STREAMFLOW AND SEDIMENT DATA COLLECTED AT SEVEN STREAM-GAGING STATIONS IN THE JAMES RIVER BASIN DOWNSTREAM FROM FORESTBURG, SOUTH DAKOTA, FROM OCTOBER 1, 1981, TO SEPTEMBER 30, 1982

By John R. Little

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INTRODUCTION

This interim report is a compilation of the streamflow and suspended-sediment data collected from October 1, 1981, to September 30, 1982, at seven gaging stations in the James River basin downstream from Forestburg, S. Dak (fig. 1). Three of the gaging stations are on the main stem and four are on tributary streams (fig. 2). These are the results from the first year of a two-year study in cooperation with the Lower James Conservancy Sub-District.

The data listed in the tables (tables 1-15) and figures (figs. 3-23) include location, a summary of the streamflow for the period of record, tables listing the daily streamflow, mean suspended-sediment concentration, and suspended-sediment discharge; and figures showing the daily streamflow, mean suspended-sediment concentration and suspended-sediment discharge for each gaging station. Also included are part of the water-quality analyses from samples collected at the James River near Scotland gaging station.

The purpose of the study is to determine the rates of suspended sediment discharge at the mouths of selected tributaries to the James River. Sandbars are developing in the river and this data is to be used in studies analyzing sources of the sediment, and tributary sediment loads relative to those carried by the main stem.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and sediment, as used in this report, are defined below.

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.

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.

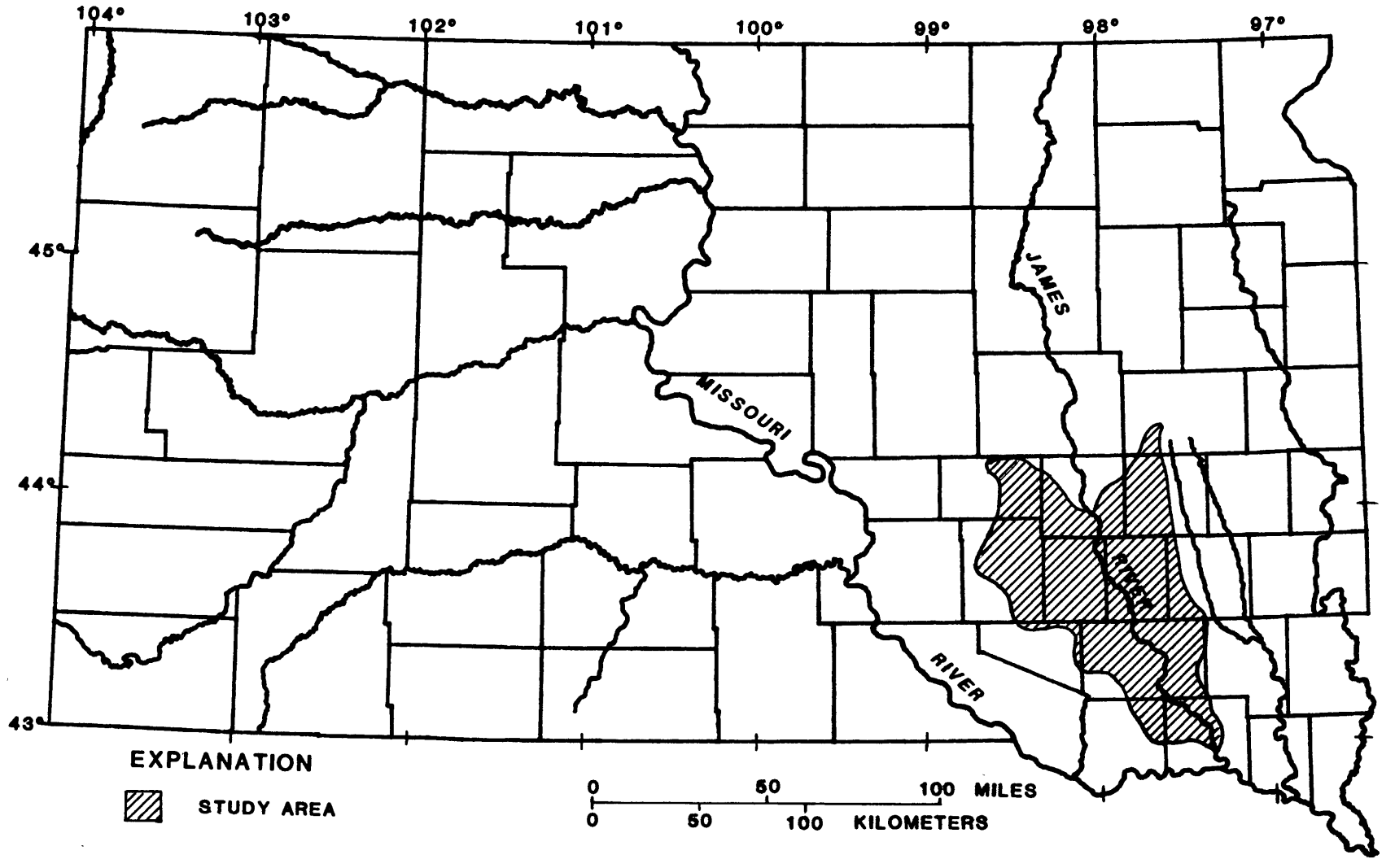

Figure 1.--Location of study area in South Dakota.

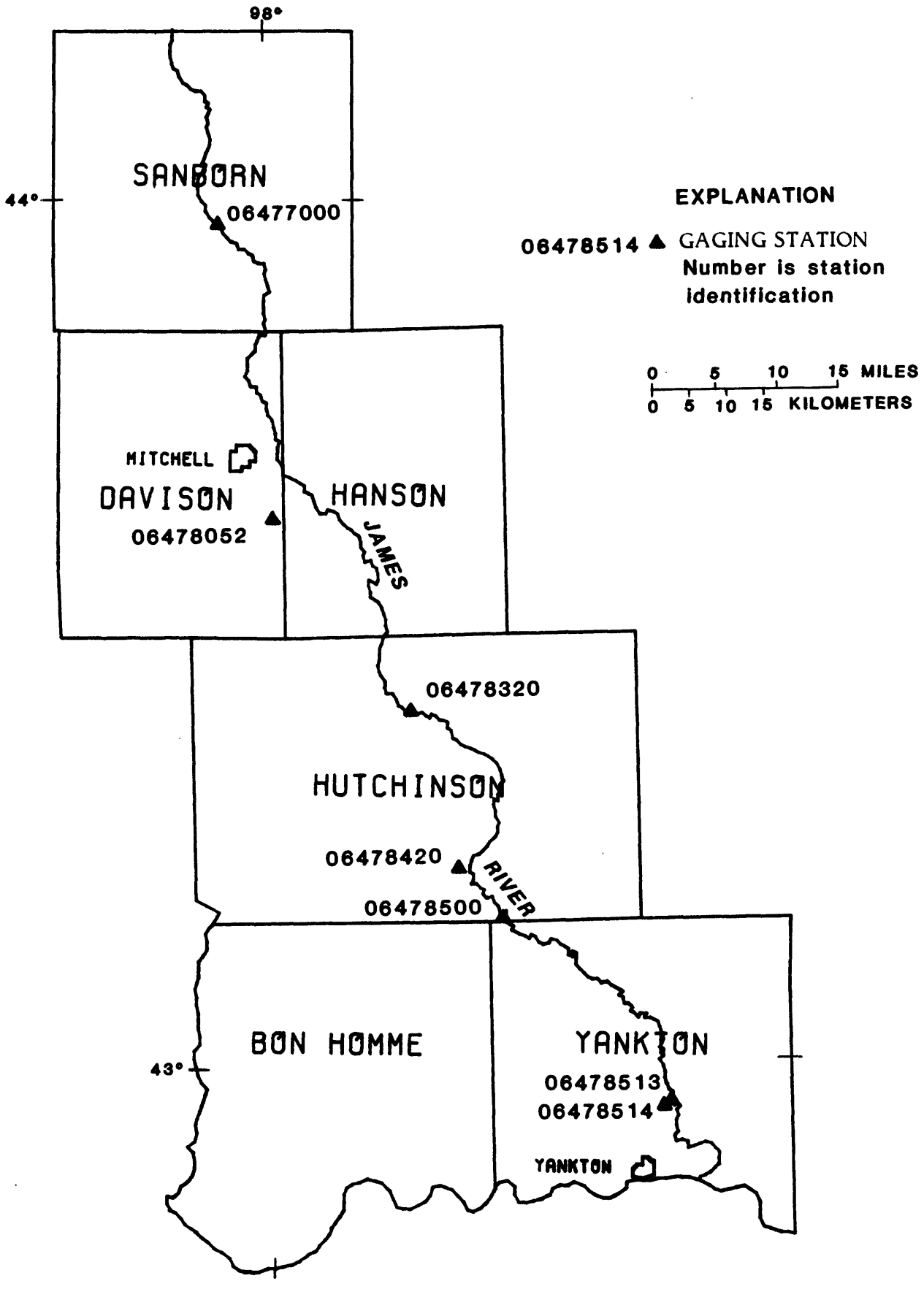

Figure 2.--Location of gaging stations in study area.

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 $44.5^{\circ}C \pm 0.2^{\circ}C$ 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 $35^{\circ}C \pm 1.0^{\circ}C$ on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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.

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

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

Cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 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 material in a representative water sample which passes through a 0.45 µm membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determination of "dissolved" constituents are made on subsamples of the filtrate.

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 ($CaCO_3$).

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.

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

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

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

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.

Particle-size is the diameter, in millimeters (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.

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.

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.

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 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.

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

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.

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 measure ments of discharge of streams. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. 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 U.S. Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 2175, 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 most 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 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.

The data in this report comprise a description of the station and tabulations of daily and monthly figures. Tables showing the daily discharge and monthly and yearly discharge are given (tables 3, 5, 7, 9, 12, 14). 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.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS."

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."

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.

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 acre-feet (line headed "AC-FT"). In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

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^3/s; to tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures above 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the figure.

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 Geological Survey District Office in Huron, S. Dak. 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.

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 (tables 2, 4, 6, 8, 10, 11, 13, 15).

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.

Chemical quality

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey manuals, "Techniques of Water-Resources Investigations".

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.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples 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.

SELECTED REFERENCES

Carter, R. W., and Davidian, Jacob, 1968, General procedure for gaging streams: U.S. Geological Survey Techniques of Water-Resources Investigations, book 3, chap. A6, 13 p.

Rantz, S. E., and others, 1982, Measurement and computation of streamflow, v. 1, Measurement of stage and discharge: U.S. Geological Survey Water-Supply Paper 2175, 284 p.

Table 1.--Daily discharge for James River near Forestburg, SD (06477000)

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^2 (48,200 km^2), approximately, of which about 4,790 mi^2 (12,400 km^2) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,208.34 ft (368.302 m) National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Sept. 5, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm^3), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm^3), 408 mi (656 km) upstream since May 1953. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--32 years, 270 ft^3/s (7.646 m^3/s), 195,600 acre-ft/yr (241 hm^3/yr); median of yearly mean discharges, 140 ft^3/s (3.96 m^3/s), 101,000 acre-ft/yr (120 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft^3/s (354 m^3/s) Apr. 9, 1969, gage height, 17.16 ft (5.230 m); no flow at times in 1950, 1955, 1959, 1961, 1970, 1976, 1977, 1981, 1982.

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, 1,050 ft^3/s (29.7 m^3/s) at 0315 hours, May 13, and 0930 hours, May 15, gage height, 8.37 ft (2.551 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	27	.46	.02	190	163	910	907	280	85	53
2	.00	.00	24	.37	.02	160	158	928	868	264	74	70
3	.00	.00	25	.33	.01	130	201	926	825	256	72	83
4	.00	.00	22	.24	.00	150	181	919	788	241	69	87
5	.00	.00	20	.15	.00	140	276	943	751	210	63	112
6	.00	.00	17	.12	.00	120	428	975	729	196	61	126
7	.00	.00	14	.08	.00	110	723	982	718	187	52	121
8	.00	.00	12	.04	.00	100	861	980	723	178	43	113
9	.00	.00	9.2	.03	.00	90	867	962	635	170	35	103
10	.00	.00	7.1	.01	.00	80	832	962	527	158	28	92
11	.00	.00	6.2	.01	.00	70	814	989	507	153	23	89
12	.00	.00	5.2	.01	.00	64	794	1030	613	140	18	105
13	.00	.00	4.3	.00	.00	58	799	1040	709	121	16	117
14	.00	.00	3.5	.00	.00	58	790	1040	716	105	13	128
15	.00	.00	3.0	.00	.00	60	761	1040	675	114	12	121
16	.00	.00	2.4	.00	.00	64	741	1040	582	143	10	115
17	.00	.00	1.9	.00	.00	72	741	1020	462	163	8.7	108
18	.00	.00	1.6	.00	.01	90	719	1020	407	135	7.2	103
19	.00	.00	1.3	.00	1.0	100	702	1010	397	114	6.7	99
20	.00	.00	1.1	.00	9.2	95	717	1000	395	101	9.2	96
21	.00	.00	1.0	.00	14	98	748	980	393	105	13	93
22	.00	.00	.97	.00	28	101	763	959	386	104	18	89
23	.00	.00	.85	.06	40	106	777	940	376	99	23	82
24	.00	.00	.82	.07	29	92	790	916	359	86	32	78
25	.00	1.3	.77	.06	23	75	814	902	355	76	32	77
26	.00	7.6	.74	.05	20	80	849	924	346	79	41	76
27	.00	13	.74	.04	14	76	871	926	332	109	40	74
28	.00	15	.69	.04	45	95	874	911	318	128	35	67
29	.00	17	.67	.04	---	126	876	883	302	113	32	65
30	.00	22	.59	.03	---	135	884	900	292	105	33	64
31	.00	---	.56	.03	---	170	---	923	---	97	44	---
TOTAL	.00	75.90	216.20	2.27	223.26	3155	20514	29880	16393	4530	1048.8	2806
MEAN	.000	2.53	6.97	.073	7.97	102	684	964	546	146	33.8	93.5
MAX	.00	22	27	.46	45	190	884	1040	907	280	85	128
MIN	.00	.00	.56	.00	.00	58	158	883	292	76	6.7	53
AC-FT	.00	151	429	4.5	443	6260	40690	59270	32520	8990	2080	5570

CAL YR 1981 TOTAL 3549.18 MEAN 9.72 MAX 60 MIN .00 AC-FT 7040
WTR YR 1982 TOTAL 78844.43 MEAN 216 MAX 1040 MIN .00 AC-FT 156400

Table 2.--Water-quality records, daily suspended sediment, for James River near Forestburg, SD (06477000)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1982.

REMARKS.--Records poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 300 mg/L Mar. 1; minimum daily, 0 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 445 tons (404 tonnes) Apr. 9; minimum daily, 0 ton (0 tonne) on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.00	0	.00	27	90	6.6
2	.00	0	.00	.00	0	.00	24	80	5.2
3	.00	0	.00	.00	0	.00	25	60	4.1
4	.00	0	.00	.00	0	.00	22	50	3.0
5	.00	0	.00	.00	0	.00	20	40	2.2
6	.00	0	.00	.00	0	.00	17	30	1.4
7	.00	0	.00	.00	0	.00	14	20	.76
8	.00	0	.00	.00	0	.00	12	10	.32
9	.00	0	.00	.00	0	.00	9.2	8	.20
10	.00	0	.00	.00	0	.00	7.1	6	.12
11	.00	0	.00	.00	0	.00	6.2	5	.08
12	.00	0	.00	.00	0	.00	5.2	4	.06
13	.00	0	.00	.00	0	.00	4.3	3	.03
14	.00	0	.00	.00	0	.00	3.5	2	.02
15	.00	0	.00	.00	0	.00	3.0	1	.00
16	.00	0	.00	.00	0	.00	2.4	1	.00
17	.00	0	.00	.00	0	.00	1.9	1	.00
18	.00	0	.00	.00	0	.00	1.6	1	.00
19	.00	0	.00	.00	0	.00	1.3	1	.00
20	.00	0	.00	.00	0	.00	1.1	1	.00
21	.00	0	.00	.00	0	.00	1.0	1	.00
22	.00	0	.00	.00	0	.00	.97	1	.00
23	.00	0	.00	.00	0	.00	.85	1	.00
24	.00	0	.00	.00	0	.00	.82	1	.00
25	.00	0	.00	1.3	2	.00	.77	1	.00
26	.00	0	.00	7.6	5	.10	.74	1	.00
27	.00	0	.00	13	10	.35	.74	1	.00
28	.00	0	.00	15	20	.81	.69	1	.00
29	.00	0	.00	17	60	2.8	.67	1	.00
30	.00	0	.00	22	80	4.8	.59	1	.00
31	.00	0	.00	---	---	---	.56	1	.00
TOTAL	0.00	---	0.00	75.90	---	8.86	216.20	---	24.09

Table 2.—Water-quality records, daily suspended sediment, for James River near Forestburg, SD (06477000)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.46	1	.00	.02	0	.00	190	300	154
2	.37	1	.00	.02	0	.00	160	250	108
3	.33	1	.00	.01	0	.00	130	250	88
4	.28	1	.00	.00	0	.00	150	250	101
5	.15	0	.00	.00	0	.00	140	200	76
6	.12	0	.00	.00	0	.00	120	200	65
7	.08	0	.00	.00	0	.00	110	150	45
8	.04	0	.00	.00	0	.00	100	150	40
9	.03	0	.00	.00	0	.00	90	150	36
10	.01	0	.00	.00	0	.00	80	100	22
11	.01	0	.00	.00	0	.00	70	100	19
12	.01	0	.00	.00	0	.00	64	100	17
13	.00	0	.00	.00	0	.00	58	100	16
14	.00	0	.00	.00	0	.00	58	100	16
15	.00	0	.00	.00	0	.00	60	100	16
16	.00	0	.00	.00	0	.00	64	100	17
17	.00	0	.00	.00	0	.00	72	100	19
18	.00	0	.00	.01	0	.00	90	150	36
19	.00	0	.00	1.0	1	.00	100	150	40
20	.00	0	.00	9.2	5	.12	95	150	38
21	.00	0	.00	14	20	.76	98	150	40
22	.00	0	.00	28	40	3.0	101	150	41
23	.06	0	.00	40	70	7.6	106	150	43
24	.07	0	.00	29	60	4.7	92	100	25
25	.06	0	.00	23	50	3.1	75	90	18
26	.05	0	.00	20	40	2.2	80	80	17
27	.04	0	.00	14	30	1.1	76	60	12
28	.04	0	.00	45	200	24	95	80	21
29	.04	0	.00	---	---	---	126	90	31
30	.03	0	.00	---	---	---	135	100	36
31	.03	0	.00	---	---	---	170	110	50
TOTAL	2.27	---	0.00	223.26	---	46.58	3155	---	1303
		APRIL			MAY			JUNE	
1	163	120	53	910	55	135	907	70	171
2	158	130	55	928	55	138	868	75	176
3	201	140	76	926	50	125	825	75	167
4	191	150	73	919	50	124	788	75	160
5	276	150	112	943	50	127	751	75	152
6	428	160	185	975	50	132	729	75	148
7	723	180	351	982	50	133	718	75	145
8	861	190	442	980	45	119	723	75	146
9	867	190	445	962	45	117	635	70	120
10	832	150	337	962	45	117	527	60	85
11	814	100	220	989	45	120	507	60	82
12	794	90	193	1030	45	125	613	80	132
13	799	80	173	1040	45	126	709	90	172
14	790	70	149	1040	45	126	716	90	174
15	761	50	103	1040	45	126	675	85	155
16	741	50	100	1040	45	126	582	85	134
17	741	50	100	1020	45	124	462	70	87
18	719	50	97	1020	45	124	407	70	77
19	702	50	95	1010	45	123	397	70	75
20	717	50	97	1000	45	121	395	70	75
21	749	50	101	980	45	119	393	70	74
22	763	50	103	959	45	117	386	70	73
23	777	50	105	940	45	114	376	70	71
24	790	50	107	916	45	111	359	65	63
25	814	50	110	902	45	110	355	65	62
26	849	55	126	924	50	125	346	65	61
27	871	55	129	926	50	125	332	65	58
28	874	55	130	911	50	123	318	65	56
29	876	55	130	883	50	119	302	65	53
30	884	55	131	900	60	146	292	65	51
31	---	---	---	923	70	174	---	---	---
TOTAL	20514	---	4628	29880	---	3891	16393	---	3255

