-05	--	1000	--	--	--	--
	77-04-28	--	160	--	--	--	--
451023098381001	76-10-06	--	200	--	--	--	--
	77-04-27	--	170	--	--	--	--

< Less than.



## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED GALLIUM (GA) (UG/L) (01120)	DIS-SOLVED GERMANIUM (GE) (UG/L) (01125)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED MANGANESE (MN) (UG/L) (01056)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED MOLYBDENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SELENIUM (SE) (UG/L) (01145)
HAND COUNTY											
444141099204901	77-08-30	190	--	--	--	--	500	--	--	--	--
444314099265401	77-08-25	60	--	--	--	--	1000	--	--	--	--
444248099303501	77-08-25	80	--	--	--	--	370	--	--	--	--
HYDE COUNTY											
444138099295201	77-08-25	690	--	--	--	--	500	--	--	--	--
444056099272901	77-08-25	1900	--	--	--	--	1500	--	--	--	--
444051099345201	77-08-30	360	--	--	--	--	1200	--	--	--	--
444020099391801	77-08-30	2100	--	--	--	--	430	--	--	--	--
444018099365201	77-08-24	120	--	--	--	--	290	--	--	--	--
443947099353101	77-08-24	250	--	--	--	--	870	--	--	--	--
443931099391401	77-08-24	150	--	--	--	--	180	--	--	--	--
443931099391402	77-08-30	4100	--	--	--	--	360	--	--	--	--
444458099235201	77-08-25	2100	--	--	--	--	160	--	--	--	--
444406099232402	77-08-25	540	--	--	--	--	280	--	--	--	--
MINER COUNTY											
435251097301201	77-09-01	180	--	--	--	--	170	--	--	--	--
435251097301202	77-09-01	30	--	--	--	--	240	--	--	--	--
435428097393701	77-07-29	--	--	--	--	--	--	--	--	--	--
435337097472701	77-09-01	--	--	--	--	--	--	--	--	--	--
435755097392501	77-07-28	--	--	--	--	--	--	--	--	--	--
440007097510201	77-07-28	--	--	--	--	--	--	--	--	--	--
435928097484001	77-07-28	--	--	--	--	--	--	--	--	--	--
440557097495001	77-07-28	--	--	--	--	--	--	--	--	--	--
440127097495001	77-07-28	--	--	--	--	--	--	--	--	--	--
440218097494801	77-07-28	--	--	--	--	--	--	--	--	--	--
MOODY COUNTY											
434508096372701	76-10-14	10	<5	<10	<8	80	150	.0	8	7	--
	77-04-19	--	--	--	--	--	--	.0	--	--	--
434414096380301	76-10-14	20	<5	<10	<7	50	<5	.0	<5	<5	--
434432096364201	76-10-14	60	<7	<20	<10	50	<7	.0	<7	9	--
	77-04-19	--	--	--	--	--	--	.0	--	--	--
434435096374802	76-10-14	20	<8	<20	38	100	240	.0	9	<8	--
	77-04-20	--	--	--	--	--	--	.0	--	--	--
434357096364201	76-10-13	2000	<5	<10	<7	80	10	.0	<5	15	--
434429096361801	76-10-14	20	<4	<10	<7	60	<4	.0	6	6	--
434400096362201	76-10-13	80	<9	<20	23	40	20	.0	<9	<9	--
434400096362201	77-04-20	--	--	--	--	--	--	.9	--	--	--
434332096371501	76-10-13	570	<5	<10	<7	80	230	.0	41	<5	--
	77-04-20	--	--	--	--	--	--	.0	--	--	--
434339096381101	76-10-13	1300	<10	<30	<16	130	900	.0	<11	<11	--
	77-04-20	--	--	--	--	--	--	.0	--	--	--
	77-04-20	4600	--	--	--	--	1200	--	--	--	--
SPINK COUNTY											
443731098203001	76-10-08	450	--	--	--	--	310	--	--	--	--
	77-04-28	480	--	--	--	--	320	--	--	--	--
445000098225501	76-10-08	2800	--	--	--	--	1900	--	--	--	--
	77-04-28	7000	--	--	--	--	3500	--	--	--	--
445535098304501	76-10-08	220	--	--	--	--	1600	--	--	--	--
	77-04-27	20	--	--	--	--	3000	--	--	--	--
445900098135001	76-10-05	2600	--	--	--	--	3100	--	--	--	--
	77-04-28	2800	--	--	--	--	3300	--	--	--	--
450315098194502	76-10-05	27000	--	--	--	--	1300	--	--	--	--
	77-04-28	29000	--	--	--	--	1500	--	--	--	--
450920098122501	76-10-05	1800	--	--	--	--	1200	--	--	--	--
	77-04-28	4100	--	--	--	--	2300	--	--	--	--
451023098381001	76-10-06	140	--	--	--	--	0	--	--	--	--
	77-04-27	210	--	--	--	--	10	--	--	--	--

