

Quality of Surface Waters of the United States 1950

Parts 5-6

Prepared under the direction of S. K. LOVE, Chief, Quality of Water Branch

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of Iowa, and with other agencies*



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PREFACE

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ILLUSTRATION

Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1950.	Page 2
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QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1950

PARTS 5-6

INTRODUCTION

The quality-of-water investigations of the United States Geological Survey are concerned with chemical and physical characteristics of the surface and ground water supplies of the Nation. Most of the investigations carried on in cooperation with States and other Federal agencies deal with the amounts of matter in solution and in suspension in streams.

The records of chemical analysis, suspended sediment, and temperature for surface waters given in this volume serve as a basis for determining the suitability of the waters examined for industrial, agricultural, and domestic uses insofar as such use is affected by the dissolved or suspended mineral matter in the waters. The discharge of a stream and, to a lesser extent, the chemical quality are related to variations in rainfall and other forms of precipitation. In general, lower concentrations of dissolved solids may be expected during the periods of high flow than during periods of low flow. The concentration in some streams may change materially with relatively small variations in flow, whereas for other streams the quality may remain relatively uniform throughout large ranges in discharge. The quantities of suspended sediment carried by streams are also related to discharge, and during flood periods the sediment concentrations in many streams vary over wide ranges.

The regular yearly publication of records of chemical analyses, suspended sediment, and water temperature was begun by the Geological Survey in 1941. The annual records prior to 1948 were published in a single volume for the entire country. Beginning in 1948, the records were published in two volumes, and beginning in 1950, in four volumes, covering the drainage basins shown in figure 1. The samples for which data are given were collected from October 1, 1949, to September 30, 1950. Descriptive statements are given for each sampling station for which regular series of chemical analyses or sediment determinations have been made. These statements include the location of the stream-sampling station, drainage area, length of time for which records are available, extremes of dissolved solids, total hardness, sediment loads, water temperature, and other pertinent data. Records of water discharge of the streams at, or near, the sampling point for the sampling period are included in most tables of analyses. The records are arranged by drainage basins, according to Geological Survey practice in reporting records of stream flow.

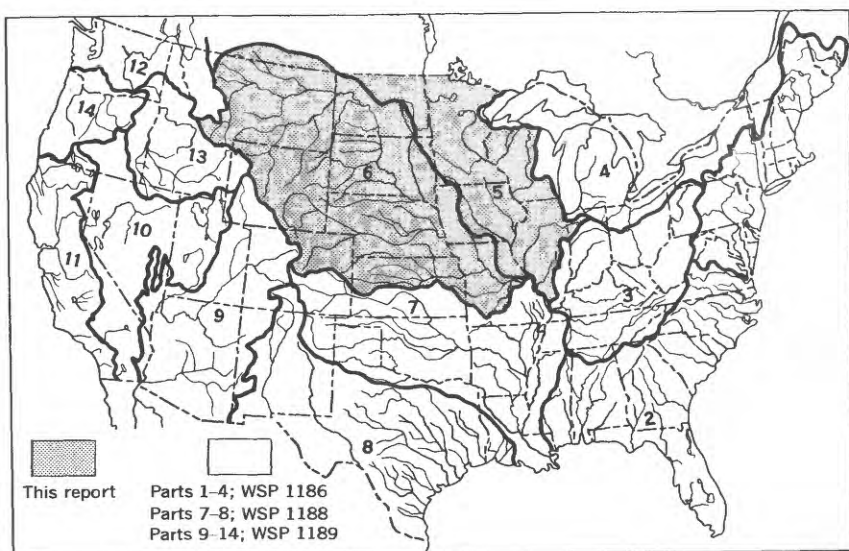


Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1950. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

During the year ended September 30, 1950, 35 regular sampling stations on 35 streams for the study of the chemical character of surface waters were maintained by the Geological Survey in the area covered by this volume. Samples were collected less frequently during the year at many other points. Water temperatures were measured daily at 40 of the regular sampling stations. Not all analyses of samples of surface water collected during the year have been included. Single analyses of an incomplete nature generally have been omitted. Also, determinations made on the daily samples before compositing have not been reported. Specific conductance was usually determined on each daily sample, and pH, chloride, or other determinations were also made on many of the daily samples. As noted in the table headings these data are available for reference at the district offices listed under Division of Work, on page 17.

Quantities of suspended sediment are reported for 85 stations during the year ended September 30, 1950. The sediment samples were collected from one to five times daily at most stations, depending on the rate of flow and changes in stage of the stream. Sediment samples were collected less frequently during the year at many other points. In connection with measurements of sediment discharge, sizes of sediment particles were determined at 96 of the stations. As noted under "Remarks" in

the table headings, suspended-sediment concentrations also were determined from the samples collected for chemical analysis in some parts of the country. The data do not provide a reliable basis for computing the loads of suspended sediment carried by the stream but may be of value for design and operation of filtration plants utilizing these stream waters. Records of these infrequent determinations are available for reference in the district offices listed.

Material which is transported essentially in continuous contact with the stream bed is termed bed load and is not considered in this report. All other undissolved material in transport is termed suspended sediment and generally constitutes the major part of the total sediment load. At the present time no reliable method has been developed for determining bed load on a routine basis.

COLLECTION AND EXAMINATION OF SAMPLES

CHEMICAL QUALITY

Samples for chemical analysis were usually collected daily at, or near, points on streams where gaging stations are maintained for measurement of water discharge. Most of the analyses were made on 10-day composites of daily samples collected for a period of a year at each sampling point. Three composite samples were usually prepared each month by mixing together equal volumes of daily samples collected from the 1st to the 10th, from the 11th to the 20th, and during the remainder of the month. For some streams that are subject to sudden and large changes in chemical composition or concentration, samples were composited for shorter periods on the basis of the concentration of dissolved solids indicated by measurements of specific conductance of the daily samples.

The samples were analyzed according to methods regularly used by the Geological Survey. These methods are essentially the same as or are modifications of methods described in recognized authoritative publications for the mineral analysis of water samples (Collins, 1928; Am. Public Health Assoc., 1946).

For those waters containing moderately large quantities of soluble salts, the value reported for dissolved solids is the sum of the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. In other analyses the value reported as dissolved solids is the residue on evaporation after drying at 180°C for 1 hour. Specific conductance is given for most analyses and was determined by means of a conductance bridge using a standard potassium chloride solution as reference.

SUSPENDED SEDIMENT

In general, samples were collected daily with the US D-43 depth-integrating sampler (U. S. Inter-agency, 1948, p. 70-76) from a fixed sampling point at one vertical in the cross section. The US DH-48 hand sampler was used at many stations during periods of low flow. Suspended-sediment samples, consisting of depth-integrated samples at three or more verticals in the cross section were made periodically to determine the cross-sectional distribution of the suspended concentration with respect to that at the daily sampling vertical. In streams where comparatively rapid fluctuations in transverse distribution of water discharge or sediment concentration are encountered at the sampling point, samples were taken regularly at two or more verticals to determine the average concentration across the section. During periods of high flow, samples were taken two or more times throughout the day at many sampling stations, and during periods of rapidly changing flow samples were taken hourly at some stations.

Sediment concentrations were determined by filtration or evaporation of the samples as required. At many stations the mean daily concentration for some days was obtained by plotting the instantaneous concentrations on the original or copies of the original gage-height chart. The plotted concentrations adjusted, if necessary, for cross-sectional distribution with respect to that at the daily sampling vertical, were connected or averaged by continuous curves to obtain a concentration graph. This graph represented the estimated concentration at anytime and, for most periods, mean daily concentrations were determined from the graph. When the concentration and water discharge were changing rapidly, the day was often subdivided for this computation. For some periods when the day-to-day variation in the concentration was negligible, the data were not plotted, and the average concentration of the samples was used as the mean concentration for the day. For certain stations, when the discharge and sediment concentrations were relatively low and varied only slightly from day to day, the samples for a number of days were composited and the mean daily concentrations and mean daily loads are shown.

For some periods when no samples were collected, daily sediment loads were estimated on the basis of water discharge, sediment concentrations observed immediately preceding and following the periods, and sediment loads for other periods of similar discharge. The estimates were further guided by weather conditions and sediment discharge for other stations.

In many instances where there were no observations for several days, the sediment loads for individual days are not estimated, as numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates of sediment loads for individual days. However, estimated sedi-

ment loads for missing days in an otherwise continuous period of sampling have been included in monthly and annual totals for most streams to provide a complete record.

In addition to the records of total quantities of sediment, records of the particle sizes of sediment are included also. The particle sizes of the suspended sediments were determined periodically for many of the stations. As much of the material carried in suspension can pass through the finest sieves, the bottom-withdrawal tube method (U. S. Inter-agency, 1943, p. 82-90) was used in most of the analyses. Generally, sieves were used in the determination of particle sizes for sediments which were predominantly coarser than 0.062 mm. Size distribution for some sediments was determined by a combination of sieves and pipette methods in which the size fraction 0.062 mm and larger was analyzed by sieves and that smaller than 0.062 mm was analyzed by the pipette method (Kilmer and Alexander, 1949). Native or distilled water, as noted in the tables of analyses, was used as the settling medium. In some instances, chemical dispersing agents were added to the settling medium. As settling diameters of the clay and colloidal fractions are often affected by the chemical character of the settling medium, analyses made using native water more nearly simulate particle sizes existing in the stream. Results of analyses using distilled water or using a settling medium containing dispersing agents approximate ultimate particle sizes of the finer fractions. The concentration of sediment suspension for analysis was reduced to less than 10,000 parts per million, where necessary, by means of a sample splitter, in order to stay within limits recommended for the bottom-withdrawal tube or pipette method. The concentration of suspended sediment used in the bottom-withdrawal tube was often different from the concentration in the original suspension. The weight of sediment used is indicated in the tables of analyses.

TEMPERATURE

For most of the stations, daily water temperatures were obtained at the time that the chemical quality or sediment samples were collected. So far as practicable the water temperatures were observed at about the same time each day for an individual river station in order that the data would be relatively unaffected by diurnal variations in temperature. For most large, swiftly flowing streams the diurnal variation in water temperature is probably small, but for sluggish or shallow streams the daily range in temperature may amount to several degrees and may follow closely changes in air temperature. The thermometers used for determination of water temperature were accurate to plus or minus about 0.5°F.

Records of thermograph observations consist of maximum and minimum temperatures for each day, the average of the maximum daily temperatures, and the average of the minimum daily temperatures.

EXPRESSION OF RESULTS

The dissolved mineral constituents are reported in parts per million. A part per million is a unit weight of a constituent in a million unit weights of water. Equivalents per million are not given in this report although the expression of analyses in equivalents per million is sometimes preferred. An equivalent per million is a unit chemical combining weight of a constituent in a million unit weights of water and is calculated by dividing the concentration in parts per million by the chemical combining weight of the constituent. For convenience in making this conversion the reciprocals of chemical combining weights of the most commonly reported constituents (ions) are given in the following table:

Constituent	Factor	Constituent	Factor
Iron (Fe ⁺⁺)	0.0358	Carbonate (CO ₃ ⁻⁻) . .	0.0333
Iron (Fe ⁺⁺⁺)0537	Bicarbonate (HCO ₃ ⁻)	.0164
Calcium (Ca ⁺⁺)0499	Sulfate (SO ₄ ⁻⁻)0208
Magnesium (Mg ⁺⁺)0822	Chloride (Cl ⁻)0282
Sodium (Na ⁺)0435	Fluoride (F ⁻)0526
Potassium (K ⁺)0256	Nitrate (NO ₃ ⁻)0161

Results given in parts per million can be converted to grains per United States gallon by dividing by 17.12. A calculated quantity of sodium and potassium is given in some analyses and is the quantity of sodium needed in addition to the calcium and magnesium to balance the acid constituents.

The total hardness, as calcium carbonate (CaCO₃), is calculated from the equivalents of calcium and magnesium except for a few samples for which the reported values also include equivalents of free mineral acid, aluminum, iron, and manganese when present in significant quantities. The hardness caused by calcium and magnesium (and other ions if significant) equivalent to the carbonate and bicarbonate is called carbonate hardness; the hardness in excess of this quantity is called noncarbonate hardness.

In the analyses of most waters used for irrigation, the quantity of dissolved solids is given in tons per acre-foot as well as in parts per million. Percent sodium has been computed for those analyses where sodium and potassium are reported separately by dividing the equivalents per million of sodium by the sum of the equivalents per million of calcium, magnesium, sodium, and potassium and multiplying the quotient by 100. In analyses where sodium and potassium were calculated and reported as a combined value, the value reported for percent sodium will include the equivalent quantity of potassium. In most waters of moder-

ate to high concentration, the proportion of potassium is much smaller than that of sodium.

Specific conductance values are expressed in reciprocal ohms (micromhos at 25°C). The discharge of the streams is reported in second-feet (See Stream Flow, p. 17) and the temperature in degrees Fahrenheit. Color is expressed in units of the platinum-cobalt scale proposed by Hazen (1892, p. 427-428). Hydrogen-ion concentration (pH) is given as the negative logarithm of the number of moles of ionized hydrogen per liter of water.

An average of analyses (arithmetical or weighted) for the water year is given for most daily sampling stations. An arithmetical average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the river each day for the water year. A weighted average represents approximately the composition of water that would be found in a reservoir containing all of the water passing a given station during the year after thorough mixing in the reservoir. The weighted average of the analyses is computed by multiplying the discharge for the sampling period by the quantities of the individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. Water as represented by the weighted average is less concentrated than that represented by the average of the individual analyses for most streams because at times of high discharge the rivers generally have lower concentrations of dissolved solids.

Mean daily sediment concentrations are expressed in parts per million by weight. Daily sediment loads are expressed in tons per day, and except for subdivided days are usually obtained by multiplying mean daily sediment concentration in parts per million by the mean daily discharge, and the conversion factor 0.0027.

Particle-size analyses are expressed in percentages finer than indicated sizes in millimeters. The size classification used in this report is that recommended by the American Geophysical Union Subcommittee on sediment terminology (Lane, et al; 1947, p. 937). Other data included as pertinent to the size analyses for many streams are the date of collection, the stream discharge and sediment concentration when sample was collected, the concentration of the suspension during analysis, and the method of analysis.

COMPOSITION OF SURFACE WATERS

All natural waters contain dissolved mineral matter. Water in contact with soils or rock, even for only a few hours, will dissolve some rock materials. The quantity of dissolved mineral matter in a natural water depends primarily on the type of rocks or soils through which the water has passed and the length

of time it has been in contact with the rocks or soils. Some streams are fed by both surface runoff and underground water from springs or seeps. Such streams reflect the chemical character of their concentrated underground sources during dry periods and are more dilute during periods of heavy rainfall. Underground water is usually more highly concentrated than surface runoff as it remains in contact with the rocks and soils for much longer periods. The concentration of dissolved solids in a river water is frequently increased by drainage from mines or oil fields, by the addition of industrial or municipal wastes, or--in irrigated regions--by return drain waters.

The mineral constituents and physical properties of natural waters reported in the tables of analyses include those that have a practical bearing on the value of the waters for most purposes. The analyses generally include results for silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together as sodium), bicarbonate, sulfate, chloride, fluoride, nitrate, boron, and dissolved solids. Aluminum, manganese, color, pH, acidity, oxygen consumed, and other dissolved constituents and physical properties are reported for certain streams. The source and significance of the different constituents and properties of natural waters are discussed in the following paragraphs.

MINERAL CONSTITUENTS IN SOLUTION

Silica (SiO_2)

Silica is dissolved from practically all rocks. Some natural surface waters contain less than 5 parts per million of silica and few contain more than 50 parts, but the more common range is from 10 to 30 parts per million. Silica affects the usefulness of a water because it contributes to the formation of boiler scale; it usually is removed from feed water for high-pressure boilers. Silica also forms troublesome deposits on the blades of steam turbines.

Aluminum (Al)

Aluminum is usually present only in negligible quantities in natural waters except in areas where the waters have been in contact with the more soluble rocks of high aluminum content such as bauxite and certain shales. Acid waters often contain large amounts of aluminum. It may be troublesome in feed waters where it tends to be deposited as a scale on boiler tubes.

Manganese (Mn)

Manganese is dissolved in appreciable quantities from rocks in some sections of the country. Waters impounded in large reservoirs may contain manganese that has been dissolved from the mud on the bottom of the reservoir by action of carbon dioxide produced by anaerobic fermentation of organic matter. Manganese is not regularly determined in areas where it is not present in the waters in appreciable amounts. It is especially objectionable in water used in laundry work and in textile processing. Concentrations as low as 0.2 part per million may cause a dark-brown or black stain on fabrics and porcelain fixtures. Appreciable quantities of manganese are often found in waters containing objectionable quantities of iron.

Iron (Fe)

Iron is dissolved from many rocks and soils. On exposure to the air, normal basic waters that contain more than 1 part per million of iron soon become turbid with the insoluble reddish ferric oxide produced by oxidation. Surface waters, therefore, seldom contain as much as 1 part per million of dissolved iron, although some acid waters carry large quantities of iron in solution. Iron causes reddish-brown stains on white porcelain or enameled ware and fixtures and on fabrics washed in the water.

Calcium (Ca)

Calcium is dissolved from practically all rocks and soils, but the highest concentrations are usually found in waters that have been in contact with limestone, dolomite, and gypsum. Calcium and magnesium make water hard and are largely responsible for the formation of boiler scale. Most waters associated with granite or silicious sands contain less than 10 parts per million of calcium; waters in areas where rocks are composed of dolomite and limestone contain from 30 to 100 parts per million; and waters that have come in contact with deposits of gypsum may contain several hundred parts per million.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft waters may amount to only 1 or 2 parts per million, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain from 20 to 100 parts per million or more of magnesium.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized waters found in the western United States. Natural waters that contain only 3 or 4 parts per million of the two together are likely to carry almost as much potassium as sodium. As the total quantity of these constituents increases, the proportion of sodium becomes much greater. Moderate quantities of sodium and potassium have little effect on the usefulness of the water for most purposes, but waters that carry more than 50 or 100 parts per million of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized waters that contain a large proportion of sodium salts may be unsatisfactory for irrigation.

Carbonate and bicarbonate (CO_3 and HCO_3)

Bicarbonate occurs in waters largely through the action of carbon dioxide, which enables the water to dissolve carbonates of calcium and magnesium. Carbonate as such is not usually present in appreciable quantities in natural waters. The bicarbonate in waters that come from relatively insoluble rocks may amount to less than 50 parts per million; many waters from limestone contain from 200 to 400 parts per million. Bicarbonate in moderate concentrations in water has no effect on its value for most uses. Bicarbonate or carbonate is an aid in coagulation for the removal of suspended matter from water.

Sulfate (SO_4)

Sulfate is dissolved from many rocks and soils--in especially large quantities from gypsum and from beds of shale. It is formed also by the oxidation of sulfides of iron and is therefore present in considerable quantities in waters from mines. Sulfate in waters that contain much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water.

Chloride (Cl)

Chloride is dissolved from rock materials in all parts of the country. Surface waters in the humid regions are usually low in chloride, whereas streams in arid or semiarid regions may contain several hundred parts per million of chloride leached from soils and rocks, especially where the streams receive return drainage from irrigated lands or are affected by ground-water inflow carrying appreciable quantities of chloride. Large quantities of chloride may affect the industrial use of water by in-

creasing the corrosiveness of waters that contain large quantities of calcium and magnesium.

Fluoride (F)

Fluoride has been reported as being present in some rocks to about the same extent as chloride. However, the quantity of fluoride in natural surface waters is ordinarily very small compared to that of chloride. Recent investigations indicate that the incidence of dental caries is less when there are small amounts of fluoride present in the water supply than when there is none. However, excess fluoride in water is associated with the dental defect known as mottled enamel if the water is used for drinking by young children during calcification or formation of the teeth (Dean, 1936, p. 1269-1272). This defect becomes increasingly noticeable as the quantity of fluoride in water increases above 1.5 to 2.0 parts per million.

Nitrate (NO_3)

Nitrate in water is considered a final oxidation product of nitrogenous material and in some instances may indicate previous contamination by sewage or other organic matter. The quantities of nitrate present in surface waters usually amount to less than 5 parts per million (as NO_3) and have no effect on the value of the water for ordinary uses.

It has been reported that as much as 2 parts per million of nitrate in boiler water tends to decrease intercrystalline cracking of boiler steel. Studies made in Illinois indicate that nitrates in excess of 70 parts per million (as NO_3) may contribute to methemoglobinemia ("blue babies") (Faucett and Miller, 1946, p. 593), and more recent investigations conducted in Ohio show that drinking water containing nitrates in the range of 44 to 88 parts per million or more (as NO_3) may be the cause of methemoglobinemia in infants (Waring, 1949). In a report published by the National Research Council, Maxcy (1950, p. 271) concludes that a nitrate content in excess of 44 parts per million (as NO_3) should be regarded as unsafe for infant feeding.

Boron (B)

Boron in small quantities has been found essential for plant growth, but irrigation water containing more than 1 part per million boron is detrimental to citrus and other boron-sensitive crops. Boron is reported in Survey analyses of surface waters in arid and semiarid regions of the Southwest and West where irrigation is practiced or contemplated, but few of the surface waters analyzed have harmful concentrations of boron.

Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Waters with less than 500 parts per million of dissolved solids are usually satisfactory for domestic and some industrial uses. Waters containing several thousand parts per million of dissolved solids are sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands.

PROPERTIES AND CHARACTERISTICS OF WATER

Oxygen consumed

The value for oxygen consumed furnishes an approximation of the oxidizable matter in the unfiltered and filtered samples and gives a partial measure of polluting materials such as sewage and oxidizable industrial wastes. Naturally highly colored waters may have relatively high oxygen consumed, although waters that are not noticeably colored may contain oxidizable material.

Color

In water analysis the term "color" refers to the appearance of water that is free from suspended solids. Many turbid waters that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. In some areas objectionable color in water results from industrial wastes and sewage. Clear deep water may appear blue as the result of a scattering of sunlight by the water molecules. Water for domestic use and some industrial uses should be free from any perceptible color. A color less than 10 usually passes unnoticed. Some swamp waters have natural color of 200 to 300 or more.

Hydrogen-ion concentration (pH)

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH, is related to the corrosive properties of water, and is useful in determining the proper treatment for coagulation that may be necessary at water-treatment plants. A pH value of 7.0 indicates that the water is neither acid nor alkaline. Waters having pH values progressively lower than 7.0 denote increasing acidity, whereas values progressively higher than 7.0 denote increasing alkalinity.

(See p. 13). The pH of most natural surface waters ranges between 6 and 8. Some alkaline surface waters have pH values greater than 8.0, and waters containing free mineral acid usually have pH values less than 4.5.

Specific conductance (micromhos at 25 C)

The specific conductance of a water is a measure of its capacity to conduct a current of electricity. The conductance varies with the concentration and degree of ionization of the different minerals in solution and with the temperature of the water. When considered in conjunction with results of determinations for other constituents, specific conductance is a useful determination and plays an important part in indicating changes in concentration of the total quantity of dissolved minerals in surface waters. (See p. 7 .)

Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is usually recognized by the increased quantity of soap required to produce lather. The use of hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and pipes, with the resultant decrease in rate of heat transfer, possibility of boiler failure, and loss of flow.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents--such as iron, manganese, aluminum, barium, strontium, and free acid--also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect. Water that has less than 60 parts per million of hardness is usually rated as soft and suitable for many purposes without further softening. Waters with hardness ranging from 61 to 120 parts per million may be considered moderately hard, but this degree of hardness does not seriously interfere with the use of water for many purposes except for use in high-pressure steam boilers and in some industrial processes. Waters with hardness ranging from 121 to 200 parts per million are considered hard, and laundries and industries may profitably soften such supplies. Water with hardness above 200 parts per million usually requires some softening before being used for most purposes.

Total acidity

The total acidity of a natural water represents the content of free carbon dioxide, mineral acids, and salts--especially sulfates of iron and aluminum--that hydrolyze to give hydrogen ions. Acid waters are very corrosive and generally contain excessive amounts of objectionable constituents, such as iron, aluminum, and manganese.

Corrosiveness

The corrosiveness of a water is that property which makes the water aggressive to metal surfaces and frequently results in the appearance of the "red water" caused by solution of iron. The disadvantages of iron in water have been discussed previously. Additionally, corrosion causes the deterioration of water pipes, steamboilers, and water-heating equipment. Many waters that do not appreciably corrode cold-water lines will aggressively attack hot-water lines. Oxygen, carbon dioxide, free acid, and acid-generating salts are the principal constituents in water that cause corrosion. In a general way, very soft waters of low mineral content tend to be more corrosive than hard waters containing appreciable quantities of carbonates and bicarbonates of calcium and magnesium.

Percent sodium

Percent sodium is reported in most of the analyses of waters collected from streams in the western part of the country where irrigation is practiced extensively. The proportion of sodium to all the basic constituents in the water has a bearing on the suitability of a water for irrigation. (See p. 6.) Waters in which the percent sodium is more than 60 may be injurious when applied to certain types of soils, particularly when adequate drainage is not provided (Magistad and Christiansen, 1944, p. 8-9; Wilcox, 1948, p. 6).

SEDIMENT

Fluvial sediment is generally regarded as that sediment which is transported by, suspended in, or deposited by water. Suspended sediment is that sediment which remains in suspension in water owing to the upward components of turbulent currents or by colloidal suspension. Most fluvial sediment results from the normal process of erosion, which in turn is part of the geologic cycle of rock transformation. In some instances, this normal process may have been accelerated by agricultural practices. Sediment also results from a number of industrial activities. In certain sections, waste materials from mining, logging, oil-field, and other industrial operations introduce large quantities of suspended as well as dissolved material.

The quantity of sediment, transported or available for transportation, is affected by climatic conditions, form or nature of precipitation, vegetal cover, topography, and land use. An important property of fluvial sediment is the fall velocity of the particles in transport. Particle sizes, as determined by various

methods, represent mechanical diameters, which are related to sedimentation diameters indirectly. Sediment particles in the sand-size (0.062 mm) range do not appear to be affected by flocculation or dispersion resulting from the mineral constituents in solution. The sedimentation diameter of clay and silt particles in suspension may vary considerably from point to point in a stream or reservoir, depending on the mineral matter in solution and in suspension and the degree of turbulence present. The size of sediment particles in transport at any point depends on the type of erodible and soluble material in the drainage area, the degree of flocculation present, time in transport, and characteristics of the transporting flow. The flow characteristics include velocity of water, turbulence, and the depth, width, and roughness of the channel. As a result of these variable characteristics, the size of particles transported, as well as the total sediment load, is in constant adjustment with the characteristics and physical features of the stream and drainage area.

PUBLICATIONS

Reports giving chemical analyses, suspended-sediment loads, and water temperatures of samples of surface water made by the Geological Survey have been published yearly since 1941. Records for the years ended September 30, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, and 1949, for many of the stations listed in this report are given in Water-Supply Papers 942, 950, 970, 1022, 1030, 1050, 1102, 1132, and 1162.

Geological Survey reports containing analyses of surface-water samples collected prior to 1941 are listed below. Publications dealing largely with the quality of ground-water supplies and only incidentally covering the chemical composition of surface-waters are not included. Publications that are out of print are preceded by an asterisk.

PROFESSIONAL PAPER

- *135. Composition of river and lake waters of the United States, 1924.

BULLETINS

- *479. The geochemical interpretation of water analyses, 1911.
- 770. The data of geochemistry, 1924.

WATER-SUPPLY PAPERS

- *108. Quality of water in the Susquehanna River drainage basin, with an introductory chapter on physiographic features, 1904.

- *161. Quality of water in the upper Ohio River basin and at Erie, Pa., 1906.
- *193. The quality of surface waters in Minnesota, 1907.
- *236. The quality of surface waters in the United States, Part 1, Analyses of waters east of the one hundredth meridian, 1909.
- *237. The quality of the surface waters of California, 1910.
- *239. The quality of the surface waters of Illinois, 1910.
- *273. Quality of the water supplies of Kansas, with a preliminary report on stream pollution by mine waters in south-eastern Kansas, 1911.
- *274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, 1911.
- *339. Quality of the surface waters of Washington, 1914.
- *363. Quality of the surface waters of Oregon, 1914.
- *418. Mineral springs of Alaska, with a chapter on the chemical character of some surface waters of Alaska, 1917.
- *596-B. Quality of water of Colorado River in 1925-26, 1928.
- *596-D. Quality of water of Pecos River in Texas, 1928.
- *596-E. Quality of the surface waters of New Jersey, 1928.
- *636-A. Quality of water of the Colorado River in 1926-28, 1930.
- *636-B. Suspended matter in the Colorado River in 1925-28, 1930.
- *638-D. Quality of water of the Colorado River in 1928-30, 1932.
- *839. Quality of water of the Rio Grande basin above Fort Quitman, Tex., 1938.
- *889-E. Chemical character of surface water of Georgia, 1944.
- *998. Suspended sediment in the Colorado River, 1925-41, 1947.
- 1110-C. Quality of water of Conchas Reservoir, New Mexico, 1939-49, 1952.

Many of the reports listed are available for consultation in the larger public and institutional libraries. Copies of Geological Survey publications still in print may be purchased at a nominal cost from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., who will, upon request, furnish lists giving prices.

COOPERATION

Records in Iowa, Upper Mississippi River basin, were obtained in cooperation with the Iowa Geological Survey, H. G. Hershey, director and State geologist. Records on file for sediment sampling stations can be obtained by writing to the District Engineer, Surface Water, 508 Hydraulic Laboratory, University of Iowa, Iowa City, Iowa.

Financial assistance was furnished by the Bureau of Reclamation of the United States Department of the Interior in the operation of some stations in the Missouri River basin.

In addition to these cooperative programs, many of the stations

were operated from funds appropriated directly to the Geological Survey for quality-of-water investigations.

Assistance in collecting records was given by many municipal, State, and Federal agencies.

DIVISION OF WORK

The quality-of-water program was conducted by the water resources division of the Geological Survey, Carl G. Paulsen, chief hydraulic engineer, and S. K. Love, chief of the quality of water branch.

The chemical quality and sediment investigations in the Missouri River basin in Colorado, Iowa, Kansas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming were initiated in 1945. The studies were made as a part of the program of the Interior Department for development of the Missouri River basin through funds provided directly to the Geological Survey for this purpose. The studies were made under the direction of P. C. Benedict, regional engineer, Lincoln, Nebr. A few analyses of streams in the Hudson Bay basin in North Dakota were made in connection with this program. Any additional analytical data on file for the sampling stations can be obtained by writing or visiting the Quality of Water regional office, 510 Rudge-Guenzel Building, Lincoln, Nebr.

STREAM FLOW

Most of the records of stream discharge, used in conjunction with the chemical analyses and in the computation of sediment loads in this volume, are published in Geological Survey reports on the surface-water supply of the United States. The discharge reported for a composite sample is usually the average of the mean daily discharges for the normal composite period. For analyses in which the composite periods differ from the normal 10- or 11-day period, the discharges reported are the averages of the mean daily discharges for the days indicated. The discharges reported in the tables of single analyses either are daily mean discharges or are discharges for the time at which samples were collected, computed from a stage-discharge relation or from a discharge measurement.

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CHEMICAL ANALYSES, WATER TEMPERATURES, AND SUSPENDED SEDIMENT

PART 5. HUDSON BAY AND UPPER MISSISSIPPI RIVER BASINS

RED RIVER OF THE NORTH BASIN

SOURIS RIVER NEAR VERENDRYE, N. DAK.

LOCATION.--At gaging station, 3 miles northeast of Verendrye, McHenry County, and 7½ miles southwest of (19 miles upstream from) mouth of Wintering River. DRAINAGE AREA.--12,200 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1175.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second-feet)	pH	Specific conduct-ance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Car-bo-nate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate	
Oct. 6, 1949	21	8.6	1,190	25	0.02	72	34	187	29	449	160	67	0.2	5.0	--	--	790	1.07		320	0	53
Dec. 19	55	7.3	741	18	.04	58	27	77	0	299	125	29	.2	6.6	--	--	508	.69		256	11	39
Feb. 17, 1950	a 20	7.2	987	26	.08	71	30	114	0	385	142	54	.2	11	--	--	682	.90		301	0	45
Apr. 5	93	7.2	748	21	.04	52	21	85	0	282	113	31	.1	11	0.20	504	504	.69		217	0	46
Apr. 20	1,280	7.0	278	14	--	23	6.5	23	0	104	40	3.0	.2	3.9	.10	200	200	.27		84	0	38
June 9	402	8.6	645	14	.04	45	20	74	16	233	110	14	.2	3.6	--	--	432	.59		195	0	45
June 23	120	7.8	1,070	18	.04	63	30	142	0	424	193	26	.2	4.6	--	--	710	.97		281	0	52
July 27	89	7.4	685	9.8	.02	46	22	92	0	312	112	24	.2	5.6	--	--	480	.65		211	0	49
Aug. 23	a 70	7.7	1,000	13	.04	52	24	149	0	374	168	45	.2	7.3	--	--	644	.88		228	0	56
Sept. 28	43	7.5	1,280	19	.02	65	32	188	0	466	178	59	1.0	8.4	.10	824	1.12		294	0	56	

a Mean daily discharge.

RED RIVER OF THE NORTH BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER OF THE NORTH BASIN IN NORTH DAKOTA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F.)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-ble	
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbonate		
SHEYENNE RIVER AT SHEYENNE																							
Dec. 2, 1949	1.3	7.9	7.9	1,040	15	--	48	43	155	524	165		21	0.3	3.6	--		760	1.03		297	0	53
Feb. 3, 1950 .....	.01	7.7	7.7	2,500	28	0.04	123	104	412	1,370	404		59	.6	2.8	--		1,810	2.46		735	0	58
Mar. 30	30	7.3	7.3	274	13	.02	20	6.7	30	112	39		5.0	.2	2.8	0.00		190	.26		78	0	46
Apr. 19	2,280	7.1	7.1	201	17	.30	20	5.8	14	98	19		1.0	.2	2.3	.10		154	.21		74	0	29
June 2	130	8.0	8.0	932	19	.04	50	27	107	360	147		12	.4	2.3	.20		552	.75		236	0	50
June 23	a 49	8.0	8.0	1,030	16	.10	54	33	154	472	183		18	.2	3.7	--		706	.96		270	0	55
Aug. 2	8.2	7.9	8.75	31	.04	77	32	76	390	140	15		15	.2	3.4	--		586	.80		324	4	54
Sept. 1 .....	.2	7.9	7.9	1,090	18	.02	44	39	165	520	158		24	.6	3.3	.30		724	.98		271	0	57
DES LACS RIVER AT FOXHOLM																							
Dec. 18, 1949	0.58	7.7	7.7	1,950	18	0.02	100	58	306	722	480		41	0.4	4.4	0.30		1,360	1.85		488	0	58
Jan. 17, 1950 .....	.13	7.8	7.8	2,000	26	--	71	82	325	728	530		46	--	8.7	--		1,450	1.97		514	0	58
Feb. 14 .....	.08	7.3	7.3	1,760	32	.04	125	64	244	818	353		41	.2	11	--		1,270	1.73		575	0	48
Apr. 4	34.2	6.9	6.9	230	13	.04	19	5.3	21	86	38		1.0	.2	4.0	--		1,172	.23		70	0	40
Apr. 18	404	7.2	7.2	370	12	.04	32	9.0	32	136	63		4.0	.2	4.1	--		262	.36		117	5	37
June 20	50.4	7.5	7.5	929	12	.08	45	23	160	368	215		20	.2	1.2	--		666	.91		207	0	63
July 24	30.4	7.5	7.5	928	13	.02	39	26	153	354	210		18	.2	2.6	--		682	.93		205	0	62
Sept. 7	7.64	7.8	7.8	1,420	26	.10	66	40	216	547	280		34	.2	4.4	.10		984	1.34		329	0	56
Sept. 25	24.1	7.7	7.7	1,380	25	.04	52	33	230	484	313		28	.2	2.8	.20		942	1.28		265	0	65

a Mean daily discharge.

IOWA RIVER BASIN
IOWA RIVER AT IOWA CITY, IOWA

LOCATION --At Benton Street Bridge at Iowa City, Johnson County, 0.5 mile downstream from the university dam and gaging station, 1.0 mile upstream from Baitson Creek and 3.8 miles downstream from Clear Creek.

DRAINAGE AREA --3,230 square miles

RECORDS AVAILABLE --Chemical analyses: September 1906 to September 1950.

Water temperatures: January 1944 to September 1950.

Sediment records: October 1943 to September 1950.

EXTREMES, 1949-50. --Dissolved solids: Maximum, 326 ppm Dec. 1-31; minimum, 116 ppm Mar. 1-31.

Hardness: Maximum, 258 ppm Dec. 1-31; minimum, 63 ppm Feb. 10-16.

Specific conductance: Maximum daily 593 micromhos Jan. 12; minimum daily, 125 micromhos Mar. 11.

Water temperatures: Maximum, 88°F Aug. 7; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 5,700 ppm June 18; minimum daily, 11 ppm Dec. 24.

Sediment loads: Maximum daily, 109,300 tons July 2; minimum daily, 3 tons Dec. 24.

EXTREMES, 1943-50. --Dissolved solids (1944-50): Maximum, 436 ppm Jan. 26 to Feb. 17, 1948; minimum, 96 ppm Jan. 5-10, 1946.

Hardness (1944-50): Maximum, 345 ppm Dec. 21-31, 1944; minimum, 54 ppm Jan. 5-10, 1946.

Specific conductance (1943-46, 1947-50): Maximum daily, 739 micromhos Feb. 3, 1948; minimum daily, 108 micromhos Jan. 9, 1946.

Water temperatures (1944-50): Maximum, 89°F July 4, 1949; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 5,700 ppm June 18, 1950; minimum daily, 4 ppm Feb. 10-12, 1945, Feb. 5, 1947.

Sediment loads: Maximum daily, 177,000 tons May 23, 1944; minimum daily, 3 tons Jan. 24, 1945, Dec. 24, 1949.

REMARKS --Daily water temperature analysis composed by discharge. Records of specific conductance of daily samples for period October 1945 to September 1946 and July 1947 to September 1950 available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1175.

Chemical analyses, in parts per million, water year October 1948 to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids		Hardness as CaCO ₃		
																	Parts per million	Tons per acre-foot	Tons per acre-foot	Total	Non-carbonate
Oct. 1-20, 1949	153	7.6		494	8.8	0.02	62	22	15	4.1	247	51	12	0.2	2.1	0.20	310	0.42	128	245	42
Oct. 21-23	906	7.5		228	10	.10	26	6.1	9.2		106	21	4.0		2.4	.10	152	.21	372	90	3
Oct. 24-31	204	7.6		324	12	.02	44	15	10	5.9	172	36	9.0		4.7	.10	238	.32	131	171	30
Nov. 1-30	166	7.7		481	9.4	.02	59	23	14	3.6	244	51	12	.2	2.1	.10	300	.41	134	241	11
Dec. 1-31	148	7.9		510	11	.02	63	24	16	2.9	256	55	14	.2	2.4	.10	326	.44	130	256	48
Jan. 1-31, 1950	314	7.5		338	10	.20	40	14	9.6	7.7	156	38	9.0	.2	3.6	.10	226	.31	192	159	31
Feb. 1-9	383	7.9		308	9.7	.10	37	12	8.4	8.3	141	32	8.0	.3	5.3	.10	212	.29	219	141	25
Feb. 10-16	1,793	6.7		161	6.7	.40	16	5.5	7.4	9.4	72	17	3.5	.3	9.2	.10	122	.17	591	63	4
Feb. 17-28	375	6.8		217	7.1	.20	25	7.7	5.2	10	100	20	4.5	.3	4.7	.10	154	.21	156	94	12
Mar. 1-31	5,266	6.8		158	7.7	.40	19	5.6	3.2	5.4	74	14	2.5	.2	5.5	.10	116	.16	1,650	71	10
Apr. 1-18	1,889	7.5		363	17	.02	49	12	6.2	4.3	135	11	5.5	.3	11	.20	725	.31	1,160	171	96
Apr. 19	955	7.5		478	17	.04	66	20	8.4	3.8	230	58	6.0	.1	9.4	--	310	.42	799	247	58
Apr. 20	892	7.4		486	19	.04	64	20	11	3.9	252	50	6.0	.1	1.7	--	316	.43	761	242	35
Apr. 21-30	1,111	7.6		446	19	.02	60	17	8.8	3.6	215	53	7.0	.2	7.1	.20	286	.39	858	219	43
May 1-31	2,250	7.6		397	16	.26	54	15	6.7	3.3	178	46	5.5	.3	15	.20	252	.34	1,530	195	49

IOWA RIVER BASIN--Continued
IOWA RIVER AT IOWA CITY, IOWA--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-foot)	Temperature (°F)	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
June 1-16, 1950	1,597	7.8	439	15	0.20	60	14	8.2	3.0	212	43	5.5	0.3	13	0.20	276	0.38	1,180	208	34	8
June 17	2,100	7.5	424	15	.04	57	16	7.4	3.4	200	43	4.0	.2	18	--	264	.36	1,500	208	44	7
June 18-20	4,627	7.2	225	16	--	30	8.0	5.2	2.7	129	8.0	2.0	.3	2.2	.10	154	.21	1,820	108	2	9
June 21	5,610	7.4	192	12	.60	26	6.0	5.5	3.8	94	20	2.0	.2	1.1	--	138	.19	2,090	90	13	11
June 22-23	6,400	7.3	208	13	.14	27	5.7	7.5	3.6	93	25	2.0	.2	5.0	.10	142	.19	2,450	91	15	15
June 24-28	6,883	7.3	273	14	.09	34	8.8	4.9	3.8	122	26	3.0	.2	12	.10	176	.24	3,180	126	26	7
June 27-29	9,610	7.3	268	17	.09	34	9.2	4.4	3.8	121	27	2.5	.2	8.6	.20	178	.24	4,620	123	24	7
June 30-July 1	3,965	7.7	407	24	.11	54	15	6.5	3.5	194	40	4.0	.2	13	.20	264	.36	2,630	198	39	6
July 2	7,150	7.0	243	12	.90	30	7.9	4.0	3.1	116	22	2.0	.1	.6	--	150	.20	3,150	108	43	7
July 3-30	1,152	7.6	243	15	.45	30	10	9.0	2.4	230	51	6.0	.2	7.0	.10	258	.40	1,786	234	18	8
July 31	2,876	7.1	263	17	.9	50	10	5.6	4.2	250	53	8.5	.2	1.7	.10	258	.39	1,546	154	18	9
Aug. 1-31	343	7.5	466	10	.42	56	21	10	3.0	222	55	8.5	.2	2.5	.20	264	.39	263	224	42	9
Sept. 1-8	191	7.6	496	6.7	.40	58	23	13	3.0	233	58	11	.2	2.4	.10	300	.41	155	239	48	10
Sept. 9	193	7.5	505	6.1	.04	58	25	14	2.9	240	65	11	.2	2.0	--	312	.42	163	248	51	11
Sept. 10-23	161	7.6	508	6.2	.29	59	24	15	3.0	240	60	11	.2	1.6	.10	304	.41	132	244	47	12
Sept. 24	223	7.9	517	9.1	.04	58	25	13	2.9	250	63	11	.2	3.3	--	320	.44	193	248	43	10
Sept. 25-30	872	7.6	335	14	.20	41	13	7.6	2.8	157	32	5.5	.2	5.9	.10	210	.29	494	155	26	9
Weighted average	1,372	--	291	12	0.25	37	11	5.9	4.4	136	30	4.3	0.2	7.9	0.14	191	0.26	708	138	26	8

IOWA RIVER BASIN--Continued

IOWA RIVER AT IOWA CITY, IOWA--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement at approximately 7:30 a. m.,
 except Jan. 26 to June 18, between 1 p. m. and 5 p. m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	45	39	34	32	32	48	48	75	70	77	72
2	62	46	36	34	32	22	46	51	71	68	75	71
3	63	47	37	34	34	32	43	54	70	70	78	74
4	63	45	39	32	32	35	41	58	68	74	75	73
5	63	45	38	32	32	34	43	64	73	73	76	69
6	63	46	38	32	34	34	45	64	73	73	76	68
7	63	44	37	32	34	37	47	61	76	75	88	69
8	63	45	34	32	34	32	47	64	78	74	76	69
9	67	46	34	32	34	32	44	59	78	76	78	70
10	69	48	36	32	36	33	44	64	68	68	77	74
11	66	48	41	32	34	32	44	59	68	79	75	73
12	62	51	35	32	32	32	44	64	68	78	76	68
13	63	51	35	32	34	32	43	64	72	72	76	68
14	63	50	34	32	33	35	45	67	67	75	74	67
15	61	46	35	33	33	34	47	69	68	72	73	67
16	61	46	35	32	33	34	49	64	68	75	74	68
17	63	44	35	32	33	34	55	64	68	76	78	68
18	59	43	37	32	33	34	54	68	68	76	75	69
19	--	42	37	32	33	33	54	64	72	75	74	--
20	62	42	37	32	34	34	53	64	64	72	73	--
21	--	40	35	32	33	35	54	64	68	76	68	69
22	58	37	33	32	33	34	58	67	68	75	69	68
23	58	38	33	35	33	34	59	70	72	75	70	67
24	53	39	32	35	32	37	58	71	73	77	72	66
25	51	38	35	33	32	38	49	73	74	76	73	60
26	48	37	33	32	32	38	48	70	76	77	74	60
27	58	38	33	32	33	41	47	70	76	77	74	59
28	58	37	34	32	34	40	46	66	73	80	74	61
29	59	37	35	32	--	40	46	69	72	81	73	64
30	50	38	35	32	--	42	44	70	71	81	73	65
31	48	--	36	32	--	44	--	71	--	75	70	--
Average	60	43	36	32	33	35	48	64	71	75	75	68

IOWA RIVER BASIN--Continued

IOWA RIVER AT IOWA CITY, IOWA--Continued

Suspended sediment, water year October 1949 to September 1950									
Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	94	54	14	168	40	18	165	40	18
2-----	101	50	14	165	50	22	156	40	17
3-----	114	40	12	148	51	20	158	45	19
4-----	114	47	14	164	35	15	151	37	15
5-----	105	53	15	142	61	23	138	36	13
6-----	123	48	16	151	94	38	144	26	10
7-----	121	51	17	157	60	25	144	28	11
8-----	123	58	19	154	51	21	96	30	8
9-----	125	60	20	158	39	17	94	26	7
10-----	177	68	32	161	63	27	94	28	7
11-----	272	65	48	153	36	15	140	44	17
12-----	231	72	45	177	40	19	181	42	21
13-----	199	58	31	203	57	31	92	39	10
14-----	182	58	29	191	59	30	101	40	11
15-----	155	63	26	211	60	34	117	43	14
16-----	165	61	27	213	62	39	134	35	13
17-----	155	64	27	198	46	25	149	47	19
18-----	150	44	18	172	48	22	169	38	17
19-----	158	49	21	174	36	17	174	43	20
20-----	189	71	36	167	29	13	198	43	23
21-----	1,340	186	673	156	27	11	181	33	16
22-----	802	392	849	144	26	10	105	25	7
23-----	575	260	404	162	26	11	90	17	4
24-----	199	173	93	162	26	11	85	11	3
25-----	274	150	111	156	23	10	125	15	5
26-----	231	110	69	156	22	9	129	14	5
27-----	210	104	59	158	23	10	126	17	6
28-----	192	130	67	158	29	12	113	27	8
29-----	177	68	32	156	43	18	103	33	9
30-----	181	54	26	158	30	13	111	41	12
31-----	168	50	23	--	--	--	630	67	114
Total-	7,402	--	2,687	4,953	--	586	4,593	--	497
January			February			March			
1-----	610	159	262	131	26	9	1,620	69	302
2-----	313	200	169	127	27	9	1,940	61	320
3-----	280	104	79	116	22	7	1,700	86	395
4-----	162	59	26	116	19	6	1,340	101	s 385
5-----	138	46	17	115	18	6	4,980	444	s 6,570
6-----	153	30	12	236	26	17	6,880	818	15,200
7-----	149	20	8	1,020	61	168	5,720	1,070	s 16,600
8-----	129	14	5	678	36	66	8,980	1,860	s 46,000
9-----	121	19	6	906	55	135	11,400	1,280	s 39,600
10-----	127	46	16	1,460	113	445	12,800	820	28,300
11-----	123	45	15	1,940	145	760	13,300	600	21,500
12-----	117	70	22	2,340	420	2,650	12,800	425	14,700
13-----	1,020	109	s 474	2,580	388	2,700	11,400	335	10,300
14-----	1,140	459	1,410	2,260	262	1,600	9,760	290	7,640
15-----	381	297	306	1,260	135	459	7,240	250	4,890
16-----	387	188	196	708	81	155	3,940	295	3,140
17-----	385	135	140	524	69	98	3,310	435	3,890
18-----	344	102	95	470	58	74	3,140	438	3,710
19-----	275	109	81	405	51	56	2,820	356	2,710
20-----	248	131	88	408	56	62	2,660	290	2,080
21-----	235	130	82	389	39	41	2,420	223	1,460
22-----	203	122	67	355	30	29	2,260	172	1,050
23-----	196	120	64	333	26	23	2,420	214	1,400
24-----	192	108	56	275	23	17	2,900	568	4,450
25-----	656	204	361	278	20	15	3,400	1,580	s 14,600
26-----	634	117	200	258	18	13	4,390	1,690	20,000
27-----	201	81	44	266	17	12	4,300	1,070	s 12,600
28-----	186	52	26	537	35	51	3,580	598	5,780
29-----	282	34	26	--	--	--	3,490	540	5,090
30-----	193	33	17	--	--	--	3,310	575	5,140
31-----	149	30	12	--	--	--	3,060	482	3,980
Total-	9,729	--	4,382	20,491	--	9,683	163,260	--	303,787

s Computed by subdividing day.

IOWA RIVER BASIN--Continued

IOWA RIVER AT IOWA CITY, IOWA--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2,660	330	2,370	1,220	95	313	1,380	170	633
2-----	2,500	255	1,720	1,140	80	246	1,260	130	442
3-----	2,660	250	1,800	1,060	70	200	1,220	100	329
4-----	2,820	280	2,130	1,620	236	1,030	1,300	125	439
5-----	2,660	270	1,940	1,260	333	1,130	1,380	150	559
6-----	2,340	210	1,330	1,100	165	490	1,340	125	452
7-----	2,020	160	873	1,300	100	351	1,220	105	346
8-----	1,780	120	577	2,420	258	1,690	1,140	128	394
9-----	1,680	102	457	2,980	674	s 5,490	1,060	128	366
10-----	1,780	135	649	2,980	945	s 8,260	990	108	289
11-----	1,860	198	994	4,030	3,660	39,800	920	99	246
12-----	1,700	123	548	4,210	4,020	45,700	2,020	150	818
13-----	1,540	112	466	4,210	2,500	28,400	3,140	900	7,630
14-----	1,420	125	479	4,210	1,400	15,900	2,340	790	4,990
15-----	1,300	100	351	3,850	900	9,360	2,660	1,460	10,500
16-----	1,180	75	239	2,980	480	3,860	2,020	700	3,820
17-----	1,100	75	223	2,420	300	1,960	2,100	810	4,590
18-----	1,025	79	219	2,100	198	1,120	4,120	5,700	s 68,400
19-----	955	79	204	1,860	145	728	4,780	4,870	s 62,800
20-----	892	72	173	1,620	122	534	4,980	4,740	s 63,300
21-----	822	71	158	1,740	100	470	5,610	2,820	42,700
22-----	720	78	152	1,700	142	652	6,520	2,100	37,000
23-----	864	82	191	2,020	157	856	6,260	1,410	23,900
24-----	1,100	139	413	2,660	474	3,400	6,050	1,000	16,300
25-----	1,820	345	1,700	1,980	1,250	s 6,710	6,280	1,140	19,300
26-----	1,260	215	731	1,700	595	2,730	7,720	1,480	30,800
27-----	1,180	97	309	1,780	360	1,730	10,300	1,500	41,700
28-----	1,100	75	223	2,420	1,110	s 7,330	10,200	1,040	28,600
29-----	1,100	156	404	2,020	2,780	15,200	8,330	700	15,700
30-----	1,140	100	308	1,660	1,400	6,270	4,640	460	5,760
31-----	--	--	--	1,500	320	1,300	--	--	--
Total-	46,958	--	22,331	69,750	--	213,210	113,300	--	493,103
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3,290	828	s 12,400	848	365	836	287	100	77
2-----	7,770	4,560	s 109,300	537	280	406	191	100	52
3-----	2,500	860	5,800	289	185	144	132	87	31
4-----	2,020	406	2,210	484	182	238	156	104	44
5-----	1,740	220	1,030	408	154	170	262	94	66
6-----	1,540	152	632	366	125	124	112	85	26
7-----	1,250	116	392	366	126	125	280	127	96
8-----	1,220	107	352	355	116	111	105	88	25
9-----	1,140	83	255	374	114	115	193	60	31
10-----	1,060	77	220	532	192	s 377	100	55	15
11-----	955	72	186	390	234	246	232	67	42
12-----	1,110	255	s 966	413	214	239	132	72	26
13-----	1,290	470	s 1,750	378	228	233	147	69	27
14-----	857	163	377	246	159	106	139	69	26
15-----	649	118	207	408	110	121	167	53	24
16-----	690	108	201	247	96	64	166	52	23
17-----	829	107	239	295	93	74	153	53	22
18-----	666	114	205	246	99	66	115	49	15
19-----	969	357	s 1,080	344	107	99	227	58	36
20-----	787	416	s 918	218	108	64	158	51	22
21-----	640	189	327	289	118	92	218	58	34
22-----	610	142	234	436	122	144	143	71	27
23-----	565	127	194	146	95	37	158	56	24
24-----	466	110	138	344	80	74	223	72	43
25-----	436	120	141	197	89	47	1,420	171	s 662
26-----	470	109	138	249	82	55	1,140	541	s 1,630
27-----	497	111	149	159	90	39	857	360	833
28-----	520	100	140	386	121	126	684	238	440
29-----	510	83	114	281	76	58	605	171	279
30-----	668	210	s 688	234	95	60	524	140	198
31-----	2,370	1,090	s 7,800	172	85	39	--	--	--
Total-	40,064	--	148,783	10,637	--	4,729	9,426	--	4,896

Total discharge for year (second-foot-days) 500,623
 Total load for year (tons) 1,208,851

s Computed by subdividing day.

IOWA RIVER BASIN--Continued

CEDAR RIVER AT CEDAR RAPIDS, IOWA

LOCATION.--At Eighth Avenue Bridge on U. S. Highway 30, at Cedar Rapids, Linn County, 500 feet downstream from gaging station, 1 mile below power dam, and 2.6 miles upstream from Prairie Creek.

DRAINAGE AREA.--6,640 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1906 to September 1907, January 1944 to September 1950.

Water temperatures: January 1944 to September 1950.

Sediment records: October 1943 to September 1950.

EXTREMES, 1949-50.--Dissolved solids: Maximum, 400 ppm Jan. 1-31; minimum, 71 ppm Mar. 5-11, 12-13.

Hardness: Maximum, 234 ppm Jan. 1-31; minimum, 689 micromhos Jan. 24; minimum daily, 163 micromhos Mar. 9.

Specific conductance: Maximum, 81 F July 29-31; minimum, 33 F Jan. 7.

Water temperatures: Maximum daily, 74.100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

Sediment loads: Maximum daily, 74,100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

EXTREMES, 1949-50.--Dissolved solids (1944-50): Maximum, 1948; minimum, 71 ppm Jan. 1-31; minimum, 118 ppm Mar. 5-11, 12-13, 1950.

Hardness (1944-50): Maximum, 314 ppm Jan. 1-31; minimum, 689 micromhos Jan. 24; minimum daily, 163 micromhos Mar. 9.

Specific conductance (1944-50): Maximum, 81 F July 29-31; minimum, 33 F Jan. 7.

Water temperatures: Maximum daily, 74.100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

Sediment loads: Maximum daily, 74,100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

EXTREMES, 1944-50.--Dissolved solids: Maximum, 400 ppm Jan. 1-31; minimum, 71 ppm Mar. 5-11, 12-13.

Hardness: Maximum, 234 ppm Jan. 1-31; minimum, 689 micromhos Jan. 24; minimum daily, 163 micromhos Mar. 9.

Specific conductance: Maximum, 81 F July 29-31; minimum, 33 F Jan. 7.

Water temperatures: Maximum daily, 74.100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

Sediment loads: Maximum daily, 74,100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

EXTREMES, 1944-50.--Dissolved solids: Maximum, 400 ppm Jan. 1-31; minimum, 71 ppm Mar. 5-11, 12-13.

Hardness: Maximum, 234 ppm Jan. 1-31; minimum, 689 micromhos Jan. 24; minimum daily, 163 micromhos Mar. 9.

Specific conductance: Maximum, 81 F July 29-31; minimum, 33 F Jan. 7.

Water temperatures: Maximum daily, 74.100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

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EXTREMES, 1944-50.--Dissolved solids: Maximum, 400 ppm Jan. 1-31; minimum, 71 ppm Mar. 5-11, 12-13.

Hardness: Maximum, 234 ppm Jan. 1-31; minimum, 689 micromhos Jan. 24; minimum daily, 163 micromhos Mar. 9.

Specific conductance: Maximum, 81 F July 29-31; minimum, 33 F Jan. 7.

Water temperatures: Maximum daily, 74.100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

Sediment loads: Maximum daily, 74,100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

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Specific conductance: Maximum, 81 F July 29-31; minimum, 33 F Jan. 7.

Water temperatures: Maximum daily, 74.100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

Sediment loads: Maximum daily, 74,100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

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Sediment loads: Maximum daily, 74,100 (ons June 25; minimum daily, 3 Cons. R. 4, 5.

REMARKS.--Daily samples for chemical analysis composited by discharge: Records of specific conductance of daily samples for period October 1945 to September 1946 and July 1947 to September 1950 available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1175.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃	Percent non-carbonate		
																	Parts per million	Tons per acre-foot				
																					Total	
Oct. 1-31, 1949.....	549	8.1	457	10	0.03	44	18	26	2.7	202	30	33	33	0.1	2.2	0.04	276	0.38	409	184	18	23
Oct. 4, Sta. 120a.....	490	8.1	434	--	--	--	--	--	--	172	33	35	35	--	5.1	--	--	--	--	167	--	--
Oct. 4, Sta. 230a.....	490	8.1	429	--	--	--	--	--	--	179	28	35	35	--	4.9	--	--	--	--	163	--	--
Oct. 4, Sta. 300a.....	490	8.0	422	--	--	--	--	--	--	174	24	35	35	--	2.7	--	--	--	--	165	--	--
Oct. 4, Sta. 325a.....	490	8.2	428	--	--	--	--	--	--	180	25	35	35	--	2.7	--	--	--	--	165	--	--
Oct. 4, Sta. 420a.....	490	8.3	428	--	--	--	--	--	--	b174	30	35	35	--	2.7	--	--	--	--	165	--	--
Oct. 4, Sta. 500a.....	490	--	430	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 1-30.....	582	8.2	492	12	.04	47	19	27	2.6	217	34	35	35	.2	3.8	.20	298	.41	463	196	19	23
Nov. 7, Sta. 120a.....	550	--	508	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 7, Sta. 230a.....	550	--	502	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 7, Sta. 300a.....	550	--	503	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 7, Sta. 325a.....	550	--	502	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 7, Sta. 420a.....	550	--	503	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 7, Sta. 500a.....	550	--	513	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a. Not included in weighted average.

b. Includes equivalent of 6 parts per million of carbonate (CO₃).

Dec. 1-31.....	488	8.2	520	12	.04	55	19	30	2.6	240	39	37	.2	4.2	20	34.8	47	459	215	18	23
Jan. 1-31, 1900.....	486	8.1	561	15	.04	64	18	30	4.0	252	41	39	.2	9.3	20	400	54	503	234	27	21
Feb. 1-9.....	350	7.6	549	18	.04	61	16	28	4.6	244	36	36	.2	8.1	20	382	52	381	218	18	21
Feb. 10-17.....	979	7.2	377	12	.04	41	9.5	18	7.4	152	26	22	.1	9.5	20	270	37	714	142	17	21
Feb. 18-Mar. 4.....	484	7.5	494	15	.04	55	14	25	5.6	212	34	31	.1	7.4	20	324	44	432	195	21	21
Mar. 5-11.....	19,110	7.0	179	8.6	.10	24	3.3	3.0	5.4	88	2.0	2.0	.1	10	20	118	.16	6,080	74	2	8
Mar. 12-13.....	19,200	7.1	168	7.1	.10	22	3.8	2.8	5.6	74	7.0	5.0	.2	9.1	20	118	.16	6,120	71	10	7
Mar. 14-30.....	6,722	7.2	250	11	.10	33	7.0	5.0	5.2	112	21	7.0	.1	6.1	20	176	.24	3,190	112	20	9
Mar. 31-Apr. 3.....	15,660	7.5	282	11	.10	39	5.1	4.0	4.6	128	19	5.0	.1	5.8	20	176	.24	7,440	119	14	6
Apr. 4-30.....	3,644	7.5	402	14	.02	53	12	11	4.7	185	38	12	.1	6.8	10	252	.34	2,480	182	30	11
May 1-31.....	4,218	7.5	382	15	.10	52	13	9.7	2.9	178	39	10	.2	6.4	20	246	.33	2,800	182	36	10
June 1-24.....	4,844	7.6	346	13	.20	47	10	9.7	3.2	165	32	9.0	.1	4.8	30	214	.29	2,800	160	25	11
June 12, Sta. 120 a.....	4,310	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 12, Sta. 230 a.....	4,310	--	372	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 12, Sta. 300 a.....	4,310	--	347	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 12, Sta. 325 a.....	4,310	--	355	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 12, Sta. 400 a.....	4,310	--	361	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 12, Sta. 500 a.....	4,310	--	361	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 25-26.....	13,550	7.6	305	12	.40	43	9.4	5.0	2.4	152	24	7.0	.2	4.6	20	194	.26	7,100	146	21	7
June 27-July 31.....	2,380	7.8	386	15	.04	52	14	11	3.0	192	36	13	.2	5.7	20	250	.34	1,610	186	29	11
Aug. 1-31.....	1,311	7.6	386	11	.04	41	14	16	4.4	178	30	19	.2	4	20	202	.30	786	162	18	17
Sept. 1-21.....	731	7.4	375	6.5	.02	31	17	18	3.0	165	26	24	.2	.3	30	208	.28	411	146	11	21
Sept. 22-25.....	4,645	7.4	244	9.1	.50	33	5.7	7.4	3.3	118	18	8.0	.2	1.4	20	148	.20	1,860	106	9	13
Sept. 26-30.....	1,524	7.4	402	11	.30	50	14	14	3.3	190	35	16	.2	2.9	20	240	.33	988	181	25	14
Weighted averages.....	2,656	--	327	12	0.11	42	9.9	9.6	4.1	152	26	11	0.1	6.1	0.20	209	0.28	1,500	146	21	12

a Not included in weighted average.

IOWA RIVER BASIN--Continued

CEDAR RIVER AT CEDAR RAPIDS, IOWA--Continued

Temperature (°F) of water, water year October 1949 to September 1950

/Once-daily temperature measurement generally at 5 p. m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	48	41	38	35	35	40	49	71	71	80	75
2	62	47	40	37	35	35	42	52	68	74	75	72
3	64	44	40	36	37	35	44	55	67	76	75	73
4	68	45	40	35	36	--	41	60	66	75	74	72
5	65	46	39	36	36	35	45	58	71	77	78	72
6	66	47	39	35	36	35	44	60	74	77	78	71
7	69	48	38	33	37	36	48	60	76	77	78	71
8	71	50	37	37	38	36	43	58	77	78	77	71
9	70	53	37	38	37	35	45	59	78	78	79	70
10	70	55	35	36	37	35	44	58	75	76	79	72
11	68	56	36	38	36	35	46	60	76	78	77	73
12	64	55	35	38	36	35	45	60	72	79	73	70
13	62	54	34	37	36	35	45	65	71	75	74	67
14	62	50	37	36	35	35	47	68	75	75	77	68
15	60	46	40	36	35	37	49	70	76	76	78	69
16	59	45	--	35	36	36	52	65	76	78	80	69
17	60	42	37	37	36	37	56	67	74	78	80	69
18	62	44	37	36	35	36	55	67	66	75	78	72
19	62	43	36	36	36	37	55	64	62	72	75	72
20	64	41	37	36	36	37	52	63	65	75	72	72
21	64	41	37	37	36	38	53	65	66	75	74	70
22	59	40	37	38	36	39	58	67	71	75	73	67
23	57	40	37	37	36	40	57	69	74	76	75	65
24	55	39	37	37	34	40	55	72	73	76	77	65
25	52	37	37	36	35	39	52	72	73	75	78	62
26	50	39	37	35	36	41	47	70	75	78	75	65
27	50	39	36	35	38	42	45	68	73	79	75	65
28	52	40	38	37	37	40	45	68	74	80	74	67
29	55	41	37	36	--	37	45	66	72	81	72	68
30	53	43	37	35	--	39	48	70	74	81	71	68
31	50	--	37	36	--	39	--	70	--	81	71	--
Aver- age	61	45	37	36	36	37	48	64	72	77	76	69

IOWA RIVER BASIN--Continued

CEDAR RIVER AT CEDAR RAPIDS, IOWA--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	480	30	39	550	18	27	614	36	60
2-----	470	28	36	580	18	28	543	28	41
3-----	480	30	39	570	18	28	928	26	65
4-----	490	35	46	560	17	26	595	31	50
5-----	490	37	49	520	15	21	740	29	58
6-----	510	32	44	540	10	15	434	23	27
7-----	540	28	42	550	18	27	554	37	55
8-----	610	36	59	570	24	37	321	24	21
9-----	550	43	64	520	30	42	270	14	10
10-----	520	53	74	520	28	39	212	13	7
11-----	520	35	49	540	29	42	380	13	13
12-----	520	27	38	646	25	44	677	17	31
13-----	510	29	40	590	24	38	559	14	21
14-----	460	29	36	646	26	45	217	16	9
15-----	460	29	36	580	14	22	280	16	12
16-----	480	56	73	646	10	17	315	25	21
17-----	470	44	56	670	8	14	754	24	49
18-----	440	38	45	590	10	16	686	16	30
19-----	520	42	59	658	36	64	670	15	27
20-----	560	34	51	550	31	46	896	13	31
21-----	580	26	41	550	26	39	536	12	17
22-----	550	16	24	530	24	34	499	12	16
23-----	838	18	41	580	22	34	329	10	9
24-----	706	28	53	590	23	37	280	11	8
25-----	540	26	38	560	14	21	256	11	8
26-----	646	14	24	560	16	24	392	18	19
27-----	646	10	17	530	22	31	500	23	31
28-----	682	25	46	520	25	35	540	19	28
29-----	634	40	68	540	25	36	329	24	21
30-----	580	36	56	910	28	69	418	31	35
31-----	540	20	29	--	--	--	392	31	33
Total--	17,022	--	1,412	17,466	--	998	15,116	--	863
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	420	26	29	350	7	6	778	11	23
2-----	580	13	20	320	7	6	754	4	14
3-----	497	12	16	310	8	7	694	7	75
4-----	680	22	40	310	4	3	634	157	269
5-----	450	18	22	310	4	3	2,600	190	1,330
6-----	230	28	17	310	6	5	7,800	640	13,500
7-----	346	48	45	310	8	7	11,600	1,220	38,200
8-----	320	44	38	400	8	9	23,600	675	s 43,000
9-----	323	37	32	530	10	14	25,600	318	22,000
10-----	312	13	11	1,020	18	50	30,200	341	27,800
11-----	246	7	5	1,590	32	137	32,400	257	22,500
12-----	329	14	12	1,380	37	138	24,400	158	s 10,600
13-----	400	16	17	1,200	23	75	14,000	100	3,780
14-----	760	43	88	950	19	49	6,840	60	1,110
15-----	700	90	170	700	14	26	6,050	48	784
16-----	600	132	214	520	10	14	5,700	112	1,720
17-----	540	87	127	470	9	11	5,000	90	1,210
18-----	540	85	124	420	6	7	4,310	53	617
19-----	600	23	37	420	6	7	4,240	67	767
20-----	600	20	32	450	5	6	4,070	112	1,230
21-----	470	14	18	420	5	6	3,870	104	1,090
22-----	480	42	54	400	8	9	4,140	72	805
23-----	490	22	29	410	9	10	4,650	103	1,290
24-----	470	5	6	420	9	10	5,880	121	1,920
25-----	490	9	12	370	10	10	7,280	193	3,790
26-----	540	10	15	360	6	6	8,500	186	4,310
27-----	500	7	9	370	5	5	9,550	213	5,490
28-----	400	9	10	500	7	9	9,800	199	5,320
29-----	390	9	9	--	--	--	11,000	300	8,910
30-----	380	17	17	--	--	--	13,300	413	14,800
31-----	370	11	11	--	--	--	20,000	548	s 29,600
Total--	14,453	--	1,286	15,530	--	645	309,340	--	267,854

s Computed by subdividing day.

IOWA RIVER BASIN--Continued

CEDAR RIVER AT CEDAR RAPIDS, IOWA--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	21,500	436	s 25,900	2,950	142	1,130	2,560	75	518
2-----	13,000	212	7,440	2,720	97	712	3,280	205	1,810
3-----	8,150	170	3,740	2,490	78	524	4,650	175	2,200
4-----	7,100	125	2,400	2,840	125	958	4,650	198	2,490
5-----	6,050	112	1,830	2,840	147	1,130	3,870	120	1,250
6-----	5,350	95	1,370	2,840	78	598	3,410	118	1,090
7-----	4,550	67	823	3,530	200	s 2,020	2,950	100	796
8-----	4,110	56	621	4,620	908	s 11,800	2,540	78	535
9-----	3,830	68	705	5,880	1,010	16,000	2,340	70	442
10-----	3,830	62	641	5,880	789	s 12,800	2,180	90	530
11-----	3,630	60	588	6,750	650	11,800	2,750	195	1,450
12-----	3,280	50	443	8,500	881	s 20,000	4,310	409	4,760
13-----	3,250	36	316	8,680	541	s 12,600	4,820	548	7,130
14-----	3,370	36	328	6,920	305	5,700	3,340	295	2,660
15-----	3,190	47	405	5,180	195	2,730	4,870	1,020	s 13,800
16-----	2,860	41	317	4,190	120	1,360	4,480	841	s 10,200
17-----	2,650	35	250	3,630	80	784	4,140	767	s 8,590
18-----	2,410	30	195	3,220	85	738	7,060	1,810	s 35,000
19-----	2,150	30	174	2,950	80	637	8,150	1,560	s 34,000
20-----	2,020	23	125	2,810	70	531	7,800	1,070	s 22,400
21-----	1,980	27	144	2,720	70	514	8,320	930	20,900
22-----	1,920	53	275	2,780	72	540	8,850	715	17,100
23-----	1,940	131	686	3,130	160	1,350	7,010	342	6,470
24-----	3,100	232	1,940	4,040	330	3,600	7,930	711	s 16,400
25-----	4,310	486	s 5,940	3,800	327	3,350	13,600	2,050	s 74,100
26-----	5,180	963	s 13,600	3,770	380	3,850	13,500	960	35,000
27-----	5,000	671	9,060	4,140	410	s 4,730	5,990	760	12,300
28-----	4,320	495	5,770	5,700	989	s 15,000	4,480	377	s 4,690
29-----	3,700	335	3,340	4,650	343	s 8,820	3,660	196	1,940
30-----	3,310	240	2,140	3,470	185	1,730	3,060	105	867
31-----	--	--	--	2,950	110	876	--	--	--
Total-	141,040	--	91,504	130,770	--	148,912	160,550	--	341,418
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2,880	135	1,050	1,590	89	429	814	64	141
2-----	6,660	271	s 4,880	1,480	100	356	754	79	161
3-----	5,190	210	1,810	1,700	86	395	754	82	167
4-----	2,510	117	793	2,510	94	637	754	83	169
5-----	2,240	78	472	2,540	102	700	742	72	144
6-----	2,040	79	435	2,200	118	701	718	70	136
7-----	1,840	56	278	1,840	88	437	634	69	118
8-----	1,800	78	379	1,700	93	427	646	54	112
9-----	1,630	88	387	1,540	76	316	718	80	155
10-----	1,600	88	360	1,380	79	294	658	64	114
11-----	1,480	76	304	1,290	78	272	634	60	103
12-----	1,380	69	257	1,240	83	278	754	74	151
13-----	1,380	90	335	1,150	66	205	706	81	154
14-----	1,450	103	403	1,370	67	243	646	62	108
15-----	1,140	63	194	1,400	64	242	778	54	113
16-----	1,380	51	190	1,330	56	201	754	68	138
17-----	1,300	65	228	1,150	66	205	658	92	163
18-----	1,270	71	243	1,160	60	188	670	85	154
19-----	1,370	96	355	1,110	80	240	610	72	119
20-----	2,720	137	1,010	1,080	77	225	658	75	133
21-----	3,470	169	1,580	1,110	64	192	1,300	94	330
22-----	2,750	150	1,110	876	68	161	7,100	444	s 8,660
23-----	2,590	136	951	954	68	175	5,440	292	s 4,400
24-----	2,560	123	825	889	68	163	3,500	163	1,540
25-----	2,340	106	670	863	64	149	2,540	79	542
26-----	2,180	87	512	826	86	192	1,880	88	447
27-----	2,000	91	491	876	88	208	1,630	67	295
28-----	1,800	90	437	863	68	158	1,430	72	278
29-----	1,540	88	366	876	86	203	1,380	79	294
30-----	1,670	112	505	814	70	154	1,300	72	253
31-----	1,940	120	629	928	65	163	--	--	--
Total-	66,100	--	22,459	40,635	--	8,914	41,560	--	19,792
Total discharge for year (second-foot-days)									969,582
Total load for year (tons)									906,057

s Computed by subdividing day.

PART 6. MISSOURI RIVER BASIN

MISSOURI RIVER MAIN STEM

BEAVERHEAD RIVER AT BARRATTS, MONT.

LOCATION.--At gaging station at bridge on local road at junction with U.S. Highway 91, 1 mile upstream from Barratts, Beaverhead County, 2 miles downstream from Grasshopper Creek, and 8½ miles southwest of Dillon.

DRAINAGE AREA.--2,740 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1949 to September 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent non- carbo- nate
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbo- nate	
Nov. 30, 1949.....	505		8.1	542	26	0.04	64	21	33		251	84	16	0.6	1.5	--	--	384	0.52	246	40	23
Dec. 23.....	399		8.0	608	25	.04	67	23	12		194	103	13	.4	2.6	0.20	394	.54	262	103	9	
Feb. 7, 1950.....	329		7.9	588	28	.01	68	24	26		252	93	12	.4	2.9	.20	404	.55	268	61	17	
Mar. 1.....	350		7.6	573	21	.04	65	25	7.4		200	93	12	.4	2.2	.10	384	.52	265	101	6	
Apr. 4.....	300		7.9	526	28	.04	61	17	26		220	75	11	.3	3.1	.30	402	.55	222	42	20	
May 4.....	359		7.9	563	18	.02	60	21	29		220	90	16	.4	1.0	.10	362	.49	236	56	21	
May 31.....	247		8.0	569	21	.02	61	21	22		216	96	15	.4	1.1	.20	372	.51	239	62	21	
July 20.....	441		7.8	569	21	.06	74	21	24		272	77	14	.4	.9	--	368	.50	271	48	16	
July 31.....	460		7.9	513	20	.02	50	21	41		246	78	12	.4	.6	--	362	.49	212	10	30	
Sept. 7.....	286		8.0	626	20	.02	76	25	31		280	102	15	.4	.7	--	418	.57	291	61	19	

MISSOURI RIVER MAIN STEM--Continued

BEAVERHEAD RIVER AT BARRATTS, MONT.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
Oct. 4, 1949	390	16	17
Oct. 20	463	41	51
Nov. 1	525	31	44
Nov. 30	505	27	37
Dec. 23	399	46	50
Feb. 7, 1950	329	162	144
Feb. 14	305	43	35
Mar. 1	346	30	28
Apr. 4	500	130	176
Apr. 21	399	34	37
May 4	360	17	17
May 15	363	32	31
May 18	451	40	49
May 31	247	11	7
June 12	507	68	93
June 16	781	125	264
June 26	769	88	183
July 8	462	461	575
July 12	615	79	131
July 20	440	29	34
July 31	449	26	32
Aug. 17	399	22	24
Aug. 29	313	11	9
Sept. 7	285	14	11
Sept. 18	492	44	58
Sept. 23	564	36	55

MISSOURI RIVER MAIN STEM--Continued

MISSOURI RIVER AT HIGHWAY BRIDGE AT TOSTON, MONT.

LOCATION --At bridge on U. S. Highway 10N at Toston, Broadwater County, 2 miles upstream from Crow Creek, 2½ miles downstream from gaging station at Toston and 9½ miles downstream from Sixteenmile Creek.

DRAINAGE AREA --14,000 square miles (approximate figure).

RECORDS AVAILABLE --Water temperatures: May 1949 to September 1950.

Sediment records: March 1949 to September 1950.

EXTREMES, 1949-50 --Water temperatures: Maximum, 75°F Aug. 3; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 538 ppm Apr. 8; minimum daily, 6 ppm Oct. 15.

Sediment loads: Maximum daily, 8,250 tons June 19; minimum daily, 54 tons Sept. 6.

EXTREMES, March 1949 to September 1950 --Water temperatures (May 1949 to September 1950): Maximum, 78°F July 25, 1949; minimum, freezing point on many days during December 1949 to March 1950.

Sediment concentrations: Maximum daily, 538 ppm Apr. 8, 1950; minimum daily, 6 ppm Oct. 15, 1949.

Sediment loads: Maximum daily, 8,250 tons June 19, 1950; minimum daily, 54 tons Sept. 6, 1950.

REMARKS --Discharge records for gaging station at Toston, for water year October 1949 to September 1950 given in Water-Supply Paper 1176. No appreciable inflow between gaging station and sampling point except during periods of heavy local rains.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	Specific conduct-ance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-dum		
															Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate			
Nov. 30, 1949	4,210	7.6	425	34	0.02	43	14	30		186	50	18	1.0	1.4	--	290	0.39		165	12	28	
Mar. 1, 1950	4,430	7.7	389	27	.06	43	11	29		174	46	15	1.0	2.2	0.05		270	.37		153	10	29
June 2,	7,720	7.8	238	23	.04	28	6.2	14		109	23	6.0	.8	1.6	.30		158	.21		96	7	24
Sept. 6,	2,650	7.7	372	28	.02	38	9.7	31		164	43	14	1.4	.4	.30		248	.34		135	1	33

MISSOURI RIVER MAIN STEM--Continued

MISSOURI RIVER AT HIGHWAY BRIDGE AT TOSTON, MONT.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement between 11 a. m. and 3 p. m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	45	38	--	--	37	47	46	55	68	70	66
2	53	46	38	--	--	39	42	45	53	69	73	73
3	53	44	36	--	36	39	40	45	53	72	75	71
4	--	44	34	--	36	42	42	42	50	68	67	71
5	53	44	34	--	35	43	43	45	63	68	72	69
6	48	43	33	--	36	39	52	49	60	65	67	70
7	45	43	35	--	35	37	47	47	56	70	68	68
8	45	40	--	--	40	37	45	45	47	68	68	62
9	44	44	--	--	32	38	48	48	56	73	69	61
10	43	40	--	--	36	32	--	55	57	67	--	58
11	45	43	--	--	37	32	53	57	56	65	68	60
12	43	40	--	32	38	32	50	55	50	62	66	57
13	48	42	--	34	35	32	55	60	60	69	66	55
14	45	40	--	34	38	34	50	60	62	71	70	54
15	45	41	--	34	36	42	45	60	61	65	71	52
16	46	38	--	34	36	42	50	56	60	65	70	53
17	44	38	--	32	38	37	50	60	60	65	71	58
18	34	40	--	36	37	35	45	54	60	69	68	60
19	40	40	--	36	35	40	50	49	60	67	68	58
20	41	38	--	36	34	44	55	56	60	67	70	59
21	40	38	--	36	35	45	55	48	64	70	70	--
22	44	48	--	35	35	45	53	60	61	71	70	59
23	45	38	--	34	36	42	45	58	59	71	66	59
24	45	39	--	--	39	42	48	53	56	70	65	60
25	--	43	--	--	39	37	45	51	53	73	70	60
26	--	43	--	--	42	38	45	58	56	67	66	55
27	--	42	50	--	36	40	46	64	61	67	67	52
28	46	42	50	--	37	40	39	60	62	72	71	50
29	45	38	--	--	--	42	42	--	68	67	65	46
30	44	38	44	--	--	43	48	50	66	67	73	46
31	44	--	46	--	--	47	--	50	--	67	69	--
Average	45	41	35	33	36	39	47	53	58	67	69	59

a Includes estimated temperature 32°F on missing days.

MISSOURI RIVER MAIN STEM--Continued

MISSOURI RIVER AT HIGHWAY BRIDGE AT TOSTON, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3,600	20	194	4,030	14	152	4,140	23	257
2-----	3,710	19	190	4,000	15	162	4,160	18	202
3-----	3,760	16	162	3,940	12	128	3,910	13	137
4-----	3,600	13	126	3,910	10	106	3,740	9	91
5-----	3,550	12	115	4,010	12	130	3,730	9	91
6-----	3,550	10	96	4,030	12	130	3,760	16	162
7-----	3,600	8	78	4,030	10	109	3,450	16	149
8-----	3,640	8	79	4,010	12	130	3,450	11	102
9-----	3,590	9	87	4,010	13	141	3,600		
10-----	3,620	8	78	4,010	13	141	3,600		
11-----	3,670	8	79	3,980	14	150	2,600		
12-----	3,690	7	70	3,920	10	106	2,400		
13-----	3,670	8	79	3,830	12	124	2,500		
14-----	3,640	8	79	3,940	10	106	2,700		
15-----	3,640	6	59	3,940	10	106	2,900		
16-----	3,590	7	68	3,920	12	127	3,100		
17-----	3,450	8	74	3,920	12	127	3,400		
18-----	3,660			3,920	10	106	3,400		
19-----	3,730			3,940	13	138	3,350		
20-----	3,820			3,920	13	138	2,600	17	150
21-----	3,870			3,870	9	94	2,500		
22-----	3,910			3,820	12	124	2,850		
23-----	4,050	11	120	3,820	15	155	3,250		
24-----	4,230			3,850	13	135	3,400		
25-----	4,340			3,960	12	128	3,400		
26-----	4,210			4,030	15	163	3,200		
27-----	4,120			4,090	16	177	3,570		
28-----	4,100	30	332	4,160	18	202	3,800		
29-----	4,090	30	331	4,180	13	147	3,890		
30-----	4,050	26	284	4,190	26	294	3,980		
31-----	3,910	14	148	--	--	--	3,820		
Total--	117,660	--	4,010	119,180	--	4,180	104,150	--	4,640
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3,600			2,700	--	e 290	4,610	105	1,310
2-----	3,100			2,650	--	e 250	4,250	91	1,040
3-----	2,400			2,600	30	210	4,100	71	785
4-----	2,200			2,650	26	166	4,140	52	581
5-----	2,300			2,800	17	129	4,290	42	487
6-----	2,500	17	130	3,100	18	151	4,530	55	673
7-----	2,600			3,300	37	330	4,420	48	572
8-----	2,800			3,200	29	250	4,160	44	494
9-----	3,000			3,200	22	190	4,050	31	339
10-----	3,100			3,200	22	190	3,890	32	336
11-----	3,100			3,200	23	199	3,420	31	286
12-----	2,950	18	143	3,300	22	196	3,020	21	171
13-----	2,850	20	154	3,400	22	202	3,300	16	143
14-----	2,800	26	197	3,470	21	197	3,710	19	190
15-----	2,750	26	193	3,570	28	270	3,660	22	217
16-----	2,750	12	89	3,760	35	355	4,070	41	450
17-----	2,800	30	227	4,030	51	555	4,210	51	580
18-----	2,900	27	211	4,100	69	764	4,210	42	477
19-----	3,050	25	206	4,000	55	594	4,180	45	508
20-----	3,250	62	544	4,030	44	479	4,320	57	665
21-----	3,500	102	964	3,830	38	393	4,070	29	319
22-----	3,800	90	923	3,780	32	327	3,980	26	279
23-----	3,800	74	760	3,880	34	357	3,740	19	192
24-----	3,600			4,120	66	735	3,370	19	173
25-----	3,150			4,690	108	1,370	3,330	18	162
26-----	3,100			5,090	175	2,400	3,780	17	174
27-----	3,100			5,550	253	3,790	3,850	20	208
28-----	3,100	--	e 460	5,140	170	2,360	3,850	19	200
29-----	3,100			--	--	--	3,740	15	152
30-----	3,050			--	--	--	3,670	15	149
31-----	2,900			--	--	--	3,740	16	162
Total--	93,000	--	9,720	102,350	--	17,720	121,700	--	12,470

e Estimated.

MISSOURI RIVER BASIN

MISSOURI RIVER MAIN STEM--Continued

MISSOURI RIVER AT HIGHWAY BRIDGE AT TOSTON, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	4,190	80	905	4,140	105	1,170	7,120	72	1,380
2-----	5,660	400	6,110	4,190	83	939	7,200	63	1,220
3-----	4,770	230	2,960	4,550	39	479	7,090	58	1,110
4-----	4,910	92	1,220	4,530	19	232	6,690	56	1,010
5-----	4,830	175	2,280	4,310	18	210	6,400	48	829
6-----	4,730	181	2,320	4,140	16	179	7,230	60	1,170
7-----	4,910	225	2,980	4,010	20	216	8,190	87	1,920
8-----	5,120	538	7,400	3,850	14	146	10,000	128	3,460
9-----	5,140	373	5,170	3,920	14	148	11,300	147	4,490
10-----	5,090	230	3,160	3,870	15	157	11,000	116	3,450
11-----	5,030	220	2,990	3,870	17	178	10,600	101	2,890
12-----	4,950	190	2,540	3,890	24	252	10,300	92	2,560
13-----	5,010	70	946	3,940	33	351	10,700	93	2,690
14-----	5,270	75	1,070	4,190	41	464	11,300	93	2,840
15-----	5,530	84	1,250	4,750	58	744	11,600	102	3,200
16-----	5,440	69	1,010	5,310	76	1,090	11,900	105	3,370
17-----	5,400	67	977	5,730	76	1,180	13,000	128	4,490
18-----	5,240	59	835	6,240	107	1,800	14,400	181	7,040
19-----	5,260	53	754	7,090	149	2,850	15,600	196	8,250
20-----	5,050	48	655	6,870	110	2,040	15,900	158	6,780
21-----	4,810	126	1,640	6,350	77	1,320	16,000	152	6,560
22-----	4,910	174	2,310	5,780	50	780	16,700	140	6,310
23-----	5,120	223	3,080	6,070	75	1,230	17,300	139	6,490
24-----	5,180	210	2,940	6,610	107	1,910	16,800	114	5,170
25-----	4,930	164	2,180	7,200	126	2,450	16,800	100	4,540
26-----	4,550	132	1,620	6,760	99	1,810	16,100	94	4,090
27-----	4,340	98	1,150	6,220	68	1,140	14,700	79	3,140
28-----	4,340	100	1,170	6,560	60	1,060	13,300	73	2,620
29-----	4,380	96	1,140	7,310	89	1,760	11,800	65	2,070
30-----	4,230	98	1,120	7,260	80	1,570	10,100	61	1,660
31-----	--	--	--	7,260	76	1,490	--	--	--
Total-	148,320	--	65,920	166,770	--	31,340	357,120	--	106,800
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	10,100	61	1,660	3,350	8	72	2,650	8	57
2-----	9,880	54	1,440	3,300	8	71	2,650	9	64
3-----	9,460	47	1,200	3,210	11	95	2,640	8	57
4-----	9,000	42	1,020	3,250	19	167	2,600	9	63
5-----	8,640	41	956	3,400	16	147	2,540	11	75
6-----	8,190	38	840	3,590	14	136	2,510	8	54
7-----	7,680	27	560	3,600	13	126	2,490	10	67
8-----	7,820	32	676	3,690	14	139	2,520	10	66
9-----	7,980	34	733	3,710	15	150	2,760	14	104
10-----	7,620	33	680	3,710	15	150	3,120	14	118
11-----	7,450	31	624	3,670	15	149	4,160	19	213
12-----	7,760	38	796	3,820	17	175	4,360	17	200
13-----	7,650	30	620	3,890	20	210	4,310	14	163
14-----	7,340	24	476	3,830	16	164	4,480	15	182
15-----	6,370	23	396	3,740	13	131	4,650	16	201
16-----	5,680	18	276	3,640	12	118	4,810	16	208
17-----	5,290	13	186	3,490	10	94	4,910	13	172
18-----	5,070	13	178	3,420	12	111	4,910	13	172
19-----	4,610	12	149	3,260	12	106	4,910	13	172
20-----	4,710	15	191	3,210	12	104	4,910	14	186
21-----	4,320	14	163	3,150	11	94	5,090	14	192
22-----	4,050	15	164	3,070	11	91	5,120	14	193
23-----	3,910	17	179	2,800	10	76	5,160	14	195
24-----	3,800	15	154	2,890	10	78	4,500	13	158
25-----	3,690	15	150	2,890	10	78	4,230	15	171
26-----	3,520	15	143	2,830	9	69	4,420	15	179
27-----	3,350	16	145	2,810	11	83	4,380	14	166
28-----	3,150	15	128	2,780	12	90	4,690	15	190
29-----	3,120	14	118	2,760	11	82	4,310	11	128
30-----	3,150	18	153	2,760	11	82	4,480	11	133
31-----	3,330	14	126	2,720	11	81	--	--	--
Total-	187,690	--	15,280	102,240	--	3,520	119,270	--	4,300

Total discharge for year (second-foot days) 1,739,450
 Total load for year (tons) 279,900

MISSOURI RIVER MAIN STEM--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN MISSOURI RIVER MAIN STEM IN MONTANA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- lids	
																	Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate		
BEAVERHEAD RIVER AT BLAINE																						
Nov. 30, 1949.....	671	8.1	607	29	0.04	59	25	51	0	279	99	18	0.6	2.5	--	--	421	0.57	250	21	31	
Feb. 7, 1950.....	a425	7.5	626	19	.04	70	24	35	0	262	104	17	.2	3.1	0.30	--	424	.58	273	58	22	
Mar. 1.....	528	7.7	619	27	.02	71	26	28	0	262	104	13	.4	2.9	.10	--	414	.56	284	69	18	
Apr. 4.....	686	7.8	551	31	.04	64	18	33	0	236	85	13	.3	4.0	.20	--	372	.51	234	40	23	
May 4.....	421	7.9	659	19	.02	71	26	37	0	264	111	21	.4	2.1	.20	--	456	.62	284	68	22	
May 31.....	8.0	7.9	1,170	40	.02	104	47	109	0	392	298	40	.6	1.7	.20	--	870	1.18	453	132	34	
July 7.....	60	7.8	852	35	.04	87	34	60	0	336	169	24	.6	1.4	--	--	584	.79	357	81	27	
July 31.....	226	7.9	738	25	.02	80	30	35	0	301	119	18	.6	3.4	.10	--	480	.65	324	77	19	
Sept. 7.....	211	7.8	713	26	.02	87	23	43	0	283	135	19	.5	2.0	--	--	480	.65	312	76	23	
FORT PECK RESERVOIR																						
May 16, 1950.....		7.9	686	16	0.02	57	21	55	0	188	173	8.0	0.7	0.3	0.30	--	559	0.76	229	75	34	
Aug. 21.....		7.7	610	11	.04	58	18	52	0	182	160	8.5	.7	.7	--	--	412	.56	218	69	34	
MISSOURI RIVER NEAR WOLF POINT																						
Dec. 12, 1949.....	a5,250	8.4	707	13	0.02	60	21	71	7	190	198	10	0.7	1.6	--	--	479	0.65	236	69	40	
Jan. 6, 1950.....	a4,500	8.3	693	13	.03	59	21	66	6	188	190	9.5	.7	.3	0.25	--	460	.63	234	70	38	
Apr. 19.....	15,400	7.1	448	21	.04	38	12	43	0	124	123	3.5	.3	3.1	.30	--	378	.51	145	43	39	
May 4.....	12,300	7.6	631	28	.04	52	19	60	0	181	170	7.0	.6	.9	--	--	436	.59	208	60	38	
May 29.....	3,010	7.9	700	20	.04	60	23	72	0	206	208	10	.6	.1	--	--	510	.69	244	75	39	
July 9.....	3,220	8.1	746	11	.02	58	22	69	0	188	206	9.0	.7	1.1	.30	--	492	.67	235	81	39	
Aug. 3.....	12,700	7.9	625	11	.04	60	18	53	0	183	164	9.0	.7	1.8	--	--	430	.58	222	72	34	
Sept. 12.....	20,400	8.1	624	12	.04	59	18	53	0	186	164	8.5	.7	.8	--	--	428	.58	222	69	34	
a Mean daily discharge.																						

a. Mean daily discharge.