Table 2.--Water-quality records, daily suspended sediment, for

James River near Forestburg, SD (06477000)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	280	60	45	85	60	14	53	90	13
2	264	60	43	74	55	11	70	100	19
3	256	60	41	72	55	11	83	150	34
4	241	60	39	69	55	10	87	180	42
5	210	60	34	63	55	9.4	112	190	57
6	196	60	32	61	55	9.1	126	200	68
7	187	60	30	52	50	7.0	121	180	59
8	178	55	26	43	50	5.8	113	150	46
9	170	55	25	35	50	4.7	103	110	31
10	158	55	23	28	50	3.8	92	100	25
11	153	55	23	23	50	3.1	89	100	24
12	140	55	21	18	50	2.4	105	100	28
13	121	55	18	16	50	2.2	117	110	35
14	105	55	16	13	50	1.8	128	120	41
15	114	70	22	12	50	1.6	121	120	39
16	143	75	29	10	50	1.4	115	120	37
17	163	80	35	8.7	50	1.2	108	110	32
18	135	70	26	7.2	50	.97	103	110	31
19	114	60	18	6.7	50	.90	99	110	29
20	101	60	16	9.2	55	1.4	96	110	29
21	105	60	17	13	60	2.1	93	110	28
22	104	60	17	18	65	3.2	89	110	26
23	99	60	16	23	70	4.3	82	110	24
24	86	50	12	32	70	6.0	78	100	21
25	76	50	10	32	70	6.0	77	100	21
26	79	50	11	41	80	8.9	76	100	21
27	109	60	18	40	80	8.6	74	100	20
28	128	80	28	35	75	7.1	67	100	18
29	113	80	24	32	75	6.5	65	100	18
30	105	70	20	33	75	6.7	64	100	17
31	97	65	17	44	80	9.5	---	---	---
TOTAL	4530	---	752	1048.8	---	171.67	2806	---	933

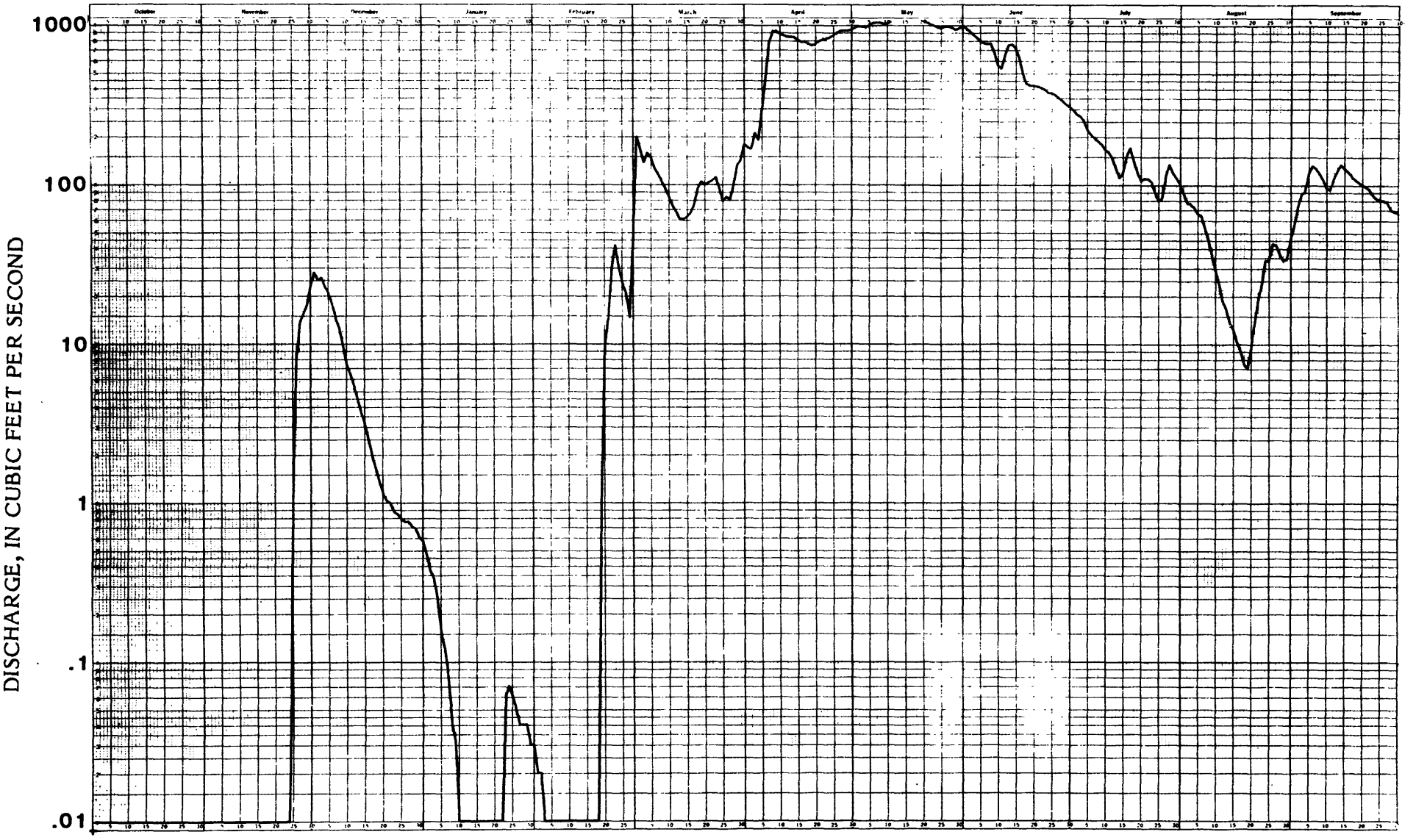

Figure 3.--Daily discharge for James River near Forestburg (06477000), October 1981 to September 1982.

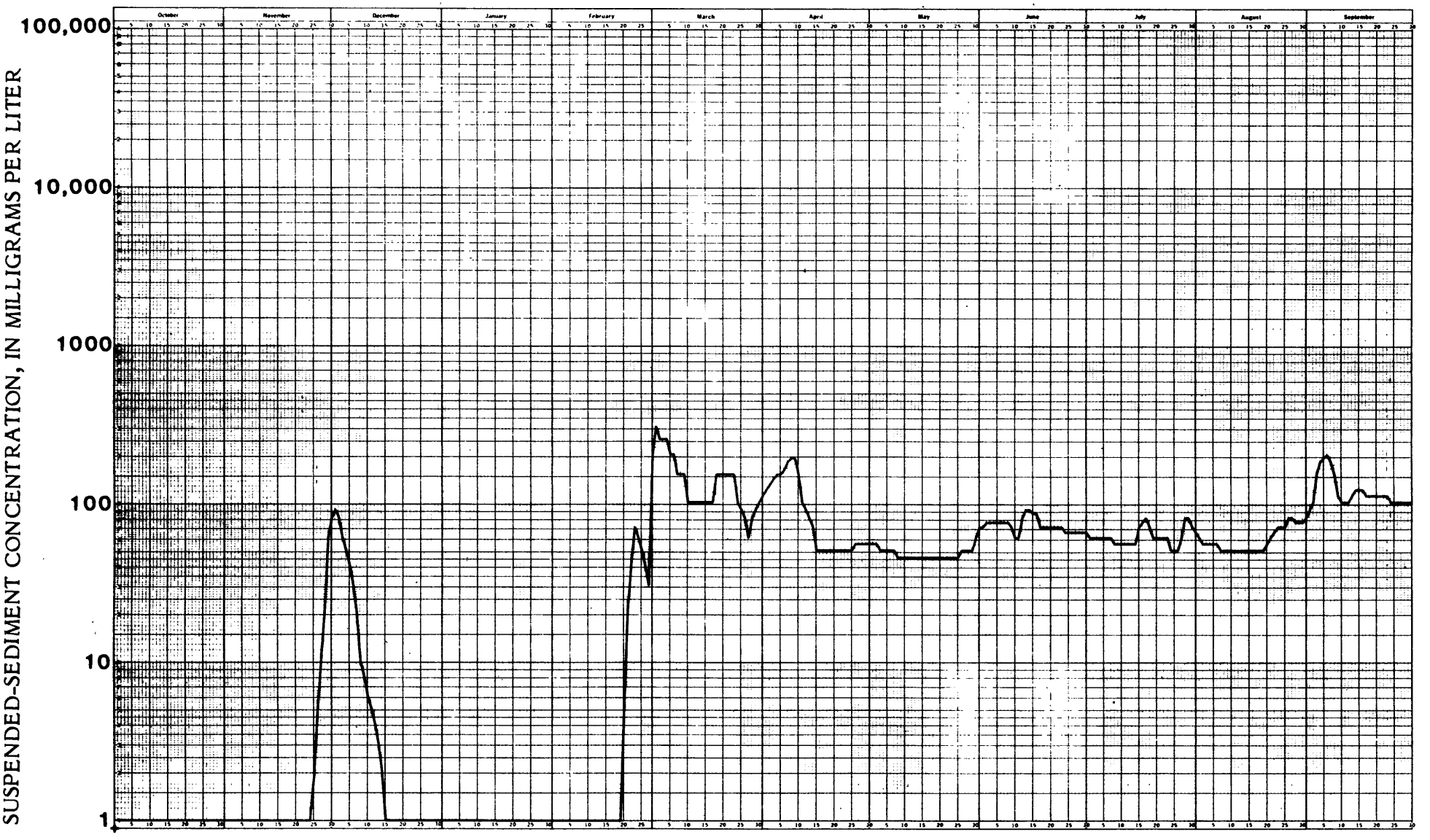

Figure 4.--Daily suspended-sediment concentration for James River near Forestburg (06477000), October 1981 to September 1982.

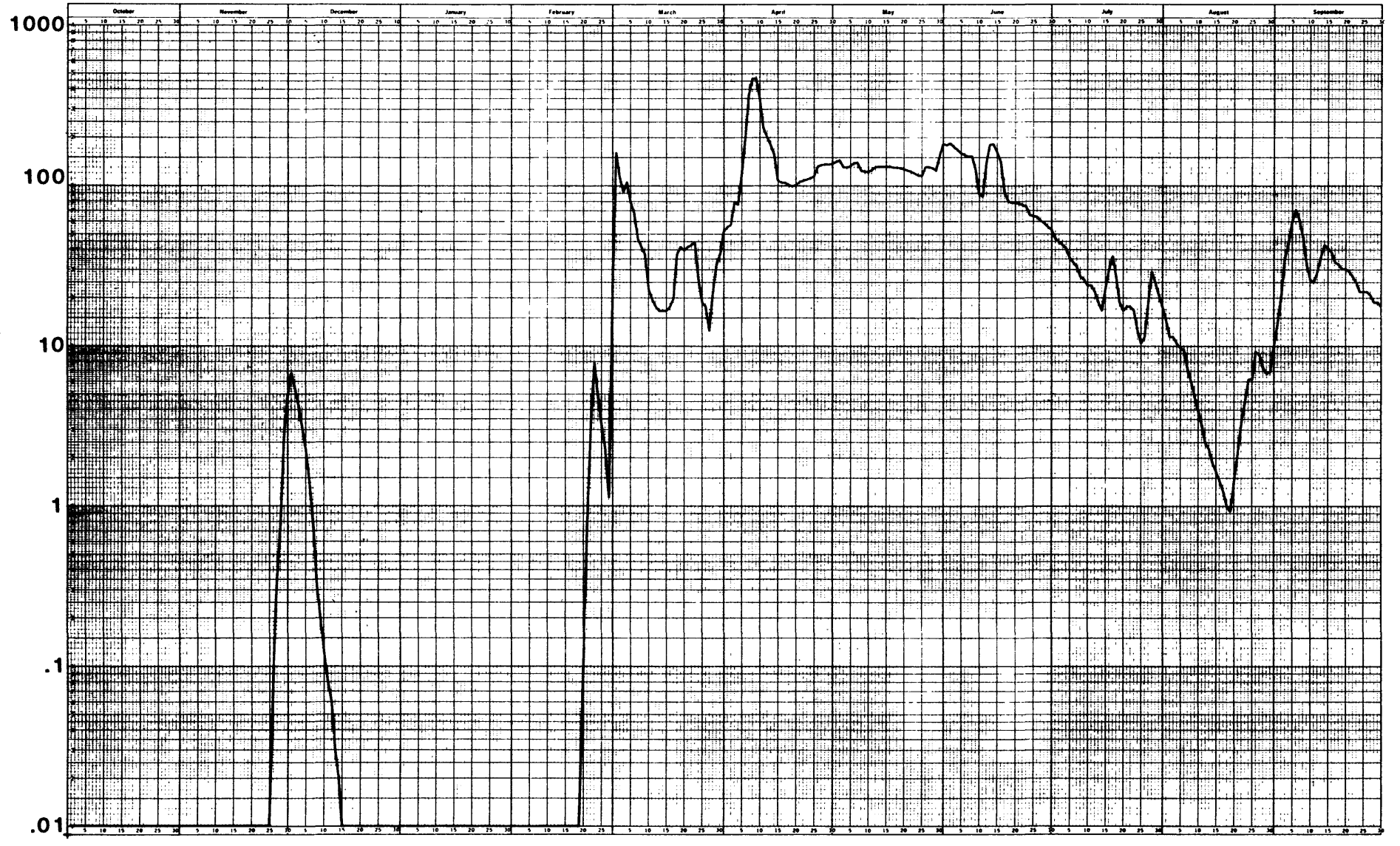

Figure 5.--Daily suspended-sediment discharge for James River near Forestburg (06477000), October 1981 to September 1982.

Table 3.--Daily discharge for Enemy Creek near Mitchell, SD (06478052)

LOCATION.--Lat 43°38'33", long 97°59'09", in NW¼NW¼ 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.

DRAINAGE AREA.--181 mi^2 (469 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,280 ft (390 m), from topographic map.

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

AVERAGE DISCHARGE.--7 years, 2.65 ft^3/s (0.075 m^3/s), 1,920 acre-ft/yr (2.37 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,390 ft^3/s (39.4 m^3/s) Mar. 19, 1978, gage height, 11.27 ft (3.435 m); maximum gage height, 12.54 ft (3.822 m) Mar. 19, 1978 (backwater from ice); no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 106 ft^3/s (3.00 m^3/s) at 1030 hours, June 1, gage height, 7.05 ft (2.149 m), no other peak above base of 20 ft^3/s (0.57 m^3/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.20	.07	.00	83	.07	.00	.00
2	.00	.00	.00	.00	.00	.17	.04	.01	58	.08	.00	.00
3	.00	.00	.00	.00	.00	.17	.04	.00	44	.11	.00	.00
4	.00	.00	.00	.00	.00	.17	.02	.00	28	.05	.00	.00
5	.00	.00	.00	.00	.00	.12	.03	.00	19	.01	.00	.00
6	.00	.00	.00	.00	.00	.12	.03	.00	18	.00	.00	.00
7	.00	.00	.00	.00	.00	.11	.03	.00	17	.00	.00	.00
8	.00	.00	.00	.00	.00	.12	.04	.00	13	.00	.00	.00
9	.00	.00	.00	.00	.00	.11	.06	.00	9.8	.00	.00	.00
10	.00	.00	.00	.00	.00	.23	.05	.00	7.5	.00	.00	.00
11	.00	.00	.00	.00	.00	.28	.05	.00	6.2	.00	.00	.00
12	.00	.00	.00	.00	.00	.17	.06	.02	5.3	.00	.00	.00
13	.00	.00	.00	.00	.00	.22	.09	.09	4.7	.00	.00	.00
14	.00	.00	.00	.00	.00	.21	.06	.14	5.0	.00	.00	.00
15	.00	.00	.00	.00	.00	.20	.06	.13	5.2	.08	.00	.00
16	.00	.00	.00	.00	.00	.19	.04	.09	4.7	.09	.00	.00
17	.00	.00	.00	.00	.00	.12	.02	.06	3.9	.01	.00	.00
18	.00	.00	.00	.00	.00	.11	.02	.07	3.9	.00	.00	.00
19	.00	.00	.00	.00	.00	.22	.02	.04	3.5	.00	.00	.00
20	.00	.00	.00	.00	10	.32	.02	.03	2.6	.00	.00	.00
21	.00	.00	.00	.00	4.8	.23	.02	.04	1.9	.00	.00	.00
22	.00	.00	.00	.00	3.1	.20	.04	.03	1.4	.00	.00	.00
23	.00	.00	.00	.00	.71	.15	.05	.04	1.0	.00	.00	.00
24	.00	.00	.00	.00	.45	.12	.03	.04	.68	.00	.00	.00
25	.00	.00	.00	.00	.14	.09	.02	.12	.21	.00	.00	.00
26	.00	.00	.00	.00	.09	.05	.02	.35	.21	.00	.00	.00
27	.00	.00	.00	.00	.12	.08	.00	.27	.16	.00	.00	.00
28	.00	.00	.00	.00	.20	.05	.00	.14	.18	.00	.00	.00
29	.00	.00	.00	.00	---	.07	.00	.10	.15	.00	.00	.00
30	.00	.00	.00	.00	---	.09	.01	.90	.11	.00	.00	.00
31	.00	---	.00	.00	---	.09	---	9.7	---	.00	.00	---
TOTAL	.00	.00	.00	.00	19.61	4.78	1.04	12.41	348.30	.50	.00	.00
MEAN	.000	.000	.000	.000	.70	.15	.035	.40	11.6	.016	.000	.000
MAX	.00	.00	.00	.00	10	.32	.09	9.7	83	.11	.00	.00
MIN	.00	.00	.00	.00	.00	.05	.00	.00	.11	.00	.00	.00
AC-FT	.00	.00	.00	.00	39	9.5	2.1	25	691	1.0	.00	.00

CAL YR 1981 TOTAL 0.07 MEAN .000 MAX .01 MIN .00 AC-FT .10
WTR YR 1982 TOTAL 386.64 MEAN 1.06 MAX 83 MIN .00 AC-FT 767

Table 4.--Water-quality records, daily suspended sediment, for Enemy Creek near Mitchell, SD (06478052)

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1982.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1982.

REMARKS.--Records fair. No flow Oct. 1 to Feb. 19, Apr. 27-29, May 1, 3-11, July 6-14, 18-31, Aug. 1 to Sept. 30.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 269 mg/L June 1; minimum daily mean, 0 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 60 tons (54.4 tonnes) June 1; minimum daily, 0 ton (0 tonne) on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00

Table 4.—Water-quality records, daily suspended sediment, for Enemy Creek near Mitchell, SD (06478052)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.00	0	.00	.00	0	.00	.20	10	.00
2	.00	0	.00	.00	0	.00	.17	9	.00
3	.00	0	.00	.00	0	.00	.17	9	.00
4	.00	0	.00	.00	0	.00	.17	9	.00
5	.00	0	.00	.00	0	.00	.12	8	.00
6	.00	0	.00	.00	0	.00	.12	8	.00
7	.00	0	.00	.00	0	.00	.11	8	.00
8	.00	0	.00	.00	0	.00	.12	8	.00
9	.00	0	.00	.00	0	.00	.11	8	.00
10	.00	0	.00	.00	0	.00	.23	10	.00
11	.00	0	.00	.00	0	.00	.28	11	.00
12	.00	0	.00	.00	0	.00	.17	9	.00
13	.00	0	.00	.00	0	.00	.22	10	.00
14	.00	0	.00	.00	0	.00	.21	10	.00
15	.00	0	.00	.00	0	.00	.20	10	.00
16	.00	0	.00	.00	0	.00	.19	9	.00
17	.00	0	.00	.00	0	.00	.12	8	.00
18	.00	0	.00	.00	0	.00	.11	8	.00
19	.00	0	.00	.00	0	.00	.22	10	.00
20	.00	0	.00	10	49	1.3	.32	12	.01
21	.00	0	.00	4.8	32	.41	.23	10	.00
22	.00	0	.00	3.1	25	.21	.20	10	.00
23	.00	0	.00	.71	15	.03	.15	9	.00
24	.00	0	.00	.45	13	.02	.12	8	.00
25	.00	0	.00	.14	9	.00	.09	7	.00
26	.00	0	.00	.09	7	.00	.05	4	.00
27	.00	0	.00	.12	8	.00	.08	6	.00
28	.00	0	.00	.20	10	.00	.05	4	.00
29	.00	0	.00	---	---	---	.07	6	.00
30	.00	0	.00	---	---	---	.09	7	.00
31	.00	0	.00	---	---	---	.09	7	.00
TOTAL	0.00	---	0.00	19.61	---	1.97	4.78	---	0.01
		APRIL			MAY			JUNE	
1	.07	6	.00	.00	0	.00	83	269	60
2	.04	3	.00	.01	1	.00	58	193	30
3	.04	3	.00	.00	0	.00	44	151	18
4	.02	1	.00	.00	0	.00	28	103	7.8
5	.03	3	.00	.00	0	.00	19	76	3.9
6	.03	3	.00	.00	0	.00	18	73	3.5
7	.03	3	.00	.00	0	.00	17	70	3.2
8	.04	3	.00	.00	0	.00	13	58	2.0
9	.06	5	.00	.00	0	.00	9.8	48	1.3
10	.05	4	.00	.00	0	.00	7.5	42	.85
11	.05	4	.00	.00	0	.00	6.2	38	.64
12	.06	5	.00	.02	1	.00	5.3	34	.49
13	.09	7	.00	.09	7	.00	4.7	32	.41
14	.06	5	.00	.14	8	.00	5.0	33	.45
15	.06	5	.00	.13	8	.00	5.2	34	.48
16	.04	3	.00	.09	7	.00	4.7	32	.41
17	.02	1	.00	.06	5	.00	3.9	29	.31
18	.02	1	.00	.07	6	.00	3.9	29	.31
19	.02	1	.00	.04	3	.00	3.5	27	.26
20	.02	1	.00	.03	3	.00	2.6	23	.16
21	.02	1	.00	.04	3	.00	1.9	19	.10
22	.04	3	.00	.03	3	.00	1.4	19	.07
23	.05	4	.00	.04	3	.00	1.0	18	.05
24	.03	3	.00	.04	3	.00	.68	15	.03
25	.02	1	.00	.12	8	.00	.21	10	.00
26	.02	1	.00	.35	12	.01	.21	10	.00
27	.00	0	.00	.27	11	.00	.16	9	.00
28	.00	0	.00	.14	8	.00	.18	8	.00
29	.00	0	.00	.10	8	.00	.15	9	.00
30	.01	1	.00	.90	17	.04	.11	8	.00
31	---	---	---	9.7	48	1.3	---	---	---
TOTAL	1.04	---	0.00	12.41	---	1.35	348.30	---	134.72