&lt; Less than.



QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRONTIUM (SR) (UG/L) (01080)	DIS-SOLVED TIN (SN) (UG/L) (01100)	DIS-SOLVED TITANIUM (TI) (UG/L) (01150)	DIS-SOLVED VANADIUM (V) (UG/L) (01085)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED ZIRCONIUM (ZR) (UG/L) (01160)	CYANIDE (CN) (MG/L) (00720)
HAND COUNTY									
444141099204901	77-08-30	--	--	--	--	--	--	--	--
444314099265401	77-08-25	--	--	--	--	--	--	--	--
444248099303501	77-08-25	--	--	--	--	--	--	--	--
HYDE COUNTY									
444138099295201	77-08-25	--	--	--	--	--	--	--	--
444056099272901	77-08-25	--	--	--	--	--	--	--	--
444051099345201	77-08-30	--	--	--	--	--	--	--	--
444020099391801	77-08-30	--	--	--	--	--	--	--	--
444018099365201	77-08-24	--	--	--	--	--	--	--	--
443947099353101	77-08-24	--	--	--	--	--	--	--	--
443931099391401	77-08-24	--	--	--	--	--	--	--	--
443931099391402	77-08-30	--	--	--	--	--	--	--	--
444458099235201	77-08-25	--	--	--	--	--	--	--	--
444406099232402	77-08-25	--	--	--	--	--	--	--	--
MINER COUNTY									
435251097301201	77-09-01	--	--	--	--	--	--	--	--
435251097301202	77-09-01	--	--	--	--	--	--	--	--
435428097393701	77-07-29	--	--	--	--	--	--	--	--
435337097472701	77-09-01	--	--	--	--	--	--	--	--
435755097392501	77-07-28	--	--	--	--	--	--	--	--
440007097510201	77-07-28	--	--	--	--	--	--	--	--
435928097484001	77-07-28	--	--	--	--	--	--	--	--
440557097495001	77-07-28	--	--	--	--	--	--	--	--
440127097495001	77-07-28	--	--	--	--	--	--	--	--
440218097494801	77-07-28	--	--	--	--	--	--	--	--
MOODY COUNTY									
434508096372701	76-10-14	<3	290	<8	<3	<10	60	<10	.01
	77-04-19	--	--	--	--	--	--	--	.00
434414096380301	76-10-14	<2	180	<7	<2	<9.3	70	<9	.00
434432096364201	76-10-14	<3	310	<10	<3	<13	20	<10	.02
	77-04-19	--	--	--	--	--	--	--	.00
434435096374802	76-10-14	<4	890	50	<4	<16	130	<20	.00
	77-04-20	--	--	--	--	--	--	--	.00
434357096364201	76-10-13	<2	180	<7	<2	<9.4	1500	<9	.00
434429096361801	76-10-14	<2	480	<7	<2	<8.8	140	<9	.00
434400096362201	76-10-13	<4	360	<13	40	<17	30	<20	.07
434400096362201	77-04-20	--	--	--	--	--	--	--	.03
434332096371501	76-10-13	<2	450	<7	20	<9.6	1200	<10	.00
	77-04-20	--	--	--	--	--	--	--	.00
434339096381101	76-10-13	<5	1100	<16	<5	<21	570	<20	.00
	77-04-20	--	--	--	--	--	--	--	.00
	77-04-20	--	--	--	--	--	--	--	--
SPINK COUNTY									
443731098203001	76-10-08	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
445000098225501	76-10-08	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
445535098304501	76-10-08	--	--	--	--	--	--	--	--
	77-04-27	--	--	--	--	--	--	--	--
445900098135001	76-10-05	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
450315098194502	76-10-05	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
450920098122501	76-10-05	--	--	--	--	--	--	--	--
	77-04-28	--	--	--	--	--	--	--	--
451023098381001	76-10-06	--	--	--	--	--	--	--	--
	77-04-27	--	--	--	--	--	--	--	--