PRICKLY PEAR CREEK BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN PRICKLY PEAR CREEK BASIN IN MONTANA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- dium	
																Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate		
PRICKLY PEAR CREEK NEAR CLANCY																						
Jan. 20, 1950	a 19	7.3	336	24	0.02	38	8.1	19	2.8	0	107	75	6.0	0.5	2.2	0.32	232	0.32		129	41	24
May 11	76	7.7	261	18	.02	32	6.3	12		0	76	62	2.0	.6	1.8	.10	186	.25		106	44	20
June 6	183	7.6	163	19	.10	19	3.2	8.1		0	47	34	1.5	.4	1.3	.13	118	.16		61	22	22
Sept. 5	22	8.1	352	22	.02	43	7.2	21		0	100	91	2.5	.5	2.0	.11	258	.35		137	55	25
TENMILE CREEK NEAR HELENA																						
Sept. 30, 1948	a 10	7.8	298	31	0.00	37	8.5	16	0.4	0	134	43	2.0	0.4	0.0	0.00	210	0.29		127	17	21
Mar. 21, 1950	6.5	7.6	339	25	.04	39	7.4	25		0	151	45	5.0	.7	1.9	.30	238	.32		128	4	29
June 16	340	6.6	91.1	16	.15	10	2.2	3.0		0	30	12	.5	.3	2.5	.20	82	.11		34	9	16

a Mean daily discharge.

MARIAS RIVER BASIN

MARIAS RIVER NEAR SHELBY, MONT.

LOCATION --At bridge on U. S. Highway 91, 200 feet upstream from gaging station which is 7 miles south of Shelby, Toole County, and 24 miles downstream from Cut Bank Creek.

DRAINAGE AREA --2 610 square miles (above gaging station).

RECORDS AVAILABLE --Chemical analyses: September 1949 to September 1950.

Water temperatures: October 1949 to September 1950.

Sediment records: September 1949 to September 1950.

EXTREMES, 1949-50. --Water temperatures: Maximum, 77°F Aug. 4; minimum, freezing point on many days during December to February.

Sediment concentrations: Maximum daily, 3,780 ppm June 13; minimum daily, 1 ppm Jan. 25.

Sediment loads: Maximum daily, 93,900 tons June 13; minimum daily, less than 1 ton Jan. 25.

REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, September 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Dissolved solids		Hardness as CaCO ₃		Per-cent non-carbon-ate		
																Bo-ron (B)	Parts per million	Tons per acre-foot	Tons per day		Total	Non-carbon-ate
Sept. 13, 1949	a 209	8.3		585	6.4	0.04	54	24	33		b 198	130	4.5	0.2	0.9	0.30	370	0.50	234	72	24	
Dec. 1	661	7.5		417	13	.04	44	18	19		164	82	2.0	.2	1.6	.10	266	.36	184	50	18	
Jan. 2, 1950	a 180	7.8		531	6.5	--	58	19	27		208	103	1.0	.2	1.5	.20	396	.54	223	52	21	
Feb. 8	a 240	7.7		503	7.6	.04	53	20	29		198	104	4.0	.2	1.3	--	344	.47	215	53	23	
Mar. 2	a 250	7.5		629	12	.04	51	25	52		200	185	4.0	.2	1.7	.10	418	.57	231	67	33	
Apr. 5	A 400	7.6		531	14	.04	51	16	37		172	120	3.0	.2	3.7	.20	374	.51	194	53	26	
May 3	1,170	7.8		573	5.9	.02	48	24	36		200	123	4.4	.4	.9	.10	380	.52	221	57	26	
June 2	4,420	7.7		257	12	.04	32	9.3	8.1		126	29	1.0	.4	.2	.10	164	.22	118	15	13	
June 14	10,200	6.9		321	12	.04	38	11	13		144	46	1.0	.1	.6	.10	198	.27	140	22	17	
July 7	27,140	7.2		341	9.2	.06	34	11	9.0		135	36	.5	.2	.6	--	172	.23	130	19	13	
Aug. 1	1,040	7.5		386	9.2	.02	40	15	13		154	57	1.5	.3	.9	.20	216	.26	180	34	15	
Sept. 6	580	7.4		408	7.5	.02	48	16	18		176	74	2.0	.2	.4	--	254	.35	166	42	17	

a Mean daily discharge.

b Includes equivalent of 7 parts per million of carbonate (CO₃).

MISSOURI RIVER BASIN
 MARIAS RIVER BASIN--Continued
 MARIAS RIVER NEAR SHELBY, MONT.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement between 3 p. m. and 7 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	44	35	33	32	34	34	46	50	68	65	66
2	57	45	36	33	32	34	36	44	--	65	75	70
3	--	45	36	33	32	34	36	--	58	63	76	66
4	56	46	35	33	32	34	35	--	55	63	77	70
5	48	48	36	33	32	34	38	48	58	63	70	70
6	43	42	33	33	33	35	35	48	56	62	70	70
7	43	44	32	33	33	35	36	49	54	71	70	65
8	40	38	32	--	33	--	36	49	--	68	68	65
9	--	38	35	--	32	35	36	52	46	70	70	55
10	--	42	33	32	32	34	--	50	46	65	67	53
11	--	40	35	33	32	34	45	58	55	68	68	60
12	--	40	32	32	--	34	--	52	60	68	67	65
13	44	40	35	32	--	34	46	--	60	68	69	65
14	46	--	35	32	32	34	46	56	58	65	60	50
15	48	40	33	32	--	34	--	56	55	67	67	55
16	39	40	33	32	32	34	--	58	52	65	76	55
17	--	35	33	32	32	34	44	52	54	65	68	60
18	--	38	32	32	33	34	45	48	58	70	66	65
19	33	40	33	32	33	--	36	48	55	64	66	59
20	35	37	33	32	33	34	48	48	58	65	65	62
21	34	37	33	32	34	34	48	--	55	66	67	65
22	36	--	32	32	33	34	45	56	56	66	68	58
23	--	41	33	32	33	34	42	54	55	70	--	58
24	36	43	33	32	33	34	45	50	--	70	65	60
25	38	42	33	32	33	34	45	55	60	70	65	63
26	38	43	33	32	33	34	48	56	60	70	65	55
27	40	38	33	32	34	--	48	54	60	70	65	52
28	43	--	33	32	34	34	46	--	65	70	66	--
29	40	35	33	32	--	34	43	54	65	70	65	45
30	43	35	33	32	--	34	44	55	68	70	70	--
31	--	--	33	32	--	35	--	55	--	65	65	--
Average	--	41	34	32	a33	34	42	52	57	67	68	61

a Includes estimated temperature, 32° F on missing days.

Suspended sediment, September 1949

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							--	--	--
2-----							--	--	--
3-----							--	--	--
4-----							--	--	--
5-----							--	--	--
6-----							--	--	--
7-----							--	--	--
8-----							--	--	--
9-----							--	--	--
10-----							--	--	--
11-----							--	--	--
12-----							--	--	--
13-----							209	4	2
14-----							219	6	4
15-----							216	10	6
16-----							209	19	11
17-----							199	21	11
18-----							202	16	9
19-----							260	12	8
20-----							289	17	13
21-----							281	16	12
22-----							274	12	9
23-----							267	9	6
24-----							260	14	10
25-----							246	13	9
26-----							236	13	8
27-----							232	13	8
28-----							236	13	8
29-----							236	14	9
30-----							236	17	11
31-----							--	--	--
Total-							4,307	--	154

MARIAS RIVER BASIN--Continued

MARIAS RIVER NEAR SHELBY, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	216	20	12	441	30	36	683	63	116
2-----	209	17	10	412	21	23	650	41	72
3-----	219	15	9	392	19	20	610	29	48
4-----	219	14	8	372	16	16	514	25	35
5-----	219	15	9	360	13	13	437	14	17
6-----	216	17	10	353	19	18	479	15	19
7-----	219	19	11	349	12	11	471	13	17
8-----	236	26	17	345	14	13	460	19	24
9-----	260	21	15	341	8	7	440	11	13
10-----	281	20	15	337	6	5	412	34	38
11-----	281	18	14	330	6	5	341	30	28
12-----	271	20	15	326	7	6	274	14	10
13-----	260	20	14	306	7	7	239	7	5
14-----	260	18	13	420	15	17	250	11	7
15-----	260	17	12	445	15	18	260	17	12
16-----	253	16	11	433	10	12	240	28	18
17-----	256	15	10	420	16	18	220	20	12
18-----	180	---	e 7	404	9	10	210	28	16
19-----	133	21	8	404	9	10	200	35	19
20-----	106	21	6	408	9	10	200	29	16
21-----	213	26	15	368	9	9	220	21	12
22-----	349	27	25	384	10	10	230	20	12
23-----	454	78	96	388	10	10	240	23	15
24-----	441	136	162	368	18	18	240	20	13
25-----	441	78	93	400	27	29	240	17	11
26-----	441	47	56	424	40	46	240	12	8
27-----	420	42	48	458	57	70	230	12	7
28-----	416	37	42	488	---	e 85	220	7	4
29-----	433	70	82	683	103	190	220	10	6
30-----	428	36	42	705	105	200	220	19	11
31-----	458	37	46	---	---	---	210	17	10
Total--	9,048	---	933	12,354	---	942	10,100	---	651
Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	200	13	7	200	12	6	250	24	16
2-----	180	13	6	210	12	7	250	21	14
3-----	160	13	6	220	10	6	260	77	54
4-----	180	14	7	240	---	e 6	280	106	81
5-----	200	11	6	260	9	6	300	218	177
6-----	220	12	7	260	12	8	290	265	208
7-----	220	11	7	250	14	9	280	307	232
8-----	210	---	e 5	240	9	6	260	129	91
9-----	210	---	e 4	230	7	4	240	65	42
10-----	210	6	e 3	220	13	8	220	36	21
11-----	210	7	4	230	22	14	200	22	12
12-----	200	8	4	240	---	e 8	190	11	6
13-----	190	6	3	250	6	4	220	15	9
14-----	180	5	2	260	25	18	240	16	10
15-----	180	5	2	270	---	e 24	260	24	17
16-----	180	6	3	250	37	25	280	33	25
17-----	180	6	3	220	18	11	280	22	17
18-----	190	6	3	230	11	7	270	32	23
19-----	200	6	3	250	17	11	260	24	17
20-----	210	6	3	260	30	21	270	33	24
21-----	210	18	10	270	30	22	300	32	26
22-----	210	14	8	280	26	20	340	54	50
23-----	200	4	2	280	29	22	350	95	90
24-----	190	2	1	280	27	20	360	110	107
25-----	180	1	(t)	280	23	17	360	73	71
26-----	180	2	1	280	36	27	350	93	88
27-----	180	5	2	270	88	64	350	158	149
28-----	180	7	3	260	76	53	400	213	230
29-----	180	11	5	---	---	---	460	353	438
30-----	160	12	6	---	---	---	550	243	361
31-----	190	10	5	---	---	---	650	375	658
Total--	5,990	---	132	6,990	---	454	9,570	---	3,360

e Estimated.

t Less than 1 ton.

MISSOURI RIVER BASIN

MARIAS RIVER BASIN--Continued

MARIAS RIVER NEAR SHELBY, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	800	560	1,210	1,130	65	198	4,480	373	4,510
2-----	1,000	1,220	3,300	1,140	60	185	4,360	345	4,080
3-----	2,180	606	3,570	1,160	64	200	3,900	281	2,960
4-----	1,490	400	1,610	1,100	66	196	3,900	369	3,880
5-----	1,160	360	1,130	1,060	67	192	4,580	500	6,180
6-----	1,200	800	2,590	1,050	56	159	5,570	1,370	s 21,800
7-----	967	170	444	1,060	47	135	6,480	1,530	26,800
8-----	830	121	271	1,060	54	155	6,640	1,480	26,500
9-----	743	180	361	1,110	57	171	5,590	810	12,200
10-----	830	174	390	1,240	72	241	4,860	840	11,000
11-----	811	278	609	1,570	350	1,480	4,690	640	8,100
12-----	1,010	930	2,540	2,630	1,500	10,600	4,960	700	9,370
13-----	1,300	1,060	3,720	3,760	1,880	19,100	9,200	3,780	93,900
14-----	1,960	1,480	7,830	5,260	2,380	33,800	10,200	2,530	69,700
15-----	2,110	790	4,500	5,660	2,260	34,600	9,280	1,910	47,900
16-----	2,080	700	3,930	5,350	1,140	16,500	8,760	1,420	33,600
17-----	2,100	710	4,030	4,880	863	12,600	8,190	1,200	26,500
18-----	2,470	1,100	7,340	4,790	997	12,900	7,760	1,260	26,400
19-----	2,020	545	2,970	4,400	924	9,790	8,500	1,270	29,200
20-----	1,750	295	1,390	3,760	545	5,530	8,560	1,220	28,200
21-----	1,680	282	1,280	3,340	440	3,970	8,090	1,130	24,700
22-----	2,070	392	2,190	3,830	628	6,500	8,000	1,110	24,000
23-----	2,100	500	2,840	5,680	1,740	s 28,300	7,760	1,100	23,000
24-----	1,900	261	1,340	5,720	1,440	22,200	7,010	--	e 18,000
25-----	1,650	159	709	4,920	814	10,800	6,870	970	18,000
26-----	1,580	110	469	4,500	590	7,170	6,800	720	13,200
27-----	1,490	95	382	4,710	582	7,410	5,700	550	8,460
28-----	1,380	100	372	5,170	800	11,200	5,110	650	8,970
29-----	1,260	88	299	5,330	851	12,200	4,960	335	4,490
30-----	1,170	75	237	5,000	659	8,900	4,980	360	4,840
31-----	--	--	--	4,750	480	6,150	--	--	--
Total-	45,091	--	63,850	106,100	--	283,500	195,740	--	640,400
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5,150	395	5,490	1,040	90	253	605	27	36
2-----	5,640	1,900	28,900	960	81	210	626	34	57
3-----	5,330	950	13,700	896	76	184	575	28	43
4-----	4,920	433	5,750	863	75	175	575	27	42
5-----	4,560	319	3,930	896	570	1,380	575	27	42
6-----	4,460	300	3,610	1,010	1,150	3,140	580	23	36
7-----	4,160	282	3,160	889	225	540	565	19	29
8-----	3,830	256	2,650	811	98	215	556	24	36
9-----	3,580	209	2,020	767	74	153	560	--	e 55
10-----	3,320	212	1,900	767	57	118	570	--	e 80
11-----	3,230	218	1,900	844	58	132	575	54	84
12-----	3,020	183	1,490	850	79	181	580	--	e 65
13-----	2,730	200	1,470	870	65	153	575	27	42
14-----	2,460	240	1,590	779	77	162	570	18	28
15-----	2,390	214	1,380	714	57	110	575	27	42
16-----	2,470	175	1,170	686	46	85	580	15	23
17-----	2,370	147	940	703	38	72	590	14	22
18-----	2,110	134	764	755	37	75	575	15	23
19-----	1,920	126	654	743	29	58	556	15	23
20-----	1,770	116	554	743	30	60	547	24	35
21-----	1,690	122	557	714	29	56	538	28	41
22-----	1,590	96	412	676	32	58	529	22	31
23-----	1,500	93	377	642	54	94	534	25	36
24-----	1,420	103	395	686	35	85	560	28	42
25-----	1,350	86	314	703	25	47	547	16	24
26-----	1,270	100	343	703	21	40	538	23	33
27-----	1,240	100	335	698	22	41	511	23	32
28-----	1,220	104	342	670	21	38	502	--	e 30
29-----	1,160	86	269	648	25	44	520	24	34
30-----	1,110	78	234	632	41	70	534	--	e 30
31-----	1,090	75	221	620	26	44	--	--	--
Total-	84,060	--	86,820	23,978	--	8,050	16,823	--	1,180
Total discharge for year (second-foot-days).....									525,844
Total load for year (tons)									1,090,000

e Estimated.

s Computed by subdividing day.

MARIAS RIVER BASIN--Continued
MARIAS RIVER NEAR SHELBY, MONT.--Continued

Particle-size analyses of suspended sediment, April to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, plette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters								1. 000	
					0. 002	0. 004	0. 008	0. 016	0. 031	0. 062	0. 125	0. 250			0. 350	0. 500
Apr. 20, 1950	11:05 a. m.	1, 760	292	792	42	54	70	74	--	93	100	--	--	SPWCM
May 13	2:45 p. m.	3, 370	1, 770	1, 220	--	37	--	56	--	89	100	--	--	SPWCM
May 14	7:00 a. m.	4, 420	2, 080	1, 450	--	44	--	65	--	91	100	--	--	SPWCM
May 15	7:30 a. m.	5, 440	2, 280	1, 590	--	35	--	61	--	89	100	--	--	SPWCM
May 16	8:45 p. m.	5, 570	950	2, 230	20	26	36	46	62	80	91	99	100	SPWCM
June 13	2:00 p. m.	9, 260	3, 780	2, 810	--	35	--	60	--	88	96	99	100	SPWCM
June 14	9:57 a. m.	10, 300	2, 490	1, 850	12	21	36	49	68	85	96	99	100	SPWCM
June 14	9:57 a. m.	10, 300	2, 490	5, 060	23	34	40	54	67	86	96	100	--	SPWCM
June 25	6:55 p. m.	6, 850	1, 520	1, 180	30	33	47	60	71	84	86	99	100	BWC
Aug. 5	8:00 p. m.	967	1, 410	846	40	59	79	91	98	99	100	--	--	BWC

MILK RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN MILK RIVER BASIN IN MONTANA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second-foot)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃) (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- dium	
																Parts per mil- lion	Tons per acre- foot day	Total	Non- carbon- ate		
MILK RIVER BELOW FRESNO DAM																					
Mar. 7, 1950	a.18	8.2	542	7.4	0.02	43	19	52	6.1	6	246	80	8.0	0.1	1.5	0.20	339	0.46	186	0	37
June 15	a.875	7.7	370	7.8	.02	32	13	28	28	0	169	35	1.0	.1	1.0	.20	227	.31	134	0	31
MILK RIVER AT NASHUA																					
Dec. 9, 1949	a.50	8.1	1,630	7.6	0.02	99	49	221	0	433	485	48	0.4	1.6	0.30	1,120	1.52	449	94	52	
May 29, 1950	385	7.7	1,200	11	.04	73	33	159	0	244	415	21	.4	2	.20	20	864	1.18	318	118	52
Sept. 7	167	8.0	941	7.1	.02	62	25	120	0	282	249	18	.3	1.8	.13	636	.86	258	27	50	

a Mean daily discharge.

YELLOWSTONE RIVER BASIN
YELLOWSTONE RIVER AT MILES CITY, MONT.

LOCATION.---At gaging station at bridge on State Highway 22 at Miles City, Custer County, about three-quarters of a mile downstream from Tongue River.
DRAINAGE AREA.---48,500 square miles (approximate).
RECORDS AVAILABLE.---Chemical analyses: December 1949 to September 1950.
REMARKS.---Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- dium
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate	
Dec. 6, 1949	5,880		7.9	841	31	0.02	69	23	87	214	248	13	0.4	4.1	0.40		584	0.79		287	92	42
Jan. 6, 1950	3,360		7.9	850	20	.04	76	26	77	230	242	12	.5	4.7	--		638	.87		297	108	36
Feb. 8	4,350		7.6	808	17	.02	69	24	81	226	238	15	.2	4.6	--		582	.79		271	86	40
Feb. 9	4,850		7.5	850	21	.02	75	29	72	234	240	12	.4	4.0	--		608	.83		307	115	34
Mar. 2	9,080		7.3	714	21	.04	59	26	59	198	200	6.0	.2	4.3	--		506	.68		254	92	34
Apr. 6	28,800		7.5	747	21	.02	65	17	77	191	215	12	.6	.2	--		506	.69		232	75	42
Apr. 21	7,680		7.7	794	17	.02	67	23	79	206	230	16	.6	1.7	--		538	.73		262	93	40
May 10	7,850		7.8	800	11	.04	57	23	85	194	233	12	.4	1.9	--		540	.73		237	78	44
May 18	12,020		7.6	618	17	.02	53	18	62	184	163	12	.4	4.2	--		462	.63		207	56	40
June 2	21,260		7.9	394	18	.04	38	10	30	124	88	5.0	.2	1.5	--		258	.35		136	34	33
June 19	51,740		7.7	355	11	.04	38	5.7	30	126	69	3.0	.2	3.5	--		226	.31		119	16	35
July 6	47,180		7.3	256	15	.08	27	6.0	14	87	43	3.5	.3	1.3	--		168	.23		92	21	26
July 18	27,840		7.5	335	13	.02	30	9.4	24	100	71	4.5	.3	1.6	--		208	.28		114	32	31
Aug. 2	19,460		7.7	516	16	.02	46	11	43	123	135	7.5	.3	1.3	--		338	.46		161	60	37
Aug. 6	13,310		7.7	494	14	.04	47	9.6	45	137	124	8.0	.4	1.6	--		330	.45		157	45	39
Sept. 5	6,530		7.5	695	13	.02	55	18	70	171	201	10	.5	1.8	--		466	.63		213	73	42
Sept. 27	9,920		7.8	773	15	.02	65	18	78	168	242	11	.4	2.6	--		542	.74		238	100	42

YELLOWSTONE RIVER BASIN--Continued

WIND RIVER AT RIVERTON, WYO.

LOCATION.--At gaging station at bridge on State Highway 320, three-quarters of a mile southeast of Riverton, Fremont County.
DRAINAGE AREA.--2,320 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1947 to September 1949.

Water temperatures: April 1947 to September 1950.

Sediment records: October 1948 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 2,600 ppm Oct. 19; minimum daily, not determined.

Sediment loads: Maximum daily, 18,100 tons June 8; minimum daily, not determined.

EXTREMES, 1947-49.--Dissolved solids (1947-49): Maximum, 358 ppm Apr. 22-29, 1947; minimum, 106 ppm July 1-31, 1947.

Hardness (1947-49): Maximum, 216 ppm Mar. 31 to Apr. 10, 1947; minimum, 69 ppm June 1-30, 1948.

Daily specific conductance (1947-49): Maximum, 822 micromhos May 13, 1948; minimum, 152 micromhos July 10, 1947.

Sediment concentrations (1948-50): Maximum daily, 2,780 ppm May 18, 1949; minimum daily, not determined.

Sediment loads (1948-50): Maximum daily, 25,500 tons June 13, 1949; minimum daily, not determined.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, November 1949 to September 1950

Chemical analyses, in parts per million, November, 1949 to September, 1950																						
Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- dium
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate	
Nov. 4, 1949	776	7.7	377	14	0.04	40	10	25		136	69	7.2	0.2	1.1			248	0.34	141	141	29	28
Nov. 23	652	7.9	417	13	.02	45	10	30	30	149	81	8.4	.2	.5			264	.36	154	154	32	30
Feb. 10, 1950	a490	7.0	466	14	.08	49	11	36	36	156	95	12	.2	2.5			308	.42	168	168	40	32
Mar. 21	342	8.0	514	24	.02	42	13	57	57	182	113	10	.3	1.8			384	.52	159	159	10	44
Apr. 29	409	7.7	498	18	.02	53	12	37	37	176	99	10	.2	.4			322	.44	182	182	38	31
June 10	1,760	7.5	236	17	.10	33	5.3	8.3	8.3	104	31	2.5	.2	1.0	0.10		158	.21	105	105	20	15
Sept. 16	1,560	7.8	364	19	.02	35	8.1	32	32	133	69	5.5	.2	.9			246	.33	121	121	12	36

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

WIND RIVER AT RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,170	413	s 1,410	767	--	e 160	604	--	
2-----	1,270	--		794	--	e 85	500	18	
3-----	1,210	--		776	12		495	--	
4-----	1,270	285	e 1,000	767	21		480	--	
5-----	1,210	--		767	--		450	--	
6-----	1,180	--		767	--		410	--	
7-----	1,160	--		767	22		381	--	
8-----	1,200	--		749	--		395	--	e 20
9-----	1,180	--	e 600	758	19	e 38	390	25	
10-----	1,130	174		767	--		400	--	
11-----	1,110	--		716	18		270	--	
12-----	1,080	--		676	--		260	18	
13-----	1,060	103		628	--		250	--	
14-----	1,060	--		660	43	77	280	--	
15-----	1,030	--	e 260	668	--	e 65	355	--	
16-----	1,010	--		652	16		410	38	
17-----	1,020	74		628	--		445	--	
18-----	1,120	--	e 1,100	628	15		480	--	
19-----	1,240	2,600	8,700	628	--		490	56	e 55
20-----	688	--	e 440	612	--		490	--	
21-----	902	--	e 600	612	--		480	--	
22-----	940	80		556	--		470	--	
23-----	980	--		572	20		450	10	
24-----	1,010	--		604	--	e 30	480	--	
25-----	1,010	--		644	25		490	--	
26-----	902	118	e 260	660	--		490	--	e 20
27-----	848	--		636	--		490	--	
28-----	803	120		628	10		500	13	
29-----	794	--		660	--		500	22	
30-----	848	--		612	--		490	--	
31-----	794	100		--	--	--	490	--	
Total-	32,229	--	24,000	20,359	--	1,300	13,565	--	830
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	480	--		390	--		445	--	
2-----	470	6		400	--		435	--	
3-----	420	--		410	--		455	--	
4-----	370	--	e 8	430	--		470	--	
5-----	370	--		440	--	e 42	460	--	e 150
6-----	380	--		460	--		440	--	
7-----	420	--		475	38		415	--	
8-----	440	--		490	--		380	91	
9-----	450	--		490	--		335	--	
10-----	450	--		490	--		300	--	
11-----	440	--		490	--		280	--	
12-----	440	--	e 20	490	--	e 180	280	--	e 60
13-----	430	--		485	136		285	76	
14-----	420	--		480	--		290	--	
15-----	430	--		475	--		305	--	
16-----	440	--		475	--		325	30	
17-----	450	--		470	--		355	20	
18-----	465	--		465	108		388	--	
19-----	480	--		460	--		354	--	
20-----	520	--		460	--	e 140	348	15	
21-----	540	--		460	--		336	17	e 26
22-----	520	--		460	119		330	--	
23-----	520	--		465	--		324	--	
24-----	500	--		485	165		336	59	
25-----	490	--	e 38	510	--		342	--	
26-----	470	--		515	--	e 280	342	--	
27-----	460	--		505	240		330	--	
28-----	450	--		475	--		324	13	
29-----	440	--		--	--	--	330	12	e 11
30-----	420	--		--	--	--	336	12	
31-----	400	--		--	--	--	312	--	
Total-	13,975	--	800	13,100	--	4,300	10,987	--	1,900

e Estimated.

s Computed by subdividing day.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

WIND RIVER AT RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June			
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day	
1-----	318	--	e 26	300	16	13	2,080	619	3,490	
2-----	360	--		300	30	24	2,130	832	4,780	
3-----	493	--		269	22	16	1,980	541	2,890	
4-----	395	--		248	40	27	1,390	517	1,940	
5-----	342	25		239	55	35	1,750	648	s 3,330	
6-----	336	--		221	42	25	2,780	1,650	s 14,710	
7-----	330	12		239	32	21	3,530	1,890	18,000	
8-----	367	22		306	30	25	3,760	1,780	18,100	
9-----	430	--		312	38	32	2,440	1,160	7,640	
10-----	409	--		290	45	35	1,740	615	2,890	
11-----	348	--	e 36	264	55	39	1,480	448	1,790	
12-----	330	--		244	31	20	2,070	738	s 4,710	
13-----	354	--		290	25	20	2,800	1,020	7,710	
14-----	441	75		551	106	158	2,910	784	6,160	
15-----	588	--		e 200	872	1,030	2,430	3,050	888	7,310
16-----	626	--		e 260	960	718	1,860	3,400	916	8,410
17-----	652	214		377	1,050	748	s 2,250	4,130	1,260	14,100
18-----	640	190		328	1,150	826	2,560	4,320	909	10,600
19-----	636	178		306	1,230	710	2,360	3,990	621	6,690
20-----	508	102		140	857	259	599	3,980	598	6,430
21-----	566	256	s 506	652	130	229	3,940	681	7,240	
22-----	630	664	1,130	842	270	s 768	4,060	865	9,480	
23-----	676	310	650	1,400	1,120	s 4,960	4,450	856	10,300	
24-----	744	215	374	1,880	1,030	5,230	4,030	677	7,010	
25-----	448	85	103	1,760	672	3,190	4,130	561	6,260	
26-----	367	55	54	1,210	570	1,860	3,130	470	3,970	
27-----	290	19	15	1,110	428	1,280	2,520	576	3,920	
28-----	318	20	17	1,610	166	2,030	2,650	468	3,560	
29-----	409	23	25	1,840	525	2,610	2,720	322	2,360	
30-----	342	18	17	1,500	443	1,790	3,000	324	2,620	
31-----	--	--	--	1,830	458	2,260	--	--	--	
Total-----	13,693	--	4,940	25,826	--	38,760	90,350	--	208,400	
	July			August			September			
1-----	3,560	431	4,070	1,140	99	305	355	23	22	
2-----	3,640	378	3,920	880	160	380	345	21	20	
3-----	3,080	479	5,150	750	91	184	340	17	16	
4-----	4,110	943	10,500	630	59	100	335	20	18	
5-----	4,010	647	7,010	600	51	83	330	20	18	
6-----	3,690	442	4,400	595	50	80	324	26	23	
7-----	3,570	478	4,610	595	62	100	381	28	29	
8-----	3,580	322	3,110	560	64	97	402	23	25	
9-----	3,360	280	2,540	540	87	98	493	31	41	
10-----	3,100	361	3,020	530	49	70	799	--	e 700	
11-----	3,320	344	3,080	540	60	87	1,230	--	e 1,300	
12-----	3,200	364	3,140	555	60	90	1,380	464	1,730	
13-----	2,890	220	1,720	570	37	57	1,320	248	884	
14-----	2,540	237	1,630	570	32	49	1,310	88	311	
15-----	2,460	195	1,300	555	40	60	1,440	97	377	
16-----	2,290	209	1,290	535	53	77	1,480	489	1,950	
17-----	2,130	356	2,050	515	47	65	1,300	369	1,300	
18-----	1,870	192	969	480	50	65	1,330	245	883	
19-----	1,700	110	506	455	44	54	1,300	133	467	
20-----	1,590	94	404	420	41	46	1,480	328	1,310	
21-----	1,520	85	349	405	25	27	1,410	311	1,180	
22-----	1,450	62	243	405	28	31	1,300	115	404	
23-----	1,410	75	286	405	23	25	1,260	119	405	
24-----	1,560	204	859	400	32	35	1,260	212	721	
25-----	1,480	136	543	395	38	40	1,210	136	444	
26-----	1,570	51	216	370	46	46	1,130	81	247	
27-----	1,510	68	277	360	40	39	1,080	68	198	
28-----	1,450	245	959	365	20	20	1,060	60	172	
29-----	1,530	122	504	365	24	24	1,040	124	348	
30-----	1,620	61	267	365	28	28	1,190	867	2,790	
31-----	1,400	161	609	360	20	19	--	--	--	
Total-----	77,230	--	69,530	16,300	--	2,480	29,614	--	18,330	
Total discharge for year (second-foot days).....									357,128	
Total load for year (tons).....									375,600	

YELLOWSTONE RIVER BASIN--Continued
WIND RIVER AT RIVERTON, WYO.--Continued

Particle-size analyses of suspended sediment, October 1948 to June 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment													Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Oct. 19, 1949	4:40 p. m.	1,250	2,840	1,120	41	64	84	92	93	95	96	96		97	BW	
May 20, 1950	12:32 p. m.	821	261	571	13	19	26	38	41	50	57	64		67	BWC	
June 21	6:30 p. m.	4,420	984	606	14	32	37	50	61	71	80	94		100	BWC	

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT THERMOPOLIS, WYO.

LOCATION.--At Broadway Street bridge, upstream from principal hot springs inflow, 1 mile upstream from water stage recorder at Thermopolis, Hot Springs Drainage Area, 8,080 feet downstream from Buffalo Creek. Water discharge measurements made at this site.

RECORDS AVAILABLE.--Chemical analyses and water stage measurements from August 1947 to September 1950.

Water temperatures: April 1947 to September 1950.

Sediment records: March 1946 to September 1950.

EXTREMES 1949-50.--Water temperatures: Maximum 67°F July 10, 11, 28, 29, Aug. 4; minimum, freezing point on many days during December to February. Sediment concentrations: Maximum daily, 28,000 ppm Sept. 21; minimum daily, 35 ppm Jan. 14.

Sediment loads: Maximum daily, 330,000 tons Sept. 21; minimum daily, 6 tons Jan. 7.

Hardness 1949-50.--Dissolved solids (1947-49): Maximum, 728 ppm Aug. 1-31, 1948; minimum, 176 ppm July 7-15, 1947.

Daily specific conductance (1947-49): Maximum, 346 ppm Apr. 1-10, 11-20, 1947; minimum, 107 ppm July 7-15, 1947, June 22-30, 1949.

Water temperatures (1947-50): Maximum, 72°F July 10, 11, 24, 1948; minimum, freezing point on many days during winter months each year.

Sediment concentrations: Maximum daily, 30,800 ppm Sept. 20, 1948; minimum daily, 34 ppm Jan. 2, 1947.

Sediment loads: Maximum daily, 330,000 tons Sept. 21, 1950; minimum daily, 6 tons Jan. 7, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, October 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conduct-ance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-ble
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbon-ate	
Oct. 20, 1949	a1,700	7.3	7.3	674	14	0.06	60	20	59		174	189	14	0.2	2.1	--	462	0.63	232	89	36
Nov. 4	1,330	7.7	7.7	772	11	.04	64	19	88		177	249	15	.5	2.1	--	552	.75	238	93	45
Nov. 6	a1,240	7.4	7.4	762	12	.04	63	23	72		178	229	16	.2	2.0	--	532	.72	252	106	39
Dec. 2	930	7.7	7.7	813	13	.02	66	20	81		192	230	15	.6	3.2	0.20	552	.75	247	90	42
Jan. 16, 1950	676	7.6	7.6	833	16	.02	74	25	79		216	249	14	.2	4.2	--	576	.78	288	111	38
Feb. 13	776	7.8	7.8	787	20	.02	67	23	70		192	225	13	.2	3.8	.20	540	.73	262	105	37
Mar. 17	930	7.6	7.6	843	22	.02	72	26	79		200	260	14	.4	3.8	--	608	.83	287	123	38
Apr. 13	830	7.8	7.8	1,040	22	.04	84	23	114		212	330	21	.4	4.2	.20	706	.96	304	130	45
May 17	1,840	7.5	7.5	1,742	18	.02	68	19	68		204	199	13	.4	3.0	--	548	.75	248	81	38
June 26	9,100	7.5	7.5	255	13	.04	28	5	17		88	50	2	2.5	.8	.10	166	.23	92	20	28
July 1	6,820	7.2	7.2	307	16	.06	32	5	24		90	73	3	3.8	1.1	.20	204	.28	105	31	33
Aug. 1	2,730	7.6	7.6	550	16	.02	51	10	49		120	160	7	7.5	1.3	.25	362	.49	170	72	39
Sept. 1	a1,000	7.6	7.6	956	13	.08	109	4	112		181	343	18	.5	3.2	--	694	.94	291	143	46

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT THERMOPOLIS, WYO.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement at approximately 7:30 a. m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	42	--	34	32	36	48	47	56	66	60	65
2	54	42	40	32	32	37	48	49	53	64	62	65
3	55	42	35	32	32	37	46	48	50	64	66	65
4	54	42	32	32	36	37	46	44	51	64	67	65
5	55	42	36	31	38	36	46	42	55	61	65	65
6	51	41	36	32	38	38	49	47	60	62	65	65
7	50	41	35	35	36	36	52	47	59	66	63	66
8	46	41	36	33	36	39	51	43	53	63	64	64
9	43	42	35	36	36	37	52	--	49	65	65	64
10	43	42	37	36	36	36	43	--	52	67	64	59
11	43	42	32	37	39	35	48	51	56	67	64	54
12	45	41	32	36	38	34	51	54	60	62	65	52
13	46	40	33	37	36	35	51	55	60	61	64	50
14	45	41	32	36	37	37	53	60	60	63	63	54
15	45	41	35	32	36	37	54	59	59	62	64	52
16	46	40	37	34	37	36	58	59	61	63	65	49
17	45	40	33	32	39	41	56	60	58	61	65	51
18	46	40	36	33	37	36	49	61	59	63	65	55
19	40	39	35	33	38	35	46	51	58	64	64	52
20	33	39	36	36	38	36	48	50	52	65	61	58
21	35	39	34	39	37	38	52	54	60	65	60	56
22	35	39	34	35	36	37	52	56	60	64	61	57
23	36	36	35	35	38	38	51	61	60	65	--	56
24	39	36	36	35	37	42	47	55	60	63	66	56
25	42	36	34	33	37	43	45	49	59	64	64	57
26	43	36	36	34	38	44	47	49	57	64	62	58
27	45	36	34	35	43	43	47	51	59	65	62	56
28	44	36	36	33	37	43	48	57	60	67	66	52
29	45	37	37	32	--	42	41	52	62	67	63	52
30	42	37	36	32	--	42	40	54	62	61	62	47
31	42	--	35	32	--	45	--	54	--	60	65	--
Average	45	40	35	34	37	38	49	52	57	64	64	57

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT THERMOPOLIS, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	990	930	2,460	1,360	718	2,640	980	414	1,100
2-----	1,460	2,860	11,300	1,320	753	2,680	930	412	1,030
3-----	1,500	1,910	7,740	1,300	786	2,760	860	331	768
4-----	1,490	1,640	6,600	1,310	668	2,360	788	220	468
5-----	1,520	1,650	6,770	1,280	640	2,210	720	154	299
6-----	1,450	1,310	5,130	1,240	637	2,130	688	139	258
7-----	1,430	1,180	4,560	1,270	678	2,320	720	159	309
8-----	1,480	1,200	4,800	1,270	686	2,350	732	169	334
9-----	1,590	1,360	5,840	1,240	606	2,030	748	175	353
10-----	1,560	1,310	5,520	1,260	648	2,200	740	181	362
11-----	1,510	1,190	4,850	1,260	610	2,080	500	123	166
12-----	1,500	1,180	4,770	1,190	590	1,900	392	55	58
13-----	1,450	1,050	4,100	1,150	525	1,630	400	53	57
14-----	1,470	1,040	4,110	1,100	507	1,510	380	54	55
15-----	1,470	1,050	4,170	1,150	527	1,640	488	67	88
16-----	1,430	916	3,540	1,150	520	1,610	620	140	234
17-----	1,420	850	3,260	1,130	519	1,580	744	115	231
18-----	1,440	849	3,300	1,080	491	1,430	805	157	341
19-----	1,580	960	4,100	1,080	520	1,520	748	103	208
20-----	1,700	1,790	8,220	1,080	569	1,660	740	102	204
21-----	1,260	1,470	5,000	1,040	523	1,470	728	64	126
22-----	1,380	1,110	4,140	1,020	480	1,320	660	76	135
23-----	1,400	831	3,140	975	455	1,200	620	106	181
24-----	1,460	852	3,360	985	515	1,370	736	262	521
25-----	1,490	1,000	4,020	1,040	626	1,760	712	150	288
26-----	1,500	1,060	4,290	1,070	681	1,970	784	360	762
27-----	1,440	928	3,600	1,080	692	2,020	788	462	983
28-----	1,400	868	3,280	1,060	621	1,780	752	825	1,680
29-----	1,380	817	3,040	1,020	555	1,530	728	860	1,690
30-----	1,330	795	2,850	1,020	514	1,420	772	770	1,600
31-----	1,300	802	2,820	--	--	--	776	692	1,450
Total--	44,770	--	144,700	34,530	--	56,080	21,779	--	16,340
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	728	442	869	720	82	159	1,020	642	1,770
2-----	692	188	342	712	65	125	965	485	1,260
3-----	708	142	272	708	78	149	950	555	1,420
4-----	616	75	125	712	70	135	950	664	1,700
5-----	576	53	82	752	166	337	1,060	868	2,480
6-----	544	97	142	772	219	456	1,140	1,070	3,290
7-----	51	42	6	780	243	512	995	714	1,920
8-----	143	83	32	784	173	366	940	525	1,330
9-----	576	298	463	788	154	328	870	537	1,260
10-----	636	143	246	772	173	361	860	510	1,180
11-----	696	129	242	772	238	496	788	300	638
12-----	704	112	213	780	208	438	716	210	406
13-----	680	76	140	784	195	413	680	225	413
14-----	624	35	59	772	193	402	708	280	535
15-----	644	100	174	780	215	453	820	449	994
16-----	656	100	177	784	245	519	910	610	1,510
17-----	648	94	164	800	270	583	975	940	2,470
18-----	660	73	130	792	300	642	990	1,410	3,770
19-----	672	74	134	788	263	560	945	933	2,380
20-----	688	115	214	805	290	630	955	1,160	2,990
21-----	708	216	413	815	292	643	930	1,330	3,340
22-----	1,320	1,920	8,640	825	286	637	895	1,250	3,020
23-----	764	480	990	805	266	578	805	1,210	2,630
24-----	780	365	769	860	403	936	768	838	1,740
25-----	796	200	430	905	540	1,320	772	865	1,800
26-----	788	240	511	980	800	2,120	788	1,130	2,400
27-----	788	274	583	1,060	1,080	3,090	760	800	1,640
28-----	748	203	410	1,080	978	2,850	736	584	1,160
29-----	736	128	254	--	--	--	724	320	626
30-----	724	88	172	--	--	--	712	478	919
31-----	728	97	191	--	--	--	724	640	1,250
Total--	20,822	--	17,590	22,687	--	20,240	26,851	--	54,230

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT THERMOPOLIS, WYO.--Continued

Suspended sediment water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	740	1,400	2,800	950	787	2,020	4,580	3,120	38,600
2-----	736	1,640	3,260	890	768	1,850	5,180	3,440	48,100
3-----	764	1,110	2,290	900	873	2,120	5,170	4,510	63,000
4-----	920	1,460	3,630	920	1,120	2,780	4,620	3,830	47,800
5-----	840	1,050	2,380	860	927	2,150	4,020	2,920	31,700
6-----	776	947	1,980	825	836	1,860	4,720	2,840	36,200
7-----	780	600	1,260	870	1,110	2,610	5,960	4,320	69,500
8-----	776	1,550	3,250	995	1,880	5,050	6,980	4,340	81,800
9-----	875	1,850	4,370	1,140	2,390	7,360	6,860	3,940	73,000
10-----	1,040	3,000	8,420	1,110	2,490	7,460	5,550	3,220	48,300
11-----	1,000	2,070	5,590	1,040	1,500	4,210	4,860	2,370	31,100
12-----	895	1,270	3,070	985	1,380	3,670	4,720	2,410	30,700
13-----	815	1,060	2,330	970	1,350	3,540	5,970	3,140	50,600
14-----	784	940	1,990	955	1,310	3,380	6,680	2,630	47,400
15-----	845	1,090	2,490	1,170	1,840	5,810	6,680	2,120	38,200
16-----	1,050	1,790	5,070	1,790	4,160	20,100	7,160	2,060	39,800
17-----	1,150	1,940	6,020	1,990	3,860	20,700	7,690	2,480	51,500
18-----	1,190	1,770	5,690	2,250	3,840	23,300	8,490	2,860	65,600
19-----	1,210	1,480	4,840	2,600	4,490	31,500	8,850	2,600	62,100
20-----	1,250	1,510	5,100	2,560	3,140	21,700	8,410	3,010	68,300
21-----	1,060	1,140	3,260	2,190	1,490	8,800	8,280	2,120	47,400
22-----	1,060	1,540	4,410	2,000	1,630	8,800	8,300	1,820	40,800
23-----	1,210	1,700	5,550	2,310	2,220	13,800	8,760	1,640	38,800
24-----	1,420	1,840	7,050	3,240	3,840	33,600	9,160	1,490	36,900
25-----	1,350	1,430	5,210	3,990	4,930	53,100	9,060	1,550	37,900
26-----	1,090	898	2,640	3,550	2,700	25,900	8,810	1,660	39,500
27-----	1,020	784	2,160	3,000	1,660	13,400	7,160	1,790	34,600
28-----	965	792	2,060	2,930	1,590	12,600	5,870	1,930	30,600
29-----	935	889	2,240	3,860	2,840	29,600	5,870	1,800	28,600
30-----	1,030	991	2,760	3,760	2,900	29,400	5,620	1,830	27,800
31-----	--	--	--	3,570	2,430	23,400	--	--	--
Total-	29,576	--	113,200	60,170	--	425,600	200,040	--	1,349,000

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6,510	1,990	35,000	2,870	3,640	26,200	1,000	2,600	7,020
2-----	7,340	1,700	33,600	2,280	3,450	21,200	950	2,700	6,930
3-----	8,050	1,560	33,900	1,980	3,430	18,300	920	2,850	7,080
4-----	8,660	2,080	48,700	1,730	3,380	15,800	900	3,150	7,650
5-----	9,080	3,940	96,600	1,640	3,500	15,500	880	3,140	7,460
6-----	8,490	2,980	68,300	1,610	3,300	14,300	870	3,150	7,400
7-----	7,920	1,940	41,500	1,630	3,500	15,400	860	3,150	7,310
8-----	7,430	1,850	37,100	1,540	3,550	14,800	860	3,180	7,380
9-----	6,840	1,740	32,100	1,430	3,370	13,000	880	3,040	7,220
10-----	6,530	1,850	32,600	1,370	3,350	12,400	1,250	5,400	19,200
11-----	6,230	2,200	37,000	1,270	3,320	11,400	1,690	10,800	49,300
12-----	6,680	2,400	43,300	1,330	3,770	13,500	2,170	9,750	57,100
13-----	6,090	1,850	30,400	1,360	3,950	14,500	1,970	6,350	33,800
14-----	5,590	1,980	29,900	1,460	4,600	18,100	2,030	4,590	23,200
15-----	4,870	2,080	27,300	1,450	4,060	15,900	2,170	3,820	22,400
16-----	4,580	1,950	23,900	1,390	3,960	14,900	2,370	4,000	25,600
17-----	4,160	2,040	22,900	1,380	3,920	14,600	2,120	3,810	21,800
18-----	3,760	2,040	20,700	1,300	3,830	13,400	1,990	3,420	19,400
19-----	3,300	2,080	18,500	1,260	3,580	12,200	2,080	3,100	17,400
20-----	2,960	2,070	16,500	1,100	3,750	11,100	2,430	11,000	89,700
21-----	2,840	2,020	15,500	1,040	3,720	10,400	4,090	28,000	833,000
22-----	2,790	2,150	16,200	1,020	4,000	11,000	2,720	7,570	55,600
23-----	2,780	2,240	16,800	1,040	3,680	10,300	2,320	4,730	27,600
24-----	2,900	5,000	39,200	1,060	3,300	9,440	2,180	3,850	22,700
25-----	2,940	2,900	23,000	1,100	2,880	8,550	2,110	3,140	17,900
26-----	3,410	19,000	185,000	1,090	2,750	8,090	1,980	2,660	11,200
27-----	2,940	9,600	76,200	1,080	2,560	7,460	1,910	2,410	12,400
28-----	2,800	4,840	36,600	1,020	2,500	5,890	1,870	2,110	11,700
29-----	2,770	4,020	30,100	980	2,600	6,880	1,950	1,970	11,400
30-----	2,900	4,230	33,100	1,000	3,500	9,450	2,080	3,030	17,000
31-----	3,060	3,990	33,000	1,020	2,850	7,850	--	--	--
Total-	157,150	--	1,234,000	42,630	--	402,800	53,600	--	967,800

Total discharge for year (second-foot days)

714,605

Total load for year (tons)

4,837,000

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
BIGHORN RIVER AT THERMOPOLIS, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sifter; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 6, 1949	10:50 a. m.	1,460	1,260	520	--	11	1	22	34	55	84	93	96	BN	
Oct. 6	10:50 a. m.	1,460	1,260	999	3	7	11	18	32	54	89	96	98	BW	
Oct. 12	10:20 a. m.	1,500	1,180	1,500	--	10	14	20	34	54	74	92	98	BW	
Oct. 27	10:20 a. m.	1,420	1,894	1,500	22	24	30	35	42	57	79	98	99	BW	
Nov. 4	10:25 a. m.	1,350	686	503	--	6	12	14	18	36	58	79	--	BN	
Nov. 4	10:25 a. m.	1,320	686	480	--	4	8	14	22	36	60	82	98	BW	
Nov. 10	2:35 p. m.	1,270	653	1,840	--	18	22	26	33	46	68	88	97	BW	
Nov. 18	9:50 a. m.	1,100	486	974	--	10	12	16	20	30	52	88	98	BN	
Nov. 18	9:50 a. m.	1,100	486	900	--	8	11	14	19	31	50	78	95	BN	
Nov. 25	3:00 p. m.	1,040	656	2,230	12	17	24	27	35	52	70	100	--	BW	
Dec. 2	3:05 p. m.	930	422	1,210	--	14	19	24	32	46	65	92	98	BW	
Dec. 7	12:50 p. m.	792	209	647	--	17	22	26	38	55	69	88	94	BW	
Jan. 16, 1950	3:40 p. m.	676	278	874	--	7	5	7	11	20	43	--	--	BW	
Mar. 8	10:00 a. m.	935	792	966	--	18	22	24	27	32	56	92	100	BN	
Mar. 8	10:00 a. m.	935	792	945	10	16	21	24	27	37	60	94	100	BN	
Mar. 17	10:15 a. m.	940	664	1,230	--	40	--	51	--	63	77	98	--	SPWCM	
Mar. 22	3:05 p. m.	835	875	1,980	--	50	--	76	--	86	91	99	--	SPWCM	
Mar. 30	3:00 p. m.	708	559	1,390	--	49	--	75	--	90	95	100	--	SPWCM	
Apr. 5	10:15 a. m.	850	1,170	3,340	--	49	--	74	--	88	94	99	100	SPWCM	
Apr. 13	3:10 p. m.	820	1,170	3,390	--	60	--	79	--	90	95	99	100	SPWCM	
Apr. 21	12:15 p. m.	1,060	1,130	2,230	28	35	45	56	64	72	88	99	100	SPWCM	
May 1	12:35 p. m.	955	765	1,650	--	43	--	57	--	71	80	99	100	SPWCM	
May 8	1:10 p. m.	1,000	2,080	4,820	--	62	--	74	--	86	90	99	100	SPWCM	
May 12	4:35 p. m.	1,000	1,350	3,390	--	59	--	76	--	88	94	99	100	SPWCM	
May 17	11:40 a. m.	1,840	2,920	1,910	2	8	27	36	49	72	89	97	100	SPN	
May 17	11:40 a. m.	1,840	2,920	2,080	23	26	32	42	53	72	--	--	--	SPWCM	
May 26	11:10 a. m.	3,610	2,520	2,790	--	21	--	34	--	61	78	96	99	100	SPWCM
June 6	2:05 p. m.	5,236	3,200	5,010	--	20	--	31	--	61	80	93	100	--	SPWCM
June 16	10:50 a. m.	7,310	1,970	3,360	--	32	--	48	--	72	81	92	100	--	SPWCM
June 21	3:40 p. m.	8,470	1,830	3,600	--	35	--	53	--	74	81	88	98	100	SPWCM

July 1	8:50 a.m.	6,770	2,460	5,360	--	25	--	38	--	76	94	97	99	100	SPWCM
July 6	12:10 p.m.	8,770	2,130	1,920	12	29	46	80	91	90	--	--	--	--	SPN
July 6	12:10 p.m.	8,770	2,130	1,980	52	--	53	66	76	80	--	--	--	--	SPWCM
July 20	10:55 a.m.	3,150	2,290	5,150	--	37	--	55	--	81	--	--	--	--	SPN
July 27	3:20 p.m.	2,970	7,250	6,590	--	1	16	66	--	93	--	--	--	--	SPWCM
July 27	3:20 p.m.	2,970	7,250	5,590	34	42	53	66	89	93	--	--	--	--	SPWCM
Aug. 1	10:25 a.m.	2,750	4,160	3,240	4	5	36	50	61	80	--	--	--	--	SPN
Aug. 1	10:25 a.m.	2,750	4,160	3,970	21	36	44	53	64	80	95	98	99	a99	SPWCM
Aug. 9	10:15 a.m.	1,420	3,480	9,510	--	54	--	77	--	94	--	--	--	--	SPWCM
Aug. 9	9:55 a.m.	1,400	3,670	9,510	--	54	--	79	--	95	--	--	--	--	SPWCM
Aug. 17	10:15 a.m.	b1,000	2,620	2,890	3	6	32	75	84	97	--	--	--	--	SPN
Sept. 1	10:15 a.m.	b1,000	2,620	2,820	40	49	64	75	84	97	--	--	--	--	SPWCM
Sept. 13	11:20 a.m.	2,190	6,080	4,620	--	2	15	43	57	80	97	99	100	--	SPN
Sept. 13	11:20 a.m.	2,190	6,080	3,580	22	29	36	42	54	80	--	--	--	--	SPWCM
Sept. 21	7:15 a.m.	4,180	36,900	7,180	--	45	--	67	--	86	--	--	--	--	SPWCM
Sept. 21	2:45 p.m.	4,190	17,000	5,090	--	40	--	58	--	81	95	100	100	--	SPN
Sept. 27	10:00 a.m.	1,930	2,390	1,230	5	8	14	19	28	52	82	99	100	--	SPWCM
Sept. 27	10:00 a.m.	1,930	2,390	1,260	15	18	--	19	31	56	84	99	100	--	SPWCM

a 100 percent finer than 2.000 millimeters.

b Daily discharge.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER NEAR MANDERSON, WYO.

LOCATION.--At gaging station at bridge on county highway, a quarter of a mile west of Rairden, and 6 miles southeast of Manderson, Big Horn County.

RECORDS AVAILABLE.--Water temperatures: August 1949 to September 1950.

Sediment Records: April 1949 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 77°F July 8; minimum, freezing point on many days during November to March.

Sediment concentrations: Maximum daily, 28,000 ppm Aug. 13; minimum daily, not determined.

Sediment loads: Maximum daily, 218,000 tons Sept. 22; minimum daily, not determined.

EXTREMES, April 1949 to September 1950.--Water temperatures (August 1949 to September 1950): Maximum, 80°F Aug. 1, 10, 11, 1949; minimum, freezing point on many days during November 1949 to March 1950.

Sediment concentrations: Maximum daily, 28,000 ppm Aug. 13, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 218,000 tons Sept. 22, 1950; minimum daily, not determined.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950

/Once-daily temperature measurement between 8 a.m. and 11 a.m.; excepting Dec. 23 to Feb. 17/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	46	--	--	--	34	47	48	58	67	63	67
2	57	43	35	--	--	34	43	47	55	69	66	68
3	57	46	35	--	--	34	41	44	55	66	69	70
4	56	43	33	--	--	34	43	43	56	62	67	70
5	55	42	33	--	--	34	44	47	--	66	--	67
6	51	45	35	32	--	34	49	49	61	65	66	69
7	48	41	33	--	32	33	51	48	59	66	64	67
8	45	43	32	--	--	34	51	42	51	77	65	66
9	45	44	33	--	--	33	49	46	54	68	66	63
10	45	45	32	--	--	32	46	53	56	69	66	57
11	43	42	--	--	--	32	49	55	61	67	65	53
12	42	42	--	--	--	32	52	58	--	65	66	53
13	47	41	--	--	--	34	54	60	65	65	63	52
14	52	42	--	--	--	36	58	63	65	67	63	52
15	48	46	--	--	--	36	54	63	63	65	66	50
16	51	40	--	--	--	36	56	60	64	64	68	52
17	46	39	--	--	33	38	58	62	61	66	66	54
18	45	40	--	--	34	33	45	62	60	66	--	37
19	39	39	--	--	35	34	47	54	60	68	--	59
20	35	37	--	--	33	37	49	55	61	65	65	--
21	37	36	--	--	34	41	51	59	63	67	66	58
22	35	36	--	--	34	42	53	61	63	69	66	58
23	36	35	32	32	35	45	54	63	59	65	64	58
24	--	38	--	--	34	42	42	53	61	68	63	60
25	42	39	--	--	36	41	45	53	60	68	65	57
26	43	33	--	--	36	42	47	52	59	68	62	58
27	48	39	--	--	35	41	47	56	60	69	66	55
28	47	40	--	--	34	41	--	55	61	71	65	53
29	45	39	--	--	--	41	41	54	64	63	64	49
30	46	32	32	--	--	43	42	56	66	64	66	45
31	43	--	--	--	--	--	--	57	--	63	66	--
Average	46	40	a 32	a 32	a 33	37	49	54	60	67	65	59

a Includes estimated temperature, 32°F, on missing days.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER NEAR MANDERSON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	832	1,410	3,170	1,500	1,020	4,130	1,070	655	1,890
2-----	920	2,800	6,950	1,410	883	3,360	1,000	659	1,780
3-----	1,430	3,710	14,300	1,290	1,030	3,590	944	688	1,750
4-----	1,460	2,600	10,200	1,280	810	2,800	840	660	1,500
5-----	1,460	2,450	9,650	1,280	893	3,080	808	525	1,140
6-----	1,470	2,080	8,250	1,260	1,050	3,570	714	508	978
7-----	1,340	1,590	5,750	1,230	899	2,980	702	598	1,130
8-----	1,500	1,610	6,520	1,280	906	3,130	744	550	1,100
9-----	1,480	1,900	7,600	1,290	975	3,400	760	803	1,650
10-----	1,500	1,990	8,060	1,280	1,060	3,600	800	682	1,470
11-----	1,500	1,670	6,760	1,260	874	2,970	530	--	
12-----	1,440	1,650	6,410	1,220	926	3,050	440	--	
13-----	1,460	1,490	5,880	1,160	1,100	3,440	450	--	
14-----	1,440	1,460	5,680	1,130	999	3,040	440	--	
15-----	1,490	1,700	6,840	1,110	1,190	3,560	550	--	
16-----	1,440	1,780	6,920	1,180	1,130	3,600	700	--	
17-----	1,420	1,310	5,020	1,190	799	2,560	800	--	
18-----	1,380	1,470	5,480	1,190	682	2,190	900	--	
19-----	1,340	1,460	5,280	1,120	733	2,220	860	--	
20-----	1,630	1,840	8,100	1,120	674	2,640	840	--	
21-----	1,550	2,580	10,800	1,120	857	2,590	830	--	e 750
22-----	1,330	2,320	8,330	1,070	900	2,600	800	--	
23-----	1,490	2,520	10,100	1,060	1,100	3,150	740	218	
24-----	1,590	2,020	8,670	1,030	820	2,280	640	--	
25-----	1,680	3,210	14,600	1,090	700	2,080	800	--	
26-----	1,670	2,440	11,000	1,130	710	2,160	880	--	
27-----	1,600	1,850	7,990	1,130	862	2,630	880	--	
28-----	1,530	1,470	6,070	1,130	870	2,660	840	--	
29-----	1,480	1,240	4,950	1,110	743	2,230	800	--	
30-----	1,470	990	3,930	1,080	--	e 2,000	830	526	
31-----	1,460	990	3,900	--	--	--	880	--	
Total-	44,782	--	233,200	35,710	--	87,260	24,012	--	31,100
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	860	--	e 1,000	820	--	e 850	1,300	830	2,910
2-----	820	--	--	820	--	--	1,220	672	2,210
3-----	800	--	--	820	--	--	1,100	450	1,340
4-----	740	--	--	840	--	--	1,100	583	1,730
5-----	700	--	--	870	--	--	1,160	910	2,850
6-----	620	241	--	920	--	--	1,240	1,400	4,690
7-----	400	--	--	1,010	370	--	1,300	1,910	6,700
8-----	200	--	e 270	1,060	--	--	1,080	1,190	3,470
9-----	200	--	--	1,060	--	--	980	980	2,540
10-----	450	--	--	1,040	--	--	930	880	2,210
11-----	600	--	--	1,010	--	e 1,000	930	850	2,130
12-----	800	--	--	1,000	--	--	880	1,940	4,610
13-----	780	--	--	1,000	--	--	760	1,420	2,910
14-----	720	--	--	1,000	--	--	808	--	e 2,840
15-----	750	--	--	1,010	--	--	1,020	1,410	3,880
16-----	750	--	--	1,030	--	--	1,100	1,800	5,350
17-----	740	--	e 750	1,040	430	--	1,170	2,920	9,220
18-----	750	--	--	1,040	--	e 1,000	1,240	2,020	6,760
19-----	760	--	--	1,030	295	--	1,110	2,500	7,490
20-----	790	--	--	1,050	402	--	1,110	2,340	7,010
21-----	800	--	--	1,060	--	e 1,700	1,060	2,400	6,870
22-----	850	--	--	1,070	718	--	1,040	2,150	6,040
23-----	1,420	697	e 2,100	1,050	435	--	1,030	1,860	5,170
24-----	1,200	--	--	1,070	--	e 1,500	1,030	1,790	4,980
25-----	820	--	--	1,150	--	e 2,100	936	1,300	3,280
26-----	820	312	--	1,200	605	--	928	1,070	2,660
27-----	820	--	--	1,300	603	--	904	1,000	2,440
28-----	820	--	e 650	1,400	592	--	848	1,000	2,290
29-----	800	--	--	--	--	--	784	855	1,810
30-----	820	--	--	--	--	--	816	753	e 1,660
31-----	840	--	--	--	--	--	744	700	e 1,410
Total-	23,240	--	24,000	28,770	--	34,200	31,658	--	121,500

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER NEAR MANDERSON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	720	977	1,900	1,230	6,900	22,900	2,920	2,690	20,500
2-----	768	1,260	2,610	1,080	7,110	20,700	4,160	5,600	62,900
3-----	888	2,180	5,230	1,110	8,080	24,200	4,730	5,480	70,000
4-----	792	3,530	7,550	960	4,370	11,300	5,010	4,000	54,100
5-----	848	2,730	6,250	928	2,180	5,460	4,010	2,910	31,500
6-----	754	2,200	4,480	928	1,760	4,410	3,640	2,880	28,300
7-----	684	1,940	3,580	960	2,520	6,530	4,370	3,810	44,900
8-----	672	1,620	2,940	1,140	5,590	17,200	6,350	5,720	98,100
9-----	672	2,490	4,520	1,110	5,010	15,000	7,510	5,280	107,000
10-----	800	2,380	5,140	1,150	3,800	11,800	5,950	3,890	62,500
11-----	987	2,740	7,300	968	2,970	7,770	4,540	3,130	38,400
12-----	872	2,720	6,400	816	2,150	4,740	3,910	2,880	30,400
13-----	728	1,700	3,340	708	1,750	3,340	4,200	3,340	37,900
14-----	702	2,090	3,960	606	1,680	2,750	5,370	3,820	55,400
15-----	594	1,500	2,400	608	2,800	4,590	6,150	3,620	60,100
16-----	714	1,430	2,750	960	4,580	11,900	6,410	3,120	54,000
17-----	1,010	2,510	6,840	1,550	5,400	22,600	6,970	3,860	72,800
18-----	987	2,490	6,840	1,970	6,000	31,900	7,580	3,940	80,500
19-----	987	2,090	5,570	2,070	6,050	33,800	8,280	4,330	96,800
20-----	969	1,740	4,550	2,360	6,100	38,900	7,890	3,920	83,500
21-----	920	1,700	4,220	1,740	3,420	16,100	7,660	4,560	94,300
22-----	720	1,150	2,230	1,420	2,450	9,390	7,720	2,940	61,300
23-----	696	970	1,820	1,370	2,210	8,180	7,830	2,780	59,000
24-----	944	1,490	3,800	1,890	3,670	18,700	8,140	2,460	54,500
25-----	1,030	1,950	5,420	3,060	5,880	48,600	8,230	2,530	56,200
26-----	880	1,210	2,870	3,400	5,580	51,200	7,930	2,230	47,700
27-----	594	651	1,040	2,640	3,130	22,300	7,300	1,960	38,600
28-----	654	812	1,430	2,170	2,220	13,000	5,510	2,200	32,700
29-----	978	1,900	5,010	2,530	2,680	18,300	5,130	2,200	30,500
30-----	987	1,550	4,130	3,340	3,750	33,800	5,290	2,050	29,300
31-----	--	--	--	2,730	2,700	19,900	--	--	--
Total-	24,551	--	125,900	49,501	--	561,300	180,690	--	1,694,000
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5,390	2,420	35,200	2,330	3,280	20,600	412	1,910	2,120
2-----	6,290	2,700	45,900	2,070	2,950	16,500	357	1,540	1,480
3-----	6,770	3,480	63,600	1,860	2,870	14,400	336	1,190	1,080
4-----	7,410	4,380	87,800	1,660	2,830	12,700	330	1,250	1,110
5-----	7,760	4,190	87,800	1,470	4,930	19,600	321	1,300	1,130
6-----	7,620	5,910	122,000	1,400	5,070	19,200	309	1,300	1,080
7-----	7,050	3,020	57,500	1,350	2,700	9,850	306	1,360	1,120
8-----	6,670	2,420	43,600	1,280	2,600	8,990	309	1,380	1,150
9-----	6,170	2,020	33,600	1,100	2,460	7,300	324	1,420	1,240
10-----	5,610	2,090	31,700	872	2,120	4,990	392	1,620	1,710
11-----	5,310	2,120	30,400	708	2,100	4,010	1,010	16,900	s 56,600
12-----	5,290	2,950	42,100	636	3,140	5,390	1,420	14,200	54,400
13-----	5,310	2,100	30,100	1,240	28,000	93,700	1,890	9,270	47,300
14-----	4,820	1,900	24,700	888	8,000	19,200	1,780	5,660	27,200
15-----	4,180	1,930	21,800	960	3,840	9,950	1,780	5,150	24,800
16-----	3,720	1,930	19,400	880	3,090	7,340	2,030	8,860	48,600
17-----	3,260	1,910	16,800	768	2,710	5,610	2,200	5,360	31,300
18-----	3,070	2,280	18,900	642	2,440	4,230	2,050	3,540	19,600
19-----	2,580	2,480	17,300	535	2,120	3,060	2,070	3,870	21,600
20-----	2,330	2,070	13,000	505	2,040	2,780	2,260	3,950	24,100
21-----	2,050	2,030	11,200	500	2,090	2,820	3,590	14,900	144,000
22-----	2,000	1,890	10,200	525	2,230	3,160	3,420	21,600	s 218,000
23-----	2,050	2,000	11,100	552	2,300	3,430	2,660	6,550	47,000
24-----	2,030	2,310	12,700	530	2,160	3,090	2,380	4,070	26,200
25-----	2,190	3,000	17,700	525	1,050	1,490	2,220	3,490	20,900
26-----	2,310	2,460	15,400	465	850	1,070	2,030	3,080	16,900
27-----	2,420	9,250	s 56,200	404	1,400	1,530	1,800	2,240	10,900
28-----	2,170	8,020	47,000	408	1,410	1,550	1,610	1,950	8,470
29-----	2,350	4,660	29,600	416	1,380	1,650	1,540	2,100	8,730
30-----	2,450	4,440	29,400	424	1,350	1,540	1,590	2,250	9,650
31-----	2,530	4,720	32,200	436	1,480	1,740	--	--	--
Total-	131,160	--	1,116,000	28,339	--	312,400	44,726	--	880,000
Total discharge for year (second-foot-days)									647,139
Total load for year (tons)									5,220,000

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER NEAR WANDERSON, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950.
 Methods of analysis: B, by hydrometer; C, by sedimentation; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed.

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 3, 1949	2:50 p. m.	1,540	2,980	1,110	6	15	28	41	58	72	85	96		100	BN
Oct. 3	2:50 p. m.	1,340	2,980	1,020	7	14	23	36	56	68	82	91		96	BN
Oct. 6	2:50 p. m.	1,480	1,810	731	--	3	6	16	26	42	58	83		93	BN
Oct. 10	9:45 a. m.	1,530	1,960	1,360	7	12	13	24	37	52	76	93		99	BN
Oct. 13	9:45 a. m.	1,530	1,420	948	--	--	12	18	26	40	64	98		100	BN
Oct. 13	9:45 a. m.	1,530	1,420	840	--	--	12	16	25	38	62	96		100	BN
Oct. 17	1:50 p. m.	1,480	1,300	781	--	--	4	12	20	28	46	94		99	BN
Oct. 17	1:50 p. m.	1,480	1,300	745	--	--	10	12	18	30	48	92		99	BN
Oct. 23	10:30 a. m.	1,520	1,430	1,000	--	20	27	34	38	46	58	82		94	BN
Oct. 23	10:30 a. m.	1,520	1,430	993	--	20	23	27	32	42	58	85		96	BN
Oct. 23	9:25 a. m.	1,480	1,250	466	--	3	6	11	16	25	37	68		86	BN
Nov. 3	9:40 a. m.	1,270	1,060	1,420	2	4	10	18	28	35	47	83		98	BN
Nov. 3	9:40 a. m.	1,270	1,060	1,290	2	9	15	21	30	41	58	89		98	BN
Nov. 11	11:30 a. m.	1,340	901	1,060	--	--	7	12	17	26	44	82		98	BN
Nov. 11	11:30 a. m.	1,340	901	1,200	--	3	8	12	17	27	44	76		92	BN
Nov. 25	9:35 a. m.	1,130	686	1,070	--	6	10	16	20	24	34	86		99	BN
Nov. 25	9:35 a. m.	1,130	696	919	--	10	13	20	25	32	38	68		92	BN
Dec. 1	3:00 p. m.	1,150	655	2,010	--	8	10	15	21	30	38	96		100	BN
Mar. 16, 1950	3:20 p. m.	1,100	1,810	1,370	6	10	19	32	45	62	72	90		100	BN
Mar. 16	3:20 p. m.	1,100	1,810	1,460	15	21	28	39	50	62	71	97		100	BN
Mar. 30	4:55 p. m.	808	684	1,470	--	50	--	68	--	77	86	99		100	SPWCM
Mar. 31	11:55 p. m.	809	680	1,430	--	47	--	62	--	76	85	98		100	SPWCM
Apr. 6	10:10 a. m.	808	2,200	2,420	17	18	32	86	89	92	96	99		100	SPNM
Apr. 6	10:10 a. m.	808	2,200	836	--	63	76	86	88	93	96	99		100	SPWCM
Apr. 11	3:35 p. m.	1,010	2,830	7,510	--	50	--	76	--	89	94	99		100	SPWCM
Apr. 18	11:10 a. m.	996	2,450	1,510	--	51	--	73	--	85	93	100		--	SPWCM
Apr. 18	11:10 a. m.	996	2,450	1,440	6	9	44	63	75	84	92	99		100	SPNM
Apr. 27	9:40 a. m.	880	729	1,600	--	47	--	67	--	81	90	99		100	SPWCM
May 5	3:45 p. m.	995	1,440	3,660	--	57	--	70	--	87	94	100		100	SPWCM
May 8	3:30 p. m.	1,170	7,680	6,670	--	--	1	76	--	93	96	99		100	SPNM

a Mean daily discharge.

a. Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER NEAR MANDERSON, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment													Methods of analysis
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)		Percent finer than indicated size, in millimeters									
			0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000			
May 8, 1950	3:30 p. m.	1,170	7,690	5,320	45	57	66	77	90	93	96	99		100		SPWCM
May 16	11:15 a. m.	880	4,180	5,690		51		74		94	98	100		--		SPWCM
May 26	10:20 a. m.	3,610	6,030	6,080		19		30		70	88	98		100		SPWCM
May 28	10:55 a. m.	4,290	5,710	5,310		21		34		71	89	98		100		SPWCM
June 8	4:40 p. m.	7,130	6,570	3,750		26		41		72	87	96		100		SPWCM
June 16	2:10 p. m.	6,410	2,970	1,560	12	22	26	32	42	50	71	92		100		SPN
June 18	2:10 p. m.	6,410	2,970	1,130	--	--	--	27	36	45	--	--		--		SPWCM
June 22	9:40 p. m.	7,680	2,760	4,180	--	25	--	37	53	69	93		100			SPWCM
July 3	11:20 a. m.	6,530	4,070	2,930	3	9	36	47	58	71	82	95	100			SPN
July 3	11:20 a. m.	6,530	4,070	2,570	17	24	30	36	48	--	84	92		92		BWC
July 18	3:45 p. m.	3,000	1,900	3,380	--	31	--	45	--	63	73	91		99	100	SPWCM
July 27	2:05 p. m.	2,540	10,200	9,540	0	1	5	85	92	98	--	--		--		SPN
July 27	2:05 p. m.	2,540	10,200	3,600	57	69	73	87	92	94	--	--		--		SPWCM
Aug. 2	9:40 a. m.	2,260	2,710	6,780	--	43	--	62	--	80	--	--		--		SPWCM
Aug. 5	5:50 p. m.	2,050	7,650	5,310	--	48	--	73	--	93	--	--		--		SPWCM
Aug. 9	2:05 p. m.	1,090	2,440	2,420	3	5	33	91	--	93	--	--		--		SPN
Aug. 9	2:05 p. m.	1,090	2,440	2,220	53	69	74	86	91	92	--	--		--		SPWCM
Aug. 13	9:10 a. m.	1,540	37,600	6,830	--	50	--	79	--	97	--	--		--		SPWCM
Aug. 14	8:00 a. m.	886	9,200	6,820	--	62	--	87	--	97	--	--		--		SPWCM
Aug. 18	4:00 p. m.	684	2,400	6,420	--	67	--	88	--	95	--	--		--		SPWCM
Aug. 24	1:55 p. m.	540	2,200	2,190	--	3	34	91	96	--	--	--		--		SPN
Aug. 24	1:55 p. m.	540	2,200	2,740	59	73	87	97	--	98	--	--		--		SPWCM
Sept. 6	10:20 a. m.	318	1,300	4,150	--	81	--	98	--	99	--	--		--		SPWCM
Sept. 11	4:30 p. m.	1,410	23,500	8,720	--	56	--	79	--	95	--	--		--		SPWCM
Sept. 12	9:27 a. m.	1,410	17,100	6,280	--	60	--	83	--	96	--	--		--		SPWCM
Sept. 13	1:10 p. m.	2,000	8,220	5,980	--	35	--	56	--	88	--	--		--		SPWCM
Sept. 16	9:00 a. m.	2,020	9,920	6,650	--	49	--	66	--	91	--	--		--		SPWCM
Sept. 21	12:20 p. m.	4,380	14,800	12,200	--	0	2	28	56	86	95	99		100		SPN
Sept. 21	12:20 p. m.	4,380	14,800	5,580	--	14	20	30	54	85	95	98		100		SPWCM
Sept. 22	8:40 a. m.	3,680	21,800	7,860	--	47	--	72	--	94	--	--		--		SPWCM
Sept. 22	3:40 p. m.	3,090	13,600	9,790	--	43	--	64	--	92	--	--		--		SPWCM
Sept. 23	8:00 a. m.	2,730	6,770	4,070	--	40	--	55	--	85	--	--		--		SPWCM
Sept. 28	9:25 a. m.	1,710	1,910	2,600	--	20	--	30	--	56	73	92		100		SPWCM

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT KANE, WYO.

LOCATION --At gaging station at bridge on State Highway 14, half a mile upstream from Shoshone River, and half a mile east of Kane, Big Horn County.
DRAINAGE AREA --15,900 square miles.
RECORDS AVAILABLE --Chemical analyses: December 1949 to September 1950.

Water temperatures: July 1949 to September 1950.
Sediment concentrations: Maximum daily, 15,500 ppm Sept. 23; minimum daily, not determined.
EXTREMES 1949-50 --Sediment concentrations: Maximum daily, 15,500 ppm Sept. 23; minimum daily, not determined.

Sediment loads: Maximum daily, 200,000 tons June 9; minimum daily, not determined.
EXTREMES 1946-50 --Sediment concentrations: Maximum daily, 33,000 ppm Apr. 20, Sept. 21, 1948; minimum daily, not determined.

Sediment loads: Maximum daily, 972,000 tons June 25, 1946; minimum daily, not determined.
REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent non-carbon-ate
																Parts per million	Tons per acre-foot	Total	Non-carbon-ate	
Dec. 1, 1949	1,650	7.7	980	16	0.04	90	31	102		234	338	19	0.4	3.3	0.20	754	1.03	352	160	39
Jan. 6, 1950	a 880	8.1	1,130	26	.02	112	39	99		284	375	20	.5	4.4	--	858	1.17	440	207	33
Feb. 7	a 1,380	7.9	955	25	.02	86	34	84		236	300	19	.2	4.0	--	710	.97	355	161	34
Mar. 9	a 1,520	7.9	1,030	24	.04	91	33	98		182	371	19	.2	4.1	--	806	1.10	363	206	37
Apr. 12	1,660	7.8	1,160	35	.04	98	30	111		230	375	18	.4	3.7	.20	812	1.10	368	179	40
May 19	3,160	7.6	807	18	.02	68	23	77		188	244	15	.4	1.0	--	574	.78	264	110	39
June 6	5,910	7.9	554	18	.04	52	13	48		136	187	7.0	.2	2.7	--	380	.62	184	72	36
June 27	a 3,780	7.5	355	11	.04	35	7.7	30		108	89	4.5	.2	.3	.10	234	.32	119	30	36
Aug. 1	3,310	7.6	386	13	.04	70	17	75		180	265	12	.3	2.1	.11	540	.73	246	123	40
Sept. 7	974	7.7	1,390	16	.02	118	31	196		234	510	25	.6	3.4	--	975	1.33	422	230	45

a Mean daily discharge.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT KANE, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment	
		Mean con- cen- tra- tion (ppm)	Tons per day		Mean con- cen- tra- tion (ppm)	Tons per day		Mean con- cen- tra- tion (ppm)	Tons per day
1-----	1,340	1,550	5,610	2,040	1,100	6,060	1,620	678	2,960
2-----	1,290	2,220	7,730	2,020	--	e 5,300	1,610	728	3,160
3-----	1,500	2,380	9,640	1,840	858	4,260	1,520	847	3,480
4-----	1,990	3,540	19,000	1,880	1,120	5,690	1,480	765	3,060
5-----	2,000	2,400	13,000	1,910	1,690	8,720	1,270	409	1,400
6-----	1,950	1,710	9,000	1,850	890	4,440	1,100	910	2,700
7-----	1,940	1,470	7,700	1,860	905	4,540	1,050	1,290	3,660
8-----	1,900	1,400	7,180	1,890	929	4,740	1,000	1,230	3,320
9-----	1,990	1,370	7,360	1,940	921	4,830	1,050	--	e 2,600
10-----	2,090	1,300	7,340	1,880	861	4,370	1,000	185	500
11-----	2,140	1,490	8,610	1,840	808	4,020	575	80	124
12-----	2,060	1,410	7,840	1,830	1,020	5,040	526	120	170
13-----	2,020	1,380	7,420	1,820	825	4,060	522	--	--
14-----	2,000	1,440	7,780	1,760	793	3,770	520	--	--
15-----	2,010	1,530	8,300	1,780	794	3,820	600	--	e 460
16-----	2,050	1,450	8,030	1,760	731	3,480	900	--	--
17-----	2,000	1,450	7,830	1,770	--	e 3,000	1,100	--	--
18-----	2,060	1,620	9,010	1,720	620	2,880	1,200	--	e 2,000
19-----	2,100	1,430	8,110	1,640	662	3,020	1,150	--	--
20-----	2,210	--	e 8,700	1,570	662	2,890	1,100	--	--
21-----	2,560	2,130	14,700	1,560	601	2,530	1,050	--	--
22-----	2,210	2,120	12,700	1,540	708	2,940	1,020	--	--
23-----	2,170	2,410	14,100	1,520	530	2,180	1,000	--	--
24-----	2,280	2,190	13,500	1,530	708	2,920	1,100	--	--
25-----	2,330	2,730	17,200	1,540	652	2,710	1,100	--	--
26-----	2,490	3,970	26,700	1,640	--	e 2,700	1,200	--	e 1,000
27-----	2,390	3,460	22,300	1,710	--	e 2,700	1,150	--	--
28-----	2,300	2,730	17,000	1,710	551	2,540	1,100	--	--
29-----	2,260	1,910	11,700	1,770	690	3,300	1,100	--	--
30-----	2,130	1,490	8,570	1,700	561	2,580	1,120	326	--
31-----	2,020	1,290	7,040	--	--	--	1,150	--	--
Total-	63,780	--	340,700	52,820	--	116,000	32,983	--	48,000
Day	January			February			March		
	Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment	
		Mean con- cen- tra- tion (ppm)	Tons per day		Mean con- cen- tra- tion (ppm)	Tons per day		Mean con- cen- tra- tion (ppm)	Tons per day
1-----	1,100	--	--	1,010	--	--	1,700	--	--
2-----	1,100	--	--	1,000	--	--	1,600	--	--
3-----	1,100	--	e 850	1,000	--	e 600	1,500	--	--
4-----	1,000	--	--	1,000	--	--	1,450	--	--
5-----	900	--	--	1,100	--	--	1,450	--	--
6-----	860	104	e 240	1,250	--	--	1,500	--	--
7-----	700	--	--	1,380	332	--	1,600	--	--
8-----	400	--	--	1,400	384	--	1,700	--	--
9-----	400	--	--	1,400	--	--	1,520	753	--
10-----	500	4	e 15	1,320	--	--	1,440	--	--
11-----	600	--	--	1,300	--	--	1,400	--	--
12-----	800	251	--	1,300	--	--	1,210	--	--
13-----	1,000	--	--	1,310	--	--	1,080	616	1,800
14-----	940	--	--	1,320	--	e 1,300	1,170	928	2,930
15-----	860	--	e 850	1,320	--	--	1,270	872	2,990
16-----	960	--	--	1,320	--	--	1,580	1,100	4,690
17-----	960	--	--	1,320	284	--	1,820	1,120	5,500
18-----	940	--	--	1,340	--	--	1,860	1,180	5,930
19-----	980	389	--	1,360	--	--	1,910	1,230	6,340
20-----	1,000	--	--	1,360	--	--	2,100	1,640	9,300
21-----	1,020	--	--	1,360	--	--	1,740	1,560	7,330
22-----	1,030	--	e 1,200	1,380	--	--	1,800	2,270	11,000
23-----	1,050	--	--	1,400	436	--	1,960	2,840	15,000
24-----	1,600	--	--	1,380	--	--	1,880	3,100	15,700
25-----	1,350	--	--	1,480	--	e 1,700	1,730	2,530	11,800
26-----	1,050	--	--	1,520	--	--	1,430	2,220	8,570
27-----	960	141	--	1,600	--	--	1,370	1,750	6,470
28-----	960	--	--	1,680	--	--	1,400	1,540	5,820
29-----	980	--	e 460	--	--	--	1,400	1,410	5,330
30-----	1,000	--	--	--	--	--	1,370	1,260	4,660
31-----	1,020	--	--	--	--	--	1,430	982	3,790
Total-	29,120	--	22,400	36,910	--	35,700	48,370	--	169,800

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT KANE, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,480	1,210	4,840	1,590	1,740	7,470	4,220	3,320	37,800
2-----	1,530	1,450	5,990	1,900	4,310	22,100	5,060	4,510	61,600
3-----	1,460	1,630	6,430	1,860	6,120	30,700	6,240	8,200	138,000
4-----	1,430	1,670	6,450	1,840	7,220	35,900	5,940	5,590	89,600
5-----	1,330	3,250	11,700	1,630	5,680	25,000	6,110	4,920	81,200
6-----	1,420	2,670	10,200	1,560	3,490	14,700	5,840	4,380	69,100
7-----	1,460	3,550	14,000	1,530	4,400	18,200	7,050	5,980	114,000
8-----	1,560	4,260	17,900	1,610	4,830	21,000	10,000	6,550	177,000
9-----	1,730	2,520	11,800	1,730	3,450	16,100	10,800	6,850	200,000
10-----	1,790	2,260	10,900	1,630	4,150	18,300	9,250	5,270	132,000
11-----	1,700	2,690	12,300	1,530	3,250	13,400	7,020	4,710	89,300
12-----	1,650	2,430	10,800	1,380	2,600	9,690	6,320	4,200	71,700
13-----	1,600	2,710	11,700	1,240	2,580	8,640	7,260	4,200	82,300
14-----	1,660	2,360	10,700	1,250	2,110	7,120	6,380	4,910	111,000
15-----	1,660	1,920	8,610	1,360	2,350	8,630	9,470	4,640	119,000
16-----	1,660	1,450	6,500	1,710	3,150	14,500	9,750	4,210	111,000
17-----	1,850	2,010	10,000	2,220	5,690	34,100	10,400	5,850	164,000
18-----	1,900	2,500	12,800	2,840	6,420	49,200	11,200	5,990	181,000
19-----	1,820	2,600	12,800	3,090	6,490	54,100	11,500	5,320	165,000
20-----	1,780	1,810	8,700	3,290	5,590	49,700	11,200	4,810	145,000
21-----	1,730	1,950	9,110	3,160	4,900	41,800	10,400	4,670	131,000
22-----	1,640	2,160	9,560	2,840	3,780	29,000	10,300	4,340	121,000
23-----	1,410	2,150	8,190	3,000	3,770	30,600	10,600	3,720	106,000
24-----	1,360	2,260	8,300	3,490	4,840	45,600	10,300	3,270	90,900
25-----	1,460	1,680	6,620	4,220	5,840	66,500	10,800	3,660	107,000
26-----	1,600	1,630	7,040	4,670	5,520	69,600	11,300	3,910	119,000
27-----	1,420	1,560	5,980	4,330	5,000	58,400	9,780	3,390	89,500
28-----	1,250	1,370	4,620	3,940	4,120	43,800	8,210	3,750	83,100
29-----	1,390	1,360	5,100	4,400	3,200	38,000	8,130	3,750	82,300
30-----	1,630	1,750	7,700	4,550	3,630	44,600	8,000	3,490	75,400
31-----	--	--	--	4,600	4,140	51,400	--	--	--
Total-	47,360	--	277,300	79,990	--	977,800	280,830	--	3,345,000
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	7,970	3,060	65,800	3,350	3,310	30,000	1,100	1,460	4,340
2-----	8,620	3,660	85,200	2,960	2,780	22,200	1,130	1,720	5,250
3-----	8,480	4,140	94,800	2,650	2,490	17,800	1,100	1,740	5,170
4-----	8,920	4,100	98,700	2,390	2,380	15,400	1,050	1,480	4,190
5-----	9,530	5,740	148,000	2,190	2,420	14,300	1,000	1,440	3,690
6-----	9,890	5,860	158,000	2,090	7,300	41,200	974	1,130	2,970
7-----	9,190	5,240	130,000	1,780	6,860	33,000	974	1,170	3,080
8-----	8,380	3,330	75,300	1,660	3,000	13,400	956	1,180	3,040
9-----	7,890	3,080	65,600	1,630	2,320	10,200	992	1,190	3,190
10-----	7,410	3,234	64,600	1,510	2,110	8,600	1,080	1,820	5,310
11-----	6,920	2,700	50,400	1,440	1,980	7,700	1,390	3,100	11,600
12-----	6,920	2,570	48,000	1,420	2,380	8,900	2,620	8,750	61,900
13-----	6,940	3,190	59,800	1,900	--	e 30,000	2,560	12,500	86,400
14-----	6,550	2,650	46,900	2,290	11,200	69,300	2,900	7,920	62,000
15-----	5,740	2,480	38,400	1,650	13,200	58,800	2,810	4,980	37,800
16-----	4,990	2,390	32,200	1,650	4,900	21,800	2,900	4,980	39,000
17-----	4,690	2,300	29,100	1,620	3,400	14,900	2,950	7,050	56,200
18-----	4,310	2,300	26,800	1,580	2,580	11,000	2,840	3,600	27,600
19-----	3,920	2,360	25,000	1,400	2,560	9,680	2,840	2,400	16,400
20-----	3,650	3,730	36,800	1,290	2,200	7,660	2,780	2,580	19,400
21-----	3,260	2,760	24,300	1,280	1,950	6,740	2,880	2,620	20,400
22-----	3,000	2,280	18,500	1,260	1,810	6,160	4,600	9,730	121,000
23-----	2,930	2,880	22,800	1,240	1,770	5,930	3,880	15,500	162,000
24-----	3,220	9,600	83,500	1,270	2,070	7,100	3,410	5,800	53,500
25-----	3,240	2,600	22,800	1,210	1,940	6,340	3,310	3,570	31,900
26-----	3,500	2,000	18,900	1,270	2,200	7,550	3,030	2,620	21,400
27-----	3,750	2,600	26,300	1,250	1,910	6,450	2,680	2,420	17,500
28-----	3,500	5,150	48,700	1,220	2,160	7,110	2,560	1,960	13,500
29-----	3,350	9,000	81,400	1,210	1,500	4,900	2,580	1,910	13,300
30-----	3,480	6,190	56,100	1,150	1,570	4,870	2,730	1,920	14,100
31-----	3,500	4,300	40,600	1,140	1,650	5,080	--	--	--
Total-	177,640	--	1,823,000	51,950	--	514,100	68,606	--	£29,300
Total discharge for year (second-foot-days)									950,359
Total load for year (tons)									8,599,000

e Estimated.