Table 4.—Water-quality records, daily suspended sediment, for Enemy Creek near Mitchell, SD (06478052)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	.07	6	.00	.00	0	.00	.00	0	.00
2	.08	6	.00	.00	0	.00	.00	0	.00
3	.11	8	.00	.00	0	.00	.00	0	.00
4	.05	4	.00	.00	0	.00	.00	0	.00
5	.01	1	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.08	6	.00	.00	0	.00	.00	0	.00
16	.09	7	.00	.00	0	.00	.00	0	.00
17	.01	1	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	.00	0	.00	---	---	---
TOTAL	0.50	---	0.00	0.00	---	0.00	0.00	---	0.00

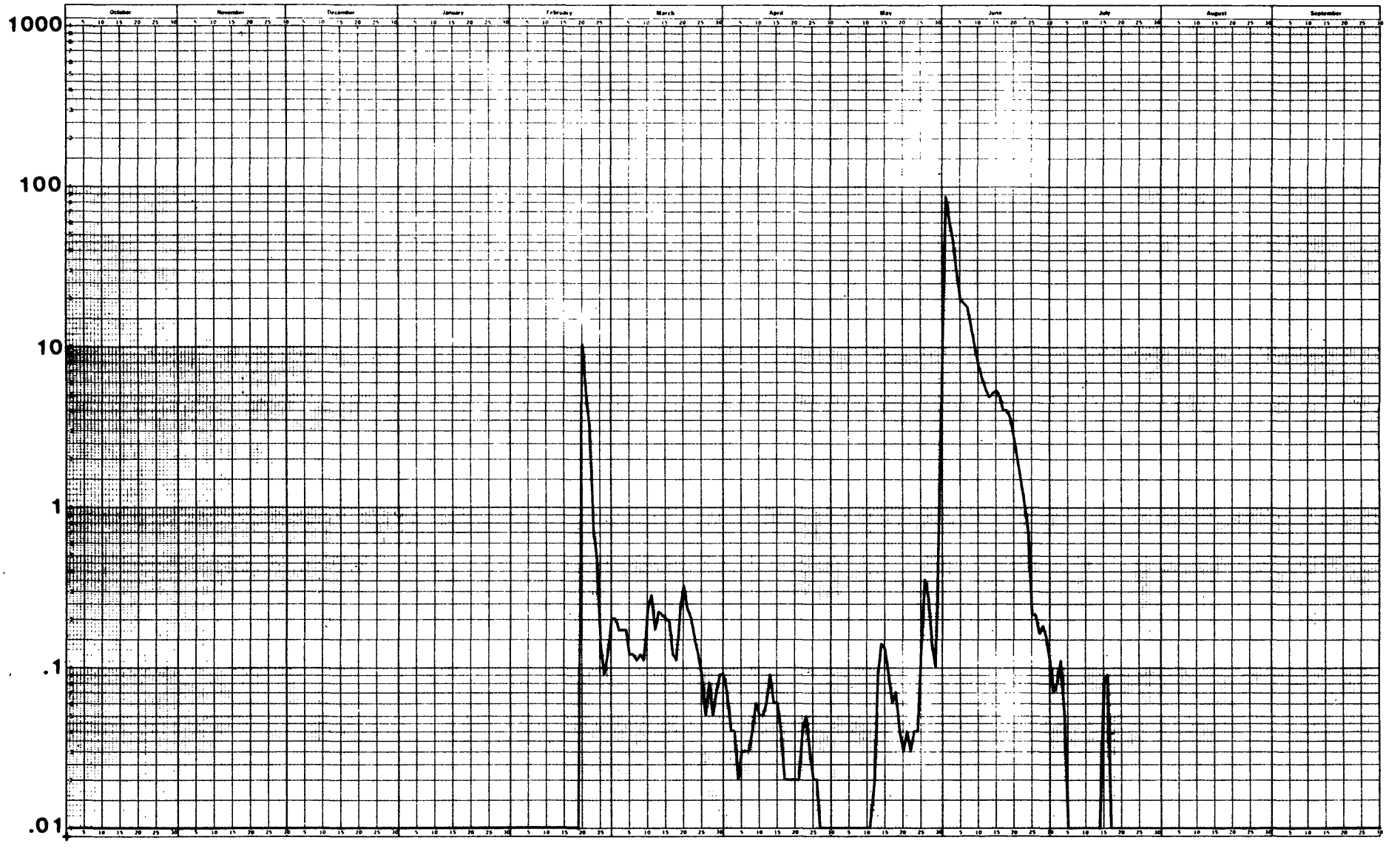

Figure 6.--Daily discharge for Enemy Creek near Mitchell (06478052), October 1981 to September 1982.

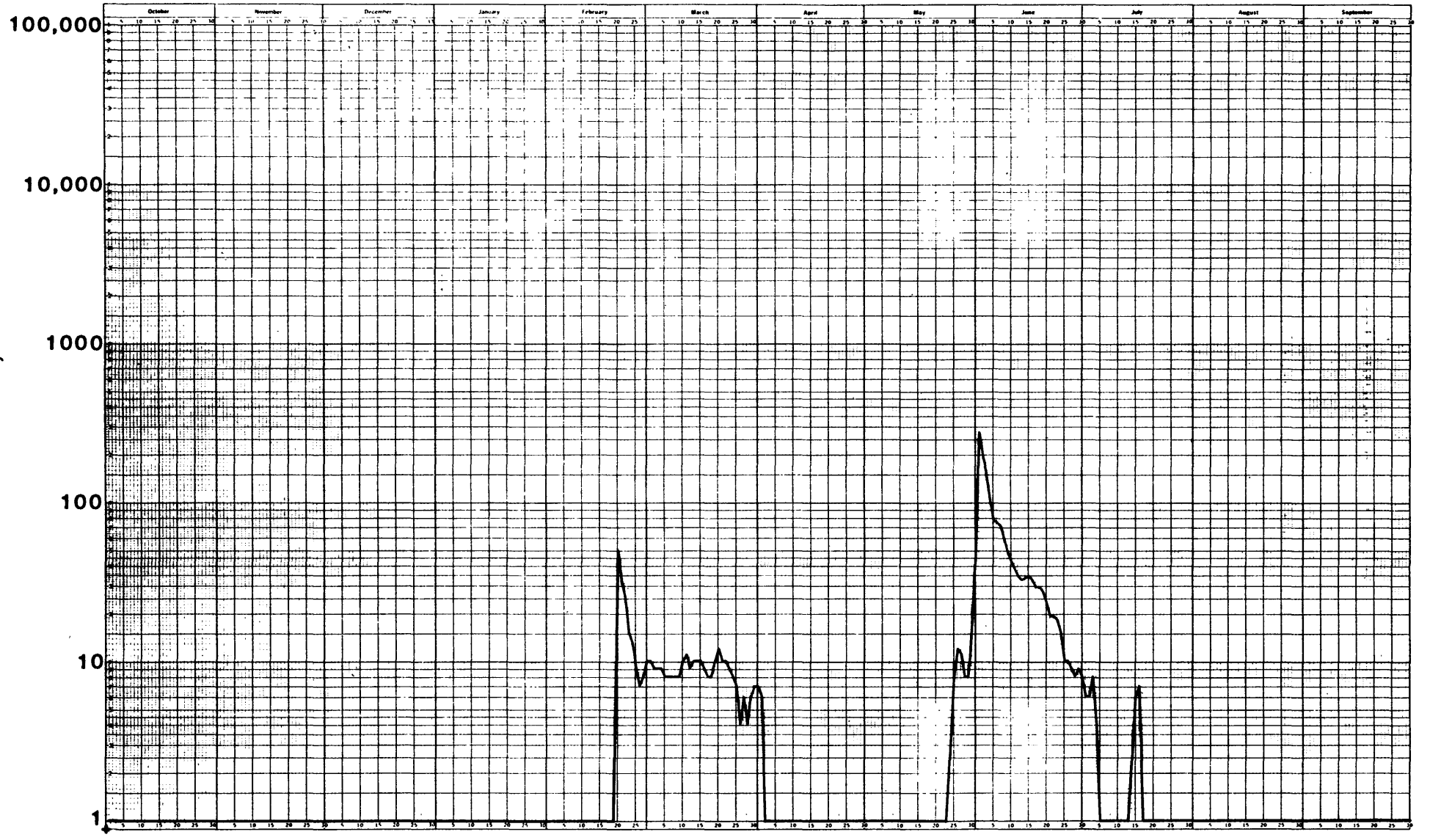

Figure 7.--Daily suspended-sediment concentration for Enemy Creek near Mitchell (06478052), October 1981 to September 1982.

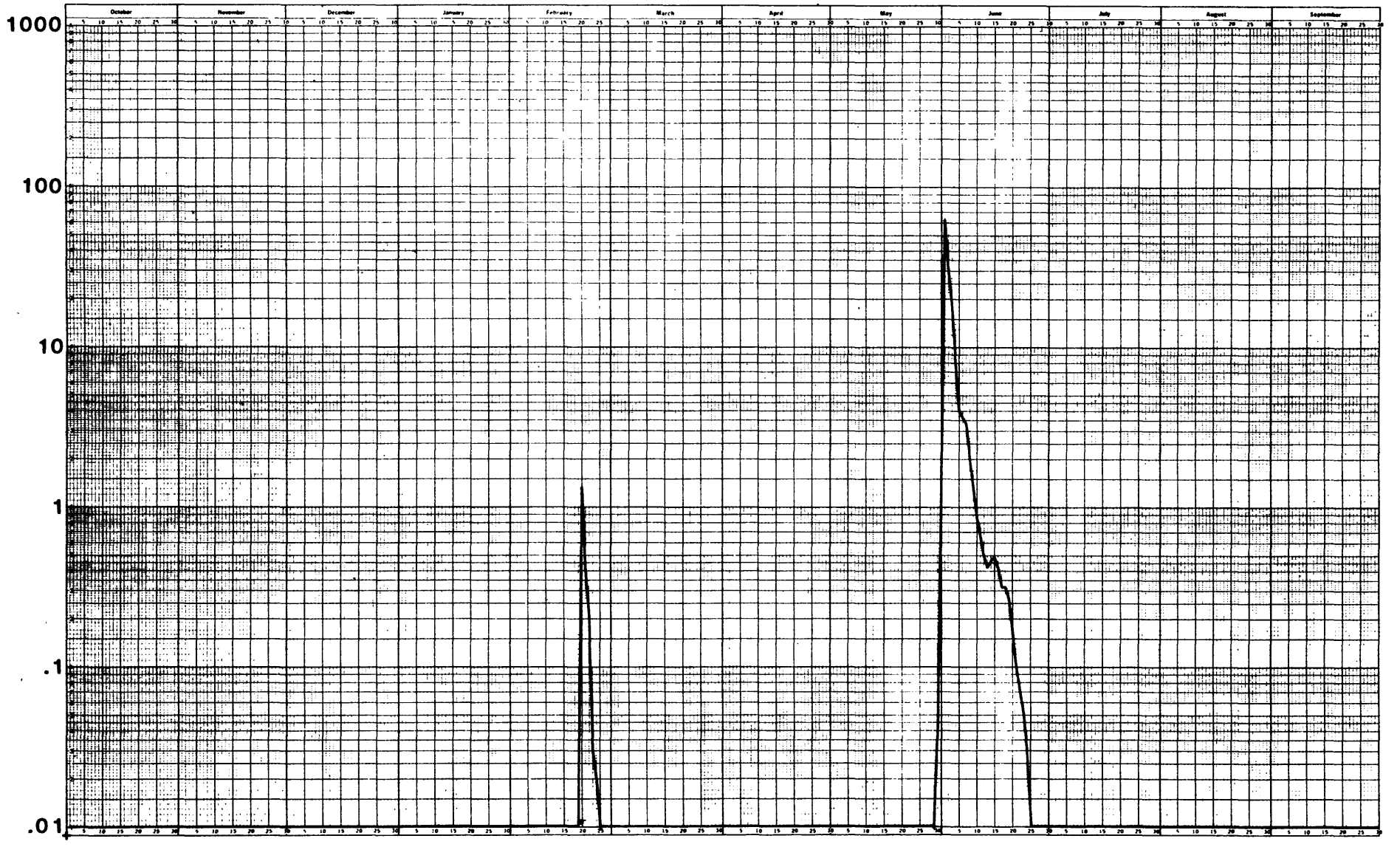

Figure 8.--Daily suspended-sediment discharge for Enemy Creek near Mitchell (06478052), October 1981 to September 1982.

Table 5.--Daily discharge for Plum Creek near Milltown, SD (06478320)

LOCATION.--Lat 43°25'05", long 97°46'13", in SE¼SW¼ sec.1, T.99 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, on right bank 5 ft (2 m) downstream from highway bridge, 0.9 mi (1.4 km) upstream from mouth, and 1.6 mi (2.6 km) southeast of Milltown.

DRAINAGE AREA.--35.4 mi^2 (91.7 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1982.

GAGE.--Water-stage recorder. Altitude of gage is 1,194 ft (364 m), from topographic map.

REMARKS.--Record poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 116 ft^3/s (3.29 m^3/s) at 1410 hours, Feb. 22, gage height, 5.60 ft (1.707 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	8.7	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	2.8	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	42	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	27	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	12	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	13	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	5.8	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	1.0	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.54	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.07	.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	1.0	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	10	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	50	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	30	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	16	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.80	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.35	.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	28	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	24	---	.00	.00	---
TOTAL	.00	.00	.00	.00	108.65	.00	.00	52.00	112.84	.00	.00	.00
MEAN	.000	.000	.000	.000	3.88	.000	.000	1.68	3.76	.000	.000	.000
MAX	.00	.00	.00	.00	50	.00	.00	28	42	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

WTR YR 1982 TOTAL 275.49 MEAN .75 MAX 50 MIN .00

Table 6.--Water-quality records, daily suspended sediment, for Plum Creek near Milltown, SD (06478320)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1982.

REMARKS.--Records fair. No flow Oct. 1 to Feb. 18, Feb. 27 to May 29, and June 13 to Sept. 30. Three observations of water temperature and two observations of specific conductance were made during the year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,190 mg/L Feb. 22; minimum daily mean, 0 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 110 tons (99.8 tonnes) Feb. 21; minimum daily, 0 ton (0 tonne) on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00

Table 6.--Water-quality records, daily suspended sediment, for

Plum Creek near Milltown, SD (06478320)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	1.0	10	.03	.00	0	.00
20	.00	0	.00	10	20	.54	.00	0	.00
21	.00	0	.00	50	815	110	.00	0	.00
22	.00	0	.00	30	1190	96	.00	0	.00
23	.00	0	.00	16	600	26	.00	0	.00
24	.00	0	.00	.80	30	.06	.00	0	.00
25	.00	0	.00	.50	20	.03	.00	0	.00
26	.00	0	.00	.35	15	.01	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	---	---	---	.00	0	.00
30	.00	0	.00	---	---	---	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	108.65	---	232.67	0.00	---	0.00
		APRIL			MAY			JUNE	
1	.00	0	.00	.00	0	.00	8.7	137	3.2
2	.00	0	.00	.00	0	.00	2.8	35	.26
3	.00	0	.00	.00	0	.00	42	40	4.5
4	.00	0	.00	.00	0	.00	27	40	2.9
5	.00	0	.00	.00	0	.00	12	20	.65
6	.00	0	.00	.00	0	.00	13	19	.67
7	.00	0	.00	.00	0	.00	3.8	10	.10
8	.00	0	.00	.00	0	.00	1.7	12	.06
9	.00	0	.00	.00	0	.00	1.0	15	.04
10	.00	0	.00	.00	0	.00	.54	12	.02
11	.00	0	.00	.00	0	.00	.23	9	.00
12	.00	0	.00	.00	0	.00	.07	6	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	28	455	34	.00	0	.00
31	---	---	---	24	511	33	---	---	---
TOTAL	0.00	---	0.00	52.00	---	67.00	112.84	---	12.40

Table 6.—Water-quality records, daily suspended sediment, for

Plum Creek near Milltown, SD (06478320)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.00	0	.00
5	.00	0	.00	.00	0	.00	.00	0	.00
6	.00	0	.00	.00	0	.00	.00	0	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.00	0	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.00	0	.00	.00	0	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.00	0	.00
13	.00	0	.00	.00	0	.00	.00	0	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	.00	0	.00	---	---	---
TOTAL	0.00	---	0.00	0.00	---	0.00	0.00	---	0.00

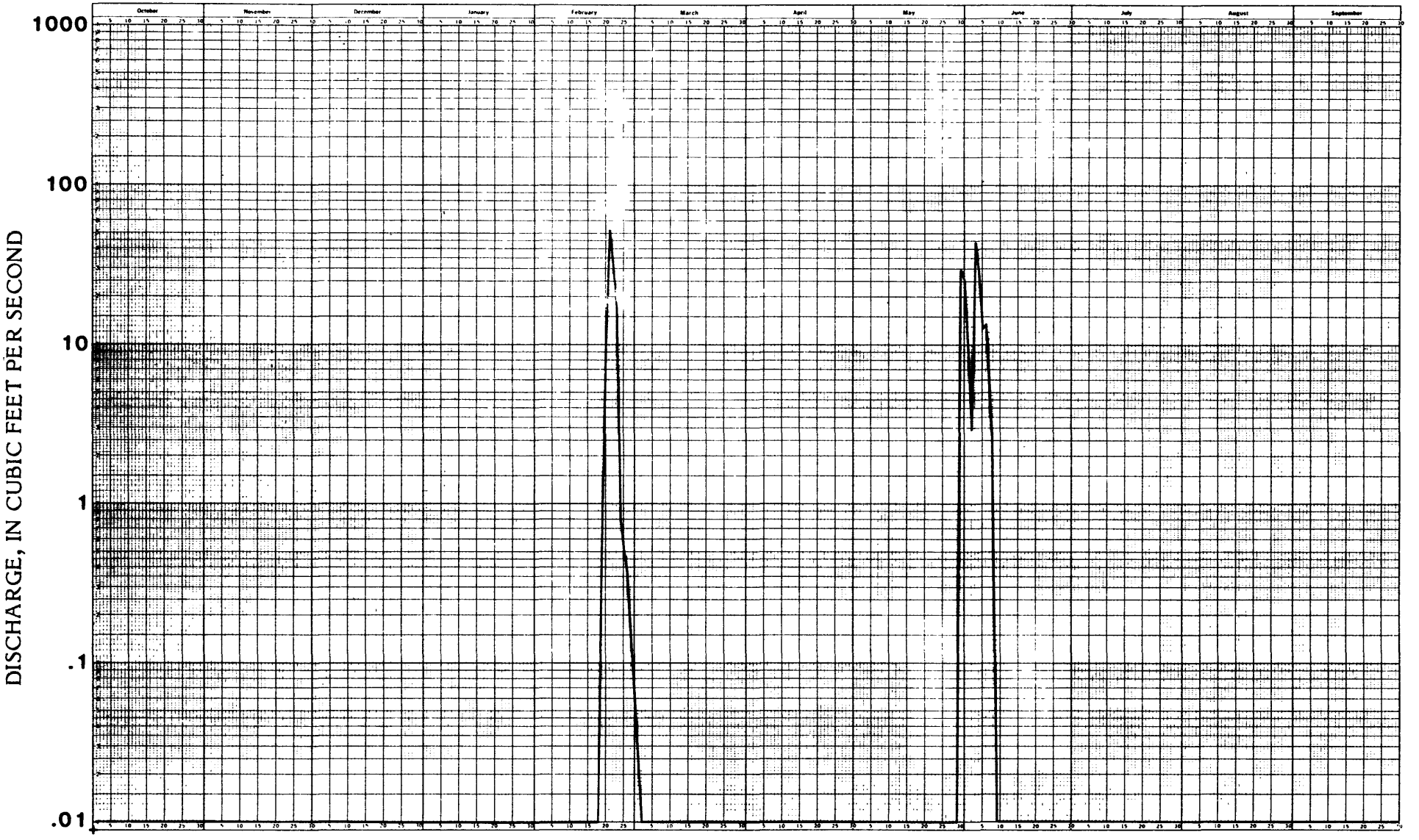

Figure 9.--Daily discharge for Plum Creek near Milltown (06478320), October 1981 to September 1982.