< Less than.

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	LOCAL IDENT- IFIER	GEO- LOGIC UNIT	TOTAL DEPTH OF WELL (FT) (72008)	DATE OF SAMPLE	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)
SULLY COUNTY										
443546099434902	113N74W15CA8C	--	--	77-08-30	1480	7.1	11.0	700	250	
443523099441201	113N74W21AAAA	--	56	77-08-30	2000	7.4	10.0	1000	770	
443437099440801	113N74W22CCCC	--	30	77-08-24	960	7.5	13.0	470	180	
443441099425001	113N74W23CCCA	--	64	77-08-24	1800	7.2	11.0	930	440	
443431099410901	113N74W25BAAA	--	40	77-08-30	1850	7.3	12.0	900	510	
443345099425901	113N74W27DDDD	--	52	77-08-24	1520	7.2	11.0	630	280	
443339099460201	113N74W32BAAA	--	28	77-08-24	420	7.8	13.0	200	5	
444008099463401	114N74W20C8CB	--	12	77-08-24	1650	7.6	14.5	720	400	
443953099432001	114N74W22DCC	--	132	77-08-24	2500	7.5	11.0	490	0	
WALWORTH COUNTY										
451537099483101	121N74W33B88B	112BWDL	24	77-05-24	783	--	11.0	310	10	
451455099464101	121N74W33DCCB	--	--	76-10-13	910	8.2	11.0	390	73	
451843100033001	121N76W 7ADDD	112PLSC	75	77-05-25	885	--	9.5	300	10	
451902099585801	121N76W11A88B	--	--	76-10-13	860	8.0	9.0	200	0	
451536100035401	121N76W31A8AC	221SNDC	--	76-11-04	2250	7.3	23.5	1200	1100	
451957100071301	121N77W 3AADA	--	--	76-10-13	1060	7.6	9.5	290	0	
452339099434601	122N74W11DDAB	112BWDL	15	77-05-24	--	--	8.5	310	52	
452412099424602	122N74W12A8DD2	112BWDL	47	77-05-26	580	--	9.5	300	100	
452326099500001	122N75W13AAAA	112PLSC	42	77-05-25	--	--	8.5	430	58	
452513100081801	122N77W 3B88A	--	--	76-11-03	2000	7.2	9.5	640	48	
452937099434101	123N74W 2DDDD	112BWDL	12	77-05-24	1180	--	7.5	520	240	
453017099530401	123N75W 3BADCC	--	--	76-10-19	1150	7.5	10.0	590	190	
453008099530901	123N75W 3BD8D	--	--	76-10-19	1240	7.5	10.0	660	290	
452729100031701	123N76W208CDC	--	--	76-11-03	2600	7.2	9.5	990	400	
452653100033501	123N76W30AAD8	217FLRV	2357	76-11-03	2250	7.8	25.5	1200	1000	
453336099454301	124N74W158DB	221SNDC	2419	77-06-09	2440	--	20.5	1300	1100	
453027099505001	124N75W35DDDD	112PLSC	110	77-05-25	975	--	8.5	610	210	
453451099595001	124N76W 3DDDD1	112GRND	202	77-05-25	1700	--	10.0	410	0	
453451099595002	124N76W 3DDDD2	112SL8Y	36	77-05-25	805	--	9.0	260	0	
453356100040601	124N76W 7DCCC	112SL8Y	21	77-05-25	710	--	9.0	260	0	
453432100024901	124N76W 8ACBB	--	--	76-10-20	820	8.1	10.0	360	88	
453425100024901	124N76W 8ACCC	--	--	76-10-20	900	7.6	10.0	390	110	
453427100021501	124N76W 9BC8C	112SL8Y	22	77-05-25	735	--	8.5	340	110	
453452100065501	124N77W 2CDDD	112GRND	235	77-05-26	1960	--	10.0	170	0	
453354100071001	124N77W1488BA	112GRND	96	77-05-26	1120	--	10.0	210	0	
453027099044501	124N77W36DDDD	112PLSC	21	77-05-26	1000	--	9.5	290	93	
453240100182001	124N78W19AADA	112GRND	62	77-05-26	1790	--	10.0	170	0	
453306100143301	124N78W2388BB	112GRND	172	77-05-26	3550	--	10.0	1700	1300	
453210100161801	124N78W28A8BA	--	--	76-10-20	2000	7.5	10.0	230	0	
453157100161801	124N78W28ACBA	--	--	76-10-20	1950	7.5	15.0	220	0	
453031100184801	124N78W31DCCC	112GRND	115	77-05-26	2130	--	9.5	200	0	
452555100324401	124N79W19ADCC	112PLSC	80	77-06-09	2230	--	11.0	1200	760	