YELLOWSTONE RIVER BASIN--Continued
BIGHORN RIVER AT KANE, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 1, 1949	9:00 a.m.	1,360	1,200	511	6	13	16	23	27	32	50	90	EW	
Oct. 7	1:50 p.m.	1,910	1,470	1,400	11	15	24	33	42	50	84	99	EW	
Oct. 7	1:50 p.m.	1,910	1,470	1,320	16	14	26	36	45	54	72	100	EW	
Oct. 12	10:55 a.m.	2,050	1,260	1,731	10	16	20	27	36	45	65	98	EW	
Oct. 12	2:100 p.m.	2,100	1,340	933	8	13	18	24	32	42	58	96	EW	
Oct. 22	11:00 a.m.	2,130	1,810	717	4	9	16	24	36	48	58	76	EW	
Oct. 27	12:55 p.m.	2,370	3,240	1,140	--	10	41	69	70	73	90	92	EW	
Oct. 27	12:55 p.m.	2,370	3,240	1,280	33	42	50	57	58	60	67	75	EW	
Nov. 3	2:45 p.m.	1,780	846	973	--	5	10	16	23	31	41	90	EW	
Nov. 3	2:45 p.m.	1,780	846	1,070	--	7	12	14	22	29	44	88	EW	
Nov. 9	11:10 a.m.	1,900	794	871	4	8	15	23	30	36	51	80	EW	
Nov. 9	11:10 a.m.	1,900	794	934	9	13	19	25	30	38	53	84	EW	
Nov. 16	4:15 p.m.	1,730	734	1,030	--	1	5	10	14	20	38	--	EW	
Nov. 16	4:15 p.m.	1,730	734	1,130	--	7	10	12	15	22	39	100	EW	
Mar. 17, 1950	11:30 a.m.	1,910	1,070	1,210	--	24	--	28	--	42	62	94	SPWCM	
Mar. 28	7:50 a.m.	1,420	1,510	830	--	39	--	49	--	63	74	95	SPWCM	
Apr. 12	3:10 p.m.	1,680	2,400	5,360	--	37	--	67	--	80	89	99	SPWCM	
Apr. 18	7:45 a.m.	1,880	2,410	1,490	--	37	--	54	--	71	85	99	SPWCM	
Apr. 25	8:20 a.m.	1,380	1,810	1,220	34	41	49	59	70	75	86	98	SPWCM	
Apr. 25	8:20 a.m.	1,380	1,810	550	35	36	46	56	65	70	84	99	SPWCM	
May 4	1:05 p.m.	1,990	7,350	6,260	--	--	2	83	--	92	96	100	SPNM	
May 10	3:05 p.m.	1,630	4,390	12,100	62	70	76	82	90	92	96	100	SPWCM	
May 17	2:20 p.m.	2,290	6,940	4,800	--	48	--	66	--	83	89	99	SPWCM	
May 19	12:50 p.m.	3,160	5,790	2,950	--	26	--	45	--	79	92	100	SPWCM	
May 23	6:15 p.m.	3,050	3,970	2,450	--	26	--	44	--	76	90	99	SPWCM	
June 2	2:35 p.m.	5,510	4,540	6,360	--	17	--	25	--	64	84	98	SPWCM	
June 6	2:50 p.m.	5,810	3,850	8,470	--	21	--	34	--	69	87	97	SPWCM	
June 16	11:40 a.m.	9,560	3,770	6,340	--	9	--	15	--	75	91	99	SPWCM	

June 22	2:10 p.m.	10,150	4,290	2,020	7	9	33	47	56	72	88	96	99	100	SPNM
June 22	2:10 p.m.	10,150	4,290	1,680	26	31	36	43	54	72	90	98	100	SPWCM	
July 3	4:10 p.m.	9,330	4,130	2,760	9	16	21	29	48	69	89	99	100	SPNM	
July 3	4:10 p.m.	9,330	4,130	2,030	16	21	--	28	44	69	88	99	100	SPWCM	
July 18	2:40 p.m.	4,200	2,100	3,620	--	27	--	41	--	80	84	99	100	SPWCM	
July 27	10:40 a.m.	a 3,750	2,640	4,500	--	36	--	51	--	65	81	97	100	SPWCM	
July 28	6:30 p.m.	a 3,500	8,760	6,270	--	62	--	85	--	91	--	--	--	SPWCM	
Aug. 1	11:15 a.m.	3,330	3,380	2,710	3	5	32	67	76	73	--	--	--	SPNM	
Aug. 1	11:15 a.m.	3,330	3,380	1,980	36	48	57	66	73	78	--	--	--	SPWCM	
Aug. 7	7:00 p.m.	1,760	5,570	2,170	68	88	--	86	--	89	--	--	--	SPWCM	
Aug. 10	11:25 a.m.	1,510	2,130	5,640	--	56	--	72	--	79	--	--	--	SPWCM	
Aug. 14	7:00 p.m.	1,960	15,000	9,830	--	65	--	91	--	95	--	--	--	SPWCM	
Aug. 15	8:25 a.m.	1,640	15,000	11,100	--	66	--	92	--	96	--	--	--	SPWCM	
Aug. 18	12:10 p.m.	1,580	2,340	8,320	--	46	--	68	--	85	--	--	--	SPWCM	
Aug. 25	12:55 p.m.	1,200	1,880	4,560	--	58	--	71	--	78	88	99	100	SPWCM	
Sept. 7	10:45 a.m.	974	1,040	2,420	--	55	--	68	--	78	88	99	100	SPWCM	
Sept. 12	11:40 a.m.	2,860	6,580	5,550	1	1	4	64	79	85	92	100	--	SPNM	
Sept. 12	11:40 a.m.	2,860	6,580	4,670	32	42	53	64	77	83	--	--	--	SPWCM	
Sept. 12	5:25 p.m.	2,810	13,600	4,800	--	65	--	83	--	92	--	--	--	SPWCM	
Sept. 13	7:30 a.m.	2,500	12,400	8,050	--	50	--	68	--	77	84	93	100	SPWCM	
Sept. 17	12:30 p.m.	2,930	8,870	6,280	--	60	--	76	--	87	--	--	--	SPWCM	
Sept. 20	11:50 a.m.	2,830	2,250	5,170	--	35	--	52	--	74	87	99	100	SPWCM	
Sept. 22	1:55 p.m.	4,710	7,420	6,380	1	4	9	54	76	83	90	98	100	SPNM	
Sept. 22	1:55 p.m.	4,710	7,420	3,420	23	27	36	51	72	83	--	--	--	SPWCM	
Sept. 24	6:15 p.m.	3,330	4,610	2,820	--	47	--	66	--	82	--	--	--	SPWCM	
Sept. 28	1:40 p.m.	2,540	1,800	2,560	--	31	--	45	--	64	80	98	100	SPWCM	

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT BIGHORN, MONT.
(Formerly known as Bighorn River near Custer, Mont.)

LOCATION --At bridge on U. S. Highways 10 and 12, three-quarters of a mile upstream from mouth, 1 mile southwest of Bighorn, Treasure County, and 3½ miles downstream from gaging station near Custer, Mont.

RECORDS AVAILABLE --Water temperatures: April 1949 to September 1950.

Sediment records: July 1947 to September 1950.

EXTREMES 1949-50.--Water temperatures: Maximum, 73°F Aug. 5; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 8,700 ppm Sept. 25; minimum daily, not determined.

Sediment loads: Maximum daily, 254,000 tons June 10; minimum daily, 136 tons Dec. 11.

EXTREMES 1947-50.--Sediment concentrations: Maximum daily, 20,000 ppm Sept. 23, 1948; minimum daily, not determined.

Sediment loads: Maximum daily, 539,000 tons June 4, 1948; minimum daily, 136 tons Dec. 11, 1949.

REMARKS.--Discharge records for gaging station near Custer, for water year October 1949 to September 1950 given in Water-Supply Paper 1176. No appreciable inflow between gaging station and sampling point except small amounts of irrigation waste water.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Discharge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- dium carbon- ate	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		Non- carbon- ate
Dec. 6, 1949.....	2,520		7.9	1,090	17	0.04	90	32	110		246	352	15	0.4	6.1	0.30	780	1.06		356	154	40
Feb. 8, 1950.....	2,050		7.5	960	16	.02	88	30	90		245	288	17	.2	4.4	--	702	.95		343	142	36
Mar. 2.....	3,350		7.6	915	24	.02	79	28	86		200	301	12	.2	4.4	--	672	.91		312	148	37
Apr. 6.....	3,000		7.8	1,040	25	.04	96	29	107		232	360	16	.4	4.8	796	796	1.08		359	169	39
May 1.....	2,940		7.7	1,110	17	.04	90	30	113		224	363	20	.4	4.5	--	824	1.12		348	164	41
June 2.....	5,790		7.4	643	20	.04	56	17	58		160	183	8.0	.3	3.2	--	462	.63		210	79	38
July 5.....	12,000		7.3	476	14	.07	45	12	43		124	140	5.0	.3	1.4	--	327	.44		162	60	37
Aug. 3.....	4,370		7.7	874	17	.02	75	21	86		168	290	11	.3	2.8	.35	608	.83		272	134	41
Sept. 4.....	1,820		7.5	1,210	17	.02	96	32	142		219	453	17	.5	3.7	--	902	1.23		370	190	46

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT BIGHORN, MONT.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement between 8 a. m. and 9 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57	44	37				--	44	57	70	68	66
2	57	43	38				--	46	55	70	65	68
3	54	46	37				--	42	57	70	68	70
4	54	43	--				45	42	59	70	69	69
5	55	42	34				--	45	60	69	73	70
6	52	42	35				45	46	64	--	69	69
7	50	41	33				--	48	60	--	66	69
8	47	42	33				--	45	61	--	69	65
9	45	45	33				--	45	53	--	68	62
10	45	45	33				--	47	56	--	67	59
11	42	45	33	31			45	53	60	--	69	56
12	45	42	33				47	55	64	--	69	55
13	43	44	33				50	56	64	--	67	51
14	44	42	33				53	57	67	--	69	53
15	45	42	33				--	52	66	--	69	51
16	47	41	33				57	61	66	--	70	50
17	45	40	33				53	60	65	70	67	54
18	43	41	33				48	60	64	68	67	57
19	40	41	33				47	55	62	68	68	57
20	36	42	33				50	59	65	60	62	60
21	34	36	33				51	56	66	68	62	57
22	34	40	--				53	60	69	60	70	59
23	40	38	--				48	62	65	68	66	69
24	40	38	--				45	56	65	68	64	60
25	41	40	--				46	57	63	69	65	69
26	--	40	--				45	56	62	69	65	60
27	43	41	--				45	59	67	71	64	57
28	44	42	--				43	60	66	72	65	55
29	44	42	33				38	55	67	71	64	52
30	44	40	--				48	59	69	65	65	44
31	43	--	--				--	57	--	62	66	--
Average	45	42	--				--	53	63	--	67	60

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT BIGHORN, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December			
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day	
1-----	2,360	693	4,410	3,610	983	9,580	2,890	287	2,240	
2-----	2,370	648	4,150	3,540	774	7,400	2,840	327	2,510	
3-----	2,410	581	3,780	3,520	672	6,390	2,840	314	2,410	
4-----	2,410	628	4,080	3,430	576	5,340	2,800	366	2,760	
5-----	2,760	998	7,440	3,230	632	5,510	2,630	376	2,670	
6-----	2,910	998	7,840	3,320	671	6,020	2,530	358	2,450	
7-----	2,930	1,150	9,100	3,230	574	5,010	2,480	224	1,500	
8-----	2,050	1,040	8,280	3,210	549	4,760	2,450	98	648	
9-----	3,060	875	7,230	3,270	581	5,130	2,530	272	1,860	
10-----	3,080	836	6,950	3,360	529	4,800	2,500	83	560	
11-----	3,230	817	7,130	3,340	533	4,810	1,440	35	136	
12-----	3,230	928	8,100	3,250	537	4,710	1,310	66	233	
13-----	3,140	850	7,210	3,210	585	5,070	860	62	144	
14-----	3,140	945	8,010	3,160	556	4,750	958	299	774	
15-----	3,100	838	7,010	3,210	456	3,840	1,660	348	1,560	
16-----	3,120	845	7,120	3,060	526	4,340	2,280	239	1,470	
17-----	3,060	808	6,680	3,040	546	4,480	2,000	312	1,680	
18-----	3,080	741	6,160	3,040	452	3,710	1,950	413	2,170	
19-----	3,290	862	7,650	2,990	432	3,490	2,000	144	778	
20-----	3,570	1,050	10,100	3,040	443	3,640	2,000	98	529	
21-----	3,660	939	9,280	2,970	423	3,390	2,050	102	565	
22-----	4,080	1,710	18,800	2,870	478	3,700	2,050	--	e 550	
23-----	4,290	2,220	25,700	2,890	421	3,280	2,000	--	e 440	
24-----	3,680	1,680	17,600	2,890	456	3,560	1,950	--	e 320	
25-----	4,000	1,630	17,600	2,910	352	2,770	1,850	--	e 300	
26-----	4,210	2,180	24,800	2,850	273	2,100	1,900	40	205	
27-----	4,260	2,580	29,700	2,910	320	2,510	1,900	73	374	
28-----	4,110	3,120	34,600	2,910	340	2,670	1,850	--	e 300	
29-----	4,000	2,960	32,000	2,910	353	2,770	1,800	40	194	
30-----	3,860	2,070	21,600	2,910	352	2,770	1,850	31	155	
31-----	3,760	1,240	12,600	--	--	--	1,800	52	253	
Total-	103,310	--	382,700	93,990	--	132,300	63,948	--	32,740	
	January			February			March			
1-----	1,700		e 240	1,740	--	e 1,100	5,400	948	13,800	
2-----	1,650		e 240	1,750	--	e 1,200	5,400	949	13,800	
3-----	1,700		e 260	1,760			5,600	1,190	18,000	
4-----	1,700		e 300	1,770			5,800	1,200	18,800	
5-----	1,800		e 500	1,780			5,600	--	e 17,000	
6-----	1,800		e 600	1,880			5,400	1,040	15,200	
7-----	1,800		e 700	1,970	237	1,260	5,200	1,050	14,700	
8-----	1,750		e 800	2,050	191	1,060	4,800	1,040	13,500	
9-----	1,700		e 900	2,130	--	e 1,100	3,900	--	e 13,000	
10-----	1,600		e 1,000	2,200	--	e 1,200	3,800	--	e 12,000	
11-----	1,600	264	1,140	2,210	--	e 1,300	3,500	--	e 12,000	
12-----	1,650		e 1,200	2,220	--	e 1,400	3,200	--	e 11,000	
13-----	1,600		e 1,100	2,220	--	e 1,500	3,200	--	e 11,000	
14-----	1,550		e 1,000	2,240	--	e 1,700	3,600	--	e 14,000	
15-----	1,460		e 1,000	2,300	--	e 1,800	3,800	--	e 17,000	
16-----	1,460			2,400	--	e 1,900	4,400	--	e 18,000	
17-----	1,460			2,500	--	e 2,100	4,400	--	e 18,000	
18-----	1,460		e 900	2,600	399	2,600	4,200	--	e 18,000	
19-----	1,460			2,720	374	2,750	4,000	--	e 20,000	
20-----	1,460			2,910	494	3,880	4,800	--	e 26,000	
21-----	1,600		e 1,100	2,960	700	5,600	5,200	2,500	35,100	
22-----	1,780		e 1,300	3,000	761	6,160	6,000	1,680	27,200	
23-----	1,850		e 1,400	3,020	--	e 7,000	5,800	--	e 27,000	
24-----	1,820		e 1,300	3,100	--	e 8,000	5,800	2,190	34,300	
25-----	1,780		e 1,200	3,300	--	e 9,500	6,200	2,440	40,800	
26-----	1,750			3,700	--	e 14,000	5,400	1,800	26,200	
27-----	1,710			6,000	1,440	23,300	5,800	1,650	25,800	
28-----	1,680		e 1,000	5,800	--	e 20,000	6,400	1,600	27,600	
29-----	1,700			--	--	--	--	6,000	1,310	21,200
30-----	1,720			--	--	--	--	5,000	2,450	33,100
31-----	1,730		e 1,100	--	--	--	2,590	2,130	14,900	
Total-	51,480		28,000	74,230	--	126,000	150,190	--	628,000	

e Estimated.

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BIGHORN RIVER AT BIGHORN, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Suspended sediment, water year October 1949 to September 1950--Continued									
Day	Mean dis-charge (second-foot)	April		Mean dis-charge (second-foot)	May		Mean dis-charge (second-foot)	June	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	2,630	1,630	11,600	3,180	1,720	14,800	6,340	2,590	44,400
2	2,710	1,430	10,500	3,140	1,430	12,100	5,940	2,290	36,800
3	2,940	1,720	13,700	3,630	2,170	21,300	6,560	2,900	57,400
4	3,530	2,380	22,700	3,930	2,850	30,200	7,970	5,490	118,000
5	3,440	1,810	16,800	3,700	4,000	40,000	7,320	6,700	137,000
6	3,230	1,630	14,200	3,320	5,070	45,400	7,520	4,240	87,100
7	3,180	1,540	13,200	2,980	3,510	28,200	7,450	3,720	77,800
8	3,250	2,430	21,300	2,810	2,380	18,100	9,140	6,270	157,000
9	3,340	2,450	22,100	2,690	2,200	16,000	11,700	8,000	253,000
10	3,440	2,800	26,000	2,710	2,460	18,000	13,100	7,190	254,000
11	3,460	2,500	23,400	2,590	2,120	14,800	11,300	5,210	157,000
12	3,460	1,900	17,900	2,440	1,860	12,300	9,140	4,190	107,000
13	3,460	1,690	15,800	2,420	2,520	16,500	8,560	3,510	87,100
14	3,370	1,750	15,900	2,060	1,690	9,400	8,960	6,060	161,000
15	3,160	1,600	13,700	2,020	1,480	8,070	10,900	6,460	197,000
16	3,050	1,540	12,700	2,000	1,320	7,130	11,400	4,550	147,000
17	2,980	1,320	12,200	2,080	1,560	8,870	11,700	3,850	122,000
18	3,140	1,450	12,300	2,840	1,890	14,000	12,100	4,490	147,000
19	3,280	1,550	13,700	3,760	3,010	30,600	13,200	5,040	187,000
20	3,340	1,700	15,300	4,010	3,680	39,800	13,700	5,870	217,000
21	3,250	1,560	13,700	4,060	3,100	34,000	13,200	5,300	189,000
22	2,940	1,350	10,700	4,440	2,840	34,000	12,000	4,200	137,000
23	2,790	1,260	9,490	4,040	2,220	24,200	11,800	3,900	124,000
24	2,570	1,240	8,600	4,170	2,180	24,600	12,400	3,650	122,000
25	2,360	1,170	7,460	4,830	2,540	33,100	12,600	3,480	119,000
26	2,530	1,250	8,540	5,850	3,820	60,300	12,700	3,580	123,000
27	2,590	1,370	9,580	6,060	3,410	55,800	13,400	3,660	132,000
28	2,490	1,160	7,800	5,730	2,890	44,700	11,900	3,010	96,700
29	2,320	939	5,880	5,140	2,340	32,500	10,600	2,860	81,800
30	2,360	1,010	6,440	5,640	2,350	35,800	9,580	2,760	71,400
31	--	--	--	6,120	2,460	40,600	--	--	--
Total	90,620	--	413,200	114,290	--	825,700	315,350	--	3,920,000
	July			August			September		
1	9,580	2,660	68,800	5,610	4,020	60,900	1,900	653	3,350
2	9,680	2,540	66,400	5,260	2,790	39,600	1,810	566	2,770
3	10,300	3,020	84,000	4,630	2,320	29,000	1,820	581	2,860
4	11,500	4,000	124,000	4,140	1,860	20,800	1,810	571	2,790
5	12,000	3,910	127,000	4,040	1,630	17,800	1,680	581	2,640
6	12,300	3,450	115,000	3,660	1,420	14,000	1,610	575	2,500
7	12,600	3,920	133,000	3,440	1,340	12,400	1,570	544	2,310
8	12,400	3,680	123,000	3,250	1,380	12,100	1,520	480	1,970
9	12,600	3,840	131,000	2,960	1,320	10,500	1,510	489	1,990
10	12,800	3,260	113,000	2,790	2,420	18,200	1,700	584	2,680
11	12,600	2,940	100,000	2,920	1,520	12,000	1,920	752	3,900
12	12,300	2,610	86,700	3,140	1,480	12,500	2,270	1,100	6,740
13	12,400	2,590	86,700	3,320	1,560	14,000	3,860	2,340	24,400
14	12,200	2,380	78,400	3,830	2,820	29,200	4,170	3,080	34,700
15	11,300	2,480	75,700	4,970	4,060	54,500	4,490	6,010	72,900
16	9,000	2,550	62,000	3,960	3,060	32,700	4,360	4,370	50,300
17	7,970	2,370	51,000	3,560	5,450	52,400	4,520	2,840	34,800
18	7,810	1,910	40,300	3,340	3,810	34,400	4,630	2,420	30,200
19	7,230	1,820	35,500	3,070	1,750	14,500	4,410	2,600	33,400
20	6,720	1,770	32,100	2,640	1,350	10,400	4,360	2,330	27,400
21	6,210	1,780	29,800	2,570	1,210	8,400	4,140	1,630	18,200
22	5,670	2,050	31,400	2,490	1,060	7,130	4,170	1,470	16,500
23	5,320	1,500	21,600	2,470	1,030	6,670	5,480	2,260	56,800
24	5,170	1,570	21,400	2,490	1,010	6,650	5,170	4,220	59,900
25	5,490	1,530	22,700	2,420	940	6,140	4,410	8,700	104,000
26	5,060	3,700	50,500	2,400	1,200	7,780	4,140	4,140	46,300
27	4,860	1,870	24,500	2,380	1,270	8,160	3,980	2,150	23,100
28	4,750	1,620	20,800	2,360	1,280	8,220	3,780	1,670	17,000
29	4,630	1,730	21,600	2,290	1,040	6,430	3,680	1,410	14,000
30	4,610	2,370	29,500	2,060	902	5,010	4,010	1,340	14,500
31	5,490	5,820	87,800	2,030	864	4,730	--	--	--
Total	272,550	--	2,096,000	100,660	--	577,400	98,830	--	639,900
Total discharge for year (second-foot-days)									1,599,548
Total load for year (tons)									9,814,000

YELLOWSTONE RIVER BASIN--Continued

BIGHORN RIVER AT BIGHORN, MONT.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 1, 1949	8:00 a. m.	2,420	718	409	14	23	30	34	36	42	48	94	100	BW
Oct. 26	9:00 a. m.	3,600	2,050	1,300	31	37	47	52	55	58	65	90	99	BW
Nov. 2	10:40 a. m.	3,500	790	1,270	5	12	24	34	41	46	--	--	--	BN
Nov. 2	10:40 a. m.	3,500	790	1,270	--	22	28	34	38	44	52	81	94	BN
Nov. 15	2:28 p. m.	3,180	448	737	--	10	17	25	32	37	47	76	90	BN
Nov. 15	2:28 p. m.	3,180	448	123	40	42	44	50	53	57	62	78	86	BW
Mar. 26, 1950	8:00 a. m.	5,400	1,600	847	--	--	--	--	--	--	--	--	--	SPWCM
Apr. 4	10:00 a. m.	3,580	2,410	1,850	18	27	36	43	52	63	77	90	96	BW
Apr. 4	2:20 p. m.	3,610	2,200	4,810	--	32	--	46	--	71	86	98	100	SPWCM
Apr. 12	5:00 p. m.	3,490	1,760	1,190	31	44	53	59	62	68	77	88	94	BW
Apr. 18	1:04 p. m.	3,250	1,410	1,710	--	30	--	42	--	56	71	86	90	SPWCM
May 1	1:46 p. m.	3,390	1,720	3,260	--	27	--	49	--	59	79	97	--	SPWCM
June 2	12:03 p. m.	5,820	2,270	1,620	3	10	37	47	60	71	87	99	100	SPNM
June 2	12:03 p. m.	5,820	2,270	3,460	25	32	38	47	58	71	87	99	100	SPWCM
June 5	6:30 p. m.	7,360	8,130	5,190	--	56	--	76	--	91	97	100	--	SPWCM
June 15	4:56 p. m.	11,200	5,070	2,730	3	7	28	38	50	72	93	99	100	SPNM
June 15	4:56 p. m.	11,200	5,070	2,880	22	33	41	54	68	81	99	100	100	SPWCM
July 5	11:43 a. m.	12,000	5,040	3,720	6	14	48	56	68	81	99	100	--	SPNM
July 5	11:43 a. m.	12,000	5,040	5,140	34	39	47	57	73	81	--	--	--	SPWCM
July 7	12:47 p. m.	7,900	2,390	7,190	19	23	--	--	40	60	89	99	100	SPWCM
July 22	8:00 a. m.	5,760	2,200	1,210	--	46	--	57	--	74	90	98	100	SPWCM
July 26	8:30 a. m.	5,090	5,960	2,930	--	57	--	79	--	85	--	--	--	SPWCM
July 31	8:00 a. m.	5,410	6,230	3,840	--	61	--	79	--	86	--	--	--	SPWCM
Aug. 1	8:00 a. m.	5,700	4,510	2,870	--	58	--	77	--	86	--	--	--	SPWCM
Aug. 14	12:30 p. m.	4,090	2,280	2,650	1	5	33	66	74	76	--	--	--	SPNM
Aug. 14	12:30 p. m.	4,090	2,280	2,930	34	41	56	67	76	81	90	99	100	SPWCM
Aug. 17	8:00 a. m.	3,510	4,870	3,430	--	64	--	83	--	92	--	--	--	SPWCM
Sept. 4	12:48 p. m.	1,820	563	1,320	--	55	--	74	--	98	--	--	--	SPWCM
Sept. 15	9:00 a. m.	4,610	6,810	4,840	--	63	--	84	--	89	--	--	--	SPWCM
Sept. 21	11:00 a. m.	4,140	1,640	4,160	--	42	--	69	--	81	93	100	--	SPWCM

YELLOWSTONE RIVER BASIN--Continued

POPO AGIE RIVER NEAR RIVERTON, WYO.

LOCATION.--At downstream side of bridge on Sand Draw road, a quarter of a mile upstream from gaging station, which is $1\frac{1}{2}$ miles upstream from mouth, and 2 miles southeast of Riverton, Fremont County.

DRAINAGE AREA.--2,010 square miles.

RECORDS AVAILABLE.--Water temperatures: March to September 1949.

Sediment records: March 1949 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 2,900 ppm Sept. 20; minimum daily, not determined.

Sediment loads: Maximum daily, 12,500 tons Sept. 20; minimum daily, not determined.

EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum daily, 2,900 ppm Sept. 20, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 17,000 tons June 14, 1949; minimum daily, not determined.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	137	--	e 16	338	--	e 42	225	--	e 13
2-----	160	--		330	--		231	26	
3-----	189	--		322	--		247	--	
4-----	195	31		318	44		169	--	
5-----	207	--		310	--		180	--	
6-----	201	--	e 48	306	--	e 28	225	--	e 20
7-----	210	--		306	51		210	--	
8-----	274	--		303	--		247	--	
9-----	322	--		306	39		204	20	
10-----	314	43		300	--		205	--	
11-----	330	--	e 90	296	62	e 38	130	--	e 10
12-----	318	--		296	--		130	42	
13-----	330	106		303	--		130	--	
14-----	342	--		318	54		170	43	
15-----	318	--		314	--		200	--	
16-----	310	--	e 65	306	40	e 28	225	49	e 10
17-----	306	92		300	--		235	--	
18-----	318	--		303	31		235	--	
19-----	377	50		300	--		230	28	
20-----	386	--		292	--		225	--	
21-----	372	--	e 110	275	--	e 38	225	--	e 10
22-----	359	--		268	--		225	--	
23-----	372	--		278	37		225	16	
24-----	372	--		289	--		225	--	
25-----	372	--		286	57		225	--	
26-----	390	121	e 50	282	--	e 38	230	--	e 10
27-----	386	--		275	--		230	--	
28-----	359	89		272	54		230	--	
29-----	338	--		268	--		230	--	
30-----	342	--		234	--		225	17	
31-----	342	51		--	--		220	--	
Total-	9,548	--	1,900	8,894	--	1,100	6,543	--	440

e Estimated.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

POPO AGIE RIVER NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	190	--	e 6	175	--	e 7	230	--	e 24
2-----	165	13		180			230	--	
3-----	150	--		185			240	--	
4-----	140	--		195			280	--	
5-----	140	--		200			280	--	
6-----	150	--	e 6	210	--	7	250	--	e 38
7-----	150	--		225	--		245	40	
8-----	155	--		230	--		225	68	
9-----	160	--		235	--		210	--	
10-----	160	--		235	--	e 5	200	--	
11-----	160	--	e 15	235	--		195	--	e 100
12-----	160	29		230	--		190	--	
13-----	160	--		230	8		195	67	
14-----	155	--		230	--		205	--	
15-----	155	--		230	--		220	--	
16-----	155	--	e 13	225	--	e 9	235	76	e 75
17-----	155	--		225	--		255	108	
18-----	160	43		225	13		275	--	
19-----	165	--		225	--		264	--	
20-----	180	--		225	--		261	140	
21-----	190	--	e 13	225	--	e 18	247	152	e 140
22-----	190	--		225	14		234	--	
23-----	180	--		225	--		231	--	
24-----	175	--		230	17		225	122	
25-----	170	--		255	--		234	--	
26-----	165	--	e 13	280	--	e 18	240	--	e 240
27-----	165	--		250	29		234	--	
28-----	160	--		235	--		240	467	
29-----	165	--		--	--		225	302	
30-----	165	--		--	--		218	316	
31-----	170	--		--	--		219	--	e 200
Total--	5,060	--	350	6,255	--	240	7,190	--	2,500
Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	225	--	e 200	377	780	774	2,170	812	4,760
2-----	234	--	e 200	354	560	535	2,420	983	6,420
3-----	258	--	e 240	350	340	321	2,750	1,350	10,000
4-----	235	--	e 280	372	560	562	2,470	1,380	9,200
5-----	230	514	319	359	440	426	2,410	853	5,550
6-----	230	--	e 240	368	1,040	1,030	2,650	700	5,010
7-----	230	253		382	1,550	1,600	3,210	799	6,920
8-----	250	241		486	1,920	2,520	3,360	562	5,100
9-----	290	--		498	1,340	1,800	2,710	460	3,370
10-----	325	--		492	1,300	1,730	2,320	413	2,590
11-----	310	--	e 240	486	820	1,080	2,150	424	2,460
12-----	290	--		439	490	581	2,400	498	3,230
13-----	278	--		428	280	324	2,950	503	4,010
14-----	264	358		255	450	255	3,650	470	4,630
15-----	282	--		e 280	575	510	3,750	494	5,000
16-----	318	--	e 340	720	770	1,500	3,950	488	5,200
17-----	342	460	425	868	1,030	2,410	4,180	483	5,450
18-----	372	665	668	1,090	1,490	4,390	4,250	483	5,540
19-----	395	860	917	1,170	1,250	3,950	4,090	409	4,520
20-----	377	1,010	1,030	1,040	772	2,170	4,090	392	4,330
21-----	377	1,080	1,100	1,010	832	2,270	4,090	392	4,330
22-----	390	670	706	1,080	868	2,530	4,250	348	3,990
23-----	450	545	662	1,300	1,150	4,040	4,530	355	4,340
24-----	486	595	781	1,600	1,180	5,100	4,590	370	4,590
25-----	456	690	850	1,620	867	3,790	4,400	277	3,290
26-----	439	960	1,160	1,470	788	3,130	4,030	261	2,840
27-----	395	720	768	1,320	616	2,200	3,020	335	2,730
28-----	377	370	377	1,420	621	2,380	2,890	268	2,090
29-----	412	290	323	1,650	616	2,740	2,880	254	1,960
30-----	386	640	667	1,530	488	2,020	2,990	246	1,990
31-----	--	--	--	1,890	722	3,680	--	--	--
Total--	9,903	--	14,330	27,194	--	62,680	99,580	--	135,400

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

POPO AGIE RIVER NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3,320	268	2,400	885	35	84	278	41	31
2-----	3,460	218	2,040	736	37	74	275	26	17
3-----	3,750	351	3,550	638	33	57	258	17	12
4-----	3,840	305	3,160	589	29	46	250	22	17
5-----	3,650	211	2,080	549	16	24	247	18	12
6-----	3,380	243	2,220	516	15	21	237	19	12
7-----	3,100	202	1,690	492	15	20	219	22	13
8-----	2,750	190	1,410	417	20	23	207	19	11
9-----	2,530	203	1,390	382	14	14	265	--	e 300
10-----	2,530	203	1,390	334	11	10	522	--	e 900
11-----	2,560	200	1,380	318	12	10	617	270	450
12-----	2,580	171	1,190	303	8	7	631	256	437
13-----	2,240	142	859	314	15	13	568	193	287
14-----	1,880	172	873	338	18	16	536	96	139
15-----	1,650	150	668	338	16	15	556	65	97
16-----	1,600	128	553	322	13	11	582	62	97
17-----	1,340	133	481	310	15	13	568	49	75
18-----	1,210	104	340	303	16	13	536	42	67
19-----	1,090	98	288	286	19	15	504	28	37
20-----	1,060	97	278	286	20	15	1,210	2,900	s 12,507
21-----	1,030	78	217	300	24	19	1,470	2,030	s 8,520
22-----	1,000	72	194	296	24	19	860	840	1,950
23-----	1,050	88	249	275	38	28	736	390	775
24-----	1,060	311	890	272	31	23	690	230	428
25-----	1,030	135	375	264	13	9	638	140	241
26-----	1,000	74	200	264	17	12	610	80	132
27-----	994	74	199	289	21	16	589	40	64
28-----	994	83	223	292	24	19	582	70	110
29-----	994	98	263	303	27	22	603	500	814
30-----	1,150	76	236	300	31	25	638	140	241
31-----	1,060	50	143	289	50	39	--	--	--
Total-	60,662	--	31,430	11,800	--	732	16,482	--	28,780

Total discharge for year (second-foot days) 269,331

Total load for year (tons) 279,900

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
POPO AGIE RIVER NEAR RIVERTON, WYO.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge- (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Apr. 18, 1950	6:40 p. m.	364	698	440	59	75	100	--	--	--	--	--	--	--	SPWCM
Apr. 27	6:30 p. m.	382	608	392	63	70	98	--	--	--	--	--	--	--	SPWCM
May 20	11:50 a. m.	1,110	842	1,290	36	49	79	94	98	98	98	98	98	99	100
Sept. 20	6:30 p. m.	2,000	5,640	3,650	56	76	95	95	--	--	--	--	--	--	SPWCM
Sept. 22	3:30 p. m.	808	767	1,680	86	93	96	98	99	100	100	100	100	100	BWC

YELLOWSTONE RIVER BASIN--Continued

MUSKRAT CREEK NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, 1½ miles upstream from mouth, and 7 miles southwest of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: June to September 1950.

EXTREMES, June to September 1950.--Sediment concentrations: Maximum observed, 92,400 ppm Sept. 20; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 34,700 tons Sept. 20; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, June to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Suspended sediment					Concentration (ppm)	
			Load (tons)	Daily load (tons)			Weighted mean	Maximum daily	
				Mean	Maximum	Minimum			
October	--	--	--	--	--	--	--	--	--
November	--	--	--	--	--	--	--	--	--
December	--	--	--	--	--	--	--	--	--
January	--	--	--	--	--	--	--	--	--
February	--	--	--	--	--	--	--	--	--
March	--	--	--	--	--	--	--	--	--
April	--	--	--	--	--	--	--	--	--
May	--	--	--	--	--	--	--	--	--
June 19-30	0.1	0.2	(t)	--	(t)	0	630	--	--
July	69	137	e 7,400	239	--	0	38,300	--	--
August	0	0	0	0	0	0	--	--	--
September	384.4	762	a 70,400	2,350	34,700	0	65,400	92,400	--
Period, June 19 to Sept. 30, 1950	--	899	77,800	748	34,700	0	--	92,400	--

e Estimated.

t Sediment discharge less than 1 ton.

a Partly estimated.

YELLOWSTONE RIVER BASIN--Continued
FIVEMILE CREEK ABOVE WYOMING CANAL NEAR PAVILLION, WYO.

LOCATION.--At gaging station, 1,000 feet upstream from Wyoming Canal Siphon, and 4 miles north of Pavillion, Fremont County. Prior to Mar. 29, 1950, at site 100 feet downstream from Wyoming Canal Siphon.
RECORDS AVAILABLE.--Sediment records: October 1949 to September 1950.
EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 77,400 ppm Sept. 20; maximum observed, 114,000 ppm July 25; minimum daily, no flow on many days. Sediment loads: Maximum daily, 123,000 tons Sept. 20; minimum daily, 0 tons on many days.
REMARKS.--Daily samples for chemical analysis composited by discharge. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, September 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Sept. 5, 1949	1.5	7.8	7.8	4,670	14	0.02	497	145	627	166	2,850	65	65	1.0	1.5	0.97	4,280	5.82	1,840	1,700	43	
Feb. 20, 1950	5	7.6	7.6	4,040	22	.02	426	185	430	200	2,400	65	65	1.4	1.9	--	3,630	4.94	1,820	1,660	34	
June 19	a 135	7.1	7.1	2,370	17	.04	310	62	266	208	1,350	18	18	.7	5.1	.20	2,130	2.90	1,030	1,859	36	
Sept. 18-22	57	7.6	7.6	3,340	--	--	--	--	308	--	206	1,890	32	--	--	--	--	--	--	--	--	31
Sept. 25-29	1.3	7.5	7.5	4,900	--	--	--	--	600	198	2,880	66	66	--	--	--	--	--	--	--	--	40

a Instantaneous discharge.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK ABOVE WYOMING CANAL NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	1.5	--	--	0.1	--	(t)
2-----	0	--	0	1.5	5,800	--	.1	--	(t)
3-----	0	--	0	1.3	--	e20	.1	--	(t)
4-----	.1	20	(t)	1.1	--	--	0	--	0
5-----	.1	23	(t)	.9	--	--	0	--	0
6-----	.1	17	(t)	.9	--	--	0	--	0
7-----	.9	--	e3	.7	2,800	--	0	--	0
8-----	3.5	--	e140	.7	--	e7	0	--	0
9-----	5.4	--	e150	.9	4,000	--	0	--	0
10-----	3.6	4,600	45	1.1	--	--	0	--	0
11-----	1.1	--	e8	1.3	--	--	0	--	0
12-----	.7	2,000	4	1.5	--	e17	0	--	0
13-----	.5	--	e3	1.5	--	--	0	--	0
14-----	3.0	--	e70	1.7	5,200	--	0	--	0
15-----	1.5	3,700	15	1.5	--	--	0	--	0
16-----	.9	--	e4	.7	600	1	0	--	0
17-----	1.3	3,300	12	.5	--	(t)	0	--	0
18-----	2.3	--	e55	1.1	--	e1	0	--	0
19-----	3.2	6,800	59	.2	--	(t)	0	--	0
20-----	3.4	--	e85	0	--	--	0	--	0
21-----	3.8	9,360	s105	.6	2,060	e6	0	--	0
22-----	3.7	--	e140	1.6	--	e26	0	--	0
23-----	4.2	--	e140	1.1	--	e16	0	--	0
24-----	2.5	11,300	76	.9	--	e12	0	--	0
25-----	2.8	--	e65	.9	3,800	--	0	--	0
26-----	2.8	6,700	51	.7	--	--	0	--	0
27-----	2.1	--	--	.9	--	e7	0	--	0
28-----	2.1	--	--	.8	2,700	--	0	--	0
29-----	1.7	--	e26	.5	--	e2	0	--	0
30-----	1.7	--	--	.2	300	(t)	0	--	0
31-----	1.5	5,000	--	--	--	--	0	--	0
Total-	60.5	--	1,400	28.8	--	310	0.3	--	(t)
Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	0	--	0	1	3,200	9
2-----	0	--	0	0	--	0	1	2,200	6
3-----	0	--	0	0	--	0	1	4,600	12
4-----	0	--	0	0	--	0	1	--	e11
5-----	0	--	0	0	--	0	1	--	e10
6-----	0	--	0	0	--	0	1	1,300	4
7-----	0	--	0	0	--	0	1	300	(t)
8-----	0	--	0	0	--	0	1	1,500	4
9-----	0	--	0	0	--	0	1	4,000	11
10-----	0	--	0	0	--	0	.5	--	e5
11-----	0	--	0	0	--	0	.5	--	e3
12-----	0	--	0	0	--	0	.5	--	e2
13-----	0	--	0	0	--	0	.5	500	1
14-----	0	--	0	.5	--	(t)	.5	6,200	8
15-----	0	--	0	.5	--	(t)	.5	7,700	10
16-----	0	--	0	.5	--	(t)	.5	800	1
17-----	0	--	0	5	--	--	1	--	--
18-----	0	--	0	5	--	--	1	--	--
19-----	0	--	0	5	--	e85	1	--	--
20-----	.5	--	0	5	6,400	--	1	--	e5
21-----	1.0	--	e3	5	--	--	1	--	--
22-----	1.2	--	--	5	--	--	1	--	--
23-----	1.3	1,420	--	5	--	e110	1	2,600	7
24-----	.5	--	--	5	--	--	1	4,800	13
25-----	.1	--	(t)	5	--	--	1	--	e12
26-----	0	--	0	5	--	--	1	--	e11
27-----	.2	--	(t)	5	9,000	122	1	3,700	10
28-----	0	--	0	2	6,000	32	1	3,400	9
29-----	0	--	0	--	--	--	2.0	--	e32
30-----	0	--	0	--	--	--	4.0	6,300	s80
31-----	0	--	0	--	--	--	3.4	6,500	60
Total-	4.8	--	15	58.5	--	1,200	33.9	--	360

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK ABOVE WYOMING CANAL NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.8	--	e 65	4.7	--	e 240	1	200	(t)
2-----	2.5	--	e 20	4.7	--	e 200	1.6	950	4
3-----	1.1	1,700	5	6.4	15,200	263	1.1	--	2
4-----	.4	3,700	4	6.5	--	e 260	.3	--	(t)
5-----	.5	--	e 6	4.4	--	e 170	0	--	0
6-----	.8	1,700	4	2.5	--	e 80	0	--	0
7-----	.9	4,000	10	6.4	--	e 240	0	--	0
8-----	.7	--	e 9	7.5	--	e 300	0	--	0
9-----	2.1	--	e 32	5.0	12,800	173	0	--	0
10-----	1.0	2,600	7	3.5	14,000	132	0	--	0
11-----	.8	2,700	6	2.3	11,200	70	0	--	0
12-----	.8	--	e 8	1.5	8,000	32	0	--	0
13-----	.7	4,100	8	1.3	7,000	25	0	--	0
14-----	.8	4,800	10	1.3	--	e 22	0	--	0
15-----	.9	--	e 24	.5	--	e 6	0	--	0
16-----	1.0	--	--	.4	3,100	3	0	--	0
17-----	.8	16,100	--	.2	2,000	1	0	--	0
18-----	.7	--	e 26	0	--	0	16	--	e 460
19-----	1.0	--	0	--	--	0	50	7,680	s 1,600
20-----	.5	--	0	--	--	0	10	3,530	s 132
21-----	.3	10,200	8	0	--	0	2	400	2
22-----	.4	--	e 10	0	--	0	1	--	e 1
23-----	.1	--	e 1	0	--	0	.5	350	(t)
24-----	.3	3,520	3	0	--	0	0	--	0
25-----	.2	3,550	2	.8	6,700	14	0	--	0
26-----	.9	--	e 9	.6	5,700	9	0	--	0
27-----	1.6	--	e 50	.1	--	(t)	0	--	0
28-----	5.3	--	e 400	.2	--	e 2	0	--	0
29-----	5.0	--	e 300	.7	3,800	7	0	--	0
30-----	5.5	--	e 340	.6	--	e 6	0	--	0
31-----	--	--	--	.5	--	e 4	--	--	--
Total--	41.4	--	1,500	62.6	--	2,200	83.5	--	2,200
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	0	--	0	0	--	0
2-----	0	--	0	0	--	0	0	--	0
3-----	3	--	e 46	0	--	0	0	--	0
4-----	6	10,700	173	0	--	0	0	--	0
5-----	9	17,600	428	0	--	0	0	--	0
6-----	.5	8,200	11	0	--	0	0	--	0
7-----	.3	3,000	2	.1	34	0	0	--	0
8-----	0	--	0	.1	--	0	0	--	0
9-----	0	--	0	.1	--	0	0	--	0
10-----	0	--	0	.1	--	(t)	4.2	5,220	59
11-----	0	--	0	.1	28	--	4.4	--	e 60
12-----	0	--	0	.1	--	0	1.5	4,550	18
13-----	0	--	0	0	--	0	.7	1,820	3
14-----	0	--	0	0	--	0	1.3	--	e 5
15-----	0	--	0	0	--	0	12	8,300	269
16-----	0	--	0	0	--	0	4.2	--	e 65
17-----	0	--	0	0	--	0	3	3,400	28
18-----	0	--	0	0	--	0	2	2,050	11
19-----	0	--	0	0	--	0	2.5	2,300	s 28
20-----	0	--	0	0	--	0	273	77,400	s 123,000
21-----	0	--	0	0	--	0	5	10,000	135
22-----	1	--	e 5	0	--	0	1	2,500	7
23-----	2	--	e 16	0	--	0	1	--	e 5
24-----	3	5,000	41	0	--	0	2	--	e 6
25-----	96	46,300	s 24,600	0	--	0	2	950	5
26-----	27	34,300	s 3,260	0	--	0	1	700	2
27-----	2.9	8,000	63	0	--	0	0	--	0
28-----	1.2	333	1	.2	--	(t)	0	--	0
29-----	.8	--	e 1	.7	--	(t)	3.5	3,020	29
30-----	.6	--	(t)	0	--	0	4.0	--	50
31-----	0	--	0	0	--	0	--	--	--
Total--	153.3	--	28,650	1.5	--	1	328.3	--	121,800
Total discharge for year (second-foot-days)									857.4
Total load for year (tons)									16',600

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN—Continued
FIVEMILE CREEK ABOVE WYOMING CANAL NEAR PAVILLION, WYO.—Continued

Particle-size analyses of suspended sediment, September 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Sept. 4, 1949	2:55 p.m.	2.3	8,470	1,580	61	82	94	94	95	96	98	100		BW
Mar. 6, 1950	11:00 a.m.	e 1	1,580	880	34	47	57	62	70	82	92	96	98	BW
Mar. 15	12:10 p.m.	e.5	7,700	3,090		13		23		53	75	94	99	SPWCM
Mar. 27	4:45 p.m.	e 1	7,980	3,370		40		62		75	92	99	100	SPWCM
Apr. 4	1:10 p.m.	.8	3,940	2,370		72		83		95				SPWCM
Apr. 17	12:30 p.m.	1.4	15,800	3,080	74	80	92	96	98	99	100			BWC
Apr. 27	3:00 p.m.	1.7	4,530	2,650		72		85		93				SPWCM
May 9	4:25 p.m.	6.5	24,800	7,070		46		67		87				SPWCM
May 25	12:10 p.m.	1.2	6,680	3,310		68		82		88				SPWCM
June 2	2:55 p.m.	1.5	1,580	741		81		85		89				SPWCM
June 19	5:00 p.m.	135	24,700	14,400		35		61		88				SPWCM
July 25	10:30 a.m.	e 7	26,800	10,700		67		90		96				SPWCM
July 25	8:10 p.m.	240	110,000	4,840		34		53		83				SPWCM
Sept. 20	12:20 p.m.	280	78,400	16,100	21	30	38	47	60	74	90	99	100	BWCM
Sept. 21	10:20 a.m.	5.5	9,820	3,810		72	84	90	93	96	98	100		BWCM

e Estimated.

YELLOWSTONE RIVER BASIN--Continued
FIVEMILE CREEK NEAR RIVERTON, WYO.

LOCATION.--At gaging station, 3 miles downstream from Ocean Drain, 12½ miles north of Riverton, Fremont County, and 13 miles upstream from mouth.
RECORDS AVAILABLE.--Sediment records: October 1949 to September 1950.
EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 89,500 ppm Sept. 20; maximum observed, 308,000 ppm June 19; minimum daily, not determined.
Sediment loads: Maximum daily, 199,000 tons Sept. 20; minimum daily, 3 tons Jan. 5, 16, 17.
REMARKS.--Daily samples for chemical analysis composited by discharge. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃	
																	Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate
Sept. 18-24, 1950 ..	146		7.6	3,290					346		277	1,720	38							38
Sept. 25-29	46.2		7.6	3,180					484		172	1,480	68							59

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	76	3,220	661	38	2,310	237	24	1,850	120
2-----	39	2,390	252	38	2,380	244	24	--	e 140
3-----	39	2,330	245	32	1,840	159	25	2,160	146
4-----	39	2,150	226	35	--	e 170	28	1,770	134
5-----	32	2,420	209	40	--	e 220	27	--	e 95
6-----	35	2,110	199	44	2,520	299	26	917	64
7-----	33	2,190	195	48	--	e 340	23	170	11
8-----	34	2,340	215	47	2,650	336	20	--	e 7
9-----	35	2,700	255	40	2,270	245	19	--	e 7
10-----	38	--	e 280	39	1,780	187	18	125	6
11-----	37	--	e 220	29	--	e 130	18	105	5
12-----	35	2,040	193	28	1,780	135	17	210	10
13-----	28	1,940	147	27	3,310	241	17	130	6
14-----	29	--	e 160	26	--	e 200	16	140	6
15-----	30	2,330	189	25	2,370	160	16	138	6
16-----	31	2,510	210	24	2,290	148	15	179	7
17-----	32	--	e 200	25	1,820	123	15	180	7
18-----	32	1,970	170	24	--	e 85	15	190	8
19-----	41	2,240	248	24	1,260	62	15	170	7
20-----	43	3,020	351	28	2,300	174	14	180	7
21-----	46	--	e 460	25	--	e 140	14	180	7
22-----	44	4,990	593	23	1,440	89	14	--	e 9
23-----	49	3,140	416	22	--	e 90	14	375	14
24-----	51	--	e 420	22	1,550	92	14	390	15
25-----	35	3,270	309	23	1,490	93	14	--	e 18
26-----	37	3,250	325	23	1,370	85	14	1,270	48
27-----	39	3,010	317	27	1,350	98	15	780	32
28-----	42	--	e 280	24	--	e 85	15	425	17
29-----	41	2,410	267	24	1,140	74	15	419	17
30-----	45	2,750	334	24	1,120	73	15	370	15
31-----	44	--	e 300	--	--	--	15	285	12
Total--	1,211	--	8,850	898	--	4,830	551	--	1,000
Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	15	--	e 11	8	258	6	20	14,200	767
2-----	15	298	12	8	--	e 6	22	13,600	808
3-----	14	218	8	8	280	6	18	--	e 600
4-----	12	160	5	8	--	e 6	22	--	e 800
5-----	6	--	e 3	9	--	e 6	27	--	e 1,200
6-----	7	230	4	10	258	7	27	14,000	1,020
7-----	7	285	5	11	--	e 10	16	6,400	276
8-----	7	275	5	13	360	13	20	14,400	562
9-----	7	305	6	15	--	e 12	25	14,100	682
10-----	7	255	5	20	235	13	16	6,150	266
11-----	7	222	4	35	--	e 26	15	--	e 260
12-----	6	--	e 4	30	--	e 30	15	--	e 300
13-----	6	224	4	25	442	30	16	9,350	404
14-----	6	250	4	22	--	e 26	16	14,400	449
15-----	6	--	e 4	20	430	23	17	--	e 420
16-----	5	223	3	19	--	e 24	18	8,640	420
17-----	5	250	3	18	495	24	28	15,700	1,190
18-----	5	280	4	17	--	e 22	25	15,700	1,060
19-----	5	325	4	16	--	e 22	25	--	e 1,100
20-----	6	290	5	16	650	28	26	12,500	878
21-----	8	--	e 7	16	870	38	20	8,840	477
22-----	9	--	e 9	17	800	37	28	9,800	741
23-----	9	470	11	30	--	e 140	15	7,800	316
24-----	9	--	e 11	40	3,400	367	20	7,500	405
25-----	9	410	10	30	--	e 500	20	5,300	e 286
26-----	9	--	e 9	25	--	e 750	20	--	e 340
27-----	8	360	8	22	18,800	1,120	18	7,350	357
28-----	8	--	e 7	20	17,200	928	15	5,450	221
29-----	8	--	e 6	--	--	--	20	10,400	s 671
30-----	8	265	6	--	--	--	25	9,900	668
31-----	8	--	e 6	--	--	--	20	6,200	335
Total--	247	--	193	528	--	4,220	635	--	18,280

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	25	--	e 360	26	5,420	380	47	30,500	3,870
2-----	20	--	e 300	31	5,820	487	49	21,000	2,780
3-----	16	6,250	270	45	--	e 850	58	22,200	3,480
4-----	21	7,400	420	40	8,600	929	61	24,600	4,050
5-----	23	7,200	447	40	--	e 1,000	62	26,000	4,350
6-----	34	10,700	982	30	9,700	786	86	37,500	9,030
7-----	34	10,000	918	42	12,200	1,360	82	37,500	8,610
8-----	35	9,440	892	51	23,900	3,290	121	36,000	12,200
9-----	60	--	e 1,500	60	--	e 3,700	92	34,500	8,570
10-----	35	8,100	765	45	17,800	2,160	97	34,200	8,960
11-----	34	7,750	711	41	13,600	1,510	150	32,700	13,200
12-----	32	9,250	799	45	11,200	1,360	106	29,000	8,300
13-----	30	7,750	628	45	11,200	1,360	89	27,400	6,580
14-----	30	6,550	531	43	12,200	1,420	109	36,600	11,200
15-----	36	--	e 550	47	13,400	1,700	137	50,000	19,200
16-----	36	--	e 500	47	13,100	1,660	131	35,800	13,100
17-----	28	5,570	421	47	13,600	1,730	137	31,200	11,500
18-----	26	5,890	413	69	11,700	2,180	260	--	e 70,000
19-----	25	6,240	421	61	12,500	2,060	271	86,500	s 94,300
20-----	24	6,360	412	60	--	e 1,600	209	65,800	s 47,100
21-----	26	6,450	453	47	10,700	1,360	134	45,000	16,900
22-----	26	--	e 440	39	8,400	885	128	43,100	15,400
23-----	24	6,160	399	40	5,600	605	134	40,000	15,000
24-----	33	4,820	429	41	11,400	1,280	141	39,800	15,700
25-----	35	5,480	518	42	13,800	1,560	121	36,300	12,300
26-----	31	5,250	439	41	10,400	1,150	137	35,600	13,700
27-----	33	4,950	441	38	9,100	934	121	30,000	9,800
28-----	39	6,190	862	57	28,000	4,310	112	31,000	9,370
29-----	32	9,160	791	89	40,000	9,970	141	33,200	12,600
30-----	--	--	e 500	55	32,700	4,880	136	30,500	11,200
31-----	--	--	--	49	30,600	4,050	--	--	--
Total--	912	--	17,510	1,453	--	62,490	3,659	--	492,400
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	160	26,500	11,400	178	36,800	18,300	149	28,800	11,600
2-----	116	26,100	8,170	171	35,900	17,200	140	26,700	10,800
3-----	158	38,700	14,400	180	39,000	19,700	155	31,000	13,000
4-----	186	36,100	18,800	173	36,200	17,500	163	31,700	14,000
5-----	236	36,400	24,100	183	36,100	16,500	152	30,000	12,300
6-----	215	37,400	22,500	183	38,600	19,800	152	32,900	13,500
7-----	197	31,000	16,500	178	42,500	21,200	151	35,400	15,000
8-----	165	33,900	15,100	182	39,200	20,000	135	30,600	11,200
9-----	146	33,100	13,000	175	37,000	18,100	155	28,400	11,900
10-----	136	31,900	11,700	176	32,900	15,600	155	--	e 12,000
11-----	124	31,000	10,400	180	34,400	16,700	167	31,000	14,000
12-----	118	29,300	9,330	170	36,000	17,100	178	33,300	16,000
13-----	136	29,800	10,900	180	40,000	20,200	155	32,100	13,400
14-----	112	30,800	9,310	183	40,000	20,500	135	28,000	10,200
15-----	126	30,000	10,200	182	40,500	20,600	106	28,100	8,040
16-----	134	31,800	11,500	180	37,700	19,000	101	26,400	7,200
17-----	112	31,700	9,590	171	37,100	17,800	92	23,700	5,890
18-----	126	32,300	11,000	178	36,800	18,300	86	21,000	4,880
19-----	131	37,100	13,600	185	34,800	17,400	77	18,100	3,760
20-----	126	32,400	11,000	176	35,000	16,600	497	89,500	s 199,000
21-----	141	30,000	11,400	182	34,300	16,900	142	43,300	17,200
22-----	150	--	e 13,000	173	31,300	14,600	94	32,000	8,120
23-----	150	--	e 14,000	170	31,000	14,200	81	29,900	6,540
24-----	156	36,000	15,700	160	27,000	11,700	45	11,100	1,350
25-----	464	--	e 120,000	144	29,300	11,400	43	12,000	1,390
26-----	378	--	e 90,000	159	29,100	12,500	48	15,800	2,050
27-----	171	51,600	24,700	143	25,100	9,690	47	15,000	1,900
28-----	171	47,000	22,500	152	28,600	11,700	45	14,400	1,750
29-----	171	41,200	19,700	147	36,200	14,900	48	16,900	2,190
30-----	159	43,500	19,400	130	28,700	10,100	50	19,100	2,580
31-----	170	40,800	18,400	154	29,100	12,100	--	--	--
Total--	5,241	--	632,300	5,278	--	509,900	3,744	--	452,700

Total discharge for year (second-foot days) 24,357
 Total load for year (tons) 2,215,000

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
FIVEMILE CREEK NEAR RIVERTON, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000
Oct. 1, 1949	6:05 p.m.	76	3,810	1,580	--	19	29	40	50	59	66	81	96	--	--	BW
Oct. 8	10:30 a.m.	34	2,370	1,240	3	6	8	12	15	17	28	56	85	--	--	BW
Oct. 26	10:45 a.m.	37	3,290	1,600	6	9	12	16	19	23	29	62	77	--	--	BW
Nov. 23	4:05 p.m.	23	1,300	706	--	20	27	32	41	53	72	84	92	--	--	BN
Feb. 27, 1950	3:15 p.m.	a 22	23,600	1,880	22	27	36	48	62	78	92	98	100	--	--	BW
Mar. 6	12:00 m.	27	14,200	8,230	--	35	--	57	--	78	87	94	99	100	--	SPWCM
Mar. 16	10:50 a.m.	18	7,260	2,340	--	22	--	34	--	54	76	90	99	100	--	SPWCM
Mar. 26	3:25 p.m.	27	17,800	6,950	--	18	--	28	--	49	60	72	90	98	100	SPWCM
Apr. 10	2:00 p.m.	35	8,040	5,330	--	36	--	51	--	72	86	93	98	100	--	SPWCM
Apr. 23	2:35 p.m.	24	6,190	3,650	--	2	8	40	50	60	78	90	96	99	100	SPNM
Apr. 23	2:35 p.m.	24	6,190	3,260	--	30	36	42	50	60	--	--	--	--	--	SPWCM
May 7	4:45 p.m.	42	12,100	10,500	--	33	--	57	--	78	89	96	99	100	--	SPWCM
May 8	5:45 p.m.	51	26,100	4,470	--	45	--	60	--	86	94	98	99	100	--	SPWCM
May 21	5:10 p.m.	45	11,000	6,140	--	32	--	46	--	66	79	90	97	99	--	SPWCM
May 28	11:35 a.m.	60	28,200	4,100	--	40	--	58	--	86	95	98	100	--	--	SPWCM
May 29	1:30 p.m.	89	39,000	14,900	--	32	--	52	--	83	--	--	--	--	--	SPWCM
June 2	3:40 p.m.	50	18,800	5,120	--	29	--	44	--	71	87	94	98	99	100	SPWCM
June 10	11:35 a.m.	100	30,300	6,870	--	29	--	46	--	75	92	98	100	--	--	SPWCM
June 14	4:20 p.m.	97	40,100	6,160	--	35	--	54	--	84	--	--	--	--	--	SPWCM
June 19	8:00 p.m.	640	132,000	8,550	--	27	--	43	--	77	--	--	--	--	--	SPWCM
June 22	10:50 a.m.	132	41,400	4,510	--	32	--	49	--	74	--	--	--	--	--	SPWCM
June 29	1:45 p.m.	137	32,200	4,820	--	33	--	50	--	77	--	--	--	--	--	SPWCM
July 1	9:50 a.m.	160	26,200	5,570	--	29	--	42	--	70	86	95	98	99	100	SPWCM
July 8	1:40 p.m.	165	37,200	8,540	--	21	--	40	--	65	83	97	100	--	--	SPWCM
July 19	8:40 a.m.	134	34,000	3,830	--	30	--	44	--	68	87	97	100	--	--	SPWCM
July 21	4:55 p.m.	134	34,300	9,140	--	33	--	51	--	75	88	95	98	100	--	SPWCM
July 25	1:00 p.m.	211	53,500	7,740	--	1	5	47	57	74	89	97	100	--	--	SPNM
July 25	1:00 p.m.	211	53,500	3,980	29	33	41	52	61	76	89	96	100	--	--	SPWCM
July 25	5:00 p.m.	530	87,400	5,860	--	26	--	39	--	68	88	98	100	--	--	SPWCM
a Mean daily discharge																

a Mean daily discharge

July 25	7:45 p. m.	718	70,900	5,750	--	30	--	45	--	72	91	99	100	--	--	SPWCM
July 27	2:15 p. m.	165	45,600	6,720	--	30	--	45	--	71	89	96	99	100	--	SPWCM
Aug. 6	12:15 a. m.	185	38,500	5,180	--	32	--	46	--	71	87	96	100	--	--	SPWCM
Aug. 9	1:15 p. m.	182	39,400	2,500	--	32	1	44	53	68	86	96	100	--	--	SPWCM
Aug. 9	6:15 p. m.	182	39,400	2,530	23	29	37	43	51	70	88	97	100	--	--	SPWCM
Aug. 10	3:25 p. m.	180	36,700	25,300	--	--	1	43	56	70	86	96	100	--	--	SPNM
Aug. 10	3:25 p. m.	180	36,700	6,020	22	30	40	47	56	72	88	97	100	--	--	SPWCM
Aug. 11	11:05 a. m.	193	35,500	24,100	--	--	1	42	53	68	86	96	99	100	--	SPNM
Aug. 11	11:05 a. m.	193	35,500	5,010	23	30	36	44	50	69	87	96	99	100	--	SPWCM
Aug. 13	7:20 a. m.	187	42,200	5,280	--	30	--	46	--	73	87	94	98	100	--	SPWCM
Aug. 14	9:10 a. m.	195	41,400	5,620	--	28	--	40	--	65	84	94	98	100	--	SPWCM
Aug. 17	9:05 a. m.	178	38,800	9,340	1	3	3	41	50	65	86	96	100	--	--	SPNM
Aug. 17	9:05 a. m.	178	38,800	5,150	25	30	36	43	54	71	88	97	100	--	--	SPWCM
Aug. 20	5:45 p. m.	183	35,600	4,620	--	30	--	42	--	87	88	97	100	--	--	SPWCM
Aug. 23	9:45 a. m.	163	34,800	22,300	--	--	1	36	48	60	81	96	100	--	--	SPNM
Aug. 23	9:45 a. m.	163	34,800	2,440	20	26	32	39	44	58	--	--	--	--	--	SPWCM
Aug. 26	9:15 a. m.	165	37,100	7,760	--	36	--	44	--	74	89	98	100	--	--	SPWCM
Sept. 20	9:20 a. m.	401	67,100	5,010	--	40	--	54	--	82	98	100	--	--	--	SPWCM
Sept. 20	2:10 p. m.	941	238,100	3,100	--	22	--	33	--	59	84	98	100	--	--	SPWCM
Sept. 27	2:10 p. m.	52	15,100	3,670	--	26	--	40	--	57	70	85	98	100	--	SPWCM
Sept. 29	11:00 a. m.	51	19,800	8,860	1	1	3	30	36	49	72	89	96	99	100	SPNM
Sept. 29	11:00 a. m.	51	19,800	3,960	17	21	27	32	39	49	73	90	97	99	100	SPWCM

YELLOWSTONE RIVER BASIN--Continued
FIVEMILE CREEK NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, 2½ miles upstream from mouth and 5 miles west of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Chemical analyses. September 1949 to September 1950.

Water temperatures: December 1948 to September 1950.

Sediment records: August 1948 to September 1950.

EXTREMES: 1949-50.--Dissolved solids: Maximum, 3,500 ppm Dec. 12-31; minimum, 1,140 ppm July 1-24.

Hardness: Maximum, 1,030 ppm Sept. 15-24; minimum, 431 ppm July 1-24.

Specific conductance: Maximum daily, 4,650 micromhos Jan. 25; minimum daily, 1,420 micromhos July 13.

Water temperatures: Maximum, 78°F July 8; minimum, freezing point on many days during November to March.

Sediment concentrations: Maximum, 78,400 ppm July 26; minimum, 219 ppm Jan. 6.

EXTREMES: 1948-50.--Dissolved solids: Maximum, 82,000 tons (estimated) Sept. 19, 1948; minimum daily, 140 tons Dec. 27, 1948.

Hardness (September 1949 to September 1950): Maximum, 4,650 micromhos Jan. 25, 1950; minimum, 1,420 micromhos July 13, 1950.

Specific conductance (September 1949 to September 1950): Maximum, 4,650 micromhos Jan. 25, 1950; minimum, 1,420 micromhos July 13, 1950.

Water temperatures: Maximum, 84°F June 10, 1949; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 136,000 ppm June 12, 1949; minimum daily, 140 tons Dec. 27, 1948.

Sediment loads: Maximum daily, 350,000 tons (estimated) Sept. 19, 1948; minimum daily, 8 tons Dec. 27, 1948.

REMARKS.--Daily samples for chemical analysis composited by discharge. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (°F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids			Hardness as CaCO ₃	
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate
Oct. 1-31, 1949.....	64	7.7		3,360	15	0.01	210	54	568	4.7	240	1,670	73	0.9	18	0.30	2,730	3.71	472	746	549
Nov. 1-30.....	49	--		3,560	--	--	--	--	--	--	--	--	--	--	--	--	3,010	4.09	398	--	--
Dec. 1-11.....	36	--		3,650	--	--	--	--	--	--	--	--	--	--	--	--	3,150	4.28	306	--	--
Dec. 12-31.....	26	--		4,060	--	--	--	--	--	--	--	--	--	--	--	--	3,900	4.76	246	--	--
Jan. 1-31, 1950.....	19	7.7		4,060	19	.01	282	70	693	5.0	310	2,050	90	1.0	29	.48	3,390	4.61	174	992	738
Feb. 1-28.....	34	--		3,650	--	--	--	--	--	--	--	--	--	--	--	--	3,330	4.53	306	--	--
Mar. 1-31.....	40	7.6		3,600	13	.01	255	62	598	5.8	240	1,870	80	.9	25	.30	3,030	4.12	327	892	695
Apr. 1-30.....	45	7.9		3,740	11	.01	236	61	667	5.2	218	1,850	91	1.2	15	.30	3,040	4.13	369	840	661
May 1-5.....	51	7.7		3,700	33	.10	234	60	642	6.4	238	1,830	87	.9	15	.53	3,030	4.12	417	830	635
May 6-16.....	116	7.7		2,690	14	.04	193	37	592	5.9	317	1,160	55	.7	11	.10	1,393	2.59	523	320	442
May 17-31.....	136	7.6		1,970	18	.04	150	29	269	4.4	203	820	38	.7	9.6	.20	1,440	1.96	529	492	326
June 1-30.....	253	7.6		1,620	19	.04	150	22	196	4.3	192	675	26	.7	9.4	.20	1,200	1.63	820	467	310

July 1-24	298	7.7	1,560	18	.04	142	19	198	4.1	172	650	23	6	6.6	-20	1,140	1.55	917	431	290	48
July 25-26	546	7.6	1,980	15	.04	216	32	228	5.4	186	920	26	8	7.4	-30	1,540	2.09	2,270	870	517	42
July 27-Aug. 25	295	7.6	1,690	17	.04	151	22	212	4.1	168	725	26	7	9.5	-30	1,250	1.70	996	467	329	49
Aug. 26-Sept. 14	234	7.7	1,880	17	.04	152	25	247	4.3	178	815	33	7	10	-30	1,390	1.89	878	482	338	52
Sept. 15-24	213	7.7	3,000	16	.04	322	55	362	6.2	195	1,530	42	1.0	5.9	-30	2,440	3.32	1,400	1,080	870	43
Sept. 25-30	80	7.8	3,360	13	.04	237	48	535	5.1	225	1,610	68	1.0	15	-30	2,640	3.59	570	1,788	603	59
Weighted average...	121	--	2,190	--	--	--	--	--	--	--	--	--	--	--	--	1,710	2.33	559	--	--	--
Weighted average...	121	--	2,190	--	--	179	32	309	4.6	191	1,000	40	--	11	--	1,710	2.33	559	578	421	54

a Includes estimated values for missing data.

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK NEAR SHOSHONI, WYO.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement between 8 a. m. and 12 m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	46	32	--	33	--	--	--	51	70	66	60
2	64	--	34	32	32	--	50	48	52	--	60	66
3	65	38	34	--	32	33	--	--	--	73	65	--
4	58	38	32	--	35	33	36	--	75	61	67	62
5	57	50	32	36	--	--	54	--	62	60	63	63
6	45	51	32	32	34	33	--	--	67	67	--	62
7	43	33	32	32	--	33	47	38	51	69	52	65
8	38	40	33	--	33	32	--	--	52	78	64	63
9	46	35	32	32	--	32	43	--	54	68	62	63
10	40	40	--	33	33	32	53	--	68	74	62	53
11	42	38	32	32	35	--	45	--	--	70	67	57
12	42	46	--	32	33	33	65	--	67	58	--	64
13	45	47	32	--	32	--	55	--	65	57	61	52
14	38	35	--	--	32	33	58	68	65	66	68	48
15	45	35	32	37	32	32	--	59	71	59	65	47
16	58	34	32	--	34	33	69	--	67	68	62	55
17	39	32	32	--	--	33	--	64	70	62	67	54
18	40	38	32	36	34	33	--	64	--	75	61	56
19	34	47	32	--	32	40	--	50	67	59	58	55
20	35	43	32	34	--	--	--	--	65	63	68	54
21	36	32	32	34	33	--	36	--	75	68	63	--
22	35	36	32	--	--	32	--	67	66	--	63	--
23	46	35	--	--	--	33	54	--	64	--	65	65
24	49	37	32	32	--	36	53	46	58	73	65	52
25	50	35	--	32	--	--	46	49	--	77	63	57
26	44	--	34	--	33	--	--	--	68	71	62	53
27	40	49	33	32	--	--	--	58	68	67	60	51
28	41	38	33	--	--	32	--	58	65	64	62	47
29	45	33	33	31	--	--	--	55	68	74	62	44
30	50	32	34	32	--	33	66	59	68	--	59	46
31	33	--	35	33	--	43	--	58	--	63	61	--
Average	45	39	33	--	--	--	--	--	64	67	63	56

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	139	10,900	4,090	58	6,200	971	43	7,550	877
2-----	80	8,100	1,750	57	6,750	1,040	41	6,150	681
3-----	72	7,600	1,480	58	6,950	1,090	36	6,060	589
4-----	74	7,200	1,440	57	6,300	970	33	3,980	355
5-----	72	7,500	1,460	55	5,550	824	35	5,260	497
6-----	66	6,600	1,180	56	5,900	892	35	3,830	362
7-----	68	6,950	1,280	56	5,505	764	34	4,100	376
8-----	70	9,900	1,870	57	8,200	1,260	39	2,920	307
9-----	69	8,150	1,520	57	8,950	1,380	35	2,550	241
10-----	78	9,500	2,000	56	6,250	945	36	3,310	322
11-----	62	8,100	1,360	53	6,050	866	27	3,890	284
12-----	58	7,600	1,190	47	5,350	679	20	1,550	84
13-----	56	6,500	983	45	5,400	656	18	400	19
14-----	57	6,650	1,020	44	6,450	766	16	1,200	52
15-----	57	6,200	954	44	5,300	630	25	950	64
16-----	58	6,100	955	42	4,750	539	39	1,000	105
17-----	58	6,600	1,030	42	4,200	476	34	910	84
18-----	55	6,200	921	44	6,750	802	32	730	63
19-----	54	9,590	1,400	48	5,300	687	30	392	32
20-----	57	15,800	2,430	48	6,650	862	29	1,170	92
21-----	56	13,700	2,070	44	9,250	1,100	29	847	66
22-----	58	14,400	2,260	37	7,400	739	27	437	32
23-----	58	15,200	2,380	44	6,700	796	28	371	28
24-----	60	11,900	1,930	45	9,100	1,110	27	701	51
25-----	62	13,900	2,330	45	7,400	899	26	--	e 65
26-----	57	7,800	1,200	45	5,550	674	23	912	57
27-----	57	7,900	1,220	42	5,200	590	24	554	36
28-----	57	6,500	1,000	43	5,000	580	26	414	29
29-----	57	6,450	993	43	5,400	627	23	469	29
30-----	58	7,300	1,140	43	6,700	778	23	514	32
31-----	57	6,200	954	--	--	--	22	512	30
Total-	1,997	--	47,790	1,455	--	24,990	915	--	5,940
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	20	--	e 30	14	718	27	37	7,200	s 876
2-----	19	512	26	14	791	30	40	7,080	s 907
3-----	20	320	17	15	874	35	52	9,000	s 1,360
4-----	17	352	16	16	754	33	69	14,800	s 3,060
5-----	20	224	12	17	893	41	58	17,500	2,740
6-----	22	218	13	18	996	48	46	17,800	2,210
7-----	21	367	21	19	1,130	58	35	9,800	926
8-----	22	504	30	18	922	45	34	9,500	872
9-----	22	518	31	22	853	51	33	10,000	891
10-----	20	466	25	26	1,020	72	32	7,100	613
11-----	20	768	41	41	1,440	159	31	3,400	285
12-----	20	757	41	34	1,470	135	31	4,600	385
13-----	20	736	40	32	1,540	133	32	6,000	518
14-----	20	701	38	30	1,470	119	34	9,900	909
15-----	17	596	27	34	1,440	132	45	13,600	1,650
16-----	17	400	18	34	1,550	142	50	15,500	2,050
17-----	16	461	20	34	1,610	148	55	21,000	3,120
18-----	18	546	27	32	1,710	148	56	21,000	3,180
19-----	16	516	22	32	1,910	165	45	15,800	1,920
20-----	16	646	28	36	2,350	228	41	16,500	1,830
21-----	20	964	53	40	2,640	285	39	12,000	1,260
22-----	20	957	52	38	3,070	315	38	13,100	1,340
23-----	20	626	34	57	4,240	653	36	13,800	1,340
24-----	20	1,150	62	65	6,150	s 1,180	38	11,700	1,200
25-----	17	773	35	76	7,770	s 1,780	41	13,600	1,510
26-----	16	564	24	65	10,500	s 1,980	36	11,300	1,100
27-----	17	774	36	58	9,150	s 1,600	34	11,700	1,070
28-----	17	678	31	43	6,280	s .01	34	8,500	780
29-----	15	910	37	--	--	--	34	6,800	624
30-----	15	810	33	--	--	--	33	11,000	s 80
31-----	14	690	26	--	--	--	34	9,800	900
Total-	574	--	946	560	--	10,640	1,253	--	42,450

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE CREEK NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	32	9,900	855	42	9,400	1,070	188	21,500	10,900
2-----	30	8,900	721	42	10,000	1,130	220	23,400	13,900
3-----	29	9,500	744	57	11,000	1,690	211	21,800	12,400
4-----	35	11,300	1,070	56	15,500	2,340	202	19,700	10,700
5-----	44	10,700	1,270	57	14,300	2,200	188	20,200	10,300
6-----	56	12,000	1,810	92	13,800	3,430	193	24,100	12,600
7-----	60	15,300	2,480	159	16,400	7,040	193	30,300	15,800
8-----	66	13,400	2,390	151	22,300	9,090	283	26,800	20,500
9-----	62	14,500	2,430	92	18,200	4,520	301	27,300	22,200
10-----	50	12,900	1,740	98	13,200	3,490	270	26,300	19,200
11-----	48	12,000	1,560	88	11,400	2,710	278	25,700	19,300
12-----	51	12,200	1,680	95	12,700	3,260	229	22,700	14,000
13-----	51	10,900	1,500	128	11,000	3,800	159	22,700	9,750
14-----	46	11,300	1,400	132	11,000	3,920	147	29,900	11,900
15-----	45	11,000	1,340	128	12,700	4,390	198	36,300	20,100
16-----	46	9,900	1,230	110	16,000	4,750	247	32,600	22,500
17-----	47	11,600	1,470	128	15,000	5,180	238	35,000	23,300
18-----	45	10,100	1,230	135	15,300	5,580	260	33,500	24,400
19-----	43	10,900	1,270	121	13,600	4,440	336	71,100	s 78,700
20-----	43	10,000	1,160	124	13,600	4,550	262	63,100	s 52,800
21-----	43	10,000	1,160	124	10,100	3,380	238	40,000	26,700
22-----	42	--	e 1,100	114	11,800	3,630	265	33,800	25,100
23-----	40	9,800	1,060	92	9,900	2,460	283	35,900	28,400
24-----	40	8,200	886	135	13,000	4,740	301	35,600	30,000
25-----	39	8,800	874	167	13,000	5,860	310	33,900	29,400
26-----	37	8,500	849	128	10,900	3,770	306	30,200	25,000
27-----	38	7,900	811	114	9,300	2,860	314	27,700	23,500
28-----	48	11,000	1,430	171	17,800	8,220	319	24,300	20,900
29-----	48	14,100	1,830	159	23,100	9,920	328	27,800	24,600
30-----	44	9,600	1,140	151	25,500	10,400	324	27,000	23,600
31-----	--	--	--	171	22,000	10,200	--	--	--
Total-	1,348	--	40,490	3,561	--	144,000	7,591	--	682,400
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	328	21,500	19,000	260	32,500	23,700	216	25,500	14,900
2-----	314	27,900	23,700	283	27,500	21,000	229	22,800	14,100
3-----	332	39,300	36,500	301	31,200	25,400	238	24,200	15,600
4-----	364	39,000	39,700	301	30,200	24,500	260	26,000	18,300
5-----	368	42,200	43,500	310	31,000	25,900	252	23,800	16,200
6-----	368	37,800	39,000	296	33,300	27,600	220	26,200	15,600
7-----	420	37,600	44,200	324	31,200	27,300	211	27,200	15,500
8-----	378	36,700	38,800	292	34,500	28,200	206	27,000	15,000
9-----	328	35,400	32,500	301	33,000	27,800	206	23,400	14,700
10-----	283	27,900	21,300	314	33,800	29,700	252	27,800	18,900
11-----	238	31,000	19,900	324	31,800	27,800	274	31,600	22,600
12-----	211	29,000	16,500	342	39,800	38,100	292	31,000	24,400
13-----	229	27,000	16,700	314	40,300	35,400	265	31,000	21,500
14-----	238	27,700	17,800	319	37,200	33,200	216	25,500	15,500
15-----	252	28,200	19,200	283	37,900	30,000	184	23,200	11,500
16-----	256	28,100	19,400	265	35,000	26,000	184	27,600	10,200
17-----	270	29,700	21,700	238	34,900	23,300	171	2,000	9,700
18-----	274	27,700	20,500	247	34,200	23,700	151	19,500	7,950
19-----	270	30,000	21,900	263	34,300	27,200	147	18,000	7,140
20-----	238	28,500	18,300	292	32,000	20,200	571	79,700	s 182,000
21-----	252	27,000	18,400	314	34,200	30,100	254	5,200	36,400
22-----	278	--	e 22,000	288	32,500	26,200	202	3,500	17,200
23-----	324	--	e 25,000	260	30,800	21,600	167	36,500	17,100
24-----	346	31,200	29,100	252	28,700	18,800	98	19,000	5,080
25-----	533	55,600	s 131,000	242	26,600	17,400	82	14,800	3,280
26-----	559	83,400	s 166,000	234	25,000	15,800	90	14,800	3,600
27-----	350	34,000	33,300	224	24,600	14,900	82	16,900	3,740
28-----	346	34,800	33,700	224	23,800	14,400	75	16,500	3,340
29-----	328	31,700	28,100	233	32,200	s 21,500	80	18,000	3,890
30-----	319	32,400	28,900	211	26,000	14,800	70	18,800	3,740
31-----	283	38,300	30,300	220	23,300	13,800	--	--	--
Total-	9,877	--	1,076,000	8,581	--	761,300	5,945	--	568,600

Total discharge for year (second-foot-days) 44,057

Total load for year (tons) 3,406,000

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
FIVEMILE CREEK NEAR SHOSHONI, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000
	4:45 p. m.	72	8,300	1,560	--	16	23	28	35	46	63	97	100	--	--	BW
	3:36 p. m.	78	10,100	2,040	--	26	36	43	50	62	82	99	100	--	--	BW
	9:30 a. m.	53	6,810	1,350	--	10	14	19	26	33	52	92	98	--	--	BW
	3:25 p. m.	55	7,020	2,580	--	16	21	27	34	42	54	87	97	--	--	BW
	5:45 p. m.	78	23,800	11,800	--	26	--	42	--	58	79	97	100	--	--	SPWCM
	4:30 p. m.	a 55	27,700	14,300	--	26	--	41	--	63	77	93	100	--	--	SPWCM
	4:55 p. m.	37	11,600	7,190	24	30	38	48	59	76	91	99	100	--	--	SPWCM
	12:15 p. m.	44	13,000	3,460	--	32	--	50	--	77	32	99	100	--	--	SPWCM
	3:45 p. m.	58	14,200	4,080	--	38	--	55	--	74	87	98	100	--	--	SPWCM
	3:10 p. m.	40	9,980	8,190	--	1	4	58	74	87	96	100	--	--	--	SPNM
	3:10 p. m.	40	9,980	8,200	31	40	50	62	74	88	96	100	--	--	--	SPWCM
	2:30 p. m.	47	14,600	10,800	--	1	3	55	68	79	93	100	--	--	--	SPNM
	2:30 p. m.	47	14,600	4,620	31	43	52	58	66	78	90	100	--	--	--	BWC
	4:45 p. m.	100	13,800	4,200	--	33	--	50	--	71	88	98	100	--	--	SPWCM
	3:25 p. m.	155	17,300	12,000	--	--	3	39	51	70	87	99	100	--	--	SPNM
	3:25 p. m.	155	17,300	5,210	17	22	30	38	49	69	89	99	100	--	--	SPWCM
	5:25 p. m.	124	13,100	6,280	--	37	--	52	--	70	85	98	100	--	--	SPWCM
	12:10 p. m.	114	13,800	2,170	--	33	--	53	--	56	75	92	99	100	--	SPWCM
	10:35 a. m.	167	22,400	5,750	--	39	--	56	--	77	89	98	100	--	--	SPWCM
	4:20 p. m.	310	27,000	2,070	12	18	26	36	46	60	70	83	90	--	--	BWC
	2:40 p. m.	274	23,800	5,720	25	33	41	50	60	79	88	92	98	--	--	BWC
	12:00 p. m.	716	160,000	6,430	24	30	38	50	58	74	88	96	100	--	--	SPWCM
	10:15 a. m.	332	35,200	3,920	--	26	--	37	--	63	--	--	--	--	--	BWC
	3:15 p. m.	278	35,400	5,940	22	30	37	46	55	68	82	96	98	--	--	BWC
	2:30 p. m.	378	36,600	4,200	--	26	--	36	--	62	80	95	100	--	--	SPWCM
	12:20 p. m.	328	30,400	6,070	--	28	--	42	--	71	85	97	100	--	--	SPWCM
	2:50 p. m.	346	31,000	3,430	--	29	--	42	--	67	85	98	100	--	--	SPWCM
	8:15 p. m.	812	66,000	3,100	--	6	24	56	62	78	92	99	100	--	--	BN
	8:15 p. m.	812	66,000	3,370	25	34	45	53	64	79	91	99	100	--	--	BWC
	11:45 p. m.	2,300	172,000	6,730	--	28	--	44	--	72	91	99	100	--	--	SPWCM
	2:30 a. m.	1,020	155,000	5,440	--	26	--	40	--	69	90	99	100	--	--	SPWCM
	1:25 p. m.	472	65,600	4,040	--	34	--	49	--	74	--	--	--	--	--	SPWCM
	11:00 a. m.	314	2,800	3,950	--	33	--	47	--	80	95	100	--	--	--	SPWCM

a. Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued
FIVEMILE CREEK NEAR SHOSHONI, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000
Aug. 7, 1950	10:00 a. m.	364	28,800	8,880	--	38	--	55	--	80	--	--	--	--	SPWCM
Aug. 11	1:50 p. m.	355	30,800	4,180	--	28	--	41	--	69	87	98	100	--	SPWCM
Aug. 18	4:30 p. m.	274	25,200	4,510	--	27	--	38	--	62	83	98	100	--	SPWCM
Aug. 23	10:25 a. m.	288	31,700	15,500	--	--	--	35	44	60	81	95	100	--	SPNM
Aug. 23	10:25 a. m.	288	31,700	13,000	17	24	31	36	44	58	78	96	99	--	BWC
Aug. 24	11:100 a. m.	242	29,200	11,100	--	27	--	40	--	60	82	97	100	--	SPWCM
Aug. 25	11:07 a. m.	265	26,000	16,200	--	--	--	36	44	59	79	94	100	--	SPNM
Aug. 25	11:07 a. m.	265	28,000	2,140	--	24	28	34	40	52	69	91	98	--	BWC
Aug. 29	11:30 a. m.	252	37,000	5,080	--	39	--	56	--	74	89	98	100	--	SPWCM
Sept. 1	9:40 a. m.	229	26,900	16,600	--	1	2	42	49	63	85	97	100	--	SPNM
Sept. 1	9:40 a. m.	229	26,900	2,560	26	32	38	41	48	66	87	96	100	--	SPWCM
Sept. 12	3:40 p. m.	310	29,800	3,580	--	27	--	40	--	--	--	--	--	--	SPWCM
Sept. 15	10:55 a. m.	180	23,500	4,200	--	27	--	39	--	63	83	97	100	--	SPWCM
Sept. 20	1:15 p. m.	1,060	74,000	3,560	--	32	--	43	--	71	91	98	100	--	SPWCM
Sept. 20	3:15 p. m.	2,960	174,000	5,120	--	23	--	36	--	62	83	95	99	100	SPWCM
Sept. 21	4:15 p. m.	171	39,000	26,300	--	--	--	49	65	73	89	98	100	--	SPNM
Sept. 21	4:15 p. m.	171	39,000	3,750	24	32	48	58	68	72	88	98	100	--	SPWCM
Sept. 20	11:22 a. m.	85	16,600	10,600	1	2	3	39	49	65	87	98	100	--	SPNM
Sept. 29	11:22 a. m.	85	16,600	3,220	20	26	32	39	46	62	80	95	99	--	BWCM

YELLOWSTONE RIVER BASIN--Continued

POWER LINE WASTEWAY NEAR PAVILLION, WYO.