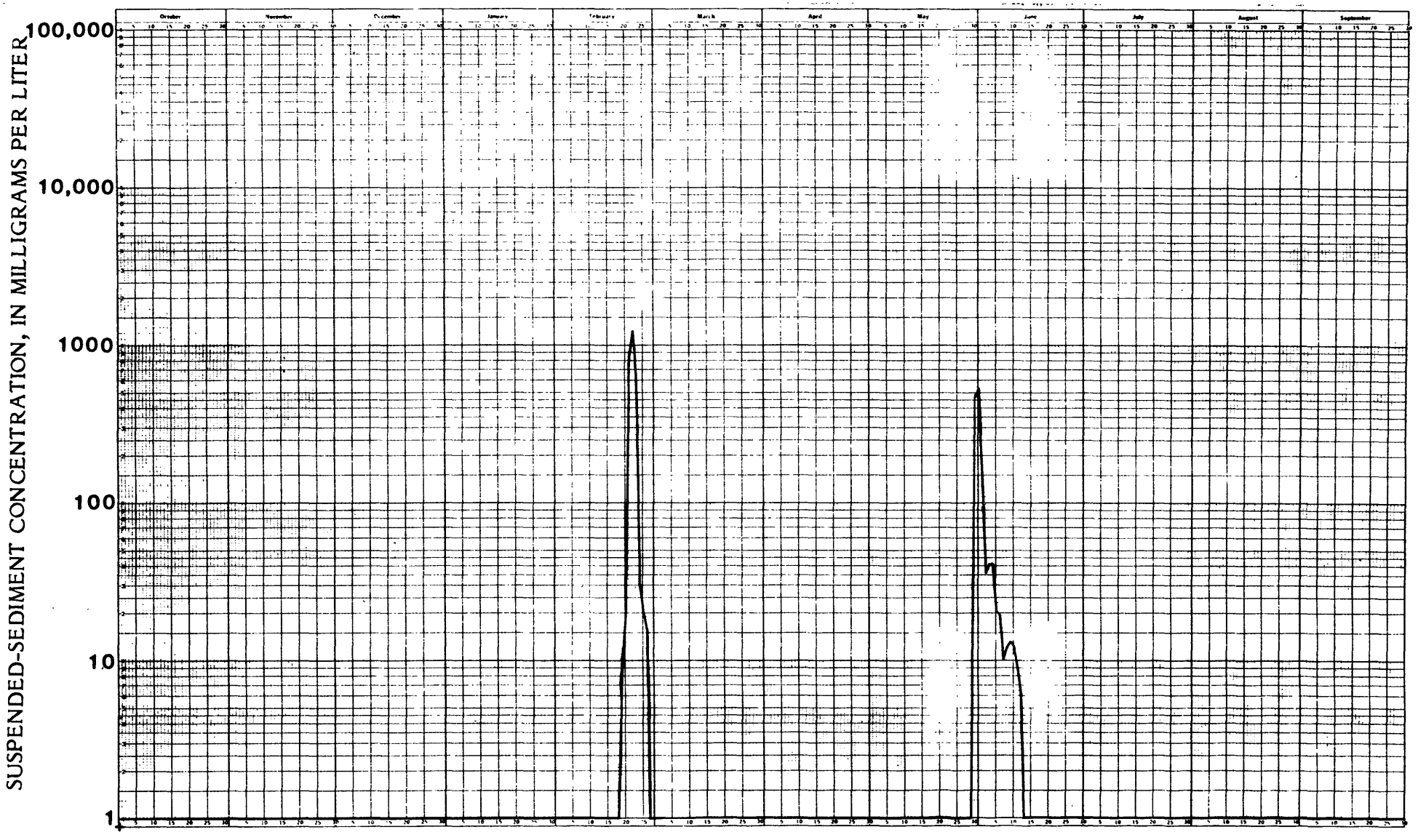

Figure 10.--Daily suspended-sediment concentration for Plum Creek near Milltown (06478320), October 1981 to September 1982.

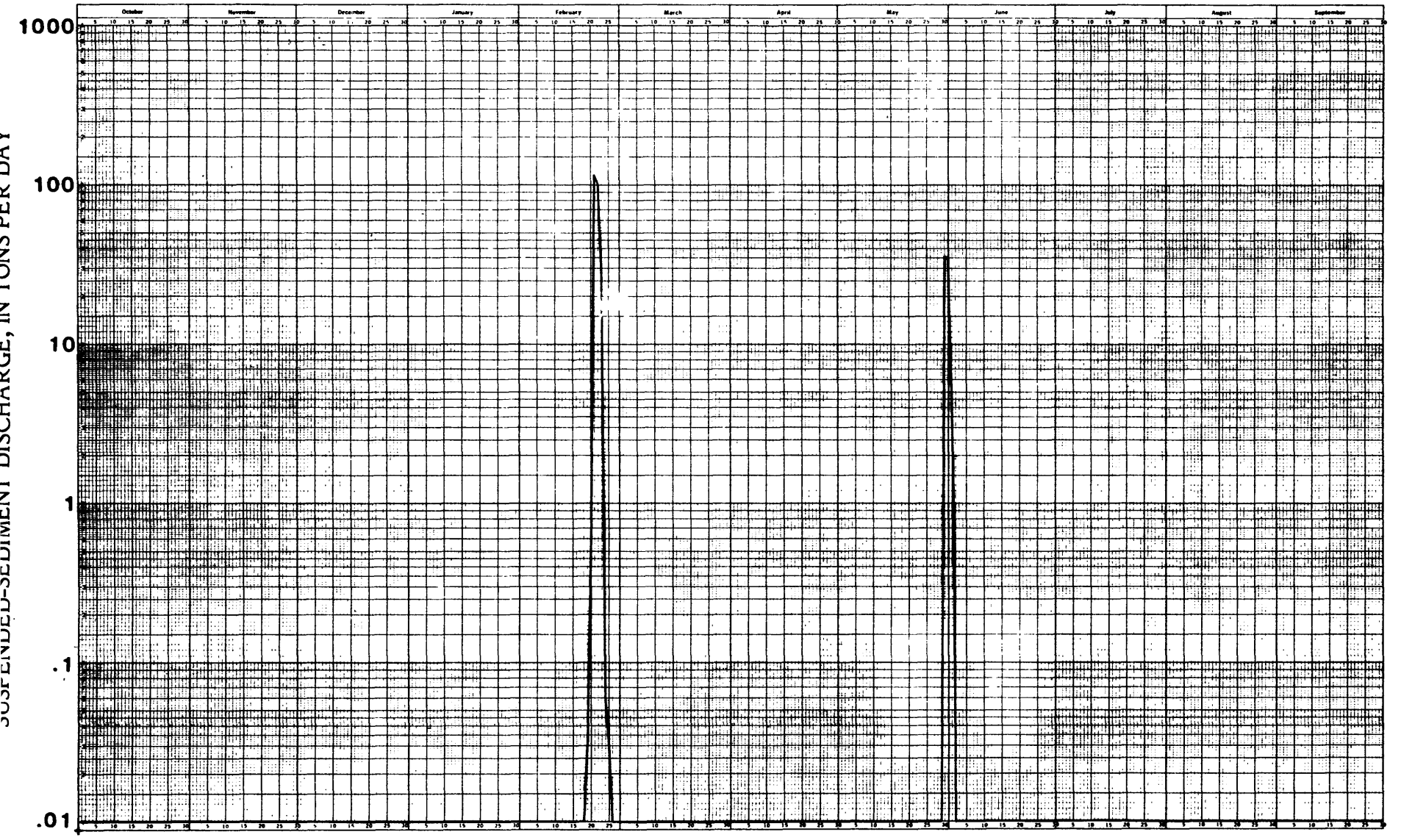

Figure 11.—Daily suspended-sediment discharge for Plum Creek near Milltown (06478320), October 1981 to September 1982.

Table 7.--Daily discharge for Lonetree Creek at Olivet, SD (06478420)

LOCATION.--Lat 43°13'35", long 97°40'44", in NE¼NE¼ sec.15, T.97 N., R.58 W., Hutchinson County, on right bank 25 ft (7.6 m) upstream from highway bridge, 0.7 mi (1.1 km) upstream from mouth, 0.4 mi (0.6 km) downstream from South Branch Lonetree Creek, and 1.0 mi (1.6 km) southwest of Olivet.

DRAINAGE AREA.--112 mi^2 (290 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1982.

GAGE.--Water-stage recorder. Altitude of gage is 1,180 ft (360 m), from topographic map.

REMARKS.--Records fair except those for winter period, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 267 ft^3/s (7.56 m^3/s) at 2100 hours, May 30, gage height, 8.61 ft (2.624 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	3.0	.00	1.1	119	.91	.00	.72
2	.00	.00	.00	.00	.00	3.0	.00	.88	70	.85	.00	.18
3	.00	.00	.00	.00	.00	3.0	.00	.64	40	.94	.00	.00
4	.00	.00	.49	.00	.00	2.0	.64	.27	24	.67	.00	.00
5	.00	.00	.20	.00	.00	1.5	.00	.27	17	.54	.00	.00
6	.00	.00	.41	.00	.00	1.0	.00	.49	13	.74	.00	.00
7	.00	.00	.34	.00	.00	.50	.00	.27	10	.99	.00	.00
8	.00	.00	.25	.00	.00	.50	.41	.07	8.4	.81	.00	.00
9	.00	.00	.01	.00	.00	.20	1.3	.39	6.6	1.2	.00	.76
10	.00	.00	.01	.00	.00	2.6	2.1	.12	5.2	1.5	.00	4.0
11	.00	.00	.01	.00	.00	3.6	2.5	.00	4.2	1.5	.00	.79
12	.00	.00	.05	.00	.00	3.1	3.4	.26	3.5	1.3	.00	1.3
13	.00	.00	.05	.00	.00	2.6	3.5	.31	3.1	1.1	.00	1.3
14	.00	.00	.00	.00	.00	2.7	2.0	.26	3.1	1.1	.00	.97
15	.00	.00	.00	.00	.00	1.5	1.9	.53	3.2	1.4	.00	.96
16	.00	.00	.00	.00	.00	1.4	1.8	.66	2.6	1.0	.00	.82
17	.00	.00	.00	.00	.00	.93	1.8	.15	2.2	.61	.00	1.1
18	.00	.00	.00	.00	.00	.53	1.7	.00	2.3	.41	.00	1.1
19	.00	.00	.00	.00	.00	.93	1.6	.07	2.0	.86	.00	.57
20	.00	.00	.00	.00	40	1.5	1.6	.47	1.7	.69	.00	.33
21	.00	.00	.00	.00	60	.69	1.5	1.2	1.6	.25	.00	.11
22	.00	.00	.00	.00	80	.67	1.4	1.0	2.0	.07	.00	.00
23	.00	.00	.00	.00	40	.64	1.3	.47	1.6	.00	.00	.00
24	.00	.00	.00	.00	20	.43	1.1	.67	1.2	.00	7.4	.00
25	.00	.00	.00	.00	18	.03	1.0	2.1	1.0	.00	3.2	.00
26	.00	.00	.00	.00	12	.00	1.0	4.7	.82	.00	9.3	.00
27	.00	.00	.00	.00	10	.00	.96	4.9	.59	.00	5.5	.00
28	.00	.00	.00	.00	5.0	.00	1.0	6.8	.44	.00	3.7	.00
29	.00	.00	.00	.00	---	.00	1.1	7.5	.57	.00	3.1	.00
30	.00	.00	.00	.00	---	.00	1.2	68	1.0	.00	2.3	.00
31	.00	---	.00	.00	---	.00	---	200	---	.00	1.4	---
TOTAL	.00	.00	1.82	.00	285.00	38.55	37.81	304.55	351.92	19.44	35.90	15.01
MEAN	.000	.000	.059	.000	10.2	1.24	1.26	9.82	11.7	.63	1.16	.50
MAX	.00	.00	.49	.00	80	3.6	3.5	200	119	1.5	9.3	4.0
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.44	.00	.00	.00
AC-FT	.00	.00	3.6	.00	565	76	75	604	698	39	71	30

WTR YR 1982 TOTAL 1090.00 MEAN 2.99 MAX 200 MIN .00 AC-FT 2160

Table 8.—Water-quality records, daily suspended sediment, for

Lonetree Creek near Olivet, SD (06478420)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1982.

REMARKS.--Records poor. No flow Oct. 1 to Dec. 3, Dec. 14 to Feb. 19, Mar. 26 to Apr. 3, Apr. 5-7, May 11, 18, July 23 to Aug. 23, Sept. 3-8, and Sept. 22-30. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 165 mg/L May 31; minimum daily mean, 0 mg/L on many days.
SEDIMENT LOAD: Maximum daily, 89 tons (81 tonnes) May 31; minimum daily, 0 ton (0 tonne) on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.00	0	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.00	0	.00
4	.00	0	.00	.00	0	.00	.49	10	.01
5	.00	0	.00	.00	0	.00	.20	5	.00
6	.00	0	.00	.00	0	.00	.41	10	.01
7	.00	0	.00	.00	0	.00	.34	10	.00
8	.00	0	.00	.00	0	.00	.25	10	.00
9	.00	0	.00	.00	0	.00	.01	10	.00
10	.00	0	.00	.00	0	.00	.01	10	.00
11	.00	0	.00	.00	0	.00	.01	10	.00
12	.00	0	.00	.00	0	.00	.05	10	.00
13	.00	0	.00	.00	0	.00	.05	10	.00
14	.00	0	.00	.00	0	.00	.00	0	.00
15	.00	0	.00	.00	0	.00	.00	0	.00
16	.00	0	.00	.00	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	0.00	---	0.00	1.82	---	0.02

Table 8.--Water-quality records, daily suspended sediment, for

Lonetree Creek near Olivet, SD (06478420)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.00	0	.00	.00	0	.00	3.0	40	.32
2	.00	0	.00	.00	0	.00	3.0	40	.32
3	.00	0	.00	.00	0	.00	3.0	40	.32
4	.00	0	.00	.00	0	.00	2.0	38	.21
5	.00	0	.00	.00	0	.00	1.5	37	.15
6	.00	0	.00	.00	0	.00	1.0	35	.09
7	.00	0	.00	.00	0	.00	.50	32	.04
8	.00	0	.00	.00	0	.00	.50	32	.04
9	.00	0	.00	.00	0	.00	.20	29	.02
10	.00	0	.00	.00	0	.00	2.6	105	.74
11	.00	0	.00	.00	0	.00	3.6	109	1.1
12	.00	0	.00	.00	0	.00	3.1	107	.90
13	.00	0	.00	.00	0	.00	2.6	105	.74
14	.00	0	.00	.00	0	.00	2.7	106	.77
15	.00	0	.00	.00	0	.00	1.5	101	.41
16	.00	0	.00	.00	0	.00	1.4	100	.38
17	.00	0	.00	.00	0	.00	.93	95	.24
18	.00	0	.00	.00	0	.00	.53	90	.13
19	.00	0	.00	.00	0	.00	.93	95	.24
20	.00	0	.00	40	55	5.9	1.5	101	.41
21	.00	0	.00	60	58	9.4	.69	92	.17
22	.00	0	.00	80	60	13	.67	92	.17
23	.00	0	.00	40	55	5.9	.64	92	.16
24	.00	0	.00	20	51	2.8	.43	88	.10
25	.00	0	.00	18	50	2.4	.03	73	.00
26	.00	0	.00	12	48	1.6	.00	0	.00
27	.00	0	.00	10	47	1.3	.00	0	.00
28	.00	0	.00	5.0	43	.58	.00	0	.00
29	.00	0	.00	---	---	---	.00	0	.00
30	.00	0	.00	---	---	---	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	0.00	---	0.00	285.00	---	42.88	38.55	---	8.17
		APRIL			MAY			JUNE	
1	.00	0	.00	1.1	97	.29	119	155	50
2	.00	0	.00	.88	94	.22	70	146	28
3	.00	0	.00	.64	92	.16	40	139	15
4	.64	92	.16	.27	83	.06	24	132	8.6
5	.00	0	.00	.27	83	.06	17	127	5.8
6	.00	0	.00	.49	90	.12	13	124	4.4
7	.00	0	.00	.27	83	.06	10	121	3.3
8	.41	87	.10	.07	75	.01	8.4	118	2.7
9	1.3	99	.35	.39	87	.09	6.6	115	2.0
10	2.1	103	.58	.12	78	.03	5.2	113	1.6
11	2.5	105	.71	.00	0	.00	4.2	111	1.3
12	3.4	108	.99	.26	83	.06	3.5	109	1.0
13	3.5	109	1.0	.31	85	.07	3.1	107	.90
14	2.0	103	.56	.26	83	.06	3.1	107	.90
15	1.9	102	.52	.53	90	.13	3.2	108	.93
16	1.8	102	.50	.66	92	.16	2.6	105	.74
17	1.8	102	.50	.15	80	.03	2.2	103	.61
18	1.7	101	.46	.00	0	.00	2.3	104	.65
19	1.6	101	.44	.07	75	.01	2.0	102	.55
20	1.6	101	.44	.47	89	.11	1.7	101	.46
21	1.5	100	.41	1.2	98	.32	1.6	101	.44
22	1.4	100	.38	1.0	97	.26	2.0	103	.56
23	1.3	99	.35	.47	91	.12	1.6	101	.44
24	1.1	97	.29	.67	92	.17	1.2	98	.32
25	1.0	96	.26	2.1	103	.58	1.0	96	.26
26	1.0	96	.26	4.7	112	1.4	.82	94	.21
27	.96	95	.25	4.9	112	1.5	.59	91	.14
28	1.0	96	.26	6.8	116	2.1	.44	88	.10
29	1.1	97	.29	7.5	117	2.4	.57	91	.14
30	1.2	98	.32	68	146	27	1.0	96	.26
31	---	---	---	200	165	89	---	---	---
TOTAL	37.81	---	10.38	304.55	---	126.58	351.92	---	132.31

Table 8.—Water-quality records, daily suspended sediment, for

Lonetree Creek near Olivet, SD (06478420)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	.91	95	.23	.00	0	.00	.72	92	.18
2	.85	94	.22	.00	0	.00	.18	81	.04
3	.94	95	.24	.00	0	.00	.00	0	.00
4	.67	92	.17	.00	0	.00	.00	0	.00
5	.54	90	.13	.00	0	.00	.00	0	.00
6	.74	93	.19	.00	0	.00	.00	0	.00
7	.99	95	.25	.00	0	.00	.00	0	.00
8	.81	93	.20	.00	0	.00	.00	0	.00
9	1.2	98	.32	.00	0	.00	.76	93	.19
10	1.5	100	.41	.00	0	.00	4.0	110	1.2
11	1.5	100	.41	.00	0	.00	.79	93	.20
12	1.3	99	.35	.00	0	.00	1.3	99	.35
13	1.1	97	.29	.00	0	.00	1.3	99	.35
14	1.1	97	.29	.00	0	.00	.97	95	.25
15	1.4	100	.38	.00	0	.00	.96	95	.25
16	1.0	96	.26	.00	0	.00	.82	94	.21
17	.61	91	.15	.00	0	.00	1.1	97	.29
18	.41	87	.10	.00	0	.00	1.1	97	.29
19	.86	94	.22	.00	0	.00	.57	91	.14
20	.69	92	.17	.00	0	.00	.33	85	.08
21	.25	83	.06	.00	0	.00	.11	77	.02
22	.07	74	.01	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	7.4	117	2.3	.00	0	.00
25	.00	0	.00	3.2	108	.93	.00	0	.00
26	.00	0	.00	9.3	120	3.0	.00	0	.00
27	.00	0	.00	5.5	113	1.7	.00	0	.00
28	.00	0	.00	3.7	110	1.1	.00	0	.00
29	.00	0	.00	3.1	107	.90	.00	0	.00
30	.00	0	.00	2.3	104	.65	.00	0	.00
31	.00	0	.00	1.4	100	.38	---	---	---
TOTAL	19.44	---	5.05	35.90	---	10.96	15.01	---	4.04

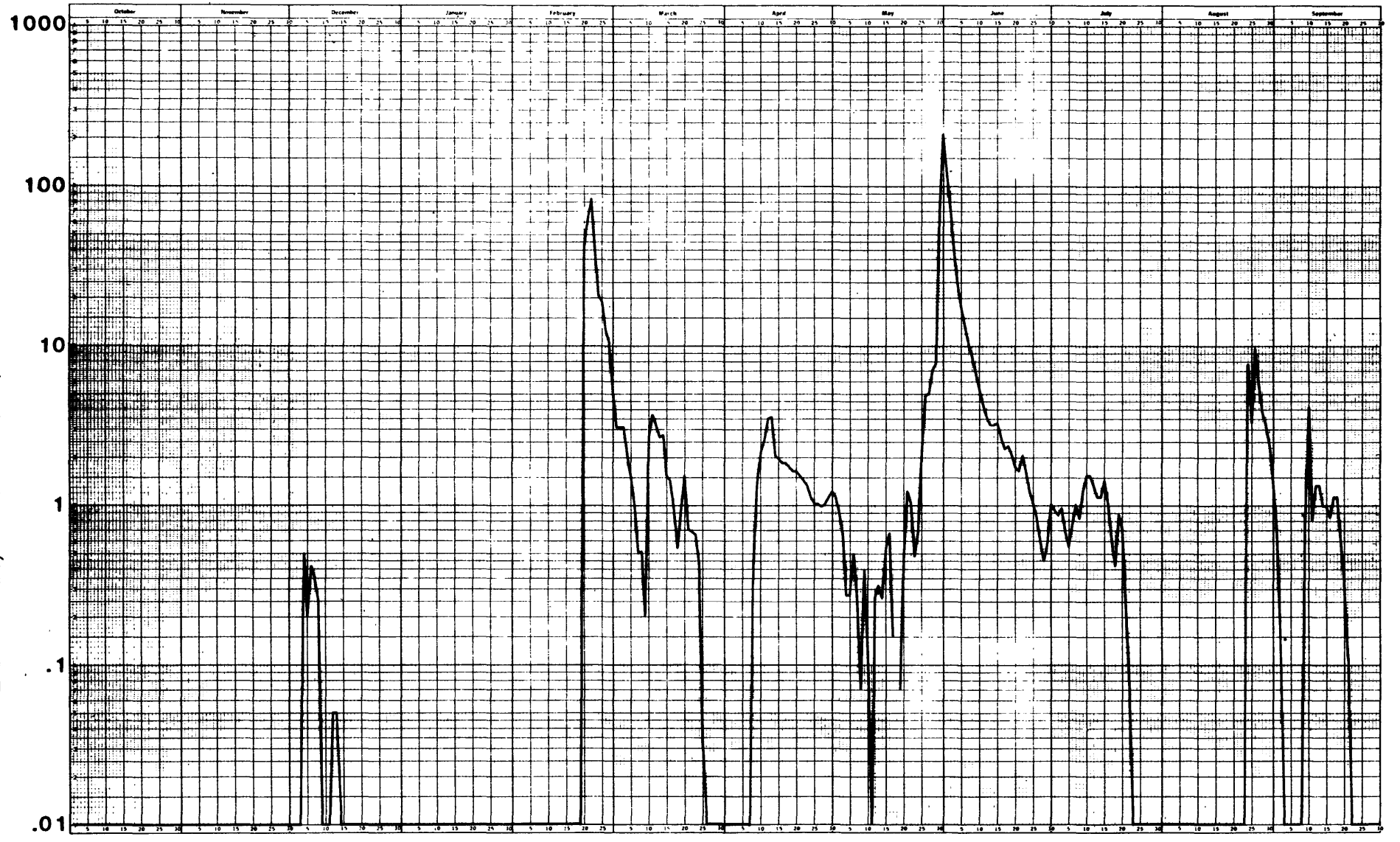

Figure 12.--Daily discharge for Lonetree Creek at Olivet (06478420), October 1981 to September 1982.