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SOHP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)
SULLY COUNTY												
443546099434902		77-08-30	180	60	91	22	1.5	8.0	550	0	450	400
443523099441201		77-08-30	260	96	48	9	.6	13	340	0	280	550
443437099440801		77-08-24	120	41	23	10	.5	6.1	350	0	290	230
443441099425001		77-08-24	240	80	66	13	.9	9.5	600	0	490	550
443431099410901		77-08-30	210	90	88	17	1.3	13	470	0	390	440
443345099425901		77-08-24	160	56	90	23	1.6	9.3	430	0	350	410
443339099460201		77-08-24	53	17	5.0	5	.2	3.8	240	0	200	19
444008099463401		77-08-24	130	97	89	21	1.4	8.9	400	0	330	390
443953099432001		77-08-24	130	41	440	65	8.6	14	760	0	620	690
WALWORTH COUNTY												
451537099483101		77-05-24	86	22	59	29	1.5	7.6	360	--	300	120
451455099464101		76-10-13	110	27	50	22	1.1	7.4	382	0	313	140
451843100033001		77-05-25	76	26	93	40	2.4	8.7	350	--	290	160
451902099585801		76-10-13	49	19	110	53	3.4	10	423	0	347	76
451536100035401		76-11-04	320	99	120	17	1.5	24	171	0	140	1300
451957100071301		76-10-13	75	25	110	44	2.8	9.0	387	0	317	220
452339099434601		77-05-24	83	26	18	11	.4	6.2	320	--	260	78
452412099424602		77-05-26	80	24	12	8	.3	4.6	240	--	200	98
452326099500001		77-05-25	110	37	52	20	1.1	10	450	--	370	170
452513100081801		76-11-03	170	53	250	45	4.3	16	725	0	595	610
452937099434101		77-05-24	96	67	59	19	1.1	26	340	--	280	290
453017099530401		76-10-19	150	53	42	13	.8	17	496	0	407	310
453008099530901		76-10-19	170	58	45	13	.8	18	461	0	378	350
452729100031701		76-11-03	270	76	320	41	4.4	27	717	0	588	1100
452653100033501		76-11-03	310	89	190	26	2.4	24	178	0	146	1300
453336099454301		77-06-09	360	94	120	17	1.5	21	180	--	150	1300
453027099505001		77-05-25	140	62	34	11	.6	20	480	--	390	240
453451099595001		77-05-25	110	32	290	60	6.3	16	690	--	570	410
453451099595002		77-05-25	75	23	75	36	1.9	5.7	370	--	300	120
453356100040601		77-05-25	67	22	58	32	1.6	6.6	340	--	280	100
453432100024901		76-10-20	84	37	50	23	1.1	8.5	334	0	274	220
453425100024901		76-10-20	88	42	60	24	1.3	9.6	349	0	286	260
453427100021501		77-05-25	89	28	30	16	.7	7.4	280	--	230	160
453452100065501		77-05-26	42	17	400	82	13	12	830	--	680	340
453354100071001		77-05-26	58	17	170	62	5.0	10	500	--	410	170
453027099044501		77-05-26	70	28	95	41	2.4	7.8	240	--	200	270
453240100182001		77-05-26	45	13	350	81	12	7.5	500	--	410	510
453306100143301		77-05-26	450	140	300	27	3.2	19	530	--	430	1700
453210100161801		76-10-20	62	19	480	81	14	12	880	0	722	510
453157100161801		76-10-20	60	18	480	81	14	11	874	0	717	510
453031100184801		77-05-26	51	17	440	82	14	10	810	--	660	430
452555100324401		77-06-09	330	83	110	17	1.4	8.6	500	--	410	760