LOCATION.--One hundred fifty feet upstream from gaging station, 300 feet upstream from mouth, and 4 miles northeast of Pavillion, Fremont County.

RECORDS AVAILABLE.--Sediment records: May 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 4,490 ppm June 9; minimum daily, no flow many days.

Sediment loads: Maximum daily, 202 tons July 25; minimum daily, 0 tons on many days.

EXTREMES, May 1949-September 1950.--Sediment concentrations: Maximum daily, 4,490 ppm June 9, 1950; minimum daily, no flow many days each year.

Sediment loads: Maximum daily, 202 tons July 25, 1950; minimum daily 0 tons on many days each year.

REMARKS.--No flow during period October to March; record is deleted. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				0	--	0	2.2	--	6.0
2-----				0	--	0	2.8	1,850	14
3-----				0	--	0	6.0	--	e 30
4-----				0	--	0	6.8	--	e 34
5-----				1.4	--	e 2	7.2	1,820	35
6-----				4.7	--	e 1.2	5.9	--	22
7-----				4.7	--	e .9	7.1	1,060	20
8-----				5.0	--	e .8	9.5	--	70
9-----				4.7	--	e .6	13	4,490	158
10-----				4.7	40	.5	13	--	e 140
11-----				5.7	92	s 1.6	12	--	e 90
12-----				7.2	197	3.8	9.8	2,150	57
13-----				7.2	--	e 3.0	7.2	--	e 48
14-----				6.8	130	2.4	14	2,800	106
15-----				7.8	175	3.7	12	--	e 70
16-----				2.1	114	s 1.0	11	1,520	45
17-----				.2	115	(t)	11	--	e 48
18-----				.4	135	.1	11	--	e 48
19-----				.3	133	.1	18	--	e 140
20-----				.2	--	(t)	15	--	e 85
21-----				.2	--	(t)	20	1,900	103
22-----				.4	75	(t)	24	--	e 110
23-----				5.1	--	e 3.0	23	1,440	89
24-----				10	175	4.7	17	--	e 70
25-----				4.8	--	e 1.5	16	--	e 80
26-----				.5	88	.1	13	1,920	87
27-----				2.1	--	e 1.5	8.8	--	e 60
28-----				14	--	e 12	7.5	3,130	63
29-----				12	--	e 10	7.5	--	e 48
30-----				15	--	e 12	7.5	1,640	33
31-----				7.5	--	e 7.0	--	--	--
Total--	0	--	0	134.7	--	72	338.8	--	1,990

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

POWER LINE WASTEWAY NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Suspended sediment, water year October 1949 to September 1950--Continued									
Day	Mean dis- charge (second- feet)	July		Mean dis- charge (second- feet)	August		Mean dis- charge (second- feet)	September	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concen- tration (ppm)	Tons per day		Mean concen- tration (ppm)	Tons per day		Mean concen- tration (ppm)	Tons per day
1-----	8.1	--	e34	18	--	e28	14	610	23
2-----	12	--	e85	19	1,270	65	15	--	e26
3-----	15	--	e85	18	--	e55	18	--	e26
4-----	16	--	e28	17	690	32	18	540	26
5-----	20	580	31	14	--	e30	19	490	25
6-----	17	--	e34	12	1,150	37	19	300	15
7-----	17	1,050	48	11	--	e44	21	--	e22
8-----	16	--	e46	8.8	--	e42	19	340	17
9-----	16	--	e40	10	1,820	49	17	--	e12
10-----	17	890	41	13	--	e42	19	--	e12
11-----	14	--	e48	16	880	38	18	220	11
12-----	9.0	1,760	43	20	--	e48	13	315	11
13-----	4.7	--	e20	21	--	e50	13	170	6.0
14-----	2.9	1,370	11	21	880	50	12	140	4.5
15-----	4.0	--	e18	23	--	e42	12	150	4.9
16-----	11	--	e55	24	440	29	11	--	e3.5
17-----	10	2,140	58	23	--	e22	11	--	e2.0
18-----	11	--	e55	24	320	21	11	40	1.2
19-----	11	1,400	42	26	--	e20	11	60	1.8
20-----	12	--	e48	25	--	e16	18	--	e42
21-----	18	1,620	79	24	195	13	12	140	4.5
22-----	17	--	e75	21	--	e18	9.8	80	2.1
23-----	18	--	e75	16	570	25	1.5	--	e.2
24-----	24	1,500	97	13	--	e24	0	--	0
25-----	32	2,200	s202	12	680	22	0	--	0
26-----	30	1,340	109	8.8	--	e14	0	--	0
27-----	22	--	e38	6.2	--	e6.0	0	--	0
28-----	21	355	20	7.8	330	6.9	0	--	0
29-----	23	--	e20	9.5	--	e8.0	0	--	0
30-----	21	--	e18	11	250	7.4	0	--	0
31-----	19	360	18	13	--	e14	--	--	--
Total-	488.7	--	1,620	506.1	--	918	332.3	--	299
Total discharge for year (second-foot days)									1,800.6
Total load for year (tons)									4,900

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
POWER LINE WASTEWAY NEAR PAVILLION, WYO.--Continued

Particle-size analyses of suspended sediment, June 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
June 9, 1950	12:30 p. m.	13	4,520	2,740		58		81		97					SPWCM
June 28	3:15 p. m.	6.2	2,850	1,730		64		88		95					SPWCM

YELLOWSTONE RIVER BASIN--Continued

PAVILLION DRAIN NEAR PAVILLION, WYO.

LOCATION.--At gaging station, half a mile upstream from mouth and 8 miles east of Pavilion, Fremont County.

RECORDS AVAILABLE.--Sediment records: September 1948 to September 1950 (discontinued). EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 12,600 ppm June 16; minimum daily, not determined.

Sediment loads: Maximum daily, 1,070 tons Aug. 16; minimum daily, less than 1 ton on many days.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 21,300 ppm May 21, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 1,360 tons July 14, 1949; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950									
Day	Mean discharge (second-foot)	October		Mean discharge (second-foot)	November		Mean discharge (second-foot)	December	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.8	1,180	12	1.2	--	(t)	0.9	--	(t)
2-----	2.2	520	3	1.2	178	(t)	.9	256	
3-----	1.3	195		1.2	--	} e 1	.9	--	
4-----	1.2	170		1.3	310		.8	--	
5-----	1.2	181		1.3	--		.8	185	
6-----	1.2	138		1.3	--		.7	--	
7-----	1.3	154		1.4	425	} e 2	.7	187	
8-----	1.4	--		1.4	--		.7	--	
9-----	1.5	--		1.5	400		.6	157	
10-----	1.4	206		1.2	--		.6	--	
11-----	1.2	--	(t),	1.2	328	} e 1	.5	--	
12-----	1.2	142		1.4	--		.3	--	
13-----	1.2	--		1.2	--		.3	132	
14-----	1.2	122		1.4	350		.2	97	
15-----	1.4	--		1.3	--		.2	--	
16-----	1.5	--		1.3	395		.2	116	
17-----	1.5	152		1.3	--		.1	--	
18-----	1.6	--		1.5	422		.1	--	
19-----	1.6	343	1	1.5	--		.1	111	
20-----	1.8	--	e 2	1.2	--	.1	--		
21-----	3.1	390	3	1.2	320	} (t)	.1	73	
22-----	2.9	--	e 3	1.3	--		.2	--	
23-----	2.2	--	e 2	1.3	--		.2	66	
24-----	2.0	315	2	1.2	--		.2	--	
25-----	1.9	--		.9	220		.3	--	
26-----	1.8	238		.9	--		.4	50	
27-----	1.7	--		.9	--		.4	--	
28-----	1.6	244	e 1	.8	256		.4	--	
29-----	1.5	--		.8	310		.4	--	
30-----	1.3	--		.9	145		.4	57	
31-----	1.5	310		--	--	.4	--		
Total-	52.2	--	43	36.5	--	34	13.1	--	5

e Estimated.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued

PAVILLION DRAIN NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	0.4	--	--	0.1	--	--	1.0	286	(t)
2-----	.2	112	--	.1	--	--	.9	--	e 1
3-----	.2	--	--	.1	--	--	.9	--	e 1
4-----	.1	--	--	.1	--	--	.9	--	e 2
5-----	.1	--	--	.1	--	--	.9	--	e 2
6-----	.1	310	--	.1	35	--	.9	798	2
7-----	.2	--	--	.1	--	--	.8	565	1
8-----	.2	--	--	.1	--	--	.6	475	--
9-----	.2	408	--	.1	--	--	.6	615	--
10-----	.2	--	--	.1	46	--	.5	--	--
11-----	.2	--	--	.1	--	--	.5	--	(t)
12-----	.2	--	--	.1	--	--	.5	--	--
13-----	.2	380	--	.2	59	--	.5	300	--
14-----	.2	--	--	.2	--	--	.7	330	--
15-----	.2	--	--	.2	--	--	.8	--	--
16-----	.2	416	(t)	.2	--	--	.9	1,080	--
17-----	.2	573	--	.2	46	--	.9	--	--
18-----	.3	--	--	.2	--	--	.9	--	e 3
19-----	.3	--	--	.2	--	--	.9	--	--
20-----	.4	400	--	.3	280	--	.9	1,180	--
21-----	.4	--	--	.4	--	--	.9	1,100	--
22-----	.4	--	--	.6	--	--	1.0	3,050	8
23-----	.3	--	--	.8	--	--	1.0	--	e 6
24-----	.3	--	--	.9	380	--	1.0	--	--
25-----	.3	--	--	1.0	--	--	1.0	--	--
26-----	.3	--	--	1.0	--	--	1.0	--	--
27-----	.3	--	--	1.0	--	--	1.0	1,390	4
28-----	.2	--	--	1.0	450	--	1.0	--	--
29-----	.2	--	--	--	--	--	1.1	--	--
30-----	.2	--	--	--	--	--	1.2	--	--
31-----	.1	--	--	--	--	--	1.3	--	--
Total-----	7.4	--	6	9.6	--	8	27.0	--	83
Day	April			May			June		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	1.3	--	e 4	0.9	1,130	3	6.1	6,210	102
2-----	1.4	--	e 5	.9	1,000	2	16	7,500	324
3-----	1.6	1,200	5	1.1	1,110	3	21	9,290	527
4-----	1.5	1,200	5	1.1	1,100	3	17	9,510	437
5-----	1.5	1,810	7	1.0	1,090	3	18	10,500	510
6-----	1.5	1,770	7	.9	880	2	18	9,410	457
7-----	1.4	--	e 6	1.2	1,640	5	18	8,190	398
8-----	1.3	--	e 5	1.8	2,300	11	21	7,550	428
9-----	1.2	--	e 4	1.2	1,420	5	22	6,950	413
10-----	1.2	1,080	3	.9	940	2	18	7,460	363
11-----	.8	1,280	3	.8	800	2	20	7,150	386
12-----	.7	--	e 2	.8	770	2	18	7,990	388
13-----	.7	1,050	2	.8	820	2	14	6,930	262
14-----	.8	1,100	2	.8	880	2	23	9,270	576
15-----	.8	--	e 2	1.0	1,100	3	19	9,480	486
16-----	.8	--	e 2	.8	1,000	2	26	12,600	s 951
17-----	.8	900	2	11	9,030	s 308	26	11,300	793
18-----	.7	610	1	8.6	6,020	140	23	9,600	596
19-----	.7	--	e 1	5.5	2,750	41	30	8,850	717
20-----	.8	790	2	4.8	2,750	36	29	7,500	587
21-----	.8	--	e 2	4.8	3,000	39	20	7,470	403
22-----	.8	--	e 1	4.6	2,310	29	17	6,840	314
23-----	.8	--	e 1	3.5	1,200	11	17	6,290	289
24-----	.8	610	1	4.7	2,600	33	14	6,060	229
25-----	.9	670	2	4.4	2,620	31	16	5,140	222
26-----	.9	520	1	6.6	2,350	42	17	6,130	281
27-----	1.6	1,910	s 42	4.4	1,890	22	18	6,000	292
28-----	6.4	7,460	s 167	9.7	5,120	134	18	6,980	339
29-----	1.6	1,920	8	8.1	4,990	s 115	21	6,000	340
30-----	1.0	1,690	5	6.6	3,900	69	23	7,580	471
31-----	--	--	--	4.6	4,690	58	--	--	--
Total-----	37.1	--	300	107.9	--	1,160	584.1	--	12,880

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

PAVILLION DRAIN NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	25	6,300	425	29	5,300	415	21	4,450	252
2-----	23	5,700	354	28	5,700	430	20	3,800	205
3-----	22	5,680	338	27	5,380	392	19	3,700	190
4-----	36	6,300	612	28	5,500	416	18	3,500	170
5-----	37	8,000	799	28	7,450	563	19	3,300	169
6-----	32	8,050	696	28	10,100	764	16	2,700	117
7-----	36	10,300	1,000	32	9,400	812	14	1,500	57
8-----	28	9,600	726	29	9,500	744	11	1,200	36
9-----	27	8,900	649	30	6,500	526	10	1,950	53
10-----	26	9,380	658	34	5,500	505	16	1,750	76
11-----	26	8,250	579	36	4,660	453	18	2,000	97
12-----	18	7,730	376	41	8,200	908	16	1,900	82
13-----	24	7,120	461	38	8,200	841	13	1,450	51
14-----	19	7,590	389	41	6,100	675	12	1,150	37
15-----	18	5,790	281	41	6,950	769	13	1,650	58
16-----	20	6,800	367	42	9,400	1,070	11	1,150	34
17-----	22	6,200	368	38	9,600	985	13	1,700	60
18-----	23	6,500	404	35	8,300	784	10	950	26
19-----	21	6,300	357	26	6,300	442	9.4	900	23
20-----	18	5,300	258	20	5,320	287	23	4,050	252
21-----	20	5,260	284	20	5,200	281	11	2,400	71
22-----	23	6,400	297	20	4,400	238	8.7	1,800	42
23-----	27	5,040	367	17	4,100	186	6.4	600	10
24-----	27	5,170	377	13	3,500	123	4.1	350	4
25-----	38	7,330	s 888	12	3,350	109	3.8	350	4
26-----	27	9,530	s 695	11	3,750	111	2.4	300	2
27-----	24	7,200	467	13	4,300	151	1.4	250	(t)
28-----	25	6,100	412	14	3,800	144	1.5	400	2
29-----	26	7,300	512	16	4,200	181	2.2	350	2
30-----	26	6,700	470	20	4,750	256	3.3	300	3
31-----	26	7,000	491	19	4,900	251	--	--	--
Total-	790	--	15,460	826	--	14,810	347.2	--	2,190
Total discharge for year (second-foot-days)									2,853.1
Total load for year (tons)									46,980

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
PAVILLION DRAIN NEAR PAVILLION, WYO.--Continued

Particle-size analyses of suspended sediment, September 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Sept. 24, 1949.....	9:31 a. m.	8	552	453		27	36	43	49	52	56	83		98		BW
Oct. 1.....	3:40 p. m.	a. 3.8	1,500	927		26	40	52	65	74	80	97		100		BW
Mar. 27, 1950.....	12:15 p. m.	a. 1.0	1,650	1,370	40	53	66	80	87	92	94	98		100		BW
May 7.....	6:50 p. m.	1.2	1,370	900		56	--	74	--	90	--	--		--		SPWCM
May 17.....	7:35 a. m.	16.2	11,100	7,360		50	--	72	--	88	94	99		100		SPWCM
May 29.....	6:00 p. m.	6.8	9,460	6,290		47	--	65	--	88	98	100		100		SPWCM
June 1.....	8:00 p. m.	3.8	9,250	5,340		44	--	61	--	85	97	100		100		SPWCM
June 3.....	6:30 p. m.	13.5	9,850	5,700		46	--	64	--	85	96	99		100		SPWCM
June 11.....	7:45 p. m.	16.5	8,660	5,360		37	--	51	--	70	86	97		100		SPWCM
June 28.....	8:05 a. m.	13.2	7,000	3,400		42	--	57	--	76	--	--		--		SPWCM
July 6.....	6:45 p. m.	26.4	8,670	4,240		37	--	51	--	68	80	93		100		SPWCM
July 15.....	8:30 a. m.	22.0	5,800	2,400		30	--	39	--	54	74	95		100		SPWCM
July 21.....	8:00 p. m.	17.8	6,450	2,590		30	--	39	--	51	69	92		100		SPWCM
July 25.....	6:25 p. m.	67.2	13,400	7,410		38	--	54	--	76	86	95		99		SPWCM
Aug. 15.....	8:20 p. m.	42.2	7,960	3,780		36	--	50	--	68	83	97		99		SPWCM
Aug. 16.....	36.5	36.5	8,740	3,900		35	--	48	--	66	83	94		99		SPWCM
Aug. 18.....	8:40 a. m.	21.6	5,420	1,840		25	--	33	--	46	61	84		98		SPWCM
Sept. 1.....	6:35 a. m.	21.6	5,420	1,840		25	--	33	--	46	61	84		98		SPWCM

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

OCEAN DRAIN NEAR PAVILLION, WYO.

LOCATION.--At gaging station, a quarter of a mile upstream from mouth and 11½ miles east of Pavillion, Fremont County.

RECORDS AVAILABLE.--Sediment records: August 1948 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 7,050 ppm Apr. 6; minimum daily, not determined.

Sediment loads: Maximum daily, 886 tons July 25; minimum daily, less than 1 ton on many days during January and February.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 7,330 ppm May 21, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 950 tons June 28, 1949; minimum daily, less than 1 ton on many days during January and February 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	44	804	96	27	834	46	18	470	23
2-----	30	825	51	27	816	45	16	430	19
3-----	28	578	44	27	818	45	16	482	21
4-----	28	642	49	26	579	41	15	411	17
5-----	31	772	65	26	592	42	15	448	18
6-----	28	623	47	26	729	51	14	540	20
7-----	26	684	48	25	827	56	14	347	13
8-----	26	631	44	24	861	56	14	580	22
9-----	26	650	46	24	899	58	15	250	10
10-----	29	819	64	24	899	58	16	142	6
11-----	30	730	59	24	774	50	16	40	2
12-----	26	673	47	23	707	44	16	--	e 4
13-----	24	690	45	23	774	48	16	102	4
14-----	24	578	37	21	645	37	17	118	5
15-----	24	560	36	19	595	31	18	140	7
16-----	24	599	39	19	490	25	18	--	e 22
17-----	24	560	36	19	485	25	18	565	27
18-----	24	517	34	19	510	26	17	390	18
19-----	24	502	33	19	565	29	17	205	9
20-----	25	605	41	18	530	26	17	380	17
21-----	27	625	46	19	559	29	17	492	23
22-----	29	618	48	19	554	28	17	--	e 18
23-----	29	629	49	19	530	27	17	329	15
24-----	30	558	45	19	471	24	17	298	14
25-----	30	648	52	19	492	25	16	271	12
26-----	30	731	59	18	432	21	16	237	10
27-----	30	970	79	19	398	20	15	209	8
28-----	30	664	54	18	439	21	13	219	8
29-----	30	625	51	18	384	19	12	159	5
30-----	28	626	47	18	407	20	12	160	5
31-----	28	575	43	--	--	--	12	160	5
Total-	866	--	1,530	646	--	1,070	487	--	407

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

OCEAN DRAIN NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	12	171	6	6.8	50	(t)	17	1,880	86
2-----	11	203	6	7.6	97	2	19	1,830	94
3-----	10	175	5	8.8	40	(t)	18	1,470	71
4-----	8.2	140	3	9.8	--	(t)	18	--	e 70
5-----	7.4	110	2	11	--	(t)	16	--	e 65
6-----	7.0	90	2	12	43	(t)	16	1,710	74
7-----	6.9	81	2	13	--	e 3	16	2,970	128
8-----	6.9	70	1	15	192	8	16	2,150	93
9-----	6.9	59	1	16	190	8	17	1,630	75
10-----	6.8	55	1	16	221	10	16	2,020	87
11-----	6.8	53	(t)	16	--	e 9	18	--	e 130
12-----	6.8	50	(t)	16	--	e 8	22	--	e 170
13-----	6.2	46	(t)	16	183	8	20	2,600	140
14-----	5.7	34	(t)	16	--	e 10	17	2,070	95
15-----	5.3	35	(t)	16	272	12	16	1,610	70
16-----	5.0	40	(t)	16	--	e 12	16	1,290	56
17-----	4.4	38	(t)	16	310	13	16	1,560	67
18-----	3.9	36	(t)	16	--	e 16	15	1,300	53
19-----	3.9	40	(t)	16	--	e 19	14	--	e 80
20-----	4.4	39	(t)	17	449	21	16	1,760	76
21-----	4.7	--	(t)	17	--	e 22	17	1,550	71
22-----	5.0	--	(t)	18	535	26	16	2,190	95
23-----	5.2	70	(t)	18	1,790	87	16	2,460	106
24-----	5.4	--	e 1	17	2,800	129	16	2,500	108
25-----	5.5	108	2	16	--	e 95	16	1,780	77
26-----	5.7	75	1	16	--	e 80	16	--	e 65
27-----	5.6	60	(t)	15	2,180	88	16	1,890	82
28-----	5.9	--	(t)	16	1,710	74	16	1,880	81
29-----	6.1	--	(t)	--	--	--	14	1,960	e 83
30-----	6.2	66	1	--	--	--	14	1,870	71
31-----	6.4	--	e 1	--	--	--	14	1,550	59
Total--	197.4	--	47	410.0	--	765	510	--	2,660
Day	April			May			June		
	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	13	--	e 55	29	2,660	208	32	1,900	164
2-----	13	--	e 55	32	3,620	313	36	1,870	182
3-----	13	1,710	60	35	2,700	255	39	1,930	203
4-----	17	--	e 100	34	2,290	210	38	1,910	196
5-----	21	4,190	s 268	34	2,580	237	35	1,840	174
6-----	29	7,050	552	30	2,560	207	34	1,840	169
7-----	27	6,580	480	32	2,620	226	38	2,100	215
8-----	29	6,910	541	36	2,340	227	44	1,990	236
9-----	27	--	e 460	35	2,800	265	43	1,980	230
10-----	30	6,280	509	34	2,600	239	45	2,220	270
11-----	32	6,080	525	37	3,780	s 412	42	2,970	337
12-----	31	6,080	509	34	3,000	275	45	2,670	324
13-----	31	5,520	462	32	2,600	225	39	2,490	262
14-----	32	5,500	475	33	2,280	203	36	2,550	248
15-----	32	--	e 420	34	2,700	248	40	2,660	287
16-----	33	--	e 380	39	3,210	338	41	2,300	255
17-----	34	4,170	383	40	3,170	342	44	2,600	309
18-----	30	3,570	289	39	3,340	352	47	2,620	332
19-----	31	3,450	289	38	2,470	254	46	2,800	348
20-----	32	3,390	293	36	2,180	212	47	2,740	348
21-----	30	3,450	279	35	2,080	197	47	2,810	357
22-----	30	--	e 280	34	2,270	208	48	2,610	338
23-----	31	--	e 280	38	2,270	233	50	2,590	350
24-----	26	3,380	237	39	2,080	219	53	2,620	375
25-----	25	3,270	221	45	2,760	335	54	2,530	369
26-----	23	2,850	177	45	2,290	278	54	2,310	337
27-----	23	2,970	184	42	2,210	251	48	2,290	297
28-----	27	2,700	197	47	2,580	327	41	2,580	286
29-----	30	2,770	224	45	2,530	307	47	2,840	360
30-----	28	2,570	194	38	2,100	215	47	2,970	377
31-----	--	--	--	37	1,890	189	--	--	--
Total--	810	--	9,380	1,138	--	8,010	1,300	--	8,540

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

OCEAN DRAIN NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	51	2,860	394	65	2,850	465	46	2,400	298
2-----	54	2,970	433	62	2,680	449	49	2,330	308
3-----	62	3,120	522	62	2,650	444	50	2,000	270
4-----	60	3,470	562	63	2,650	451	49	1,810	239
5-----	62	3,570	598	65	2,960	519	47	1,520	193
6-----	68	3,440	613	65	3,400	597	46	1,500	186
7-----	65	3,100	544	62	3,210	537	45	1,550	188
8-----	62	3,120	522	60	3,200	518	45	1,500	182
9-----	59	2,770	441	61	3,080	507	51	1,650	227
10-----	57	2,720	419	61	2,900	478	54	1,730	252
11-----	54	2,680	391	62	2,800	469	58	1,420	222
12-----	50	2,490	336	62	2,860	479	63	1,750	298
13-----	50	2,410	325	56	2,950	446	57	1,580	243
14-----	49	2,040	270	55	2,460	365	50	1,300	176
15-----	42	1,950	221	55	2,630	391	45	1,260	153
16-----	43	2,200	255	56	2,330	352	42	1,200	136
17-----	44	2,300	273	55	2,220	330	42	1,420	161
18-----	38	2,330	239	58	2,100	329	41	1,260	139
19-----	42	2,430	276	62	2,250	377	41	1,250	138
20-----	44	2,420	287	65	2,450	430	53	2,200	315
21-----	48	2,560	332	66	2,160	385	52	1,460	205
22-----	47	2,670	339	62	2,330	390	44	1,370	163
23-----	49	2,500	331	57	2,230	343	34	1,090	100
24-----	52	2,500	351	57	2,200	339	32	860	74
25-----	67	4,290	886	55	2,150	319	33	850	76
26-----	65	4,250	746	54	2,050	299	32	1,000	86
27-----	63	3,500	595	53	2,080	295	30	1,000	81
28-----	63	3,070	522	46	2,280	283	31	800	67
29-----	64	2,820	487	44	2,090	248	29	790	62
30-----	65	2,810	493	51	2,400	330	26	920	65
31-----	66	2,320	413	47	2,400	305	--	--	--
Total-	1,703	--	13,420	1,804	--	12,470	1,317	--	5,300
Total discharge for year (second-foot-days)									11,188.4
Total load for year (tons)									63,600

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
OCEAN DRAIN NEAR PAVILLION, WYO.--Continued

Particle-size analyses of suspended sediment, October 1949 to July 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.006	0.016	0.031	0.062	0.125	0.250		0.500	1.000
Oct. 4, 1949	2:31 p.m.	28	839	590		26	40	55	69	77	82	100	--	--	BW
Mar. 7, 1950	11:20 a.m.	16	3,350	1,570		35	--	48	--	70	87	97	100	--	SPWCM
Mar. 29	4:00 p.m.	19	3,500	1,960		36	--	48	--	72	88	96	100	--	SPWCM
May 16	7:00 p.m.	a 39	4,060	3,310	30	33	41	57	62	69	74	79	82	83	BWC
June 7	8:10 p.m.	43	2,160	1,120		37	--	48	--	65	81	95	100	--	SPWCM
June 12	7:45 p.m.	48	2,820	1,290		29	--	39	--	61	82	91	95	--	95
June 19	5:00 p.m.	45	2,880	1,320		27	--	43	--	62	79	93	99	100	SPWCM
July 5	6:20 a.m.	62	3,360	1,910		36	--	48	--	68	87	96	100	--	SPWCM
July 11	6:40 a.m.	59	3,160	1,180		31	--	54	--	51	77	97	100	--	SPWCM
July 25	6:45 p.m.	114	9,900	7,030		44	--	70	--	86	--	--	--	--	SPWCM
a Mean daily discharge.															

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

DUDLEY WASTEWAY NEAR PAVILLION, WYO.

LOCATION.--One hundred feet upstream from mouth and 12 miles east of Pavillion, Fremont County.

RECORDS AVAILABLE.--Sediment records: May 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 34 tons July 25; minimum daily, 0 tons on many days.

EXTREMES, May 1949 to September 1950.--Sediment concentrations: Maximum daily, not determined; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 34 tons July 25, 1950; minimum daily, 0 tons on many days each year.

REMARKS.--No flow during period January to March; record is deleted. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.7		e0.2						
2-----	0		0						
3-----	0		0						
4-----	0		0						
5-----	0		0						
6-----	0		0						
7-----	0		0						
8-----	0		0						
9-----	0		0						
10-----	0		0						
11-----	0		0						
12-----	0		0						
13-----	0		0						
14-----	0		0						
15-----	0		0						
16-----	0		0						
17-----	0		0						
18-----	0		0						
19-----	0		0						
20-----	0		0						
21-----	0		0						
22-----	0		0						
23-----	0		0						
24-----	0		0						
25-----	0		0						
26-----	0		0						
27-----	0		0						
28-----	0		0						
29-----	0		0						
30-----	0		0						
31-----	0		0						
Total-	1.7	--	0.2	0	--	0	0	--	0

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

DUDLEY WASTEWAY NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				0	--	0	3.7	--	e 1.6
2-----				0	--	0	2.7	230	1.7
3-----				0	--	0	.4	--	e 1
4-----				0	--	0	.1	--	(t)
5-----				0	--	0	2.7	436	s 4.7
6-----				0	--	0	5.4	--	e 1
7-----				0	--	0	5.7	585	9.0
8-----				0	--	0	7.8	--	e 1
9-----				1.5	--	e 2.9	4.6	337	s 4.6
10-----				2.3	272	s 2.5	.9	--	e 4
11-----				.1	--	(t)	2.4	--	e .9
12-----				2.4	359	s 3.4	.4	90	.1
13-----				.9	--	e .1	1.2	--	e 4
14-----				.2	39	(t)	.8	70	.2
15-----				.3	90	.1	4.7	--	e 5.3
16-----				1.2	192	s 1.6	7.2	545	11
17-----				2.7	365	2.7	5.1	--	e 9.5
18-----				1.4	80	.3	6.0	--	e 9.5
19-----				1.8	102	.5	7.2	--	e 7.0
20-----				1.1	--	e .3	7.7	--	e 9.5
21-----				1.1	--	e .3	5.9	315	5.0
22-----				2.3	--	e .6	1.7	--	e 1.5
23-----				1.7	--	e .6	.4	117	.1
24-----				.5	70	.1	1.0	--	e .6
25-----				.4	--	e .1	3.1	--	e 1.8
26-----				1.0	100	.3	3.4	175	1.6
27-----				3.3	--	e 1.4	3.7	--	e 1.9
28-----				3.2	--	e 1.0	3.0	--	1.1
29-----				3.6	124	1.2	4.2	--	e 2.0
30-----				4.7	--	e 2.2	4.5	195	2.4
31-----				2.5	155	1.0	--	--	--
Total-	0	--	0	40.2	--	23.2	107.6	--	10 ³
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	4.4	--	e 2.2	3.7	--	e 0.9	0.3	50	(t)
2-----	3.7	--	e 1.8	3.8	108	1.1	.3	--	(t)
3-----	3.4	178	1.6	1.4	81	.3	.9	--	e 0.5
4-----	3.2	--	e 1.4	1.0	53	.1	1.4	191	.7
5-----	3.1	239	2.0	1.5	--	e .3	2.3	--	e 1.0
6-----	2.6	--	e .5	2.0	--	e .5	6.0	213	3.5
7-----	3.0	88	.7	2.8	88	.7	5.6	--	e 3.0
8-----	3.6	--	e .9	.2	--	(t)	4.8	94	1.2
9-----	2.0	--	e .5	.3	77	(t)	3.7	--	e .5
10-----	.7	50	.1	3.9	--	e 1.0	4.3	--	e .6
11-----	3.2	--	e 1.4	6.4	134	2.3	4.9	50	.7
12-----	2.9	126	1.0	5.5	--	e 1.4	4.5	--	e .7
13-----	2.1	--	e .5	4.2	--	e 1.0	5.5	50	.7
14-----	1.4	55	.2	3.8	77	.8	5.1	--	e .6
15-----	2.8	--	e .7	3.7	--	e .7	4.3	33	.4
16-----	.8	--	e .1	2.5	82	.6	5.3	--	e .6
17-----	1.3	54	.2	1.4	--	e .2	4.7	--	e .5
18-----	3.0	--	e .7	2.5	71	.5	4.3	28	.3
19-----	2.6	80	.6	4.1	--	e .6	3.6	--	e .1
20-----	.4	--	e .1	5.2	--	e 1.0	2.6	--	(t)
21-----	.5	146	.2	4.7	54	.7	.2	--	(t)
22-----	2.5	--	e .6	4.4	--	e .7	0	--	0
23-----	4.0	--	e .9	4.4	61	.7	0	--	0
24-----	4.7	150	1.9	5.2	--	e 1.0	0	--	0
25-----	6.0	1,390	s 34	6.0	127	2.1	0	--	0
26-----	4.2	1,100	12	3.1	--	e .7	0	--	0
27-----	7.5	--	e 15	4.5	--	e .8	0	--	0
28-----	6.7	261	4.7	3.5	27	.3	0	--	0
29-----	4.7	--	e 1.0	2.8	--	e .4	0	--	0
30-----	1.1	--	e .1	1.8	158	.8	0	--	0
31-----	1.7	16	.1	.6	--	e .5	--	--	--
Total-	93.8	--	87.7	100.9	--	22.8	74.6	--	15.7

Total discharge for year (second-foot-days) 418.8

Total load for year (tons) 258

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

YELLOWSTONE RIVER BASIN--Continued

KELLETT DRAIN NEAR PAVILLION, WYO.

LOCATION.--At gaging station, 0.1 mile upstream from mouth, 12½ miles north of Riverton, and 13½ miles southeast of Pavillion, Fremont County.

RECORDS AVAILABLE.--Sediment records: December 1948 to September 1950 (discontinued).
EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 11,200 ppm July 28; minimum daily, not determined.

Sediment loads: Maximum daily, 305 tons July 25; minimum daily, less than 0.1 ton on some days.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 11,200 ppm July 28, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 305 tons July 25, 1950; minimum daily, less than 0.1 ton on some days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.7	--		0.8	139		0.7	270	
2-----	.7	--		.7	--		.6	--	
3-----	.7	--	(t)	.7	140	e 0.3	.6	--	
4-----	.7	49		.7	--		.5	--	
5-----	.7	--		.7	--		.5	--	e 0.4
6-----	.7	58		.8	--		.6	276	
7-----	.8	--		.8	--		.6	247	
8-----	.8	--	e 0.1	.8	168		.7	238	
9-----	.8	--		.7	--	e .4	.8	--	
10-----	.7	--		.8	146		.8	--	
11-----	.7	192		.7	--		.8	--	
12-----	.7	--		.8	--		.8	--	
13-----	.7	145		.8	--		.8	--	e .6
14-----	.7	--		.8	--		.7	--	
15-----	.7	--	e .3	.8	103		.7	306	
16-----	.7	--		.8	--	e .2	.7	--	
17-----	.7	--		.7	93		.7	--	
18-----	.7	189		.7	--		.7	--	
19-----	.7	--		.7	--		.6	--	
20-----	.8	160		.6	--		.6	513	e .8
21-----	1.2	--	e 1.6	.7	--		.6	--	
22-----	1.4	--	e 1.9	.7	203		.6	352	.6
23-----	.7	--		.7	--		.6	--	e .6
24-----	.5	--		.7	--	e .4	.5	--	
25-----	.6	147		.7	--		.5	--	
26-----	.7	--		.6	--		.5	--	
27-----	.7	132	e .3	.5	--	e .3	.5	246	e .4
28-----	.7	--		.5	--		.5	--	
29-----	.8	--		.5	227		.5	287	
30-----	.8	--		.6	--		.6	--	
31-----	.8	--		--	--		.5	--	
Total-	23.3	--	10	21.1	--	9.5	19.4	--	16

e Estimated.

t Less than 0.1 ton.

YELLOWSTONE RIVER BASIN--Continued

KELLETT DRAIN NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.5	--		0.4	--		0.5	2,140	2.9
2-----	.5	--		.4	--		.4	1,670	1.8
3-----	.4	512		.4	--		.5	950	1.3
4-----	.4	--		.4	--		.6	--	e 1.6
5-----	.4	216		.4	--		.7	--	e 2.8
6-----	.4	--		.4	--		.7	1,300	2.5
7-----	.5	--		.4	903		.6	--	e 1.8
8-----	.5	--		.4	--		.6	850	1.4
9-----	.5	--		.4	--		.5	--	e 1.1
10-----	.5	451	e 0.6	.4	--	e 1.0	.5	920	1.2
11-----	.5	--		.4	--		.5	--	e 1.0
12-----	.5	472		.4	--		.6	--	e .8
13-----	.5	--		.4	--		.6	675	1.1
14-----	.5	--		.4	938		.5	800	1.1
15-----	.5	--		.4	--		.5	850	1.1
16-----	.5	--		.4	--		.4	820	.9
17-----	.5	--		.4	--		.4	1,120	1.2
18-----	.5	--		.4	--		.3	--	e .6
19-----	.5	489		.4	--		.4	--	e .7
20-----	.6	--		.4	--		.4	--	e .7
21-----	.6	--		.4	1,150		.5	--	e .8
22-----	.6	--		.4	--		.5	640	.9
23-----	.6	--		.4	--	e 1.2	.7	670	1.3
24-----	.6	967		.4	--		.7	500	.9
25-----	.5	--	e 1.3	.4	--		.7	--	e .9
26-----	.5	--		.4	--		.4	--	e .4
27-----	.4	--		.5	--	e 3.2	.4	390	.4
28-----	.4	--		.5	2,280	3.1	.4	--	e .4
29-----	.4	--		--	--	--	.5	390	.5
30-----	.4	--		--	--	--	.5	--	e .5
31-----	.4	1,080		--	--	--	.5	320	.4
Total-	15.1	--	27	11.4	--	34	16.0	--	35
	April			May			June		
1-----	0.7	--		0.5	--		0.8	168	0.4
2-----	.6	--		.5	340		.8	--	e .3
3-----	.5	287		.6	--	e 0.4	.8	--	e .3
4-----	.5	--		.5	282		.9	--	e .3
5-----	.4	319	e 0.4	.5	--		1.0	226	.6
6-----	.4	--		.5	--		2.1	1,170	6.6
7-----	.4	303		.6	--	e .6	1.0	1,490	4.0
8-----	.5	--		.7	--	e .7	1.6	1,490	6.4
9-----	.6	--		.7	--	e .6	1.7	2,150	9.9
10-----	.5	350		.7	290	.5	1.8	--	e 1.3
11-----	.5	--	e .5	.6	290	.5	1.8	--	e 1.2
12-----	.6	400		.6	312	.5	1.8	2,350	11
13-----	.6	299		.6	--	e .5	2.0	4,170	22
14-----	.6	282		.7	--	e .7	1.5	3,360	14
15-----	.6	--		.6	308	.5	1.5	3,470	14
16-----	.6	--		.6	--		1.5	2,200	8.9
17-----	.6	222		.6	--		1.4	--	e 8.5
18-----	.6	--		.6	224	.4	1.5	--	e 9.0
19-----	.6	--		.6	--		1.3	--	e 8.0
20-----	.6	--		.6	--		1.0	--	e 5.5
21-----	.6	259		.6	--	e .3	1.1	1,920	5.7
22-----	.6	--		.5	166	.2	1.0	2,100	5.7
23-----	.6	--		.5	154	.2	1.0	1,010	2.7
24-----	.6	197		.5	147	.2	1.1	--	e 4.2
25-----	.6	--		.6	158	.3	.8	--	e 2.2
26-----	.6	--		.5	192	.3	1.2	1,350	4.4
27-----	.6	--		.8	--	e .5	1.4	1,000	3.8
28-----	.6	237		.9	--	e .5	2.2	1,230	7.3
29-----	.5	--		.9	197	.5	3.7	2,270	23
30-----	.5	--		.9	185	.4	3.9	3,170	33
31-----	--	--		.7	178	.3	--	--	--
Total-	16.8	--	13	19.3	--	13.2	45.2	--	27

e Estimated.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

KELLETT DRAIN NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.6	--	e 22	1.1	4,650	14	1.6	1,780	7.7
2-----	2.0	--	e 8.5	1.2	3,600	12	1.7	--	e 7.5
3-----	2.6	--	e 8.0	1.4	4,850	18	2.0	--	e 10
4-----	2.9	--	e 7.5	1.4	4,080	15	2.2	--	e 13
5-----	3.9	1,000	11	1.4	--	e 13	2.4	2,600	17
6-----	3.9	3,000	32	1.5	--	e 16	2.7	3,160	23
7-----	3.4	3,220	30	1.7	6,360	29	2.2	--	e 15
8-----	3.2	--	e 26	2.9	--	e 48	2.3	3,300	20
9-----	2.4	--	e 16	2.8	5,800	44	2.3	--	e 20
10-----	2.6	2,340	16	2.9	8,320	65	3.1	--	e 40
11-----	2.6	1,790	13	2.3	4,820	30	1.7	5,000	23
12-----	3.1	2,540	21	2.7	--	e 32	1.5	3,150	13
13-----	3.2	1,690	15	3.5	--	e 42	1.3	1,900	6.7
14-----	3.6	1,880	18	3.6	5,200	51	1.2	1,300	4.2
15-----	4.1	--	e 22	3.4	5,950	55	1.1	960	2.9
16-----	4.0	--	e 20	3.6	5,950	58	1.0	--	e 2.2
17-----	3.5	1,840	17	4.5	6,460	78	1.0	--	e 2.4
18-----	2.6	1,860	13	4.0	8,700	94	1.0	980	2.6
19-----	4.2	2,050	23	3.6	--	e 75	1.0	820	2.2
20-----	3.8	4,190	43	3.2	--	e 65	1.9	--	e 50
21-----	2.8	4,380	33	4.0	--	e 80	1.0	1,400	3.8
22-----	1.9	--	e 20	3.6	9,200	89	1.0	2,220	6.0
23-----	1.7	--	e 17	3.2	7,700	67	.9	--	e 3.2
24-----	2.0	3,700	20	2.7	3,620	26	.9	--	e 2.4
25-----	5.7	10,400	s 305	2.3	3,980	25	1.0	910	2.5
26-----	.9	9,300	23	2.0	--	e 20	1.0	730	2.0
27-----	1.4	10,200	39	1.8	--	e 16	.9	810	2.0
28-----	1.5	11,200	45	1.7	3,110	14	.9	630	1.5
29-----	1.5	--	e 15	1.3	3,440	12	1.0	715	1.9
30-----	1.5	--	e 10	1.3	3,740	13	1.0	--	e 1.9
31-----	1.6	2,600	11	1.5	2,800	11	--	--	--
Total-	86.7	--	920	78.1	--	1,230	44.8	--	310
Total discharge for year (second-foot-days)									397.2
Total load for year (tons)									2,860

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
KELLETT DRAIN NEAR PAVILLION, WYO.--Continued

Particle-size analyses of suspended sediment, March to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment														Methods of analysis									
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000
Mar. 17, 1950.....	2:35 p. m.	40.4	1,370	1,070	41	53	60	78	88	94	98	100													BW	
June 9.....	2:45 p. m.	1.1	1,870	1,140	51	65	86	96	99	100	100	100													BWC	
July 25.....	7:40 p. m.	20	23,800	7,610	--	39	--	60	--	85	--	--													SPWCM	
Aug. 22.....	12:35 p. m.	3.1	10,200	2,610	--	20	--	31	--	42	58	87										99	100		SPWCM	

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

DEWEY DRAIN NEAR PAVILLION, WYO.

LOCATION.--At gaging station, 0.1 mile upstream from mouth, 12½ miles north of Riverton, and 13½ miles southeast of Pavillion, Fremont County.

RECORDS AVAILABLE.--Sediment records: December 1948 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 629 ppm July 25; minimum daily, not determined.

Sediment loads: Maximum daily, 8.2 tons July 25; minimum daily, less than 0.01 ton on many days.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 4,320 ppm June 2, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 10 tons June 23, 1949; minimum daily, less than 0.01 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Suspended sediment					
			Load (tons)	Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum daily
October	11.9	24	1.8	0.06	0.19	0.03	56	--
November	8.8	17	3.3	.1	.46	.04	139	--
December	6.9	14	1.0	.03	.06	.02	54	--
Calendar year 1949...	181.3	359.7	140	.38	10	(t)	--	4,320
January	5.4	11	1.9	.06	.12	(t)	130	--
February	4.7	9.3	1.2	.04	.08	(t)	95	--
March	5.6	11	1.0	.03	.05	.02	66	--
April	3.7	7.3	.5	.02	.03	(t)	50	--
May	3.6	7.1	.4	.01	.07	(t)	41	--
June	14.7	29	1.6	.05	.18	(t)	40	--
July	38.5	76	15	.48	8.2	.05	144	629
August	44.2	88	13	.4	1.1	.04	109	--
September	29.3	58	3.4	.1	.50	.02	43	--
Water year 1949-50 ..	177.3	352	44	0.12	8.2	(t)	--	629

t Sediment discharge less than 0.01 ton.

YELLOWSTONE RIVER BASIN--Continued

FIVEMILE 76 DRAIN NEAR RIVERTON, WYO.

LOCATION.--At gaging station, 200 feet upstream from mouth and 12½ miles north of Riverton, Fremont County.

RECORDS AVAILABLE.--Sediment records: March 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 6.0 tons, estimated, July 25; minimum daily, less than 0.01 ton May 24 to June 2.

EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum daily, 4,100 ppm June 21, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 8.86 tons June 21, 1949; minimum daily, less than 0.01 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Load (tons)	Suspended sediment				
				Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum daily
October	11.2	22	3.2	0.1	0.24	0.03	106	
November	12.6	25	3.6	.1	.22	.05	106	
December	7.1	14	4.5	.1	.54	.03	235	
January	5.5	11	4.0	.1	.25	.07	269	
February	5.8	12	6.4	.2	e .39	.07	409	
March	6.1	12	13	.4	.66	.13	789	
April	6.0	12	4.4	.1	e .49	.02	272	
May	6.2	12	1.7	.05	.14	(t)	102	
June	14.2	28	14	.5	e 5.0	(t)	365	
July	18.6	37	16	.5	e 6.0	.03	319	
August	17.9	36	5.9	.2	.44	.02	122	
September	18.0	36	7.6	.3	e 2.0	.2	156	
Water year 1949-50	129.2	257	84.3	.2	6.0	(t)	--	

e Estimated.

t Sediment discharge less than 0.01 ton.

YELLOWSTONE RIVER BASIN--Continued

SAND GULCH DRAIN AND WASTEWAY NEAR RIVERTON, WYO.

LOCATION.--At gaging station, a quarter of a mile upstream from mouth and 12½ miles north of Riverton, Fremont County.

RECORDS AVAILABLE.--Sediment records: March 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum observed, 12,400 ppm July 25; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 293 tons July 25; minimum daily, 0 tons on many days. EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum observed, 12,400 ppm July 25, 1950; maximum daily, 8,000 ppm Aug. 10, 1949; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 293 tons July 25, 1950; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.2	--	e 0.4	0.1	250	--	0.2	620	--
2-----	.2	--	--	.2	--	--	.2	--	--
3-----	.1	84	(t)	.2	380	--	.2	--	e 0.3
4-----	.1	100	--	.2	--	--	.2	--	--
5-----	.1	140	--	.2	--	--	.2	--	--
6-----	.2	240	.1	.2	--	--	.2	170	--
7-----	.2	330	.2	.2	--	--	.2	--	--
8-----	.2	--	e .2	.2	280	--	.2	110	(t)
9-----	.1	--	--	.4	--	--	.2	--	--
10-----	.1	--	--	.2	270	--	.2	--	--
11-----	.1	200	--	.1	--	--	.1	--	--
12-----	.1	--	--	.2	--	--	0	--	0
13-----	.1	140	--	.3	--	--	0	--	0
14-----	.1	--	(t)	.3	--	--	0	--	0
15-----	.1	--	--	.2	280	--	0	--	0
16-----	.1	--	--	.3	--	--	0	--	0
17-----	.1	--	--	.3	520	--	0	--	0
18-----	.1	260	--	.3	--	e .4	0	--	0
19-----	.1	--	--	.3	--	--	0	--	0
20-----	.1	--	e .2	.3	--	--	0	--	0
21-----	.1	--	e .1	.2	--	e .3	0	--	0
22-----	.1	--	(t)	.2	600	--	0	--	0
23-----	.1	--	(t)	.1	--	--	0	--	0
24-----	.1	480	.1	.1	--	--	0	--	0
25-----	.1	510	.1	.2	--	--	0	--	0
26-----	.1	--	--	.2	--	--	0	--	0
27-----	.1	180	--	.2	--	(t)	0	--	0
28-----	.1	--	--	.2	--	--	0	--	0
29-----	.1	270	(t)	.2	88	--	0	--	0
30-----	.1	--	--	.2	--	--	0	--	0
31-----	.1	--	--	--	--	--	0	--	0
Total-	5.5	--	3	6.5	--	6	2.1	--	2

e Estimated.

t Less than 0.1 ton.

YELLOWSTONE RIVER BASIN--Continued

SAND GULCH DRAIN AND WASTEWAY NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				0		0	0.1	4,030	1.1
2-----				0		0	.2	5,370	2.9
3-----				0		0	.2	--	e1.0
4-----				0		0	.2	--	e1.0
5-----				0		0	.2	--	e.4
6-----				0		0	.2	223	.1
7-----				0		0	.1	--	e.1
8-----				0		0	0	--	0
9-----				0		0	0	--	0
10-----				0		0	0	--	0
11-----				0		0	0	--	0
12-----				0		0	0	--	0
13-----				0		0	0	--	0
14-----				0		0	0	--	0
15-----				0		0	0	--	0
16-----				0		0	0	--	0
17-----				0		0	.1	840	.2
18-----				0		0	.1	--	e.2
19-----				0		0	.1	--	e.1
20-----				0		0	.1	--	(t)
21-----				0		0	.1	665	.2
22-----				0		0	.1	470	.1
23-----				0		0	.1	370	.1
24-----				0		0	.1	280	
25-----				0		0	.1	--	
26-----				0		0	.1	--	
27-----				0		0	.1	290	(t)
28-----				.1	3,600	1.0	.1	--	
29-----				--	--	--	.1	300	
30-----				--	--	--	.1	305	
31-----				--	--	--	.1	180	
Total-	0	--	0	0.1	--	1.0	2.7	--	8.3
Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.1	--		0.1	45		1.1	175	0.5
2-----	.1	--		.1	48		.8	670	1.4
3-----	.1	75		.1	--		1.4	--	e1.5
4-----	.1	--		.1	--		1.3	--	e.9
5-----	.1	150		.1	--	(t)	2.0	295	1.6
6-----	.1	--	(t)	.1	--		1.9	--	e1.2
7-----	.1	170		.1	--		3.2	--	e5.0
8-----	.1	--		.1	90		5.2	455	6.4
9-----	.1	--		.1	--		3.8	305	3.1
10-----	.1	140		.5	360	s0.8	3.8	--	e2.6
11-----	.1	--		.3	220	.2	5.7	--	e4.0
12-----	.1	98		.8	108	.2	4.5	250	3.0
13-----	.1	--		.1	40	(t)	3.4	--	e2.2
14-----	.1	60		.1	14	(t)	2.6	235	1.6
15-----	.1	--	(t)	.4	120	.1	1.4	468	1.8
16-----	.1	--	(t)	.2	20	(t)	2.5	430	2.9
17-----	.1	60		.2	40	(t)	4.5	--	e5.0
18-----	.1	--		.6	62	.1	7.0	--	e8.5
19-----	.1	58		.6	35		6.3	--	e7.5
20-----	.1	--		.5	--		2.1	--	e2.0
21-----	.1	47		.5	--	(t)	1.7	250	1.1
22-----	.1	--		.5	21	(t)	1.3	260	.9
23-----	.1	60		.6	--		1.4	450	1.7
24-----	.1	60		.8	22		1.5	--	e1.3
25-----	.1	--	(t)	.9	82	.2	1.9	--	e.9
26-----	.1	22		1.8	170	.8	1.9	110	.6
27-----	.1	--		.2	50		2.4	--	e1.5
28-----	.1	--		.1	12	(t)	3.9	270	2.8
29-----	.1	--		.1	8		2.8	230	1.7
30-----	.1	--		.6	--	e.1	4.2	190	2.2
31-----	--	--	--	1.5	155	.6	--	--	--
Total-	3.0	--	0.7	12.8	--	3.4	87.5	--	77.4

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

SAND GULCH DRAIN AND WASTEWAY NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	18	--	e 26	4	--	e 3.2	1.4	520	2.0
2-----	17	--	e 20	2.5	160	1.1	1.8	--	e 1.6
3-----	16	--	e 15	1.5	140	.6	2.5	--	e 1.2
4-----	9.3	--	e 10	1	160	.4	3.5	92	.9
5-----	9.9	260	6.9	1.4	--	e .7	4	--	e .6
6-----	8	350	7.6	1.8	--	e 1.0	1.3	100	.4
7-----	6.1	320	5.3	2	250	1.4	1.3	--	e .3
8-----	5.7	--	e 4.4	1	--	e 1.4	1.4	--	e .4
9-----	3.6	--	e 2.6	1.2	960	3.1	1.8	74	.4
10-----	2.5	260	1.8	1.8	980	4.8	2	--	e .5
11-----	1.9	--	e 1.2	2	460	2.5	1.8	56	.3
12-----	3.8	220	2.3	2.5	--	e 2.4	1.8	--	e .3
13-----	3	240	2.0	.7	--	e .5	1.6	46	.2
14-----	3.5	290	2.7	1	300	.8	1.8	52	.3
15-----	4.2	--	e 3.8	1.4	--	e 2.0	1.8	--	e .3
16-----	2.3	--	e 2.2	1	48	.1	1.7	--	e .2
17-----	3.0	360	2.9	.9	200	.5	2	--	e .5
18-----	2.0	--	e 1.9	1	290	.8	2.5	150	1.0
19-----	2.3	845	5.2	2	--	e 3.6	2	--	e .7
20-----	5.2	380	5.3	5.5	--	e 4.6	1.5	--	e .4
21-----	8.2	240	5.3	5.5	--	e 4.6	.2	360	e .2
22-----	6.6	--	e 4.4	5	--	e 2.0	.2	420	
23-----	9.3	--	e 7.0	4.5	66	.8	.2	--	
24-----	7.0	260	4.9	4	--	e .8	.2	--	
25-----	15	3,200	s 293	3.5	140	1.3	.2	280	
26-----	3.5	1,800	17	3.5	--	e 1.8	.2	--	
27-----	5	350	4.7	3	--	e 2.2	.2	280	
28-----	6	340	5.5	2.5	470	3.2	.2	220	
29-----	5	--	e 3.6	2.5	--	e 2.4	.2	280	
30-----	3	--	e 2.2	2	350	1.9	.2	--	
31-----	2.5	260	1.9	.9	900	2.2	--	--	--
Total-	198.4	--	479	73.1	--	58.7	41.5	--	14.5

Total discharge for year (second-foot-days) 433.2

Total load for year (tons) 654

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

LOST WELLS BUTTE DRAIN NEAR RIVERTON, WYO.

LOCATION.--At gaging station, 0.1 mile upstream from mouth and 11½ miles north of Riverton, Fremont County.

RECORDS AVAILABLE.--Sediment records: March 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 6,050 ppm July 25; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 943 tons July 25; minimum daily, 0 tons on many days.

EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum daily,

6,400 ppm June 3, 1949; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 943 tons July 25, 1950; minimum daily, 0 tons on many

days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5.6	62	0.9	1.0	18		3.7	87	0.9
2-----	4.0	--	e.3	1.0	--		1.4	--	
3-----	7.0	265	s7.2	1.0	21	(t)	1.4	--	
4-----	3.7	154	1.5	1.2	--		1.4	--	e.3
5-----	1.3	--	e.3	1.4	--		1.4	--	
6-----	1.2	60	.2	1.5	--		1.4	62	
7-----	1.5	93	.4	2.1	--		.5	--	
8-----	1.8	--	e.5	1.0	69		.2	45	
9-----	1.8	--	e.5	1.0	--		.1	--	
10-----	1.4	--		.8	73		.1	--	
11-----	1.1	88		.8	--	e0.2	.1	--	
12-----	1.1	--		.8	--		.1	--	
13-----	1.0	--		1.0	--		.1	82	
14-----	1.0	--		1.0	--		.1	--	
15-----	1.0	--	e.2	.8	71		.1	--	(t)
16-----	1.0	--		1.6	77		.1	--	
17-----	1.0	--		1.8	72	.4	.1	--	
18-----	1.0	45		1.9	--		.1	--	
19-----	1.1	--		1.0	--		.1	--	
20-----	1.8	82	.4	1.9	--	e.5	.1	--	
21-----	3.2	--	e1.2	2.2	--		.1	--	
22-----	3.4	--	e.8	1.6	118		.1	4	
23-----	3.2	--	e.5	.7	--		.1	--	
24-----	2.2	--	e.3	.8	--		0	--	0
25-----	1.2	40		.8	--		0	--	0
26-----	1.1	--		.7	--		0	--	0
27-----	1.0	42		.6	--	e.2	0	--	0
28-----	1.0	--	e.1	.6	--		0	--	0
29-----	1.0	--		.7	122		0	--	0
30-----	1.0	--		.6	--		0	--	0
31-----	1.1	--		--	--		0	--	0
Total--	59.8	--	18	33.9	--	7	12.9	--	3

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

LOST WELLS BUTTE DRAIN NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued^a

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				0	--	0	0	--	0
2-----				0	--	0	0	--	0
3-----				0	--	0	0	--	0
4-----				0	--	0	.1		
5-----				0	--	0	.1		
6-----				0	--	0	.1		
7-----				0	--	0	.1		
8-----				0	--	0	.1	--	(t)
9-----				0	--	0	.1		
10-----				0	--	0	.2		
11-----				0	--	0	.2		
12-----				0	--	0	.2	--	
13-----				0	--	0	.3	--	
14-----				0	--	0	.3	--	
15-----				0	--	0	.3		
16-----				0	--	0	.3	--	
17-----				0	--	0	.4	182	
18-----				0	--	0	.4	--	
19-----				0	--	0	.4	--	
20-----				0	--	0	.4	--	e .2
21-----				0	--	0	.4	--	
22-----				0	--	0	.4	--	
23-----				0	--	0	.4	281	
24-----				.1			.3	--	
25-----				.1	--		.3	--	
26-----				.1			.2	--	
27-----				.1	68		.2	--	
28-----				.1			.2	230	
29-----				--	--	--	.2	--	
30-----				--	--	--	.2	--	e .1
31-----				--	--	--	.2	--	
Total-	0	--	0	0.5	--	0.1	7.0	--	4
Day	April			May			June		
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	0.3	--		0	--	0	6.0	366	5.9
2-----	.3	--		0	--	0	6.6	548	9.8
3-----	.3	--		.2			6.4	--	e 7.5
4-----	.3	66		.2	--	(t)	7.9	--	e 10
5-----	.3	--		.1			9.8	528	14
6-----	.3	82	(t)	0	--	0	13	820	29
7-----	.2	--		.2	--	(t)	17	1,080	50
8-----	.2	--		1.8	375	s 3.8	19	902	46
9-----	.1	--		3.2	--	e 2.0	15	756	31
10-----	.1	--		1.0	82	.2	13	--	e 24
11-----	0	--	0	1.1	40	.1	12	--	e 20
12-----	0	--	0	3.9	910	s 12	9.6	596	15
13-----	0	--	0	4.7	--	e 16	9.8	680	18
14-----	0	--	0	5.8	--	e 22	7.9	484	10
15-----	0	--	0	8.1	1,330	29	12	840	27
16-----	0	--	0	14	1,370	52	11	886	26
17-----	0	--	0	12	930	30	10	--	e 22
18-----	0	--	0	11	540	16	9.6	--	e 14
19-----	0	--	0	8.9	390	9.4	9.8	460	12
20-----	0	--	0	9.8	--	e 13	10	610	16
21-----	0	--	0	6.6	--	e 11	11	530	16
22-----	0	--	0	7.4	628	13	13	900	32
23-----	0	--	0	5.2	322	s 5.5	15	824	33
24-----	0	--	0	4.2	158	1.8	16	--	e 32
25-----	0	--	0	5.3	162	2.3	17	--	e 36
26-----	0	--	0	4.7	210	2.7	13	657	23
27-----	0	--	0	2.9	--	e 1.1	11	678	20
28-----	0	--	0	2.5	--	e .7	12	676	22
29-----	0	--	0	2.3	135	.8	12	808	26
30-----	0	--	0	1.5	160	.6	11	880	26
31-----	--	--	--	2.8	--	e 1.7	--	--	--
Total-	2.4	--	0.6	131.4	--	247	346.4	--	673

^a Estimated.^s Computed by subdividing day.^t Less than 0.1 ton.

YELLOWSTONE RIVER BASIN--Continued

LOST WELLS BUTTE DRAIN NEAR RIVERTON, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	9.6	--	e22	17	2,120	97	6.6	640	11
2-----	11	--	e28	15	2,450	99	5.6	--	e 6.0
3-----	10	860	23	15	1,390	56	5.4	--	e 2.2
4-----	11	--	e30	14	910	34	5.6	--	e 2.4
5-----	12	1,180	38	15	--	e40	10	490	13
6-----	16	1,110	48	16	--	e50	13	420	15
7-----	22	1,310	78	17	--	e70	15	--	e 24
8-----	18	--	e50	14	1,910	72	16	--	e 42
9-----	17	--	e44	15	1,400	57	17	1,300	60
10-----	16	890	38	17	1,130	52	18	1,410	69
11-----	8.1	420	9.2	16	1,120	48	18	1,440	70
12-----	9.4	420	11	16	--	e48	18	1,100	53
13-----	11	580	17	16	--	e46	13	380	13
14-----	9.4	475	12	17	950	44	13	390	14
15-----	9.8	--	e13	16	820	35	13	220	7.7
16-----	9.8	--	e14	17	1,380	63	11	--	e 4.8
17-----	10	525	14	18	860	42	9	--	e 3.4
18-----	10	530	14	17	1,140	52	9.4	130	3.3
19-----	12	480	16	17	--	e32	8.8	110	2.6
20-----	14	680	26	17	--	e24	11	--	e 13
21-----	14	--	e20	17	500	23	2.5	70	.5
22-----	13	--	e20	18	510	25	2.1	45	.3
23-----	18	--	e60	14	370	14	2.1	--	e .2
24-----	18	3,400	165	12	480	16	1.9	--	e .1
25-----	25	6,050	s943	11	230	6.8	1.8	18	(t)
26-----	20	3,700	200	11	--	e5.5	1.6	25	.1
27-----	20	3,620	196	8.9	--	e4.6	1.5	12	(t)
28-----	19	2,510	129	7.5	200	4.0	1.5	7	(t)
29-----	22	--	e150	6.4	200	3.5	1.9	20	.1
30-----	18	--	e90	6.4	110	1.9	1.8	14	(t)
31-----	14	1,290	49	5.8	250	3.9	--	--	--
Total-	447.1	--	2,570	440.0	--	1,170	255.1	--	431
Total discharge for year (second-foot-days)									1,736.5
Total load for year (tons)									5,120

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

YELLOWSTONE RIVER BASIN--Continued

COLEMAN DRAIN NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, 0.1 mile upstream from mouth and 11½ miles southwest of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: December 1948 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 4,510 ppm June 13; minimum daily, not determined.

Sediment loads: Maximum daily, 290 tons July 25; minimum daily, less than 1 ton on many days.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 4,510 ppm June 13, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 290 tons July 25, 1950; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	7.8	260	5.5	4.2	168	1.9	3.1	208	e 2.0
2-----	7.4	220	4.4	4.2	168	1.9	3.1	206	
3-----	6.6	169	3.9	4.2	167	1.9	3.0	--	
4-----	6.3	137	2.3	3.9	161	1.7	3.1	--	
5-----	5.9	197	3.1	4.1	185	2.0	3.1	172	
6-----	5.9	190	3.0	4.2	189	2.1	3.0	166	e 1.0
7-----	6.3	246	4.2	4.5	172	2.1	2.8	145	
8-----	7.0	--	e 5.0	4.8	162	2.2	2.8	120	
9-----	7.0	--	e 5.0	4.5	160	1.9	2.8	--	
10-----	6.3	214	3.6	4.5	--	e 2.0	2.8	--	
11-----	5.9	208	3.4	4.2	218	2.5	2.8	--	e 2.0
12-----	5.6	190	2.9	4.2	--	e 2.0	2.7	274	
13-----	5.6	158	2.4	4.2	--	e 2.0	2.6	--	
14-----	5.6	129	2.0	4.2	187	2.1	2.6	--	
15-----	5.9	--	e 2.0	4.2	191	2.2	2.7	--	
16-----	6.3	--	e 2.0	3.9	198	2.1	2.8	220	e 1.0
17-----	6.3	126	2.1	3.9	205	2.2	2.9	--	
18-----	5.9	138	2.2	3.9	210	2.2	2.9	--	
19-----	5.9	150	2.4	3.9	--	e 2.0	2.9	220	
20-----	5.9	165	2.6	3.7	--	e 2.0	3.0	--	
21-----	5.9	178	2.8	3.4	205	1.9	3.0	210	e 1.0
22-----	5.9	--	e 3.0	3.1	--	e 2.0	3.0	--	
23-----	5.9	--	e 3.0	3.1	201	1.7	3.0	127	
24-----	5.9	166	2.6	3.1	--	e 2.0	3.0	--	
25-----	5.9	168	2.6	3.4	200	1.8	2.9	--	
26-----	5.6	170	2.6	3.4	--	e 2.0	2.9	128	e 1.0
27-----	5.3	173	2.4	3.1	--	e 2.0	2.8	--	
28-----	4.8	181	2.3	3.0	249	2.0	2.8	154	
29-----	4.2	--	e 2.0	3.0	230	1.9	2.8	138	
30-----	4.2	--	e 2.0	3.1	214	1.8	2.9	122	
31-----	4.5	168	2.0	--	--	--	2.9	--	
Total-	183.5	--	90	115.1	--	60	89.5	--	47

e Estimated.

YELLOWSTONE RIVER BASIN

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YELLOWSTONE RIVER BASIN--Continued

COLEMAN DRAIN NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.8	--	e 1.0	1.6	--	--	1.9	--	--
2-----	2.8	208	1.6	1.6	--	--	2.0	--	--
3-----	2.8	--	e 3.0	1.6	251	--	1.9	260	e 1.0
4-----	2.8	470	3.6	1.6	--	--	1.7	--	--
5-----	2.8	342	2.6	1.6	--	--	1.9	--	--
6-----	2.6	311	--	1.6	228	1.0	2.0	--	--
7-----	2.6	--	--	1.6	--	--	1.9	--	--
8-----	2.7	--	--	1.6	--	--	1.8	--	--
9-----	2.8	260	--	1.5	--	--	1.7	--	--
10-----	2.6	244	--	1.5	291	--	1.7	338	1.6
11-----	2.2	235	e 2.0	1.5	--	--	1.7	--	--
12-----	2.2	--	--	1.6	--	--	1.6	--	--
13-----	2.2	400	--	1.6	134	--	1.6	--	--
14-----	2.2	--	--	1.6	--	--	1.6	--	--
15-----	2.2	--	--	1.6	--	--	1.8	229	--
16-----	2.2	287	--	1.6	--	--	1.8	110	--
17-----	2.0	268	--	1.6	108	--	1.8	109	--
18-----	1.9	247	--	1.6	--	--	1.8	--	--
19-----	1.9	224	--	1.6	--	(t)	1.8	--	--
20-----	1.9	201	--	1.6	100	--	1.8	90	(t)
21-----	1.9	--	--	1.6	--	--	1.8	76	--
22-----	2.0	--	--	1.6	--	--	1.8	49	--
23-----	2.0	264	--	1.7	173	--	1.8	55	--
24-----	2.0	--	e 1.0	2.2	150	--	1.8	64	--
25-----	1.9	--	--	2.3	--	--	1.8	--	--
26-----	1.8	--	--	2.3	--	--	1.8	--	--
27-----	1.6	259	--	3.3	189	s 2.1	1.8	80	--
28-----	1.6	--	--	2.2	107	(t)	1.8	--	e 1.0
29-----	1.6	--	--	--	--	--	1.8	238	s 1.2
30-----	1.6	378	--	--	--	--	1.8	120	(t)
31-----	1.6	--	--	--	--	--	1.8	75	(t)
Total-	67.8	--	50	48.9	--	22	55.6	--	28
Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.8	--	--	2.3	--	--	8.6	3,510	81
2-----	1.8	--	--	2.3	--	--	11	1,990	59
3-----	1.8	90	--	2.5	--	--	9.7	1,280	34
4-----	1.8	--	--	2.3	--	--	6.5	1,010	18
5-----	1.9	151	--	2.3	--	--	5.6	820	12
6-----	2.0	--	--	2.3	--	--	5.3	600	8.6
7-----	2.2	131	--	2.5	--	--	6.0	959	s 15
8-----	2.2	--	--	2.8	68	(t)	6.7	983	s 21
9-----	2.3	--	--	2.5	--	--	6.0	1,850	s 20
10-----	1.9	90	--	2.3	--	--	4.7	3,820	s 45
11-----	1.8	--	--	2.3	--	--	5.8	2,270	36
12-----	1.8	--	--	2.3	--	--	6.0	2,290	37
13-----	1.8	--	--	2.5	--	--	8.8	4,510	107
14-----	2.0	80	--	2.3	--	--	11	4,100	122
15-----	2.0	--	(t)	2.3	--	--	10	2,040	55
16-----	2.0	--	--	2.6	176	s 1.5	13	2,420	85
17-----	2.0	71	--	3.8	460	4.7	16	2,200	95
18-----	1.8	--	--	3.8	317	3.3	16	1,990	86
19-----	1.8	70	--	4.0	244	2.6	19	1,600	82
20-----	1.8	--	--	4.2	169	1.9	15	2,120	s 78
21-----	1.7	60	--	4.2	139	1.6	14	1,720	s 69
22-----	1.7	--	--	4.4	208	2.5	14	1,510	57
23-----	1.7	--	--	4.9	3,010	s 46	14	2,030	77
24-----	1.7	78	--	6.0	3,950	64	13	1,770	62
25-----	1.7	68	--	5.2	3,460	49	13	2,490	87
26-----	1.7	53	--	4.8	2,510	33	13	2,530	89
27-----	1.7	48	--	4.5	620	7.5	13	2,930	103
28-----	1.7	160	--	4.3	235	2.7	17	2,410	110
29-----	1.9	--	--	4.2	285	3.2	17	3,900	179
30-----	2.2	--	--	5.8	610	9.5	18	3,050	s 156
31-----	--	--	--	5.1	910	13	--	--	--
Total-	56.2	--	14	107.6	--	253	336.7	--	2,090

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

COLEMAN DRAIN NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	18	1,700	83	20			12		
2-----	20	2,000	108	19			12	--	e 10
3-----	19	--	e 130	20			8.9		
4-----	20	--	e 100	18			7.4		
5-----	20	2,100	113	19			7.4	--	e 7.0
6-----	19	1,800	92	19	--	e 85	7.4		
7-----	20	1,700	92	18			6.6		
8-----	19	1,800	92	16			12	--	e 10
9-----	18	--	e 80	18			16		
10-----	18	3,000	146	19			19	--	e 34
11-----	17			19	1,200	62	18		
12-----	18	--	e 75	20	1,700	92	13	--	e 14
13-----	17			20	1,900	103	8.9		
14-----	16	1,150	50	20	1,800	97	8.9		
15-----	19	--	e 90	19			11	--	e 6.0
16-----	21	--	e 110	18			10		
17-----	21	2,130	121	18			9.2		
18-----	22	2,170	129	19	--	e 80	12	230	7.5
19-----	20	1,880	102	19			11	240	7.1
20-----	18	2,000	97	19			16	--	e 50
21-----	20	1,930	104	21			8.9	260	6.2
22-----	23	2,000	124	19			8.1	220	4.8
23-----	23	2,000	124	18	--	e 30	7.8	170	3.6
24-----	25	2,100	142	17			7.0	170	3.2
25-----	28	--	e 290	16			7.0	160	3.0
26-----	20	2,800	151	15			7.0	150	2.8
27-----	18	1,620	79	15	--	e 20	6.6	200	3.6
28-----	20	--	e 120	14			6.6	210	3.7
29-----	21			14			7.4	190	3.8
30-----	21	--	e 110	13	400	14	7.0	180	3.4
31-----	20			13	480	17	--	--	--
Total-	619	--	3,420	552	--	2,000	300.1	--	314
Total discharge for year (second-foot-days)									2,532.0
Total load for year (tons)									8,390

e Estimated.

YELLOWSTONE RIVER BASIN--Continued
 COLEMAN DRAIN NEAR SHOSHONI, WYO.--Continued

Particle-size analyses of suspended sediment, May to July 1950
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250			0.350	0.500	1.000
May 23, 1950.....	5:25 p. m.	5.8	6,880	3,500		56		81		83	86	92		99	SPWCM
.....	6:35 p. m.	3.8	4,240	2,940		51		74		91	97	99		100	SPWCM
June 9.....	9:00 a. m.	20	3,300	5,120		47		68		96	100	---		---	SPWCM
June 17.....	6:20 a. m.	19	2,300	1,400		39		56		84	---	---		---	SPWCM
June 28.....	8:30 a. m.	24	1,660	921		42		57		85	---	---		---	SPWCM
July 5.....															

YELLOWSTONE RIVER BASIN--Continued

SAND GULCH NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, half a mile upstream from mouth and 10½ miles southwest of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: September 1948 to September 1950 (discontinued). EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 5,930 ppm May 6; minimum daily, not determined.

Sediment loads: Maximum daily, 1,410 tons June 2; minimum daily, not determined. EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 5,930 ppm May 6, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 1,410 tons June 2, 1950; minimum daily, not determined. REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	31	--	e 32	8.1	--		7.2	--	e 2
2-----	15	58	2	8.6	96	e 2	7.2	122	2
3-----	13			8.6	--		7.0	--	e 2
4-----	12			8.6	100		6.9	--	e 4
5-----	12			8.6	--		6.6	259	5
6-----	12	108	e 4	8.6	--	e 3	6.4	--	e 4
7-----	13			8.6	124	3	6.0	139	2
8-----	13			8.6	--	e 3	5.8	--	e 2
9-----	13			8.6	155	4	5.6	92	e 1
10-----	12	120	e 3	8.6	--	e 4	5.4	--	
11-----	11	--		8.1	155	3	5.0	--	
12-----	11	110		8.1	--	e 3	4.8	107	
13-----	11	--		8.1	--	e 3	4.7	--	e 2
14-----	11	91	e 4	8.1	104	--	4.7	88	
15-----	11	--		7.7	--	--	4.8	--	
16-----	11	--		7.7	105	e 2	4.9	130	
17-----	11	132	e 3	7.7	--	--	5.0	--	e 2
18-----	11	--		8.1	120	--	5.0	--	
19-----	11	145		8.1	--	--	5.0	138	
20-----	11	--		7.2	--	--	5.0	--	
21-----	11	160	5	8.1	150	e 2	5.0	120	e 3
22-----	11	--	e 5	8.1	--		5.0	--	
23-----	10	--	e 4	8.1	--		5.0	130	
24-----	9.6	128	3	7.7	--		5.0	--	
25-----	9.6	--	e 3	7.7	102	e 2	5.0	--	e 3
26-----	9.6	137	4	7.7	--		5.2	193	
27-----	9.1	--	e 3	7.7	--		5.2	--	
28-----	9.1	120		7.2	79		5.2	185	
29-----	9.1	--		7.2	--		5.2	--	e 3
30-----	9.1	--		7.2	132	3	5.3	230	
31-----	8.6	108	--	--	--	--	5.4	--	
Total-	361.8	--	130	241.1	--	77	169.5	--	68

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

SAND GULCH NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5.4	--	e 3	2.8	--	--	7.4	1,260	25
2-----	5.2	180	3	2.7	--	--	7.0	--	e 24
3-----	5.0	--	e 2	2.7	340	e 2	4.8	1,060	14
4-----	4.5	162	2	2.7	--	--	4.8	--	e 10
5-----	4.1	--	e 2	2.9	--	--	5.0	--	e 8
6-----	4.3	125	1	3.3	410	e 4	5.0	440	6
7-----	4.6	--	e 1	3.5	--	--	5.0	340	5
8-----	4.8	--	--	3.6	--	--	5.1	310	4
9-----	5.4	138	--	3.7	--	e 7	5.1	250	3
10-----	5.6	--	e 2	3.7	830	8	5.2	245	3
11-----	5.8	152	--	3.8	--	--	5.2	--	e 5
12-----	6.0	--	--	4.0	--	--	5.2	--	e 4
13-----	6.0	372	e 6	4.2	780	e 9	5.2	300	4
14-----	6.0	--	--	4.5	--	--	5.4	820	12
15-----	6.0	--	--	4.5	--	--	7.0	1,470	28
16-----	6.0	408	7	4.5	--	--	6.2	--	e 17
17-----	6.0	--	e 6	4.5	370	--	5.3	--	e 10
18-----	6.0	390	6	4.5	--	--	5.3	--	e 9
19-----	6.5	--	--	4.5	--	e 4	5.8	--	e 9
20-----	7.1	360	--	4.5	370	--	5.3	530	8
21-----	7.0	--	e 7	4.5	--	--	6.3	530	9
22-----	6.7	--	--	4.5	--	e 5	6.3	550	9
23-----	5.8	430	--	4.5	480	6	5.8	--	e 9
24-----	5.3	--	--	5.0	612	8	5.8	600	9
25-----	4.2	--	--	5.3	--	e 9	5.8	--	e 8
26-----	4.0	--	--	5.0	--	e 9	5.8	--	e 8
27-----	3.6	392	--	5.5	655	10	6.7	490	9
28-----	3.4	--	e 4	4.8	520	7	7.7	200	4
29-----	3.2	--	--	--	--	--	7.7	140	3
30-----	3.0	440	--	--	--	--	7.2	640	12
31-----	2.8	--	e 3	--	--	--	5.0	250	3
Total-	159.3	--	130	114.2	--	160	180.4	--	291
Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5.3	--	--	4.5	125	2	88	3,000	713
2-----	5.3	--	--	4.2	100	1	112	4,650	1,410
3-----	5.0	232	--	5.3	146	2	102	2,920	805
4-----	4.8	--	3	4.8	145	2	84	1,900	431
5-----	5.0	260	4	4.5	122	1	59	1,620	258
6-----	4.8	240	--	35	5,930	s 878	30	740	60
7-----	5.0	220	--	51	3,350	462	49	858	r 135
8-----	4.8	--	e 3	57	3,000	462	119	2,100	675
9-----	5.0	--	--	42	1,600	181	123	2,440	810
10-----	5.0	200	--	18	720	35	100	1,320	356
11-----	4.5	160	--	11	460	14	90	930	226
12-----	4.2	--	--	22	842	s 58	63	800	136
13-----	4.0	--	e 2	36	1,280	124	45	640	78
14-----	4.0	140	--	39	890	94	32	400	35
15-----	3.8	--	--	34	740	68	56	520	79
16-----	3.8	--	--	25	310	21	56	810	122
17-----	3.8	140	--	38	510	52	53	940	135
18-----	4.0	--	--	40	450	49	52	980	138
19-----	4.0	115	--	35	390	37	52	930	131
20-----	4.0	--	--	38	500	51	52	820	115
21-----	4.0	--	e 1	54	700	102	54	560	82
22-----	4.0	--	--	48	750	97	60	820	133
23-----	4.0	--	--	36	510	50	53	720	103
24-----	4.0	130	--	34	500	46	53	590	84
25-----	4.0	112	--	67	850	154	60	880	143
26-----	4.0	118	--	53	420	60	62	880	147
27-----	4.0	112	--	45	370	45	62	630	105
28-----	4.8	145	2	47	400	51	62	580	97
29-----	4.5	288	3	36	380	37	62	410	69
30-----	4.5	140	2	38	430	44	58	380	60
31-----	--	--	--	44	480	57	--	--	--
Total-	131.9	--	59	1,046.3	--	3,140	2,003	--	7,870

e Estimated.

s Computed by subdividing day.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

SAND GULCH NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July				August				September			
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	46	380	47	41	--	e 130	38	--	e 15			
2-----	40	380	41	36	930	90	41	210	23			
3-----	40	370	40	40	850	92	43	--	e 26			
4-----	47	560	71	45	800	97	47	--	e 30			
5-----	48	880	114	53	780	112	42	160	18			
6-----	46	700	87	58	820	128	26	--	e 13			
7-----	53	600	86	53	630	90	22	150	9			
8-----	60	720	117	48	760	98	22	100	6			
9-----	52	--	e 100	53	710	102	21	110	6			
10-----	58	780	122	67	980	177	26	180	13			
11-----	54	670	98	70	1,080	204	39	580	61			
12-----	55	--	e 100	74	900	180	60	--	e 130			
13-----	62	--	e 110	67	630	114	48	340	44			
14-----	62	630	105	66	880	157	24	--	e 20			
15-----	56	660	100	52	500	70	16	--	e 9			
16-----	49	420	56	43	--	e 55	14	100	4			
17-----	46	410	51	38	--	e 45	14	75	3			
18-----	49	390	52	32	--	e 40	16	120	5			
19-----	46	500	62	37	--	e 45	16	190	8			
20-----	46	650	81	41	450	50	36	--	e 300			
21-----	47	680	86	43	440	51	36	1,680	s 189			
22-----	51	820	113	48	560	73	84	--	e 400			
23-----	53	730	104	48	370	48	31	560	49			
24-----	57	690	108	49	290	38	17	--	e 7			
25-----	67	850	s 195	43	--	e 34	13	110	4			
26-----	63	1,300	221	46	240	30	12	--				
27-----	72	1,850	360	43	300	35	11	55				
28-----	73	1,950	384	43	230	27	11	--				
29-----	63	1,800	306	41	180	20	11	--				
30-----	51	1,900	262	41	220	24	11	--				
31-----	47	1,450	184	40	170	18	--	--	--			
Total-	1,659	--	3,960	1,499	--	2,470	848	--	1,400			

Total discharge for year (second-foot-days)..... 8,413.5

Total load for year (tons)..... 19,780

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued
SAND GULCH NEAR SHOSHONI, WYO.--Continued

Particle-size analyses of suspended sediment, September 1949 to May 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Sept. 1, 1949	2:55 p. m.	33	367	248	--	--	22	32	48	74	84	96		PW
Mar. 1, 1950	1:10 p. m.	a 7.4	1,690	1,200	30	37	46	59	72	84	90	96		PW
May 6	7:15 a. m.	33	12,700	6,510	18	27	37	49	66	79	90	97	100	SPWCM

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

EAGLE DRAIN NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, 0.1 mile upstream from mouth and 7 miles west of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: December 1948 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 3,960 ppm Aug. 17; minimum daily, not determined.

Sediment loads: Maximum daily, 166 tons July 26; minimum daily, less than 1 ton on many days.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 3,960 ppm Aug. 17, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 219 tons Aug. 9, 1949; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950									
Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6.8	--	e 5.0	3.9	--	e 2.8	3.6	--	e 2.7
2-----	5.0	--	e 3.0	3.6	281	2.7	3.6	300	
3-----	3.3	189	1.7	3.6	--	e 2.8	3.3	--	
4-----	3.3	190	1.7	3.6	313	3.0	3.3	297	
5-----	3.5	181	1.7	3.6	--	e 3.0	3.3	--	
6-----	3.6	154	1.5	3.6	--	e 2.8	3.3	--	e 2.8
7-----	4.2	205	2.3	3.9	279	2.9	3.3	350	
8-----	4.2	--	e 2.4	4.2	--	e 3.2	3.3	--	
9-----	3.9	--	e 2.2	3.9	310	3.3	3.3	269	
10-----	3.6	250	2.4	3.6	--	e 3.2	3.2	--	
11-----	3.3	--	e 2.2	3.6	369	3.6	3.0	--	e 1.3
12-----	3.3	186	1.7	3.5	--	e 4.0	2.6	183	
13-----	3.2	--	e 1.7	3.5	--	e 4.8	2.2	--	
14-----	3.3	220	2.0	3.3	570	5.1	2.0	228	
15-----	3.3	--	e 1.9	3.3	--	e 4.4	2.0	--	
16-----	3.3	--	e 1.8	3.3	446	4.0	2.0	171	e .9
17-----	3.3	197	1.8	3.3	--	e 4.4	2.0	--	
18-----	3.3	--	e 1.7	3.3	560	5.0	2.0	--	
19-----	3.2	198	1.7	3.5	--	e 4.2	2.0	162	
20-----	3.2	--	e 2.6	3.3	--	e 2.6	2.1	--	
21-----	3.2	428	3.7	3.3	238	2.1	2.0	130	e .7
22-----	3.2	--	e 3.4	3.5	--	e 2.4	1.9	--	
23-----	3.3	--	e 3.6	3.5	400	3.8	1.8	170	
24-----	3.3	362	3.2	3.9	--	e 4.6	2.0	--	
25-----	3.5	--	e 3.2	3.9	410	4.3	2.0	--	
26-----	3.5	350	3.3	3.8	--	e 3.6	2.1	119	e 2.2
27-----	3.5	--	e 3.2	3.6	--	e 3.0	2.1	--	
28-----	3.6	311	3.0	3.5	278	2.6	2.1	95	
29-----	3.6	--	e 2.8	3.3	--	e 2.4	2.2	--	
30-----	3.5	--	e 2.6	3.6	275	2.7	2.2	110	
31-----	3.6	270	2.6	--	--	--	2.2	--	
Total-	111.9	--	78	107.3	--	100	78.0	--	

e Estimated.