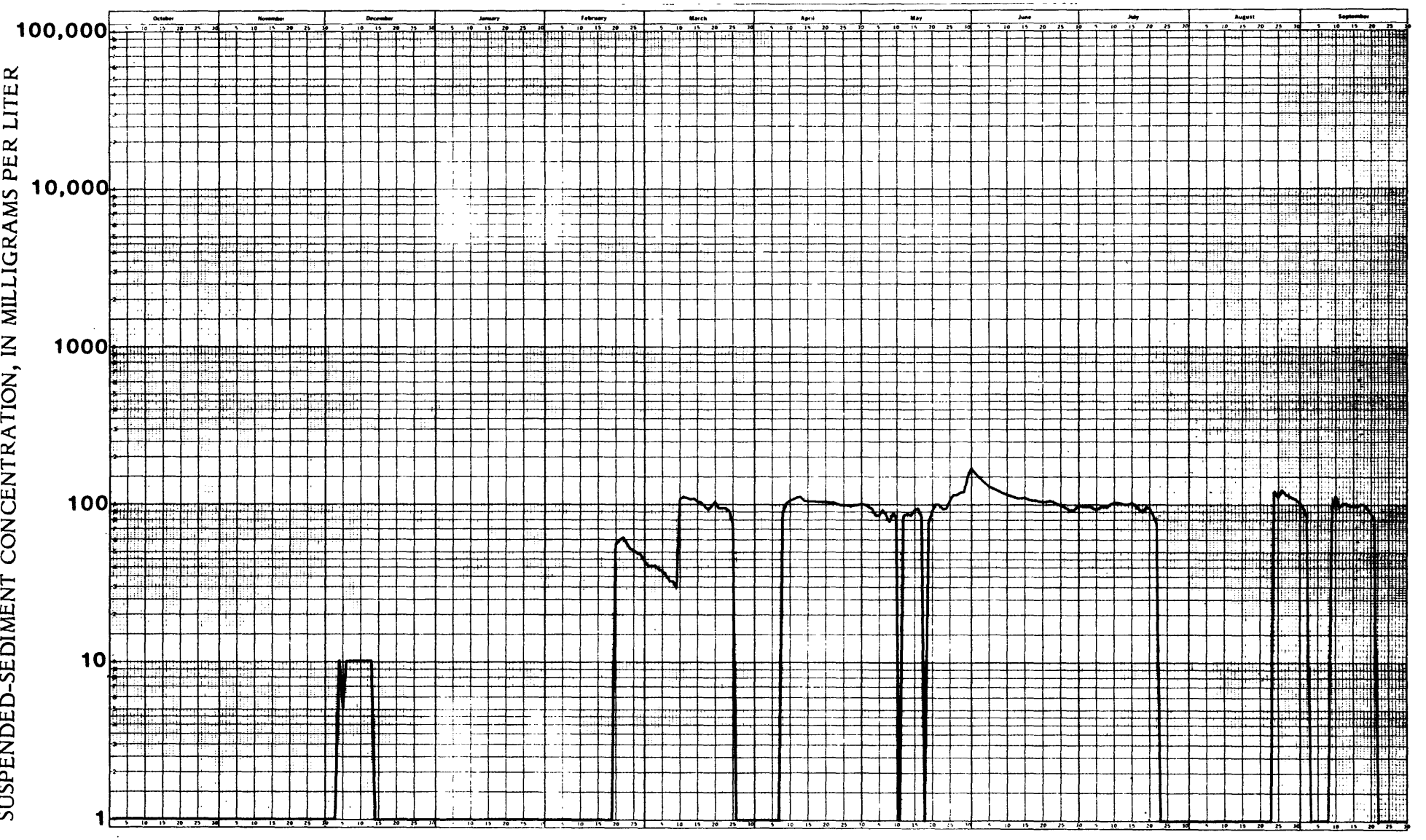

Figure 13.--Daily suspended-sediment concentration for Lonetree Creek at Olivet (06478420), October 1981 to September 1982.

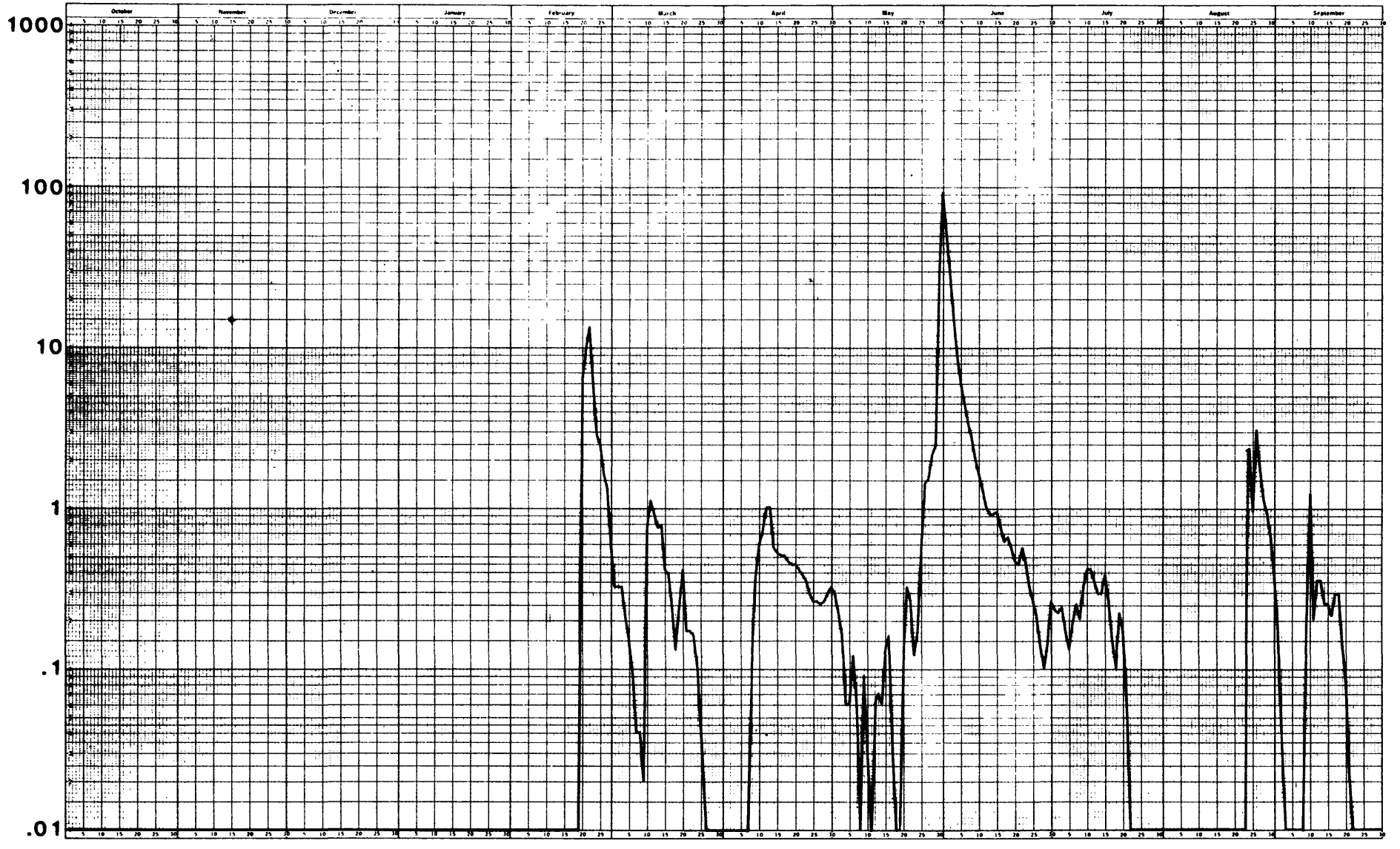

Figure 14.--Daily suspended-sediment discharge for Lonetree Creek at Olivet (06478420), October 1981 to September 1982.

Table 9.--Daily discharge for James River near Scotland, SD (06478500)

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^2 (55,810 km^2), approximately, of which about 4,790 mi^2 (12,400 km^2) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 786: Drainage area. WSP 956: 1937-38. WSP 1279: 1932, 1948.

GAGE.--Water-stage recorder and rock and earth control. Datum of gage is 1,168.51 ft (356.162 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1972, at site 0.25 mi (0.4 km) downstream at present datum.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir, combined capacity, 246,000 acre-ft (303 hm^3), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm^3), 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.--54 years, 366 ft^3/s (10.37 m^3/s), 265,200 acre-ft/yr (327 hm^3/yr); median of yearly mean discharges, 190 ft^3/s (5.38 m^3/s), 138,000 acre-ft/yr (170 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft^3/s (430 m^3/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, 2,360 ft^3/s (66.8 m^3/s) June 1, gage height, 11.88 ft (3.621 m); minimum daily discharge, 6.2 ft^3/s (0.18 m^3/s) Oct. 2 and 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	7.2	21	14	12	250	111	850	2340	315	86	26
2	6.2	7.4	21	14	12	210	123	870	2160	307	83	40
3	6.5	7.2	29	13	12	192	163	875	1900	303	79	44
4	8.6	7.3	23	13	12	137	192	875	1660	293	79	41
5	8.2	9.1	20	12	12	123	184	895	1500	272	81	39
6	8.9	7.2	18	12	12	130	171	904	1370	273	74	39
7	8.0	7.8	17	11	12	120	171	899	1250	270	69	47
8	7.6	10	15	11	12	110	201	918	1120	247	63	51
9	8.4	8.2	14	11	12	111	260	927	1010	274	57	64
10	7.0	9.2	13	11	12	120	388	945	931	282	56	100
11	6.2	9.4	14	11	12	130	575	952	859	232	48	99
12	6.6	9.6	14	11	12	136	705	983	794	201	43	107
13	9.4	8.4	15	10	12	137	783	1000	714	194	39	114
14	11	8.7	16	10	13	137	806	1020	650	182	35	107
15	14	9.4	16	10	14	137	812	1040	640	180	34	111
16	16	8.2	16	11	17	123	822	1050	681	163	33	111
17	21	7.6	16	11	22	104	828	1050	716	139	30	112
18	21	8.7	15	10	27	91	812	1050	745	192	27	116
19	19	13	14	9.8	35	88	795	1040	689	187	24	120
20	20	11	15	9.5	50	98	789	1040	600	151	21	116
21	19	13	14	9.4	150	111	771	1040	526	97	18	115
22	17	15	15	9.4	300	101	753	1050	460	71	17	108
23	15	17	15	9.2	500	107	741	1120	418	185	15	101
24	13	13	16	9.3	420	107	741	1100	393	180	58	100
25	12	13	15	9.4	330	98	747	1060	387	131	45	102
26	9.6	13	16	10	280	96	783	1060	374	109	30	97
27	9.3	11	16	13	285	91	789	1070	356	103	25	84
28	7.9	10	15	12	295	80	795	1070	349	96	18	74
29	7.0	9.8	15	12	---	73	800	1070	339	92	18	77
30	7.4	14	16	12	---	71	828	1250	333	90	18	86
31	7.0	---	15	12	---	96	---	2180	---	89	20	---
TOTAL	346.2	303.4	510	343.0	2894	3715	17439	32253	26264	5900	1343	2548
MEAN	11.2	10.1	16.5	11.1	103	120	581	1040	875	190	43.3	84.9
MAX	21	17	29	14	500	250	828	2180	2340	315	86	120
MIN	6.2	7.2	13	9.2	12	71	111	850	333	71	15	26
AC-FT	687	602	1010	680	5740	7370	34590	63970	52090	11700	2660	5050

CAL YR 1981 TOTAL 5522.89 MEAN 15.1 MAX 40 MIN .47 AC-FT 10950
WTR YR 1982 TOTAL 93858.60 MEAN 257 MAX 2340 MIN 6.2 AC-FT 186200

Table 10.--Water-quality records, chemical, for

James River near Scotland, SD (06478500)

PERIOD OF RECORD.--Water years 1956-64, 1967-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1974 to Sept. 30, 1981.
WATER TEMPERATURES: January 1953 to September 1969, October 1974 to current year.
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1982.

REMARKS.--Prior to October 1969, continuous temperature thermograph at station. Sediment discharge records fair during periods of daily observer samples, poor thereafter.

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.--
WATER TEMPERATURES: Maximum daily, 30.0°C July 21, 22, Aug. 2; minimum daily, 0.5°C Jan. 19.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 507 mg/L May 31; minimum daily mean, 50 mg/L Mar. 30.
SEDIMENT LOADS: Maximum daily, 2,980 tons (2,700 tonnes) May 31; minimum daily, 1.7 tons (1.5 tonnes) Oct. 2, 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)
NOV											
18...	1200	8.4	2000	8.3	8.5	5.8	10.4	K27	150	862	632
JAN											
19...	1300	9.8	2610	7.7	.5	4.0	6.9	<2	190	1376	1026
MAR											
03...	1300	183	800	7.5	2.0	--	11.1	K1400	860	--	--
APR											
14...	1325	810	--	--	10.5	--	--	--	--	--	--
MAY											
12...	1430	985	470	8.0	18.0	34	--	--	--	154	24
JUN											
08...	1615	1120	--	--	22.0	--	--	--	--	--	--
JUL											
14...	1200	179	950	8.2	27.5	25	7.0	K95	580	361	105
AUG											
18...	1400	29	1110	8.1	26.0	33	6.6	500	460	392	130
SEP											
21...	1315	116	--	--	14.5	--	--	--	--	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV											
18...	210	82	140	26	2.1	.7	790	230	75	.5	19
JAN											
19...	320	140	160	20	1.9	24	1300	350	77	.6	19
MAR											
03...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	--	--	--	--	--	--	--	--	--	--	--
MAY											
12...	37	15	36	31	1.3	13	85	130	19	.2	2.3
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
JUL											
14...	85	36	72	29	1.7	17	230	256	34	.3	6.0
AUG											
18...	86	43	95	34	2.1	14	290	262	46	.3	4.2
SEP											
21...	--	--	--	--	--	--	--	--	--	--	--

< Less than.
K Non-ideal colony count.

Table 10.—Water-quality records, chemical, for

James River near Scotland, SD (06478500)—Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)
NOV												
18...	1200	8.4	151	3.4	67	--	--	--	74	100	--	--
JAN												
19...	1300	9.8	206	5.5	61	--	--	--	65	70	100	--
MAR												
03...	1300	183	--	--	--	--	--	--	--	--	--	--
APR												
14...	1325	810	144	315	--	--	--	--	--	--	--	--
MAY												
12...	1430	985	164	436	93	--	--	--	--	--	--	--
JUN												
08...	1615	1120	218	659	--	--	--	--	--	--	--	--
JUL												
14...	1200	179	125	60	96	--	--	--	--	--	--	--
AUG												
18...	1400	29	275	22	76	--	--	--	--	--	--	--
SEP												
21...	1315	116	142	44	98	--	--	--	--	--	--	--

Table 11.--Water-quality records, daily suspended sediment, for

James River near Scotland, SD (06478500)

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	8.4	100	2.3	7.2	150	2.9	21	210	12
2	6.2	100	1.7	7.4	150	3.0	21	240	14
3	6.5	100	1.8	7.2	150	2.9	29	300	23
4	8.6	100	2.3	7.3	150	3.0	23	270	17
5	8.2	100	2.2	9.1	150	3.7	20	250	13
6	8.9	100	2.4	7.2	150	2.9	18	240	12
7	8.0	100	2.2	7.8	150	3.2	17	210	9.6
8	7.6	100	2.1	10	150	4.1	15	200	8.1
9	8.4	100	2.3	8.2	150	3.3	14	200	7.6
10	7.0	100	1.9	9.2	150	3.7	13	200	7.0
11	6.2	100	1.7	9.4	150	3.8	14	200	7.6
12	6.6	100	1.8	9.6	150	3.9	14	200	7.6
13	9.4	110	2.8	8.4	150	3.4	15	200	8.1
14	11	130	3.9	8.7	150	3.5	16	200	8.6
15	14	160	6.0	9.4	150	3.8	16	200	8.6
16	16	200	8.6	8.2	150	3.3	16	200	8.6
17	21	200	11	7.6	150	3.1	16	200	8.6
18	21	200	11	8.7	150	3.5	15	200	8.1
19	19	200	10	13	150	5.3	14	200	7.6
20	20	200	11	11	150	4.5	15	200	8.1
21	19	190	9.7	13	150	5.3	14	200	7.6
22	17	160	7.3	15	150	6.1	15	200	8.1
23	15	160	6.5	17	150	6.9	15	200	8.1
24	13	160	5.6	13	150	5.3	16	200	8.6
25	12	160	5.2	13	150	5.3	15	200	8.1
26	9.6	150	3.9	13	150	5.3	16	200	8.6
27	9.3	150	3.8	11	150	4.5	16	200	8.6
28	7.9	150	3.2	10	150	4.1	15	200	8.1
29	7.0	150	2.8	9.8	150	4.0	15	200	8.1
30	7.4	150	3.0	14	180	6.8	16	200	8.6
31	7.0	150	2.8	---	---	---	15	200	8.1
TOTAL	346.2	---	142.8	303.4	---	124.4	510	---	295.4
		JANUARY			FEBRUARY			MARCH	
1	14	200	7.6	12	200	6.5	250	300	202
2	14	200	7.6	12	200	6.5	210	260	147
3	13	200	7.0	12	200	6.5	192	200	104
4	13	200	7.0	12	200	6.5	137	160	59
5	12	200	6.5	12	200	6.5	123	120	40
6	12	200	6.5	12	200	6.5	130	100	35
7	11	200	5.9	12	200	6.5	120	90	29
8	11	200	5.9	12	200	6.5	110	80	24
9	11	200	5.9	12	200	6.5	111	80	24
10	11	200	5.9	12	200	6.5	120	90	29
11	11	200	5.9	12	200	6.5	130	100	35
12	11	200	5.9	12	200	6.5	136	100	37
13	10	200	5.4	12	210	6.8	137	100	37
14	10	200	5.4	13	220	7.7	137	100	37
15	10	200	5.4	14	230	8.7	137	100	37
16	11	200	5.9	17	240	11	123	90	30
17	11	200	5.9	22	250	15	104	80	22
18	10	200	5.4	27	260	19	91	70	17
19	9.8	200	5.3	35	270	26	88	70	17
20	9.5	200	5.1	50	280	38	98	70	19
21	9.4	200	5.1	150	300	121	111	70	21
22	9.4	200	5.1	300	400	324	101	80	22
23	9.2	200	5.0	500	500	675	107	80	23
24	9.3	200	5.0	420	500	567	107	80	23
25	9.4	200	5.1	330	400	356	98	80	21
26	10	200	5.4	280	370	280	96	70	18
27	13	200	7.0	285	370	285	91	70	17
28	12	200	6.5	295	370	295	80	70	15
29	12	200	6.5	---	---	---	73	60	12
30	12	200	6.5	---	---	---	71	50	9.6
31	12	200	6.5	---	---	---	96	60	16
TOTAL	343.0	---	185.1	2894	---	3113.2	3715	---	1178.6