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED CHLORIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUORIDE (F) (MG/L) (00950)	BROMIDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	TOTAL NITRATE (N) (MG/L) (00620)	TOTAL NITRITE (N) (MG/L) (00615)
SULLY COUNTY											
443546099434902	77-08-30	12	.3	--	--	28	--	1050	1.43	--	--
443523099441201	77-08-30	73	.1	--	--	27	--	1470	2.00	--	--
443437099440801	77-08-24	9.3	.2	--	--	23	--	630	.86	--	--
443441099425001	77-08-24	24	.3	--	--	29	--	1310	1.78	--	--
443431099410901	77-08-30	70	.1	--	--	30	--	1330	1.81	--	--
443345099425901	77-08-24	35	.2	--	--	26	--	1030	1.40	--	--
443339099460201	77-08-24	4.6	.1	--	--	27	--	249	.34	--	--
444008099463401	77-08-24	100	.3	--	--	25	--	1150	1.56	--	--
443953099432001	77-08-24	56	.3	--	--	28	--	1780	2.42	--	--
WALWORTH COUNTY											
451537099483101	77-05-24	11	--	--	--	--	509	--	.69	--	--
451455099464101	76-10-13	21	.3	--	--	28	--	576	.78	--	--
451843100033001	77-05-25	25	--	--	--	--	590	--	.80	--	--
451902099585801	76-10-13	15	.7	--	--	28	--	527	.72	--	--
451536100035401	76-11-04	66	--	--	--	--	2200	--	2.99	--	--
451957100071301	76-10-13	7.2	.4	--	--	28	--	677	.92	--	--
452339099434601	77-05-24	3.5	--	--	--	--	394	--	.54	--	--
452412099424602	77-05-26	1.6	--	--	--	--	383	--	.52	--	--
452326099500001	77-05-25	3.9	--	--	--	--	630	--	.86	--	--
452513100081801	76-11-03	27	--	--	--	--	1530	--	2.08	--	--
452937099434101	77-05-24	38	--	--	--	--	820	--	1.12	--	--
453017099530401	76-10-19	4.6	.2	--	--	53	--	876	1.19	--	--
453008099530901	76-10-19	5.2	.2	--	--	53	--	929	1.26	--	--
452729100031701	76-11-03	26	--	--	--	--	2300	--	3.13	--	--
452653100033501	76-11-03	110	3.0	--	--	13	--	2140	2.91	--	--
453336099454301	77-06-09	63	--	--	--	--	2230	--	3.03	--	--
453027099505001	77-05-25	4.0	--	--	--	--	810	--	1.10	--	--
453451099595001	77-05-25	20	--	--	--	--	1270	--	1.73	--	--
453451099595002	77-05-25	12	--	--	--	--	517	--	.70	--	--
453356100040601	77-05-25	4.8	--	--	--	--	448	--	.61	--	--
453432100024901	76-10-20	3.3	.2	--	--	28	--	598	.81	--	--
453425100024901	76-10-20	3.9	.2	--	--	29	--	668	.91	--	--
453427100021501	77-05-25	5.0	--	--	--	--	489	--	.67	--	--
453452100065501	77-05-26	35	--	--	--	--	1290	--	1.75	--	--
453354100071001	77-05-26	15	--	--	--	--	740	--	1.01	--	--
453027099044501	77-05-26	9.9	--	--	--	--	685	--	.93	--	--
453240100182001	77-05-26	14	--	--	--	--	1210	--	1.65	--	--
453306100143301	77-05-26	110	--	--	--	--	3330	--	4.53	--	--
453210100161801	76-10-20	50	.4	--	--	26	--	1600	2.18	--	--
453157100161801	76-10-20	49	.4	--	--	27	--	1590	2.16	--	--
453031100184801	77-05-26	44	--	--	--	--	1420	--	1.93	--	--
452555100324401	77-06-09	56	--	--	--	--	1820	--	2.48	--	--