YELLOWSTONE RIVER BASIN

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YELLOWSTONE RIVER BASIN--Continued

EAGLE DRAIN NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.3	--		2.0	316		2.5	--	e 2.4
2-----	2.3	209		1.9	--		2.6	--	e 2.2
3-----	2.5	--		1.8	339		2.8	289	2.2
4-----	2.3	249		1.8	--		2.8	--	e 2.4
5-----	2.2	--		1.8	--		2.8	--	e 2.4
6-----	2.0	196	e 1.2	1.9	279	e 1.6	2.8	329	2.5
7-----	2.0	--		1.8	--		2.6	283	2.0
8-----	2.1	--		1.8	389		2.6	277	1.9
9-----	2.1	176		1.8	--		2.6	328	2.3
10-----	2.2	--		1.9	280		2.5	295	2.0
11-----	2.2	92		2.0	--		2.5	--	e 1.8
12-----	2.2	--		2.0	--		2.5	--	e 1.7
13-----	2.2	103		2.0	243		2.5	279	1.9
14-----	2.2	--		2.0	--		2.6	340	2.4
15-----	2.1	--		2.0	302		2.6	310	2.2
16-----	2.1	98	e .5	2.1	--		2.6	--	e 2.0
17-----	2.1	--		2.2	240		2.9	287	2.1
18-----	2.2	72		2.3	--		2.9	--	e 2.0
19-----	2.2	--		2.3	--		2.6	--	e 1.8
20-----	2.2	82		2.5	286		2.6	248	1.7
21-----	2.2	--		2.5	--		2.8	237	1.8
22-----	2.3	--		2.6	318		2.8	234	1.8
23-----	2.6	146	e 1.0	2.8	--		2.8	310	2.3
24-----	2.6	--		2.8	330	e 2.6	2.6	310	2.2
25-----	2.3	162		2.9	--		2.8	--	e 2.4
26-----	2.3	--		2.9	--		2.8	--	e 2.2
27-----	2.3	326		3.0	--		2.9	291	2.3
28-----	2.3	--	e 2.1	2.5	400		2.7	--	e 2.0
29-----	2.3	--		--	--		2.6	284	2.0
30-----	2.3	357		--	--		2.7	--	e 1.9
31-----	2.2	--		--	--		2.9	213	1.7
Total--	69.4	--	35	61.9	--	52	83.3	--	64.5
Day	April			May			June		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	2.9	--		2.3	88	0.5	9.7	180	44.7
2-----	2.9	--		2.4	--	e .6	12	240	7.8
3-----	2.9	--	e 1.7	2.6	--	e .7	8.2	--	e 5.5
4-----	2.8	--		2.7	--	e .7	10	245	6.6
5-----	2.8	--		2.8	100	.8	10	241	6.5
6-----	2.9	--		2.6	--	e .7	16	443	19
7-----	2.9	160		3.6	--	e 1.4	20	565	31
8-----	3.0	--		6.4	--	e 8.0	24	605	39
9-----	3.3	--		3.9	--	e 5.0	19	497	26
10-----	3.3	150	e 1.1	3.3	231	2.1	14	410	15
11-----	2.9	--		3.9	167	s 2.2	17	519	29
12-----	2.9	110		6.0	430	7.0	16	449	14
13-----	2.9	--		4.4	--	e 1.6	6.4	360	6.2
14-----	3.0	105		4.7	101	1.3	8.2	402	8.9
15-----	3.1	--		4.7	110	1.4	11	620	18
16-----	3.1	--		4.4	169	2.0	13	610	21
17-----	3.2	--		5.6	203	3.1	18	1,090	53
18-----	3.0	--		5.3	150	2.1	25	1,200	81
19-----	3.0	88		5.6	120	1.8	25	970	66
20-----	3.0	--		5.3	--	e 1.3	31	1,360	114
21-----	3.0	92		5.0	75	1.0	31	1,330	111
22-----	3.0	--		4.7	82	1.0	23	900	56
23-----	3.0	--	e .7	4.6	126	1.6	25	655	44
24-----	2.8	88		6.1	168	2.8	25	555	37
25-----	2.8	--		5.9	151	2.4	27	520	38
26-----	2.8	68		4.4	90	1.1	23	520	32
27-----	2.6	--		4.4	70	.8	21	560	32
28-----	2.8	110		4.7	72	.9	21	740	42
29-----	2.5	--		5.7	123	1.9	20	1,050	57
30-----	2.5	--		5.8	77	1.2	16	1,000	43
31-----	--	--		6.0	83	1.3	--	--	--
Total--	87.6	--	30	139.8	--	60.3	545.5	--	1,060

e Estimated.

s Computed by subdividing day.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

EAGLE DRAIN NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	14	740	28	25	1,880	127	15	1,100	45
2-----	14	--	e 36	22	1,620	96	19	1,290	66
3-----	16	1,000	43	21	1,780	100	20	990	53
4-----	23	945	59	21	1,650	94	21	980	56
5-----	27	845	62	24	1,400	91	18	800	39
6-----	27	870	63	25	1,320	89	13	720	25
7-----	31	1,160	97	21	1,350	77	12	700	23
8-----	32	1,170	101	23	1,200	75	13	2,300	81
9-----	27	1,280	93	23	1,260	78	14	720	27
10-----	25	1,640	111	24	1,430	93	15	--	e 13
11-----	22	1,760	105	23	1,950	121	16	270	12
12-----	23	2,020	125	22	1,580	94	10	210	5.7
13-----	29	1,820	143	21	1,730	98	7.1	200	3.8
14-----	29	1,780	139	21	2,630	149	6.4	170	2.9
15-----	29	1,710	134	17	3,200	147	7.1	210	4.0
16-----	28	2,030	153	14	3,460	131	6.1	280	4.6
17-----	27	1,950	142	14	3,980	150	6.1	220	3.6
18-----	25	2,380	161	16	3,800	160	5.8	190	3.0
19-----	25	1,860	126	17	3,400	156	5.0	220	3.0
20-----	25	1,650	111	18	2,640	128	9.5	1,310	34
21-----	24	1,750	113	22	2,630	156	7.5	310	6.3
22-----	30	--	e 150	19	2,920	150	5.3	220	3.1
23-----	34	--	e 160	16	2,570	111	4.7	220	2.8
24-----	31	1,680	141	16	2,820	122	4.4	--	e 2.4
25-----	27	1,780	130	17	1,720	79	4.2	180	2.0
26-----	30	2,050	166	16	1,650	71	4.2	160	1.8
27-----	25	2,200	148	17	2,300	106	4.0	110	1.2
28-----	21	2,190	124	14	2,010	76	3.9	160	1.7
29-----	20	1,870	101	15	1,680	68	4.4	310	3.7
30-----	20	1,510	82	14	1,410	53	4.2	300	3.4
31-----	18	1,550	75	15	1,220	49	--	--	--
Total-	778	--	3,420	593	--	3,300	285.9	--	533
Total discharge for year (second-foot-days)									2,941.6
Total load for year (tons)									8,780

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

LATERAL P-34.9 WASTEWAY NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, 0.1 mile upstream from mouth and 5½ miles west of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: May 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum observed, 317 ppm Sept. 15; minimum daily, no flow on many days.

Sediment loads: Maximum daily, not determined; minimum daily, 0 tons on many days.

EXTREMES, May 1949 to September 1950.--Sediment concentrations: Maximum observed, 1,510 ppm May 31, 1949; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, not determined; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Load (tons)	Suspended sediment				
				Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum observed
October	8.9	18	1.1	0.04	--	0	46	--
November	0	0	0	0	0	0	--	--
December	0	0	0	0	0	0	--	--
January	0	0	0	0	0	0	--	--
February	0	0	0	0	0	0	--	--
March	0	0	0	0	0	0	--	--
April	0	0	0	0	0	0	--	--
May	67.1	133	18	.6	--	0	99	196
June	164.0	325	95	3.2	--	--	215	302
July	300.3	596	185	6.0	--	--	228	306
August	225.9	448	87	2.8	--	--	143	258
September	150.1	298	67	2.2	--	0	165	317
Water year 1949-50 ..	916.3	1,820	450	1.2	--	0	--	317

YELLOWSTONE RIVER BASIN--Continued

LATERAL P-36.8 WASTEWAY NEAR SHOSHONI, WYO.

LOCATION.--At gaging station, 100 feet upstream from mouth and $4\frac{1}{2}$ miles west of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: May 1949 to September 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum observed, 4,200 ppm May 19; minimum daily, no flow on many days.

Sediment loads: Maximum daily, not determined; minimum daily, 0 tons on many days.

EXTREMES, May 1949 to September 1950.--Sediment concentrations: Maximum observed, 4,440 ppm May 12, 1949; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, not determined; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Load (tons)	Suspended sediment			Concentration (ppm)	
				Daily load (tons)			Weighted mean	Maximum observed
				Mean	Maximum	Minimum		
October	7.0	14	5	0.2	--	0	265	--
November	0	0	0	0	0	0	--	--
December	0	0	0	0	0	0	--	--
January	0	0	0	0	0	0	--	--
February	0	0	0	0	0	0	--	--
March	0	0	0	0	0	0	--	--
April	0	0	0	0	0	0	--	--
May	76.0	151	190	6.1	--	0	926	4,200
June	80.9	160	83	2.8	--	--	380	662
July	181.6	360	260	8.4	--	--	530	835
August	213.1	423	210	6.8	--	--	365	368
September	139.4	276	98	3.3	--	0	260	556
Water year 1949-50	698.0	1,384	850	2.3	--	0	--	4,200

YELLOWSTONE RIVER BASIN--Continued

POISON CREEK NEAR SHOSHONI, WYO.

LOCATION.--At gaging station below bridge on U. S. Highway 26, 1 mile west of Shoshoni, Fremont County.

RECORDS AVAILABLE.--Sediment records: March 1949 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum observed, 108,000 ppm July 2; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 8,000 tons (estimated) July 23; minimum daily, 0 tons on many days.

EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum observed, 108,000 ppm July 2, 1950; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 8,000 tons (estimated) July 23, 1950; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot--days)	Runoff (acre-feet)	Load (tons)	Suspended sediment				
				Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum observed
October	10.7	21	4.5	0.1	--	(t)	156	230
November	15.4	31	4.3	.1	--	(t)	103	175
December	9.3	18	2	.1	--	(t)	80	134
January	3.1	6.1	2	.1	--	(t)	239	347
February	9.0	18	13	.5	--	(t)	535	1,940
March	14.9	30	130	4.2	--	--	3,230	16,400
April	39.2	78	860	29	--	--	8,120	16,000
May	67.2	133	2,040	66	460	(t)	11,200	15,400
June	10.2	20	290	9.7	270	(t)	10,500	3,680
July	36.7	73	9,200	297	e 8,000	(t)	89,500	108,000
August	4.0	7.9	1.2	.04	--	0	111	262
September	13.9	28	480	16	280	0	12,800	30,400
Water year 1949-50...	233.6	464.0	a13,000	36	e 8,000	0	--	108,000

e Estimated.

a Load mostly estimated.

YELLOWSTONE RIVER BASIN--Continued
POISON CREEK NEAR SHOSHONI, WYO.--Continued

Particle-size analyses of suspended sediment, June 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
June 2, 1949.....	8:50 a. m.	41	28,200	2,070	28	32	58	69	87	92	94	98		100		BW
Mar. 15, 1950.....	1:55 p. m.	a. 3	10,100	6,000	--	41	--	85	--	99	--	--		--		SPWCM
Apr. 28.....	1:40 p. m.	a 8.9	16,000	11,600	45	61	77	88	95	96	97	99		100		SPWCM
May 6.....	12:00 m.	a 17.0	10,900	7,920	34	48	67	82	92	96	98	100		--		SPWCM
July 2.....	2:05 a. m.	37.2	101,000	8,300	--	44	--	78	--	91	--	--		--		SPWCM
July 2.....	2:55 a. m.	56.8	90,800	5,990	--	50	--	84	--	93	--	--		--		SPWCM
July 2.....	10:05 a. m.	a 5.3	16,400	6,540	--	84	--	99	--	100	--	--		--		SPWCM
Sept. 21.....	10:30 a. m.	1.6	27,200	4,880	--	82	--	99	--	99	--	--		--		SPWCM
Sept. 29.....	12:35 p. m.	e 3.0	23,000	8,190	--	72	--	97	--	98	--	--		--		SPWCM

e Estimated.

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

BADWATER CREEK AT BONNEVILLE, WYO.

LOCATION.--At gaging station, at Bonneville, Fremont County, 5½ miles upstream from mouth.

DRAINAGE AREA.--790 square miles.

RECORDS AVAILABLE.--Sediment records: October 1947 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 73,000 ppm Sept. 11; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 14,000 tons Sept. 20; minimum daily, 0 tons on many days.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 108,000 ppm July 11, 1949; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 69,800 tons June 2, 1949; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0		0	0.1	--				
2-----	0		0	.1	--				
3-----	0		0	.1	--				
4-----	0		0	.1	--				
5-----	0		0	.1	800				
6-----	0		0	.1	--				
7-----	0		0	.1	--				
8-----	0		0	.1	--	(t)			
9-----	0		0	.1	--				
10-----	0		0	.1	--				
11-----	0		0	.1	--				
12-----	0		0	.1	--				
13-----	0		0	.1	--				
14-----	0		0	.1	--				
15-----	0		0	.5	3,400	5			
16-----	0		0	.3	--	e 2			
17-----	0		0	.1	--				
18-----	0		0	.1	--	(t)			
19-----	0		0	.1	--				
20-----	0		0	.1	--				
21-----	0		0	0	--	0			
22-----	0		0	0	--	0			
23-----	0		0	0	--	0			
24-----	0		0	0	--	0			
25-----	0		0	.4	--	(t)			
26-----	.1			2.0	7,000	38			
27-----	.1			1.7	--	e 20			
28-----	.1			1.5	--	e 4			
29-----	.1	(t)		.1	400	(t)			
30-----	.1			0	--	0			
31-----	.1			--	--	--			
Total-	0.6	--	1	8.3	--	75	0	--	0

e Estimated.

t Indicates sediment discharge less than 1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

BADWATER CREEK AT BONNEVILLE, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				0	--	0	15	9,200	s 580
2-----				0	--	0	14	8,400	320
3-----				0	--	0	19	6,200	320
4-----				0	--	0	15	--	e 240
5-----				0	--	0	17	--	e 300
6-----				0	--	0	21	6,600	370
7-----				0	--	0	17	2,800	130
8-----				0	--	0	22	3,600	210
9-----				0	--	0	25	6,500	440
10-----				0	--	0	.3	--	e 4
11-----				0	--	0	0	--	0
12-----				0	--	0	0	--	0
13-----				0	--	0	0	--	0
14-----				0	--	0	0	--	0
15-----				0	--	0	.5	--	e 5
16-----				0	--	0	5	--	e 80
17-----				0	--	0	8	--	e 110
18-----				6.7	--	e 65	10	--	e 160
19-----				19	--	e 260	10	--	e 180
20-----				20	--	e 380	10	7,000	190
21-----				19	7,200	370	10	6,800	180
22-----				18	--	e 340	12	4,800	160
23-----				16	5,800	250	12	--	e 120
24-----				12	--	e 170	12	3,600	120
25-----				13	--	e 220	12	--	e 150
26-----				9.9	--	e 200	12	--	e 200
27-----				12	7,400	240	11	7,300	220
28-----				12	2,400	78	10	7,300	200
29-----				--	--	--	10	--	e 180
30-----				--	--	--	11	5,000	150
31-----				--	--	--	12	2,600	84
Total--	0	--	0	157.6	--	2,600	332.8	--	5,400
Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	12	--	e 36	18	3,600	170	9	750	18
2-----	13	--	e 38	21	--	e 200	5.8	600	9
3-----	14	--	e 90	24	5,700	370	6.0	1,200	19
4-----	27	8,200	600	25	--	e 440	2	500	3
5-----	27	--	e 300	25	--	e 440	.9	200	(t)
6-----	24	4,500	290	31	--	e 550	0	--	0
7-----	36	--	e 420	28	--	e 500	0	--	0
8-----	61	--	e 720	41	11,000	1,200	0	--	0
9-----	96	--	e 1,300	27	--	e 340	0	--	0
10-----	117	12,000	3,800	21	--	e 190	0	--	0
11-----	54	--	e 1,100	18	3,300	160	0	--	0
12-----	29	6,900	540	25	--	e 220	0	--	0
13-----	30	--	e 550	31	3,600	300	0	--	0
14-----	41	--	e 750	37	--	e 360	0	--	0
15-----	52	--	e 1,000	48	--	e 700	0	--	0
16-----	54	--	e 1,300	74	9,000	1,800	0	--	0
17-----	60	9,800	1,600	74	--	e 1,800	5	--	e 200
18-----	50	--	e 1,200	63	--	e 1,500	10	11,000	300
19-----	42	--	e 700	63	8,900	1,500	3	6,300	51
20-----	31	3,300	280	44	--	e 850	1	3,200	9
21-----	27	--	e 240	32	3,800	330	0	--	0
22-----	21	--	e 180	18	--	e 130	0	--	0
23-----	18	--	e 150	14	3,400	130	0	--	0
24-----	17	2,900	130	14	4,000	180	0	--	0
25-----	9.6	2,600	67	12	3,800	120	0	--	0
26-----	6.8	1,900	35	9.3	2,900	73	0	--	0
27-----	7.8	1,200	25	13	1,600	56	0	--	0
28-----	10	--	e 60	17	2,400	110	0	--	0
29-----	13	--	e 130	24	2,200	140	0	--	0
30-----	14	--	e 140	19	3,200	160	0	--	0
31-----	--	--	--	12	1,500	49	--	--	--
Total--	1,014.2	--	17,800	922.3	--	15,000	42.7	--	610

e Estimated.

s Computed by subdividing day.

t Indicates sediment discharge less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued

BADWATER CREEK AT BONNEVILLE, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0		0				0	--	0
2-----	0		0				0	--	0
3-----	0		0				0	--	0
4-----	0		0				0	--	0
5-----	0		0				0	--	0
6-----	0		0				0	--	0
7-----	0		0				0	--	0
8-----	0		0				0	--	0
9-----	0		0				0	--	0
10-----	0		0				10	59,000	s 2,800
11-----	0		0				5	73,000	1,000
12-----	0		0				0	--	0
13-----	0		0				0	--	0
14-----	0		0				0	--	0
15-----	0		0				0	--	0
16-----	0		0				0	--	0
17-----	0		0				0	--	0
18-----	0		0				0	--	0
19-----	0		0				0	--	0
20-----	0		0				50	32,000	s 14,000
21-----	0		0				3	66,000	550
22-----	0		0				1	70,000	200
23-----	0		0				0	--	0
24-----	.5		e 5				0	--	0
25-----	0		0				0	--	0
26-----	0		0				0	--	0
27-----	0		0				0	--	0
28-----	0		0				0	--	0
29-----	0		0				15	42,000	s 2,500
30-----	0		0				1	42,000	120
31-----	0		0				--	--	--
Total-	0.5	--	5	0	--	0	85	--	21,200
Total discharge for year (second-foot-days).....									2,564.0
Total load for year (tons)									62,700

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

BADWATER CREEK AT BONNEVILLE, WYO.--Continued

Particle-size analyses of suspended sediment, November 1949 to September 1950
(Methods of analysis: B, from withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000
Nov. 19, 1949.....	4:00 p. m.	e 1.0	17,000	2,790	40	60	82	98	100	--	--	--	--	--	--	BW
Feb. 27, 1950.....	11:40 a. m.	11	7,520	2,670	15	24	36	50	68	84	96	100	--	--	--	BW
Mar. 1.....	4:30 p. m.	27	35,000	8,570	--	19	--	38	--	87	96	100	--	--	--	SPWCM
Mar. 9.....	3:00 p. m.	22	5,820	4,470	--	33	--	57	--	94	99	100	--	--	--	SPWCM
Mar. 28.....	4:20 p. m.	e 14	7,280	4,060	--	38	--	58	--	84	96	99	100	--	--	SPWCM
Apr. 4.....	10:05 a. m.	e 23	13,500	7,760	25	32	38	47	63	80	95	100	--	--	--	SPWCM
May 3.....	11:15 a. m.	24	6,540	2,840	--	25	--	75	--	71	87	96	--	97	--	SPWCM
May 13.....	12:50 p. m.	32	3,760	2,850	--	53	--	75	--	95	98	100	--	--	--	SPWCM
May 23.....	10:15 a. m.	17	3,720	2,250	--	35	--	47	--	90	99	100	--	--	--	SPWCM
June 18.....	8:00 a. m.	e 10	10,900	6,430	--	68	--	84	--	95	--	--	--	--	--	SPWCM
Sept. 10.....	1:30 p. m.	e 50	105,000	5,230	--	61	--	95	--	98	--	--	--	--	--	SPWCM
Sept. 20.....	7:15 p. m.	157	90,200	5,930	--	49	--	75	--	88	--	--	--	--	--	SPWCM
Sept. 29.....	8:10 p. m.	26	52,400	10,700	--	60	--	89	--	96	98	99	100	--	--	SPWCM

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR PAVILLION, WYO.

LOCATION.--At gaging station, three-quarters of a mile upstream from Wyoming Canal siphon, 3 miles downstream from Sheep Creek, and 9½ miles northeast of Pavillion, Fremont County.
 DRAINAGE AREA.--257 square miles.
 RECORDS AVAILABLE.--Sediment records: March 1949 to September 1950.
 EXTREMES, 1949-50.--Sediment concentrations: Maximum observed, 189,000 ppm June 19; minimum daily, no flow Sept. 2-8.
 Sediment loads: Maximum daily, 140,000 tons (estimated) July 4; minimum daily, 0 tons Sept. 2-8.
 EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum observed, 302,000 ppm June 13, 1949; minimum daily, no flow Sept. 2-8, 1950.
 Sediment loads: Maximum daily, 140,000 tons (estimated) July 4, 1950; minimum daily, 0 tons Sept. 2-8, 1950.
 REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, September 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F.)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃			
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbon-ate		
Sept. 5, 1949	1.8		7.4	2,060	14	0.02	212	91	185		258	1,020	19	0.9	2.3	0.30		1,670	2.27		903	691	31
Dec. 8	a.4		7.7	2,150	20	.04	211	126	172		350	1,050	24	1.2	1.7	--		1,780	2.42		1,040	753	26
Mar. 20, 1950	a13		7.6	1,460	22	.02	154	73	98		256	635	14	1.0	3.9	.15		1,130	1.54		684	474	24
May 26	4.6		7.7	1,990	16	.10	182	100	151		260	910	20	1.0	1.8	.20		1,510	2.05		865	652	27
Sept. 18	6.2		7.8	1,600	14	.06	174	72	115		242	728	14	.9	2.2	.30		1,240	1.69		731	523	25

a Mean daily discharge.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6.8	880	16	5.0	--	--	5.0	--	e 26
2-----	7.4	--	e 16	5.0	1,290	--	8.0	3,450	75
3-----	7.4	900	12	5.0	--	--	5.0	--	e 15
4-----	6.8	570	10	5.0	2,230	--	2.0	--	e 2
5-----	5.0	670	9	4.6	--	--	.6	236	--
6-----	4.2	680	8	5.0	--	--	.5	--	--
7-----	4.2	920	10	5.0	2,790	--	.4	300	--
8-----	5.0	--	--	6.2	--	e 36	.4	--	--
9-----	5.6	--	--	5.0	2,380	--	.3	462	--
10-----	4.6	840	--	5.6	--	--	.3	--	--
11-----	4.0	--	e 11	4.6	3,380	--	.3	--	--
12-----	3.4	1,250	--	5.0	--	--	.3	--	--
13-----	3.8	--	--	5.6	--	--	.2	220	--
14-----	3.8	748	--	5.0	2,700	--	.2	--	--
15-----	3.0	--	--	4.6	--	--	.2	--	--
16-----	2.2	--	e 6	4.6	380	e 7	.2	180	--
17-----	2.6	892	--	4.2	--	--	.2	--	--
18-----	2.6	--	--	5.0	2,000	--	.2	--	--
19-----	3.4	1,660	--	5.6	--	e 27	.2	75	(t)
20-----	2.6	--	e 15	4.2	--	--	.2	--	--
21-----	2.3	2,620	--	2.2	1,240	--	.2	--	--
22-----	2.6	--	e 34	6.0	--	e 8	.2	--	--
23-----	14	--	e 65	7.0	410	--	.2	44	--
24-----	14	3,030	115	8.0	--	--	.2	--	--
25-----	7.4	--	e 60	6.2	2,380	--	.2	--	--
26-----	5.0	2,510	--	4.2	--	--	.3	94	--
27-----	4.6	--	--	3.8	--	e 30	.3	--	--
28-----	4.6	2,380	e 30	4.6	2,370	--	.3	45	--
29-----	4.2	--	--	4.2	--	--	.4	--	--
30-----	4.6	--	--	3.8	750	8	.4	94	--
31-----	5.0	2,700	--	--	--	--	.4	--	--
Total--	156.7	--	676	149.8	--	820	27.8	--	120
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.3	--	--	2.4	--	--	11	690	20
2-----	.2	--	--	2.4	--	--	11	--	e 20
3-----	.2	--	--	2.4	115	--	13	--	e 26
4-----	.2	--	--	2.3	--	--	14	--	e 40
5-----	.2	--	--	2.3	--	--	14	--	e 70
6-----	.2	230	--	2.3	233	(t)	14	1,680	64
7-----	.2	--	--	2.2	--	--	13	1,690	59
8-----	.2	--	(t)	2.2	--	--	11	1,470	44
9-----	.2	90	--	2.2	--	--	9.0	1,970	48
10-----	.3	--	--	2.2	78	--	7.0	--	e 36
11-----	.5	122	--	2.1	--	--	5.6	--	e 24
12-----	.7	--	--	2.1	--	--	5.6	--	e 24
13-----	.9	134	--	2.1	232	1	5.6	1,510	23
14-----	1.2	--	--	2.1	--	e 1	8.0	2,040	44
15-----	1.5	--	--	2.1	--	--	15	4,700	190
16-----	2.0	87	--	2.1	--	--	17	3,600	165
17-----	2.2	--	--	2.1	360	--	17	--	e 150
18-----	2.4	--	--	2.2	--	e 2	16	--	e 150
19-----	2.7	--	--	2.3	--	--	14	--	e 200
20-----	3.0	112	--	2.5	--	--	13	8,500	298
21-----	3.3	--	--	3.5	440	4	13	12,900	453
22-----	3.0	--	--	7.0	--	e 15	12	--	e 550
23-----	2.8	128	--	14	--	--	12	17,900	580
24-----	2.8	--	(t)	17	--	--	11	16,800	499
25-----	2.7	--	--	17	--	--	11	--	e 480
26-----	2.6	--	--	17	--	e 65	10	--	e 440
27-----	2.6	140	--	16	--	--	9.0	17,800	433
28-----	2.5	--	--	14	612	23	9.0	5,940	144
29-----	2.5	--	--	--	--	--	8.0	6,220	134
30-----	2.4	--	--	--	--	--	7.0	6,050	114
31-----	2.4	--	--	--	--	--	7.4	13,600	272
Total--	48.9	--	16	150.1	--	390	343.2	--	5,790

e Estimated.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR PAVILLION, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	12	--	e 460	9.2	--	e 200	4.6	2,040	25
2-----	14	--	e 550	7.4	--	e 170	4.6	1,740	22
3-----	12	--	e 400	10	8,660	234	4.6	--	e 20
4-----	8.0	13,500	292	9.8	--	e 170	4.6	--	e 20
5-----	8.6	20,000	464	7.4	--	110	4.2	--	e 20
6-----	10	--	e 500	7.4	--	e 75	3.4	1,630	15
7-----	10	14,900	402	10	--	e 120	2.6	--	e 11
8-----	11	--	e 380	10	--	e 110	4.6	1,220	15
9-----	11	--	e 360	9.2	4,130	103	4.2	1,230	14
10-----	10	--	e 260	7.4	--	e 75	3.4	1,260	12
11-----	9.8	9,700	257	6.8	--	e 70	3.4	1,270	12
12-----	9.8	8,900	235	6.2	3,740	63	2.6	1,270	9
13-----	9.8	9,500	251	6.2	--	e 60	2.6	--	e 8
14-----	12	9,200	288	6.2	--	e 55	1.4	1,040	4
15-----	12	--	e 300	7.4	--	e 70	1.4	1,440	5
16-----	11	--	e 240	6.2	--	e 44	1.0	660	2
17-----	9.2	7,080	176	6.8	3,100	57	1.4	--	e 3
18-----	4.6	--	e 85	5.6	--	e 50	2.6	--	e 6
19-----	5.6	6,750	102	4.6	--	e 46	46	47,000	s 20,500
20-----	6.2	6,800	114	4.6	--	e 46	24	29,500	s 2,880
21-----	6.2	6,850	115	4.6	--	e 46	3.8	4,950	51
22-----	5.6	--	e 100	4.2	3,950	45	2.6	2,920	20
23-----	4.6	--	e 75	3.4	2,500	23	1.4	3,620	14
24-----	5.6	5,240	79	3.4	1,860	17	2.2	--	e 22
25-----	6.2	6,610	111	4.2	2,080	24	1.4	--	e 14
26-----	5.6	5,240	79	4.2	--	e 24	1.4	--	e 14
27-----	6.2	5,640	94	4.2	--	e 24	4.2	13,900	158
28-----	9.6	--	e 200	4.6	--	e 30	1.8	--	e 30
29-----	4.6	--	e 100	5.0	3,000	40	.9	2,800	7
30-----	6.8	--	e 140	4.6	2,480	31	.8	1,900	4
31-----	--	--	--	4.6	1,620	23	--	--	--
Total-	257.8	--	7,220	195.4	--	2,300	147.7	--	23,940
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.7	1,750	3	1.8	--	e 2	0.3	--	(t)
2-----	8.0	12,100	s 1,060	1.0	--	e 1	0	--	0
3-----	8.6	6,000	139	.7	311	--	0	--	0
4-----	225	--	e 140,000	.7	--	--	0	--	0
5-----	56	--	e 10,000	.6	--	--	0	--	0
6-----	28	--	e 4,000	.4	--	--	0	--	0
7-----	2.6	3,650	27	.4	195	(t)	0	--	0
8-----	3.0	--	e 11	.4	--	--	0	--	0
9-----	2.6	--	e 7	.4	--	--	114	--	e 42,000
10-----	3.0	1,050	8	.7	462	--	47	--	e 2,000
11-----	3.0	1,250	10	.9	--	--	8.0	2,580	56
12-----	2.6	900	6	16	--	e 2,000	6.8	1,530	28
13-----	3.4	925	8	12	--	e 400	4.6	--	e 13
14-----	3.0	1,100	9	7.4	564	11	5.0	940	13
15-----	3.0	--	e 9	6.2	--	e 6	9.2	--	e 40
16-----	3.0	--	e 8	4.2	--	e 4	10	--	e 60
17-----	3.8	760	8	2.6	265	--	6.8	3,650	67
18-----	3.0	550	4	1.8	--	--	6.2	1,750	29
19-----	3.0	800	5	2.6	--	--	5.0	--	e 13
20-----	2.6	--	e 4	2.6	--	--	51	24,000	3,300
21-----	3.0	--	e 5	2.6	256	--	21	10,800	612
22-----	6.2	--	e 50	1.8	--	--	13	2,720	95
23-----	6.8	--	e 55	1.4	--	--	17	--	e 120
24-----	6.8	3,450	63	.7	157	--	8.6	--	e 34
25-----	72	--	e 30,000	.8	--	--	6.2	1,390	23
26-----	17	--	e 4,000	.9	--	--	4.6	1,170	15
27-----	3.8	4,890	50	.9	--	--	3.0	--	e 9
28-----	2.2	--	e 9	.8	128	(t)	3.4	--	e 12
29-----	2.6	--	e 15	3.9	--	--	5.0	1,700	23
30-----	2.2	--	e 8	1.0	--	--	7.4	--	e 42
31-----	1.8	--	e 4	.6	545	--	--	--	--
Total-	492.3	--	189,600	78.8	--	2,450	363.1	--	54,600

Total discharge for year (second-foot-days) 2,411.6
 Total load for year (tons) 267,900

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
 MUDDY CREEK NEAR PAVILLION, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 3, 1949	10:30 a.m.	6.2	568	418	21	38	50	64	72	79	86	92		95		BW
Oct. 12	2:00 p.m.	5.0	1,280	1,030	19	26	36	46	55	66	83	93		98		BW
Oct. 26	3:00 p.m.	5.0	2,510	1,770	20	28	38	48	58	70	85	94		96		BW
Feb. 27, 1950	3:45 p.m.	20	4,440	1,530	30	36	47	55	64	74	85	98		100		BW
Mar. 20	2:25 p.m.	13	9,980	5,580	--	49	--	54	--	84	--	--		--		SPWCM
Mar. 31	1:20 p.m.	9.2	21,400	13,500	--	28	--	45	--	83	97	100		--		SPWCM
Apr. 5	2:10 p.m.	8.6	27,800	8,490	16	22	28	37	58	85	98	100		--		SPWCM
Apr. 14	2:10 p.m.	12	9,050	6,200	--	36	--	56	--	87	98	100		--		SPWCM
May 9	2:30 p.m.	9.2	4,040	2,250	--	35	--	47	--	78	97	100		--		SPWCM
May 26	3:30 p.m.	4.2	5,560	1,710	--	24	--	30	--	47	59	73		82		SPWCM
June 7	3:00 p.m.	1.4	5,020	846	--	15	--	24	--	52	--	--		--		SPWCM
June 19	6:50 p.m.	141	164,000	5,820	--	31	--	49	--	82	--	--		--		SPWCM
June 20	1:15 p.m.	8.6	22,400	9,530	--	58	--	89	--	98	--	--		--		SPWCM
June 27	11:05 a.m.	5.0	19,300	5,840	--	71	--	96	--	100	--	--		--		SPWCM
July 2	4:55 p.m.	62	106,000	5,310	--	30	--	50	--	93	--	--		--		SPWCM
July 6	2:10 p.m.	13	25,000	8,840	--	69	--	92	--	98	--	--		--		SPWCM
July 25	10:00 a.m.	34	54,400	5,230	--	58	--	82	--	96	--	--		--		SPWCM
July 25	4:15 p.m.	13	27,800	5,290	--	72	--	94	--	99	--	--		--		SPWCM
Sept. 10	3:10 p.m.	10	13,100	4,250	60	73	86	93	95	97	99	100		--		BWCM
Sept. 17	12:40 p.m.	5.0	3,530	2,470	--	85	--	99	--	99	--	--		--		SPWCM
Sept. 20	4:25 p.m.	64	23,800	9,500	37	48	57	65	74	81	92	99		100		BWCM

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR SHOSHONI, WYO.

LOCATION --At gaging station, 5 miles upstream from mouth and 9 miles northwest of Shoshoni, Fremont County.

RECORDS AVAILABLE --Sediment records: March 1949 to September 1950.

EXTREMES, 1949-50 --Sediment concentrations: Maximum observed, 176,000 ppm June 20; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 200,000 tons July 5; minimum daily, 0 tons on many days.

EXTREMES, March 1949 to September 1950 --Sediment concentrations: Maximum observed, 330,000 ppm July 13, 1949; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 200,000 tons July 5, 1950; minimum daily, 0 tons on many days each year.

REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, September 1949 to September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	Specific conduct- ivity (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent car- bon- dium
																Parts per mil- lion	Tons per acre- foot	Total	Non- car- bon- ate	
Sept. 4, 1949	±0.9	7.1	4,070	26	0.02	448	267	493	493	482	2,690	61	1.8	1.4	0.54	4,230	5.75	2,220	1,830	33
Dec. 8	a. 3	7.6	3,430	20	.04	318	195	400	400	372	2,000	52	1.4	.7	--	3,170	4.31	1,600	1,300	35
Feb. 26, 1950	a. 5.2	7.9	1,720	32	.04	190	82	148	148	218	890	16	1.0	3.7	.30	4,470	2.00	811	632	28
May 23	3.7	7.7	2,760	17	.02	242	141	254	254	244	1,420	16	1.4	2.1	.30	2,240	3.05	1,480	960	32
Aug. 23	20	8.8	616	19	.02	93	36	71	71	178	333	11	.5	1.5	.10	794	1.69	356	210	50
Sept. 19	13	8.0	1,070	19	.02	106	36	62	62	194	413	12	.5	2.0	.10	794	1.06	422	271	30

a Mean daily discharge.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.3	--	(t)	5.0	--		2.5	--	5
2-----	1.1	--		4.7	3,200		1.5	474	2
3-----	1.3	--		4.3	--		1.0	--	1
4-----	1.4	--	e 2	3.7	1,400		.8	--	
5-----	1.4	420		4.0	--		.6	252	
6-----	1.3	470		3.7	--	e 37	.5	--	
7-----	2.4	500	3	4.0	4,040		.4	212	(t)
8-----	5.6	--	e 22	4.3	--		.3	148	
9-----	6.3	--	e 42	5.0	4,200		.2	--	
10-----	6.0	3,200		4.7	--		.1	--	
11-----	4.0	--		4.7	2,800		0	--	0
12-----	4.0	1,300		3.2	--		0	--	0
13-----	4.0	--		2.2	--		0	--	0
14-----	4.0	958		3.2	1,320		0	--	0
15-----	4.0	--		3.5	--		0	--	0
16-----	4.3	--	e 15	2.2	1,260		0	--	0
17-----	4.3	726		1.5	--	e 12	0	--	0
18-----	5.6	--		1.1	3,080		0	--	0
19-----	3.5	1,020		.9	--		0	--	0
20-----	3.0	--		.8	--		0	--	0
21-----	2.6	1,400		.7	3,320		0	--	0
22-----	2.6	--		1.1	--	e 3	0	--	0
23-----	4.0	--		1.3	188	(t)	0	--	0
24-----	14	11,000	416	2.7	--	e 26	0	--	0
25-----	14	--	e 500	5.6	12,100		0	--	0
26-----	9.9	4,200	112	4.7	--	e 50	0	--	0
27-----	8.2	--	e 70	3.5	--	e 26	0	--	0
28-----	6.3	2,760	47	4.0	3,400	37	0	--	0
29-----	6.3	--	e 46	3.7	3,500	35	0	--	0
30-----	5.3	--	e 42	3.1	1,300	11	0	--	0
31-----	4.7	3,160	40	--	--	--	0	--	0
Total--	145.7	--	1,600	97.1	--	900	7.9	--	10
Day	January			February			March		
	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	--	--		0	--	0	5.6	6,000	91
2-----	--	--		0	--	0	10	8,500	176
3-----	--	--		0	--	0	13	--	e 220
4-----	--	--		0	--	0	18	--	e 480
5-----	--	--		0	--	0	14	--	e 380
6-----	--	--		0	--	0	8.6	13,200	306
7-----	--	--		0	--	0	3.7	3,000	30
8-----	--	--		0	--	0	3.2	900	8
9-----	--	--		0	--	0	2.7	3,000	22
10-----	--	--		0	--	0	2.2	--	e 12
11-----	--	--		0	--	0	1.8	--	e 6
12-----	--	--		0	--	0	1.4	--	e 4
13-----	--	--		0	--	0	3.5	1,200	11
14-----	--	--		0	--	0	8.0	2,100	45
15-----	--	--		0	--	0	23	3,700	230
16-----	--	--		0	--	0	29	--	e 1,000
17-----	--	--		0	--	0	23	--	e 900
18-----	--	--		0	--	0	22	--	e 800
19-----	--	--		0	--	0	19	--	e 700
20-----	--	--		0	--	0	12	14,500	470
21-----	--	--		4.0	552	6	12	8,000	259
22-----	--	--		9.0	--	e 46	11	--	e 200
23-----	--	--		11	5,360	159	11	15,800	469
24-----	--	--		12	--	e 240	13	11,400	400
25-----	--	--		13	--	e 300	15	--	e 600
26-----	--	--		12	--	e 240	9.4	--	e 340
27-----	--	--		6.0	5,400	88	9.1	7,000	172
28-----	--	--		5.2	5,600	79	8.5	14,600	335
29-----	--	--		--	--	--	8.5	11,200	257
30-----	--	--		--	--	--	16	11,400	492
31-----	--	--		--	--	--	17	23,900	1,100
Total--	0	--	0	72.2	--	1,200	354.2	--	10,500

e Estimated.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR SHOSHONI, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	16	--	e 1,400	4.7	8,180	104	0.8	1,600	3
2-----	14	--	e 1,100	6.0	--	e 180	1.1	1,700	5
3-----	14	28,000	1,060	9.4	13,000	330	1.4	--	e 9
4-----	13	19,300	677	9.9	--	e 380	1.0	3,300	9
5-----	13	--	e 650	7.0	--	e 280	2.2	6,400	s 51
6-----	11	--	e 600	5.6	--	e 120	1.6	2,900	13
7-----	11	20,800	618	8.2	--	e 300	.3	550	(t)
8-----	11	--	e 600	11	--	e 600	.1	260	(t)
9-----	11	--	e 650	8.2	6,060	134	0	--	0
10-----	11	23,800	707	6.3	--	e 100	0	--	0
11-----	9.0	19,600	476	4.7	--	e 75	.5	638	s 2
12-----	9.0	13,800	335	4.7	5,930	75	.1	650	(t)
13-----	9.4	16,000	406	8.3	--	e 200	0	--	0
14-----	9.4	16,000	406	7.0	--	e 170	0	--	0
15-----	9.0	--	e 400	11	9,400	279	0	--	0
16-----	8.6	--	e 380	13	14,800	519	3.8	8,640	s 119
17-----	8.2	14,400	319	13	18,700	656	3.2	6,400	s 65
18-----	7.7	--	e 280	9.3	9,200	231	.8	500	1
19-----	7.3	11,600	229	3.0	--	e 75	2.5	3,560	s 31
20-----	5.3	--	e 150	2.7	11,200	82	41	130,000	s 28,700
21-----	4.7	6,070	77	2.4	--	e 60	9.1	57,000	s 1,530
22-----	3.5	--	e 55	1.4	3,600	14	6.3	33,000	561
23-----	1.9	--	e 36	1.3	1,950	7	12	17,000	551
24-----	2.4	8,000	52	1.9	1,800	9	17	13,000	597
25-----	3.7	10,000	100	3.5	1,540	15	24	16,100	1,040
26-----	4.0	13,000	140	6.6	6,100	109	25	15,000	1,010
27-----	4.0	--	e 140	5.3	12,100	173	21	9,800	556
28-----	6.6	--	e 220	6.7	11,600	210	16	17,500	756
29-----	7.7	--	e 280	3.5	9,000	85	15	14,400	583
30-----	4.0	--	e 100	1.4	3,600	14	14	13,000	491
31-----	--	--	--	.8	1,600	3	--	--	--
Total-	249.4	--	12,600	187.8	--	5,590	219.8	--	36,680
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	15	7,900	320	65	18,000	3,160	2.2	1,050	6
2-----	24	--	e 1,600	60	22,000	3,560	3.2	1,280	11
3-----	28	35,600	2,790	55	16,000	2,380	2.2	1,020	6
4-----	22	12,100	719	50	15,500	2,090	2.2	380	2
5-----	286	--	e 200,000	40	9,000	972	1.1	210	(t)
6-----	52	47,200	s 7,060	20	6,500	351	1.3	300	1
7-----	39	23,000	2,420	16	8,000	346	1.7	380	2
8-----	34	15,500	1,420	20	10,000	540	1.3	630	2
9-----	31	--	e 900	7.4	3,000	60	2.4	--	e 6
10-----	27	10,700	780	1.3	700	2	143	127,000	s 95,000
11-----	18	7,400	360	2.5	2,500	17	24	25,000	1,620
12-----	14	5,700	216	3.7	3,700	37	20	--	e 500
13-----	8.2	4,000	89	20	32,000	s 2,710	17	5,600	257
14-----	4.0	2,000	22	6.3	6,500	111	15	4,850	196
15-----	4.3	2,700	31	5.6	3,900	59	22	7,600	451
16-----	4.0	1,100	12	2.7	1,300	9	22	--	e 450
17-----	2.0	2,200	12	1.9	1,920	5	17	5,700	262
18-----	3.6	2,600	25	2.2	1,880	11	14	5,400	204
19-----	6.3	3,200	54	2.7	1,000	7	14	3,800	144
20-----	2.7	1,000	7	3.5	2,250	21	58	--	e 20,000
21-----	13	9,370	s 454	3.0	2,800	23	86	--	e 15,000
22-----	28	--	e 1,000	3.0	2,100	17	25	14,000	945
23-----	27	--	e 950	16	6,910	s 350	15	7,500	304
24-----	32	--	e 3,500	22	7,000	416	7.3	14,000	276
25-----	67	42,000	s 11,500	25	8,180	552	3.5	13,500	128
26-----	145	--	e 60,000	24	5,150	334	2.7	4,990	36
27-----	67	43,000	8,070	22	4,550	270	1.4	2,900	11
28-----	63	23,000	3,910	18	6,000	292	2.7	--	e 32
29-----	67	22,000	3,980	18	6,200	301	6.0	6,850	111
30-----	72	27,500	5,350	18	5,300	258	6.3	--	110
31-----	66	21,000	3,740	9.0	3,000	73	--	--	--
Total-	1,272.1	--	321,300	563.8	--	19,330	539.5	--	1 ^a ,100
Total discharge for year (second-foot-days)									
									3,709.5
Total load for year (tons)									
									545,800

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued

MUDDY CREEK NEAR SHOSHONI, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September, 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949.....	9:58 a. m.	5.6	3,120	968	45	70	88	94	95	95	96	97		98	BV
Oct. 24.....	4:10 p. m.	2.6	11,200	2,100	25	40	58	73	83	90	95	97		98	BV
Feb. 21, 1950.....	2:50 p. m.	a 5.2	19,600	3,640	11	18	21	29	43	65	85	95		98	BVC
Mar. 14.....	2:00 p. m.	a 8.0	4,240	2,040	--	31	--	49	--	73	92	100		--	SPWCM
Mar. 31.....	2:05 p. m.	17	26,200	15,400	--	50	--	74	--	87	94	99		100	SPWCM
Apr. 3.....	10:45 a. m.	a 14	28,800	2,350	38	46	56	66	73	80	90	100		--	BVC
Apr. 11.....	4:40 p. m.	10	18,600	1,720	36	41	53	58	73	83	90	97		100	BVC
Apr. 26.....	4:00 p. m.	6.6	14,400	4,630	--	36	--	56	--	82	95	99		100	SPWCM
May 9.....	12:30 p. m.	4.3	6,060	3,400	--	54	--	78	--	93	98	100		--	SPWCM
May 17.....	3:50 p. m.	14	19,200	4,390	28	33	39	50	72	90	97	99		100	SPWCM
May 29.....	4:40 p. m.	6.0	11,000	5,140	--	33	--	50	--	86	93	99		100	SPWCM
June 5.....	3:15 p. m.	7.0	13,800	7,310	--	37	--	59	--	90	97	100		--	SPWCM
June 20.....	9:30 a. m.	63	176,000	7,540	29	39	49	62	75	90	96	99		100	SPWCM
June 25.....	6:25 p. m.	24	16,800	5,930	--	30	--	43	--	86	--	--		--	SPWCM
June 28.....	10:15 a. m.	16	20,000	7,160	--	68	--	87	--	94	--	--		--	SPWCM
July 3.....	11:45 a. m.	28	41,800	25,000	--	48	--	75	--	93	98	99		100	SPWCM
July 5.....	3:15 p. m.	146	153,000	12,800	--	36	--	58	--	84	94	99		100	SPWCM
July 6.....	2:50 p. m.	94	35,300	6,080	--	37	--	58	--	93	--	--		--	SPWCM
July 19.....	2:45 p. m.	4.3	2,420	1,370	--	66	--	96	--	98	--	--		--	SPWCM
July 25.....	11:00 p. m.	112	82,000	4,090	31	41	49	58	68	80	94	100		--	BVC
July 26.....	3:15 p. m.	144	105,000	9,270	--	35	--	52	--	82	94	99		100	SPWCM
July 27.....	12:30 p. m.	70	47,900	8,040	--	44	--	64	--	84	--	--		--	SPWCM
Aug. 4.....	2:45 p. m.	51	16,900	9,770	--	30	--	45	--	78	94	99		100	SPWCM
Aug. 13.....	8:55 a. m.	38	55,000	5,190	--	50	--	75	--	89	--	--		--	SPWCM
Sept. 10.....	1:25 p. m.	105	146,000	3,150	32	44	50	63	74	84	92	98		100	SPWCM
Sept. 11.....	2:40 p. m.	21	15,600	5,710	--	62	--	81	--	93	97	100		--	SPWCM
Sept. 22.....	10:15 a. m.	a 25	14,400	2,660	48	58	65	73	79	93	97	99		100	BVC
Sept. 24.....	10:40 a. m.	14	17,000	6,120	--	74	--	89	--	96	--	--		--	SPWCM
a Mean daily discharge.															

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

TONGUE RIVER AT MILES CITY, MONT.

LOCATION.--At gaging station, 4 miles south of Miles City, Custer County, and 8 miles upstream from mouth.

RECORDS AVAILABLE.--Water temperatures: April 1949 to September 1950.

Sediment records: June 1946 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 74°F July 8; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 9,750 ppm Apr. 2; minimum daily, not determined.

Sediment loads: Maximum daily, 26,300 tons Apr. 2; minimum daily, 2 tons Aug. 9, 10, 19, 20.

EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, 18,900 ppm Aug. 13, 1946; minimum daily, 1 ppm Aug. 14, 15, 1947.

Sediment loads: Maximum daily, 122,000 tons June 5, 1948; minimum daily, less than 1 ton on several days in August 1947 and July to September 1949.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950
[Once-daily temperature measurement generally between 8 a.m. and 9 a.m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	47	--			--	--	52	--	70	59	64
2	--	42	--			--	--	--	56	68	62	65
3	--	--	--			33	--	--	58	69	73	--
4	60	45	--			--	38	--	60	70	65	--
5	54	--	--			--	--	--	64	68	67	63
6	--	48	32			--	--	--	65	73	--	66
7	44	--	--			--	--	--	--	73	66	64
8	--	46	--			--	--	--	48	74	68	--
9	46	--	34			--	--	--	42	73	70	57
10	--	39	--			--	--	--	56	73	--	--
11	--	--	--	32		--	--	--	60	70	--	51
12	42	44	--			--	--	--	68	59	69	51
13	--	--	--			--	--	--	68	61	70	49
14	40	39	--			--	--	--	71	68	--	--
15	--	--	--			--	--	--	69	70	69	49
16	45	35	--			--	--	--	63	--	66	49
17	--	--	--			--	--	--	65	61	--	52
18	42	41	--			--	--	60	64	66	64	53
19	--	--	--			--	39	--	62	68	55	59
20	33	--	--			--	--	--	68	69	55	58
21	34	33	--			32	--	--	68	70	--	55
22	--	--	--			--	--	--	71	64	60	57
23	42	35	--			--	--	--	66	61	64	57
24	--	--	--			--	--	--	67	66	60	59
25	45	36	--			--	--	--	64	68	63	58
26	--	--	--			--	--	--	59	68	62	59
27	45	--	--			--	--	--	67	68	64	52
28	--	--	--			--	--	--	67	69	63	47
29	47	--	--			--	--	--	67	70	--	48
30	--	--	--			--	--	--	69	--	62	42
31	44	--	--			--	--	--	--	58	65	--
Average	--	--	--			--	--	--	63	68	--	55

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

TONGUE RIVER AT MILES CITY, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	82	--	e 6	250	102	69	629	101	172
2-----	82	20	4	250	70	47	629	--	e 180
3-----	85	--	e 5	260	--	e 32	629	113	192
4-----	92	44	11	260	35	25	601	--	e 190
5-----	85	31	7	255	38	26	587	--	e 190
6-----	70	--	e 5	255	40	28	580	122	191
7-----	69	22	4	255	40	28	550	126	187
8-----	80	--	e 4	255	40	28	540	--	e 180
9-----	100	21	6	255	40	28	520	--	e 170
10-----	117	--	e 11	255	40	28	500	--	e 160
11-----	120	--	e 17	265	--	e 30	480	--	e 70
12-----	120	45	15	270	56	41	480	--	e 30
13-----	120	--	e 11	385	276	287	440	8	10
14-----	123	29	10	502	753	1,020	400	--	e 10
15-----	129	--	e 11	532	--	e 850	400	--	e 10
16-----	160	64	28	550	450	668	380	--	e 17
17-----	174	--	e 34	556	--	e 480	360	31	30
18-----	206	83	46	568	235	360	370	--	e 28
19-----	222	--	e 60	574	--	e 320	370	--	e 28
20-----	242	140	92	574	--	e 300	370	27	27
21-----	255	212	146	520	219	308	350	--	e 22
22-----	242	--	e 200	622	--	e 650	330	--	e 18
23-----	310	1,400	1,170	622	365	613	310	--	e 15
24-----	265	--	e 1,000	622	--	e 420	285	16	12
25-----	255	1,520	1,050	622	178	299	285	--	e 12
26-----	238	--	e 500	622	170	280	285	--	e 12
27-----	230	340	211	629	171	290	285	15	12
28-----	230	--	e 180	629	--	e 300	285	--	e 14
29-----	246	280	186	622	173	290	285	--	e 17
30-----	250	--	e 80	622	--	e 200	290	25	20
31-----	250	91	61	--	--	--	295	--	e 20
Total-	5,249	--	5,170	13,458	--	8,340	13,100	--	2,250
	January			February			March		
1-----	270	--	e 17	120	16	5	290	--	e 100
2-----	240	--	e 14	120	--	e 6	315	--	e 130
3-----	220	--	e 12	125	--	e 6	350	169	160
4-----	220	20	12	125	19	6	390	--	e 170
5-----	220	--	e 12	125	--	e 6	410	--	e 180
6-----	220	}	e 10	125	--	e 6	380	--	e 150
7-----	210			130	--	e 8	350	--	e 130
8-----	200			130	35	12	360	114	111
9-----	190			130	--	e 13	370	--	e 140
10-----	180	}	e 10	130	--	e 14	320	--	e 120
11-----	170			125	42	14	330	145	129
12-----	160			130	--	e 15	320	--	e 90
13-----	155			130	--	e 15	315	71	60
14-----	145	16	6	130	--	e 16	310	--	e 70
15-----	140	--	e 8	150	56	23	305	100	82
16-----	160	--	e 11	160	--	e 38	310	--	e 80
17-----	150	--	e 10	160	--	e 38	315	--	e 75
18-----	155	24	10	160	90	39	330	79	70
19-----	155	--	e 10	160	--	e 40	330	--	e 60
20-----	160	--	e 10	165	--	e 40	330	--	e 50
21-----	180	24	10	170	--	e 40	350	56	53
22-----	160	--	e 9	170	87	40	360	200	194
23-----	150	--	e 8	170	--	e 45	410	--	e 2,000
24-----	140	--	e 7	180	--	e 50	400	2,070	2,240
25-----	125	22	7	185	110	55	390	2,930	3,090
26-----	125	--	e 7	230	--	e 70	385	1,230	1,280
27-----	130	--	e 6	260	--	e 90	370	--	e 450
28-----	125	16	5	300	--	e 100	360	215	209
29-----	120	--	e 5	--	--	--	360	280	272
30-----	115	--	e 5	--	--	--	360	725	705
31-----	115	--	e 5	--	--	--	500	5,800	7,830
Total-	5,185	--	280	4,395	--	850	10,975	--	20,480

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

TONGUE RIVER AT MILES CITY, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	800	5,200	11,200	556	2,900	s 4,620	1,050	1,300	3,680
2-----	1,000	9,750	26,300	526	2,870	4,070	888	853	2,050
3-----	1,000	4,340	11,700	556	2,590	3,890	804	527	1,140
4-----	800	2,400	5,180	496	1,150	1,540	636	231	397
5-----	550	1,790	2,660	412	1,000	1,110	448	382	462
6-----	514	2,500	3,470	315	640	544	412	188	209
7-----	562	1,960	2,980	270	680	496	390	--	e 360
8-----	406	1,730	1,900	260	265	186	550	3,520	5,230
9-----	350	--	e 750	355	--	e 1,600	643	3,570	6,200
10-----	310	334	280	330	1,780	1,590	484	1,800	2,350
11-----	285	--	e 140	305	800	658	360	442	430
12-----	265	131	94	370	438	438	345	294	274
13-----	250	107	72	375	178	180	335	225	204
14-----	242	80	52	370	138	138	330	135	120
15-----	255	120	83	380	160	164	526	620	880
16-----	320	241	208	380	122	125	385	1,190	1,240
17-----	320	423	365	375	159	161	385	--	e 1,100
18-----	315	208	177	375	165	167	418	1,170	1,320
19-----	310	158	132	375	98	99	430	690	801
20-----	290	99	78	375	--	e 100	418	360	429
21-----	226	108	66	454	226	277	406	350	384
22-----	194	145	76	502	560	759	562	790	1,200
23-----	186	132	66	699	1,080	2,040	811	1,220	2,670
24-----	218	1,220	718	783	1,030	2,180	954	1,200	3,090
25-----	270	1,720	1,250	881	1,660	3,950	1,190	4,230	13,600
26-----	490	2,880	3,810	909	970	2,380	1,130	1,740	5,310
27-----	412	1,500	1,670	909	935	2,300	1,260	1,170	3,980
28-----	390	851	896	1,100	--	e 6,300	1,270	1,010	3,460
29-----	424	576	659	1,100	2,440	7,250	1,290	1,020	3,550
30-----	424	220	252	1,050	1,180	3,340	1,290	1,000	3,480
31-----	--	--	--	1,070	1,460	4,220	--	--	--
Total-	12,378	--	77,280	17,213	--	56,870	20,400	--	69,800
Day	July			August			September		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,290	626	2,180	114	45	14	166	99	44
2-----	1,270	689	2,380	90	34	8	117	48	15
3-----	804	605	1,310	76	28	6	98	--	e 8
4-----	657	382	678	65	36	6	90	30	7
5-----	532	189	272	58	24	4	82	29	6
6-----	370	135	135	54	--	e 4	78	26	5
7-----	300	81	66	48	27	3	67	30	5
8-----	285	66	51	46	23	3	70	--	e 5
9-----	260	54	38	45	18	2	78	22	5
10-----	238	59	38	48	--	e 2	76	--	e 3
11-----	230	61	38	58	--	e 160	95	21	5
12-----	214	54	31	650	5,800	10,200	156	78	33
13-----	218	47	28	260	3,510	2,460	198	61	33
14-----	163	40	18	129	--	e 700	170	--	e 17
15-----	142	30	12	67	985	178	198	59	32
16-----	152	--	e 24	45	375	46	226	112	68
17-----	300	--	e 1,900	20	130	7	218	68	40
18-----	265	2,270	1,620	17	100	5	226	66	40
19-----	250	380	256	11	84	2	238	68	44
20-----	424	--	e 1,300	11	73	2	300	671	s 678
21-----	375	960	972	11	--	e 36	526	6,950	9,870
22-----	290	1,740	1,360	142	628	241	400	3,910	4,220
23-----	255	1,520	1,050	166	603	270	380	800	821
24-----	238	483	310	186	477	240	380	339	348
25-----	226	349	213	194	365	191	390	66	70
26-----	222	246	147	210	277	157	424	400	458
27-----	210	215	122	210	223	126	424	264	302
28-----	170	352	161	163	204	90	502	295	400
29-----	135	99	36	202	212	116	532	369	530
30-----	126	--	e 22	210	189	107	532	478	687
31-----	126	58	20	210	178	101	--	--	--
Total-	10,737	--	16,770	3,816	--	15,510	7,437	--	18,800

Total discharge for year (second-foot-days) 124,343
 Total load for year (tons) 292,200

e Estimated.

s Computed by subdividing day.

YELLOWSTONE RIVER BASIN--Continued

TONGUE RIVER AT MILES CITY, MONT.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom with aml tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 25, 1949	11:00 a. m.	260	1,640	1,130	79	89	95	98	99	99	99	100				BW
Nov. 16	9:00 a. m.	550	487	811	9	16	29	58	72	77	82	90				BN
Nov. 16	9:00 a. m.	550	487	1,020	32	38	51	74	84	85	90	95				BW
Mar. 3, 1950	8:15 a. m.	a 350	169	494	82	90	94	98	99	100	--	--				BW
Mar. 24	9:45 a. m.	a 400	2,580	2,110	--	85	--	--	--	97	98	100				SPWCM
Mar. 31	8:45 a. m.	a 500	4,320	3,920	--	63	--	84	--	99	100	100				SPWCM
Apr. 4	8:00 p. m.	a 800	2,810	2,450	--	4	46	54	65	91	99	100				SPWCM
Apr. 4	6:30 p. m.	a 800	2,810	1,480	--	53	--	78	81	89	92	98				SPWCM
Apr. 19	7:50 a. m.	a 310	1,711	953	27	42	55	78	81	89	92	96				SPWCM
Apr. 26	9:00 a. m.	472	3,600	2,710	--	62	--	77	--	89	96	98				SPWCM
May 1	6:15 p. m.	664	4,430	3,720	1	2	6	74	81	92	98	100				SPWCM
May 1	6:15 p. m.	664	4,430	4,080	47	58	67	74	83	92	98	100				SPWCM
May 10	11:15 a. m.	315	1,840	1,530	--	90	--	97	--	98	--	--				SPWCM
June 2	7:45 a. m.	909	901	2,060	--	33	--	45	--	72	94	99				SPWCM
June 9	8:30 a. m.	671	3,800	3,030	--	75	--	85	--	94	98	100				SPWCM
June 15	1:45 p. m.	580	728	2,140	--	38	--	56	--	89	97	100				SPWCM
June 25	8:30 a. m.	1,260	4,560	3,750	--	51	--	78	--	97	100	--				SPWCM
July 18	7:30 a. m.	265	3,180	3,150	3	6	26	95	97	98	99	100				SPWCM
July 18	7:30 a. m.	265	3,180	5,160	73	80	92	--	--	99	--	--				SPWCM
July 23	10:00 a. m.	255	1,900	1,590	--	88	--	93	--	99	--	--				SPWCM
Aug. 12	8:00 a. m.	783	7,080	5,860	--	81	--	94	--	99	--	--				SPWCM
Aug. 15	7:25 a. m.	70	1,100	3,340	--	94	--	99	--	99	--	--				SPWCM
Sept. 20	5:55 p. m.	325	995	3,060	--	58	--	77	--	94	--	--				SPWCM
Sept. 21	7:05 a. m.	538	7,220	6,270	57	71	85	93	97	98	--	--				SPWCM
Sept. 21	7:05 a. m.	538	7,220	7,230	0	2	8	94	96	97	--	--				SPWCM

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

SOUTH FORK POWDER RIVER NEAR KAYCEE, WYO.

LOCATION.--At gaging station, 600 feet upstream from bridge on U. S. Highway 87, 1½ miles upstream from mouth of Murphy Creek, 6.6 miles southeast of Kaycee, Johnson County, and about 7 miles upstream from confluence with Middle Fork Powder River.

DRAINAGE AREA.--1,150 square miles.

RECORDS AVAILABLE.--Sediment records: May to September 1950.

EXTREMES, May to September 1950.--Sediment concentrations: Maximum daily, 65,100 ppm July 5; minimum daily, not determined.

Sediment loads: Maximum daily, 25,100 tons Sept. 21; minimum daily, less than 1 ton on many days in June, August, and September.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, May to September 1950

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				--	--	--	22	620	37
2-----				--	--	--	29	865	68
3-----				--	--	--	27	520	38
4-----				--	--	--	20	335	18
5-----				--	--	--	19	260	13
6-----				--	--	--	19	175	9
7-----				--	--	--	17	876	s 79
8-----				--	--	--	20	4,290	232
9-----				--	--	--	16	1,390	60
10-----				--	--	--	14	355	13
11-----				--	--	--	12	187	6
12-----				--	--	--	9.6	128	3
13-----				--	--	--	11	90	3
14-----				--	--	--	8.3	75	2
15-----				--	--	--	6.2	63	1
16-----				--	--	--	13	60	2
17-----				96	13,400	3,460	13	49	2
18-----				75	6,170	1,250	16	68	3
19-----				57	3,700	569	16	140	6
20-----				51	1,990	274	15	1,360	55
21-----				38	1,580	162	12	6,420	208
22-----				40	1,200	130	9.6	7,520	195
23-----				31	650	94	7.0	250	5
24-----				31	555	46	6.2	143	2
25-----				57	2,070	318	5.3	81	1
26-----				42	2,750	312	6.2		
27-----				31	1,550	130	6.2		
28-----				29	870	68	7.0	44	(t)
29-----				29	850	67	7.0		
30-----				29	895	70	8.3		
31-----				24	850	55	--	--	--
Total-				660	--	6,980	397.9	--	1,060

s Computed by subdividing day.

t Less than 1 ton.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

SOUTH FORK POWDER RIVER NEAR KAYCEE, WYO.--Continued

Suspended sediment, May to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	7.0	40	(t)	8.3	96	2	2.7	84	(t)
2-----	7.0	255	5	7.0	80	2	2.7		
3-----	8.3	172	4	6.2	82	1	2.2		
4-----	53	36,200	s 11,000	5.3			1.7		
5-----	66	65,100	12,000	5.3			1.7		
6-----	22	29,900	1,780	4.6	118	2	2.2	305	5
7-----	14	2,900	110	4.6			2.2		
8-----	14	485	18	5.3			2.2		
9-----	12	405	13	5.3	131	3	3.2	2,200	71
10-----	15	620	25	9.6	131	3	6.2		
11-----	16	805	35	12	645	21	12	1,520	39
12-----	33	45,500	s 5,400	7.0	162	3	9.6	275	5
13-----	9.6	2,300	60	5.3	108	2	7.0	280	7
14-----	5.3	300	4	3.9	93	1	9.6	5,320	s 219
15-----	4.6	200	2	4.6			14		
16-----	5.3	155	2	5.3	100	3	15	590	24
17-----	5.3	150	2	9.6			8.3	--	e 13
18-----	5.3	120	2	5.3			4.6	390	5
19-----	5.3	150	2	4.6	63	(t)	3.9	230	2
20-----	5.3	148	2	4.6			15	9,500	s 489
21-----	5.3	130	2	3.2	91	(t)	118	63,300	s 25,100
22-----	11	390	12	2.2			54	41,000	6,200
23-----	14	240	9	2.2			40	12,100	1,310
24-----	19	845	43	2.7			14	4,500	170
25-----	14	2,500	94	2.7			9.6	2,250	58
26-----	24	18,500	s 2,670	3.2	91	(t)	7.0	650	12
27-----	16	20,000	s 1,280	2.7			6.2	330	6
28-----	6.2	445	7	2.7			7.0	420	8
29-----	5.3	140	2	2.7	20	--	15	1,680	68
30-----	6.2	120	2	2.2			20	2,520	136
31-----	8.3	102	2	2.2			--	--	--
Total--	442.6	--	34,590	152.4	--	56	416.8	--	33,950
Total discharge for period May 17 to Sept. 30 (second-foot-days)									2,069.7
Total load for period May 17 to Sept. 30 (tons)									76,640

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
SOUTH FORK POWDER RIVER NEAR KAYCEE, WYO.--Continued

Particle-size analyses of suspended sediment, May to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
May 3, 1950	12:55 p. m.	a 336	69,900	58,100	--	0	71	74	86	91	98	100			SPNM
May 3	12:55 p. m.	a 336	69,900	5,010	35	48	57	70	81	93	98	100		--	SPWCM
May 11	1:35 p. m.	a 450	50,500	39,700	--	0	5	61	76	88	97	100		--	SPNM
May 11	1:35 p. m.	a 450	50,500	5,500	29	36	46	55	66	84	94	99		100	BWC
May 17	10:00 a. m.	a 96	14,000	4,500	--	--	--	--	83	88	95	97		97	SPWCM
May 25	5:45 p. m.	a 57	2,560	2,100	--	76	--	90	--	96	--	--		--	SPWCM
June 2	9:45 a. m.	a 29	1,200	918	--	65	--	87	--	91	--	--		--	SPWCM
June 8	10:45 a. m.	20	3,360	2,720	--	67	--	91	--	98	--	--		--	SPWCM
June 21	5:15 p. m.	12	11,100	9,080	--	87	--	98	--	100	--	--		--	SPWCM
July 4	5:45 p. m.	118	83,400	8,320	--	63	--	93	--	98	--	--		--	SPWCM
July 5	8:45 a. m.	66	68,400	7,460	--	72	--	--	--	99	--	--		--	SPWCM
July 6	6:40 p. m.	16	21,200	24,200	12	13	14	97	99	100	--	--		--	SPNM
July 6	6:40 p. m.	16	21,200	3,440	--	86	95	98	99	100	--	--		--	BWC
July 12	8:00 a. m.	38	63,300	6,510	--	71	--	98	--	99	--	--		--	SPWCM
July 13	10:50 a. m.	8.3	1,200	890	--	78	--	88	--	99	--	--		--	SPWCM
July 25	7:45 a. m.	16	6,220	4,980	--	88	--	97	--	99	--	--		--	SPWCM
July 26	5:30 p. m.	73	53,300	3,620	--	90	--	86	--	99	--	--		--	SPWCM
July 26	5:30 p. m.	73	10,900	11,000	--	0	4	93	99	99	--	--		--	SPNM
July 27	3:44 p. m.	112	16,900	5,280	68	88	94	97	99	100	--	--		--	SPWCM
Sept. 11	1:45 p. m.	15	3,290	2,470	--	84	--	93	--	99	--	--		--	SPWCM
Sept. 15	8:00 a. m.	15	1,290	1,070	--	69	--	83	--	98	--	--		--	SPWCM
Sept. 15	5:00 p. m.	17	15,000	6,060	--	69	--	92	--	99	--	--		--	SPWCM
Sept. 20	8:30 a. m.	22	5,300	4,300	--	68	--	85	--	98	--	--		--	SPWCM
Sept. 21	8:30 a. m.	152	62,800	6,000	--	63	--	90	--	98	--	--		--	SPWCM
Sept. 25	4:05 p. m.	9.6	1,720	2,010	--	0	2	93	96	100	--	--		--	SPNM
Sept. 25	4:05 p. m.	9.6	1,720	2,130	78	90	93	93	95	99	--	--		--	SPWCM
Sept. 30	5:00 p. m.	19	2,460	1,750	--	75	--	93	--	97	--	--		--	SPWCM

a Mean 4416 McChavez,
b 97 percent finer than 2.000 millimeters.

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER AT SUSSEX, WYO.--Continued

Temperature (°F) of water, March to September 1950

/Once-daily temperature measurement generally between 5 p. m. and 8 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						--	50	50	51	--	74	75
2						--	45	50	52	70	78	78
3						37	44	39	63	70	75	70
4						--	40	43	68	--	77	70
5						--	--	50	73	--	74	70
6						--	--	54	--	84	82	75
7						--	--	41	55	--	82	--
8						--	--	46	54	--	80	68
9						--	--	52	60	80	74	--
10						--	--	55	66	75	88	--
11						--	--	58	--	74	60	57
12						--	56	58	74	73	69	64
13						--	64	65	75	74	60	59
14						--	60	59	73	70	70	57
15						--	55	--	72	82	70	80
16						38	52	58	70	67	75	62
17						45	52	59	64	68	72	65
18						39	41	54	64	77	70	68
19						43	50	50	70	--	75	68
20						40	57	55	76	73	75	52
21						45	53	62	75	66	72	65
22						44	50	65	74	70	71	65
23						45	53	55	60	72	--	65
24						47	39	48	65	70	83	62
25						45	48	50	70	74	--	62
26						39	46	55	72	82	72	63
27						40	47	62	75	77	70	65
28						48	37	50	70	76	69	58
29						45	45	80	74	70	70	44
30						49	50	55	--	63	70	50
31						45	--	60	--	65	81	--
Average						--	--	54	67	73	74	64

Suspended sediment, March to September 1950

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							110	--	e 1,000
2-----							115	--	e 1,000
3-----							115	3,620	1,120
4-----							140	5,000	1,890
5-----							137	4,810	1,780
6-----							127	4,600	1,580
7-----							122	3,350	1,100
8-----							111	2,500	749
9-----							109	3,000	883
10-----							109	3,450	1,020
11-----							86	}	e 500
12-----							70		
13-----							92		
14-----							120	1,880	609
15-----							165	1,940	864
16-----							205	5,090	2,820
17-----							164	6,780	3,000
18-----							164	8,540	3,780
19-----							147	5,120	2,030
20-----							190	8,670	4,450
21-----							164	8,030	3,580
22-----							158	8,340	3,560
23-----							168	5,700	2,590
24-----							164	7,670	3,400
25-----							172	5,980	2,770
26-----							234	6,480	4,090
27-----							272	5,080	3,730
28-----							180	3,540	1,720
29-----							180	3,290	1,600
30-----							180	2,510	1,220
31-----							172	2,180	1,000
Total-----							4,642	--	60,420

e Estimated.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER AT SUSSEX, WYO.--Continued

Suspended sediment, March to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Suspended sediment Mean concentration (ppm)	Tons per day
1-----	164	3,230	1,430	392	9,150	9,680	282	2,560	1,950
2-----	185	2,820	1,410	416	10,200	11,500	320	2,450	2,120
3-----	254	3,020	2,070	560	32,200	s 55,100	392	2,420	2,560
4-----	244	4,350	2,870	608	23,800	39,100	234	1,820	1,150
5-----	244	4,100	2,700	485	10,800	14,100	292	1,390	1,100
6-----	301	5,500	4,470	608	21,100	34,600	301	--	e 1,100
7-----	356	12,100	11,600	858	40,200	96,600	282	1,410	1,070
8-----	292	9,400	7,410	946	29,700	75,900	332	2,880	2,580
9-----	310	5,400	4,520	990	18,800	50,200	272	2,500	1,840
10-----	500	17,700	s 25,400	1,060	31,100	89,000	200	1,470	794
11-----	428	11,800	13,600	1,040	33,300	93,500	215	--	e 800
12-----	356	10,600	10,200	924	23,000	57,400	220	1,530	909
13-----	225	7,200	4,360	792	17,100	36,800	215	1,530	889
14-----	244	5,200	3,420	752	12,400	25,200	200	1,270	686
15-----	332	4,850	4,350	836	--	e 28,000	210	1,160	658
16-----	470	13,100	16,800	1,120	13,800	41,700	215	1,070	821
17-----	485	8,000	10,500	1,400	16,200	61,200	210	965	547
18-----	575	7,100	11,000	1,470	18,400	73,000	225	1,920	1,170
19-----	545	6,400	9,420	1,560	16,500	69,500	225	16,200	s 12,700
20-----	428	5,200	6,000	1,500	12,300	49,800	190	6,750	3,460
21-----	301	5,200	4,220	1,240	8,000	26,800	147	3,220	1,280
22-----	272	3,900	2,860	1,040	7,300	20,500	130	900	316
23-----	356	4,300	4,140	1,060	8,600	24,600	114	252	78
24-----	500	6,190	8,350	1,040	8,400	23,600	106	154	44
25-----	470	2,700	3,420	990	4,360	11,700	101	187	46
26-----	332	1,750	1,570	734	3,040	6,020	88	142	34
27-----	310	1,680	1,410	545	2,450	3,600	80	118	25
28-----	292	2,260	1,780	416	2,380	2,680	69	92	17
29-----	292	2,450	1,930	380	3,320	3,410	65	77	14
30-----	292	3,300	2,600	292	2,300	1,810	57	--	e 12
31-----	--	--	--	332	2,650	2,380	--	--	--
Total--	10,355	--	185,600	26,386	--	1,139,000	5,989	--	40,570
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Suspended sediment Mean concentration (ppm)	Tons per day
1-----	44	--	e 9	14	240	9	5.0		
2-----	96	15,700	s 5,040	11	115	3	5.6		
3-----	109	9,750	2,870	18	225	11	5.9		
4-----	127	--	e 5,000	11	170	5	6.8		
5-----	130	--	e 7,200	9.7	165	4	5.9		
6-----	109	21,400	6,300	6.8	350	6	8.5	45	1
7-----	71	--	e 2,800	6.8	140	3	25	--	e 3
8-----	53	3,200	458	5.9	428	7	24	54	3
9-----	53	800	115	6.2	100	2	27	--	e 22
10-----	53	700	100	9.7	80	2	24	--	e 19
11-----	53	370	53	11	55	2	22	350	21
12-----	97	44,200	s 16,500	9.1	120	3	22	1,280	76
13-----	42	38,900	4,410	23	2,180	s 147	23	1,000	62
14-----	32	7,000	605	14	680	26	24	481	31
15-----	26	635	45	11	95	3	26	600	42
16-----	23	470	29	10	105	3	27	2,850	208
17-----	20	310	17	9.7	60	2	29	2,930	230
18-----	22	360	21	9.1	105	3	30	1,450	117
19-----	22	480	29	14	150	6	32	775	67
20-----	27	300	22	9.7	100	3	36	620	60
21-----	23	215	13	7.9			52	5,780	s 1,290
22-----	19	280	14	7.4			75	44,400	9,320
23-----	21	280	16	5.3			65	20,600	3,620
24-----	24	280	18	5.3			65	5,800	1,020
25-----	34	360	33	5.3			69	2,200	410
26-----	60	7,400	1,200	5.3			69	1,640	306
27-----	51	13,000	1,790	6.2			69	806	150
28-----	37	17,100	1,710	5.6			69	747	139
29-----	21	2,450	139	5.9			75	920	186
30-----	18	600	29	5.6			88	1,550	368
31-----	19	456	23	5.3			--	--	--
Total--	1,536	--	56,610	284.8	--	260	1,104.7	--	17,780

Total discharge for period Mar. 1 to Sept. 30 (second-foot-days) 50,297.5

Total load for period Mar. 1 to Sept. 30 (tons) 1,500,000

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
POWDER RIVER AT SUSSEX, WYO.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Apr. 6, 1950	9:30 a. m.	356	5,780	3,520	--	53	--	72	--	87	95	99			SPWCM
Apr. 7	6:00 p. m.	368	14,800	10,800	--	60	--	79	--	92	97	100			SPWCM
Apr. 8	5:30 p. m.	254	8,100	5,200	--	53	--	68	--	86	95	99			SPWCM
Apr. 10	9:30 p. m.	580	22,400	15,300	--	35	--	56	--	81	90	99			SPWCM
Apr. 16	8:50 a. m.	470	13,200	8,850	--	37	--	56	--	81	92	99			SPWCM
May 1	9:30 a. m.	416	10,800	6,970	--	34	--	--	--	78	95	100			SPWCM
May 3	6:30 p. m.	645	49,600	9,400	--	45	--	71	--	89	94	99			SPWCM
May 6	1:05 p. m.	662	29,900	12,500	30	41	50	64	78	89	97	100			SPWCM
May 11	4:55 p. m.	1,090	32,500	10,900	--	42	--	63	--	91	98	100			SPWCM
May 17	6:40 p. m.	1,450	19,400	20,000	--	1	3	31	55	78	96	100			BN
May 17	6:40 p. m.	1,450	19,400	9,940	15	20	26	35	50	78	95	100			SPWCM
May 24	2:05 p. m.	1,040	9,510	4,260	--	14	--	23	--	60	92	100			SPWCM
June 2	7:20 p. m.	416	2,810	1,370	--	12	--	19	--	54	88	100			SPWCM
June 9	7:00 p. m.	254	1,640	682	--	11	--	13	--	44	79	99			SPWCM
June 14	12:00 p. m.	200	1,090	832	--	12	--	22	--	56	86	99			SPWCM
June 19	10:45 a. m.	a 225	16,200	3,050	--	59	--	84	--	93	--	--			SPWCM
July 2	7:00 p. m.	130	18,400	7,590	--	69	--	94	--	100	--	--			SPWCM
July 6	2:50 p. m.	84	30,600	6,230	--	80	--	98	--	99	--	--			SPWCM
July 12	9:00 a. m.	180	79,800	3,850	42	55	72	88	99	99	--	--			SPWCM
July 13	1:50 p. m.	a 42	38,900	5,650	58	78	94	98	--	100	--	--			SPWCM
July 14	9:30 a. m.	60	7,740	5,660	--	78	--	94	--	97	--	--			SPWCM
July 27	1:15 p. m.	50	9,580	9,130	--	1	2	73	98	99	--	--			SPN
July 27	1:15 p. m.	50	9,580	7,650	45	64	84	92	97	99	--	--			SPWCM
July 28	9:30 a. m.	29	25,800	5,250	--	84	96	99	--	--	--	--			BWC
Aug. 13	8:05 a. m.	30	3,320	2,530	--	73	--	--	--	99	--	--			SPWCM
Sept. 13	1:45 p. m.	a 23	890	2,260	--	56	--	77	--	91	--	--			SPWCM
Sept. 16	3:30 p. m.	a 27	4,200	3,100	--	70	--	88	--	97	--	--			SPWCM
Sept. 21	12:30 p. m.	39	4,030	2,830	--	61	--	75	--	94	--	--			SPWCM
Sept. 22	9:45 a. m.	73	56,600	4,770	--	72	--	90	--	95	--	--			SPWCM
Sept. 24	8:30 a. m.	67	6,370	4,020	--	82	--	94	--	98	--	--			SPWCM
Sept. 26	1:35 p. m.	69	1,670	1,350	--	--	14	72	78	88	--	--			SPN
Sept. 26	1:35 p. m.	69	1,670	2,320	49	56	67	74	82	87	--	--			SPWCM
a Mean daily discharge.															

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER AT ARVADA, WYO.

LOCATION.--At county highway bridge, 0.1 mile south of Arvada, Sheridan County, a quarter of a mile upstream from Wildhorse Creek, and half a mile downstream from gaging station at Arvada.

DRAINAGE AREA.--6,050 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.

Water temperatures: March 1949 to September 1950.

Sediment records: April 1946 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 85°F July 27; minimum, freezing point on many days during October to April.

Sediment concentrations: Maximum daily, 46,700 tons May 12; minimum daily, 0 tons on many days in August and September.

EXTREMES 1949-50.--Sodium chloride: Maximum daily, 143,000 tons May 12; minimum daily, 0 tons on many days in August and September.

Sediment loads: Maximum daily, 1,200,000 tons June 18, 1949; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176. There is no appreciable runoff between gaging station and sampling point except during periods of intense, local rainfall.

Chemical analyses, in parts per million; December 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conduct-ance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids				Hardness as CaCO ₃		Per-cent so-dium
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate		
Dec. 7, 1949	a 30	8.0		2,290	17	0.04	214	92	239	312	312	975	111	0.6	5.1	0.30	1,810	2.46		913	657	36	
a 22		7.9		2,650	25	--	168	108	362	416	1,080	127	.6	7.8	--	--	2,080	2.83		863	522	48	
a 45		7.6		2,680	24	.02	235	64	367	312	1,160	124	.6	7.8	--	--	2,140	2.91		850	594	48	
a 90		7.8		1,560	20	.02	130	45	172	180	603	73	.4	4.7	.05	.140	1.55		510	362	42		
Mar. 2	a 282	7.7		1,830	19	.04	159	54	174	220	675			.6	4.5	.30	1,270	1.73		619	439	38	
Apr. 6																							
May 15	482	7.6		2,110	18	.10	182	53	262	166	1,010	37	.6	1.4	--	--	1,650	2.24		672	536	46	
June 6	402	7.7		1,020	14	.04	95	28	90	160	355	31	.6	3.5	--	--	738	1.00		352	221	36	
July 5	110	7.3		1,550	11	.04	173	52	147	150	760	34	.5	3.2	--	--	1,260	1.71		646	523	33	
Aug. 3	7.5	7.6		2,320	12	.02	217	112	209	244	1,170	24	.3	1.2	.35	.180	2.54		1,000	800	31		
Sept. 28	21	7.2		2,690	14	.02	244	90	313	206	1,330	71	.8	2.8	--	--	2,170	2.95		978	809	41	

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER AT ARVADA, WYO.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

/Once-daily temperature measurement between 7 a. m. and 9 a. m., except Jan. 4 to Feb. 17 and July when observations were between 1 p. m. and 8 p. m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	49	31	--	32	32	33	39	52	--	--	--
2	48	34	32	--	32	32	36	43	52	72	--	--
3	50	35	32	--	--	32	34	38	47	--	--	--
4	46	34	31	32	32	--	32	36	57	70	--	--
5	48	35	31	--	32	33	32	37	69	74	--	--
6	42	35	32	32	32	33	34	41	62	76	--	--
7	43	32	32	32	32	32	40	40	54	70	--	--
8	35	37	32	32	32	32	--	38	46	79	--	--
9	40	36	31	32	32	32	34	42	49	76	--	--
10	43	36	32	32	32	32	31	45	52	73	--	--
11	36	37	--	32	32	32	38	47	61	76	--	--
12	34	32	--	32	--	32	40	51	65	--	63	--
13	42	36	--	32	32	32	41	55	68	74	63	--
14	38	36	--	32	--	32	45	55	66	73	62	--
15	--	35	--	32	--	32	47	59	65	70	--	--
16	44	31	--	32	--	32	48	58	75	65	--	--
17	40	32	--	32	33	32	50	57	62	68	--	--
18	43	32	--	32	34	32	37	56	57	72	--	--
19	31	32	--	--	33	--	41	48	61	79	56	--
20	31	31	--	32	33	33	31	50	61	79	57	--
21	32	31	--	--	33	32	42	55	65	81	58	--
22	32	--	--	--	33	32	45	58	66	74	62	--
23	33	33	--	32	33	32	40	60	63	79	--	--
24	34	34	--	32	34	32	35	52	63	73	--	--
25	39	32	--	32	33	32	33	50	62	75	--	--
26	34	32	--	32	33	32	39	52	57	71	--	62
27	39	34	--	32	34	32	37	51	62	85	--	50
28	36	39	--	32	32	32	38	55	62	83	--	42
29	41	32	--	32	--	32	32	51	--	65	--	43
30	35	32	--	32	--	32	38	54	--	66	--	38
31	34	--	--	32	--	34	--	51	--	69	--	--
Average	39	34	a 32	a 32	a 32	32	38	49	60	74	--	--

a Includes estimated temperature, 32°F, on missing days.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER AT ARVADA, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	13	288	10	119	6,580	2,140	35	4,910	464
2-----	16	411	18	104	6,550	1,840	36	3,580	348
3-----	18	428	21	104	6,210	1,740	36	2,720	264
4-----	17	362	17	113	6,190	1,890	32	1,550	134
5-----	21	900	51	116	5,790	1,810	32	550	48
6-----	23	1,430	89	119	5,720	1,840	33	320	29
7-----	27	1,940	141	138	5,210	1,940	30	450	36
8-----	41	2,630	291	156	6,410	2,700	32	350	30
9-----	52	4,100	576	166	5,780	2,590	25	210	14
10-----	71	6,800	1,300	170	5,610	2,580	20	170	9
11-----	116	14,900	4,870	166	6,410	2,880	16		
12-----	145	19,200	7,420	145	5,660	2,220	12		
13-----	148	22,500	9,000	131	5,580	1,970	10		
14-----	119	19,500	6,260	156	6,100	2,570	12		
15-----	102	14,900	4,100	138	5,190	1,930	14		
16-----	90	10,700	2,600	80	4,610	995	16		
17-----	82	9,400	2,080	47	6,260	795	15		
18-----	82	8,150	1,810	52	5,710	803	14		
19-----	82	8,250	1,830	41	5,600	620	14		
20-----	90	8,870	2,150	36	5,600	544	14		
21-----	92	6,800	1,690	34	5,090	487	16	--	e 9
22-----	119	11,100	3,560	35	3,700	350	18		
23-----	128	10,000	3,460	40	4,810	520	22		
24-----	138	8,140	3,030	40	6,580	710	21		
25-----	159	9,560	4,110	39	6,180	650	20		
26-----	152	8,780	3,600	39	7,220	760	26		
27-----	134	9,200	3,330	39	7,000	737	26		
28-----	119	8,440	2,710	41	6,070	672	26		
29-----	131	7,480	2,640	39	5,590	589	25		
30-----	141	7,620	2,900	37	4,130	412	35		
31-----	138	7,620	2,640	--	--	--	30		
Total-	2,806	--	78,400	2,680	--	42,260	713	--	1,600
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	29	--	e 9	35	412	39	80	2,560	553
2-----	25	--	e 9	38	368	38	90	2,040	496
3-----	22	166	10	41	420	46	105	2,790	790
4-----	20	154	8	43	390	45	120	2,290	742
5-----	20	177	10	45	400	49	120	2,860	926
6-----	21	310	18	45	377	46	120	4,240	1,370
7-----	23	292	18	45	369	45	120	2,190	710
8-----	24	280	18	43	391	45	110	1,980	582
9-----	25	268	18	45	382	46	110	950	282
10-----	25	245	17	50	331	45	110	505	150
11-----	37	300	30	60	353	57	95	600	154
12-----	25	482	33	54	343	50	80	695	150
13-----	24	288	19	50	320	43	110	745	221
14-----	23	343	21	56	329	50	150	1,000	405
15-----	22	317	19	60	345	56	225	1,120	680
16-----	23	323	20	66	400	71	340	1,060	973
17-----	24	353	23	80	540	117	290	1,460	1,140
18-----	28	427	32	75	728	147	290	1,510	1,180
19-----	28	410	31	75	620	126	280	1,260	953
20-----	32	379	33	76	680	140	330	1,400	1,250
21-----	50	364	49	75	645	131	300	3,910	3,160
22-----	48	358	46	80	730	158	310	17,600	8,870
23-----	46	359	45	90	1,390	338	320	9,000	7,780
24-----	35	381	36	90	2,220	540	310	6,910	5,790
25-----	25	337	23	90	2,200	535	330	5,400	4,810
26-----	32	338	29	90	2,120	515	330	5,810	5,180
27-----	40	319	34	88	2,010	477	320	2,590	2,240
28-----	40	360	39	85	1,660	381	325	7,400	6,490
29-----	30	354	29	--	--	--	340	11,200	10,300
30-----	30	429	35	--	--	--	370	11,600	11,600
31-----	32	497	43	--	--	--	330	13,200	11,800
Total-	908	--	804	1,770	--	4,380	6,860	--	91,730

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER AT ARVADA, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	300	11,300	9,150	380	7,570	7,770	482	9,100	11,800
2-----	264	12,000	8,550	380	6,270	6,440	482	6,600	8,600
3-----	294	11,100	8,810	430	9,230	10,700	437	6,220	7,350
4-----	264	10,900	7,770	500	12,000	16,200	419	8,770	9,920
5-----	247	13,100	8,740	530	22,000	31,500	464	10,200	12,800
6-----	258	12,400	8,640	510	25,000	34,400	402	5,720	6,200
7-----	282	12,000	9,140	646	26,500	46,200	410	6,240	6,910
8-----	288	11,600	9,030	1,210	35,800	121,000	482	6,590	8,570
9-----	330	13,900	12,400	1,060	46,700	139,000	500	7,980	17,800
10-----	346	14,700	13,700	898	41,000	103,000	544	9,400	17,800
11-----	330	16,300	14,500	1,110	41,000	127,000	464	6,110	7,660
12-----	482	21,700	28,200	1,240	41,300	143,000	386	5,690	5,930
13-----	500	20,700	28,000	946	35,200	93,200	394	5,020	5,340
14-----	455	15,000	18,400	634	25,500	43,600	386	5,290	5,510
15-----	362	12,700	12,400	482	22,800	9,700	402	5,340	5,800
16-----	338	14,800	13,500	500	20,300	27,400	318	7,630	8,550
17-----	394	15,500	16,500	958	25,000	64,600	324	12,800	17,200
18-----	437	14,900	17,600	1,480	30,200	121,000	362	6,800	6,650
19-----	455	15,900	19,500	1,580	31,200	133,000	312	5,730	4,820
20-----	473	17,800	22,700	1,820	28,000	138,000	300	5,250	4,250
21-----	482	15,600	20,300	1,510	19,800	80,700	312	5,350	4,510
22-----	446	10,800	13,000	1,090	14,100	41,500	300	6,210	5,030
23-----	410	7,920	8,780	754	12,300	25,000	195	4,870	2,560
24-----	378	7,810	7,980	886	20,900	50,000	141	4,550	1,730
25-----	370	9,800	9,790	1,280	20,300	70,100	141	4,790	1,820
26-----	410	11,300	12,500	1,170	15,700	49,600	113	4,000	1,220
27-----	460	8,850	11,000	826	10,800	24,100	99	2,520	674
28-----	460	7,000	8,690	634	9,400	16,100	97	1,700	445
29-----	430	7,560	8,780	555	8,780	13,200	76	1,800	369
30-----	390	7,460	7,850	566	8,250	12,600	62	1,210	202
31-----	--	--	--	599	8,110	13,100	--	--	--
Total--	11,335	--	395,900	27,164	--	1,833,000	9,806	--	179,000
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	52	1,200	168	4.6	--	e 3	0	--	0
2-----	52	1,210	170	2.8	--	e 1	0	--	0
3-----	110	6,850	s 3,430	6.0	225	4	0	--	0
4-----	148	10,200	4,070	1.6	109	(t)	0	--	0
5-----	128	5,580	1,930	.4	100	(t)	0	--	0
6-----	131	4,100	1,450	0	--	0	0	--	0
7-----	97	4,090	1,070	0	--	0	0	--	0
8-----	102	3,140	864	0	--	0	0	--	0
9-----	82	2,910	645	0	--	0	0	--	0
10-----	62	2,800	469	0	--	0	0	--	0
11-----	50	4,070	550	14	1,800	s 247	0	--	0
12-----	48	4,200	544	98	45,000	s 16,000	0	--	0
13-----	35	2,400	227	39	38,700	4,230	0	--	0
14-----	27	1,510	110	39	37,600	4,100	0	--	0
15-----	24	530	34	26	10,600	744	0	--	0
16-----	50	1,700	230	14	--	e 32	0	--	0
17-----	65	1,790	314	3.5	180	2	0	--	0
18-----	355	29,300	s 50,400	.3	150	(t)	0	--	0
19-----	110	34,000	11,600	0	--	0	0	--	0
20-----	50	11,400	1,540	0	--	0	0	--	0
21-----	38	2,400	246	0	--	0	0	--	0
22-----	22	825	49	0	--	0	0	--	0
23-----	14	920	35	0	--	0	0	--	0
24-----	16	1,780	s 128	0	--	0	0	--	0
25-----	16	1,630	70	0	--	0	12	1,100	s 74
26-----	15	952	39	0	--	0	23	2,400	149
27-----	6.0	441	7	0	--	0	20	20,600	1,110
28-----	22	1,490	s 116	0	--	0	21	30,600	1,730
29-----	17	900	37	0	--	0	27	15,000	1,090
30-----	15	485	20	0	--	0	38	7,380	756
31-----	8.5	350	8	0	--	0	--	--	--
Total--	1,967.5	--	80,970	249.2	--	25,360	141	--	4,910
Total discharge for year (second-foot days)									66,399.7
Total load for year (tons)									2,738,000

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
POWDER RIVER AT ARVADA, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 4 1949	2:13 p. m.	16	355	526	27	56	79	87	89	93	95	98	99	BW
Oct. 18	12:50 p. m.	82	7,560	1,320	1	4	19	--	--	93	93	97	99	BN
Oct. 18	12:50 p. m.	148	7,560	1,400	45	62	79	--	--	93	94	97	99	BN
Oct. 31	11:20 a. m.	148	8,320	1,770	2	6	14	--	--	75	87	98	100	BN
Oct. 31	11:20 a. m.	148	8,320	1,730	20	34	46	56	64	75	88	97	99	BN
Nov. 2	10:53 a. m.	85	8,160	1,730	--	4	14	--	--	70	83	92	97	BN
Nov. 2	10:53 a. m.	85	8,160	1,760	23	32	44	54	60	68	79	88	97	BN
Nov. 4	7:30 a. m.	119	6,190	2,400	29	39	54	63	69	75	85	90	94	BW
Nov. 17	6:34 a. m.	62	6,340	2,110	--	1	13	60	63	71	83	94	98	BN
Nov. 17	10:20 a. m.	62	6,340	2,820	22	25	38	66	70	80	94	99	100	BW
Nov. 18	7:30 a. m.	65	5,780	2,390	18	29	41	50	57	65	79	90	94	BW
Feb. 4, 1950	2:20 p. m.	a 43	402	325	49	70	76	79	80	89	97	100	--	BW
Feb. 21	4:40 p. m.	a 75	946	611	26	36	47	60	68	78	91	100	--	BW
Feb. 27	5:10 p. m.	a 88	3,540	2,610	19	22	33	44	55	65	74	96	100	BW
Mar. 1	4:45 p. m.	a 80	3,060	2,580	14	18	27	38	50	58	70	98	100	BW
Mar. 13	9:10 a. m.	a 110	678	527	28	32	43	55	67	80	89	96	99	BW
Mar. 23	4:15 p. m.	a 320	8,350	1,740	19	27	38	54	75	85	93	98	100	SPWCM
Apr. 5	1:55 p. m.	247	14,700	18,000	--	23	--	43	--	83	91	100	--	SPWCM
Apr. 5	6:05 p. m.	270	13,600	9,170	--	30	--	50	--	86	97	100	--	SPN
Apr. 20	2:10 p. m.	491	19,700	15,000	--	--	2	41	60	81	95	99	100	SPN
Apr. 20	2:10 p. m.	491	19,700	9,120	--	30	--	46	--	80	95	99	100	SPWCM
Apr. 25	5:10 p. m.	370	13,500	10,300	--	--	4	36	54	81	95	99	100	SPWCM
Apr. 25	5:10 p. m.	370	13,500	4,780	20	24	31	41	58	81	95	99	100	SPWCM
May 9	5:30 p. m.	883	44,500	7,420	--	43	--	64	--	91	98	100	100	SPWCM
May 10	1:50 p. m.	874	41,100	7,440	--	39	--	58	--	88	96	99	100	SPWCM
May 18	5:35 p. m.	1,370	26,500	8,100	22	28	34	45	61	79	92	99	100	SPWCM
May 25	1:00 p. m.	1,320	18,000	13,700	--	1	2	34	53	76	93	99	100	SPN
May 25	1:00 p. m.	1,320	18,000	6,510	17	22	27	35	53	77	93	99	100	SPWCM
June 6	2:50 p. m.	566	9,410	6,280	--	21	--	32	--	76	92	98	100	SPWCM
June 10	7:50 a. m.	566	9,420	4,970	--	18	--	--	--	76	96	100	--	SPWCM
a Mean daily discharge.														

a Mean daily discharge.