Table 11.--Water-quality records, daily suspended sediment, for

James River near Scotland, SD (06478500)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	111	70	21	850	168	386	2340	376	2380
2	123	80	27	870	160	376	2160	212	1240
3	163	90	40	875	149	352	1900	174	893
4	192	100	52	875	150	354	1660	170	762
5	184	90	45	895	157	379	1500	170	688
6	171	80	37	904	154	376	1370	171	633
7	171	80	37	899	157	381	1250	182	614
8	201	80	43	918	177	439	1120	191	578
9	260	90	63	927	172	430	1010	223	608
10	388	100	105	945	170	434	931	249	626
11	575	110	171	952	164	422	859	229	531
12	705	120	228	983	132	350	794	222	476
13	783	130	275	1000	129	348	714	212	409
14	806	140	305	1020	116	319	650	207	363
15	812	146	320	1040	112	314	640	198	342
16	822	183	406	1050	116	329	681	205	377
17	828	199	445	1050	140	397	716	216	418
18	812	218	478	1050	146	414	745	222	447
19	795	222	477	1040	162	455	689	201	374
20	789	212	452	1040	166	466	600	165	267
21	771	195	406	1040	190	534	526	120	170
22	753	195	396	1050	164	465	460	113	140
23	741	191	382	1120	181	547	418	120	135
24	741	170	340	1100	206	612	393	117	124
25	747	172	347	1060	185	529	387	114	119
26	783	173	366	1060	153	438	374	106	107
27	789	173	369	1070	162	468	356	106	102
28	795	172	369	1070	181	523	349	107	101
29	800	169	365	1070	182	526	339	111	102
30	828	165	369	1250	197	665	333	112	101
31	---	---	---	2180	507	2980	---	---	---
TOTAL	17439	---	7736	32253	---	16008	26264	---	14227
		JULY			AUGUST			SEPTEMBER	
1	315	106	90	86	149	35	26	147	10
2	307	101	84	83	149	33	40	145	16
3	303	88	72	79	149	32	44	143	17
4	293	88	70	79	152	32	41	118	13
5	272	85	62	81	168	37	39	97	10
6	273	77	57	74	180	36	39	97	10
7	270	88	64	69	184	34	47	97	12
8	247	108	72	63	184	31	51	103	14
9	274	104	77	57	176	27	64	105	18
10	282	93	71	56	174	26	100	117	32
11	232	91	57	48	170	22	99	99	26
12	201	89	48	43	166	19	107	80	23
13	194	88	46	39	165	17	114	69	21
14	182	92	45	35	159	15	107	67	19
15	180	92	45	34	153	14	111	65	19
16	163	91	40	33	160	14	111	65	19
17	139	88	33	30	154	12	112	53	16
18	192	88	46	27	157	11	116	55	17
19	187	88	44	24	165	11	120	58	19
20	151	84	34	21	175	9.9	116	72	23
21	97	77	20	18	183	8.9	115	77	24
22	71	70	13	17	183	8.4	108	73	21
23	185	83	41	15	181	7.3	101	75	20
24	180	94	46	58	211	33	100	73	20
25	131	109	39	45	204	25	102	70	19
26	109	109	32	30	199	16	97	67	18
27	103	113	31	25	190	13	84	68	15
28	96	123	32	18	175	8.5	74	69	14
29	92	127	32	18	160	7.8	77	68	14
30	90	147	36	18	156	7.6	86	72	17
31	89	149	36	20	154	8.3	---	---	---
TOTAL	5900	---	1515	1343	---	611.7	2548	---	536

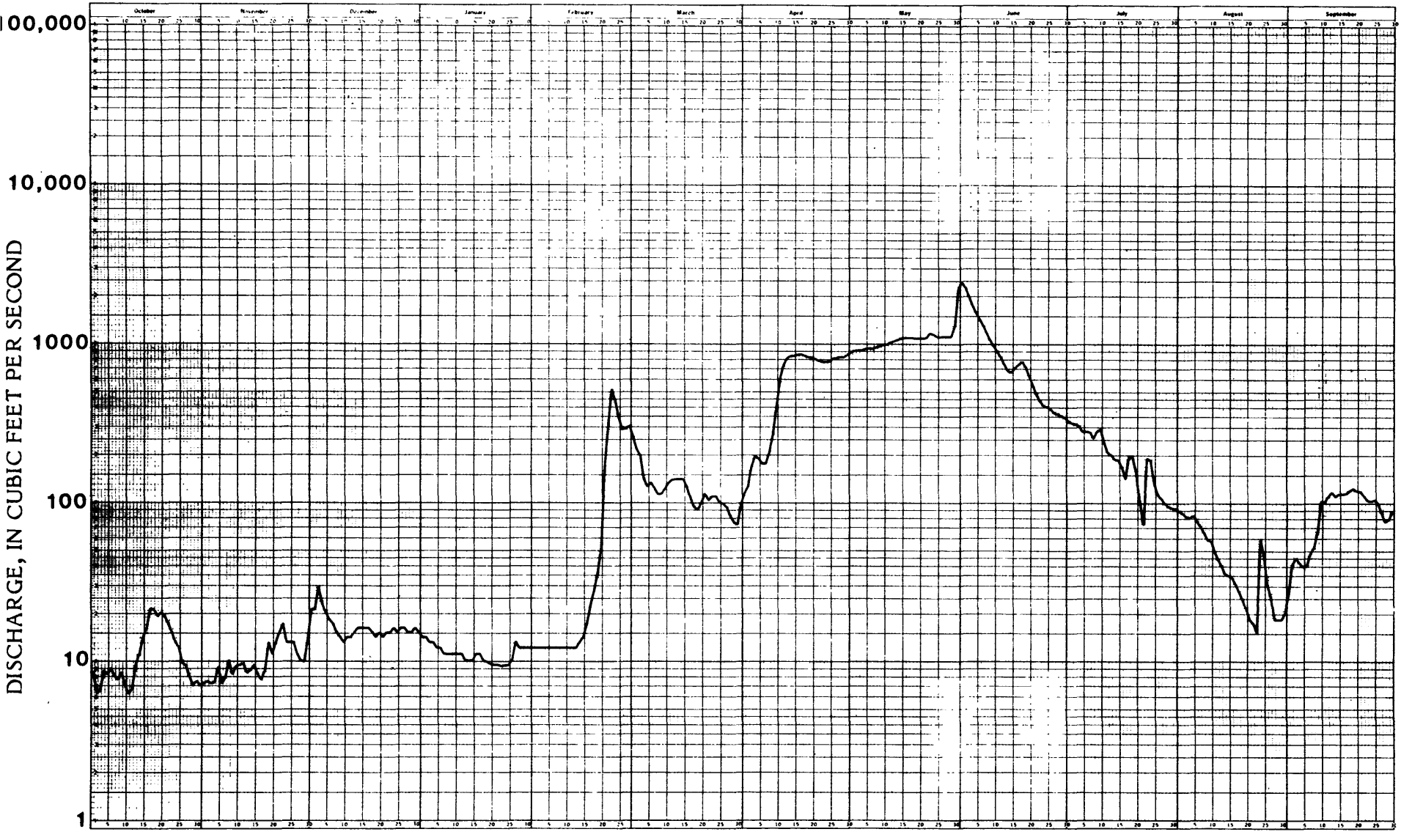

Figure 15.--Daily discharge for James River near Scotland (06478500), October 1981 to September 1982.

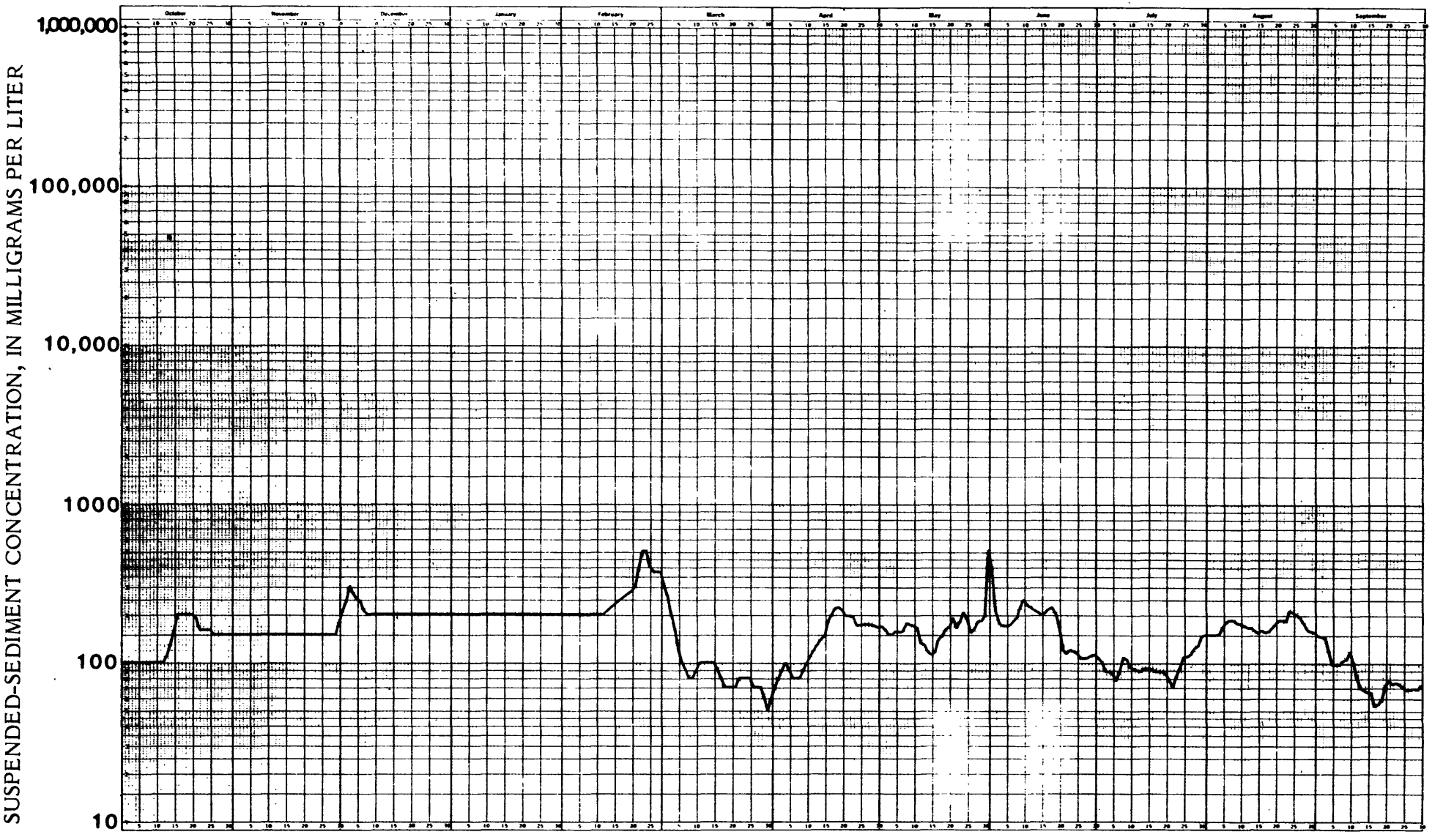

Figure 16.--Daily suspended-sediment concentration for James River near Scotland (06478500), October 1981 to September 1982.

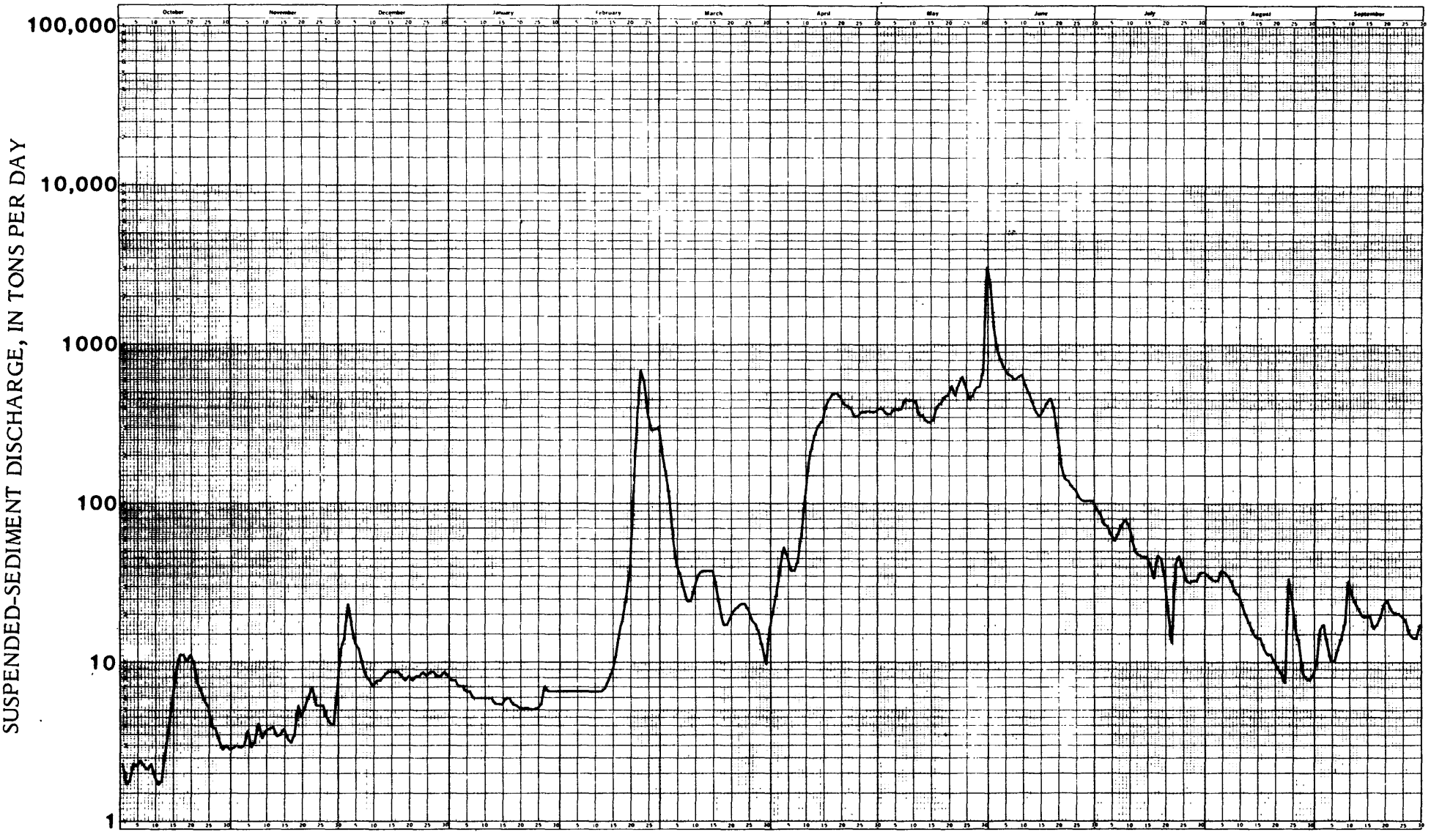

Figure 17.--Daily suspended-sediment discharge for James River near Scotland (06478500), October 1981 to September 1982.

Table 12.—Daily discharge for James River near Yankton, SD (06478513)

LOCATION.--Lat 42°59'45", long 97°22'10", in NE¼NW¼ sec.5, T.94 N., R.55 W., Yankton County, Hydrologic Unit 10160011, on left bank at downstream side of highway bridge, 3.9 mi (6.3 km) upstream from Beaver Creek, 17.2 mi (27.7 km) upstream from mouth, and 9 mi (14.5 km) northeast of Yankton.

DRAINAGE AREA.--21,800 mi^2 (56,460 km^2), approximately, of which about 4,790 mi^2 (12,400 km^2) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1982.

GAGE.--Water-stage recorder. Elevation of gage is 1,155 ft (352 m), from topographic map.

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^3), the largest of which is Jamestown Reservoir, capacity, 229,470 acre-ft (283 hm^3), 527 mi (848 km) upstream since May 1953. Occasional backwater caused by Beaver Creek. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,410 ft^3/s (68.3 m^3/s) at 2015 hours, June 2, gage height, 11.40 ft (3.475 m); minimum daily discharge, 0.78 ft^3/s (0.022 m^3/s) Oct. 4.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 4 to Nov. 19, May 20-26, June 8-10, Sept. 16-28; stage-discharge relation affected by ice Nov. 20 to Mar. 22)

3.4	0.55	4.0	33	6.0	335	9.0	1120
3.5	2.2	4.5	83	7.0	530	10.0	1600
3.6	5.0	5.0	157	8.0	770	12.0	2800
3.8	18						

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	3.9	15	15	14	400	156	752	2310	394	104	26
2	1.9	3.3	16	16	14	380	189	768	2400	381	98	25
3	1.0	2.9	20	15	14	340	214	779	2390	370	95	25
4	.78	2.5	21	14	14	310	229	785	2250	358	90	30
5	1.8	2.3	23	14	14	270	278	785	2010	350	94	38
6	3.4	2.2	26	12	14	230	297	800	1730	363	90	37
7	4.7	2.1	25	12	14	200	291	812	1510	350	85	35
8	3.7	2.1	22	12	14	180	296	815	1320	340	80	35
9	3.4	2.2	18	12	14	160	306	851	1170	320	71	38
10	5.5	2.4	14	8.0	14	140	346	845	1050	340	66	48
11	4.5	3.1	11	8.0	14	130	427	845	944	350	62	68
12	3.5	3.1	13	8.0	14	140	548	887	872	320	58	91
13	4.9	3.2	13	8.0	14	150	656	896	809	280	57	96
14	8.9	3.6	12	8.0	14	170	729	948	750	260	50	103
15	8.4	4.4	10	9.0	14	170	762	1060	698	250	47	110
16	12	4.3	10	9.0	14	170	768	1030	668	250	42	106
17	12	3.8	10	9.0	14	170	773	1000	678	230	40	110
18	9.6	3.4	10	10	16	160	782	976	708	250	39	110
19	6.3	5.5	12	10	20	150	770	972	712	245	38	110
20	6.7	5.0	15	10	30	140	755	1000	682	245	33	110
21	9.1	3.5	16	10	50	150	748	1100	625	221	29	112
22	10	4.5	16	10	100	175	740	900	560	184	29	110
23	10	7.1	16	10	200	202	728	800	514	133	27	109
24	9.4	9.0	15	10	400	199	715	900	482	147	29	101
25	9.7	7.9	15	10	550	201	712	1000	453	204	30	93
26	7.5	12	15	12	510	197	710	1200	438	180	46	93
27	6.1	9.9	15	15	470	188	725	1160	429	152	47	92
28	5.1	7.9	15	14	410	187	735	1120	416	136	34	89
29	4.6	7.1	15	14	---	178	738	1240	404	124	33	85
30	4.1	9.6	15	14	---	175	748	1600	405	112	30	75
31	4.6	---	15	14	---	158	---	2050	---	107	26	---
TOTAL	185.18	143.8	484	352.0	2994	6170	16871	30676	30387	7946	1699	2310
MEAN	5.97	4.79	15.6	11.4	107	199	562	990	1013	256	54.8	77.0
MAX	12	12	26	16	550	400	782	2050	2400	394	104	112
MIN	.78	2.1	10	8.0	14	130	156	752	404	107	26	25
AC-FT	367	285	960	698	5940	12240	33460	60850	60270	15760	3370	4580

WTR YR 1982 TOTAL 100217.98 MEAN 275 MAX 2400 MIN .78 AC-FT 198800

Table 13.—Water-quality records, daily suspended sediment, for James River near Yankton, SD (06478513)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981 to Sept. 30, 1982.