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L) (00671)	DIS- SOLVED ALUM- INUM (AL) (UG/L) (01106)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	DIS- SOLVED BARIUM (BA) (UG/L) (01005)	DIS- SOLVED BERYL- LIUM (BE) (UG/L) (01010)
SULLY COUNTY												
443546099434902		77-08-30	--	.07	--	--	.02	.02	--	--	--	--
443523099441201		77-08-30	--	52	--	--	.06	.04	--	--	--	--
443437099440801		77-08-24	--	1.1	--	--	.02	.02	--	--	--	--
443441099425001		77-08-24	--	3.2	--	--	.02	.03	--	--	--	--
443431099410901		77-08-30	--	36	--	--	.03	.02	--	--	--	--
443345099425901		77-08-24	--	6.7	--	--	.02	.02	--	--	--	--
443339099460201		77-08-24	--	.09	--	--	.12	.09	--	--	--	--
444008099463401		77-08-24	--	25	--	--	.05	.03	--	--	--	--
443953099432001		77-08-24	--	1.0	--	--	.05	.04	--	--	--	--
WALWORTH COUNTY												
451537099483101		77-05-24	--	.24	--	.10	--	--	--	--	--	--
451455099464101		76-10-13	--	.44	--	--	.00	.04	--	--	--	--
451843100033001		77-05-25	--	.03	--	.03	--	--	--	--	--	--
451902099585801		76-10-13	--	1.8	--	--	.07	.10	--	--	--	--
451536100035401		76-11-04	--	.01	--	--	--	--	--	--	--	--
451957100071301		76-10-13	--	1.6	--	--	.19	.04	--	--	--	--
452339099434601		77-05-24	--	.82	--	.03	--	--	--	--	--	--
452412099424602		77-05-26	--	4.1	--	.03	--	--	--	--	--	--
452326099500001		77-05-25	--	.01	--	.06	--	--	--	--	--	--
452513100081801		76-11-03	--	.20	--	--	--	--	--	--	--	--
452937099434101		77-05-24	--	4.8	--	.09	--	--	--	--	--	--
453017099530401		76-10-19	--	.34	--	--	.04	.06	--	--	--	--
453008099530901		76-10-19	--	.28	--	--	.04	.06	--	--	--	--
452729100031701		76-11-03	--	.01	--	--	--	--	--	--	--	--
452653100033501		76-11-03	--	.02	--	.00	--	.04	0	1	--	--
453336099454301		77-06-09	--	.62	--	.00	--	--	--	--	--	--
453027099505001		77-05-25	--	.03	--	.07	--	--	--	--	--	--
453451099595001		77-05-25	--	.03	--	.08	--	--	--	--	--	--
453451099595002		77-05-25	--	.06	--	.03	--	--	--	--	--	--
453356100040601		77-05-25	--	.00	--	.08	--	--	--	--	--	--
453432100024901		76-10-20	--	.02	--	--	.06	.03	--	--	--	--
453425100024901		76-10-20	--	.09	--	--	.05	.06	--	--	--	--
453427100021501		77-05-25	--	.05	--	.12	--	--	--	--	--	--
453452100065501		77-05-26	--	.01	--	.09	--	--	--	--	--	--
453354100071001		77-05-26	--	.01	--	.03	--	--	--	--	--	--
453027099044501		77-05-26	--	.35	--	.12	--	--	--	--	--	--
453240100182001		77-05-26	--	.14	--	.05	--	--	--	--	--	--
453306100143301		77-05-26	--	.02	--	.07	--	--	--	--	--	--
453210100161801		76-10-20	--	.10	--	--	.01	.04	--	--	--	--
453157100161801		76-10-20	--	.10	--	--	.01	.03	--	--	--	--
453031100184801		77-05-26	--	.02	--	.10	--	--	--	--	--	--
452555100324401		77-06-09	--	22	--	.00	--	--	--	--	--	--