June 13	7:20 p. m.	370	4,940	4,760	--	23	--	34	--	75	96	99	100	SPWCM
June 21	8:00 a. m.	276	6,080	3,140	--	15	--	21	--	68	95	99	100	SPWCM
June 26	5:50 a. m.	82	2,280	837	--	14	--	20	--	45	86	98	100	SPWCM
July 5	4:15 p. m.	110	5,200	4,460	--	3	7	74	84	88	--	--	--	SPNM
July 5	4:15 p. m.	110	5,200	3,970	48	71	77	80	85	90	--	--	--	SPWCM
July 12	3:50 p. m.	45	4,370	10,100	--	87	--	96	--	97	--	--	--	SPWCM
July 19	1:30 p. m.	87	33,700	2,520	63	79	94	96	97	98	100	--	--	BWC
July 26	10:25 a. m.	19	951	2,860	36	47	60	68	76	89	96	99	100	BWC
Aug. 12	8:10 a. m.	31	49,900	4,640	--	89	--	94	--	98	--	--	--	SPWCM
Aug. 13	6:30 p. m.	54	35,200	12,400	--	57	--	90	--	96	--	--	--	SPWCM
Aug. 14	8:25 a. m.	41	41,400	8,290	--	68	--	94	--	98	--	--	--	SPWCM
Aug. 15	3:15 p. m.	25	6,770	7,230	--	--	2	52	91	99	--	--	--	SPNM
Aug. 15	3:15 p. m.	25	6,770	5,420	61	86	97	86	96	97	--	--	--	SPWCM
Sept. 28	5:00 p. m.	22	2,280	1,810	--	80	--	93	--	97	--	--	--	SPWCM
Sept. 27	5:25 p. m.	20	24,900	5,160	--	89	--	97	--	99	--	--	--	SPWCM
Sept. 28	3:30 p. m.	22	29,500	6,440	71	93	99	--	--	100	--	--	--	SPWCM
Sept. 28	3:30 p. m.	22	29,500	30,200	--	4	82	93	96	97	98	99	100	BNM
Sept. 29	8:55 a. m.	25	18,200	7,730	--	89	--	98	--	99	--	--	--	SPWCM
Sept. 30	8:30 a. m.	38	8,740	4,620	--	62	--	74	--	76	--	--	--	SPWCM

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER NEAR LOCATE, MONT.

LOCATION.--At gaging station at bridge on U. S. Highway 12, 3 miles upstream from Locate Creek, 5 miles west of former site of Locate, Custer County, and 25 miles east of Miles City.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.

Sediment records: March to September 1950.

EXTREMES, March to September 1950.--Sediment concentrations: Maximum daily, 35,600 ppm May 11; minimum daily, not determined.

Sediment loads: Maximum daily, 218,000 tons May 11; minimum daily, less than 1 ton on some days in September.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-dium
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Dec. 5, 1949	112		7.7	1,800	13	--	168	75	183		300	775	47	0.4	4.8	--	1,410	1.92		728	482	35
Mar. 3, 1950	50		7.5	949	12	0.10	80	28	100		156	357	21	.2	2.9	--	730	.99		315	187	41
Apr. 6	1,560		7.7	891	21	.09	69	23	96		170	305	12	.4	1.3	0.20	678	.92		287	128	44
May 2	1,050		7.7	1,120	14	.20	72	25	147		204	388	20	.6	1.4	--	834	1.13		283	116	53
May 9	1,620		7.7	1,510	14	.10	116	41	214		208	680	28	.5	4.0	--	1,200	1.63		458	287	50
June 6	870		8.0	856	16	.04	75	24	80		156	295	15	.6	1.5	--	600	.82		286	158	38
June 26	1,050		7.6	767	13	.04	68	21	72		140	265	15	.2	1.4	.20	552	.75		256	141	38
July 5	246		7.6	1,220	17	.04	103	30	147		199	485	22	.5	.7	--	948	1.29		381	218	46
July 17	276		7.5	1,430	12	.02	113	40	149		208	540	24	.3	3.6	.20	984	1.34		446	275	42
Aug. 2	90		7.6	1,930	17	.02	155	62	213		234	835	28	.4	1.0	.30	1,430	1.94		640	448	42
Sept. 4	6.0		7.5	2,220	18	.02	155	63	307		271	1,000	35	.5	.7	.30	1,710	2.33		647	425	51

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER NEAR LOCATE, MONT.--Continued

Suspended sediment, March to September 1950

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----							25	--	e 14
2-----							35	--	e 55
3-----							50	1,030	139
4-----							100	2,420	654
5-----							120	4,220	1,370
6-----							110	4,000	1,190
7-----							75	--	e 600
8-----							60	--	e 320
9-----							50	1,170	158
10-----							40	610	66
11-----							35	290	27
12-----							30		
13-----							35		
14-----							40		
15-----							50		
16-----							60	--	e 24
17-----							55		
18-----							50		
19-----							50		
20-----							55	140	21
21-----							65	105	18
22-----							75	370	75
23-----							100	1,700	459
24-----							150	3,900	1,580
25-----							140	1,800	681
26-----							130	1,290	453
27-----							120	900	292
28-----							110	1,560	464
29-----							120	2,410	780
30-----							150	4,040	1,640
31-----							200	7,610	4,110
Total-							2,485	--	15,360
Day	April			May			June		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	1,000	11,400	30,800	829	12,400	27,800	1,080	6,500	13,000
2-----	2,000	21,200	114,000	1,000	11,600	31,300	1,070	5,960	17,200
3-----	3,000	15,500	126,000	853	8,650	19,900	992	5,280	11,100
4-----	2,800	11,000	83,100	920	8,450	21,000	956	5,400	13,900
5-----	2,390	9,700	62,600	1,000	9,800	26,500	932	5,390	13,600
6-----	1,630	10,100	44,500	1,100	9,200	27,300	870	4,600	13,800
7-----	2,040	14,400	79,300	1,370	10,100	37,400	850	5,410	12,400
8-----	1,920	12,700	65,800	1,510	11,900	48,500	1,000	6,200	13,700
9-----	1,240	8,200	27,500	1,510	13,300	54,200	1,280	10,800	31,600
10-----	990	5,350	14,300	1,760	20,900	99,300	1,590	12,600	54,100
11-----	1,030	5,670	15,700	2,190	35,600	218,000	1,560	11,900	53,100
12-----	1,000	6,280	17,000	2,020	34,700	189,000	1,310	8,400	21,700
13-----	1,000	7,210	19,500	1,900	33,100	170,000	1,180	8,350	21,600
14-----	1,060	7,280	20,800	1,720	24,300	113,000	1,090	9,100	21,800
15-----	1,050	7,900	22,400	1,420	25,000	95,800	1,400	14,100	51,300
16-----	1,000	9,600	25,900	1,140	23,100	71,100	1,380	10,900	43,600
17-----	965	9,150	23,800	1,020	20,200	55,600	1,120	5,550	13,800
18-----	829	8,150	18,200	1,020	20,400	56,200	1,040	8,310	21,300
19-----	769	7,190	14,900	1,270	19,700	67,600	968	6,900	13,000
20-----	781	7,280	15,400	1,770	25,700	123,000	1,030	5,300	14,700
21-----	769	5,980	12,400	2,010	32,500	176,000	1,080	5,100	14,900
22-----	757	6,580	13,500	2,150	25,100	146,000	980	4,780	12,700
23-----	817	7,430	16,400	1,790	23,000	111,000	900	4,020	9,770
24-----	1,150	14,300	44,400	1,510	17,700	72,200	870	3,750	8,810
25-----	1,080	15,000	43,800	1,300	15,100	53,000	910	8,400	23,600
26-----	1,030	15,200	42,300	1,540	15,200	63,200	1,030	8,150	23,700
27-----	673	6,100	11,100	1,830	17,200	85,000	790	4,320	9,210
28-----	781	10,300	21,700	1,760	14,600	69,400	800	6,000	13,000
29-----	817	10,500	23,200	1,380	12,000	44,700	790	5,200	11,100
30-----	709	9,450	18,100	1,130	9,100	27,800	630	3,920	6,670
31-----	--	--	--	1,140	7,300	22,500	--	--	--
Total-	37,077	--	1,088,000	44,862	--	2,423,000	31,478	--	637,800

e Estimated.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

POWDER RIVER NEAR LOCATE, MONT.--Continued

Suspended sediment, March to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	504	2,000	2,720	78	430	91	25	120	8
2-----	442	1,950	2,330	87	492	116	21	82	5
3-----	360	800	778	72	341	66	16	91	4
4-----	288	470	366	58	241	38	10	125	3
5-----	258	400	279	55	235	35	9.0	70	2
6-----	228	280	172	45	178	22	7.6	68	1
7-----	322	1,050	s 1,280	32	138	12	7.2	88	2
8-----	477	1,400	1,800	25	100	7	5.6		
9-----	435	1,660	1,950	20	114	6	3.4		
10-----	420	1,390	1,580	17	78	4	5.6		
11-----	558	12,900	s 22,500	122	12,000	s 10,700	4.8	51	(t)
12-----	360	4,500	4,370	294	16,500	13,100	5.6		
13-----	315	1,310	1,110	282	20,200	15,400	7.2	110	2
14-----	276	830	619	175	13,200	6,240	7.2	238	5
15-----	258	530	369	63	7,900	1,340	8.0	175	4
16-----	258	800	557	140	12,400	4,690	14		
17-----	288	1,610	1,250	330	13,200	11,800	12		
18-----	258	2,000	1,390	264	13,300	9,480	9.0	30	(t)
19-----	288	1,280	995	170	12,300	5,650	10		
20-----	315	1,830	1,560	114	6,250	1,920	9.0		
21-----	360	2,030	1,970	84	5,320	1,210	12	370	12
22-----	352	2,290	2,180	75	4,880	988	25	425	29
23-----	375	2,910	2,940	60	3,060	496	58	520	81
24-----	300	1,590	1,290	50	1,800	243	72	560	109
25-----	240	1,500	972	40	920	99	75	442	90
26-----	204	2,980	1,640	35	605	57	75	420	85
27-----	170	2,310	1,060	35	508	48	75	430	87
28-----	130	1,150	404	33	560	50	75	368	74
29-----	106	775	222	33	325	29	75	375	76
30-----	87	530	125	30	219	18	98	585	155
31-----	84	380	86	28	151	11	--	--	--
Total-	9,316	--	60,860	2,946	--	83,970	837.2	--	842

Total discharge for period Mar. 1 to Sept. 30 (second-foot-days) 129,001.2

Total load for period Mar. 1 to Sept. 30 (tons) 4,310,000

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
POWDER RIVER NEAR LOCATE, MONT.--Continued

Particle-size analyses of suspended sediment, March to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.500	1.000
Mar. 3, 1950	10:30 a.m.	a 50	777	1,170	--	17	27	30	42	61	83	98	100	BN	
Mar. 3	10:30 a.m.	a 50	777	1,130	--	21	25	32	43	58	78	95	100	BN	
Mar. 24	4:35 a.m.	a 150	9,440	4,870	--	33	--	43	--	71	85	98	100	SPWCM	
Mar. 31	4:45 p.m.	a 200	8,540	5,460	--	38	--	53	--	80	92	99	100	SPWCM	
Mar. 3	6:10 a.m.	a 3,000	15,500	9,410	--	42	--	58	--	80	93	99	100	SPWCM	
Apr. 5	12:35 p.m.	2,230	9,960	3,280	5	8	20	--	71	77	83	95	100	BN	
Apr. 5	2,230	9,960	9,960	6,860	25	34	47	59	69	74	88	97	100	BN	
Apr. 7	10:25 a.m.	1,740	12,200	8,760	--	41	--	60	--	88	95	99	100	SPWCM	
Apr. 16	6:15 a.m.	1,040	9,320	6,220	--	57	--	73	--	84	94	98	100	SPWCM	
Apr. 18	6:45 p.m.	745	8,000	6,890	15	16	18	--	--	91	95	99	100	BN	
Apr. 18	6:45 p.m.	745	8,000	4,890	47	61	76	84	87	90	92	97	99	BN	
Apr. 26	9:15 a.m.	1,060	16,500	4,400	--	51	--	71	--	80	89	96	100	SPWCM	
May 2	8:15 a.m.	1,040	11,900	6,720	42	52	63	74	84	89	94	98	100	BN	
May 2	8:15 a.m.	1,100	11,500	1,300	--	1	4	76	87	89	94	98	100	BN	
May 9	9:00 a.m.	1,580	18,000	3,270	--	30	--	42	--	54	66	87	96	SPWCM	
May 11	9:30 a.m.	2,020	33,200	7,710	--	31	--	46	--	63	79	98	100	SPWCM	
May 16	10:30 a.m.	1,120	23,200	7,080	--	46	--	65	--	73	80	94	99	SPWCM	
May 18	8:20 a.m.	1,030	17,200	14,600	--	--	1	84	92	93	96	99	100	SPN	
May 18	8:20 a.m.	1,030	17,200	3,350	51	67	77	86	90	92	95	97	98	BWC	
June 1	6:55 p.m.	1,040	5,850	5,420	--	6	15	49	56	71	81	96	98	BN	
June 1	6:55 p.m.	1,040	5,850	3,470	33	40	46	52	61	75	88	96	100	BWC	
June 8	5:45 p.m.	1,070	8,280	4,040	--	33	--	45	--	69	86	97	100	SPWCM	
June 15	9:00 a.m.	1,570	16,600	5,570	--	37	--	51	--	85	94	97	98	SPWCM	
June 26	5:45 p.m.	1,070	11,400	4,310	--	24	--	34	--	54	68	78	89	SPWCM	
July 2	5:15 p.m.	450	1,230	737	47	54	60	64	68	76	89	96	99	BWC	
July 11	5:35 p.m.	513	15,400	11,800	--	73	--	93	--	99	--	--	--	SPWCM	
July 12	5:40 a.m.	398	6,210	2,860	--	66	--	71	--	84	--	--	--	SPWCM	
July 13	5:40 a.m.	372	1,520	948	56	67	75	80	86	92	--	--	--	BWC	

a Mean daily discharge.

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued
POWDER RIVER NEAR LOCATE, MONT.--Continued

Particle-size analyses of suspended sediment, March to August 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000
July 17, 1950	7:25 p. m.	288	2,560	2,010	71	--	80	84	89	94	--	--	--	--	--	SPWCM
July 17	7:25 p. m.	288	2,560	2,430	--	4	11	--	--	94	97	100	--	--	--	BN
July 18	5:50 a. m.	270	3,520	2,450	--	76	--	88	--	98	--	--	--	--	--	SPWCM
July 21	5:35 a. m.	360	3,200	2,260	--	71	--	75	--	87	--	--	--	--	--	SPWCM
July 26	6:05 p. m.	192	3,230	2,220	--	92	--	95	--	98	--	--	--	--	--	SPWCM
Aug. 11	5:55 p. m.	294	22,800	4,640	--	74	--	91	--	98	--	--	--	--	--	SPWCM
Aug. 13	6:05 a. m.	294	23,400	8,410	--	76	--	97	--	97	--	--	--	--	--	SPWCM
Aug. 14	6:55 p. m.	116	12,000	12,600	3	3	--	--	93	99	--	--	--	--	--	SPN
Aug. 14	6:55 p. m.	116	12,000	2,370	--	92	97	98	99	100	--	--	--	--	--	BWC
Aug. 16	3:30 p. m.	282	16,200	6,580	--	73	--	93	--	98	--	--	--	--	--	SPWCM
Aug. 22	6:30 p. m.	63	4,910	3,960	--	93	--	96	--	99	--	--	--	--	--	SPWCM

YELLOWSTONE RIVER BASIN--Continued

MIDDLE FORK POWDER RIVER ABOVE KAYCEE, WYO.

LOCATION.--At gaging station, 2 miles upstream from Red Fork, 2 miles downstream from Beaver Creek, and about 10 miles southwest of Kaycee, Johnson County.

DRAINAGE AREA.--450 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1949 to September 1950.

Sediment records: April 1949 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Minimum, freezing point on many days during November to April.

Sediment concentrations: Maximum daily, 8,710 ppm May 15; minimum daily, not determined.

Sediment loads: Maximum daily, 15,100 tons May 18; minimum daily, less than 1 ton Aug. 26-30.

EXTREMES, April 1949 to September 1950.--Sediment concentrations: Maximum daily, 24,000 ppm June 9, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 18,700 tons June 9, 1949; minimum daily, less than 1 ton Aug. 26-30, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950

/Once-daily temperature measurement at approximately 9 a. m. Oct. 1 to July 23, between 3 p. m. and 7 p. m. thereafter/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	--	33	--	32	--	37	--	--	--	71	70
2	49	39	34	--	--	--	--	44	--	--	72	69
3	--	44	34	--	32	34	32	--	--	--	71	65
4	48	--	33	--	--	--	--	--	--	--	70	--
5	48	--	32	--	32	--	--	--	--	--	--	68
6	46	--	32	--	--	--	51	--	--	60	62	--
7	--	--	32	--	32	--	44	--	54	--	71	65
8	--	42	31	--	--	31	43	--	--	--	75	64
9	--	--	32	--	32	--	--	--	--	--	67	--
10	45	--	--	--	--	--	42	--	--	--	68	--
11	45	42	32	--	32	--	40	48	--	--	64	51
12	44	--	--	--	--	--	41	--	--	--	65	46
13	44	42	--	32	32	--	43	--	--	59	63	52
14	47	38	--	--	--	--	45	--	69	60	69	47
15	--	39	--	32	32	--	46	--	--	70	72	48
16	--	35	--	--	--	34	--	48	--	60	62	--
17	42	37	--	32	32	--	--	--	--	70	69	55
18	44	38	--	--	--	--	40	--	--	62	63	61
19	38	38	--	32	32	--	38	--	--	57	61	60
20	33	36	--	--	--	44	--	--	--	70	--	57
21	--	32	--	33	32	--	51	--	--	73	63	53
22	--	33	--	--	--	36	--	--	--	72	68	--
23	--	--	--	33	32	--	--	--	--	60	60	55
24	43	37	--	--	--	36	--	--	--	67	--	--
25	46	--	--	32	32	--	--	--	--	70	63	56
26	42	--	--	--	--	42	--	--	--	72	65	56
27	41	--	--	32	32	--	--	--	--	74	69	49
28	--	--	--	--	--	34	--	--	--	73	65	50
29	44	34	--	--	--	32	--	--	--	66	67	44
30	--	33	--	32	--	34	--	--	--	65	--	--
31	--	--	--	32	--	--	--	--	--	68	65	--
Average	--	--	a 32	a 32	a 32	--	--	--	--	--	67	--

a Includes estimated temperature 32°F on missing days.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

MIDDLE FORK POWDER RIVER ABOVE KAYCEE, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	44	29	3	49	--	e 4	41	68	8
2-----	46			49	38		41	42	5
3-----	45			49	31		40	68	7
4-----	44			48	--		39	107	11
5-----	43			48	--		40	130	14
6-----	44	e 4	e 4	48	--	e 2	40	95	10
7-----	47			48	--		39	123	13
8-----	54			48	18		41	95	11
9-----	52			47	--		39	98	10
10-----	51			47	--		38	--	e 10
11-----	48	26	3	47	11	3	23	106	7
12-----	47			47	--		24	--	--
13-----	48			47	--		24	--	--
14-----	46			46	22		25	--	--
15-----	42			46	--		35	--	--
16-----	45	e 6	e 6	44	--	6	35	--	--
17-----	46			44	--		34	--	--
18-----	47			48	--		33	--	--
19-----	49			48	45		33	--	--
20-----	50			46	--		32	--	--
21-----	48	e 8	e 8	41	75	8	32	--	e 8
22-----	50			43	76	9	33	--	--
23-----	53			44	--	e 7	35	--	--
24-----	53			47	44	e 5	35	--	--
25-----	53			45	--		30	--	--
26-----	53	50	7	45	--		34	--	--
27-----	54			44	--		34	--	--
28-----	53			45	--		38	--	--
29-----	53			43	35	4	36	--	--
30-----	51			41	95	11	36	--	--
31-----	49	e 5	e 5	--	--	--	36	--	--
Total--	1,508	--	167	1,384	--	136	1,075	--	270
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	36	e 8	e 8	35	114	e 12	47	--	--
2-----	32			35	--		50	--	--
3-----	25			37	111		49	211	--
4-----	26			40	--		48	--	--
5-----	27			43	86		50	--	--
6-----	33	e 8	e 8	43	--	e 19	51	--	--
7-----	33			42	144		48	--	--
8-----	33			42	--		52	270	--
9-----	33			40	216		54	--	--
10-----	31			40	--		49	--	--
11-----	36	e 11	e 11	40	120	e 38	42	--	--
12-----	34			40	--		59	510	80
13-----	32			39	192		63	--	e 95
14-----	31			40	--		62	--	e 95
15-----	30			42	194		62	600	100
16-----	32	e 15	e 15	44	--	e 38	47	330	42
17-----	32			45	256		48	180	23
18-----	34			44	--		48	164	21
19-----	34			45	318		49	--	e 36
20-----	40			45	--		50	168	23
21-----	45	e 9	e 9	43	314		46	166	21
22-----	45			42	--		45	123	15
23-----	44			46	261		45	127	15
24-----	37			46	--		45	153	19
25-----	33			47	453		48	--	e 15
26-----	36	e 9	e 9	48	--	e 38	47	117	15
27-----	40			52	258		43	98	11
28-----	37			50	--		44	88	10
29-----	35			--	--		42	90	9
30-----	35			--	--		42	80	e 10
31-----	35	114	--	--	--	--	44	--	--
Total--	1,066	--	310	1,195	--	730	1,519	--	1,050

e Estimated.

YELLOWSTONE RIVER BASIN

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YELLOWSTONE RIVER BASIN--Continued

MIDDLE FORK POWDER RIVER ABOVE KAYCEE, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	45	83	10	77	--	e 420	189	213	109
2-----	53	--	e 14	76	2,010	413	200	200	108
3-----	54	85	12	76	500	103	158	124	53
4-----	50	107	14	74	--	e 80	153	119	49
5-----	45	--	e 22	77	--	e 800	162	121	53
6-----	54	3,700	s 591	82	4,920	s 1,160	165	108	48
7-----	58	1,440	226	85	2,080	477	165	96	43
8-----	63	358	61	87	4,560	s 1,250	165	101	45
9-----	80	--	e 80	94	7,850	s 2,120	142	58	22
10-----	67	332	60	90	3,450	838	134	60	22
11-----	58	238	37	80	1,480	320	129	59	21
12-----	56	203	31	85	980	225	120	58	19
13-----	61	228	38	103	1,180	328	112	42	13
14-----	76	490	101	160	3,600	1,560	106	45	13
15-----	136	3,360	1,240	283	8,710	s 7,260	101	31	6
16-----	136	--	e 1,400	383	7,080	s 8,080	95	23	6
17-----	158	--	e 1,900	562	7,400	s 12,300	101	30	8
18-----	156	3,360	s 1,540	827	6,780	15,100	95	30	8
19-----	105	660	187	658	5,700	s 10,600	92	31	8
20-----	88	--	e 100	418	2,920	s 3,630	83	23	5
21-----	101	390	106	330	1,740	s 1,680	74	22	4
22-----	129	--	e 950	487	2,430	s 3,540	67	24	4
23-----	189	--	e 2,800	647	3,380	6,220	59	24	4
24-----	160	--	e 1,800	511	2,770	s 4,030	57	27	4
25-----	99	--	e 200	333	2,650	s 2,580	59	69	14
26-----	108	540	157	227	808	495	54	148	22
27-----	87	--	e 110	238	830	534	52	215	30
28-----	87	--	e 110	260	542	s 409	52	133	19
29-----	72	--	e 240	197	294	156	51	124	17
30-----	82	--	e 700	200	245	132	49	70	9
31-----	--	--	--	200	227	123	--	--	--
Total-	2,713	--	14,840	8,007	--	86,960	3,241	--	788

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	46	57	7	32	--	--	26	28	2
2-----	46	61	8	32	--	--	25	19	--
3-----	52	58	8	30	--	--	25	19	--
4-----	48	52	7	30	--	--	25	--	--
5-----	48	168	22	31	--	--	24	22	--
6-----	45	90	11	29	23	2	24	--	--
7-----	45	52	6	29	--	--	26	34	2
8-----	44	37	4	29	--	--	26	43	3
9-----	39	29	3	28	--	--	28	--	--
10-----	38	20	2	26	--	--	42	--	--
11-----	37	21	2	69	--	--	47	89	11
12-----	47	116	15	49	4,820	s 618	44	55	7
13-----	36	100	10	34	320	29	40	48	5
14-----	36	53	5	31	215	18	41	36	4
15-----	38	30	3	29	160	13	47	61	8
16-----	38	29	3	29	125	10	49	--	--
17-----	42	36	4	28	82	6	44	46	6
18-----	43	31	4	28	84	6	42	42	5
19-----	38	34	3	29	53	4	41	59	7
20-----	36	25	2	30	--	--	47	177	22
21-----	36	25	2	29	32	3	47	95	12
22-----	36	23	2	28	29	2	43	--	--
23-----	40	30	3	28	30	2	42	48	5
24-----	39	29	3	28	--	--	43	--	--
25-----	35	18	2	28	17	1	43	56	6
26-----	35	19	2	29	--	--	42	74	8
27-----	32	12	1	29	--	--	42	67	8
28-----	29	14	1	28	8	(t)	43	60	7
29-----	34	25	2	28	--	--	48	69	9
30-----	37	56	6	27	--	--	50	--	--
31-----	32	24	2	27	30	2	--	--	--
Total-	1,227	--	155	961	--	3,190	1,156	--	189

Total discharge for year (second-foot-days)..... 25,052

Total load for year (tons)..... 108,800

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
MIDDLE FORK POWDER RIVER ABOVE KAYCEE, WYO.--Continued

Particle-size analyses of suspended sediment, June 1949 to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
June 10, 1949	4:00 p. m.	128	1,030	1,190	8	15	24	38	63	83	100	--	--	--	BW
Nov. 30	11:40 p. m.	48	289	796	22	32	50	78	98	98	99	100	--	--	BW
Nov. 6, 1950	9:25 p. m.	60	8,530	10,100	10	10	11	85	100	--	--	--	--	--	SPNM
Apr. 6	9:25 p. m.	60	8,530	5,500	45	59	78	93	97	98	99	100	--	--	BWCM
Apr. 15	7:30 a. m.	145	4,580	3,540	--	38	--	66	--	99	--	--	--	--	SPWCM
Apr. 18	11:08 a. m.	165	3,540	7,100	--	22	--	40	--	91	99	100	--	--	SPWCM
May 6	7:05 p. m.	92	11,800	9,610	--	65	--	90	--	100	--	--	--	--	SPWCM
May 9	5:30 p. m.	103	19,700	15,800	--	55	--	82	--	98	100	--	--	--	SPWCM
May 15	11:45 a. m.	280	5,640	4,600	--	--	--	20	34	60	84	97	--	99	BWCM
May 16	3:25 p. m.	315	4,150	2,980	6	9	17	20	36	66	93	99	--	100	SPNM
May 16	3:25 p. m.	315	4,150	1,910	15	16	19	26	43	72	93	99	--	100	SPWCM
May 24	11:10 a. m.	487	2,310	4,040	--	18	--	34	--	70	88	98	--	100	SPWCM
Aug. 12	1:20 p. m.	42	2,650	2,350	--	66	--	93	--	100	--	--	--	--	SPWCM

YELLOWSTONE RIVER BASIN--Continued
MIDDLE FORK POWDER RIVER NEAR KAYCEE, WYO.

LOCATION.--At gaging station cableway, at Jay Bar U Ranch, 1½ miles downstream from North Fork Powder River, and 6 miles east of Kaycee, Johnson County.
DRAINAGE AREA.--880 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1949 to September 1950.

Water temperatures: March to September 1950.
Sediment records: March to September 1950.

EXTREMES, March to September 1950.--Water temperatures: Maximum, 79°F Aug. 31; minimum, not determined.
Sediment concentrations: Maximum daily, 13,000 ppm May 17; minimum daily, not determined.

Sediment loads: Maximum daily, 39,100 tons May 18; minimum daily, less than 1 ton on many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Discharge (second feet)	Tem- pera- ture (° F)	Specific conduct- ivity (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- dium
																Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate	
Nov. 30, 1949.....	96	7.8	1,260	12	0.04	120	51		52	344	408	58	0.4	1.9	--	920	1.25	509	369	28
Jan. 6, 1950.....	a 100	7.8	1,350	29	--	133	56	126	126	280	466	72	.4	4.3	--	1,030	1.40	596	368	27
Jan. 6.....	a 110	7.9	1,370	24	--	133	51	102	102	280	436	62	.4	2.2	--	997	1.32	584	354	27
Mar. 3.....	138	7.6	1,260	26	.02	138	44	96	96	244	433	54	.4	2.2	0.10	974	1.32	521	321	29
Apr. 6.....			1,360	14	.02	120	43	131	131	232	483	51	.6	2.9	--	955	1.30	477	285	37
May 6.....	332	7.6	1,330	18	.04	108	97	133	133	186	493	28	.6	4.1	--	914	1.24	422	269	41
June 7.....	322	7.8	1,600	14	.10	60	20	40	40	154	154	21	.2	1.7	--	404	.55	232	106	27
July 6.....	57	7.6	1,260	11	.10	110	44	128	128	221	471	43	.3	.8	--	982	1.34	456	275	38
Aug. 2.....	2.7	7.9	1,570	5.8	.06	134	54	141	141	219	555	73	.3	.4	.35	1,070	1.46	556	376	35
Sept. 8.....	1.7	7.7	1,830	10	.02	149	57	200	200	210	658	130	.4	.1	--	1,310	1.78	606	434	42

a Mean daily discharge.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

MIDDLE FORK POWDER RIVER NEAR KAYCEE, WYO.--Continued

Temperature (°F) of water, March to September 1950

/Once-daily temperature measurement generally between 4 p. m. and 6 p. m., except prior to Aug. 1 readings obtained about 8 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						--	40	--	--	--	72	78
2						--	40	--	--	--	72	75
3						--	39	--	--	--	74	73
4						--	42	--	--	--	78	76
5						--	--	--	--	--	77	74
6						--	44	52	--	72	76	73
7						--	--	--	57	70	75	67
8						--	45	--	--	68	78	69
9						--	40	52	--	68	76	62
10						--	38	--	--	78	72	55
11						--	40	59	--	68	73	53
12						--	--	--	--	70	72	--
13						--	--	--	--	67	72	51
14						--	46	--	73	66	69	49
15						--	49	--	--	67	78	58
16						35	51	--	--	70	75	58
17						--	49	52	--	70	78	56
18						--	45	--	--	77	69	65
19						--	--	--	--	78	64	--
20						38	--	--	--	76	69	56
21						44	--	--	--	70	71	64
22						--	--	--	--	72	71	64
23						--	--	--	--	73	70	66
24						--	--	--	--	74	77	62
25						43	--	--	--	73	64	63
26						40	--	--	--	68	70	60
27						38	--	--	--	70	69	--
28						38	--	--	--	71	--	54
29						37	--	--	--	73	--	47
30						40	--	--	--	73	--	49
31						40	--	--	--	70	79	--
Average						--	--	--	--	71	73	62

Suspended sediment, March to September 1950

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							100	--	e 75
2-----							100	--	e 100
3-----							110	--	e 130
4-----							150	--	e 260
5-----							140	--	e 220
6-----							131	590	208
7-----							117	260	82
8-----							93	200	50
9-----							104	185	52
10-----							108	170	50
11-----							67	126	23
12-----							111	120	36
13-----							94	127	32
14-----							122	--	e 75
15-----							136	768	282
16-----							138	1,220	455
17-----							124	--	e 340
18-----							117	--	e 280
19-----							113	--	e 240
20-----							133	777	279
21-----							128	--	e 300
22-----							124	1,010	338
23-----							133	--	e 280
24-----							124	460	154
25-----							130	320	112
26-----							125	790	266
27-----							120	--	e 190
28-----							115	230	71
29-----							113	160	49
30-----							104	230	65
31-----							108	182	53
Total-----							3,632	--	5,150

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

MIDDLE FORK POWDER RIVER NEAR KAYCEE, WYO.--Continued

Suspended sediment, March to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	108	150	44	242	--	a 2,500	278	920	690
2-----	119	165	53	246	--	a 2,200	326	925	815
3-----	145	490	192	249	--	a 2,200	346	510	477
4-----	131	370	131	215	--	a 1,200	294	659	533
5-----	119	300	96	215	--	a 1,300	303	625	511
6-----	145	2,000	783	356	8,300	7,980	322	--	e 550
7-----	179	3,520	1,700	335	--	a6,900	339	726	665
8-----	148	1,250	500	284	--	a5,500	369	1,150	1,150
9-----	171	--	e 750	503	--	a 12,000	319	750	646
10-----	249	6,220	4,180	448	--	a 11,000	281	700	531
11-----	166	1,600	717	306	7,000	5,780	274	--	e 360
12-----	145	380	149	246	--	e 2,700	258	--	e 260
13-----	138	400	149	230	--	e 1,700	230	--	e 180
14-----	168	650	295	262	--	a 2,800	212	242	139
15-----	252	2,510	s 1,970	519	--	e 15,000	200	--	e 120
16-----	335	3,000	2,720	810	--	e 18,000	197	--	e 110
17-----	363	--	e 3,300	1,010	13,000	35,400	203	--	e 120
18-----	410	5,500	6,090	1,260	11,500	39,100	203	--	e 120
19-----	322	--	a 3,700	1,230	8,500	28,200	185	--	e 120
20-----	242	--	a 1,600	830	5,930	13,300	133	--	e 120
21-----	227	--	a 1,300	620	6,670	11,200	94	--	e 75
22-----	262	--	a 2,500	687	8,000	14,800	80	--	e 60
23-----	366	--	a 5,600	946	7,280	18,600	65	--	e 44
24-----	410	--	a 6,000	1,010	6,000	16,400	54	--	e 34
25-----	242	--	a 2,000	690	3,000	5,590	47	--	e 26
26-----	224	--	a 1,800	463	3,650	4,560	37	--	e 20
27-----	209	--	a 1,200	393	2,550	2,700	30	--	e 16
28-----	209	--	a 1,200	432	2,400	2,800	26	--	e 10
29-----	194	--	a 1,000	428	1,660	1,920	23	--	e 8
30-----	191	--	a 900	339	1,390	1,270	16	--	e 6
31-----	--	--	--	335	1,110	1,000	--	--	--
Total-	6,589	--	52,600	16,139	--	296,000	5,744	--	8,500

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	9.6	--	e 5	2.7	--	--	1.8	--	--
2-----	32	--	e 210	2.5	--	--	1.8	--	--
3-----	31	--	e 35	2.4	71	(t)	1.7	--	--
4-----	33	--	e 14	2.2	--	--	1.7	--	--
5-----	22	--	e 6	2.2	--	--	1.5	--	--
6-----	38	2,710	278	2.1	--	--	1.5	--	--
7-----	22	2,000	119	1.5	--	--	1.5	--	--
8-----	16	200	9	1.1	50	(t)	1.7	--	--
9-----	15	154	6	1.2	--	--	1.7	--	--
10-----	8.8	115	3	1.5	--	--	5.9	125	s 3
11-----	6.7	83	2	.9	--	--	25	164	11
12-----	7.4	87	2	20	1,910	s 172	30	--	e 7
13-----	11	77	2	3.2	930	s 11	27	75	5
14-----	6.1	92	2	2.1	250	1	26	75	5
15-----	5.4	198	3	2.1	--	--	43	178	21
16-----	6.4	104	2	2.1	--	--	64	82	14
17-----	9.2	200	5	1.9	89	(t)	62	82	10
18-----	15	94	4	1.9	--	--	53	31	4
19-----	11	47	1	1.9	--	--	45	--	e 8
20-----	6.4	--	--	1.7	--	--	47	254	32
21-----	6.1	--	--	1.7	--	--	57	375	58
22-----	5.1	37	(t)	1.5	--	--	51	182	25
23-----	5.4	--	--	1.5	--	--	47	60	8
24-----	5.1	--	--	1.5	60	(t)	54	48	7
25-----	4.6	--	--	1.5	--	--	65	57	10
26-----	4.1	--	--	1.5	--	--	64	62	11
27-----	3.6	49	(t)	1.7	--	--	61	--	e 10
28-----	3.6	--	--	1.7	--	--	61	75	12
29-----	3.4	--	--	1.7	--	(t)	65	46	8
30-----	7.0	95	2	1.7	--	--	73	131	26
31-----	8.9	97	1	1.7	63	--	--	--	--
Total-	363.9	--	717	74.9	--	193	1,040.8	--	297

Total discharge for period Mar. 1 to Sept. 30 (second-foot-days) 33,583.6
 Total load for period Mar. 1 to Sept. 30 (tons) 363,500

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

a Computed from water-sediment relation curve and estimated concentration graph.

YELLOWSTONE RIVER BASIN--Continued
MIDDLE FORK POWDER RIVER NEAR KAYCEE, WYO.--Continued

Particle-size analyses of suspended sediment, March to July 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
			0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Mar. 26, 1950.....	5:00 p. m.	a 125	1,220	980		82			97		100	--	--		SPWCM
Apr. 7.....	8:00 a. m.	179	4,040	3,300		80			97		100	--	--		SPWCM
Apr. 16.....	6:00 a. m.	322	2,970	2,310		48			83		100	--	--		SPWCM
May 17.....	2:25 p. m.	1,330	15,100	5,600		18		30	40	56	76	93	98	100	SPWCM
May 18.....	1:00 p. m.	1,540	12,800	8,130		21			48		73	93	98	100	SPWCM
May 24.....	3:25 p. m.	1,060	6,120	3,140		16		30	62		88	97	100	SPWCM	SPWCM
May 31.....	6:00 p. m.	342	1,040	3,806		13		33	33		50	--	--	--	SPWCM
July 6.....	11:00 a. m.	58	517	1,180		40		83	97		--	--	--	--	SPWCM

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continue!
CRAZY WOMAN CREEK NEAR ARVADA, WYO.

LOCATION --At county highway bridge, 200 feet downstream from gaging station, which is a quarter of a mile upstream from mouth and 12 miles south of Arvada, Sheridan County.

DRAINAGE AREA --956 square miles. 955 square miles at former site of gage (revised).

RECORDS AVAILABLE --Water temperatures: March to September 1950.

EXTREMES, March to September 1950. --Water temperatures: Maximum, 80°F Aug. 15; minimum, freezing point on several days in March.

Sediment concentrations: Maximum daily, 36,500 ppm Aug. 13; minimum daily, no flow Aug. 23 to Sept. 11.

Sediment loads: Maximum daily, 12,500 tons Aug. 13; minimum daily, 0 tons Aug. 23 to Sept. 11.

REMARKS. --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- lum	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		Non- carbon- ate
Dec. 7, 1949	--		7.8	2,290	14	0.02	224	120	171		330	1,080	19	0.4	2.2	0.40	1,790	2.43	1,050	779	26	
Mar. 2, 1950	a13		7.8	1,480	28	.02	148	75	105		244	683	10	.2	3.0	.05	1,150	1.56		678	478	25
June 6	145		7.8	1,840	15	.10	76	32	63		148	313	5.0	.4	2.0	.20	638	.87		321	200	30
July 5	57		7.4	1,080	11	.20	97	47	83		171	445	7.7	.1	1.3	--	848	1.15		436	286	29
Sept. 28	12		7.9	1,810	7.0	.04	162	92	147		216	870	13	.3	.8	.33	1,400	1.90		782	605	29

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

CRAZY WOMAN CREEK NEAR ARVADA, WYO.--Continued

Temperature (°F) of water, March to September 1950

/Once-daily temperature measurement generally about 9 a. m., except during May and June, readings about 5 p. m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sept.
1						--	34	50	55	66	58	--
2						32	34	50	57	71	60	--
3						--	36	43	63	67	63	--
4						--	34	46	67	--	70	--
5						--	34	52	65	73	65	--
6						--	37	53	72	66	64	--
7						--	35	--	57	68	64	--
8						--	35	--	54	68	--	--
9						--	35	55	57	70	--	--
10						--	35	55	64	69	67	--
11						--	36	50	72	71	64	--
12						--	48	59	72	60	65	--
13						--	40	60	74	59	60	--
14						--	45	65	75	65	61	--
15						32	48	62	65	64	80	--
16						--	48	60	68	63	67	--
17						34	52	68	65	60	64	--
18						34	43	58	63	63	64	--
19						32	41	56	68	61	54	56
20						34	43	59	73	65	--	58
21						32	43	63	73	65	--	53
22						35	48	68	75	66	--	52
23						34	49	65	--	63	--	53
24						35	41	55	76	64	--	55
25						33	38	59	66	65	--	53
26						34	41	59	77	63	--	53
27						34	43	61	71	67	--	51
28						34	38	54	73	68	--	45
29						34	45	63	--	67	--	43
30						36	48	58	--	59	--	41
31						34	--	60	--	58	--	--
Average						--	41	57	67	65	--	--

Suspended sediment, March to September 1950

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							--	--	--
2-----							--	--	--
3-----							--	--	--
4-----							--	--	--
5-----							--	--	--
6-----							--	--	--
7-----							--	--	--
8-----							--	--	--
9-----							--	--	--
10-----							--	--	--
11-----							--	--	--
12-----							--	--	--
13-----							--	--	--
14-----							--	--	--
15-----							22	141	8
16-----							24	--	e 5
17-----							23	60	4
18-----							23	100	6
19-----							23	37	2
20-----							26	31	2
21-----							28	55	4
22-----							29	79	6
23-----							30	230	19
24-----							31	--	e 17
25-----							31	188	16
26-----							32	167	14
27-----							33	131	12
28-----							34	110	10
29-----							36	115	11
30-----							42	256	29
31-----							49	270	36
Total-							516	--	201

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

CRAZY WOMAN CREEK NEAR ARVADA, WYO.--Continued

Suspended sediment, March to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	56	220	33	48	150	19	176	1,260	599
2-----	64	500	86	44	130	15	156	1,070	450
3-----	60	570	92	48	137	18	130	872	306
4-----	63	280	48	59	260	41	129	684	238
5-----	59	750	140	77	349	73	126	697	237
6-----	70	890	168	69	279	52	137	882	326
7-----	68	1,080	198	75	--	e 200	117	706	223
8-----	73	1,180	232	102	3,040	837	142	892	342
9-----	83	1,380	309	104	1,600	449	202	1,640	895
10-----	81	1,230	269	107	2,180	630	236	2,460	1,570
11-----	96	1,680	435	176	4,700	s 2,530	178	1,840	884
12-----	97	2,030	531	158	5,120	2,180	163	1,200	529
13-----	83	1,880	s 451	134	6,400	2,320	148	990	396
14-----	64	720	124	103	4,850	1,350	170	1,170	537
15-----	60	525	85	84	4,250	964	172	1,230	571
16-----	176	5,320	s 2,970	83	3,680	824	161	1,030	448
17-----	188	7,170	3,640	220	7,030	s 4,750	167	1,180	532
18-----	124	4,250	1,420	322	11,100	9,650	163	1,100	484
19-----	135	3,020	1,100	383	10,000	9,800	150	850	344
20-----	126	1,990	677	404	10,200	11,100	165	840	374
21-----	93	1,090	274	304	6,390	5,240	140	760	287
22-----	75	720	146	245	3,650	2,420	126	740	252
23-----	69	495	92	206	2,590	1,440	107	640	185
24-----	75	550	111	241	2,650	1,720	99	450	120
25-----	90	690	168	271	2,900	2,120	93	425	107
26-----	81	505	111	269	2,740	1,990	78	330	70
27-----	62	323	54	208	1,850	1,040	75	331	67
28-----	54	247	36	182	1,440	708	68	266	49
29-----	51	195	27	165	1,140	508	51	194	27
30-----	49	178	24	174	1,350	634	44	158	19
31-----	--	--	--	178	1,300	625	--	--	--
Total--	2,535	--	14,050	5,232	--	66,250	4,069	--	11,470
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	43	121	14	9.1	43	1	0	--	0
2-----	47	120	15	14	34	1	0	--	0
3-----	49	157	21	8.8	--	--	0	--	0
4-----	55	--	e 24	6.5	--	--	0	--	0
5-----	57	165	25	5.0	--	--	0	--	0
6-----	66	308	55	3.6	--	--	0	--	0
7-----	51	179	25	2.6	15	(t)	0	--	0
8-----	59	164	26	1.7	--	--	0	--	0
9-----	44	96	11	1.4	--	--	0	--	0
10-----	40	93	10	1.2	--	--	0	--	0
11-----	36	80	8	1.2	--	--	0	--	0
12-----	32	67	6	24	--	e 2,400	.1	--	(t)
13-----	25	62	4	70	36,500	s 12,500	.1	--	(t)
14-----	22	52	3	5.8	1,300	s 25	.1	--	(t)
15-----	22	45	3	2.6	320	2	.1	--	(t)
16-----	25	--	e 9	1.6	163	(t)	.1	--	(t)
17-----	25	164	11	1.1	116	(t)	.1	--	(t)
18-----	25	220	15	.7	98	(t)	5.3	--	e 2
19-----	22	281	17	.5	93	(t)	11	90	3
20-----	20	133	7	.3	--	(t)	9.8	73	2
21-----	18	97	5	.2	--	(t)	13	79	3
22-----	16	77	3	.1	--	(t)	12	62	2
23-----	14	68	3	0	--	0	14	76	3
24-----	11	59	2	0	--	0	15	60	2
25-----	9.5	42	1	0	--	0	17	85	4
26-----	8.1	28	(t)	0	--	0	15	63	3
27-----	31	207	s 22	0	--	0	14	65	2
28-----	24	104	7	0	--	0	12	40	1
29-----	16	38	2	0	--	0	12	37	1
30-----	13	34	1	0	--	0	12	38	1
31-----	9.8	37	1	0	--	0	--	--	--
Total--	935.4	--	357	162.0	--	14,930	162.7	--	29
Total discharge for period Mar. 15 to Sept. 30 (second-foot-days)									13,612.1
Total load for period Mar. 15 to Sept. 30 (tons)									107,300

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
CRAZY WOMAN CREEK NEAR ARVADA, WYO.--Continued

Particle-size analyses of suspended sediment, April to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Apr. 9, 1950	3:36 p. m.	82	1,160	1,120	--	68	82	92	97	98	98	100	--	--	BW
Apr. 16	8:20 a. m.	140	3,200	2,470	--	60	--	77	--	95	98	100	--	--	SPWCM
Apr. 17	9:20 a. m.	192	7,620	5,620	--	41	--	70	--	96	99	100	--	--	SPWCM
Apr. 18	8:07 a. m.	121	4,300	3,230	--	52	--	75	--	91	95	100	--	--	SPWCM
Apr. 20	11:18 a. m.	124	1,900	3,770	36	45	57	68	78	86	92	99	100	100	SPWCM
May 10	3:16 p. m.	100	1,750	3,720	--	73	--	97	--	94	--	--	--	--	SPWCM
May 12	4:10 p. m.	178	6,360	5,140	--	60	--	80	--	94	98	100	--	--	SPWCM
May 13	4:00 p. m.	132	9,740	8,180	--	74	--	91	--	96	97	99	100	100	SPWCM
May 18	4:17 p. m.	396	12,600	11,200	2	3	13	54	72	89	--	--	--	--	SPN
May 18	4:17 p. m.	396	12,600	7,460	28	38	48	60	73	89	97	99	100	100	SPWCM
May 25	10:42 a. m.	235	3,040	4,920	--	31	--	45	--	74	92	99	100	100	SPWCM
June 1	5:20 p. m.	176	1,170	540	--	39	--	49	--	67	85	97	100	100	SPWCM
June 6	4:28 p. m.	140	886	1,640	--	41	--	57	--	74	89	98	100	100	SPWCM
June 11	8:25 a. m.	180	2,060	1,230	--	36	--	47	--	71	88	98	100	100	SPWCM
Aug. 12	7:10 a. m.	18	15,400	6,630	--	74	--	97	--	100	--	--	--	--	SPWCM
Aug. 13	7:30 a. m.	73	52,700	5,520	--	56	--	87	--	93	--	--	--	--	SPWCM
Aug. 13	6:10 p. m.	15	12,600	5,480	--	74	--	93	--	99	--	--	--	--	SPWCM

YELLOWSTONE RIVER BASIN--Continued

CLEAR CREEK NEAR ARVADA, WYO.

LOCATION.--At gaging station, 100 yards downstream from Cabin Creek, 1½ miles upstream from mouth, and 16 miles north of Arvada, Sheridan County. DRAINAGE AREA.--1,110 square miles.

RECORDS AVAILABLE.--Water temperatures: March to September 1950.

EXTREMES, March to September 1950.--Water temperatures: Maximum, 72°F Aug. 9; minimum, freezing point on several days in March.

Sediment records: March to September 1950.

Sediment concentrations: Maximum daily, 2,200 ppm June 8; minimum daily, not determined.

Sediment loads: Maximum daily, 7,660 tons June 8; minimum daily, less than 1 ton on several days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, September 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent non-carbon-ate
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate	
Sept. 13, 1949	a 62		7.8	1,620	6.2	0.02	132	89	112		234	704	5.0	0.8	7.2	--	1,170	1.59		696	504	26
Dec. 7	a 86		8.0	1,380	12	--	135	62	113		308	553	2.6	.3	6.3	0.20	1,040	1.41		592	339	29
Mar. 2, 1950	a 64		7.4	916	6.4	.02	83	44	66		208	335	5.0	.1	5.5	--	722	.98		388	217	27
June 6	460		7.8	494	14	.04	46	19	29		120	147	1.0	.2	1.8	.20	336	.46		193	95	24
July 5	287		7.3	545	8.6	.02	46	23	32		119	170	1.0	.1	2.3	.10	366	.50		208	110	25
Sept. 6	4.1		7.5	1,820	7.4	.02	157	88	171		282	845	7.0	.4	5.7	.30	1,420	1.93		754	523	33

a Mean daily discharge.

MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN--Continued

CLEAR CREEK NEAR ARVADA, WYO.--Continued

Temperature (°F) of water, March to September 1950
 /Once-daily temperature measurement at approximately 8:00 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						--	--	43	53	68	54	62
2						--	--	54	70	60	60	62
3						--	--	41	52	--	65	64
4						--	--	39	56	--	65	63
5						--	41	41	60	--	66	63
6						--	38	44	63	66	63	--
7						--	43	41	60	68	61	63
8						--	44	40	50	70	65	60
9						--	--	43	45	70	72	58
10						--	41	46	48	71	69	56
11						--	38	51	56	70	63	52
12						--	42	55	62	62	66	48
13						--	45	57	64	61	62	47
14						--	49	60	63	66	62	49
15						--	51	58	62	65	62	45
16						--	50	58	63	61	67	45
17						--	50	59	62	60	60	--
18						--	42	58	57	62	62	54
19						--	40	50	57	64	59	56
20						--	43	52	64	66	58	59
21						--	32	50	63	66	58	51
22						--	49	58	65	62	62	51
23						--	32	49	61	63	60	52
24						--	38	55	67	67	59	56
25						--	36	50	63	67	62	54
26						--	41	50	60	67	60	55
27						--	43	55	62	67	60	51
28						--	33	41	56	63	59	46
29						--	34	52	63	68	65	48
30						--	32	38	55	66	58	41
31						--	--	53	--	--	60	--
Average						--	43	51	60	66	62	54

Suspended sediment, March to September 1950

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							--	--	--
2-----							--	--	--
3-----							--	--	--
4-----							--	--	--
5-----							--	--	--
6-----							--	--	--
7-----							--	--	--
8-----							--	--	--
9-----							--	--	--
10-----							--	--	--
11-----							--	--	--
12-----							--	--	--
13-----							--	--	--
14-----							--	--	--
15-----							--	--	--
16-----							--	--	--
17-----							--	--	--
18-----							--	--	--
19-----							--	--	--
20-----							--	--	--
21-----							100	48	e 32
22-----							105	--	
23-----							110	85	
24-----							130	--	
25-----							150	--	
26-----							155	--	
27-----							160	--	
28-----							160	110	
29-----							166	--	e 32
30-----							161	56	
31-----							166	--	
Total-							1,563	--	350

e Estimated.

YELLOWSTONE RIVER BASIN

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YELLOWSTONE RIVER BASIN--Continued

CLEAR CREEK NEAR ARVADA, WYO.--Continued

Suspended sediment, March to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	155	144	60	92	16	4	357	95	92
2-----	183	107	53	128	27	9	357	90	87
3-----	218	123	72	116	24	8	400	135	146
4-----	189	62	32	158	32	14	328	66	58
5-----	147	47	19	144	34	13	322	65	56
6-----	134	68	25	116	28	9	417	180	203
7-----	152	147	60	136	33	12	832	1,340	3 010
8-----	233	154	97	172	35	16	1,290	2,200	7,660
9-----	224	--	e 110	158	45	19	1,000	1,540	4 160
10-----	354	1,380	1,320	150	55	22	690	578	1 080
11-----	260	960	674	172	65	30	500	277	374
12-----	178	140	67	155	61	26	460	199	247
13-----	155	56	23	144	55	21	844	787	1 790
14-----	192	53	27	134	54	20	910	924	2 270
15-----	272	137	101	189	82	42	705	550	1 050
16-----	303	200	164	367	460	456	670	462	836
17-----	245	117	77	476	1,130	1,450	596	342	550
18-----	212	52	30	536	1,280	1,850	805	1,340	2 910
19-----	189	30	15	645	1,430	2,490	820	760	1 680
20-----	150	23	9	504	604	821	645	388	676
21-----	128	28	10	406	279	306	650	396	695
22-----	116	33	10	376	232	236	484	195	255
23-----	130	31	11	512	576	796	540	320	466
24-----	150	37	15	715	1,130	2,180	576	315	490
25-----	166	29	13	760	855	1,750	532	272	391
26-----	118	22	7	532	415	596	705	490	932
27-----	136	25	9	428	239	276	420	198	224
28-----	118	16	5	452	210	256	230	54	34
29-----	123	13	4	528	292	416	144	26	10
30-----	131	17	6	413	179	200	83	18	4
31-----	--	--	--	406	153	168	--	--	--
Total-	5,461	--	3,120	10,220	--	14,510	17,312	--	32,440

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	42	15	2	4.1	--	--	22	--	e 4
2-----	19	14	(t)	3.5	--	--	18	60	3
3-----	90	--	e 10	2.4	--	--	16	47	2
4-----	393	--	e 127	2.2	--	--	8.8	--	--
5-----	303	82	67	2.1	--	--	6.5	--	--
6-----	266	93	67	2.2	31	(t)	3.9	47	(t)
7-----	233	56	35	2.4			3.0		
8-----	180	31	15	2.6			3.0		
9-----	150	24	10	2.2			18	51	2
10-----	136	23	8	2.4			21	34	2
11-----	141	25	10	2.8	980	s 536	27	23	2
12-----	126	16	5	3.9			46	37	5
13-----	144	17	7	158			118	141	45
14-----	134	21	8	13			126	124	42
15-----	96	16	4	48			139	103	39
16-----	74	15	3	34	300	28	161	113	49
17-----	79	100	21	17	160	7	178	141	68
18-----	121	1,230	402	14	100	4	158	126	54
19-----	92	220	55	16	68	3	141	102	39
20-----	99	96	26	11	65	2	150	102	41
21-----	79	67	14	16	71	3	147	85	34
22-----	55	42	6	10	106	3	152	70	29
23-----	42	33	4	6.5	68	1	139	64	24
24-----	39	--	e 3	9.2	46	1	123	64	21
25-----	49	40	5	14	53	2	113	65	20
26-----	83	60	13	18	50	2	111	73	22
27-----	94	77	20	25	43	3	101	67	18
28-----	65	44	8	16	49	2	99	45	12
29-----	60	38	6	13	50	2	106	42	12
30-----	24	30	2	13	61	2	121	35	11
31-----	9.2	33	(t)	20	64	3	--	--	--
Total-	3,517.2	--	964	504.5	--	679	2,576.2	--	603

Total discharge for period Mar. 21 to Sept. 30 (second-foot-days)..... 41 153.9

Total load for period Mar. 21 to Sept. 30 (tons)..... 52 670

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

YELLOWSTONE RIVER BASIN--Continued
CLEAR CREEK NEAR ARVADA, WYO.--Continued

Particle-size analyses of suspended sediment. May to August, 1950.
Methods of analysis: B, by sedimentation; D, by sedimentation; P, by pipette; S, by sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters								2. 000		
					0. 002	0. 004	0. 008	0. 016	0. 031	0. 062	0. 125	0. 250	0. 500		1. 000
May 18, 1950	7:15 p. m.	444	895	2, 490	50	76	95	97	99	100	--	SPWCM			
May 25	2:50 p. m.	740	855	2, 240	34	54	81	90	97	99	100	SPWCM			
June 8	9:00 a. m.	1, 210	2, 670	1, 660	34	47	71	80	92	99	100	SPWCM			
June 13	11:20 a. m.	904	959	2, 150	23	42	76	91	97	100	--	SPWCM			
Aug. 13	1:30 p. m.	99	1, 440	1, 120	69	82	94	100	--	--	--	BWS			

YELLOWSTONE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN YELLOWSTONE RIVER BASIN

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- di- um
																	Parts per mil- lion	Tons per acre- foot day	Total	Non- carbon- ate	

YELLOWSTONE RIVER AT BILLINGS, MONT.

Dec. 6, 1949	3,140	7.3	479	22	0.02	44	12	43		0	172	92	9.0	0.6	2.4	0.40	302	0.41	160	19	37
Mar. 2, 1950	3,460	7.5	452	18	.02	45	12	36		0	152	98	8.0	.2	2.9	.10	300	.41	162	37	33
June 2, 1950	17,000	7.6	194	16	.10	21	5.5	12		0	86	24	2.0	.2	1.6	.20	128	.17	75	4	25
Sept. 4, 1950	4,330	7.5	530	14	.02	45	19	43		0	160	132	7.5	.4	2.4	.30	352	.48	189	58	33

YELLOWSTONE RIVER NEAR SIDNEY, MONT.

Mar. 2, 1950	9,150	7.5	609	17	0.04	64	25	53		0	188	260	11	0.2	4.4	--	574	0.76	263	109	41
Mar. 15, 1950	5,830	7.6	781	14	.04	64	25	73		0	184	243	10	.3	3.3	--	544	.74	263	112	36
Apr. 6, 1950	29,100	7.9	548	18	.04	44	14	62		0	160	150	7.0	.6	2.1	0.20	460	.53	168	37	44
May 5, 1950	9,160	7.9	836	23	.10	60	26	81		0	212	227	14	.6	2.1	--	612	.53	257	83	41
May 21, 1950	321,400	7.7	491	18	.04	46	12	42		0	146	119	6.0	.4	2.5	--	324	.44	165	45	35
July 10, 1950	39,400	8.0	300	13	.03	35	4.5	24		0	102	64	3.5	.3	2.9	.10	168	.27	106	22	33
Aug. 4, 1950	14,900	7.9	534	12	.02	53	11	47		0	131	153	6.5	.4	3.3	.17	370	.50	177	70	37
Sept. 8, 1950	4,980	8.3	694	11	.08	55	18	73		5	156	208	10	.5	1.8	.22	482	.66	211	75	43

WIND RIVER NEAR DUBOIS, WYO.

Oct. 24, 1949	68	7.4	211	26	0.02	25	5.4	13		0	115	15	1.2	0.1	0.8	--	154	0.21	85	0	25
Nov. 10, 1949	83	8.0	188	28	.06	25	1.5	15		0	107	10	1.5	.1	.4	0.20	138	.19	69	0	32
Nov. 29, 1949	41	7.8	223	22	.02	27	5.0	14		0	121	17	1.6	.1	.2	--	152	.21	88	0	26
Apr. 13, 1950	137	7.2	204	17	.24	28	4.4	11		0	114	13	2.6	.2	.4	--	142	.19	88	0	21
May 17, 1950	320	7.8	206	26	.04	24	5.3	12		0	112	10	2.0	.4	1.2	--	160	.22	82	0	24
June 29, 1950	778	7.5	111	3.7	.04	14	2.6	9.4		0	66	10	.5	.1	.7	.10	90	.12	46	0	31
July 30, 1950	300	7.5	144	27	.04	23	3.4	1.2		0	83	3.0	1.0	.3	.5	--	106	.14	72	4	3
Sept. 8, 1950	132	7.5	162	31	.02	19	4.0	9.7		0	91	9.0	.5	.2	.2	--	130	.18	64	0	25

OCEAN DRAIN AT OCEAN LAKE OUTLET NEAR PAVILLION, WYO.

Mar. 31, 1950	12	7.5	3,130	22	0.02	149	50	557		0	172	1,450	95	1.0	2.6	0.05	2,410	3.28	578	437	68
June 30, 1950	17	7.1	2,970	24	.04	110	46	546		0	104	1,380	87	.8	.8	.20	2,260	3.07	464	379	72

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN YELLOWSTONE RIVER BASIN--Continued
Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Dis-charge (second-foot)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent so-carbon-dium
																	Parts per million	Tons per acre-foot	Total	Non-carbonate	

ALKALI CREEK AT RALSION, WYO.

Dec. 6, 1949.....		7.9	1,230	20	--	54	37	176	0	324	363	13	1.0	5.7	0.20		854	1.16		287	21	57
Mar. 9, 1950.....		7.7	1,390	18	0.02	50	37	224	0	340	443	14	1.0	3.6	--		966	1.31		277	0	64
June 7.....		8.0	384	18	0.02	26	9.9	46	0	142	78	3.0	4.4	2.5	.10		254	1.35		106	0	49
Sept. 7.....		7.7	370	20	.02	30	7.1	40	0	127	77	4.0	2.2	1.2	.10		254	.35		104	0	46

BITTER CREEK NEAR GARLAND, WYO.

Dec. 6, 1949.....	--	7.9	2,270	27	0.02	93	30	425	0	398	872	19	1.4	1.9	--		1,680	2.28		356	30	72
Mar. 9, 1950.....	21	8.0	2,130	37	.02	85	38	369	0	384	780	18	1.4	1.8	0.20		1,540	2.09		369	54	68
Apr. 13.....	19	8.0	2,240	12	.02	57	40	420	0	276	915	21	1.4	8.5	--		1,010	2.19		307	81	75
Apr. 25.....	135	7.8	843	23	.02	68	20	96	0	238	240	8.0	4.4	3.3	.10		568	.80		232	37	45
June 7.....	278	7.8	856	22	.02	51	16	113	0	212	236	7.0	6.7	7.6	.10		574	.78		194	20	56
Sept. 7.....	261	7.3	855	13	.02	60	16	109	0	210	231	8.3	8.3	6.2	.30		604	.82		216	44	52

SAGE CREEK NEAR LOVELL, WYO.

Dec. 6, 1949.....	--	7.9	5,080	20	0.04	290	232	811	0	396	2,860	81	1.4	28	--		4,520	6.15		1,680	1,360	51
Mar. 9, 1950.....	--	7.9	5,630	28	.02	295	233	964	0	468	3,190	52	1.0	13	0.40		5,010	6.81		1,690	1,310	55
June 7.....	130	7.7	1,830	17	.02	119	58	244	0	228	810	19	4.8	8.8	.20		1,390	1.89		536	348	50
Sept. 7.....	173	7.8	1,780	16	.04	121	57	234	0	229	793	19	5.5	6.5	.20		1,360	1.85		537	349	49

CLEAR CREEK NEAR BUFFALO, WYO.

Dec. 7, 1949.....	a 5.0	7.5	130	17	0.04	16	3.4	10	0	72	13	1.0	0.2	1.6	0.15		94	0.13		54	0	29
Mar. 3, 1950.....	a 2.3	7.4	113	22	.02	11	1.9	12	0	62	3.0	4.0	1.1	2.0	.00		88	.12		36	0	42
June 6.....	324	6.6	42.0	11	.04	6.0	3.7	0	0	20	7.0	1.0	.2	.30	.38		30	.05		19	3	30
Sept. 8.....	5.1	7.9	87.9	15	.02	9.5	1.3	5.5	0	48	5.4	5.4	5.4	3	3		98	.09		31	0	28

a Mean daily discharge.

YELLOWSTONE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN YELLOWSTONE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

WIND RIVER, 500 FEET UPSTREAM FROM MOUTH OF NORTH FORK WIND RIVER, NEAR DUBOIS, WY.

Sept. 16, 1949.....	350	225	2.3
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WIND RIVER NEAR BURRIS, WYO. (JUST UPSTREAM FROM MOUTH OF DINWOODY CREEK)

Sept. 16, 1949.....	720	210	498
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NORTH FORK WIND RIVER NEAR DUBOIS, WYO.

May 1, 1950.....	65	184	32
May 1.....	83	221	50
May 2.....	80	40	8.6
May 2.....	86	453	175
May 3.....	91	179	44
May 3.....	80	256	55
May 4.....	80	172	37
May 4.....	69	286	53
May 5.....	66	62	11
May 5.....	86	890	277
May 8.....	93	606	152
May 8.....	68	702	129
May 9.....	58	276	51
May 9.....	83	416	93
May 10.....	80	316	51
May 11.....	94	1,220	310
May 11.....	77	67	14
May 12.....	229	650	402
May 12.....	136	76	28
May 15.....	625	755	1,270
May 16.....	597	486	783
May 16.....	466	284	357
May 17.....	700	750	1,420
May 18.....	788	774	1,650
May 18.....	590	492	784
May 18.....	708	448	856
May 19.....	392	154	163
Sept. 16.....	216	114	66

BEAVER CREEK NEAR ARAPAHOE, WYO.

Apr. 13, 1950.....	37	5,000	500
Apr. 17.....	72	5,310	1,030
Apr. 20.....	105	8,500	2,410
Apr. 25.....	110	6,700	1,990
May 10.....	89	11,600	2,790
May 17.....	110	4,680	1,390
June 21.....	56	1,670	253
July 11.....	16	1,300	56
July 18.....	5.5	332	4.9
July 24.....	9.9	9,840	263
July 26.....	4.1	4,210	47
Sept. 22.....	20	6,600	356
Sept. 27.....	9.2	1,620	40

OCEAN DRAIN AT OCEAN LAKE OUTLET NEAR PAVILLION, WYO.

Oct. 3, 1949.....	28	2	0.15
Oct. 4.....	28	5	.33
Oct. 5.....	27	316	23
Oct. 7.....	24	7	.45
Oct. 11.....	24	180	12
Oct. 12.....	23	12	.75
Oct. 19.....	24	22	1.4
Oct. 21.....	25	6	.40
Oct. 26.....	25	6	.40
Nov. 2.....	23	8	.50
Nov. 4.....	23	6	.37
Nov. 16.....	16	22	.95
Nov. 23.....	17	89	4.1
Nov. 28.....	15	186	7.5
Dec. 7.....	14	3	.11

YELLOWSTONE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN YELLOWSTONE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued			
Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
OCEAN DRAIN AT OCEAN LAKE OUTLET NEAR PAVILLION, WYO.--Continued			
Dec. 14, 1949.....	13	2	0.07
Dec. 21.....	13	2	.07
Dec. 23.....	12	2	.06
Dec. 28.....	9.8	2	.05
Jan. 4, 1950.....	8.2	1	.02
Jan. 18.....	3.2	1	.01
Feb. 15.....	16	2	.09
Feb. 22.....	14	16	.60
Feb. 28.....	14	5	.19
Mar. 10.....	15	4	.16
Mar. 17.....	15	12	.49
Mar. 23.....	15	21	.85
Mar. 29.....	12	370	12
Apr. 4.....	22	17	1.0
Apr. 12.....	31	3	.25
June 29.....	17	16	.73
July 27.....	19	16	.82
July 31.....	19	11	.56
Sept. 27.....	28	45	3.4
UPPER HANOVER CANAL, 1 MILE SOUTHWEST OF WINCHESTER, WYO.			
July 14, 1950.....	289	1,510	1,180
Aug. 4.....	213	2,680	1,540
Sept. 27.....	235	1,160	736
UPPER HANOVER CANAL, 5½ MILES SOUTH OF WORLAND, WYO.			
Aug. 4, 1950.....	162	3,040	1,330
UPPER HANOVER CANAL, 2½ MILES SOUTH OF WORLAND, WYO.			
Aug. 4, 1950.....	169	2,930	1,340
UPPER HANOVER CANAL, 2½ MILES EAST OF WORLAND, WYO.			
Aug. 4, 1950.....	55.4	3,000	449
UPPER HANOVER CANAL, 11 MILES NORTHEAST OF WORLAND, WYO.			
Aug. 4, 1950.....	3.62	2,520	25
BLUFF CANAL, 2½ MILES NORTHEAST OF WINCHESTER, WYO.			
July 14, 1950.....	77.0	1,580	328
Aug. 22.....	117	3,300	1,040
Sept. 27.....	125	1,350	456
BLUFF CANAL, 8 MILES SOUTHWEST OF WORLAND, WYO.			
Aug. 22, 1950.....	58.2	3,070	482
GOOSEBERRY CREEK NEAR GRASS CREEK, WYO.			
Apr. 14, 1950.....	18.8	788	40
GOOSEBERRY CREEK AT PULLIAM, WYO.			
Mar. 17, 1950.....	20.2	10,200	556
Apr. 11.....	1.93	1,470	7.7
BIGHORN CANAL, 2 MILES NORTHEAST OF NEIBER, WYO.			
July 14, 1950.....	589	1,730	2,750
Aug. 23.....	376	3,380	3,430
Sept. 27.....	317	1,670	1,430
BIGHORN CANAL, 2½ MILES NORTHEAST OF NEIBER, WYO.			
July 14, 1950.....	423	1,440	1,640
Aug. 23.....	e 370	3,380	3,380
BIGHORN CANAL, 4 MILES NORTH OF WORLAND, WYO.			
Aug. 23, 1950.....	372	3,460	3,480
e Estimated.			

e Estimated.

YELLOWSTONE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN YELLOWSTONE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
BIGHORN CANAL, 2 MILES SOUTHWEST OF MANDERSON, WYO.			
Aug. 23, 1950	198	3,780	2,020
BIGHORN CANAL, 1 MILE WEST OF BASIN, WYO.			
Aug. 23, 1950.....	46	3,390	421
BIGHORN CANAL, 3½ MILES SOUTHWEST OF GREYBULL, WYO.			
Aug. 23, 1950.....	e 12	4,100	133
LOWER HANOVER CANAL, 4½ MILES SOUTH OF WORLAND, WYO.			
Aug. 3, 1950.....	e 143	2,440	542
LOWER HANOVER CANAL, 4 MILES SOUTH OF WORLAND, WYO.			
Aug. 3, 1950	143	2,500	965
Sept. 13	108	6,280	1,830
LOWER HANOVER CANAL, 1½ MILES SOUTH OF WORLAND, WYO.			
Aug. 3, 1950	109	2,760	812
LOWER HANOVER CANAL, 2 MILES NORTHEAST OF WORLAND, WYO.			
Aug. 3, 1950	106	2,690	770
LOWER HANOVER CANAL, 6 MILES NORTHEAST OF WORLAND, WYO.			
Aug. 3, 1950.....	68.3	2,610	481
NOWATER CREEK, 4 MILES SOUTH OF WORLAND, WYO.			
Aug. 3, 1950.....	14.4	2,680	104
Sept. 13.....	60	7,730	1,250
FIFTEENMILE CREEK AT WORLAND, WYO. (100 FEET UPSTREAM FROM MOUTH)			
Oct. 6, 1949	43.5	738	87
Oct. 14	25.2	374	25
May 8, 1950	e 20	40,400	2,260
Aug. 1	13.4	2,450	89
Sept. 13	e 20	27,100	1,460
SLICK CREEK, 3½ MILES NORTHEAST OF WORLAND, WYO.			
Oct. 11, 1949	e 4	295	3.2
Sept. 1, 1950	10.7	662	19
Sept. 13	e 35	5,280	499
NOWOOD CREEK NEAR TENSLEEP, WYO.			
Apr. 10, 1950	236	3,960	2,520
NOWOOD CREEK AT MANDERSON, WYO.			
Aug. 9, 1950.....	95.7	12	3.1
Sept. 6.....	66.1	7	1.2
ELK CREEK 5 MILES SOUTH OF BASIN, WYO.			
Oct. 11, 1949	110	2,830	840
Sept. 13, 1950	e 20	8,280	447
ANTELOPE CREEK 2 MILES SOUTH OF BASIN, WYO.			
Oct. 11, 1949	e 1	92	0.2
Sept. 13, 1950	e 4	2,400	26
GREYBULL RIVER NEAR BASIN, WYO.			
Aug. 24, 1950.....	58.9	98	16
Sept. 13	166	256	115
DRY CREEK AT GREYBULL, WYO. (100 FEET UPSTREAM FROM MOUTH)			
Oct. 12, 1949	40.4	51	6
Apr. 12, 1950.....	10.5	3,020	86
Apr. 26	12	158	5.1
May 4	e 18	8,880	432
May 10	41.9	4,360	494
e Estimated.			

YELLOWSTONE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN YELLOWSTONE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
DRY CREEK AT GREYBULL, WYO. (100 FEET UPSTREAM FROM MOUTH)--Continued			
May 25, 1950	47.0	2,860	363
June 8	e 60	2,590	420
July 18	55.1	960	143
Aug. 2	35.4	55*	53
Sept. 6	55.9	208	31
SHOSHONE RIVER AT BYRON, WYO.			
Aug. 10, 1950	1,060	197	564
Sept. 20	823	116	258
ALKALI CREEK AT RALSTON, WYO.			
Oct. 7, 1949	10.2	563	16
Oct. 12	10.2	366	10
June 7, 1950	e 50	17,200	2,320
July 18	36.0	5,890	572
Aug. 1	6.81	318	5.8
BITTER CREEK, HALF A MILE WEST OF GARLAND, WYO.			
Oct. 7, 1949	153	130	54
Oct. 12	190	220	113
BITTER CREEK NEAR GARLAND, WYO. (4 MILES SOUTHEAST OF GARLAND)			
June 7, 1950	278	806	605
July 18	257	424	294
Aug. 1	344	548	509
SAGE CREEK NEAR LOVELL, WYO.			
Oct. 7, 1949	213	1,820	1,050
Oct. 12	181	1,070	523
Apr. 13, 1950	52.7	3,530	502
Apr. 25	50.3	1,960	266
May 9	93.0	5,680	1,430
May 22	90.2	5,030	1,220
June 7	130	3,800	1,330
July 18	158	2,960	1,260
Aug. 1	142	2,500	958
Sept. 7	173	1,550	724

e Estimated.

LITTLE MISSOURI RIVER BASIN

LITTLE MISSOURI RIVER AT ALZADA, MONT.

LOCATION.--At bridge on U. S. Highway 212, 1 mile northwest of Alzada, Carter County, 2 miles upstream from Thompson Creek, and 3 miles upstream from gaging station near Alzada.

DRAINAGE AREA.--780 square miles (above gaging station).

RECORDS AVAILABLE.--Water temperatures: June 1949 to September 1950.

Sediment records: March 1949 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 76° F July 9; minimum, freezing point on many days during December to April.

Sediment concentrations: Maximum daily, 9,280 ppm Aug. 14; minimum daily, 0 tons Nov. 26 to Dec. 2.

Sediment loads: Maximum daily, 17,600 tons May 10; minimum daily, 0 tons Nov. 26 to Dec. 2.

EXTREMES, March 1949 to September 1950.--Sediment concentrations: Maximum daily, 20,100 ppm May 21, 1949; minimum daily, no flow several days each year.

Sediment loads: Maximum daily, 17,600 tons May 10, 1950; minimum daily, 0 tons on many days each year.

REMARKS.--Discharge records for gaging station near Alzada for water year October 1949 to September 1950 given in Water-Supply Paper 1176. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, December 1949 to July 1950

Date of collection	Discharge (second- feet)	Tem- pera- ture (° F)	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- lids
																Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate	
Dec. 5, 1949	0.2	7.6	1,500	9.0	0.02	103	37	211	288	585	7.0	0.8	2.4	0.40	1,100	1.50	409	165	53		
Mar. 8, 1950	8.2	7.2	547	20	.02	31	12	70	92	190	2.0	.4	2.0	.05	376	.51	127	52	54		
May 5	408	7.0	860	19	.04	49	28	96	80	360	2.0	.4	2.7	.30	438	.87	238	172	47		
May 20	39	7.3	1,150	9.3	.04	78	43	135	132	530	2.0	.7	1.1	.30	926	1.26	372	264	44		
July 17	1.4	7.2	881	11	.06	54	17	110	110	333	2.5	.5	1.7	--	606	.82	205	115	54		

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT ALZADA, MONT.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 (Once-daily temperature measurement at approximately 8:00 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	45	36				--	38	58	68	50	65
2	54	45	37				--	42	58	69	65	65
3	52	42	36				32	36	58	67	68	65
4	55	44	--				--	36	63	65	70	65
5	64	46	32	32			32	36	63	64	68	65
6	53	42	36				41	42	60	66	70	68
7	--	48	38				33	40	60	70	66	68
8	44	46	--			32	--	40	60	72	70	60
9	45	46	--				33	40	--	76	70	58
10	50	43	--				36	46	55	70	68	55
11	52	43	--				35	50	63	70	68	50
12	47	40	--				37	54	68	62	68	40
13	47	41	--				40	53	75	62	67	50
14	--	38	--				40	57	75	65	60	50
15	45	40	--				47	57	72	68	65	50
16	44	38	--				50	58	65	60	70	48
17	49	36	--				50	54	62	60	60	50
18	--	42	--				42	59	60	62	65	50
19	38	40	--				40	53	60	72	60	55
20	--	35	--				40	--	65	68	60	58
21	41	35	--				48	68	68	68	60	55
22	38	--	--				45	55	70	66	62	50
23	37	39	--				48	61	68	65	62	50
24	42	38	--				40	57	64	68	63	55
25	42	40	--				40	60	60	66	60	55
26	47	39	--				40	60	60	70	60	55
27	43	40	--				38	60	65	70	61	50
28	44	42	--				--	60	63	70	--	50
29	--	38	--				34	--	64	70	60	45
30	39	--	--				35	60	65	65	60	40
31	--	--	--				--	55	--	60	60	--
Average	47	41	--				40	51	64	67	64	55

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT ALZADA, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.1			0.2	230	0.1	0		0
2-----	.1			.2	140	.1	0		0
3-----	.1			.2	122	.1	.1		
4-----	.1	22	(t)	.2			.1	20	(t)
5-----	.1			.2	33	(t)	.1		
6-----	.1			.2			.1		
7-----	.1			.1			.1		
8-----	.2			.1	25	(t)	.1		
9-----	.2			.1			.1		
10-----	.2			.1			.1		
11-----	.2	11	(t)	.1			.1		
12-----	.2			.1			.1		
13-----	.2			.1			.1		
14-----	.1			.1			.1		
15-----	.1			.1			.1		
16-----	.1	13	(t)	.1			.1		
17-----	.1			.1			.1		
18-----	.1			.1	14	(t)	.1		
19-----	.2			.1			.1		
20-----	.3	15	(t)	.1			.1		
21-----	.2			.1			.1		
22-----	.2			.1			.1		
23-----	1.4		e 7.5	.1			.1		
24-----	11	540	16	.1			.1		
25-----	22	390	23	.1			.1		
26-----	14	330	12	0	--	0	.1		
27-----	5.3	240	3.4	0	--	0	.1		
28-----	.6	233	.4	0	--	0	.1		
29-----	.3	--	e .2	0	--	0	.1		
30-----	.2	250	.1	0	--	0	.1		
31-----	.3	260	.2	--	--	--	.1		
Total--	58.4	--	63.0	3.1	--	0.4	2.9		0.2
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.1			0.1			16		e 30
2-----	.1			.1			14		e 24
3-----	.1			.1			30		e 60
4-----	.1			.1			20		e 40
5-----	.1			.1			15		e 28
6-----	.1			.1			13		e 20
7-----	.1			.1			10		e 13
8-----	.1			.1			12	570	18
9-----	.1			.1			12		e 18
10-----	.1			.1			10		
11-----	.1			.1			9.8		
12-----	.1			.1			9.7		e 13
13-----	.1			.1			10		
14-----	.1			.2			10		
15-----	.1	(t)		.2			15		e 28
16-----	.1			.3			22		e 46
17-----	.1			.3			26		e 55
18-----	.1			.4			20		e 40
19-----	.1			5			30		e 60
20-----	.1			10		e 2	34		e 70
21-----	.1			15		e 13	39		e 80
22-----	.1			18		e 28	50		e 200
23-----	.1			20			43		e 90
24-----	.1			24			69		e 300
25-----	.1			20		e 40	93		e 240
26-----	.1			18			76		e 180
27-----	.1			18			69		e 160
28-----	.1			18			69		e 150
29-----	.1			--		--	59		e 130
30-----	.1			--		--	46		e 100
31-----	.1			--		--	65		e 150
Total--	3.1		0.2	168.7		320	1,016.5		2,400

e Estimated.

t Less than 0.1 ton.