REMARKS.--Records poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 450 mg/L June 1; minimum daily mean, 30 mg/L Dec. 11, 13-18, Jan. 10-15.
SEDIMENT LOADS: Maximum daily, 2,810 tons (2,550 tonnes) June 1; minimum daily, 0.53 ton (0.48 tonne) Oct. 4.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	2.0	220	1.2	3.9	130	1.4	15	100	4.1
2	1.9	290	1.5	3.3	120	1.1	16	110	4.8
3	1.0	280	.76	2.9	100	.78	20	120	6.5
4	.78	250	.53	2.5	120	.81	21	130	7.4
5	1.8	260	1.3	2.3	130	.81	23	140	8.7
6	3.4	260	2.4	2.2	130	.77	26	140	9.8
7	4.7	270	3.4	2.1	130	.74	25	100	6.8
8	3.7	240	2.4	2.1	130	.74	22	80	4.8
9	3.4	220	2.0	2.2	130	.77	18	60	2.9
10	5.5	250	3.7	2.4	130	.84	14	40	1.5
11	4.5	220	2.7	3.1	110	.92	11	30	.89
12	3.5	100	.95	3.1	120	1.0	13	40	1.4
13	4.9	160	2.1	3.2	110	.95	13	30	1.1
14	8.9	200	4.8	3.6	120	1.2	12	30	.97
15	8.4	190	4.3	4.4	130	1.5	10	30	.81
16	12	260	8.4	4.3	110	1.3	10	30	.81
17	12	230	7.5	3.8	90	.92	10	30	.81
18	9.6	190	4.9	3.4	80	.73	10	30	.81
19	6.3	120	2.0	5.5	100	1.5	12	35	1.1
20	6.7	140	2.5	5.0	90	1.2	15	35	1.4
21	9.1	150	3.7	3.5	70	.66	16	35	1.5
22	10	150	4.1	4.5	80	.97	16	35	1.5
23	10	150	4.1	7.1	90	1.7	16	35	1.5
24	9.4	150	3.8	9.0	100	2.4	15	35	1.4
25	9.7	120	3.1	7.9	80	1.7	15	35	1.4
26	7.5	80	1.6	12	100	3.2	15	35	1.4
27	6.1	90	1.5	9.9	90	2.4	15	35	1.4
28	5.1	90	1.2	7.9	80	1.7	15	35	1.4
29	4.6	100	1.2	7.1	80	1.5	15	35	1.4
30	4.1	150	1.7	9.6	90	2.3	15	35	1.4
31	4.6	140	1.7	---	---	---	15	35	1.4
TOTAL	185.18	---	87.08	143.8	---	38.51	484	---	83.10

Table 13.--Water-quality records, daily suspended sediment, for James River near Yankton, SD (06478513)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	15	35	1.4	14	45	1.7	400	100	108
2	16	35	1.5	14	45	1.7	380	90	92
3	15	35	1.4	14	45	1.7	340	70	64
4	14	35	1.3	14	45	1.7	310	60	50
5	14	35	1.3	14	45	1.7	270	50	36
6	12	35	1.1	14	45	1.7	230	50	31
7	12	35	1.1	14	45	1.7	200	50	27
8	12	35	1.1	14	45	1.7	180	50	24
9	12	35	1.1	14	45	1.7	160	50	22
10	8.0	30	.65	14	45	1.7	140	50	19
11	8.0	30	.65	14	45	1.7	130	50	18
12	8.0	30	.65	14	45	1.7	140	50	19
13	8.0	30	.65	14	45	1.7	150	55	22
14	8.0	30	.65	14	45	1.7	170	60	28
15	9.0	30	.73	14	45	1.7	170	60	28
16	9.0	35	.85	14	45	1.7	170	60	28
17	9.0	35	.85	14	45	1.7	170	60	28
18	10	35	.95	16	50	2.2	160	55	24
19	10	35	.95	20	60	3.2	150	50	20
20	10	35	.95	30	70	5.7	140	50	19
21	10	35	.95	50	90	12	150	55	22
22	10	35	.95	100	100	27	175	55	26
23	10	35	.95	200	110	59	202	65	35
24	10	35	.95	400	120	130	199	65	35
25	10	35	.95	550	130	193	201	65	35
26	12	40	1.3	510	120	165	197	60	32
27	15	45	1.8	470	110	140	188	50	25
28	14	45	1.7	410	100	111	187	50	25
29	14	45	1.7	---	---	---	178	50	24
30	14	45	1.7	---	---	---	175	50	24
31	14	45	1.7	---	---	---	158	50	21
TOTAL	352.0	---	34.48	2994	---	877.0	6170	---	1011
		APRIL			MAY			JUNE	
1	156	50	21	752	170	345	2310	450	2810
2	189	55	28	768	170	353	2400	350	2270
3	214	55	32	779	170	358	2390	300	1940
4	229	60	37	785	180	382	2250	200	1220
5	278	60	45	785	180	382	2010	200	1090
6	297	65	52	800	180	389	1730	200	934
7	291	65	51	812	180	395	1510	200	815
8	296	65	52	815	190	418	1320	190	677
9	306	70	58	851	190	437	1170	250	790
10	346	70	65	845	190	433	1050	350	992
11	427	70	81	845	190	433	944	350	892
12	548	75	111	887	200	479	872	350	824
13	656	75	133	896	200	484	809	350	765
14	729	80	157	948	200	512	750	350	709
15	762	85	175	1060	200	572	698	350	660
16	768	90	187	1030	200	556	668	340	613
17	773	90	188	1000	200	540	678	340	622
18	782	100	211	976	200	527	708	400	765
19	770	100	208	972	200	525	712	400	769
20	755	100	204	1000	200	540	682	380	700
21	748	100	202	1100	200	594	625	340	574
22	740	110	220	900	200	486	560	340	514
23	728	110	216	800	200	432	514	340	472
24	715	110	212	900	220	535	482	340	442
25	712	110	211	1000	200	540	453	340	416
26	710	120	230	1200	180	583	438	330	390
27	725	130	254	1160	170	532	429	330	382
28	735	140	278	1120	170	514	416	330	371
29	738	150	299	1240	170	569	404	330	360
30	748	160	323	1600	280	1210	405	320	350
31	---	---	---	2050	380	2100	---	---	---
TOTAL	16871	---	4541	30676	---	17155	30387	---	25128

Table 13.—Water-quality records, daily suspended sediment, for James River near Yankton, SD (06478513)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	394	320	340	104	200	56	26	150	11
2	381	320	329	98	200	53	25	150	10
3	370	320	320	95	200	51	25	150	10
4	358	320	309	90	200	49	30	160	13
5	350	320	302	94	200	51	38	170	17
6	363	360	353	90	200	49	37	200	20
7	350	320	302	85	200	46	35	190	18
8	340	320	294	80	200	43	35	180	17
9	320	320	276	71	200	38	38	180	18
10	340	350	321	66	200	36	48	190	25
11	350	400	378	62	200	33	68	200	37
12	320	370	320	58	200	31	91	270	66
13	280	360	272	57	200	31	96	280	73
14	260	350	246	50	200	27	103	290	81
15	250	340	229	47	200	25	110	300	89
16	250	330	223	42	200	23	106	300	86
17	230	320	199	40	200	22	110	300	89
18	250	330	223	39	200	21	110	300	89
19	245	340	225	38	200	21	110	300	89
20	245	180	119	33	200	18	110	300	89
21	221	160	95	29	200	16	112	290	88
22	184	150	75	29	200	16	110	280	83
23	133	150	54	27	200	15	109	270	79
24	147	300	119	29	200	16	101	260	71
25	204	270	149	30	200	16	93	250	63
26	180	250	121	46	300	37	93	240	60
27	152	220	90	47	290	37	92	230	57
28	136	200	73	34	230	21	89	220	53
29	124	200	67	33	200	18	85	210	48
30	112	200	60	30	170	14	75	200	40
31	107	200	58	26	150	11	---	---	---
TOTAL	7946	---	6541	1699	---	941	2310	---	1589

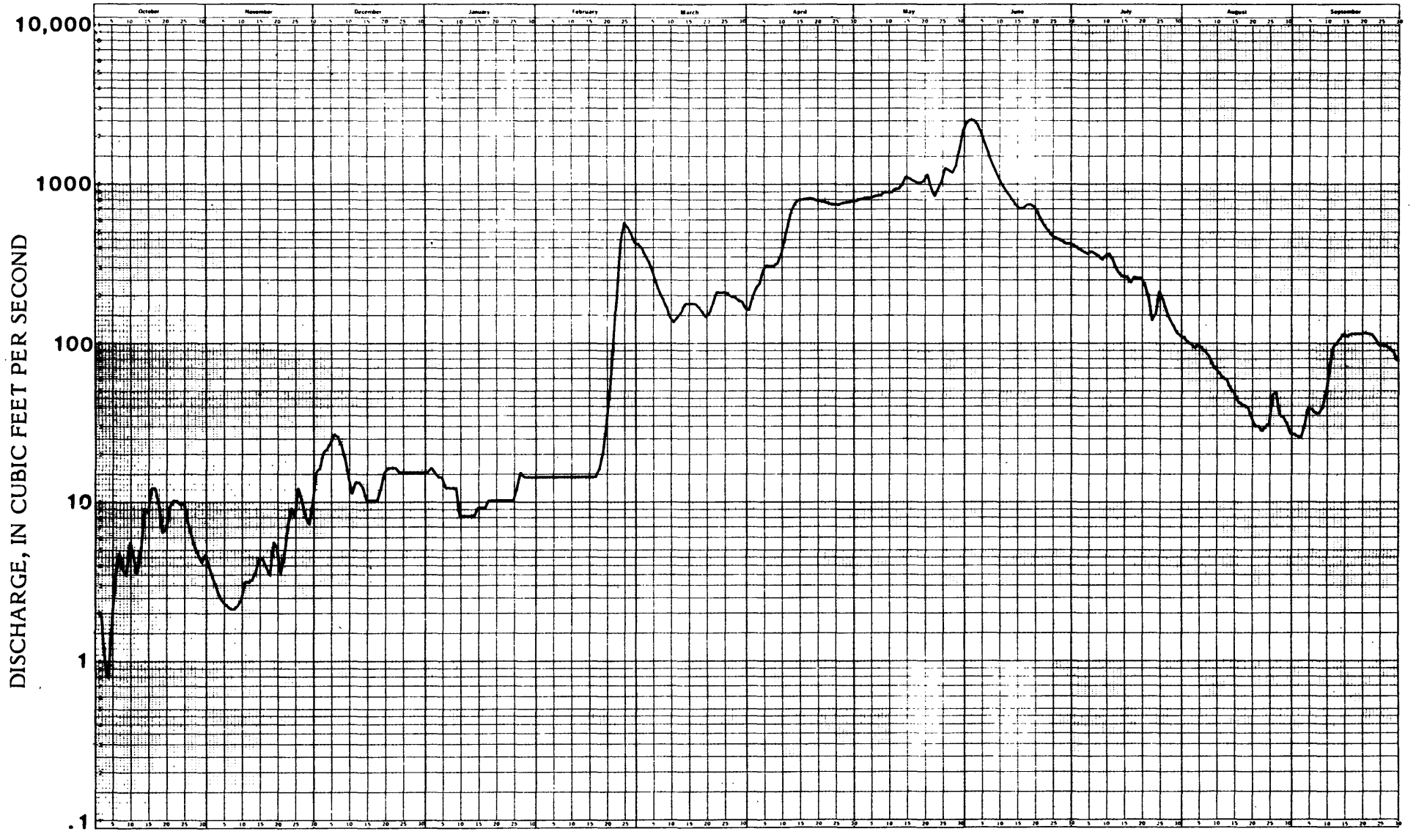

Figure 18.--Daily discharge for James River near Yankton (06478513), October 1981 to September 1982.

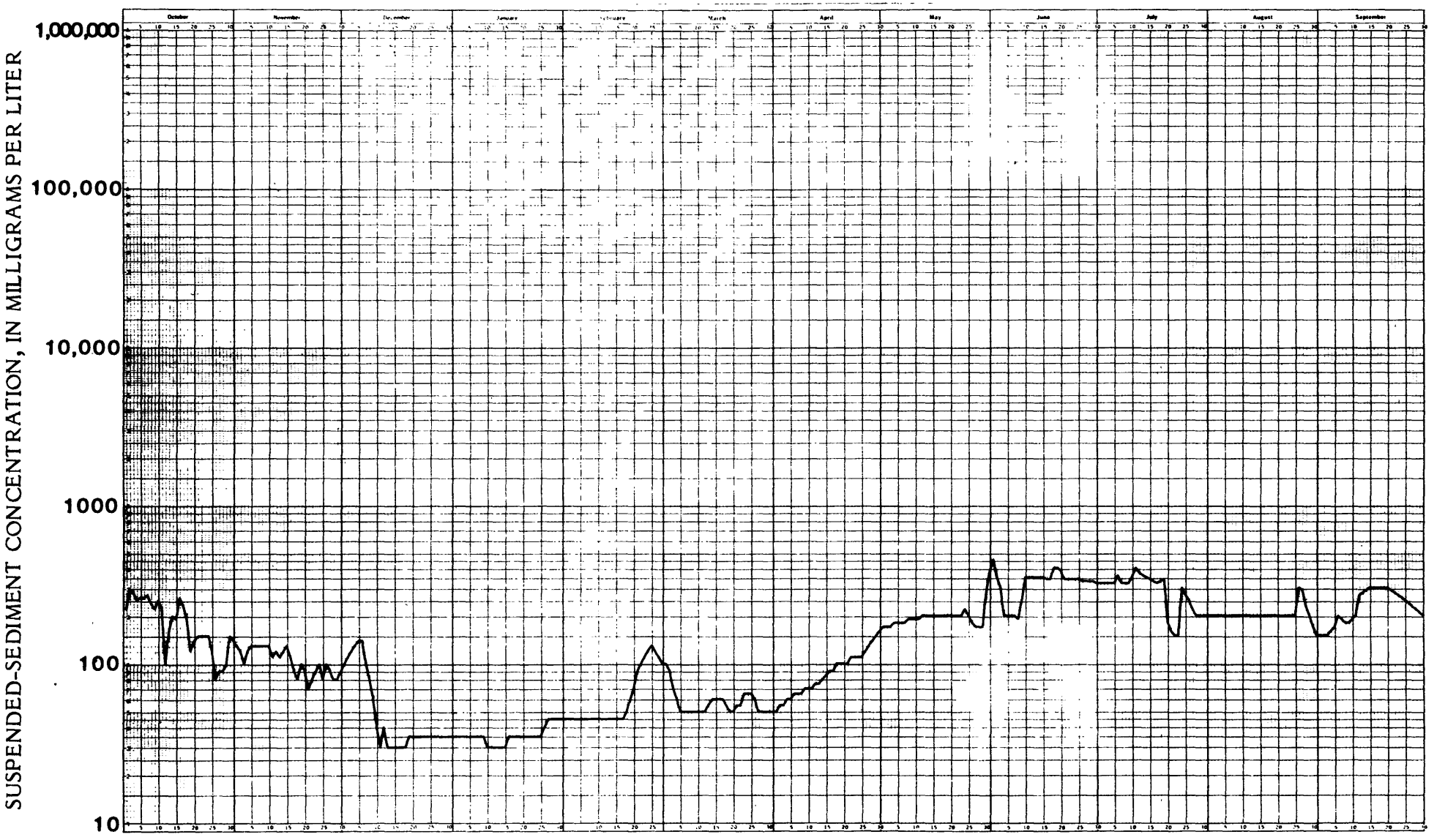

Figure 19.--Daily suspended-sediment concentration for James River near Yankton (06478513), October 1981 to September 1982.

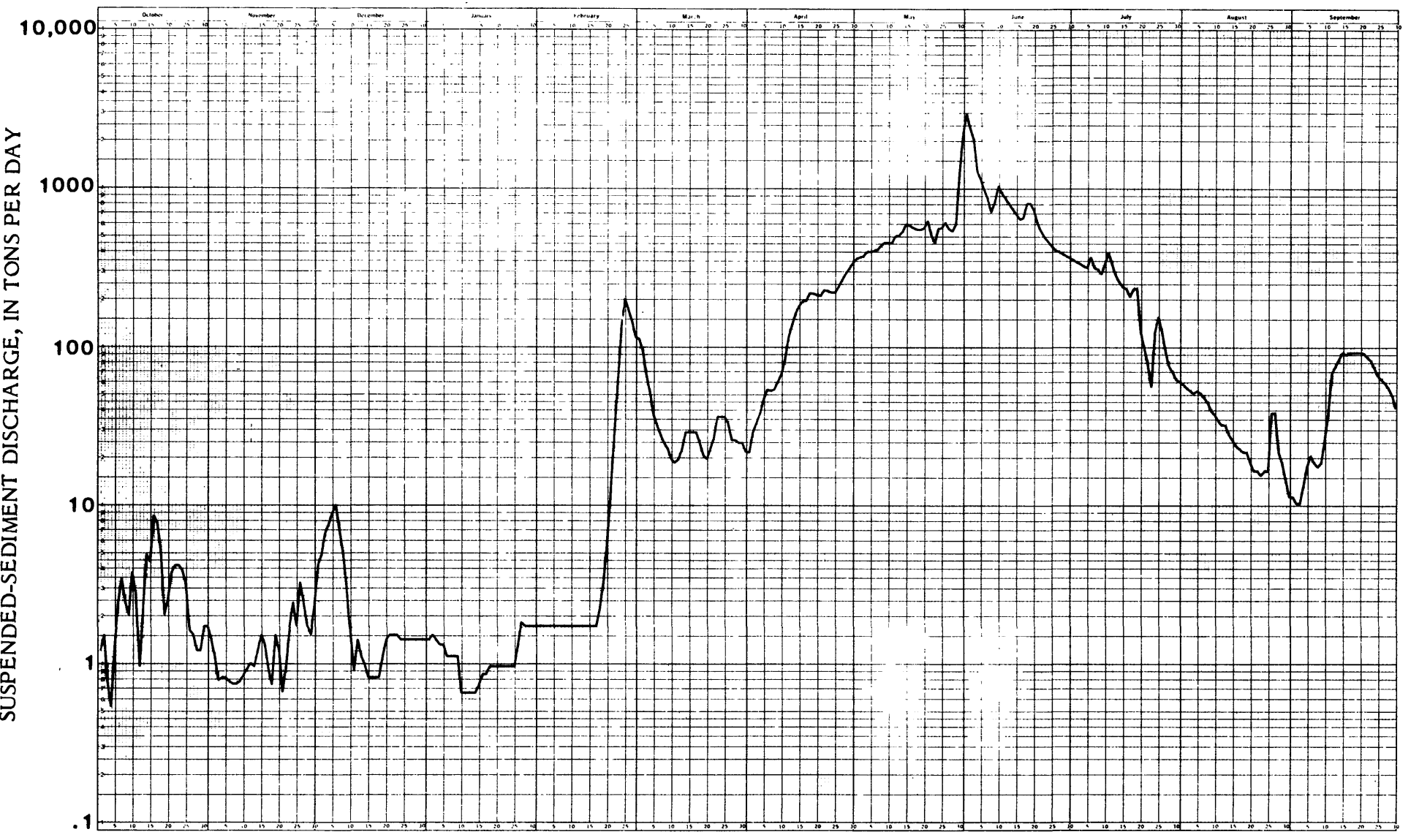

Figure 20.--Daily suspended-sediment discharge for James River near Yankton (06478513), October 1981 to September 1982.

Table 14.—Daily discharge for Beaver Creek near Yankton, SD (06478514)

LOCATION.--Lat 42°57'32", long 94°21'40", in NE¼SE¼ sec.17, T.97 N., R.55 W., Yankton County, Hydrologic Unit 10160011, on right bank 30 ft (9.1 m) downstream from highway bridge, 6.8 mi (10.9 km) northeast of Yankton, 8.9 mi (14.3 km) downstream from Beaver Lake, and 1.2 mi (1.9 km) upstream from mouth.

DRAINAGE AREA.--144 mi^2 (373 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,165 ft (355.1 m), from topographic map.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,110 ft^3/s (31.4 m^3/s) at 2245 hours, May 20, gage height, 11.11 ft (3.386 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.10	.00	.00	.00	.94	.10	.02	352	.02	.00	.00
2	.00	.11	.00	.00	.00	.32	.10	.02	200	.02	.01	.00
3	.00	.10	.00	.00	.00	.22	2.4	.02	139	.02	.02	.00
4	.00	.10	.00	.00	.00	.10	.60	.02	112	.02	.02	.00
5	.00	.10	.00	.00	.00	.10	.50	.05	80	.01	.02	.00
6	.00	.10	.00	.00	.00	.10	.30	.02	55	.01	.01	.00
7	.00	.11	.00	.00	.00	.10	.20	.04	36	.01	.00	.02
8	.00	.10	.00	.00	.00	.10	.10	.03	23	.01	.00	.02
9	.00	.11	.00	.00	.00	.10	.40	.05	18	.01	.00	.03
10	.02	.12	.00	.00	.00	.10	.72	.03	7.3	.01	.01	.02
11	.01	.11	.00	.00	.00	.10	.10	.05	5.2	.02	.00	.02
12	.01	.12	.00	.00	.00	.10	.10	.14	3.5	.02	.00	.03
13	.01	.12	.00	.00	.00	.10	.10	5.8	2.0	.08	.00	.04
14	.03	.12	.00	.00	.00	.10	.10	1.8	2.7	.01	.00	.03
15	.03	.13	.00	.00	.00	.10	.40	23	3.3	.01	.00	.04
16	.03	.13	.00	.00	.00	.10	.20	20	1.7	.01	.00	.03
17	.04	.13	.00	.00	.00	.10	.10	5.0	.91	.01	.00	.03
18	.04	.13	.00	.00	.00	.10	.05	1.0	.90	.01	.00	.03
19	.04	.01	.00	.00	.01	.18	.03	.14	.60	18	.00	.03
20	.06	.00	.00	.00	.05	.24	.02	333	.40	20	.01	.03
21	.05	.00	.00	.00	.10	2.3	.03	703	.27	16	.01	.04
22	.06	.00	.00	.00	50	.68	.05	232	.12	5.0	.01	.03
23	.07	.00	.00	.00	20	.42	.02	121	.06	.87	.02	.02
24	.07	.00	.00	.00	10	.24	.02	107	.04	.15	.49	.02
25	.08	.00	.00	.00	5.0	.10	.02	76	.03	.00	.00	.02
26	.08	.00	.00	.00	5.0	.10	.02	103	.03	.00	.00	.01
27	.08	.00	.00	.00	3.3	.10	.02	77	.02	.00	.00	.00
28	.08	.00	.00	.00	1.7	.10	.02	46	.02	.00	.00	.01
29	.09	.00	.00	.00	---	.10	.02	132	.02	.00	.00	.00
30	.09	.00	.00	.00	---	.10	.05	523	.03	.00	.00	.00
31	.09	---	.00	.00	---	.10	---	603	---	.00	.00	---
TOTAL	1.16	2.05	.00	.00	95.16	7.74	6.89	3113.23	1044.15	60.33	.63	.55
MEAN	.037	.068	.000	.000	3.40	.25	.23	100	34.8	1.95	.020	.018
MAX	.09	.13	.00	.00	50	2.3	2.4	703	352	20	.49	.04
MIN	.00	.00	.00	.00	.00	.10	.02	.02	.02	.00	.00	.00
AC-FT	2.3	4.1	.00	.00	189	15	14	6180	2070	120	1.2	1.1

WTR YR 1982 TOTAL 4331.89 MEAN 11.9 MAX 703 MIN .00 AC-FT 8590

Table 15.—Water-quality records, daily suspended sediment, for Beaver Creek near Yankton, SD (06478514)

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1982.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE.--Oct. 1, 1981, to Sept. 30, 1982.