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED BISMUTH (BI) (UG/L) (01015)	DIS- SOLVED BORON (B) (UG/L) (01020)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	DIS- SOLVED COPPER (CU) (UG/L) (01040)
SULLY COUNTY								
443546099434902		77-08-30	--	250	--	--	--	--
443523099441201		77-08-30	--	130	--	--	--	--
443437099440801		77-08-24	--	110	--	--	--	--
443441099425001		77-08-24	--	240	--	--	--	--
443431099410901		77-08-30	--	180	--	--	--	--
443345099425901		77-08-24	--	190	--	--	--	--
443339099460201		77-08-24	--	40	--	--	--	--
444008099463401		77-08-24	--	210	--	--	--	--
443953099432001		77-08-24	--	980	--	--	--	--
WALWORTH COUNTY								
451537099483101		77-05-24	--	180	--	--	--	--
451455099464101		76-10-13	--	170	--	--	--	--
451843100033001		77-05-25	--	160	--	--	--	--
451902099585801		76-10-13	--	280	--	--	--	--
451536100035401		76-11-04	--	270	--	--	--	--
451957100071301		76-10-13	--	240	--	--	--	--
452339099434601		77-05-24	--	80	--	--	--	--
452412099424602		77-05-26	--	60	--	--	--	--
452326099500001		77-05-25	--	160	--	--	--	--
452513100081801		76-11-03	--	890	--	--	--	--
452937099434101		77-05-24	--	80	--	--	--	--
453017099530401		76-10-19	--	200	--	--	--	--
453008099530901		76-10-19	--	210	--	--	--	--
452729100031701		76-11-03	--	780	--	--	--	--
452653100033501		76-11-03	--	340	1	0	0	0
453336099454301		77-06-09	--	240	--	--	--	--
453027099505001		77-05-25	--	120	--	--	--	--
453451099595001		77-05-25	--	1100	--	--	--	--
453451099595002		77-05-25	--	290	--	--	--	--
453356100040601		77-05-25	--	160	--	--	--	--
453432100024901		76-10-20	--	120	--	--	--	--
453425100024901		76-10-20	--	140	--	--	--	--
453427100021501		77-05-25	--	80	--	--	--	--
453452100065501		77-05-26	--	1000	--	--	--	--
453354100071001		77-05-26	--	350	--	--	--	--
453027099044501		77-05-26	--	150	--	--	--	--
453240100182001		77-05-26	--	620	--	--	--	--
453306100143301		77-05-26	--	720	--	--	--	--
453210100161801		76-10-20	--	1300	--	--	--	--
453157100161801		76-10-20	--	1400	--	--	--	--
453031100184801		77-05-26	--	1200	--	--	--	--
452555100324401		77-06-09	--	250	--	--	--	--