MISSOURI RIVER BASIN

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT ALZADA, MONT.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	78	--	a 200	65	490	86	7.4	56	1.1
2-----	250	1,800	1,220	240	2,870	s 2,030	6.7	50	.9
3-----	700	2,880	5,440	281	1,770	1,340	6	38	.6
4-----	1,450	2,600	10,200	269	1,420	1,030	5.3	39	.6
5-----	1,250	2,630	8,880	392	2,040	2,160	4.6	45	.6
6-----	1,010	3,100	8,450	650	3,890	6,830	3.9	45	.5
7-----	1,070	3,470	10,030	632	3,380	s 770	3.2	40	.3
8-----	1,060	3,780	10,800	584	2,650	4,180	2.8	44	.3
9-----	1,420	3,250	12,500	406	2,920	s 3,350	3.4	36	.3
10-----	1,370	2,430	8,990	1,180	5,320	17,600	3.4	41	.4
11-----	1,300	2,180	7,650	1,240	4,150	13,900	2.7	80	.5
12-----	1,700	1,900	8,720	1,100	2,570	7,630	2.5		
13-----	1,210	2,560	8,360	444	2,840	s 3,560	2.3		
14-----	904	3,630	8,860	141	1,460	556	2.3		
15-----	776	3,640	7,630	105	630	179	1.4		
16-----	728	2,550	s 0,010	110	950	282	1.4	75	.3
17-----	674	2,460	4,480	94	5,200	1,320	1.6		
18-----	436	2,000	2,350	80	1,350	292	1.8		
19-----	220	1,450	861	56	500	76	2.5		
20-----	146	830	327	42	178	20	2.5		
21-----	100	430	116	30	107	8.7	6.6	73	1.3
22-----	71	300	58	22	84	5.0	11	77	2.3
23-----	55	200	30	17	76	3.5	7.9	62	1.3
24-----	51	158	22	13	77	2.7	5.3	70	1.0
25-----	52	130	18	12	47	1.4	40	1,210	s 160
26-----	59	142	23	12			13	290	10
27-----	62	115	19	11			4.5	54	.7
28-----	65	--	a 20	10			1.6	33	.1
29-----	66	102	18	9.5	--	e 1.2	1.3		
30-----	57	87	13	8.8	42	1.0	1.1		
31-----	--	--	--	8.1	46	1.0	--	--	--
Total-	18,390	--	131,300	8,264.4	--	72,220	160.0	--	186
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.4	41	0.2	0.8	53	0.1	0.6	24	(t)
2-----	1.3			.8			.6		
3-----	1.8			.9			.6		
4-----	1.3			.9			.6		
5-----	1.2			.8			.6		
6-----	1.3	53	.2	.8	114	.3	.6		
7-----	1.4			.8			.6		
8-----	1.3			.8			.4		
9-----	1.4			.9			.3		
10-----	1.2			.9			.4		
11-----	1.1	50	.2	.9	72	e 2,300	.4	16	(t)
12-----	1.2			1.1			.6		
13-----	1.1			.7			.6		
14-----	1.2			191		s 4,880	.6		
15-----	1.2			432		s 5,590	.6		
16-----	1.6	138	s 1.3	327	1,980	s 1,870	.6		
17-----	13	390	14	48	1,000	130	.6		
18-----	26	616	s 81	22	450	27	.6		
19-----	56	236	s 37	11	360	11	.6		
20-----	32	90	7.8	6.1	260	4.3	.6		
21-----	17	62	2.8	2.5	172	1.2	.6	16	(t)
22-----	5.6	28	.4	1.6	123	.5	.5		
23-----	1.6	36	.1	.9	95	.2	.5		
24-----	1.1			.9	68	.2	.5		
25-----	.8			.9			.5		
26-----	.9			.8			.5		
27-----	.9			.8	50	.1	.5		
28-----	.9	45	.1	.7			.5		
29-----	.9			.7			.5		
30-----	.8			.7			.5		
31-----	.8			.7			--	--	--
Total-	179.3	--	148	1,130.7	--	14,820	16.2	--	0.9

Total discharge for year (second-foot-days) 29,393.3

Total load for year (tons) 221,500

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT ALZADA, MONT.--Continued

Particle-size analyses of suspended sediment, April 1949 to August 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Apr. 14, 1949.....	3:45 p. m.	549	3,930	1,320	37	60	74	90	96	98	99	100		BW
Apr. 3, 1950.....	5:00 p. m.	738	2,560	1,880	--	70	--	94	--	99	--	--		SPWCM
Apr. 14.....	9:04	12,500	4,230	2,880	--	75	--	93	--	99	--	--		SPWCM
May 2.....	5:00 p. m.	289	4,120	2,500	--	74	--	96	--	100	--	--		SPWCM
May 5.....	5:30 p. m.	424	2,300	1,510	--	79	--	93	--	99	--	--		SPWCM
May 7.....	5:00 p. m.	616	3,660	2,310	--	76	--	92	--	99	--	--		SPWCM
May 9.....	5:00 p. m.	347	3,080	2,100	--	73	--	86	--	95	--	--		SPWCM
May 10.....	8:00 a. m.	1,280	6,480	3,940	--	73	--	90	--	99	--	--		SPWCM
May 11.....	5:00 p. m.	1,290	3,920	2,450	--	77	--	96	--	98	--	--		SPWCM
May 13.....	8:00 a. m.	536	3,390	2,150	--	71	--	89	--	99	--	--		SPWCM
May 17.....	8:00 a. m.	97	13,000	3,980	--	85	95	98	99	100				BWC
June 25.....	8:00 a. m.	57	1,220	1,390	--	93	98	99	100	--	--	--		BWC
July 18.....	1:00 p. m.	8.7	1,770	1,090	--	91	93	97	98	100	--	--		BWC
July 18.....	6:00 p. m.	27	1,440	909	--	97	98	99	99	100	--	--		BWC
Aug. 14.....	7:00 a. m.	178	11,600	3,550	--	87	--	100	--	--	--	--		PWCM
Aug. 15.....	4:40 p. m.	512	4,110	5,060	70	82	89	94	100	--	--	--		PWCM
Aug. 15.....	4:40 p. m.	512	4,110	4,680	5	13	88	97	99	100	--	--		SPN
Aug. 16.....	8:00 p. m.	113	1,660	2,370	82	90	94	99	100	--	--	--		BWC

LITTLE MISSOURI RIVER BASIN--Continued
LITTLE MISSOURI RIVER AT MARMARTH, N. DAK.

LOCATION.--At gaging station at bridge on U. S. Highway 12 in Marmarth, Slope County, 1½ miles downstream from Little Beaver Creek.
DRAINAGE AREA.--4,570 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- dium	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate		
Dec. 19, 1949	0.3		8.1	2,570	15	0.06	46	46	533		656	885	2.0	0.6	0.9	--	--	1,850	2.52		304	0	79
Mar. 5, 1950	4,010		7.0	335	19	.06	24	6.7	39		84	95	1.5	.1	1.5	0.20		268	.36		88	19	49
Mar. 8	1,000		7.8	280	20	.16	18	4.6	32		64	73	1.0	.2	3.1	.20		212	.29		64	12	52
Mar. 10	5,600		7.4	209	10	.04	30	4.7	4.8		80	32	2.0	.2	3.3	--		146	.20		95	29	10
Apr. 3	2,730		6.7	187	8.0	.16	15	3.5	19		68	34	.0	.2	1.9	--		138	.19		52	0	44
Apr. 4																							
Apr. 5	13,600		8.1	281	13	.02	21	4.1	34		110	48	.5	.2	2.8	--		192	.26		70	0	52
Apr. 13	6,440		7.3	329	12	.14	39	7.6	18		120	64	1.0	.2	2.1	--		208	.28		129	31	23
Apr. 17	6,110		7.3	367	12	.04	37	7.4	29		112	86	1.0	.2	2.4	--		240	.33		123	31	34
Apr. 20	1,970		7.5	499	11	.04	40	11	49		112	151	1.0	.2	1.8	--		352	.46		145	33	43
May 9	4,060		7.5	522	12	.04	40	9.7	58		120	158	1.0	.3	.4	--		354	.48		140	42	47
June 23	64		7.8	1,400	13	.08	52	24	256		287	508	11	.3	4.9	--		1,010	1.37		229	0	71
July 17	39		8.0	1,530	13	.06	43	18	294		345	505	6.5	.5	1.7	--		1,050	1.43		182	0	78
Aug. 14	82		7.8	1,150	16	.16	18	5.8	244		303	328	3.5	.2	5.1	--		1,782	1.06		69	0	88
Sept. 11	13		8.2	1,620	13	.02	53	22	290		354	523	10	.5	.7	--		1,090	1.48		221	0	74

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT MARMARTH, N. DAK.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
Oct. 10, 1949	94	5,520	1,400
Oct. 28	40	2,060	222
Nov. 18	6.5	88	1.5
Dec. 2	5.8	79	1.2
Mar. 5, 1950	a 4,000	3,300	35,60 ^a
Mar. 7	a 1,700	1,780	8,170
Mar. 8	a 1,000	1,150	3,100
Mar. 13	a 200	208	112
Apr. 3	5,650	2,280	35,700
Apr. 4	2,730	926	6,830
Apr. 5	13,600	3,900	143,000
Apr. 6	7,490	4,710	95,200
Apr. 8	13,100	2,980	105,000
Apr. 10	7,400	5,150	103,000
Apr. 11	6,220	2,540	42,700
Apr. 13	6,440	3,020	52,500
Apr. 17	6,010	5,610	91,000
Apr. 20	1,970	2,810	14,900
Apr. 28	585	1,720	2,720
May 9	4,180	3,880	43,800
May 31	122	98	32
June 23	62	80	13
June 27	203	7,890	4,300
July 6	52	66	9.3
July 17	39	192	20
Aug. 14	88	6,410	1,500
Sept. 11	13	70	2.5

^a Mean daily discharge.

LITTLE MISSOURI RIVER BASIN--Continued
LITTLE MISSOURI RIVER AT MARMARTH, N. DAK.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 10, 1949	5:30 p. m.	94	5,520	2,410	84	93	97	98	100	--	--	--	--	--	--	BW
Oct. 28	10:00 a. m.	40	2,060	1,530	82	93	98	98	100	--	--	--	--	--	--	BW
a 4,000	4:45 p. m.	Mar. 5, 1950	3,300	9,840	--	45	--	67	--	90	97	100	--	--	--	SPWCM
12:45 p. m.	Mar. 7	a 1,700	1,780	2,420	--	57	--	64	--	68	73	93	--	98	--	SPWCM
a 1,000	1:20 p. m.	Mar. 8	1,150	2,510	--	96	--	100	--	--	--	--	--	--	--	SPWCM
5,850	3:00 p. m.	Apr. 3	2,260	5,300	--	49	--	63	--	80	89	98	--	99	100	SPWCM
2,730	2:15 p. m.	Apr. 4	926	2,700	--	62	--	74	--	87	92	98	--	100	--	SPWCM
7,490	1:40 p. m.	Apr. 6	4,710	8,630	--	47	--	65	--	87	95	99	--	100	--	SPWCM
13,100	11:30 a. m.	Apr. 8	2,980	9,390	--	63	--	82	--	92	95	99	--	100	--	SPWCM
7,400	3:00 p. m.	Apr. 10	5,150	15,500	--	47	--	65	--	79	86	95	--	100	--	SPWCM
6,220	11:30 a. m.	Apr. 11	2,540	2,020	37	54	67	82	91	98	--	--	--	--	--	SPN
6,220	6:220	Apr. 11	2,540	1,710	28	46	60	75	89	96	--	--	--	--	--	SPWCM
6,440	3:00 p. m.	Apr. 13	3,020	8,990	--	62	--	82	--	99	100	--	--	--	--	SPWCM
1,970	5:00 p. m.	Apr. 20	2,810	5,060	--	58	--	72	--	78	83	96	--	100	--	SPWCM
585	4:45 p. m.	Apr. 28	1,720	3,980	--	87	--	95	--	99	100	--	--	--	--	SPWCM
4,180	1:30 p. m.	May 9	3,880	8,920	--	60	--	--	--	85	92	98	--	100	--	SPWCM
203	7:590	June 27	11:45 a. m.	4,670	82	96	98	98	99	100	--	--	--	--	--	PWCM
88	1:30 p. m.	Aug. 14	6,410	7,660	--	98	--	100	--	--	--	--	--	--	--	PWCM

a. Mean daily discharge.

MISSOURI RIVER BASIN

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT MEDORA, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950									
Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	24	13,700	s 972	65	4,070	714	12	150	5
2-----	19	1,300	67	55	3,520	523	18	150	7
3-----	28	9,100	688	51	2,260	311	22	320	19
4-----	64	9,580	s 2,150	49	1,640	217	14	140	5
5-----	104	23,800	6,680	44	1,200	143	18	120	6
6-----	115	25,000	7,760	41	1,240	137	12	90	3
7-----	95	22,600	5,800	40	1,060	114	8	50	1
8-----	100	15,500	4,200	38	1,140	117	5		
9-----	111	12,600	3,780	33	760	68	3		
10-----	97	11,100	2,910	32	680	59	2		
11-----	151	10,700	4,360	36	530	54	1		
12-----	115	10,700	3,320	33	450	40	1		
13-----	116	10,100	3,160	29	540	42	1		
14-----	107	7,600	2,200	28	420	32	1		
15-----	82	6,200	1,370	28	450	34	1	90	(t)
16-----	66	4,800	855	28	220	17	1		
17-----	59	4,900	781	28	330	25	1		
18-----	54	4,800	700	25	320	22	1		
19-----	51	4,100	565	23	750	47	1		
20-----	50	2,700	364	16	500	22	1		
21-----	48	2,300	298	18	230	11	1		
22-----	85	3,800	872	19	220	11	1		
23-----	106	4,600	1,320	18	200	10	0	--	0
24-----	72	6,100	1,190	15	290	12	0	--	0
25-----	94	3,700	939	13	220	8	0	--	0
26-----	132	5,200	1,850	22	600	36	0	--	0
27-----	151	7,800	3,180	24	220	14	0	--	0
28-----	134	6,200	2,240	22	410	24	0	--	0
29-----	107	5,300	1,530	25	350	24	0	--	0
30-----	97	4,400	1,150	11	220	7	0	--	0
31-----	80	4,400	950	--	--	--	0	--	0
Total--	2,714	--	68,200	911	--	2,900	126	--	52
January			February			March			
1-----						0	--		0
2-----						0	--		0
3-----						10	--		e 10
4-----						100	3,200		864
5-----						4,000	3,000		32,400
6-----						7,000	3,800		71,800
7-----						4,500	2,900		35,200
8-----						1,250	--		e 6,000
9-----						950	1,600		4,100
10-----						350	1,100		1,040
11-----						180	--		e 500
12-----						120	--		e 150
13-----						70	--		e 30
14-----						85	140		32
15-----						100	170		46
16-----						100	120		32
17-----						200	150		81
18-----						250	110		74
19-----						200	--		e 50
20-----						180	80		39
21-----						300	120		97
22-----						1,100	540		1,600
23-----						1,700	900		4,130
24-----						1,700	1,100		5,050
25-----						1,800	1,300		6,320
26-----						1,600	850		3,670
27-----						820	640		1,420
28-----						620	680		1,140
29-----						480	550		713
30-----						450	1,060		1,290
31-----						450	1,020		1,240
Total--	0	--	0	0	--	0	30,665	--	179,100

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT MEDORA, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	550	1,170	1,740	900	1,500	3,640	194	170	89
2-----	1,500	3,100	12,600	850	2,100	4,820	170	120	55
3-----	5,400	4,400	64,200	750	1,700	3,440	170	150	69
4-----	6,000	3,800	61,600	850	1,600	3,670	170	90	41
5-----	4,500	3,700	45,000	850	1,450	3,330	148	80	32
6-----	5,000	5,800	78,300	800	--	e 3,000	135	80	29
7-----	16,100	8,960	408,000	1,000	--	e 10,000	131	670	237
8-----	23,300	8,100	510,000	2,430	5,250	34,400	159	470	202
9-----	14,900	6,100	245,000	4,960	8,400	112,000	170	2,000	918
10-----	10,900	7,700	227,000	4,860	8,000	105,000	170	1,100	505
11-----	8,870	8,200	196,000	5,420	8,000	117,000	170	270	124
12-----	8,180	7,400	183,000	5,040	7,800	106,000	170	180	83
13-----	8,400	7,500	170,000	4,680	7,100	89,700	159	150	64
14-----	8,400	8,100	184,000	4,150	5,300	59,400	159	1,100	472
15-----	12,600	10,300	350,000	3,340	4,400	39,700	170	920	422
16-----	19,000	12,000	616,000	2,880	4,900	38,100	194	700	367
17-----	15,200	10,200	419,000	2,300	4,800	29,800	220	4,300	2,550
18-----	9,620	7,000	182,000	1,680	3,700	16,800	194	3,000	1,570
19-----	5,800	5,300	83,000	1,200	2,600	8,420	170	2,800	1,280
20-----	3,680	5,000	49,400	850	1,850	4,250	144	1,700	661
21-----	2,580	4,200	29,300	660	1,570	2,800	125	600	202
22-----	2,040	2,900	16,000	545	1,300	1,910	111	280	84
23-----	1,680	2,300	10,400	480	780	1,010	109	220	65
24-----	1,460	2,800	11,000	400	--	e 700	127	300	103
25-----	1,400	3,200	12,100	355	550	527	220	8,100	s 5,430
26-----	1,680	6,300	28,600	335	500	452	264	17,000	12,100
27-----	1,460	5,000	19,700	315	370	315	516	18,500	s 27,200
28-----	1,150	4,800	14,900	280	350	265	451	21,000	25,600
29-----	950	4,100	10,500	264	430	307	280	18,500	14,000
30-----	900	2,400	5,830	248	290	194	220	10,000	5,940
31-----	--	--	--	220	200	119	--	--	--
Total-	203,180	--	4,224,000	53,892	--	801,100	5,790	--	100,500
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	194	4,100	2,150	58	2,100	329	61	260	43
2-----	148	3,200	1,280	52	570	80	55	170	25
3-----	131	2,800	990	45	180	22	47	160	20
4-----	135	1,700	620	40	180	19	39	150	16
5-----	121	660	216	40	170	18	36	100	10
6-----	94	450	114	39	160	17	33	70	6
7-----	80	410	99	36	110	11	29	70	5
8-----	71	180	34	31	60	5	29	85	7
9-----	61	100	16	114	5,700	s 2,830	31	90	8
10-----	51	80	11	182	19,500	9,580	30	80	6
11-----	42	110	12	133	12,100	4,340	32	65	6
12-----	140	1,080	s 516	336	24,000	s 23,800	127	80	21
13-----	248	24,000	16,100	228	13,400	s 8,680	82	290	64
14-----	207	22,000	12,300	131	6,000	2,120	57	6,600	1,020
15-----	182	13,000	6,390	117	4,400	1,390	71	3,800	728
16-----	148	8,100	3,240	96	3,000	778	173	6,300	2,940
17-----	121	6,400	2,090	80	6,700	1,450	125	6,400	2,160
18-----	101	1,650	450	182	8,600	4,230	73	8,100	1,600
19-----	86	610	142	207	10,600	5,920	57	6,000	923
20-----	70	400	76	170	7,000	3,210	49	4,200	556
21-----	58	710	111	170	3,700	1,700	41	2,100	232
22-----	58	1,350	211	234	2,700	1,710	37	430	43
23-----	70	650	123	315	3,900	3,320	35	130	12
24-----	83	430	96	234	3,000	1,890	34	90	8
25-----	70	250	47	170	2,250	1,030	32	75	6
26-----	58	140	22	144	2,000	778	33	130	12
27-----	56	100	15	125	1,550	523	34	280	26
28-----	63	130	22	101	1,350	368	31	230	19
29-----	83	4,300	964	85	950	218	28	140	11
30-----	80	5,400	1,170	74	530	106	34	500	46
31-----	70	6,000	1,130	70	390	74	--	--	--
Total-	3,180	--	50,750	4,039	--	80,550	1,575	--	10,580

Total discharge for year (second-foot-days)..... 306,072

Total load for year (tons)..... 5,518,000

e Estimated.

s Computed by subdividing day.

LITTLE MISSOURI RIVER BASIN--Continued

LITTLE MISSOURI RIVER AT MEDORA, N. DAK.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000		2.000
Oct. 3, 1949	7:15 a. m.	30	7,160	2,810	2	2	2	--	--	--	--	99	100	--	--	BN
Oct. 3	7:15 a. m.	30	7,160	2,940	33	78	--	--	--	--	--	--	--	--	--	BW
Oct. 4	5:45 p. m.	120	13,200	2,840	56	80	96	--	--	--	--	--	--	--	--	BW
Oct. 6	7:00 a. m.	130	26,100	2,860	78	91	99	--	--	--	--	--	--	--	--	BW
Oct. 7	7:15 a. m.	94	24,600	2,730	86	96	--	--	--	--	--	--	--	--	--	BW
Oct. 8	9:00 a. m.	102	16,900	3,380	85	97	99	100	--	--	--	--	--	--	--	BW
Oct. 9	10:00 a. m.	118	13,300	2,940	84	95	99	--	--	--	--	--	--	--	--	BW
Oct. 10	7:00 a. m.	82	11,100	2,420	84	97	98	--	--	--	--	--	--	--	--	BW
Oct. 11	7:00 a. m.	155	11,300	2,410	82	93	98	--	--	--	--	--	--	--	--	BW
Oct. 15	5:30 p. m.	77	6,200	1,350	86	97	--	--	--	--	--	--	--	--	--	BW
Oct. 18	7:00 a. m.	55	5,040	2,010	89	96	--	--	--	--	--	--	--	--	--	BW
Oct. 20	5:15 p. m.	50	2,440	2,280	79	90	94	96	98	99	99	100	--	--	--	BW
Oct. 22	5:30 p. m.	99	4,060	1,740	81	87	--	--	--	--	--	--	--	--	--	BW
Oct. 26	5:15 p. m.	124	6,970	2,950	79	90	97	--	--	--	--	--	--	--	--	BW
Oct. 27	10:45 a. m.	158	7,770	1,890	84	92	98	98	99	99	99	100	--	--	--	BW
Oct. 27	10:45 a. m.	158	7,770	1,800	3	4	9	--	--	--	99	100	--	--	--	BN
Oct. 30	9:30 a. m.	100	4,660	1,880	79	93	--	--	--	--	--	--	--	--	--	BW
Nov. 2	3:00 p. m.	55	3,520	2,800	72	92	97	--	--	--	--	--	--	--	--	BW
Nov. 5	1:00 p. m.	44	1,200	547	79	92	97	99	--	--	--	--	--	--	--	BW
Nov. 5	1:00 p. m.	44	1,200	515	--	18	34	--	--	99	--	--	--	--	--	BN
Nov. 8	7:00 a. m.	38	1,140	1,000	68	92	--	--	--	--	--	--	--	--	--	BW
Mar. 5, 1950	4:00 p. m.	5,700	3,680	5,600	--	38	--	53	--	72	83	95	99	100	--	SPWCM
Mar. 6	1:30 p. m.	6,860	4,230	3,030	33	40	49	58	66	75	87	96	100	--	--	SPWCM
Mar. 6	1:30 p. m.	6,860	4,230	3,020	6	14	48	59	68	76	88	97	100	--	--	SPN
Mar. 9	2:45 p. m.	1,340	1,720	2,680	--	59	--	64	--	69	79	97	100	--	--	SPWCM
Mar. 23	12:20 p. m.	1,660	1,120	1,150	--	32	--	37	--	45	61	92	99	100	--	SPWCM
Mar. 25	11:20 a. m.	1,820	1,390	1,390	--	40	--	45	--	53	63	91	99	100	--	SPWCM
Mar. 30	11:45 a. m.	504	1,340	1,860	--	54	--	70	--	77	82	96	100	--	--	SPWCM
Apr. 2	3:30 p. m.	1,610	3,400	4,270	--	37	--	54	--	69	76	91	99	100	--	SPWCM
Apr. 3	1:10 p. m.	4,370	3,890	2,130	--	42	--	51	--	61	72	92	97	100	--	SPWCM

Apr. 5	4:10 p. m.	3,770	4,740	4,180	--	28	--	38	--	50	59	71	82	94	100	SPWCM
Apr. 7	1:10 p. m.	17,700	9,320	6,390	25	32	40	49	64	75	89	97	100	--	--	SPWCM
Apr. 7	1:10 p. m.	17,700	9,320	7,170	3	6	34	45	58	68	90	98	180	--	--	SPN
Apr. 8	5:15 p. m.	22,800	6,920	10,600	3	46	--	61	--	77	86	95	97	99	100	SPWCM
Apr. 9	1:20 p. m.	14,600	5,880	11,200	--	42	--	55	--	73	87	87	99	99	100	SPWCM
Apr. 10	11:20 a. m.	10,700	6,880	12,200	--	40	--	54	--	72	83	96	100	--	--	SPWCM
Apr. 14	12:00 m.	8,180	7,860	4,100	27	35	44	52	62	72	80	85	95	100	--	BWCM
Apr. 14	12:00 m.	8,180	7,860	4,050	4	10	41	50	61	72	81	91	95	--	--	BN
Apr. 21	4:00 p. m.	2,480	3,650	6,120	--	56	--	69	--	75	81	95	99	100	--	SPWCM
Apr. 27	9:30 a. m.	1,420	5,020	8,920	--	67	--	82	--	86	89	98	100	--	--	SPWCM
May 23	3:20 p. m.	468	651	2,420	--	64	--	71	--	74	86	99	99	100	--	SPWCM
June 27	7:15 p. m.	714	22,900	8,240	--	72	--	91	--	94	96	100	--	--	--	SPWCM
June 29	7:00 p. m.	245	17,700	6,880	--	91	--	99	--	99	--	--	--	--	--	SPWCM
July 14	4:00 p. m.	204	19,800	9,880	0	6	99	99	99	99	--	--	--	--	--	SPN
July 14	4:00 p. m.	204	19,800	10,200	76	90	98	99	99	99	--	--	--	--	--	SPWCM
Aug. 10	10:10 a. m.	172	19,900	4,460	--	92	--	99	99	100	--	--	--	--	--	FWCM

KNIFE RIVER BASIN

KNIFE RIVER AT HAZEN, N. DAK.

LOCATION.--At gaging station at county highway bridge, 0.5 mile south of Hazen, Mercer County, and 2 miles upstream from Antelope Creek.

Drainage area, 352 square miles.

Drainage available.--Chemical analyses: October 1949 to September 1950.

Records available.--Chemical analyses: April to September 1948.

Segment records:--Records for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Discharge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- di- um	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		Non- carbon- ate
Oct. 20, 1949	37	8.1		1,280	13	0.06	28	30	240	458	317	4.6	0.3	1.7				868	1.18	194	0	73
Mar. 24, 1950	1,550	7.3		277	7.7	.24	23	5.3	28	101	48	2.0	.3	4.9	.86	.25		186	.25	80	0	44
Mar. 25	2,570	7.3		224	7.4	.20	15	4.7	24	76	40	2.0	.2	4.7	.16	.22		164	.22	57	0	47
Apr. 15	4,720	7.2		234	9.8	--	22	5.5	20	108	26	2.0	.2	1.4	.16	.22		182	.22	78	0	35
Apr. 19	10,500	7.0		226	8.6	.02	19	5.4	20	96	30	.5	.2	3.6	.15	.20		150	.20	70	0	39
Apr. 22	1,730	7.2		415	9.6	.02	27	9.0	49	162	70	1.0	2	3.3	.26	.36		268	.36	105	0	50
May 18	357	8.2		899	11	.10	47	20	130	a290	230	1.0	.2	2.8	.60	.82		600	.82	200	0	59
June 15	117	8.0		1,230	14	.02	71	33	196	510	288	6.6	.3	1.3	.88	1.20		886	1.20	313	0	58
Aug. 8	50	8.0		1,390	19	.04	69	33	228	558	325	3.5	.3	1.4	.96	1.31		962	1.31	307	0	62
Aug. 14	72	7.9		1,350	14	.04	70	31	208	544	315	4.0	.2	1.9	.93	1.26	0.30	930	1.26	303	0	59
Sept. 5	44	7.9		1,290	18	.06	58	31	216	536	283	5.0	.4	1.2	.90	1.23		904	1.23	274	0	63

a Includes equivalent of 6 parts per million of carbonate (CO₃).

a Includes equivalent of 8 parts per million of carbonate (CO₃).

KNIFE RIVER BASIN--Continued
 MISCELLANEOUS ANALYSES OF STREAMS IN KNIFE RIVER BASIN IN NORTH DAKOTA

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- dium	
																	Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate		
KNIFE RIVER NEAR GOLDEN VALLEY																						
Oct. 20, 1949	13	8.1	1,840	11	0.06	38	26	333		0	816	398	4.6	0.3	1.9			1,110	1.51	202	0	78
Aug. 14, 1950	13	7.9	1,790	12	.04	46	32	337	7.6	0	841	443	5.8	.8	1.7	0.00		1,200	1.63	246	0	74

HEART RIVER BASIN

HEART RIVER NEAR SOUTH HEART, N. DAK.

LOCATION.--At gaging station, half a mile downstream from North Creek, three-quarters of a mile south of U. S. Highway 10, and 2 miles east of South Heart, Stark County.

DRAINAGE AREA.--315 square miles.

RECORDS AVAILABLE.--Chemical analyses: May 1947 to September 1948, March to September 1949.

Water temperatures: May 1947 to September 1948, March to September 1949.

Sediment records: May 1947 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 13,900 ppm Oct. 10; minimum, daily, not determined.

Sediment loads: Maximum daily, 8,190 tons Apr. 16; minimum daily, less than 0.1 ton on many days.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 17,300 ppm Aug. 13; 1947; minimum daily, not determined.

Sediment loads: Maximum daily, 8,190 tons Apr. 16, 1950; minimum daily, less than 0.1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950									
Day	Mean discharge (second-foot)	October		Mean discharge (second-foot)	November		Mean discharge (second-foot)	December	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.7	93	0.4	0.8		e 0.2	0.6	--	(t)
2-----	1.0			.7			.5		
3-----	1.3			.6			.4		
4-----	2.8			.6			.3		
5-----	1.7			.6			.3		
6-----	1.1	2,910	e 84	.6			.3		
7-----	1.3			.6			.2		
8-----	1.0			.7			.2		
9-----	4.3			.7			.2		
10-----	5.8			.7			.2		
11-----	2.5	10,300	70	.6			.2		
12-----	1.6	9,500	41	.6			.2		
13-----	1.3	11,300	40	.6			.2		
14-----	1.1	4,600	14	.6			.2		
15-----	.9			.6			.2		
16-----	.8	--	e 3	.7			.2		
17-----	.8			.7			.2		
18-----	.9			.7			.2		
19-----	.8			.9			.2		
20-----	.8			1.0			.2		
21-----	.9	--	e 2	.7			.2		
22-----	.9			.6			.2		
23-----	1.0			.7			.2		
24-----	7.2			.6			.2		
25-----	3.0			.6			.2		
26-----	1.8	--	e .3	.7			.2		
27-----	1.3	--		.8			.2		
28-----	1.1	32		.7			.2		
29-----	.9	--		.7			.2		
30-----	.8	--		.6			.2		
31-----	.9	--		--	--	--	.2		
Total-	52.3	--	561	20.3	--	6	7.4	--	2

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

HEART RIVER BASIN--Continued

HEART RIVER NEAR SOUTH HEART, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.2			0.1			0.2		
2-----	.2			.1			.2	--	e 0.1
3-----	.2			.1			.2		
4-----	.2			.1			.2		
5-----	.2			.1			.2		
6-----	.2			.2			50	--	e 10
7-----	.2			.2			280	280	212
8-----	.2			.2			400	220	238
9-----	.2			.2			200	105	57
10-----	.2			.2			150	60	24
11-----	.2			.2			100	58	16
12-----	.2			.2			60	60	10
13-----	.2			.2			35		
14-----	.2			.2			20		
15-----	.2			.2	--	(t)	13		
16-----	.1	--	(t)	.2			10		
17-----	.1			.2			9		
18-----	.1			.2			10	60	2
19-----	.1			.2			10		
20-----	.1			.2			9		
21-----	.1			.2			8		
22-----	.1			.2			8		
23-----	.1			.2			200	150	81
24-----	.1			.2			600	160	259
25-----	.1			.2			500	98	132
26-----	.1			.2			200	65	35
27-----	.1			.2			90	45	11
28-----	.1			.2			100	43	12
29-----	.1			.2			90	40	10
30-----	.1			--	--	--	40	33	4
31-----	.1			--	--	--	22	43	3
31-----	.1			--	--	--	21	35	2
Total-	4.6	--	1	5.1	--	1	3,235.8	--	1,140
Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	15	35	1	21	55	3	3.5		
2-----	16	47	2	24	100	6	3.5		
3-----	12	42	1	22	590	35	3.2		
4-----	11	37	1	24	746	48	3.0		
5-----	10	50	1	25	290	20	2.9		
6-----	12	100	3	45	599	s 97	2.9	95	0.8
7-----	41	--	e 15	69	1,160	216	2.9		
8-----	104	140	39	71	1,060	203	3.0		
9-----	143	160	62	59	475	76	3.2		
10-----	69	62	12	158	664	s 315	4.6		
11-----	71	72	14	251	1,000	677	3.4		
12-----	482	210	273	120	570	185	2.9		
13-----	770	230	478	70	390	74	2.8		
14-----	994	382	s 1,150	44	225	27	2.8		
15-----	2,120	708	s 4,330	30	230	19	3.6		
16-----	3,740	812	s 8,190	21	134	8	3.0	85	.7
17-----	2,470	891	s 5,740	18	104	5	3.0		
18-----	1,200	945	s 3,050	13	90	3	3.0		
19-----	357	828	s 810	11	74	2	2.6		
20-----	115	546	170	9.5			2.4		
21-----	75	526	107	8.1			2.2		
22-----	72	667	130	7.1	61	1	1.9		
23-----	61	700	115	6.7			1.7		
24-----	79	920	196	6.2			2.0		
25-----	73	3,880	s 754	5.8			2.8		
26-----	56	2,240	339	5.6			7.1	70	.6
27-----	46	688	85	5.0			6.7		
28-----	33	230	20	4.7	74	.9	4.1		
29-----	26	100	7	4.2			3.0		
30-----	22	60	4	3.9			2.4		
31-----	--	--	--	3.6			--	--	--
Total-	13,295	--	26,100	1,166.4	--	2,030	96.1	--	21

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

MISSOURI RIVER BASIN

HEART RIVER BASIN--Continued

HEART RIVER NEAR SOUTH HEART, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.2	68	0.4	0.5	89	0.1	0.3	60	(t)
2-----	2.4			.5			.4		
3-----	2.5			.5			.4		
4-----	2.2			.4			.4		
5-----	1.9			.6			.3		
6-----	1.8	96	.3	.3	75	.1	.3	89	0.2
7-----	1.7			.4			.4		
8-----	1.6			.4			.4		
9-----	1.6			.4			.5		
10-----	1.4			.6			.5		
11-----	1.3	95	.2	.9	83	.1	.5	94	.5
12-----	1.3			1.0			.6		
13-----	1.1			1.1			.8		
14-----	1.0			1.0			1.0		
15-----	1.0			.8			1.0		
16-----	1.0	95	.2	.6	83	.1	1.0	58	.1
17-----	.9			.6			1.0		
18-----	.8			.5			1.0		
19-----	.9			.5			3.5		
20-----	.9			.4			2.6		
21-----	.9	95	.2	.4	83	.1	1.4	58	.1
22-----	.7			.4			1.0		
23-----	.7			.4			.8		
24-----	.7			.4			.7		
25-----	.6			.3			.7		
26-----	.6	95	.2	.4	83	.1	.6	58	.1
27-----	.5			.5			.6		
28-----	.5			.5			.6		
29-----	.4			.6			.6		
30-----	.4			.6			.6		
31-----	.5			.5			.8		
Total-	36.0	--	9.2	17.2	--	3.1	24.3	--	5.4
Total discharge for year (second-foot-days)									17,960.5
Total load for year (tons)									29,880

t Less than 0.1 ton.

HEART RIVER BASIN--Continued

HEART RIVER NEAR RICHARDTON, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	4.7			10			9.7		
2-----	6.2			9.3			8.4		
3-----	7.1			9.3			8.8		
4-----	7.9			8.8			3.1		
5-----	9.7			8.8			7.9		
6-----	9.7			9.7			7.5		
7-----	9.3			8.8			6.2		
8-----	10			9.3			5.7		
9-----	9.7			8.4			5.3		
10-----	10			8.4			5		
11-----	11			8.8			3		
12-----	9.7			7.9			2		
13-----	9.7			8.8			1		
14-----	9.3			8.8			1		
15-----	9.3			7.5			1		
16-----	10	e 1		3.8	(t)		1	(t)	
17-----	9.7			7.1			1		
18-----	10			7.1			1		
19-----	11			8.8			1		
20-----	11			7.5			1		
21-----	12			5.7			1		
22-----	12			8.8			1		
23-----	12			7.9			1		
24-----	13			7.1			1		
25-----	13			7.1			1		
26-----	13			9.7			1		
27-----	11			9.7			1		
28-----	11			10			1		
29-----	13			8.8			1		
30-----	11			7.5			1		
31-----	10			--		--	1		
Total--	316.0		30	249.2		20	91.6		5
	January			February			March		
1-----	1						0	--	0
2-----	1						0	--	0
3-----	1	(t)					0	--	0
4-----	1						20	--	e 5
5-----	1						500	320	432
6-----	0		0				700	416	786
7-----	0		0				400	142	153
8-----	0		0				300	47	38
9-----	0		0				350	62	59
10-----	0		0				400	126	136
11-----	0		0				200	130	70
12-----	0		0				150	--	e 40
13-----	0		0				120	--	e 30
14-----	0		0				100	--	e 25
15-----	0		0				90	--	e 20
16-----	0		0				80	72	16
17-----	0		0				100	50	14
18-----	0		0				90	--	e 12
19-----	0		0				80	--	e 11
20-----	0		0				70	--	e 9
21-----	0		0				60	--	e 8
22-----	0		0				500	50	67
23-----	0		0				1,000	100	270
24-----	0		0				1,400	270	1,020
25-----	0		0				1,600	220	950
26-----	0		0				1,200	149	483
27-----	0		0				600	177	287
28-----	0		0				250	--	e 100
29-----	0		0				250	--	e 80
30-----	0		0				250	108	73
31-----	0		0				280	--	e 80
Total--	5		(t)	0		0	11,140	--	5,270

e Estimated.

t Less than 1 ton.

MISSOURI RIVER BASIN

HEART RIVER BASIN--Continued

HEART RIVER NEAR RICHARDTON, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	277	--	e 100	181	101	51	38	59	6
2-----	247			195			35		
3-----	229			182			32		
4-----	291			184			29		
5-----	234			180			32		
6-----	261			178			31		
7-----	368			188			28		
8-----	330			225			42		
9-----	182			263	189	120	51		
10-----	430			325	320	281	41		
11-----	811	--	e 250	508	570	782	33	50	4
12-----	811	120	263	808	995	2,170	31		
13-----	1,450	280	1,100	568	1,070	1,640	35		
14-----	3,350	1,540	s 14,700	347	542	508	26		
15-----	7,040	2,220	s 43,900	252	190	129	24		
16-----	18,300	2,650	s 120,000	198	95	39	22		
17-----	17,000	3,340	s 152,000	167			20		
18-----	7,540	3,910	s 77,500	145			22		
19-----	2,580	2,840	s 20,700	132			26		
20-----	1,220	1,440	s 4,870	121			30		
21-----	705	1,180	2,250	119	52	13	30	55	5
22-----	570	752	1,180	100			23		
23-----	442	400	477	88			20		
24-----	424	310	355	78			22		
25-----	433	240	281	70			37		
26-----	380	190	195	62			58		
27-----	275	140	104	56			45		
28-----	233	110	69	46			42		
29-----	210	94	53	44			36		
30-----	189	85	43	45			28		
31-----	--	--	--	42			--	--	--
Total--	64,792	--	441,300	6,087	--	6,360	969	--	150
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	24	55	3	6.8	63	1	6.8	38	(t)
2-----	23			6.2			6.6		
3-----	21			6.4			5.4		
4-----	19			6.8			4.4		
5-----	19			6.8			3.8		
6-----	19			5.8			3.4		
7-----	20			5.8			3.4		
8-----	17			5.4			3.6		
9-----	16			5.0			4.8		
10-----	15			5.0			6.6		
11-----	17	81	3	6.8	76	2	6.6		
12-----	16			10			6.8		
13-----	16			13			7.9		
14-----	15			12			8.5		
15-----	13			12			10		
16-----	13			11			11		
17-----	13			10			12		
18-----	15			8.8			13		
19-----	17			8.2			11		
20-----	18			7.6			10		
21-----	15	70	2	7.0	56	1	10		
22-----	13			6.8			9.4		
23-----	12			6.8			9.1		
24-----	11			7.6			8.5		
25-----	9.7			8.5			7.9		
26-----	10			9.1			7.3		
27-----	9.4			8.5			7.9		
28-----	8.5			9.1			7.3		
29-----	8.2			9.1			7.0		
30-----	7.6			8.5			7.9		
31-----	7.0			7.3			--	--	--
Total--	457.4	--	82	247.7	--	41	227.9	--	22

Total discharge for year (second-foot-days) 84,582.8

Total load for year (tons) 453,300

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

HEART RIVER BASIN--Continued
HEART RIVER NEAR RICHARDTON, N. DAK.--Continued

Particle-size analyses of suspended sediment, March to April 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000
March 5, 1950	.....	465	348	712	60	70	81	97	98	99	100	--	--	--	BWC
Apr. 15	2:00 p. m.	6,750	2,920	5,050	--	33	--	49	--	75	87	95	98	98	SPWCM
Apr. 18	2:20 p. m.	5,990	4,120	1,910	35	43	52	61	72	83	91	96	97	--	BWC
Apr. 18	4:00 p. m.	5,990	4,120	2,850	14	27	40	53	71	81	90	96	--	--	BN
Apr. 19	6:00 p. m.	2,020	2,270	4,810	--	47	--	65	--	86	93	98	99	100	SPWCM
Apr. 24	12:00 m.	417	333	804	45	61	65	72	81	88	95	98	99	--	BWC
Apr. 28	12:15 p. m.	230	108	189	71	80	90	--	--	--	--	--	--	--	BWC

HEART RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN HEART RIVER BASIN IN NORTH DAKOTA

Chemical analyses, in parts per million, water year October 1949 to September 1950																							
Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- di- um	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate		
HEART RIVER BELOW HEART BUTTE DAM NEAR GLEN ULLIN																							
Aug. 11, 1950	29	7.6	495	5.2	0.04	37	14	55	5.6	0	169	125	2.1	0.2	2.9			336	0.46		149	10	43
Sept. 5	29	7.3	577						63	0	187	135	2.0								160	7	46
HEART RIVER NEAR MANDAN																							
Oct. 15, 1949	14.8	8.4	1,380	8.2	0.02	32	15	282	282	10	407	363	18	0.3	1.2	0.48		932	1.27		142	0	81
Sept. 8, 1950	a 47	8.1	1,180	12	.02	45	32	208	8.2	0	409	305	20	.2	.6			830	1.13		244	0	64

a Mean daily discharge.

CANNONBALL RIVER BASIN
CANNONBALL RIVER NEAR NEW LEIPZIG, N. DAK.

LOCATION.--At gaging station at bridge on State Highway 49, 2 1/4 miles south of New Leipzig, Grant County, and 8 miles downstream from Thirtymile Creek.
DRAINAGE AREA.--1,180 square miles.
RECORDS AVAILABLE.--Sediment concentrations: April 1946 to September 1950 (discontinued). Maximum daily, not determined; minimum daily, no flow Jan. 21 to Mar. 4.
EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 420,000 tons, estimated, Apr. 17; minimum daily, 0 tons Jan. 21 to Mar. 4.
EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, 420,000 tons, estimated, Apr. 17, 1947; minimum daily, no flow several days during 1949 and 1950.
Sediment loads: Maximum daily, 420,000 tons, estimated, Apr. 17, 1950; minimum daily, 0 tons several days during 1949 and 1950.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, April to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent non-carbon-dium	
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate		
Apr. 20, 1950	4,050	7.5		281	8.4	0.04	30	6.7	19	128	33	33	0.5	0.2	5.0		170	0.23		103	0	29
May 18	186	7.6		953	12	.04	59	25	123	260	283	330	3.0	.3	4.0		668	.91		250	37	52
June 26	39	7.9		1,130	7.8	.02	65	34	169	378	330	10	10	.3	1.0		814	1.11		302	0	55
July 24	21	8.4		1,210	11	.03	68	36	170	a 400	328	8.0	8.0	.3	3.3	0.40	857	1.17		316	0	54
Aug. 15	16	7.8		1,240	12	.04	56	35	190	388	353	7.5	7.5	.4	1.9		860	1.17		285	0	59
Sept. 5	7.5	7.8		1,320	11	.04	48	40	196	7.5	392	363	7.6	.2	1.8		888	1.21		285	0	59
Sept. 14	13	7.9		1,230	10	.02	58	20	212	385	343	9.0	9.0	.5	1.8		858	1.17		227	0	67

a Includes equivalent of 10 parts per million of carbonate (CO₃).

a Includes equivalent of 10 parts per million of carbonate (CO₃).

CANNONBALL RIVER BASIN--Continued

CANNONBALL RIVER NEAR NEW LEIPZIG, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.8			11			8.0		
2-----	4.8			7.6			6.9		
3-----	5.0			8.9			6.5		
4-----	4.8			11			6		
5-----	4.5			8.9			5.3		
6-----	5.0			7.6			4.8		
7-----	5.9			7.3			4.0		
8-----	9.8			6.9			4.0		
9-----	9.8			6.9			5.6		
10-----	8.9			7.3			6.2		
11-----	9.3			7.6			6.5		
12-----	10			7.3			5		
13-----	12			6.9			4		
14-----	8.9			7.3			4		
15-----	8.0			7.6			3		
16-----	8.9			7.6			3		
17-----	8.4			6.5			3		
18-----	8.4			7.6			3		
19-----	9.3			8.9			3		
20-----	8.9			8.4			3		
21-----	8.9			7.6			3		
22-----	10			6.5			2		
23-----	10			7.6			2		
24-----	10			8.0			2		
25-----	10			8.0			2		
26-----	9.8			8.9			2		
27-----	10			7.6			2		
28-----	10			8.0			2		
29-----	9.8			16			2		
30-----	9.3			9.8			2		
31-----	10			--			2		
Total--	262.2	--	28	247.1	--	17	117.8	--	9
Day	January			February			March		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	2						0	--	0
2-----	2						0	--	0
3-----	2						0	--	0
4-----	1						0	--	0
5-----	1						2	--	(t)
6-----	1						5	62	(t)
7-----	1						5	--	e 1
8-----	1						4	--	(t)
9-----	1						3	--	(t)
10-----	1						2	--	(t)
11-----	1						100	70	19
12-----	1						150	53	21
13-----	1						150	37	15
14-----	1						100	43	12
15-----	1						80	41	9
16-----	1						70	40	8
17-----	1						60	37	6
18-----	1						60	32	5
19-----	1						60	29	5
20-----	1						120	30	10
21-----	0		0				160	37	16
22-----	0		0				100	38	10
23-----	0		0				80	30	6
24-----	0		0				60	27	4
25-----	0		0				50	30	4
26-----	0		0				45	13	2
27-----	0		0				220	40	24
28-----	0		0				250	25	17
29-----	0		0				210	26	15
30-----	0		0				180	26	13
31-----	0		0				150	28	11
Total--	23	--	2	0	--	0	2,476	--	235

e Estimated.

t Less than 1 ton.

CANNONBALL RIVER BASIN--Continued

CANNONBALL RIVER NEAR NEW LEIPZIG, N. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	120	26	8	215	125	73	60		
2-----	100	32	9	237	120	77	58		
3-----	90	33	8	244	100	66	53		
4-----	90	24	6	230	80	50	51	58	8
5-----	90	24	6	217	90	53	50		
6-----	150	28	11	227	98	60	50		
7-----	200	24	15	296	137	109	52		
8-----	170	22	10	324	166	145	261	2,710	s 2,090
9-----	130	18	6	401	349	s 415	76	1,100	226
10-----	100	17	5	567	640	980	53	160	23
11-----	80	20	4	595	435	699	50		
12-----	80	17	4	634	302	517	46		
13-----	100	17	5	595	305	490	45	119	15
14-----	120	27	9	452	260	317	44		
15-----	800	130	281	318	197	169	43		
16-----	5,800	1,700	26,600	249	136	91	41		
17-----	37,100	--	e 420,000	210	110	62	40		
18-----	32,200	--	e 350,000	186	96	48	41	95	10
19-----	12,900	3,100	108,000	162	75	33	41		
20-----	5,490	2,550	s 38,600	147	52	21	38		
21-----	2,710	1,890	13,800	133			35		
22-----	2,160	1,250	7,290	118			35		
23-----	1,430	830	3,200	106			33		
24-----	1,000	700	1,890	94			36		
25-----	646	500	872	87			40		
26-----	461	330	411	84	40	10	39	74	7
27-----	349	250	236	79			35		
28-----	285	180	139	74			35		
29-----	258	140	98	71			34		
30-----	229	110	68	65			33		
31-----	--	--	--	62			--	--	--
Total--	105,438	--	971,600	7,479	--	4,580	1,548	--	2,590

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	33			15			10		
2-----	31			14			10		
3-----	30			13			9.1		
4-----	28			13			8.5		
5-----	27			13			8.0		
6-----	26			13	90	3	6.9	62	2
7-----	25			13			6.4		
8-----	24			13			6.4		
9-----	24			13			8.0		
10-----	23			14			18		
11-----	29	95	7	17			15		
12-----	27			17			12		
13-----	25			17			14		
14-----	24			16			13		
15-----	24			17			13	50	2
16-----	22			17	84	3	13		
17-----	21			15			15		
18-----	27			14			34		
19-----	28			13			24		
20-----	25			12			20		
21-----	24			11			18	86	5
22-----	24			11			16		
23-----	23			11			15		
24-----	21			10			13		
25-----	20			10			12		
26-----	19	99	5	11	82	2	11		
27-----	18			11			11		
28-----	17			11			11	48	1
29-----	17			12			11		
30-----	15			11			11		
31-----	15			11			--	--	--
Total--	736	--	195	409	--	82	393.3	--	75

Total discharge for year (second-foot days) 116,129.4

Total load for year (tons) 976,400

e Estimated.

s Computed by subdividing day.

CANNONBALL RIVER BASIN--Continued
CANNONBALL RIVER NEAR NEW LEIPZIG, N. DAK.--Continued

Particle size analyses of suspended sediment, April 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Apr. 19, 1950	7:15 p. m.	11,200	2,980	1,850	32	42	50	58	67	73	80	88		95	100	BWC
Apr. 19	7:15 p. m.	11,200	2,980	1,820	21	32	44	53	63	72	84	91		95	100	EN
Apr. 20	11:30 a. m.	5,100	2,560	4,810	--	46	--	66	--	86	94	99		100	--	SPWCM
Apr. 20	6:00 p. m.	4,050	2,360	4,700	--	46	--	66	--	87	95	100		--	--	SPWCM
Apr. 21	9:40 a. m.	2,520	1,820	3,530	--	52	--	74	--	92	97	100		--	--	SPWCM
Apr. 22	11:00 a. m.	2,120	1,210	2,480	--	56	--	77	--	94	98	100		--	--	SPWCM
Apr. 26	11:15 a. m.	462	200	518	73	83	93	--	--	--	--	--		--	--	BWC
Apr. 27	5:35 p. m.	318	258	700	60	76	86	92	96	98	99	100		--	--	BWC

CANNONBALL RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN CANNONBALL RIVER BASIN IN NORTH DAKOTA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bonate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- dium		
																	Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate			
CANNONBALL RIVER AT BREYEN																							
Oct. 15, 1949	16	8.4	903	17	0.02	27	2.6	188		4	296	215	7.0	0.2	4.8	0.56		615	0.84		78	0	84
Dec. 16	3.5	7.8	2,580	24	.02	92	54	494		0	908	715	24	.8	1.4	--		1,850	2.52		452	0	70
June 29, 1950	274	8.0	994	13	.02	60	26	145		0	298	300	8.6	.4	2.3	.20		724	.98		257	13	55
Aug. 31	66	8.0	1,340	14	.14	54	33	201		8.3	352	405	10	.2	.3	--		922	1.25		270	0	61
CEDAR CREEK NEAR PRETTY ROCK																							
Apr. 20, 1950	7,560	7.2	322	8.1	0.08	22	7.7	14		0	102	26	0.5	0.4	5.7	0.30		146	0.20		87	3	28
May 12	365	7.5	1,370	13	.02	78	48	179		0	298	493	6.5	.4	2.6	.30		998	1.36		380	136	51
June 29	37	7.9	1,510	19	.04	88	51	210		0	376	540	9.0	.4	1.2	.30		1,100	1.50		429	171	58
July 20	22	7.5	1,760	14	.08	82	51	262		0	410	603	11	.5	2.2	--		1,230	1.87		414	78	51
Aug. 15	148	7.5	1,080	12	.04	54	31	147		0	224	368	10	.3	2.4	--		1,748	1.02		263	79	55
Aug. 31	9.4	7.6	1,090	11	.34	59	30	134		7.7	289	330	5.0	.2	.4	--		752	1.02		271	34	51
Sept. 13	8.7	7.8	1,330	9.8	.02	75	42	174		0	335	430	8.0	.4	1.3	--		944	1.28		368	83	51

GRAND RIVER BASIN

GRAND RIVER AT SHADEHILL, S. DAK.

LOCATION.--At gaging station at bridge on State Highway 73 at Shadehill, Perkins County, 1 mile downstream from Shadehill Dam, 5 miles downstream from confluence of North Fork and South Fork, and 12 miles south of Lemmon, N. Dak.

RECORDS AVAILABLE.--3,120 square miles.

Water temperatures: October 1945 to September 1950.

Sediment records: March 1946 to June 1950 (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 5,140 ppm Apr. 16; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 622,000 tons Apr. 16; minimum daily, 0 tons on many days.

EXTREMES, 1945-50.--Dissolved solids (1945-49): Maximum, 3,910 ppm Jan. 11-20, 1946; minimum, 166 ppm Mar. 9-11, 1949.

Hardness (1945-49): Maximum, 590 ppm Feb. 1-5, 1946; minimum, 39 ppm Sept. 11-20, 1946.

Specific conductance (1945-49): Maximum daily, 6,520 micromhos Jan. 12, 1946; minimum daily, 201 micromhos Mar. 24, 1947.

Water temperatures (1945-49): Maximum, 80°F July 11, 1946; minimum, freezing point on many days during winter months.

Sediment concentrations (1946-50): Maximum daily, 18,600 ppm May 3, 1946; minimum daily, 0 tons on many days during 1948-50.

Sediment loads (1946-50): Maximum daily, 622,000 tons Apr. 16, 1950; minimum daily, 0 tons on many days during 1948-50.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176. Flow affected by storage in Shadehill Reservoir after June 30.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second-feet)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Car-bon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-ble
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 12, 1949	132	8.3	2,600	19	0.04	21	11	622	22	808	690	20	0.6	3.7	--	1,810	2.46		98	0	93	
Nov. 16	a 13	8.3	2,210	13	.04	26	15	504	31	616	614	16	.6	2.8	--	1,530	2.08		127	0	90	
Dec. 21	17	8.4	2,980	21	.04	22	22	698	69	776	848	18	.8	1.8	0.60	2,080	2.83		146	0	91	
Mar. 8, 1950	1,200	7.5	414	17	.08	23	6.6	58	0	150	90	1.5	.2	4.2	.20	324	.44		97	0	56	
Apr. 6	2,200	7.2	304	8.6	.04	21	5.2	38	0	132	44	.5	.2	2.3	.30	202	.27		74	0	53	
Apr. 9	2,940	7.2	216	8.6	.04	14	3.7	29	0	92	32	2.0	.2	.8	.20	156	.21		50	0	46	
Apr. 16	39,800	7.3	308	8.9	.02	29	5.9	30	0	156	30	.5	.2	3.0	.06	192	.26		97	0	40	
Apr. 21	2,440	7.9	431	8.2	.02	27	8.4	54	0	132	102	2.5	.2	4.5	.14	284	.39		102	0	53	
Apr. 26	1,070	7.3	774	9.3	.02	37	16	110	0	190	226	2.5	.2	4.5	.14	528	.72		159	3	60	
May 11	1,560	7.5	1,040	17	.02	34	17	177	0	254	316	1.5	.2	1.0	.12	726	.99		155	0	71	
June 28	69	8.0	2,000	8.8	.02	39	24	440	0	473	715	13	.5	1.3	.30	1,470	2.00		196	0	83	
Aug. 11	1.0	--	1,340	--	--	27	--	271	6.2	--	--	--	--	--	--	--	888	1.21		106	--	84
Aug. 15	1.4	8.1	1,060	13	.04	27	0.4	211	0	996	996	18	.7	1.6	.46	946	.95		106	0	81	
Sept. 13	1.6	8.4	1,350	12	.02	29	12	282	10	476	273	27	1.2	.8	.27	896	1.22		120	0	84	

a Mean daily discharge.

GRAND RIVER BASIN--Continued

GRAND RIVER AT SHADEHILL, S. DAK.--Continued

Suspended sediment, October 1949 to June 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.6			17			14		--
2-----	.5			16			14		--
3-----	.3			15			16		--
4-----	.3			14			14		--
5-----	.3			14			12		--
6-----	.3			14			11		--
7-----	.5			14			11		--
8-----	1.0			14			10		--
9-----	.6			14			10		--
10-----	.6			14			9		--
11-----	57			14			8		--
12-----	130			14			6		--
13-----	77			14			5		--
14-----	42			14			4		--
15-----	27			14			3		--
16-----	22			13			2		--
17-----	18			11			2		--
18-----	16			12			2		--
19-----	14			12			1		--
20-----	16			12			1		--
21-----	16			11			1		--
22-----	16			11			1		--
23-----	16			11			1		--
24-----	18			11			0		0
25-----	22			11			0		0
26-----	21			12			0		0
27-----	40			15			0		0
28-----	35			17			0		0
29-----	25			17			0		0
30-----	22			14			0		0
31-----	21			--			0		0
Total-	676.0	--	a 900	406	--	a 200	158	--	a 40
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							0	--	0
2-----							0	--	0
3-----							0	--	0
4-----							0	--	0
5-----							0	--	0
6-----							100	890	240
7-----							900	2,100	5100
8-----							1,600	2,250	9720
9-----							600	1,320	2140
10-----							300	1,250	1010
11-----							250	390	263
12-----							200	490	265
13-----							180	460	224
14-----							190	790	405
15-----							200	520	281
16-----							180	750	364
17-----							160	570	246
18-----							150	390	158
19-----							150	140	57
20-----							150	190	77
21-----							200	310	167
22-----							200	580	313
23-----							190	180	92
24-----							180	190	92
25-----							170	420	193
26-----							250	160	108
27-----							500	70	94
28-----							400	--	e 75
29-----							250	--	e 55
30-----							210	--	e 50
31-----							180	--	e 45
Total-	0	--	0	0	--	0	8,040	--	21,830

e Estimated.

a Estimated on basis of previous records for similar periods, water discharge, and periodic samples upstream on North and South Forks of the Grand River.

MISSOURI RIVER BASIN

GRAND RIVER BASIN--Continued

GRAND RIVER AT SHADEHILL, S. DAK.--Continued

Suspended sediment, October 1949 to June 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	160	--	e 35	491	150	199	123	142	47
2-----	153	--	e 35	524	160	226	108	124	36
3-----	162	--	e 45	605	280	457	105	113	32
4-----	704	1,210	2,300	882	1,080	s 2,630	99	74	20
5-----	1,840	2,410	s 14,400	762	1,980	4,070	94	45	11
6-----	2,360	3,100	19,800	653	1,180	2,080	94	70	18
7-----	4,160	1,800	20,200	823	1,280	3,050	106	--	e 75
8-----	6,370	1,700	29,200	869	1,340	3,140	121	340	111
9-----	3,150	1,300	11,100	985	1,300	3,460	99	180	46
10-----	2,340	850	5,370	961	1,380	3,580	108	135	39
11-----	2,510	1,100	7,450	1,470	3,400	13,500	106	123	35
12-----	2,000	1,100	5,940	1,460	3,310	13,000	90	105	26
13-----	1,630	1,000	4,400	1,000	1,570	4,240	82	87	19
14-----	1,970	1,460	8,660	758	700	1,430	80	78	17
15-----	9,830	4,320	115,000	617	470	783	70	98	18
16-----	42,500	5,140	s 622,000	512	320	442	75	86	17
17-----	37,300	5,000	504,000	440	260	309	110	172	51
18-----	21,600	4,830	282,000	572	560	865	101	105	29
19-----	8,230	4,990	111,000	410	740	819	76	90	18
20-----	3,610	3,450	s 34,400	368	310	308	82	78	17
21-----	2,450	2,300	15,200	326	160	141	79	67	14
22-----	2,540	2,140	14,700	256	130	90	73	76	15
23-----	2,130	1,680	9,660	235	94	60	71	79	15
24-----	1,720	1,350	6,270	200	110	59	66	86	15
25-----	1,320	1,060	3,780	178	81	39	75	--	e 40
26-----	1,060	630	1,800	165	79	35	65	90	16
27-----	843	420	956	160	61	26	65	87	15
28-----	706	270	515	146	54	21	70	74	14
29-----	609	180	296	135	52	19	79	111	24
30-----	517	160	223	123	62	21	40	100	11
31-----	--	--	--	126	130	44	--	--	--
Total-	166,474	--	1,851,000	17,272	--	59,140	2,612	--	863

Total discharge for period Oct. 1 to June 30 (second-foot-days) 195,638.0

Total load for period Oct. 1 to June 30 (tons) 1,934,000

e Estimated.

s Computed by subdividing day.

GRAND RIVER BASIN--Continued
GRAND RIVER AT SHADEHILL, S. DAK.--Continued

Particle-size analyses of suspended sediment, March to May 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Mar. 7, 1950	6:30 p. m.	1,260	2,050	3,020	3	4	9	59	80	84	86	92		98	100	BN
Mar. 7	6:30 p. m.	1,260	2,050	2,770	51	56	59	63	66	80	90	95		97	99	BWC
Mar. 8	1:00 p. m.	1,240	3,100	3,080	--	17	--	22	--	47	81	99		100	--	SPWCM
Mar. 14	1:45 p. m.	162	644	1,560	44	47	51	58	67	78	89	94		98	100	BWC
Apr. 4	3:00 p. m.	665	2,130	2,930	--	19	--	26	--	60	91	100		--	--	SPWCM
Apr. 9	12:45 p. m.	2,960	1,040	1,680	--	51	--	56	--	69	79	93		100	--	SPWCM
Apr. 14	4:10 p. m.	1,800	1,840	2,500	--	40	--	52	--	72	84	98		100	--	SPWCM
Apr. 15	5:50 p. m.	12,700	3,860	4,960	--	38	--	54	--	71	83	96		100	--	SPWCM
Apr. 16	1:00 p. m.	52,800	5,650	10,600	--	33	--	53	--	74	85	96		100	--	SPWCM
Apr. 18	12:50 p. m.	22,000	4,480	3,910	--	46	--	67	--	91	96	98		99	100	SPWCM
Apr. 19	3:05 p. m.	6,800	5,220	6,800	--	35	--	51	--	83	96	98		100	--	SPWCM
Apr. 21	10:30 a. m.	2,440	2,060	3,940	--	37	--	50	--	74	94	99		100	--	SPWCM
Apr. 26	10:10 a. m.	1,070	650	1,470	41	46	58	62	68	75	88	93		98	100	BWC
May 11	7:15 p. m.	1,580	3,720	1,820	53	67	74	84	88	93	95	96		99	100	BWC
May 11	7:15 p. m.	1,580	3,720	1,970	1	1	3	--	--	93	95	99		100	--	BN

GRAND RIVER BASIN--Continued

SOUTH FORK GRAND RIVER NEAR CASH, S. DAK.

LOCATION --At gaging station at county highway bridge, 1 mile upstream from Little Nasty Creek, 4 miles north of Cash, Perkins County, and 16 miles downstream from Big Nasty Creek.

DRAINAGE AREA --1,350 square miles.

RECORDS AVAILABLE --Chemical analyses: March to September 1950.

REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, March to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- di- um	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate		
Mar. 8, 1950.....	117	7.7	553	6.0	0.06	21	6.8	86		0	104	169	1.2	0.1	6.5	0.20		378	0.51		81	0	70
Apr. 6.....	2,130	7.1	257	10	.02	16	5.2	31		0	112	33	.5	.2	1.9	.30		166	.23		62	0	52
Apr. 9.....	1,510	6.9	182	9.6	.30	14	2.7	22		0	72	28	2.0	.2	1.8	.20		140	.19		46	0	51
Apr. 13.....	578	7.1	259	7.6	.04	14	3.0	38		0	100	42	2.0	.2	1.5	.20		182	.25		48	0	63
Apr. 15.....	14,200	7.8	285	9.6	.06	24	1.2	32		0	126	29	.5	.1	.9	.20		176	.24		65	0	52
May 10.....																							
Apr. 15.....	866	8.0	1,100	17	.02	30	17	199		0	254	350	2.0	.2	2.5	.30		758	1.03		145	0	75
June 27.....	67	8.4	2,210	11	.02	19	16	529		28	639	650	10	.5	1.0	.20		1,580	2.15		114	0	91
July 18.....	22	8.4	2,370	10	.04	19	17	543		26	694	645	9.0	.6	1.6	--		1,610	2.19		118	0	91
Aug. 11.....	11	--	2,530	--	--	--	--	576	12	--	--	--	--	--	--	--		1,740	2.37		92	--	92
Aug. 16.....	39	7.8	1,240	12	.16	13	4.3	278		0	408	298	5.0	.2	2.4	.31		838	1.13		50	0	92
Sept. 12.....	98	8.7	2,600	8.5	.02	13	12	625		53	744	695	12	.6	1.3	.44		1,790	2.43		82	0	94

GRAND RIVER BASIN--Continued

SOUTH FORK GRAND RIVER NEAR CASH, S.DAK.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
Oct. 6, 1949.....	18	18,600	904
Oct. 26.....	28	3,140	237
Mar. 7, 1950.....	909	568	1,390
Mar. 8.....	117	349	110
Mar. 9.....	13	206	7.23
Mar. 13.....	81	140	31
Apr. 4.....	753	214	435
Apr. 6.....	2,140	1,570	9,070
Apr. 9.....	1,510	580	2,360
Apr. 13.....	578	394	615
Apr. 15.....	14,200	3,990	153,000
Apr. 18.....	2,700	2,200	16,000
Apr. 19.....	959	1,110	2,870
Apr. 21.....	420	431	489
Apr. 26.....	366	727	718
May 10.....	900	3,970	9,650
May 31.....	43	178	21
June 27.....	67	73	13
July 18.....	22	82	4.87
Aug. 16.....	39	632	67
Sept. 12.....	9.8	54	1.43

GRAND RIVER BASIN--Continued

SOUTH FORK GRAND RIVER NEAR CASH, S. DAK.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 6, 1949	3:50 p. m.	18	18,600	3,800	2	5	21	100		--	--	--	--	--		BN
Oct. 6	3:50 p. m.	18	18,600	3,970	87	97	99	100		--	--	--	--	--		BW
Oct. 26	11:00 a. m.	28	3,140	1,970	2	4	7	100		--	--	--	--	--		BN
Oct. 26	11:00 a. m.	28	3,140	2,100	84	94	98	100		--	--	--	--	--		BW
Mar. 8, 1950	5:40 p. m.	117	349	901	69	78	89	98	98	99	99	100		--	100	BWC
Apr. 6	6:05 p. m.	2,140	1,570	2,570	--	42	--	55	--	70	82	97		99		SPWCM
Apr. 15	2:40 p. m.	14,200	3,890	2,530	--	53	--	77	80	90	95	99		100		SPWCM
Apr. 18	4:45 p. m.	2,700	2,200	3,760	--	61	--	81	--	93		--		--		SPWCM
Apr. 19	7:00 p. m.	959	1,110	2,380	--	78	--	90	--	98	--	--		--		SPWCM
Apr. 26	2:15 p. m.	366	1,727	1,860	--	92	--	97	--	99	--	--		--		SPWCM
May 10	1:45 p. m.	900	3,970	8,870	--	68	--	94	--	98	--	--		--		SPWCM
Aug. 16	10:50 a. m.	39	632	1,850	--	94	--	95	--	100	--	--		--		PWCM

GRAND RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN GRAND RIVER BASIN IN SOUTH DAKOTA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		
																	Parts per mil-	Tons per acre- foot	Tons per day	Total	Non- carbon- ate
NORTH FORK GRAND RIVER NEAR WHITE BUTTE																					
Dec. 20, 1949	1.1	8.1	3,590	10	0.02	50	74	799	0	817	1,400	25	1.2	1.5	--	--	2,760	3.75	430	0	80
Mar. 8, 1950	700	7.3	273	5.1	.04	14	1.5	40	0	72	64	.4	.4	2.7	.20	.30	178	.24	41	0	68
Apr. 20	1,710	7.3	335	7.3	.02	24	8.2	33	0	122	59	.5	.2	2.5	.01	.30	208	.28	94	0	43
May 9	505	7.9	1,390	14	.04	48	28	235	0	308	465	4.0	.2	2.9	.01	.976	1.33	235	0	68	
June 27	21	7.8	1,950	9.7	.02	59	38	382	0	411	750	11	.5	.9	.30	1,450	1.97	304	0	73	
July 19	16	7.8	2,170	12	.04	67	44	396	0	424	810	11	.6	1.4	--	--	1,550	2.11	348	0	71
Aug. 11	9.2	--	2,350	--	--	--	--	424	9.0	--	--	--	--	--	--	--	1,710	2.33	340	--	72
Aug. 16	23	7.5	845	11	.16	31	14	137	0	178	268	2.5	.3	2.0	.42	.42	568	.77	134	0	69
Sept. 14	3.0	8.0	1,930	9.6	.02	60	34	323	0	352	662	9.0	.6	1.2	.54	.54	1,270	1.73	291	2	71
GRAND RIVER NEAR WAKPALLA																					
Apr. 8, 1950	13,300	7.4	262	9.6	0.04	22	3.3	30	0	110	38	1.6	1.6	--	1.1	--	162	0.22	69	0	48
July 11	106	8.3	1,730	26	.02	60	25	364	12	384	660	14	0.6	2.3	--	--	1,350	1.94	233	0	76
Aug. 10	128	--	1,691	--	--	--	--	172	6.5	--	--	--	--	--	--	--	1,672	.91	124	--	74
Sept. 18	56	8.5	1,690	11	.02	68	27	288	24	272	600	13	.2	.8	0.20	0.20	1,170	1.59	281	18	69

MISSOURI RIVER BASIN

GRAND RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN GRAND RIVER BASIN IN SOUTH DAKOTA--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950			
Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
NORTH FORK GRAND RIVER NEAR WHITE BUTTE			
Oct. 26, 1949	3.7	38	0.4
Nov. 16	2.4	32	.2
Nov. 30	2.9	22	.2
Mar. 8, 1950.....	698	191	360
Mar. 14	75	34	6.9
Apr. 20	1,710	1,480	6,880
Apr. 22	1,410	856	3,260
Apr. 25	530	351	502
May 9	505	228	311
May 31	54	76	11.1
June 27	20	45	2.4
July 19	16	62	2.7
Aug. 16	21	134	7.6
Sept. 14	3.0	21	.2

GRAND RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN GRAND RIVER BASIN IN SOUTH DAKOTA--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
NORTH FORK GRAND RIVER NEAR WHITE BUTTE																
Apr. 20, 1950	1:05 p. m.	1,710	1,490	2,760	--	47		66		85	94	99			100	SPWCM
Apr. 22	10:45 a. m.	1,410	1,856	2,010	51	--		71		91						SPWCM
Apr. 25	1:20 p. m.	530	351	816	64	--		78		92						SPWCM
Aug. 16	8:50 a. m.	21	134	406	--	95		100		--						PWCM

MOREAU RIVER BASIN

MOREAU RIVER AT BIXBY, S. DAK.

LOCATION.--At county highway bridge, 300 feet upstream from gaging station, which is a quarter of a mile east of Bixby, Perkins County. DRAINAGE AREA.--1,570 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1949 to September 1950.

Water temperatures: April 1949 to September 1950.

Sediment records: April 1949 to September 1950.

EXTREMES, 1949-50.--Dissolved solids: Maximum, 3,100 ppm Dec. 1-21; minimum, 180 ppm Apr. 3.

Hardness: Maximum, 396 ppm July 1-31; minimum, 40 ppm Apr. 3.

Specific conductance: Maximum, 11,356 microhos Dec. 21; minimum, 176 microhos Apr. 3.

Water temperature: Maximum, 85° F., 21° C., during mid-July, 1949; minimum, 47° F., 8° C., during December to March.

Sediment concentrations: Maximum daily, 21,500 ppm Sept. 21; minimum daily, no flow on many days during December to March.

Sediment loads: Maximum daily, 169,000 tons Apr. 15; minimum daily, 0 tons on many days during December to March.

EXTREMES, March 1949 to September 1950.--Dissolved solids: Maximum, 3,100 ppm Dec. 1-21, 1949 (revised); minimum, 148 ppm Mar. 27, 1949.

Hardness: Maximum, 425 ppm May 6-9, 1949; minimum, 28 ppm Mar. 8, 27, 1949.

Specific conductance: Maximum daily, 5,560 microhos Dec. 21, 1949 (revised); minimum daily, 168 microhos Mar. 27, 1949.

Water temperatures (April 1949 to September 1950): Maximum, 86° F. June 11, 1949; minimum, freezing point on many days during December 1949 to March 1950.

Sediment concentrations (April 1949 to September 1950): Maximum daily, 21,500 ppm Sept. 21, 1950; minimum daily, no flow on many days each year.

Sediment loads (April 1949 to September 1950): Maximum daily, 169,000 tons Apr. 15, 1950; minimum daily, 0 tons on many days each year.

REMARKS.--Daily samples for chemical analysis composited by discharge. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids			Hardness as CaCO ₃		Percent non-carbonate
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 1-3, 1949	3.2	8.9	4,140	7.0	0.06	17	35	991	11	87	756	1,460	30	0.8	1.7	0.79	3,020	4.11	26	187	0	91
Oct. 4-12	16	8.9	2,930	8.4	.06	14	14	708	5.6	79	824	760	16	.6	2.0	.60	2,030	2.75	87	93	0	94
Oct. 13-26	7.0	8.5	1,510	15	.12	20	6.5	316	6.0	20	450	356	7.0	.3	2.6	.20	988	1.34	19	62	0	89
Oct. 27-31	8.0	8.3	1,760	14	.08	27	2.2	401	5.6	24	560	408	9.0	.3	1.3	.30	1,170	1.59	25	77	0	91
Nov. 1-30	4.1	8.4	2,080	13	.08	32	8.3	473	5.2	20	640	532	10	.4	1.0	.30	1,410	1.92	16	114	0	90
Dec. 1-21	3.2	8.4	4,370	16	.08	51	34	1,030	13	45	1,390	1,200	24	.3	.9	.67	3,100	4.22	27	267	0	89
Mar. 6-9, 1950	123	7.3	701	16	.02	16	4.1	134	4.6	0	168	190	4.0	.4	2.1	.10	510	.69	169	57	0	82
Mar. 10	100	7.2	1,200	13	.04	39	12	208	6.8	0	174	415	17	.4	3.6	.10	644	1.15	228	147	4	74
Mar. 14-Apr. 1	126	7.2	525	13	.04	20	5.7	87	4.5	0	130	140	3.0	.4	2.2	.10	356	.48	121	74	0	70
Apr. 3	2,900	7.1	176	13	--	12	2.3	24	5.2	0	56	40	4.0	.4	4.4	.10	180	.24	1,410	40	0	53
Apr. 4-6	2,800	7.1	351	16	.04	23	7.1	41	3.9	0	83	95	3.9	.3	2.0	.10	312	.33	1,330	87	19	49
Apr. 7	6,590	7.4	350	16	.08	30	7.7	33	3.8	0	146	55	2.0	.2	1.9	.10	222	.30	3,950	107	0	39
Apr. 11-14	1,260	7.2	444	17	.04	31	8.4	40	4.9	0	126	120	2.5	.2	2.1	.10	316	.43	1,060	112	24	48
Apr. 15-17	7,600	7.4	332	15	.04	22	5.6	41	3.3	0	93	70	2.5	.2	2.0	.10	230	.30	4,510	76	0	52
Apr. 18-20	1,350	7.5	521	12	.02	36	10	57	4.2	0	99	170	2.5	.2	2.6	.10	346	.47	1,260	131	50	48
Apr. 21	363	7.1	736	11	.04	46	17	83	4.9	0	110	260	3.0	.2	1.4	.20	508	.69	498	185	95	49
Apr. 22-26	280	7.3	819	13	.02	41	15	114	5.1	0	144	273	4.0	.2	1.7	.10	558	.76	422	164	46	59

Apr. 27	160	7.5	1,050	12	.04	59	20	148	5.2	0	172	388	5.0	.2	1.1	.20	728	.99	314	229	88	58
Apr. 28-May 15	470	7.5	1,050	16	.02	57	22	143	5.8	0	244	100	7.0	.2	1.4	.10	794	1.03	957	233	113	56
May 16-31	16	8.3	1,170	18	.02	67	32	224	7.0	0	244	52	7.5	.2	1.3	.10	1,094	1.13	957	233	113	56
June 1-30	39	7.9	2,320	18	.04	75	33	440	8.0	0	380	982	11	.5	1.3	.20	1,760	2.32	143	268	51	72
July 1-31	14	7.9	2,140	8.8	.04	83	46	390	9.2	0	316	935	11	.5	1.1	.20	1,640	2.23	62	398	139	67
Aug. 1-5	4.1	7.9	2,350	12	.04	39	30	480	9.2	0	455	845	16	.7	1.3	.40	1,660	2.26	18	220	0	82
Aug. 6-8	75	7.9	838	14	.16	20	4	160	6.0	0	216	230	7.0	.5	3.5	.40	574	.78	116	68	0	82
Aug. 9-31	6.7	8.3	1,770	10	.06	26	12	377	7.3	8	456	525	10	.5	2.2	.40	1,200	1.63	22	116	0	87
Sept. 1-19	4.5	8.3	2,160	9.8	.06	24	19	472	7.4	14	514	680	14	.5	1.4	.55	1,500	2.04	18	137	0	88
Sept. 20-24	34	7.8	1,140	17	.50	20	3.4	234	6.4	0	306	318	8.0	.6	2.4	.40	802	1.09	74	64	0	88
Sept. 25-30	5.2	8.3	1,760	10	.06	26	11	384	6.7	11	481	495	10	.5	1.2	.07	1,190	1.62	17	110	0	88
Weighted average a ..	b234	--	544	15	0.04	31	9.8	75	6.5	--	c124	166	3.4	0.2	1.7	0.11	380	0.52	240	118	16	56

a Weighted average for period sampled only.

b Mean discharge for water year was 216 second feet.

c Includes carbonate as bicarbonate.

MISSOURI RIVER BASIN

MOREAU RIVER BASIN--Continued

MOREAU RIVER AT BIXBY, S. DAK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

/Once-daily temperature measurement during March, April, July, and August between 8 a. m. and 11 a. m.; during remainder of year between 2 p. m. and 5 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	48	37			--	--	39	61	69	62	75
2	63	47	38			--	--	48	53	73	65	--
3	53	51	35			--	33	47	68	75	66	68
4	56	52	33			--	34	41	72	--	70	70
5	58	51	33			--	33	39	70	79	71	73
6	55	51	35			34	34	42	83	85	45	71
7	49	51	--			32	32	--	57	85	51	73
8	--	43	32			34	--	--	57	79	66	72
9	45	46	34			33	--	49	60	78	67	69
10	49	45	32			34	--	51	75	82	64	52
11	45	42	--			--	37	53	76	73	66	52
12	52	45	--			--	35	57	--	64	66	57
13	48	45	32			--	35	64	71	59	78	64
14	55	41	32			35	38	66	82	67	68	58
15	56	41	32			32	38	57	82	71	69	52
16	55	35	32			33	42	63	65	64	69	57
17	51	38	32			--	45	70	60	62	63	64
18	45	40	32			--	45	63	65	66	63	69
19	38	44	32			--	42	54	76	67	57	67
20	37	34	32			33	43	59	67	68	63	58
21	35	34	32			33	45	60	82	71	62	60
22	47	36	--			33	--	65	76	72	64	68
23	40	35	--			33	53	65	67	76	63	66
24	41	34	--			34	43	55	76	65	62	69
25	48	42	--			34	39	55	69	68	60	69
26	46	39	--			--	38	70	62	72	67	66
27	49	44	--			--	47	--	71	73	75	55
28	52	42	--			--	39	--	74	71	73	58
29	48	38	--			33	--	65	76	76	65	49
30	41	34	--			33	--	--	70	78	78	47
31	49	--	--			33	--	59	--	62	72	--
Average	49	39	--			--	--	56	70	72	69	63

MOREAU RIVER BASIN--Continued

MOREAU RIVER AT BIXBY, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.0	20	(t)	5.0			4.7		
2-----	3.1	35	(t)	4.4			5.0		
3-----	4.4	40	(t)	4.4			4.7		
4-----	18	162	s 10	4.0			4.0		
5-----	16	100	4	3.7			5.0		
6-----	9.0	100	2	3.7	90	1	5.0	71	(t)
7-----	6.6	102	2	3.7			5		
8-----	9.0		e 3	3.7			4		
9-----	13	500	18	3.7			4		
10-----	40	3,400	259	3.7			4		
11-----	20	700	38	3.7			3		
12-----	13	820	29	3.7			3		
13-----	10	1,000	27	3.7			3		
14-----	10	650	18	3.7			2		
15-----	7.5	370	7	3.7			2		
16-----	5.8			3.4	116	1	2	52	(t)
17-----	4.7			3.7			2		
18-----	4.4			3.7			1		
19-----	4.4	190	3	4.0			1		
20-----	5.8			3.7			1		
21-----	6.2			4.0			1		
22-----	7.0			3.7			0	--	0
23-----	9.0	120	3	4.0			0	--	0
24-----	7.5	380	8	5.0			0	--	0
25-----	5.4	300	4	5.0			0	--	0
26-----	10	195	5	4.4	86	1	0	--	0
27-----	11	155	5	4.0			0	--	0
28-----	8.5	--	e 5	4.7			0	--	0
29-----	8.5	240	6	5.4			0	--	0
30-----	6.2	210	4	4.4			0	--	0
31-----	5.8	130	2	--	--	--	0	--	0
Total-	291.8	--	481	121.6	--	30	66.4	--	12
Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							0	--	0
2-----							0	--	0
3-----							0	--	0
4-----							10	--	e 10
5-----							50	--	e 150
6-----							100	1,300	351
7-----							250	1,130	763
8-----							50	920	124
9-----							90	300	73
10-----							100	100	27
11-----							80	--	e 20
12-----							60	--	e 15
13-----							50	65	9
14-----							40	90	10
15-----							35	130	12
16-----							30	320	26
17-----							40	270	29
18-----							30	--	e 20
19-----							40	--	e 20
20-----							45	165	20
21-----							50	175	24
22-----							75	190	38
23-----							60	160	26
24-----							80	210	45
25-----							200	620	335
26-----							400	--	e 750
27-----							350	--	e 500
28-----							200	--	e 170
29-----							200	250	135
30-----							170	125	57
31-----							150	85	34
Total-	0	--	0	0	--	0	3,035	--	3,790

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

MISSOURI RIVER BASIN

MOREAU RIVER BASIN--Continued

MOREAU RIVER AT BIXBY, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	200	80	43	105	410	118	26		
2-----	1,300	--	e 1,000	123	700	232	23		
3-----	2,900	2,930	s 21,800	178	570	274	21		
4-----	2,710	3,620	26,500	484	1,450	s 2,060	21		
5-----	2,730	3,870	28,500	744	--	e 8,000	20		
6-----	2,960	5,080	s 42,200	650	4,700	e 8,250	18		
7-----	6,590	6,020	107,000	852	--	e 11,000	18	42	2
8-----	5,740	3,880	60,100	687	--	e 7,500	22		
9-----	3,800	--	e 35,000	542	3,800	s 5,270	20		
10-----	1,500	--	e 12,000	947	5,000	s 13,800	20		
11-----	902	2,840	6,910	1,410	6,300	24,000	24		
12-----	729	2,640	5,200	824	7,120	s 16,000	20		
13-----	871	5,610	13,200	291	4,790	s 3,950	18		
14-----	2,530	6,910	s 46,000	146	2,800	1,100	33	1,390	s 143
15-----	8,490	7,470	s 169,000	108	1,500	437	33	645	s 72
16-----	9,420	6,030	153,000	89	950	228	21		
17-----	4,880	7,550	86,300	77	490	102	22		
18-----	2,260	6,230	38,000	69	290	54	19		
19-----	1,180	4,760	15,200	59	140	22	17		
20-----	602	3,330	5,410	53	80	11	16	40	2
21-----	363	2,550	2,500	48			18		
22-----	295	--	e 1,800	43			14		
23-----	326	1,430	1,260	39	50	5	13		
24-----	313	1,250	1,060	35			11		
25-----	266	990	711	34			40	1,070	s 148
26-----	203	740	406	34			33	733	s 76
27-----	160	560	242	32			21	125	s 9
28-----	131	420	149	29	40	3	94	352	s 124
29-----	119	--	e 125	28			138	432	s 180
30-----	110	--	e 110	26			74	200	40
31-----	--	--	--	30			--	--	--
Total--	64,679	--	880,500	8,816	--	102,400	888	--	836
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	50			4.4			5.8		
2-----	39			4.7			5		
3-----	31			3.4	60	(t)	4		
4-----	26			3.4			3		
5-----	23	47	3	4.7			3	54	(t)
6-----	20			38	1,090	s 435	2		
7-----	16			138	6,020	s 2,680	1.8		
8-----	15			50	1,620	s 265	.8		
9-----	14			17	220	10	3.1	78	(t)
10-----	12			9	100	2	6.6	211	4
11-----	11			5.8			5.0	98	1
12-----	11			5.4			4.4		
13-----	10			5.0	64	(t)	4.7		
14-----	9.5			5.0			6.2		
15-----	10	46	1	11		2	5.8	67	1
16-----	10			12			6.2		
17-----	11			8.5	76		6.2		
18-----	11			5.8			5.8		
19-----	11			5.8			5.4	46	(t)
20-----	10			5.4			35	4,850	s 1,080
21-----	9.5			4.7	84	1	68	21,500	s 4,050
22-----	9.0			4.0			24	6,600	428
23-----	9.0			3.4			28	500	38
24-----	9.0			3.4	51	(t)	16	160	7
25-----	9.0			3.7			10	126	3
26-----	9.0	71	1	3.4			6.2	118	2
27-----	9.0			3.7			4.7	186	2
28-----	7.0			3.4	41	(t)	4.0		
29-----	5.4			4.0			3.1	75	(t)
30-----	4.7			16	44	2	3.1		
31-----	4.7			8.0	34	(t)	--	--	--
Total--	435.8	--	51	400.0	--	3,400	286.9	--	5,630

Total discharge for year (second-foot-days) 79,020.5

Total load for year (tons) 997,100

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

MOREAU RIVER BASIN--Continued

MOREAU RIVER AT BIXBY, S. DAK.--Continued

Particle-size analyses of suspended sediment, March to May 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
			0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000		
Mar. 7, 1950	2:20 p. m.	212	1,160	3,370	--	89	--	93	--	95	--	--	--	--	--	PWCM
Apr. 3	4:45 p. m.	2,370	6,120	10,600	--	29	--	39	--	87	88	99	100	--	--	SPWCM
Apr. 4	3:10 p. m.	2,390	2,950	1,760	28	33	37	41	51	63	76	91	--	--	--	BN
Apr. 4	3:10 p. m.	2,390	2,950	1,690	21	22	26	34	45	59	75	95	--	--	--	BN
Apr. 5	1:15 a. m.	2,460	3,870	7,200	--	45	--	58	--	74	92	99	100	--	--	SPWCM
Apr. 7	11:50 a. m.	7,540	6,060	11,000	--	44	--	60	--	78	--	--	--	--	--	SPWCM
Apr. 8	10:00 a. m.	5,720	3,890	7,740	--	55	--	68	--	80	--	--	--	--	--	SPWCM
Apr. 12	11:30 a. m.	702	2,520	7,330	--	64	--	78	--	85	--	--	--	--	--	SPWCM
Apr. 14	2:45 p. m.	2,520	5,630	3,590	38	44	50	56	64	73	83	94	--	--	--	BWCM
Apr. 14	2:45 p. m.	2,520	5,630	3,460	5	8	--	--	60	74	86	95	--	--	--	BN
Apr. 15	1:10 a. m.	8,860	7,400	14,000	--	44	--	62	--	77	89	99	100	--	--	SPWCM
Apr. 18	1:00 a. m.	2,360	6,370	11,000	--	48	--	62	--	72	79	93	100	--	--	SPWCM
Apr. 19	10:20 a. m.	1,200	4,820	8,880	--	45	--	57	--	64	69	77	85	96	100	SPWCM
Apr. 20	10:20 a. m.	605	3,350	6,840	--	65	--	79	--	86	89	92	93	97	100	SPWCM
Apr. 21	5:10 p. m.	336	2,380	1,380	72	81	89	94	97	98	99	100	--	--	--	BWCM
Apr. 21	5:10 p. m.	336	2,380	1,440	4	8	30	--	97	98	98	99	--	--	--	BN
Apr. 27	10:00 a. m.	165	564	1,390	--	87	--	95	--	100	--	--	--	--	--	PWCM
May 11	9:50 a. m.	1,380	6,100	13,400	--	57	--	74	--	87	--	--	--	--	--	SPWCM

MOREAU RIVER BASIN--Continued
 MISCELLANEOUS ANALYSES OF STREAMS IN MOREAU RIVER BASIN IN SOUTH DAKOTA
 Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- dium	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate		
MOREAU RIVER NEAR EAGLE BUTTE																							
Apr. 7, 1950	12,200	7.9	539	20	0.02	55	7.2		53		154	143	3.0	0.3	1.0	0.05		376	0.51		187	41	41
Apr. 20	6,350	7.5	409	8.6	.04	38	4.4		50	0	136	94	8.0	.2	.1			270	.37		113	1	49
June 21	99	8.0	2,080	9.9	.10	64	29		387	0	305	810	18	.4	1.3			1,470	2.00		279	29	75
Aug. 9	8	--	3,000	--	--	--	--	513	13	--	--	--	--	--	--			2,280	3.10		480	--	69
Sept. 19	31	7.7	2,710	6.7	.02	85	32		511	0	256	1,160	24	.6	1.1			1,950	2.65		344	134	76
MOREAU RIVER AT PROMISE																							
Apr. 7, 1950	13,400	7.9	469	22	0.02	45	4.2		54	0	142	120	3.0	0.2	1.0	0.05		320	0.44		130	14	47
June 22	86	7.9	2,110	13	.02	100	31		381	0	273	915	19	.4	.9	--		1,590	2.16		377	153	69
Aug. 10	6	--	3,060	--	--	--	--	478	13	--	--	--	--	--	--			2,460	3.35		716	--	59
Sept. 19	10	7.8	2,850	12	.02	204	53		442	0	244	1,400	20	.6	.5	.20		2,250	3.06		727	527	57

CHEYENNE RIVER BASIN

CHEYENNE RIVER NEAR HOT SPRINGS, S. DAK.