REMARKS.--Records poor. No flow Oct. 1-9, Nov. 20 to Feb. 18, July 25 to Aug. 1, Aug. 7-9, 11-19, Aug. 25 to Sept. 6, Sept. 27, 29, 30.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,100 mg/L May 21; minimum daily mean, 0 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 3,990 tons (3,620 tonnes) May 21; minimum daily, 0 ton (0 tonne) on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.10	10	.00	.00	0	.00
2	.00	0	.00	.11	10	.00	.00	0	.00
3	.00	0	.00	.10	10	.00	.00	0	.00
4	.00	0	.00	.10	10	.00	.00	0	.00
5	.00	0	.00	.10	10	.00	.00	0	.00
6	.00	0	.00	.10	10	.00	.00	0	.00
7	.00	0	.00	.11	10	.00	.00	0	.00
8	.00	0	.00	.10	10	.00	.00	0	.00
9	.00	0	.00	.11	10	.00	.00	0	.00
10	.02	10	.00	.12	10	.00	.00	0	.00
11	.01	10	.00	.11	10	.00	.00	0	.00
12	.01	10	.00	.12	10	.00	.00	0	.00
13	.01	10	.00	.12	10	.00	.00	0	.00
14	.03	10	.00	.12	10	.00	.00	0	.00
15	.03	10	.00	.13	10	.00	.00	0	.00
16	.03	10	.00	.13	10	.00	.00	0	.00
17	.04	10	.00	.13	10	.00	.00	0	.00
18	.04	10	.00	.13	10	.00	.00	0	.00
19	.04	10	.00	.01	10	.00	.00	0	.00
20	.06	10	.00	.00	0	.00	.00	0	.00
21	.05	10	.00	.00	0	.00	.00	0	.00
22	.06	10	.00	.00	0	.00	.00	0	.00
23	.07	10	.00	.00	0	.00	.00	0	.00
24	.07	10	.00	.00	0	.00	.00	0	.00
25	.08	10	.00	.00	0	.00	.00	0	.00
26	.08	10	.00	.00	0	.00	.00	0	.00
27	.08	10	.00	.00	0	.00	.00	0	.00
28	.08	10	.00	.00	0	.00	.00	0	.00
29	.09	10	.00	.00	0	.00	.00	0	.00
30	.09	10	.00	.00	0	.00	.00	0	.00
31	.09	10	.00	---	---	---	.00	0	.00
TOTAL	1.16	---	0.00	2.05	---	0.00	0.00	---	0.00

Table 15.—Water-quality records, daily suspended sediment, for

Beaver Creek near Yankton, SD (06478514)—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.00	0	.00	.00	0	.00	.94	25	.06
2	.00	0	.00	.00	0	.00	.32	25	.02
3	.00	0	.00	.00	0	.00	.22	25	.01
4	.00	0	.00	.00	0	.00	.10	25	.00
5	.00	0	.00	.00	0	.00	.10	25	.00
6	.00	0	.00	.00	0	.00	.10	25	.00
7	.00	0	.00	.00	0	.00	.10	25	.00
8	.00	0	.00	.00	0	.00	.10	25	.00
9	.00	0	.00	.00	0	.00	.10	25	.00
10	.00	0	.00	.00	0	.00	.10	25	.00
11	.00	0	.00	.00	0	.00	.10	25	.00
12	.00	0	.00	.00	0	.00	.10	25	.00
13	.00	0	.00	.00	0	.00	.10	25	.00
14	.00	0	.00	.00	0	.00	.10	25	.00
15	.00	0	.00	.00	0	.00	.10	25	.00
16	.00	0	.00	.00	0	.00	.10	25	.00
17	.00	0	.00	.00	0	.00	.10	25	.00
18	.00	0	.00	.00	0	.00	.10	30	.00
19	.00	0	.00	.01	9	.00	.18	30	.01
20	.00	0	.00	.05	9	.00	.24	200	.13
21	.00	0	.00	.10	9	.00	2.3	300	1.9
22	.00	0	.00	50	150	20	.68	200	.37
23	.00	0	.00	20	100	5.4	.42	100	.11
24	.00	0	.00	10	50	1.4	.24	60	.04
25	.00	0	.00	5.0	40	.54	.10	50	.01
26	.00	0	.00	5.0	30	.41	.10	50	.01
27	.00	0	.00	3.3	30	.27	.10	50	.01
28	.00	0	.00	1.7	25	.11	.10	50	.01
29	.00	0	.00	---	---	---	.10	50	.01
30	.00	0	.00	---	---	---	.10	50	.01
31	.00	0	.00	---	---	---	.10	50	.01
TOTAL	0.00	---	0.00	95.16	---	28.13	7.74	---	2.72
		APRIL			MAY			JUNE	
1	.10	50	.01	.02	10	.00	352	1000	950
2	.10	100	.03	.02	10	.00	200	600	324
3	2.4	90	.58	.02	10	.00	139	400	150
4	.60	70	.11	.02	10	.00	112	300	91
5	.50	50	.07	.05	10	.00	80	200	43
6	.30	50	.04	.02	10	.00	55	200	30
7	.20	50	.03	.04	10	.00	36	200	19
8	.10	50	.01	.03	10	.00	23	150	9.3
9	.40	70	.08	.05	10	.00	18	150	7.3
10	.72	90	.17	.03	10	.00	7.3	100	2.0
11	.10	70	.02	.05	10	.00	5.2	100	1.4
12	.10	50	.01	.14	20	.00	3.5	100	.95
13	.10	50	.01	5.8	400	6.3	2.0	100	.54
14	.10	50	.01	1.8	300	1.5	2.7	300	2.2
15	.40	70	.08	23	700	43	3.3	500	4.5
16	.20	40	.02	20	500	27	1.7	400	1.8
17	.10	30	.00	5.0	100	1.4	.91	350	.86
18	.05	20	.00	1.0	100	.27	.90	300	.73
19	.03	10	.00	.14	200	.08	.60	250	.41
20	.02	10	.00	333	700	629	.40	200	.22
21	.03	10	.00	703	2100	3990	.27	150	.11
22	.05	10	.00	232	1500	940	.12	100	.03
23	.02	10	.00	121	600	196	.06	50	.00
24	.02	10	.00	107	400	116	.04	30	.00
25	.02	10	.00	76	250	51	.03	10	.00
26	.02	10	.00	103	350	97	.03	10	.00
27	.02	10	.00	77	200	42	.02	10	.00
28	.02	10	.00	46	150	19	.02	10	.00
29	.02	10	.00	132	600	214	.02	10	.00
30	.05	10	.00	523	1000	1410	.03	10	.00
31	---	---	---	603	2000	3260	---	---	---
TOTAL	6.89	---	1.28	3113.23	---	11043.55	1044.15	---	1639.35

Table 15.--Water-quality records, daily suspended sediment, for Beaver Creek near Yankton, SD (06478514)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	.02	10	.00	.00	0	.00	.00	0	.00
2	.02	10	.00	.01	10	.00	.00	0	.00
3	.02	10	.00	.02	10	.00	.00	0	.00
4	.02	10	.00	.02	10	.00	.00	0	.00
5	.01	10	.00	.02	10	.00	.00	0	.00
6	.01	10	.00	.01	10	.00	.00	0	.00
7	.01	10	.00	.00	0	.00	.02	10	.00
8	.01	10	.00	.00	0	.00	.02	10	.00
9	.01	10	.00	.00	0	.00	.03	10	.00
10	.01	10	.00	.01	10	.00	.02	10	.00
11	.02	10	.00	.00	0	.00	.02	10	.00
12	.02	10	.00	.00	0	.00	.03	10	.00
13	.08	10	.00	.00	0	.00	.04	10	.00
14	.01	10	.00	.00	0	.00	.03	10	.00
15	.01	10	.00	.00	0	.00	.04	10	.00
16	.01	10	.00	.00	0	.00	.03	10	.00
17	.01	10	.00	.00	0	.00	.03	10	.00
18	.01	10	.00	.00	0	.00	.03	10	.00
19	18	100	4.9	.00	0	.00	.03	10	.00
20	20	400	22	.01	10	.00	.03	10	.00
21	16	200	8.6	.01	10	.00	.04	10	.00
22	5.0	100	1.4	.01	10	.00	.03	10	.00
23	.87	40	.09	.02	10	.00	.02	10	.00
24	.15	10	.00	.49	20	.03	.02	10	.00
25	.00	0	.00	.00	0	.00	.02	10	.00
26	.00	0	.00	.00	0	.00	.01	10	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.00	0	.00	.00	0	.00	.01	10	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	.00	0	.00	---	---	---
TOTAL	60.33	---	36.99	0.63	---	0.03	0.55	---	0.00

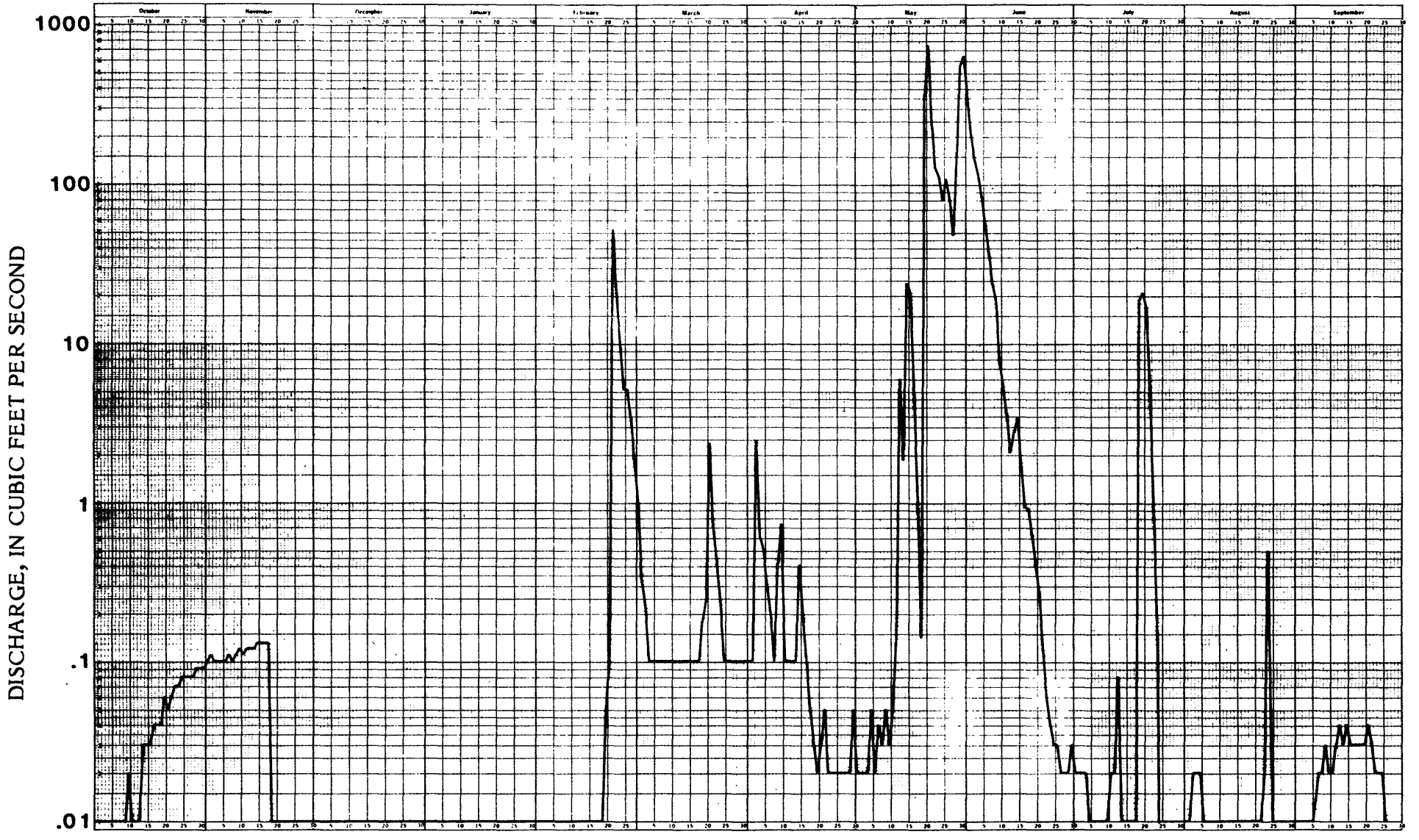

Figure 21.--Daily discharge for Beaver Creek near Yankton (06478514), October 1981 to September 1982.

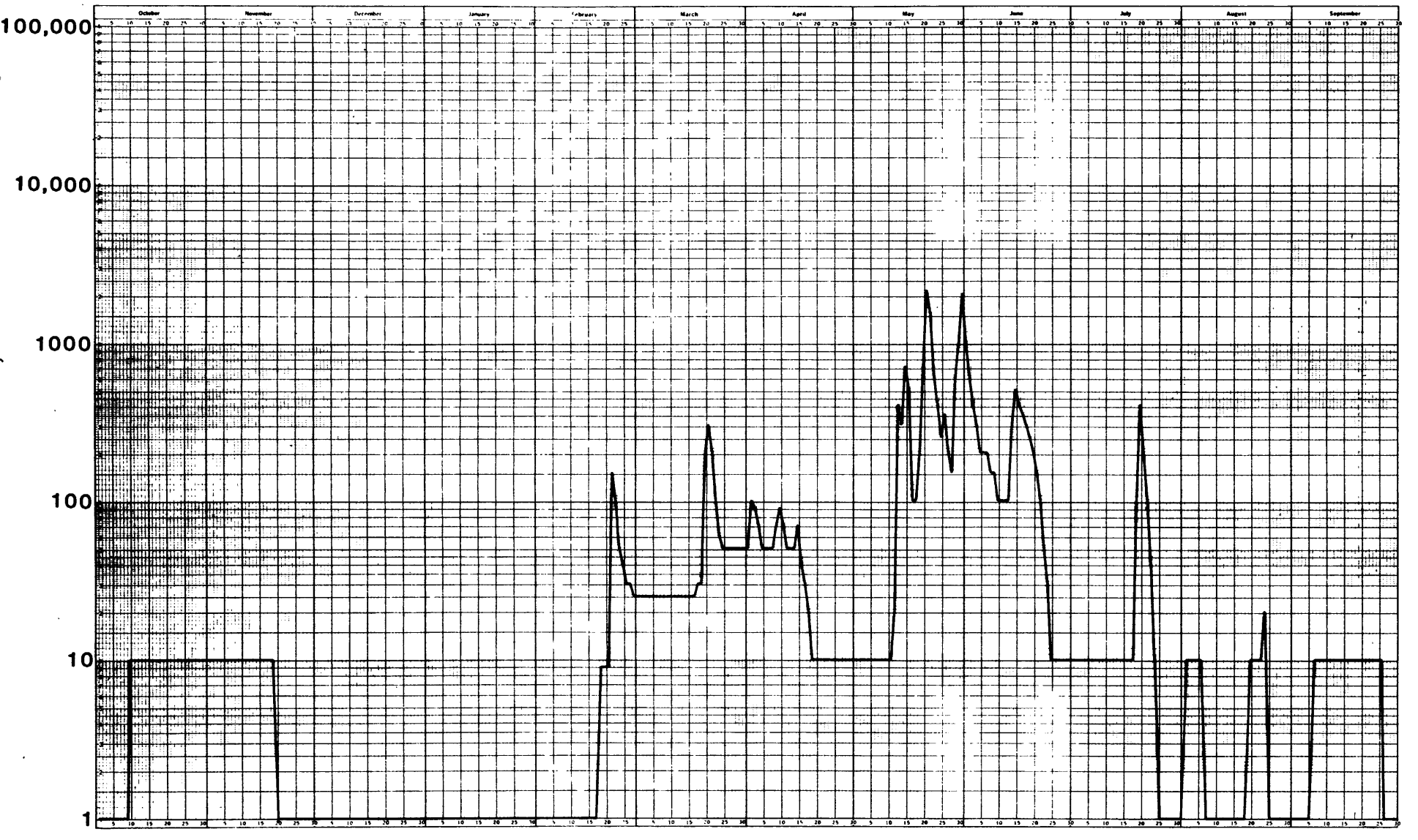

Figure 22.--Daily suspended-sediment concentration for Beaver Creek near Yankton (06478514), October 1981 to September 1982.

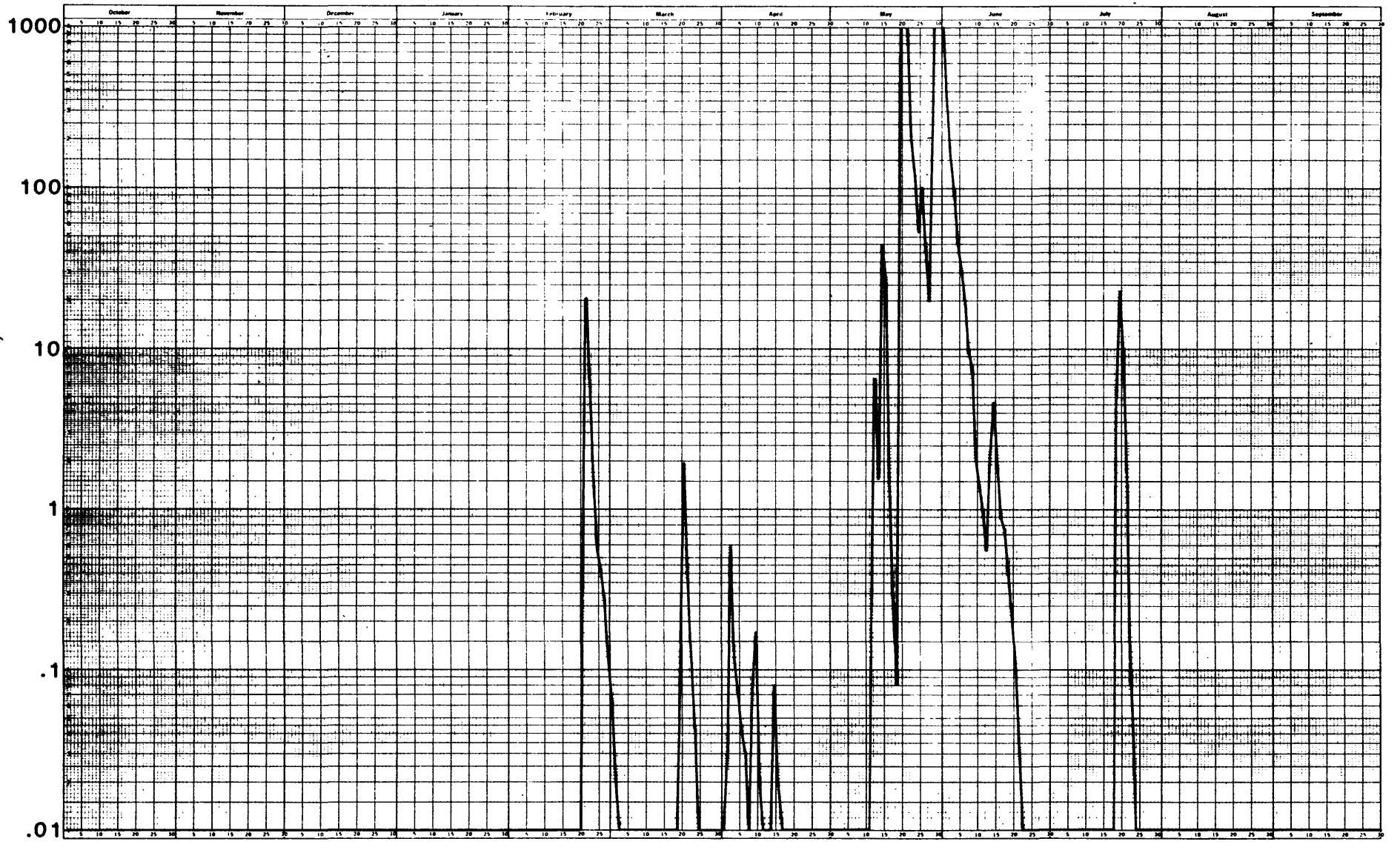

Figure 23.—Daily suspended-sediment discharge for Beaver Creek near Yankton (06478514), October 1981 to September 1982.