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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS-	DIS-	DIS-	DIS-	DIS-	DIS-	TOTAL MERCURY (UG/L) (71900)	DIS-	DIS-	DIS-
			SOLVED IRON (FE) (01046)	SOLVED GALLIUM (GA) (01120)	SOLVED GER- MANIUM (GE) (01125)	SOLVED LEAD (PB) (01049)	SOLVED LITHIUM (LI) (01130)	SOLVED MAN- GANESE (MN) (01056)		SOLVED MOLYB- DENUM (MO) (01060)	SOLVED NICKEL (NI) (01065)	SOLVED SELE- NIUM (SE) (01145)
SULLY COUNTY												
443546099434902	77-08-30	370	--	--	--	--	--	590	--	--	--	--
443523099441201	77-08-30	170	--	--	--	--	--	20	--	--	--	--
443437099440801	77-08-24	20	--	--	--	--	--	120	--	--	--	--
443441099425001	77-08-24	30	--	--	--	--	--	20	--	--	--	--
443431099410901	77-08-30	50	--	--	--	--	--	10	--	--	--	--
443345099425901	77-08-24	130	--	--	--	--	--	1400	--	--	--	--
443339099460201	77-08-24	20	--	--	--	--	--	0	--	--	--	--
444008099463401	77-08-24	20	--	--	--	--	--	510	--	--	--	--
443953099432001	77-08-24	40	--	--	--	--	--	860	--	--	--	--
WALWORTH COUNTY												
451537099483101	77-05-24	--	--	--	--	--	--	--	--	--	--	--
451455099466101	76-10-13	60	--	--	--	--	--	1500	--	--	--	--
451843100033001	77-05-25	--	--	--	--	--	--	--	--	--	--	--
451902099585801	76-10-13	830	--	--	--	--	--	990	--	--	--	--
451536100035401	76-11-04	--	--	--	--	--	--	180	--	--	--	--
451957100071301	76-10-13	3300	--	--	--	--	--	1100	--	--	--	--
452339099434601	77-05-24	--	--	--	--	--	--	--	--	--	--	--
452412099424602	77-05-26	--	--	--	--	--	--	--	--	--	--	--
452326099500001	77-05-25	--	--	--	--	--	--	--	--	--	--	--
452513100081801	76-11-03	--	--	--	--	--	--	2200	--	--	--	--
452937099434101	77-05-24	--	--	--	--	--	--	--	--	--	--	--
453017099530401	76-10-19	230	--	--	--	--	--	--	--	--	--	--
453008099530901	76-10-19	680	--	--	--	--	--	--	--	--	--	--
452729100031701	76-11-03	--	--	--	--	--	--	3200	--	--	--	--
452653100033501	76-11-03	1200	--	--	--	1	180	190	.0	14	4	0
453336099454301	77-06-09	7600	--	--	--	--	--	--	--	--	--	--
453027099505001	77-05-25	--	--	--	--	--	--	--	--	--	--	--
453451099595001	77-05-25	--	--	--	--	--	--	--	--	--	--	--
453451099595002	77-05-25	--	--	--	--	--	--	--	--	--	--	--
453356100040601	77-05-25	--	--	--	--	--	--	--	--	--	--	--
453432100024901	76-10-20	2000	--	--	--	--	--	--	--	--	--	--
453425100024901	76-10-20	2200	--	--	--	--	--	--	--	--	--	--
453427100021501	77-05-25	--	--	--	--	--	--	--	--	--	--	--
453452100065501	77-05-26	--	--	--	--	--	--	--	--	--	--	--
453354100071101	77-05-26	--	--	--	--	--	--	--	--	--	--	--
45302709944501	77-05-26	--	--	--	--	--	--	--	--	--	--	--
453240100182001	77-05-26	--	--	--	--	--	--	--	--	--	--	--
453306100143301	77-05-26	--	--	--	--	--	--	--	--	--	--	--
453210100161801	76-10-20	60	--	--	--	--	--	--	--	--	--	--
453157100161801	76-10-20	30	--	--	--	--	--	--	--	--	--	--
453031100184801	77-05-26	--	--	--	--	--	--	--	--	--	--	--
452555100324401	77-06-09	90	--	--	--	--	--	--	--	--	--	--

## QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

[illegible]

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# FACTORS FOR CONVERTING U.S. CUSTOMARY UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the U.S. customary units published herein to the International System of Units (SI). Subsequent reports will contain both the U.S. customary and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply U.S. customary units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons



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