LOCATION --At gaging station at bridge on State Highway 87, a quarter of a mile downstream from Cascade Creek, and 10 miles southwest of Hot Springs, S. D.

Drainage Area --8,710 square miles.

RECORDS AVAILABLE --Chemical analyses: April 1947 to September 1950.

Water temperatures: July 1947 to September 1949.

Sediment records: April 1946 to September 1950.

EXTREMES, 1949-50 --Sediment concentrations: Maximum daily, 55,000 ppm June 19; minimum daily, not determined.

Sediment loads: Maximum daily, 216,000 tons June 19; minimum daily, less than 1 ton on many days.

EXTREMES, 1946-50 --Dissolved solids (1947-49): Maximum, 2,930 ppm Oct. 25 to Nov. 30, 1947; minimum, 657 ppm Feb. 25 to Mar. 10, 1949.

Hardness (1947-49): Maximum, 1,760 ppm Nov. 22, 1947; minimum, 344 ppm Feb. 25 to Mar. 10, 1949.

Daily specific conductance (1947-49): Maximum, 3,920 microhms Apr. 3, 1947; minimum, 713 microhms Aug. 18, 1948.

Sediment concentrations: Maximum daily, 55,000 ppm June 19, 1950; minimum daily, 1 ppm Sept. 30, 1949.

Sediment loads: Maximum daily, 476,000 tons June 19, 1946; minimum daily, less than 1 ton on many days each year.

REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, October 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 21, 1949	33	7.3	7.3	3,030	19	0.02	508	96	167		198	1,510	203	1.0	2.0	--	2,800	3.54		1,680	1,500	18
Nov. 1	28	7.3	7.3	2,950	14	0.02	474	86	122		116	1,520	85	.9	1.3	--	2,370	3.22		1,540	1,450	15
Nov. 8	32	7.3	7.3	2,970	19	0.02	470	89	73		184	1,470	66	1.0	1.6	--	2,310	3.14		1,620	1,470	9
Dec. 2	24	7.4	7.4	2,510	22	0.02	508	80	74		190	1,480	40	1.0	2.1	0.40	2,300	3.13		1,600	1,440	9
Jan. 4, 1950	29	7.6	7.6	2,420	21	0.03	526	87	35		204	1,460	39	1.0	2.1	--	2,270	3.09		1,670	1,500	4
Feb. 2	26	7.6	7.6	2,460	38	0.01	524	84	23		178	1,440	38	1.0	1.8	--	2,240	3.05		1,650	1,500	3
Mar. 3	50	7.8	7.8	2,430	41	0.06	491	84	76		194	1,430	59	1.0	2.2	--	2,280	3.10		1,670	1,410	9
Apr. 4	156	7.4	7.4	2,700	26	0.04	480	85	69		200	1,350	118	1.0	2.7	0.20	2,250	3.06		1,550	1,390	11
May 3	124	7.5	7.5	4,030	12	0.02	308	99	498		164	1,350	495	.6	2.8	--	2,860	3.89		1,180	1,030	48
May 18	86	7.3	7.3	2,130	15	0.04	142	25	367		148	985	89	7	2.9	--	1,880	2.28		458	337	64
June 7	20	7.6	7.6	2,620	17	0.04	510	97	60		174	1,510	59	9	1.2	--	2,340	3.18		1,670	1,530	7
June 22	277	7.3	7.3	2,970	13	0.04	246	77	360		148	1,130	293	6	1.2	0.10	2,190	2.98		931	810	46
June 30	40	7.6	7.6	2,560	19	0.04	462	93	113		170	1,490	61	9	1.7	--	2,320	3.16		1,540	1,400	14
July 11	44	7.6	7.6	2,160	20	0.02	363	63	129		180	1,160	61	9	1.4	--	1,980	2.97		1,160	1,010	19
July 18	62	7.5	7.5	1,780	15	0.02	296	53	115		180	935	57	8	2.2	--	1,960	2.12		957	809	21
July 23	1,250	7.3	7.3	773	19	0.10	70	70	70		218	197	11	5	6.0	0.20	514	70		284	75	37
Aug. 8	24	7.3	7.3	2,830	13	0.04	522	91	37		134	1,520	42	9	7	0.23	2,820	3.11		1,680	1,570	5
Aug. 15	34	7.7	7.7	2,280	17	0.02	386	75	66		186	1,170	60	8	1.1	0.21	2,390	3.11		1,270	1,120	13
Aug. 29	16	7.6	7.6	2,800	20	0.04	515	80	62		169	1,460	47	9	1.0	--	2,290	3.11		1,620	1,480	8
Sept. 7	15	7.4	7.4	2,870	22	0.04	535	89	56		176	1,550	43	1	1.0	--	2,380	3.24		1,700	1,580	7
Sept. 19	23	7.5	7.5	2,860	20	0.04	545	82	40		190	1,500	44	1	1.4	--	2,330	3.17		1,700	1,540	5

MISSOURI RIVER BASIN

CHEYENNE RIVER BASIN--Continued

CHEYENNE RIVER NEAR HOT SPRINGS, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950								
Day	October			November			December	
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Tons per day
1-----	16	3	0.1	28	14	1.1	24	4
2-----	16			28			24	
3-----	18			29			23	
4-----	20			30			22	
5-----	19			31			20	
6-----	18	6	.3	31	8	.7	19	6
7-----	18			32			20	
8-----	18			31			20	
9-----	18			30			20	
10-----	16			29			20	
11-----	18	8	.4	27	5	.4	19	8
12-----	18			27			20	
13-----	18			26			20	
14-----	18			27			20	
15-----	17			25			20	
16-----	18	8	.4	24	3	.2	21	7
17-----	18			24			20	
18-----	20			24			21	
19-----	18			25			20	
20-----	32			25			21	
21-----	33	670	60	25	3	.2	23	5
22-----	31	495	41	25			23	
23-----	26	320	22	25			23	
24-----	27	148	11	25			22	
25-----	27	102	7.4	26			23	
26-----	28	78	5.9	26	3	.2	24	5
27-----	32	68	5.9	26			24	
28-----	28	37	2.8	24			24	
29-----	28	13	1.0	24			24	
30-----	28			24			24	
31-----	28			--	--	--	28	9
Total-	668	--	223	803	--	14.0	676	10.2
Suspended sediment, water year October 1949 to September 1950								
Day	January			February			March	
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Tons per day
1-----	28	13	1.0	27	18	1.3	75	760
2-----	29			26			54	245
3-----	29			26			62	440
4-----	29			26			77	560
5-----	29			28			77	630
6-----	28	17	1.3	29	18	1.4	62	400
7-----	28			29			50	270
8-----	29			29			48	220
9-----	29			28			46	185
10-----	28			28			44	115
11-----	28	15	1.1	29	13	1.0	50	155
12-----	28			28			50	125
13-----	27			29			52	85
14-----	27			28			50	95
15-----	27			28			52	130
16-----	27	15	1.1	35	37	3.5	60	200
17-----	26			36	70	6.8	54	255
18-----	26			60	475	s 86	50	110
19-----	27			87	1,000	235	61	160
20-----	27			58	370	58	58	120
21-----	28	15	1.1	45	90	11	70	230
22-----	28			50	260	35	128	1,440
23-----	28			48	170	22	93	1,150
24-----	28			77	736	s 172	86	740
25-----	27			70	880	166	82	575
26-----	27	15	1.1	73	635	125	91	570
27-----	27			64	435	75	86	770
28-----	27			64	510	88	67	260
29-----	27			--	--	--	77	200
30-----	27			--	--	--	107	1,560
31-----	26			--	--	--	80	580
Total-	856	--	34.6	1,185	--	1,100	2,099	3,010

s Computed by subdividing day.

CHEYENNE RIVER BASIN--Continued

CHEYENNE RIVER NEAR HOT SPRINGS, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	77	390	81	82	115	25	29	23	1.8
2-----	78	420	88	77	210	44	27	21	1.5
3-----	99	800	214	118	1,410	449	24	13	.8
4-----	145	3,000	1,170	179	5,590	2,700	23		
5-----	217	4,890	2,860	150	4,320	1,750	22		
6-----	221	6,450	3,850	136	2,400	881	22	19	1.1
7-----	165	3,050	1,360	153	3,580	1,480	20		
8-----	148	2,500	999	262	6,500	4,600	20		
9-----	148	1,900	759	350	12,000	11,300	57	1,420	219
10-----	179	4,080	1,970	640	15,900	27,500	52	1,360	191
11-----	200	2,920	1,580	990	23,600	63,100	40	280	30
12-----	366	6,350	s7,420	720	17,400	33,600	29	99	7.8
13-----	680	19,900	s36,800	366	9,100	9,730	24	25	1.6
14-----	402	13,300	14,400	200	4,600	2,480	20	16	.9
15-----	242	7,800	5,100	142	2,350	901	20		
16-----	168	4,300	1,950	93	1,280	321	89	9,900	s2,920
17-----	134	1,800	651	103	1,030	286	61	9,200	1,520
18-----	109	680	200	84	400	91	40	3,980	s1,200
19-----	93	300	75	66	230	41	1,420	55,000	s21,000
20-----	97	225	59	44	144	17	680	35,500	s73,000
21-----	93	375	94	34	62	5.7	298	21,700	17,500
22-----	82	305	68	24	53	3.4	287	16,800	13,000
23-----	75	115	23	24	45	2.9	150	6,100	2,470
24-----	64	115	20	24	32	2.1	99	4,400	1,180
25-----	61	135	22	27	22	1.6	73	2,300	453
26-----	57	75	12	27	18	1.3	66	840	150
27-----	64	95	16	28	19	1.4	52	305	43
28-----	72	260	51	29	21	1.6	49	190	25
29-----	77	500	104	32	35	3.0	44	55	6.5
30-----	86	270	63	32	35	3.0	40	50	5.4
31-----	--	--	--	30	25	2.0	--	--	--
Total-	4,699	--	82,060	5,286	--	161,500	3,877	--	329,900

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	40	15	1.6	32	120	10	15	22	0.9
2-----	40			31	80	6.7	16		
3-----	40			25	70	4.7	15		
4-----	138	29,100	s13,900	21	36	2.0	15	11	.5
5-----	196	44,200	24,300	14	28	1.1	16		
6-----	213	26,600	15,300	24	24	1.6	16		
7-----	210	42,400	s26,600	25			16	11	.5
8-----	182	38,900	19,800	24			16		
9-----	99	16,400	4,400	24	24	1.6	16	11	.5
10-----	64	5,000	864	24			16		
11-----	46	1,200	149	24			15	11	.5
12-----	73	4,250	s1,450	31	47	3.9	18		
13-----	768	51,700	s16,000	348	7,220	s8,200	18		
14-----	326	29,800	s26,300	50	2,150	290	20	22	1.2
15-----	124	15,000	5,020	35	250	24	24	152	9.8
16-----	103	7,800	2,170	25	136	9.2	24	85	5.5
17-----	78	2,700	569	20	49	2.6	23	57	3.5
18-----	77	5,120	s1,260	20	45	2.4	22	44	2.7
19-----	73	17,400	3,430	24	45	2.9	23		
20-----	46	8,000	994	23	21	1.3	26	600	42
21-----	34	1,100	101	20	24	1.2	57	3,800	s638
22-----	31	300	25	19			34	150	14
23-----	860	27,900	s73,000	20			27	35	2.6
24-----	767	25,300	s39,000	19	35	1.5	30	40	3.2
25-----	392	16,600	s16,100	16			31	106	8.9
26-----	182	9,700	4,770	16	68	2.9	32	110	9.5
27-----	172	10,000	4,640	20	55	3.0	27	42	3.1
28-----	126	6,200	2,110	18	40	1.9	23	25	1.6
29-----	87	3,200	752	18			22	15	.9
30-----	64	840	145	16			21		
31-----	45	255	31	16	35	1.5	--	--	--
Total-	5,696	--	407,200	1,042	--	8,590	674	--	759

Total discharge for year (second-foot-days) 27,591

Total load for year (tons) 994,400

s Computed by subdividing day.

MISSOURI RIVER BASIN

CHEYENNE RIVER BASIN--Continued

Particle-size analyses of suspended sediment. water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 20, 1949 Apr. 4, 1950 Apr. 13 May 3 May 4 May 6 May 8 May 10 May 10 May 11 May 11 May 12 May 14 May 16	2:00 p.m.	32	790	1,110	30	48	79	96	98	100	--	--	--	BW	
	6:00 p.m.	156	3,780	--	65	--	85	85	--	97	99	100	--	SPWCM	
	9:30 a.m.	805	21,700	8,040	65	78	97	97	90	94	97	100	--	SPWCM	
	8:50 a.m.	124	2,430	74	89	97	98	98	98	--	--	--	--	SPWCM	
	10:00 a.m.	200	6,950	--	78	--	--	--	--	--	--	--	--	SPWCM	
	10:00 a.m.	139	2,350	3,180	86	--	97	98	--	99	--	--	--	SPWCM	
	2:00 p.m.	288	5,890	9,480	70	--	88	--	93	96	99	100	--	SPWCM	
	7:30 a.m.	600	20,000	8,430	10	12	22	--	88	94	97	98	--	BN	
	7:30 a.m.	600	20,000	8,060	50	65	74	83	88	90	95	99	--	BN	
	7:30 a.m.	990	22,400	8,540	41	61	71	74	76	81	81	93	--	BWCM	
May 11 May 11 May 12 May 14 May 16	7:30 a.m.	990	22,400	8,500	1	4	22	72	75	76	82	99	--	BN	
	8:00 a.m.	859	18,700	4,970	65	95	87	92	--	--	--	--	SPWCM		
	9:00 a.m.	185	3,900	1,460	78	88	95	97	97	94	95	97	--	BWCM	
	6:00 p.m.	165	3,800	--	8	28	--	--	94	--	--	--	BN		
	10:00 a.m.	95	1,430	55	83	--	97	--	97	--	--	--	SPWCM		
	June 16 June 19 June 19 June 19 June 21	7:30 p.m.	128	21,700	9,390	78	--	98	--	99	--	--	--	SPWCM	
		6:00 a.m.	1,200	64,900	22,800	1	2	83	83	93	94	97	99	100	SPN
		6:00 a.m.	1,200	64,900	26,800	40	54	72	84	90	94	95	98	--	BWCM
		1:30 p.m.	1,800	52,400	1,950	53	--	79	--	86	91	95	95	97	SPWCM
	June 21 June 21 June 22 June 22 June 24	6:00 p.m.	1,930	48,100	16,400	--	58	--	84	--	95	97	99	100	SPWCM
8:00 a.m.		282	22,000	7,420	--	82	--	98	--	98	--	--	--	SPWCM	
June 22		321	21,400	9,470	--	80	--	97	--	99	--	--	--	SPWCM	
4:30 p.m.		277	12,400	7,990	63	76	89	97	99	99	100	--	--	BWCM	
June 22 June 22 June 24	4:30 p.m.	277	12,400	7,700	1	2	5	63	--	99	100	--	--	BN	
	6:00 p.m.	91	3,200	3,970	--	95	--	100	--	--	--	--	--	PWCM	
	July 4 July 5 July 5 July 7 July 7 July 13	4:00 p.m.	197	43,900	10,400	--	82	--	98	--	99	--	--	--	SPWCM
		8:00 a.m.	200	47,000	10,600	--	79	--	98	--	100	--	--	--	SPWCM
2:30 p.m.		190	46,800	9,760	--	84	--	100	--	--	--	--	--	PWCM	
7:00 p.m.		315	55,600	11,400	--	71	--	97	--	99	--	--	--	SPWCM	
8:00 a.m.	895	58,700	10,900	--	54	--	88	--	96	--	--	--	SPWCM		

July 13	11:30 a. m.	1,040	68,200	6,670	43	52	66	82	90	94	96	98	100	EWCM EN
July 13	11:30 a. m.	1,040	68,200	14,400	--	--	4	--	93	94	95	98	100	SPWCM
July 13	3:00 p. m.	942	58,500	11,100	--	58	--	85	--	97	--	--	--	SPWCM
July 18	7:00 p. m.	105	10,200	7,380	--	86	--	99	--	100	--	--	--	SPWCM
July 23	1:20 p. m.	1,200	31,300	9,760	--	56	--	80	--	96	99	100	--	SPWCM
July 23	3:40 p. m.	1,250	28,600	9,550	46	55	68	79	88	94	96	98	100	EWCM
July 23	3:40 p. m.	1,250	28,600	29,700	0	1	2	67	93	95	97	99	100	EN
July 23	6:30 p. m.	1,040	26,200	10,400	--	58	--	81	--	95	98	100	--	SPWCM
July 26	2:00 p. m.	190	10,200	7,630	--	87	--	97	--	99	100	--	--	SPWCM
July 26	7:00 p. m.	162	6,800	5,780	--	90	--	98	--	98	--	--	--	SPWCM
July 27	9:00 a. m.	179	9,400	6,220	--	88	--	98	--	98	--	--	--	SPWCM
Sept. 21	10:00 a. m.	67	6,450	4,100	--	92	--	98	--	99	--	--	--	SPWCM

CHEYENNE RIVER BASIN--Continued

LANCE CREEK AT SPENCER, WYO.

LOCATION.--At cableway 150 feet downstream from gaging station, which is three-eighths of a mile south of Spencer, Niobrara County, 1 mile upstream from mouth, and 34 miles south of Newcastle.

DRAINAGE AREA.--2,070 square miles.

RECORDS AVAILABLE.--Sediment records: April to September 1950.

EXTREMES, April to September 1950.--Sediment concentrations: Maximum daily, 55,300 ppm July 3; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 237,000 tons June 18; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, April to September 1950

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	0.1	66	(t)	0.3	--	(t)
2-----	0	--	0	.2	150	0.1	.1	--	
3-----	0	--	0	1.2	2,210	s 10	.1	--	
4-----	20	9,000	486	2.7	3,600	26	0	--	0
5-----	9.8	4,790	127	1.5	1,640	6.6	0	--	0
6-----	1.7	810	3.7	1.3	--	e 32	0	--	0
7-----	1.0	410	1.1	14	7,300	276	.2	--	e.8
8-----	6.0	1,710	28	26	8,880	s 716	.7	--	e 1.0
9-----	12	2,280	74	92	--	e 6,500	1.5	3,700	s 52
10-----	15	3,790	153	112	32,600	9,860	.3	--	
11-----	28	8,820	s 934	72	14,500	2,820	.2	98	.1
12-----	57	20,600	3,170	34	6,980	641	.2	--	
13-----	29	13,800	1,080	19	3,160	162	0	--	0
14-----	14	9,000	340	14	1,090	41	0	--	0
15-----	3.5	2,930	28	9.2	420	10	0	--	0
16-----	1.3	950	3.3	6.5	330	5.8	0	--	0
17-----	.7	409	.8	3.3	155	1.4	3.4	--	e 280
18-----	.3	325	.3	2.7	95	.6	1,060	54,400	s 237,000
19-----	.1	--	--	2.2	99	.6	703	34,600	s 88,200
20-----	.1	121	(t)	1.6	95	.4	163	24,300	9,370
21-----	.1	--	--	1.1	--	e.3	72	17,200	3,340
22-----	0	--	0	.8	70	.2	38	10,000	1,030
23-----	0	--	0	.6	94	.2	20	6,700	362
24-----	0	--	0	.7	--	e.2	12	2,540	82
25-----	0	--	0	1.2	--	e.3	8.2	830	18
26-----	0	--	0	.8	--	--	3.8	316	3.2
27-----	0	--	0	.6	58	.1	3.8	209	2.1
28-----	.1	--	--	.6	--	--	3.0	143	1.2
29-----	.2	89	(t)	1.5	66	.3	2.7	116	.8
30-----	.1	--	--	.7	54	.1	2.5	120	.8
31-----	--	--	--	.4	66	.1	--	--	--
Total--	200.0	--	6,430	424.5	--	21,110	2,099.0	--	339,700

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

CHEYENNE RIVER BASIN--Continued

LANCE CREEK AT SPENCER, WYO.--Continued

Suspended sediment, April to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.2	113	0.7	0.5	89	0.1	0	--	0
2-----	2.5	129	.9	.2	46	(t)	0	--	0
3-----	348	55,300	s 55,600	0	--	0	0	--	0
4-----	133	40,300	s 16,000	0	--	0	0	--	0
5-----	126	38,500	s 14,100	0	--	0	0	--	0
6-----	293	45,900	s 54,000	0	--	0	0	--	0
7-----	109	24,700	s 8,260	0	--	0	0	--	0
8-----	32	8,300	717	0	--	0	0	--	0
9-----	22	2,630	156	0	--	0	0	--	0
10-----	14	960	36	0	--	0	35	24,900	s 7,100
11-----	9.2	320	7.9	0	--	0	51	43,800	s 6,870
12-----	805	40,800	s 123,000	5.4	--	e 20	26	26,500	1,860
13-----	212	26,000	s 17,700	24	--	e 320	1	7,400	100
14-----	41	11,900	1,320	6	--	e 26	5	--	e 2.6
15-----	20	6,400	346	1	--	e 1	0	--	0
16-----	47	--	e 3,800	0	--	0	0	--	0
17-----	59	27,400	s 5,680	0	--	0	0	--	0
18-----	27	9,630	702	0	--	0	0	--	0
19-----	17	4,000	164	0	--	0	0	--	0
20-----	15	2,440	99	0	--	0	1.7	--	e 3.4
21-----	15	--	e 90	0	--	0	12	--	e 20
22-----	704	27,100	s 57,100	0	--	0	4.3	30	.3
23-----	326	28,900	s 28,100	0	--	0	0	--	0
24-----	133	11,300	4,060	0	--	0	0	--	0
25-----	85	7,800	1,790	0	--	0	0	--	0
26-----	55	9,900	1,470	0	--	0	0	--	0
27-----	36	9,940	966	0	--	0	0	--	0
28-----	15	1,510	61	0	--	0	0	--	0
29-----	6	360	5.8	0	--	0	0	--	0
30-----	2.5	--	e 1.4	0	--	0	0	--	0
31-----	1	--	e .4	0	--	0	--	--	--
Total-	3,712.4	--	395,400	37.1	--	370	136.0	--	15,960

Total discharge for period Apr. 1 to Sept. 30 (second-foot-days) 6,609.0

Total load for period Apr. 1 to Sept. 30 (tons) 779,000

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

CHEYENNE RIVER BASIN--Continued
LANCE CREEK AT SPENCER, WYO.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Apr. 10, 1950.....	8:00 a. m.	17	4,820	4,300	--	91	--	97	--	99	--	--	--	--	SPWCM
Apr. 12.....	9:00 a. m.	70	22,500	4,840	57	74	89	95	93	97	--	--	--	--	SPWCM
May 4.....	8:30 a. m.	4.9	4,150	3,410	--	98	--	98	--	100	--	--	--	--	SPWCM
May 7.....	7:00 a. m.	12	7,800	6,560	--	86	--	99	--	99	--	--	--	--	SPWCM
May 9.....	7:00 a. m.	63	13,000	5,260	--	69	--	--	88	96	--	--	--	--	SPWCM
May 9.....	7:00 p. m.	203	29,900	5,690	--	57	--	--	83	96	--	--	--	--	SPWCM
May 10.....	8:00 a. m.	122	4,020	55	66	79	92	95	97	--	--	--	--	--	SPWCM
May 10.....	8:00 a. m.	122	39,100	4,050	5	12	68	90	94	98	--	--	--	--	SPN
May 12.....	6:30 p. m.	27	5,500	4,680	--	92	--	98	--	100	--	--	--	--	SPWCM
May 12.....	6:30 p. m.	5.9	10,400	4,370	--	91	--	--	99	100	--	--	--	--	SPWCM
June 9.....	9:30 a. m.	5.9	10,400	4,430	--	1	--	95	--	100	--	--	--	--	SPN
June 9.....	9:30 a. m.	1,550	74,000	8,260	--	44	--	69	--	89	97	100	--	--	SPWCM
June 18.....	7:30 p. m.	1,500	55,800	11,700	--	52	--	76	--	84	99	100	--	--	SPWCM
June 19.....	5:15 p. m.	330	29,200	8,110	57	70	81	88	93	96	--	--	--	--	SPWCM
June 19.....	5:15 p. m.	330	29,200	23,400	--	1	7	90	94	96	99	100	--	--	SPN
June 19.....	6:15 p. m.	316	28,100	10,900	--	70	--	90	--	97	--	--	--	--	SPWCM
June 21.....	7:30 a. m.	82	18,000	7,620	--	77	--	90	--	97	--	--	--	--	SPWCM
June 24.....	7:00 a. m.	17	3,100	2,420	84	94	97	98	99	100	--	--	--	--	BWC
July 3.....	7:30 a. m.	440	58,900	12,700	--	58	--	84	--	96	98	100	--	--	SPWCM
July 4.....	9:00 a. m.	163	42,000	8,040	--	62	--	95	--	98	--	--	--	--	SPWCM
July 5.....	3:30 p. m.	129	39,800	12,000	--	71	--	94	--	98	--	--	--	--	SPWCM
July 5.....	4:00 p. m.	122	36,800	9,960	54	70	85	94	98	99	--	--	--	--	SPWCM
July 5.....	8:00 p. m.	122	36,800	30,900	--	1	5	94	97	98	--	--	--	--	SPN
July 6.....	7:00 a. m.	500	46,800	8,500	--	53	--	72	83	92	100	--	--	--	SPWCM
July 6.....	8:00 p. m.	354	45,200	8,160	--	59	--	83	--	96	--	--	--	--	SPWCM
July 7.....	7:00 p. m.	61	23,200	8,560	--	79	--	97	--	99	--	--	--	--	SPWCM
July 12.....	9:00 a. m.	1,130	46,800	8,760	--	47	--	70	--	94	98	99	--	100	SPWCM
July 12.....	6:30 p. m.	1,230	54,400	9,310	42	52	61	70	81	93	98	100	--	--	SPWCM
July 12.....	6:30 p. m.	1,230	54,400	8,570	2	4	26	68	81	93	98	100	--	--	SPN
July 13.....	7:30 p. m.	109	19,300	8,300	--	83	--	97	--	99	--	--	--	--	SPWCM

July 17	8:30 a. m.	61	32,300	6,010	--	78	--	96	--	99	--	SPWCM
July 18	4:00 p. m.	22	8,300	4,120	74	92	98	99	--	100	--	SPWCM
July 18	4:00 p. m.	22	8,300	8,080	1	3	23	99	--	--	--	PN
July 20	7:00 a. m.	15	2,430	2,070	91	97	99	100	--	--	--	BWC
July 22	8:00 a. m.	757	21,000	6,560	--	49	--	66	--	87	96	SPWCM
July 23	8:15 p. m.	218	20,700	5,210	63	74	84	91	94	97	--	SPWCM
July 23	6:15 p. m.	218	20,700	15,900	1	3	22	91	94	97	--	SPN
July 25	8:00 a. m.	94	7,200	5,260	--	94	--	99	--	99	--	SPWCM
Sept. 10	7:00 p. m.	109	77,400	7,780	--	72	--	97	--	100	--	SPWCM
Sept. 12	6:30 p. m.	26	23,200	9,140	--	90	--	100	--	--	--	PWCM
Sept. 21	4:25 p. m.	9.8	861	484	91	97	--	98	98	99	--	BWC

CHEYENNE RIVER BASIN--Continued
BEAVER CREEK NEAR NEWCASTLE, WYO.

LOCATION.--At gaging station at bridge on U. S. Highway 85, 1 mile downstream from Sheep Creek and 23 miles south of Newcastle, Weston County.

DRAINAGE AREA.--320 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.

Sediment records: March to September 1950.

EXTREMES, March to September 1950.--Sediment concentrations: Maximum daily, 13,700 ppm June 21; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 15,800 tons Apr. 12; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Discharge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent non- carbon- ate
																	Parts		Tons per acre- foot per day	Total	Non- carbon- ate	
																	per mil- lion	per foot				
Dec. 2, 1949.....	0.8	7.4	7.4	7,670	9.8	0.06	536	255	1,190	284	284	2,530	1,520	1.0	2.3	--	6,150	8.36	2,390	2,210	52	
Jan. 4, 1950.....	a. 3	7.7	7.7	10,000	19	--	660	378	1,620	448	448	3,330	2,060	1.0	3.6	--	8,330	11.3	3,250	2,880	52	
Feb. 1, 1950.....	a. 9	7.4	7.4	9,940	17	.02	820	425	1,220	496	496	3,360	1,800	1.0	3.2	0.10	7,990	10.7	3,190	3,360	41	
Mar. 3, 1950.....	a. 11	7.6	7.6	4,390	11	.02	425	111	522	240	240	1,500	1,100	.6	1.4	0.10	3,470	4.72	1,520	1,390	45	
Apr. 5, 1950.....	a. 132	7.7	7.7	2,300	16	.04	158	35	298	142	142	575	331	.6	3.2	.30	1,490	2.03	538	422	55	
May 2, 1950.....	12	7.5	7.5	7,160	9.1	.06	442	145	1,030	196	196	1,670	1,440	1.0	1.8	.30	4,840	6.58	1,700	1,540	57	
May 20, 1950.....	8.7	7.3	7.3	3,540	8.1	.04	248	84	478	159	159	1,150	496	.7	7.7	.20	2,550	3.47	989	889	51	
June 9, 1950.....	9	7.6	7.6	5,720	6.9	.04	420	172	793	191	191	2,050	840	.7	1.2	.30	4,380	5.96	1,760	1,600	50	
June 19, 1950.....	6	7.4	7.4	4,470	4.4	.04	344	123	840	156	156	1,830	510	.8	1.6	.20	3,530	4.80	1,360	1,230	50	
July 5, 1950.....	.3	7.2	7.2	2,310	5.4	.04	168	49	340	122	122	1,060	108	.8	1.1	--	1,790	2.43	621	521	54	
July 18, 1950.....	.3	7.4	7.4	2,740	4.6	.02	206	71	437	131	131	1,360	163	.9	.7	.34	2,310	3.14	806	699	54	
Aug. 16, 1950.....	19	7.4	7.4	1,660	9.4	.02	167	43	147	115	115	740	32	.7	3.3	.23	1,200	1.63	595	501	35	
Sept. 20, 1950.....	2.1	7.1	7.1	5,590	6.6	.02	396	150	791	104	104	1,920	875	1.0	3.1	.52	4,190	5.70	1,600	1,520	52	

a Mean daily discharge.

CHEYENNE RIVER BASIN--Continued

BEAVER CREEK NEAR NEWCASTLE, WYO.--Continued

Suspended sediment, March to September 1950									
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							--	--	--
2-----							--	--	--
3-----							--	--	--
4-----							--	--	--
5-----							--	--	--
6-----							--	--	--
7-----							--	--	--
8-----							--	--	--
9-----							--	--	--
10-----							--	--	--
11-----							--	--	--
12-----							--	--	--
13-----							--	--	--
14-----							--	--	--
15-----							--	--	--
16-----							20	62	3.3
17-----							22	54	3.2
18-----							24	46	3.0
19-----							25	44	3.0
20-----							27	--	e 4
21-----							29	65	5.1
22-----							31	90	7.5
23-----							32	140	12
24-----							32	245	21
25-----							32	273	24
26-----							33	--	e 22
27-----							34	240	22
28-----							35	460	43
29-----							43	680	79
30-----							52	423	59
31-----							45	487	59
Total-							516	--	370
	April			May			June		
1-----	40	550	59	11	--	e 1.6	2.8	54	0.4
2-----	69	--	e 500	12	53	1.7	1.2	54	.2
3-----	140	4,740	1,790	26	133	s 12	.7		
4-----	227	--	e 4,300	25	124	8.4	.9		
5-----	132	5,100	s 1,960	22	--	e 6.5	.7	52	.1
6-----	73	3,130	617	35	--	e 320	.7		
7-----	49	1,230	163	66	--	e 600	.8		
8-----	54	920	134	52	1,360	191	1.2	--	e .2
9-----	123	--	e 1,400	105	3,730	s 1,090	.8		
10-----	121	5,140	1,680	257	6,540	s 5,440	.7		
11-----	184	6,810	s 4,060	435	8,190	s 9,840	.4	35	(t)
12-----	478	11,900	s 15,800	198	8,030	s 4,870	.4		
13-----	163	7,560	s 3,570	52	3,250	456	.4		
14-----	61	1,490	245	35	750	71	.4		
15-----	43	570	66	29	275	22	.3		
16-----	34	360	33	23	93	5.8	.2		
17-----	30	--	e 24	16	73	3.2	.3	33	(t)
18-----	24	--	e 18	12	50	1.6	.5		
19-----	19	250	13	8.7			.6		
20-----	16	195	8.4	7.4			86	2,260	s 1,150
21-----	15	154	6.2	7.1			123	13,700	s 5,070
22-----	14			9.4	58	1.3	23	2,890	179
23-----	13			8.7			10	298	8.0
24-----	12	--	e 4	8.4			5.8	126	s 2.2
25-----	11			6.5			4.0	119	1.3
26-----	11			10	54	1.5	2.8	64	.5
27-----	11			7.8	56	1.2	1.5	53	.2
28-----	11	--	e 2	5.0			.9		
29-----	11			4.0	62	.6	.7	47	.1
30-----	11			2.8			.4		
31-----	--			3.4			--	--	--
Total-	2,200	--	36,470	1,500.2	--	22,960	272.1	--	6,410

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

MISSOURI RIVER BASIN

CHEYENNE RIVER BASIN--Continued

BEAVER CREEK NEAR NEWCASTLE, WYO.--Continued

Suspended sediment, March to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.2			0	--	0	0	--	0
2-----	.3			0	--	0	0	--	0
3-----	.4			0	--	0	0	--	0
4-----	.4			0	--	0	0	--	0
5-----	.4	35	(t)	0	--	0	0	--	0
6-----	.4			0	--	0	0	--	0
7-----	.3			0	--	0	6.4	--	e 15
8-----	.2			0	--	0	.9	380	.9
9-----	.1			0	--	0	.1	--	e .1
10-----	.1			0	--	0	.4	343	.4
11-----	.1			0	--	0	.1	--	e .1
12-----	.1			1.9	13	s .2	.1		
13-----	.1	39	(t)	3.4	36	.3	.1	52	.1
14-----	.1			2.2	43	.3	1.6		
15-----	.1			13	--	e 160	2.8		
16-----	.1			21	3,220	s 227	2.4	351	2.1
17-----	.2			6.0	392	6.4	1.5		
18-----	.4	46	(t)	1.6	141	.6	1.1	274	.7
19-----	.1			.4	116	.1	.8		
20-----	.1			.4			2.2	10	.1
21-----	0	--	0	.2	59	(t)	16	--	e 16
22-----	.4	115	.1	.1			7.8	315	s 7.7
23-----	.2	87	(t)	0	--	0	30	--	e 55
24-----	.1	20	(t)	0	--	0	11	465	14
25-----	.1			0	--	0	5.0		
26-----	0	--	0	0	--	0	3.0	112	1.0
27-----	0	--	0	0	--	0	1.6		
28-----	.1	12	(t)	0	--	0	.9		
29-----	.1			0	--	0	.5	28	(t)
30-----	0	--	0	0	--	0	.3		
31-----	0	--	0	0	--	0	--	--	--
Total-	5.2	--	0.7	50.2	--	395	96.6	--	120

Total discharge for period Mar. 16 to Sept. 30 (second-foot-days) 4,640.3
 Total load for period Mar. 16 to Sept. 30 (tons) 66,730

e Estimated.

s Computed by subdividing day.

t Less than 0.1 ton.

CHEYENNE RIVER BASIN--Continued

BEAVER CREEK NEAR NEWCASTLE, WYO.--Continued

Particle-size analyses of suspended sediment, April to August 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
			0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000		
Apr. 5, 1950.....	5:35 p. m.	97	4,350	6,300	25	25	28	93	100	--	--	--	--	--	PN
Apr. 5.....	5:35 p. m.	97	4,250	4,790	70	85	96	100	99	--	--	--	--	--	PWCM
Apr. 12.....	5:30 p. m.	398	9,940	6,670	68	81	91	98	99	99	99	100	100	100	SPWCM
May 9.....	6:50 p. m.	95	3,950	3,090	--	79	--	95	--	99	100	--	--	--	SPWCM
May 11.....	5:55 p. m.	368	6,380	4,780	--	74	--	96	--	100	--	--	--	--	SPWCM
May 12.....	5:30 p. m.	98	6,980	4,700	--	76	--	98	--	100	--	--	--	--	SPWCM
June 21.....	8:30 a. m.	162	15,600	3,250	72	83	94	99	100	--	--	--	--	--	PWCM
June 21.....	8:30 a. m.	162	15,600	3,240	0	2	12	97	97	100	--	--	--	--	SPN
June 21.....	3:05 p. m.	65	13,000	4,680	--	87	--	100	--	--	--	--	--	--	PWCM
June 21.....	7:45 p. m.	45	11,300	3,930	--	88	--	99	--	100	--	--	--	--	SPWCM
Aug. 16.....	12:15 p. m.	18	3,160	5,000	77	85	90	92	95	97	97	99	99	100	BWC

CHEYENNE RIVER BASIN--Continued

BELLE FOURCHE RIVER BELOW MOORCROFT, WYO.

LOCATION.--At gaging station at bridge on U. S. Highway 14, 2½ miles upstream from Wind Creek, and 5½ miles northeast of Moorcroft, Crook County.

DRAINAGE AREA.--1,730 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.

Sediment records: May to September 1950.

EXTREMES, May to September 1950.--Sediment concentrations: Maximum daily, not determined; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 7,300 tons (estimated); May 10; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to August 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent non-carbonate
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Dec. 6, 1949	0.1		7.8	2,260	16	0.02	136	64	335	460	895	14		0.4	1.8	0.40	1,690	2.30		603	226	55
Mar. 8, 1950	a.4		8.0	2,060	16	.04	95	63	325	454	780	12		.4	1.9	.10	1,520	2.07		496	124	59
Apr. 8	a.78		7.1	470	18	--	32	13	44	112	128	5		.4	2.6	--	332	4.5		134	42	42
May 5	112		7.3	695	20	.04	49	23	67	120	250	1.0		.4	1.4	--	504	69		217	119	40
May 20	1.5		7.8	1,190	11	.04	74	37	153	252	438	4.0		.4	1.5	--	860	1.17		337	130	50
June 8	1.9		7.9	1,790	8.7	.04	108	53	259	394	685	8.0		.4	1.2	--	1,320	1.80		488	165	54
June 23	.6		7.9	2,000	7.5	.10	112	63	298	350	850	8.0		.5	.9	--	1,510	2.05		539	252	55
July 6	.8		7.6	2,030	7.1	.06	105	60	291	374	785	11		.5	1.0	--	1,450	1.97		509	203	55
July 18	1.4		7.6	1,970	6.1	.02	116	65	327	364	910	14		.6	1.1	--	1,620	2.20		557	259	56
Aug. 16	1.4		7.5	1,160	7.8	.02	62	31	154	191	430	6.0		.5	1.4	.20	802	1.09		280	123	54

CHEYENNE RIVER BASIN--Continued

BELLE FOURCHE RIVER BELOW MOORCROFT, WYO.--Continued

Monthly and annual summary of water and suspended-sediment discharge, May to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Suspended sediment					
			Load (tons)	Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum daily
May	2,130.9	4,230	24,400	787	e 7,300	(t)	4,240	--
June	100.9	200	24.8	.8	5.1	(t)	91	145
July	15	31	2.5	.1	.3	0	59	--
August	71.8	142	515	16	502	0	2,630	1,650
September	0	0	0	0	0	0	--	--
Period, May 1 to Sept. 30	2,319.2	4,600	24,900	163	7,300	0	3,980	--

e Estimated.

t Sediment discharge less than 0.1 ton.

CHEYENNE RIVER BASIN--Continued
BELLE FOURCHE RIVER BELOW MOORCROFT, WYO.--Continued

Particle-size analyses of suspended sediment, May to August 1950
(Methods of analysis: B, bottom withdrawal tubes; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0. 002	0. 004	0. 008	0. 016	0. 031	0. 062	0. 125	0. 250		0. 350	0. 500	1. 000
May 4, 1950	1:10 p. m.	111	3,320	3,620	14	33	95	98	100	--						PN
May 4	1:10 p. m.	111	3,320	4,670	76	87	96	99	99	100						SPWCM
May 5	9:40 a. m.	112	1,390	3,220	--	90	--	97	--	98						SPWCM
May 9	2:45 p. m.	258	3,010	2,400	--	80	--	95	--	99						SPWCM
Aug. 14	2:40 p. m.	75	2,000	990	81	89	95	99	99	100						BWCM
Aug. 16	3:15 p. m.	1. 5	321	616	90	95	96	98	99	100						BWCM

CHEYENNE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN CHEYENNE RIVER BASIN IN SOUTH DAKOTA
Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (cusec-ft)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent non-carbonate
																	Parts per million	Tons per acre-foot	Total	Non-carbonate	

ANGOSTURA RESERVOIR

July 11, 1950	3,500	7.5	2,150	11	0.02	276	63	201	0	180	1,030	127	0.8	0.8	0.21	1.790	2.43	948	817	32
July 18	3,600	7.4	2,120	12	.02	271	67	199	0	180	1,030	127	8	1.2	.53	1.790	2.43	952	821	31
July 25	3,600	7.4	2,010	11	.02	267	62	201	0	184	1,010	120	8	1.3	--	1.750	2.38	921	787	32
Aug. 8	3,600	7.7	1,980	12	.04	232	52	172	0	183	883	93	7	1.4	.25	1.510	2.05	792	658	32
Aug. 15	3,500	7.6	1,990	10	.04	231	53	176	0	183	870	95	7	1.4	.25	1.520	2.07	794	660	32
Aug. 29	3,400	7.7	1,980	14	.04	234	50	177	0	168	865	93	7	1.1	.30	1.520	2.07	788	650	33
Sept. 19	3,100	7.6	2,000	12	.02	240	53	170	0	173	880	88	7	1.0	.20	1.530	2.08	816	674	31

CHEYENNE RIVER NEAR WASTA

Dec. 8, 1949	35	7.8	1,430	11	0.02	137	60	112	0	191	578	50	0.5	2.5	0.44	1,050	1.43	589	432	29	
Mar. 24, 1950	1,580	8.0	703	33	.04	43	6.8	109	0	156	213	13	13	5	3.4	.47	530	.72	136	8	64
July 25	136	8.1	2,100	15	.02	238	60	189	0	128	950	111	1	.1	.4	--	1,630	2.22	840	735	33

CHEYENNE RIVER NEAR EAGLE BUTTE

June 9, 1948	188	7.4	1,550	10	0.00	171	56	161	0	152	172	91	0.6	2.3	0.24	1,290	1.75	657	515	35
Oct. 1, 1948	24	7.6	2,130	28	.06	104	83	130	0	343	1,100	5	35	.6	2.5	1,120	1.54	801	510	34
Jan. 9, 1950	24	7.4	2,880	28	.04	330	16	180	0	343	1,533	31	5	2	.40	2,000	2.74	1,300	1,138	32
July 1	6,400	7.4	1,880	16	.04	223	83	194	0	156	923	11	2	1.5	.20	1,860	2.95	908	798	32
July 11	238	7.6	1,930	12	.02	223	83	194	0	134	1,110	43	8	1.2	--	1,740	2.37	734	613	35
Sept. 19	375	7.7	1,850	23	.02	187	65	180	0	148	925	26	6	3.1	--	1,480	2.01	734	613	35

BELLE FOURCHE RIVER NEAR STURGIS

Dec. 22, 1949	10	7.5	2,490	16	0.02	352	130	125	0	411	1,280	19	0.6	9.5	0.36	2,110	2.87	1,410	1,070	16
Jan. 20, 1950	4.7	7.7	2,680	25	.06	288	152	209	0	230	1,500	31	6	4.2	.21	2,320	3.16	1,340	1,150	25
Apr. 25	211	7.8	1,720	10	.04	149	78	147	0	166	805	22	5	6.7	.30	1,300	1.77	693	557	32
May 17	840	7.5	1,370	12	.04	138	54	103	0	172	605	13	5	1.1	.20	1,010	1.37	567	426	28
July 18	483	8.0	1,680	10	.02	206	71	108	0	172	840	14	1	5.0	.24	1,340	1.82	804	663	23
Sept. 19	284	7.7	1,850	6.5	.04	225	79	130	0	181	960	14	6	1.0	.30	1,510	2.05	888	740	24

BELLE FOURCHE RIVER NEAR ELM SPRINGS

Dec. 8, 1949	19	7.7	2,760	11	0.02	302	131	277	0	226	1,500	33	0.7	7.2	--	2,460	3.35	1,290	1,110	32
Feb. 1, 1950	2.9	7.8	3,630	24	.06	399	218	341	0	264	2,260	50	7	2.4	.31	3,420	4.65	1,890	1,670	28
Apr. 5	2,830	7.3	1,170	21	.06	119	36	101	0	158	495	12	3	1.3	.20	864	1.18	1,445	1,315	33
Apr. 26	284	7.5	1,860	10	.04	161	73	181	0	180	890	22	5	6.4	--	1,420	1.93	702	571	36
July 25	234	8.0	1,930	8.6	.02	218	87	142	0	158	1,010	18	5	4.5	--	1,570	2.14	902	772	26

a Reservoir storage, in acre-feet.

CHEYENNE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN CHEYENNE RIVER BASIN IN SOUTH DAKOTA--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

CHEYENNE RIVER AT ANGOSTURA RESERVOIR OUTLET

July 11, 1950	a 109	4	1.2
July 12	a 102	2	.6
July 14	a 134	1	.4
July 17	a 130	1	.4
July 18	a 121	1	.3
July 20	a 116	1	.3
July 21	a 112	1	.3
July 24	a 162	1	.4
July 25	a 182	1	.5
July 26	a 187	2	1.0
July 27	a 187	1	.5
July 28	a 182	1	.5
July 31	a 162	1	.4
Aug. 1	a 153	1	.4
Aug. 2	a 148	1	.4
Aug. 3	a 144	1	.4
Aug. 4	a 134	2	.7
Aug. 7	a 116	1	.3
Aug. 8	a 112	1	.3
Aug. 15	a 81	8	1.7
Aug. 29	a 55	6	.9
Sept. 19	a 28	2	.2

CHEYENNE RIVER BELOW ANGOSTURA DAM

July 11, 1950	109	42	12
July 18	125	66	22
July 26	197	79	42
Aug. 8	116	86	27
Aug. 15	79	19	4.1
Aug. 29	55	10	1.5
Sept. 19	28	12	.9

HAT CREEK NEAR EDMONT

May 18, 1950	18.3	73	3.6
June 7	.82	112	.2
June 22	4.46	127	1.5
June 30	e .001	42	.0001
July 18	e .75	103	.2
July 26	11.8	465	15

e Estimated.

a Mean daily discharge.

CHEYENNE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN CHEYENNE RIVER BASIN IN SOUTH DAKOTA--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
			0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
HAT CREEK NEAR EDGE MONT															
Apr. 4, 1950	5:20 p.m.		377	903	58	76	88	--	98	99	100				BW
May 3	8:00 a.m.		1,870	5,700	57	77	94	98	98	99					SPW/CM
July 26	4:00 p.m.	11.8	465	1,230	--	94	--	99	--	100					SPW/CM

BAD RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN BAD RIVER BASIN IN SOUTH DAKOTA

Chemical analyses, in parts per million, March to April 1950																						
Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent non- carbon- ate	
																Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate		
BAD RIVER NEAR MIDLAND																						
Mar. 2, 1950	14	6.8	859	15	0.10	77	14		109	0	176	289	19	0.2	2.8	--	662	0.90		250	106	49
Mar. 31	4,270	7.7	474	14	.04	65	5.2	29	0	164	103	2.0		.2	1.9	0.05	348	.47		184	50	25
Apr. 27	11	7.5	824	14	.04	72	7.5	98	0	164	258	12		.4	1.8	.30	590	.80		211	77	50
June 22	.2	7.4	2,000	9.4	.02	172	34	284	0	173	940	45		.4	.7	.20	1,570	2.14		569	427	52
Sept. 21	7	7.7	1,520	18	.02	105	18	212	0	132	608	38		.4	.4	.20	1,060	1.44		336	228	56
BAD RIVER NEAR FORT PIERRE																						
Mar. 28, 1950	863	7.5	614	23	0.02	73	9.3	49	0	164	173	6.0		0.2	2.3	0.30	510	0.69		220	86	32
Apr. 1	15,100	7.5	678	17	.04	78	9.5	61	0	160	212	8.0		.6	1.6		502	.68		234	103	36

BAD RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN BAD RIVER BASIN IN SOUTH DAKOTA--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
BAD RIVER NEAR FORT PIERRE			
Mar. 28, 1950.....	842	6,580	15,000
Mar. 31.....	10,500	18,500	524,000
Apr. 1.....	15,000	13,200	535,000
Apr. 2.....	12,600	14,600	497,000
Apr. 3.....	9,490	18,400	471,000
Apr. 4.....	4,900	20,200	267,000
Apr. 5.....	2,810	18,400	140,000
Apr. 7.....	2,000	21,100	114,000
Apr. 10.....	601	4,440	7,200
Apr. 12.....	524	8,220	11,600
May 2.....	38.9	178	19
May 8.....	8,030	45,000	1,010,000
May 9.....	5,540	28,400	425,000
May 10.....	4,660	20,100	253,000
June 2.....	18.5	86	4.3
June 13.....	5.8	91	1.4
June 30.....	3.7	205	2.0
Sept. 21.....	5,140	41,700	595,000

BAD RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN BAD RIVER BASIN IN SOUTH DAKOTA--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
BAD RIVER NEAR FORT PIERRE															
Mar. 28, 1950.....	4:00 p. m.	842	6,850	14,900	51	66	--	--	--	--	100	--	--	--	SPWCM
Mar. 31.....	4:00 p. m.	10,500	18,500	18,800	44	56	--	--	--	--	90	100	--	--	SPWCM
Apr. 1.....	1:10 a. m.	15,000	13,200	6,300	52	68	79	88	94	98	--	--	--	--	SPWCM
Apr. 1.....	1:10 a. m.	15,000	13,200	6,540	1	3	12	84	92	98	--	--	--	--	SPN
Apr. 2.....	3:30 p. m.	12,600	14,600	13,700	50	63	--	--	--	--	92	--	--	--	SPWCM
Apr. 3.....	1:15 p. m.	9,480	18,400	4,610	51	63	72	79	84	92	96	99	--	100	SPWCM
Apr. 3.....	1:15 p. m.	9,490	18,400	4,750	--	9	16	85	87	92	96	99	--	100	SPN
Apr. 4.....	12:15 p. m.	4,900	20,200	7,990	--	58	--	75	--	92	100	--	--	--	SPWCM
Apr. 5.....	1:30 p. m.	2,810	18,400	10,000	--	62	--	80	--	95	100	--	--	--	SPWCM
Apr. 10.....	3:00 p. m.	2,000	21,100	10,200	--	67	--	83	--	96	100	--	--	--	SPWCM
Apr. 10.....	3:00 p. m.	601	4,440	4,490	--	73	--	88	--	96	100	--	--	--	SPWCM
Apr. 12.....	1:30 p. m.	324	6,220	4,240	--	79	--	94	--	99	100	--	--	--	SPWCM
May 8.....	5:20 p. m.	8,030	45,000	11,000	--	69	--	87	--	97	100	--	--	--	SPWCM
May 9.....	4:00 p. m.	5,540	28,400	6,800	--	64	--	82	--	95	100	--	--	--	SPWCM
May 10.....	4:00 p. m.	4,660	20,100	9,310	44	56	66	75	83	92	97	99	--	100	SPWCM
May 10.....	4:00 p. m.	4,660	20,100	11,400	2	3	5	62	70	90	96	99	--	100	SPN
Sept. 21.....	11:44 a. m.	5,100	41,700	10,400	--	72	--	91	--	99	--	--	--	--	SPWCM

WHITE RIVER BASIN

WHITE RIVER NEAR OGLALA, S. DAK.

LOCATION(revised).--At gaging station at bridge on U. S. Highway 18, 3 miles downstream from Blacktail Creek, and 7 miles northwest of Oglala, Shannon County.

DRAINAGE AREA.--2,200 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1946 to August 1947, December 1949 to September 1950.

Water temperatures: April 1949 to September 1950.

Sediment records: March 1947 to September 1950.

Sediment concentrations: Maximum daily, 29,300 ppm Sept. 15; minimum daily, not determined.

Sediment loads: Maximum daily, 9,870 tons May 10; minimum daily, 0.3 ton Jan. 28, '50.

EXTREMES, 1947-50.--Water temperatures (April 1949 to September 1950): Maximum, 79° F July 6, Aug. 2, 1949, July 10, 1950; minimum, freezing point on many days during December, 1949 to April, 1950.

Sediment concentrations: Maximum daily, 34,000 ppm Nov. 2, 1948; minimum daily, not determined.

Sediment loads: Maximum daily, 9,600 tons May 24, 1949; minimum daily, 0.3 ton Jan. 19, Feb. 2, 1949, Jan. 29, 30, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃	
															Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate
															Bo-ron (B)				
Dec. 5, 1949	17	7.8	1,080	30	0.02	84	23	137	320	283	20	0.6	1.8	0.40	766	1.07		300	38
Jan. 30, 1950	8	8.1	818	61	12	79	19	89	344	153	16	.6	2.5	.30	826	.85		275	0
Feb. 27	59	7.9	549	45	14	59	10	55	240	93	8.0	.5	1.4	.30	408	.55		188	0
Apr. 11	68	7.5	629	38	.04	52	7.9	78	246	109	8.0	.5	3.7	.20	432	.59		162	0
May 17	61	7.6	698	37	.04	60	8.0	93	258	150	10	.5	3.0	--	500	.68		183	0
May 23	48	8.0	731	35	.04	59	11	91	256	156	11	.5	1.2	.30	502	.68		193	0
June 7	32	7.7	787	37	.10	59	10	100	272	160	9.0	.5	2.1	--	538	.73		188	0
June 12	31	7.8	935	35	.16	74	14	116	275	233	15	.6	2.3	.20	646	.88		241	15
June 22	47	7.5	548	48	10	32	2.8	90	230	85	5.0	.5	2.1	--	398	.54		92	0
June 30	10	7.7	902	39	.04	66	9.5	129	288	223	9.0	.6	2.3	--	648	.88		204	0
July 11	26	7.5	554	43	.04	38	3.0	77	200	94	7.0	.5	1.4	--	380	.52		108	0
July 17	7	8.0	706	31	.02	51	4.6	102	182	180	6.5	.1	3.8	--	504	.69		146	0
July 25	47	7.4	695	45	.04	56	5.4	97	224	163	11	.5	1.8	--	502	.68		162	0
Aug. 7	8	7.5	1,080	16	.02	123	13	110	199	398	12	.6	3.5	.52	814	1.11		360	197
Aug. 15	20	7.6	828	35	.04	53	6.7	126	245	203	13	.7	1.6	.25	566	.77		160	0
Sept. 6	8	7.6	806	39	.02	65	10	99	231	208	11	.8	5.0	--	558	.76		203	93
Sept. 19	49	7.6	722	38	.02	46	3.4	111	205	176	9.5	.6	4.9	--	508	.69		129	0
Sept. 26	23	8.0	594	48	.04	35	3.5	83	208	113	7.5	.5	4.5	--	408	.55		102	0

WHITE RIVER BASIN--Continued

WHITE RIVER NEAR OGLALA, S. DAK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement between 4 p. m. and 7 p. m.7

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	43	34	32		--	31	--	37	70	67	72
2	61	41	32	32		34	34	51	49	71	73	72
3	59	43	34	32		35	39	49	38	72	74	72
4	61	41	33	32		36	31	--	36	72	74	72
5	60	40	32	32		40	34	--	30	73	72	73
6	59	41	34	--		41	35	--	32	69	75	70
7	49	40	32	--		33	--	--	69	75	70	72
8	48	39	33	--		32	39	--	65	76	75	63
9	49	38	34	--		32	33	--	65	75	73	65
10	52	44	--	--		31	38	--	66	79	72	57
11	48	40	32	--		32	39	--	71	78	72	51
12	50	39	35	--		32	32	--	74	70	72	58
13	47	37	36	--		31	43	--	75	69	73	54
14	47	39	32	--		31	44	--	74	66	71	57
15	49	38	32	--		34	45	--	74	71	75	54
16	49	32	39	--		43	48	--	68	65	72	54
17	46	35	31	--		32	50	--	68	68	70	60
18	50	39	35	--		33	45	52	69	67	71	62
19	43	41	32	--		35	42	52	68	68	65	61
20	44	35	31	--		34	43	48	66	72	66	60
21	39	32	32	--		34	47	44	74	67	65	61
22	41	33	34	--		32	52	45	70	61	69	61
23	40	45	34	--		34	54	49	71	66	70	59
24	45	38	32	--		32	47	31	76	65	69	60
25	45	39	32	--		31	48	37	71	70	66	59
26	46	38	32	--		32	42	34	69	71	65	61
27	45	40	32	--		32	44	36	71	74	65	57
28	44	44	32	--		32	38	40	70	75	66	55
29	44	45	33	--		34	--	41	69	71	68	50
30	42	36	35	--		32	--	37	72	72	72	49
31	42	--	32	--		31	--	41	--	68	72	--
Average	48	39	33	--		34	41	--	64	70	70	61

WHITE RIVER BASIN--Continued
 WHITE RIVER NEAR OGLALA, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6			16			20	52	2.8
2-----	6			17			20	64	3.5
3-----	6	129	2.1	17			19	70	3.6
4-----	6			17	54	2.5	17	41	1.9
5-----	6			16			17	55	2.5
6-----	10			17			18	74	3.6
7-----	10	106	2.8	17			20	55	3.0
8-----	9			18			18	78	3.8
9-----	9			23	--	e 8	17	60	2.8
10-----	16	175	7.6	40	180	19	18		
11-----	22	455	27	38	163	17	19	44	2.1
12-----	19	205	11	38	142	15	17		
13-----	20	235	13	38	149	15	15		
14-----	26	400	28	38	117	12	15	49	2.0
15-----	28	360	27	30	95	7.7	15		
16-----	18	218	11	24	82	5.3	16	63	2.7
17-----	16	265	11	21	72	4.1	17		
18-----	16	170	7.3	19	72	3.7	17	40	1.8
19-----	20	152	8.2	18			17		
20-----	19	240	12	18	59	2.8	16		
21-----	19	210	11	17			15	36	1.5
22-----	18	105	5.1	17			15		
23-----	18			19			15		
24-----	20			20	56	2.9	15	27	1.1
25-----	18	85	4.4	18			15		
26-----	18			19			15		
27-----	21			22			15		
28-----	18			21	63	3.7	16		
29-----	17			22			17	30	1.4
30-----	17	75	3.5	21			19		
31-----	17			--	--	--	20		
Total-	489	--	237	676	--	164	525	--	63.7
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	20	57	3.1	8			65	117	21
2-----	18	45	2.2	9	33	0.8	60	71	12
3-----	15	36	1.5	11			55	58	8.6
4-----	11	21	.6	12	44	1.4	60	85	14
5-----	11			15	28	1.1	65	97	17
6-----	12			18	62	3.0	75		
7-----	13	17	.6	21	57	3.2	80	99	21
8-----	15			23	81	5.0	85		
9-----	16			27	81	5.9	80	73	16
10-----	17	24	1.1	30	--	e 5	75	69	14
11-----	17	21	1.0	32	--	e 3	70	55	10
12-----	17			30	24	1.9	65		
13-----	16			27			65	38	6.8
14-----	14	15	.6	25	19	1.3	70		
15-----	12			25			75	45	9.1
16-----	10			30	27	2.2	80	132	29
17-----	10			36	32	3.1	90	190	46
18-----	9	18	.5	42	31	3.5	90	53	13
19-----	10			47	36	4.6	80	48	10
20-----	12	74	2.4	50			85	60	14
21-----	15	80	3.2	55	26	3.7	90	47	11
22-----	18	43	2.1	55			95	263	67
23-----	20	60	3.2	50			110	705	209
24-----	19	109	5.6	50	37	5.0	120	358	116
25-----	17	54	2.5	50			137	200	74
26-----	12	23	.7	55	57	8.5	154	220	91
27-----	10	22	.6	60	36	5.8	154	192	80
28-----	10	15	.4	65	70	12	142	235	90
29-----	9	14	.3	--	--	--	126	290	99
30-----	7	18	.3	--	--	--	129	308	107
31-----	8	21	.5	--	--	--	121	437	143
Total-	420	--	38.7	958	--	102	2,848	--	1,400

e Estimated.

MISSOURI RIVER BASIN

WHITE RIVER BASIN--Continued

WHITE RIVER NEAR OGLALA, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	114	610	188	63	1,990	338	68	580	106
2-----	92	1,190	s 302	80	2,560	553	61	497	82
3-----	87	1,000	235	99	2,670	714	44	455	54
4-----	114	1,510	465	114	3,310	s 1,110	38	2,000	205
5-----	108	1,380	402	134	7,640	2,760	35	1,820	172
6-----	92	4,000	994	111	13,000	3,900	33	4,280	381
7-----	84	3,970	900	84	9,600	2,180	32	1,650	143
8-----	87	5,370	1,260	115	6,650	s 2,100	28	980	74
9-----	80	2,400	518	320	--	e 8,100	28	890	67
10-----	72	1,790	348	352	10,100	s 9,870	30	674	55
11-----	68	2,870	527	287	9,930	s 7,890	27	590	43
12-----	61	2,700	445	176	18,600	s 9,220	30	570	46
13-----	81	2,290	s 521	108	10,600	3,090	30	532	s 44
14-----	111	5,320	s 1,650	84	5,900	1,340	32	4,100	354
15-----	70	11,200	2,120	72	2,900	564	31	1,680	141
16-----	61	13,000	2,140	68	1,900	349	30	910	74
17-----	58	9,050	1,420	63	1,320	225	75	2,600	526
18-----	63	4,100	697	61	950	156	72	3,870	752
19-----	66	1,560	287	61	680	112	51	9,800	1,350
20-----	54	750	108	57	578	89	80	15,000	s 2,520
21-----	48	522	68	52	465	65	41	10,200	1,130
22-----	45	475	58	49	438	58	50	9,700	1,310
23-----	47	420	53	48	360	47	34	5,000	459
24-----	48	400	52	48	800	104	24	2,300	149
25-----	45	335	41	46	378	47	19	4,600	236
26-----	39	295	31	44	262	31	15	7,500	304
27-----	43	255	30	44	250	30	12	1,400	45
28-----	45	2400	29	46	246	31	11	690	20
29-----	50	265	36	49	305	40	11	535	16
30-----	53	900	129	52	332	47	10	510	14
31-----	--	--	--	52	298	42	--	--	--
Total--	2,066	--	16,040	3,039	--	55,200	1,062	--	10,870
Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	10	485	13	20	2,190	118	30	4,550	s 388
2-----	12	515	17	16	1,720	74	19	3,550	182
3-----	13	520	18	13	700	25	12	2,100	68
4-----	13	645	23	16	1,020	44	9	2,650	64
5-----	12	715	23	17	1,140	52	7	602	11
6-----	12	530	17	16	720	31	7	419	7.9
7-----	15	455	18	9	292	7.1	7	255	4.8
8-----	14	430	16	14	312	12	6	372	6.0
9-----	13	440	15	16	500	22	5	445	6.0
10-----	11	432	13	13	492	17	6	432	7.0
11-----	10	400	11	9	298	7.2	6	357	5.8
12-----	11	450	13	8	232	5.0	7	272	5.1
13-----	10	326	8.8	14	6,060	s 237	44	1,860	s 317
14-----	8	282	6.1	26	1,510	s 109	45	9,100	1,110
15-----	38	1,090	s 143	21	1,810	103	28	29,300	2,080
16-----	33	2,700	241	41	3,000	332	19	22,000	1,130
17-----	31	5,620	s 452	25	3,000	202	19	18,500	949
18-----	23	7,100	441	14	1,250	47	21	13,900	788
19-----	13	3,500	123	10	1,500	40	50	9,580	s 1,320
20-----	16	2,100	91	7	1,360	26	78	10,700	2,250
21-----	11	1,950	58	10	685	18	110	14,500	s 4,170
22-----	10	1,980	53	8	458	9.9	87	11,100	s 2,770
23-----	10	580	16	7	495	9.4	43	6,380	741
24-----	33	3,510	s 592	6	560	9.1	50	6,290	849
25-----	51	14,200	s 1,930	5	592	8.0	28	4,700	355
26-----	48	7,500	972	13	3,180	s 107	17	10,400	477
27-----	27	2,980	217	22	2,010	s 126	16	5,780	250
28-----	23	4,630	288	77	6,250	s 1,610	13	4,800	168
29-----	29	2,400	188	52	10,700	s 1,560	13	1,820	64
30-----	31	10,500	879	22	5,850	347	22	1,490	s 105
31-----	28	2,920	221	14	4,400	166	--	--	--
Total--	619	--	7,120	561	--	5,480	822	--	20,630
Total discharge for year (second-foot days)									14,105
Total load for year (tons)									117,300

e Estimated.

s Computed by subdividing day.

WHITE RIVER BASIN--Continued
WHITE RIVER NEAR OGALA, S. DAK.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Apr. 5, 1950	9:20 a. m.	99	1,260	3,270	--	76	--	90	--	99	--	--	--	--	SPWCM
Apr. 6	5:45 p. m.	82	5,540	4,770	--	83	--	97	--	100	--	--	--	--	SPWCM
Apr. 14	7:30 a. m.	124	8,320	7,120	--	68	--	94	--	100	--	--	--	--	SPWCM
Apr. 16	1:15 p. m.	59	12,900	10,400	--	80	--	98	--	100	--	--	--	--	SPWCM
May 3	11:50 a. m.	94	2,110	4,520	61	72	82	91	100	--	--	--	--	--	PWCM
May 3	6:30 p. m.	104	2,680	2,310	--	72	--	91	--	100	--	--	--	--	SPWCM
May 5	7:00 a. m.	142	4,420	3,790	--	52	--	90	--	99	--	--	--	--	SPWCM
May 6	6:30 a. m.	134	13,600	3,340	56	71	88	99	99	100	--	--	--	--	SPWCM
May 6	6:30 a. m.	134	13,600	3,040	2	4	11	--	--	98	99	--	--	--	BN
May 8	8:30 a. m.	75	6,350	5,610	--	81	--	99	--	100	--	--	--	--	SPWCM
May 10	8:30 a. m.	409	9,940	4,360	--	62	--	88	--	99	--	--	--	--	SPWCM
May 11	7:00 a. m.	244	8,280	3,660	--	60	--	86	--	99	--	--	--	--	SPWCM
May 12	9:00 a. m.	176	21,800	4,210	--	57	--	87	--	99	--	--	--	--	SPWCM
May 14	7:00 a. m.	87	6,780	3,150	--	74	--	85	--	99	--	--	--	--	SPWCM
May 17	6:15 p. m.	61	1,260	2,890	--	69	--	91	--	99	--	--	--	--	SPWCM
June 4	8:30 a. m.	39	1,810	1,460	--	88	--	100	--	--	--	--	--	--	PWCM
June 4	6:30 p. m.	37	2,840	2,250	--	92	--	100	--	--	--	--	--	--	PWCM
June 6	8:30 a. m.	34	5,920	2,240	--	93	--	100	--	--	--	--	--	--	PWCM
June 7	10:00 a. m.	32	1,700	2,540	--	87	--	99	--	100	--	--	--	--	SPWCM
June 14	6:30 p. m.	28	8,490	7,610	--	77	--	98	--	100	--	--	--	--	SPWCM
June 19	7:00 p. m.	42	18,800	8,860	--	81	--	100	--	--	--	--	--	--	PWCM
June 20	8:30 a. m.	72	15,800	7,710	--	82	--	99	--	100	--	--	--	--	SPWCM
June 24	8:30 a. m.	25	2,760	2,180	69	85	96	98	99	100	--	--	--	--	BWC
June 26	7:30 p. m.	15	2,560	2,010	66	93	97	98	100	--	--	--	--	--	BWC
July 16	6:30 p. m.	26	2,770	2,200	59	76	90	97	99	100	--	--	--	--	BWC
July 17	8:30 a. m.	44	3,170	2,680	59	79	91	99	100	--	--	--	--	--	BWC
July 17	6:50 p. m.	26	8,820	2,370	87	89	98	98	99	100	--	--	--	--	SPWCM
July 17	6:50 p. m.	26	8,820	7,010	4	7	87	99	100	--	--	--	--	--	PN
July 18	7:30 a. m.	31	7,290	6,500	4	78	99	99	100	--	--	--	--	--	SPWCM
July 24	2:00 p. m.	7	5,620	4,480	--	54	--	86	--	99	--	--	--	--	SPWCM

WHITE RIVER BASIN--Continued
WHITE RIVER NEAR OGLALA, S. DAK.--Continued

Particle-size analyses of suspended sediment, April to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000	
July 24, 1950.....	7:00 p. m.	89	6,830	5,570	--	55	--	--	96	--	100	--	--	--	--	--	SPWCM
July 25.....	6:30 p. m.	47	18,100	14,600	1	1	68	99	96	99	100	--	--	--	--	--	SPN
July 25.....	6:30 p. m.	47	18,100	5,110	59	79	95	100	100	--	--	--	--	--	--	--	PWCM
July 28.....	6:30 p. m.	27	3,640	2,730	--	86	--	--	100	--	--	--	--	--	--	--	PWCM
Aug. 6.....	8:00 a. m.	18	938	660	73	86	96	--	98	99	100	--	--	--	--	--	BWC
Aug. 13.....	9:30 a. m.	11	7,140	5,230	--	82	--	--	99	--	100	--	--	--	--	--	SPWCM
Aug. 16.....	8:00 a. m.	44	2,440	1,810	69	80	90	96	97	96	98	100	--	--	--	--	BWC
Aug. 24.....	4:00 p. m.	6	558	414	81	97	99	99	100	100	--	--	--	--	--	--	BWC
Aug. 26.....	6:00 p. m.	10	2,040	1,360	71	80	82	99	99	100	--	--	--	--	--	--	BWC
Aug. 28.....	6:30 a. m.	30	2,920	2,380	62	77	92	99	100	--	--	--	--	--	--	--	BWC
Aug. 28.....	7:00 p. m.	121	10,600	4,690	--	66	--	--	90	--	100	--	--	--	--	--	SPWCM
Sept. 13.....	5:00 p. m.	77	2,320	1,840	60	70	84	96	99	100	--	--	--	--	--	--	BWC
Sept. 14.....	8:00 a. m.	47	10,500	4,080	--	78	--	--	100	--	--	--	--	--	--	--	SPWCM
Sept. 15.....	6:30 a. m.	25	30,200	6,770	57	77	93	99	100	--	--	--	--	--	--	--	SPWCM
Sept. 16.....	8:00 a. m.	17	22,600	9,450	--	92	--	--	100	--	--	--	--	--	--	--	PWCM
Sept. 17.....	7:30 a. m.	19	19,400	8,730	--	90	--	--	98	--	100	--	--	--	--	--	SPWCM
Sept. 19.....	12:45 p. m.	52	10,300	5,190	0	1	8	90	98	100	100	--	--	--	--	--	SPN
Sept. 19.....	12:45 p. m.	52	10,300	5,220	59	70	79	87	97	99	100	--	--	--	--	--	BWC
Sept. 20.....	10:00 a. m.	94	10,400	5,910	49	58	72	91	95	99	100	--	--	--	--	--	BWC
Sept. 20.....	10:00 a. m.	94	10,400	5,790	--	1	3	--	--	--	99	100	--	--	--	--	BN
Sept. 20.....	11:00 a. m.	96	7,530	3,020	--	57	--	--	85	--	99	--	--	--	--	--	SPWCM
Sept. 21.....	5:30 p. m.	148	11,600	5,250	--	64	--	--	90	--	99	--	--	--	--	--	SPWCM
Sept. 22.....	6:45 a. m.	104	14,400	6,470	--	84	--	--	100	--	--	--	--	--	--	--	PWCM
Sept. 22.....	5:20 p. m.	68	8,300	3,550	--	84	--	--	99	--	100	--	--	--	--	--	SPWCM
Sept. 23.....	6:00 a. m.	42	7,460	3,340	--	82	--	--	97	--	99	--	--	--	--	--	SPWCM
Sept. 25.....	6:00 p. m.	19	3,580	3,000	73	83	94	97	98	99	100	--	--	--	--	--	BWC
Sept. 30.....	2:30 p. m.	34	2,320	1,990	59	80	90	94	96	98	99	100	--	--	--	--	BWC

WHITE RIVER BASIN--Continued
WHITE RIVER NEAR KADOKA, S. DAK.

LOCATION.--At gaging station at bridge on State Highway 73, 5 miles downstream from Cottonwood Creek, 6 miles south of Kadoka, Jackson County, and 7 miles upstream from Pass Creek.

DRAINAGE AREA.--5,000 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1949 to September 1950.

Water temperatures: April 1949 to September 1950.

Sediment records: April 1949 to September 1950.

EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,600 ppm Jan. 1-31; minimum, 278 ppm Mar. 24-27.

Hardness: Maximum, 464 ppm Jan. 1-31; minimum, 13 ppm Sept. 21-23, 24-30.

Specific conductance: Maximum, 236 microhos Feb. 5; minimum daily, 344 microhos Mar. 24.

Water temperatures: Maximum, 73° F., 2,800 microhos Feb. 5; minimum daily, 344 microhos Mar. 24.

Sediment load: Maximum daily, 66,600 ppm Sept. 21; minimum daily, 0 tons Jan. 4-8, 13-19.

EXTREMES March 1949 to September 1950.--Dissolved solids: Maximum, 1,600 ppm Jan. 1-31, 1950; minimum, 245 ppm Mar. 3, 1949.

Hardness: Maximum, 464 ppm Jan. 1-31, 1950; minimum, 13 ppm Sept. 21-23, 24-30, 1950.

Specific conductance: Maximum daily, 2,880 microhos Feb. 5, 1950; minimum daily, 333 microhos Mar. 3, 1949.

Water temperatures (April 1949 to September 1950): Maximum, 84° F. Aug. 11, 1949; minimum, freezing point on many days during winter months.

Sediment concentrations (April 1949 to September 1950): Maximum daily, 66,600 ppm Sept. 21, 1950; minimum daily, no flow Jan. 4-8, 13-19, 1950.

Sediment loads (April 1949 to September 1950): Maximum daily, 531,000 tons May 9, 1950; minimum daily, 0 tons Jan. 4-8, 13-19, 1950.

REMARKS.--Daily samples for chemical analysis composited by discharge. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-foot)	pH	Specific conductance (microhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium
																	Parts per million	Tons per acre-foot	Total	Non-carbonate	
																	per day				
Oct. 1-9, 1949	35	8.1	620	33	0.02	29	1.0	176	5.9	0	260	233	9.0	0.7	4.4	0.36	630	0.86	60	77	0
Oct. 10-12	1,290	8.1	523	40	0.11	19	1.5	121	6.9	0	298	138	7.3	--	4.2	.50	424	.41	1,630	44	0
Oct. 13-31	48	7.9	632	36	0.04	59	6.7	161	7.6	0	292	253	13.0	--	4.2	.27	684	.93	55	54	0
Nov. 1-31	28	8.3	830	54	0.04	62	11	124	8.0	12	298	198	11	--	1.8	.23	630	.84	55	200	0
Nov. 2-30	33	8.3	830	54	0.04	62	11	124	8.0	12	298	198	11	--	1.8	.23	630	.84	55	200	0
Dec. 1-31	20	7.9	1,700	85	0.04	132	26	272	16	0	758	383	25	--	1.4	.37	1,310	1.78	71	437	0
Jan. 1-31, 1950	4.6	7.9	2,050	102	0.10	138	29	364	21	0	974	435	29	--	1.4	.52	1,600	2.18	20	464	0
Feb. 1-16	23	7.9	1,200	60	0.04	71	11	218	9.2	0	560	210	15	--	2.4	.34	882	1.20	55	232	0
Feb. 17-28	20	7.8	1,140	43	0.04	46	6.5	218	5.9	0	388	270	16	--	4.0	--	806	1.10	44	142	0
Feb. 18-28	154	8.0	695	45	0.04	34	3.0	135	6.4	0	346	97	8.0	--	3.1	.35	506	.69	210	98	0
Mar. 1-22	353	7.7	493	35	0.04	29	2.6	84	4.2	0	232	71	6.0	--	4.4	.32	354	.48	337	83	0
Mar. 23-27	2,700	8.0	398	40	0.10	19	5.0	68	5.2	0	202	42	2.0	--	3.7	--	296	.40	2,160	68	0
Mar. 28-31	1,340	8.3	364	30	0.03	13	.5	76	4.1	4	192	11	3.0	--	3.1	--	279	.39	959	33	0
Mar. 28-31	422	7.9	489	38	0.06	21	.9	94	6.0	0	241	51	4.0	--	1.7	.10	346	.47	394	56	0
Apr. 1-4	952	8.1	455	42	0.06	16	.5	92	5.4	0	239	38	4.0	--	1.6	.20	332	.45	853	42	0
Apr. 5-19	255	7.9	507	41	0.02	25	1.9	91	5.8	0	239	57	5.0	--	1.6	.10	360	.49	248	71	0

WHITE RIVER BASIN--Continued
WHITE RIVER NEAR KADOKA, S. DAK.--Continued

Chemical analyses, in parts per million, water October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids		Hardness as CaCO ₃		Percent non-carbonate
																	Parts per million	Tons per acre-foot	Total	Non-carbonate	
Apr. 20, 1950.....	105	8.0	654	55	0.02	45	4.1	101	5.7	0	283	95	13	0.5	2.1	0.10	482	0.66	129	0	62
Apr. 20.....	105	7.8	560	36	.04	36	1.4	94	7.0	0	254	71	12	.6	2.4	.10	408	.55	96	0	66
Apr. 21-May 1.....	146	7.9	606	46	.02	34	3.6	101	6.3	0	269	81	6.0	.6	2.2	.10	448	.61	177	0	67
May 2-8.....	1,500	8.1	488	40	.40	10	.6	104	5.5	0	237	55	4.0	.6	1.3	.30	374	.51	1,510	27	87
May 9.....	4,400	8.1	476	34	.40	13	.5	103	5.3	0	234	52	9.0	.8	.9	.20	253	.48	4,180	33	85
May 10-14.....	1,210	8.1	565	40	.20	18	.1	105	5.4	0	208	96	8.0	.8	.4	.20	402	.55	1,310	46	81
May 15-June 14.....	90	8.0	751	42	.06	38	5.2	127	7.7	0	249	168	8.0	.6	.8	.30	536	.73	130	117	69
June 15-17.....	364	8.0	747	46	.16	24	1.2	141	8.2	0	268	118	13	.6	3.9	.30	534	.73	525	65	80
June 18-July 16.....	52	8.0	698	46	.10	15	.9	139	7.2	0	259	118	8.0	.8	1.7	.30	504	.69	71	41	86
July 17-25.....	235	8.0	562	42	.40	7.0	.7	127	6.9	0	277	58	5.5	1.0	.9	.30	436	.59	277	21	91
July 26-31.....	81	8.2	560	46	.40	8.0	1.3	125	6.4	0	244	89	5.5	1.0	2.2	.30	456	.62	100	25	89
Aug. 1-4.....	22	8.4	686	50	.08	10	.1	144	5.9	7	235	127	6.0	.6	2.2	.30	498	.68	30	26	90
Aug. 5-7.....	282	8.1	637	36	.08	11	.3	138	5.1	0	232	84	7.4	.8	1.6	.20	452	.61	344	29	90
Aug. 8-10.....	181	8.2	581	46	.04	8.0	.7	122	4.3	0	262	77	6.0	1.0	.9	.20	424	.58	207	23	90
Aug. 11-15.....	832	7.9	519	48	.04	8.0	.7	114	5.2	0	280	46	3.0	.8	1.0	.20	416	.57	935	23	89
Aug. 16-25.....	87	8.2	468	45	.04	8.0	.4	100	6.0	0	230	56	4.0	.6	1.5	.10	344	.47	81	22	88
Aug. 26-Sept. 2.....	211	8.2	558	45	.04	8.0	.2	121	5.9	0	271	61	4.0	1.0	1.5	.20	400	.54	238	21	90
Sept. 3-11.....	51	8.1	769	43	.04	15	.6	157	6.2	0	253	156	7.5	.8	2.6	.20	532	.72	73	40	88
Sept. 12-20.....	214	8.0	531	41	.04	3.0	1.6	117	5.1	0	262	54	4.0	1.0	1.6	.20	376	.51	217	14	93
Sept. 21-23.....	8.4	8.4	484	41	.04	3.0	1.3	108	4.7	8	238	44	5.0	.8	1.1	.30	344	.47	1,220	13	92
Sept. 24-30.....	166	8.5	650	44	.04	4.0	.9	123	5.6	7	229	72	4.5	.8	4.2	.20	390	.53	175	13	93
Weighted average.....	219	--	546	41	0.16	18	1.7	108	5.7	--	b 251	76	5.7	0.6	1.8	0.26	406	0.55	240	52	80

a. Weighted mean for day.

b. Includes carbonate as bicarbonate.

WHITE RIVER BASIN--Continued

WHITE RIVER NEAR KADOKA, S. DAK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

/Once-daily temperature measurement at approximately 8 a. m., except Dec. 18 to Apr. 21 readings at about 4 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	44	--	--	37	--	38	--	58	70	66	69
2	43	38	--	--	36	33	40	--	55	71	62	71
3	40	37	--	--	38	34	33	--	54	70	64	68
4	37	40	--	33	37	33	33	44	54	68	67	69
5	42	43	33	--	33	33	34	--	--	71	65	68
6	55	44	32	33	35	34	50	44	58	68	63	67
7	53	40	--	--	34	32	--	43	54	69	64	63
8	46	41	--	33	35	32	--	40	50	67	71	64
9	47	42	34	33	34	33	32	42	58	72	69	59
10	48	42	32	34	35	34	36	44	60	68	67	56
11	46	44	33	34	33	33	--	--	63	71	66	50
12	44	40	33	34	33	32	--	53	68	65	66	51
13	46	40	33	33	32	--	49	--	63	68	68	52
14	41	40	33	33	33	32	51	67	68	69	67	53
15	45	32	33	33	34	32	61	--	63	68	70	55
16	46	--	34	34	35	34	58	60	63	67	69	57
17	43	--	34	33	33	--	--	57	58	68	66	59
18	45	37	34	35	33	--	--	62	58	68	68	53
19	41	35	34	37	34	32	--	54	61	67	65	52
20	37	36	33	32	--	32	--	52	63	68	67	--
21	36	37	33	38	34	32	--	69	63	--	68	55
22	42	33	35	37	34	33	--	71	63	67	67	58
23	43	--	33	36	33	34	--	69	73	69	64	61
24	41	36	34	36	33	32	--	59	70	68	70	63
25	45	30	33	35	34	33	--	65	70	62	59	60
26	40	33	--	38	35	32	--	53	67	65	62	58
27	43	34	34	38	34	32	--	60	--	67	67	56
28	43	35	33	34	33	32	--	63	68	68	67	52
29	46	34	34	37	--	33	--	60	71	68	66	55
30	43	33	33	36	--	33	--	59	72	68	68	54
31	37	--	--	38	--	33	--	54	--	62	70	--
Average	43	38	--	35	34	33	--	--	62	68	66	59

MISSOURI RIVER BASIN

WHITE RIVER BASIN--Continued

WHITE RIVER NEAR KADOKA, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950									
Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	16	15,000	s 1,220	28	1,540	116	28		
2-----	18	7,770	s 327	28	1,160	88	34	127	11
3-----	19	555	28	26	422	30	34		
4-----	10			24			40	65	7
5-----	9			24			60	--	e 15
6-----	10	361	10	24	158	10	40	67	7
7-----	10			24			16	--	e 3
8-----	88	23,700	s 5,680	26			9	--	e 2
9-----	131	17,100	6,050	28			15	70	3
10-----	2,010	60,800	s 379,000	28			13	87	3
11-----	1,340	58,200	218,000	28	216	16	10	137	4
12-----	531	39,400	s 62,500	28			7	214	4
13-----	204	26,300	14,500	27			4	273	3
14-----	108	18,800	5,480	27			10	326	9
15-----	68	14,200	2,610	37			15	392	16
16-----	49	11,100	1,470	44			20		
17-----	44	9,600	1,140	42	310	36	15		
18-----	36	8,900	865	47			15	164	8
19-----	53	10,400	s 1,710	47	560	71	20		
20-----	142	12,800	4,910	44	420	50	15		
21-----	128	8,800	3,040	34	1,050	96	10		
22-----	64	4,290	741	31	750	63	10	181	6
23-----	56	2,620	396	26			12		
24-----	56	1,130	171	33	187	15	14		
25-----	55	820	122	33			15		
26-----	45	2,200	267	39	210	22	20	210	9
27-----	41	3,130	346	42	320	36	15		
28-----	39	5,410	570	36			15		
29-----	36	5,590	543	33	226	21	20	130	8
30-----	34	3,950	363	33			30		
31-----	31	2,720	228	--	--	--	25		
Total--	5,481	--	712,300	971	--	970	606	--	232
January			February			March			
1-----	10			14			110	--	e 380
2-----	5	--	e 2	16			170	1,100	505
3-----	2			14	316	12	250	1,300	878
4-----	0	--	0	15			350	3,800	3,590
5-----	0	--	0	12			400	10,500	11,300
6-----	0	--	0	20	350	19	450	9,800	11,900
7-----	0	--	0	25	--	e 110	350	4,850	4,580
8-----	0	--	0	60	--	e 480	200	1,490	805
9-----	1			35	--	e 650	180	1,750	850
10-----	10			50	--	e 750	180	1,600	778
11-----	20	167	4	25	2,080	140	170	1,480	879
12-----	10			20	490	26	150	1,550	628
13-----	0	--	0	10	120	3	200	--	e 500
14-----	0	--	0	8	380	8	250	420	284
15-----	0	--	0	12	640	21	280	500	378
16-----	0	--	0	25	470	32	300	610	494
17-----	0	--	0	20	420	23	500	4,200	5,670
18-----	0	--	0	85	1,150	264	700	5,150	9,730
19-----	0	--	0	260	1,500	1,050	650	--	e 8,500
20-----	1			150	1,400	568	625	6,000	10,100
21-----	3			190	--	e 700	600	4,400	7,130
22-----	4			210	1,300	737	700	4,500	8,500
23-----	6	198	2	240	1,820	1,180	2,700	15,500	113,000
24-----	5			170	4,600	2,110	2,000	27,300	126,000
25-----	5			130	3,400	1,190	1,250	17,300	58,400
26-----	7			85			763	10,400	21,400
27-----	13			85	--	e 320	548	7,600	11,200
28-----	10			85			345	5,600	5,220
29-----	8	172	5	--	--	--	231	5,300	3,310
30-----	10			--	--	--	325	11,600	10,200
31-----	13			--	--	--	788	12,900	29,600
Total--	143	--	61	2,071	--	11,080	16,715	--	466,500

e Estimated.

s Computed by subdividing day.

WHITE RIVER BASIN--Continued

WHITE RIVER NEAR KADOKA, S. DAK.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,020	21,700	59,800	636	15,400	s 27,300	55	740	110
2-----	1,050	21,600	61,200	1,610	37,500	s 173,000	53	500	72
3-----	980	16,600	43,900	1,420	42,500	s 177,000	59	380	61
4-----	757	7,800	15,900	954	26,200	67,500	57	345	53
5-----	443	--	e 3,600	695	--	e 41,000	59	360	57
6-----	288	2,500	1,940	1,940	34,400	s 198,000	55	410	61
7-----	306	--	e 2,700	1,530	28,300	s 126,000	51	462	64
8-----	330	4,000	3,560	2,330	35,600	s 244,000	33	462	41
9-----	235	3,200	2,030	4,400	42,800	s 531,000	29	300	23
10-----	163	2,900	1,430	2,530	32,000	219,000	27	210	15
11-----	302	--	e 3,500	1,580	21,300	s 95,500	26	190	13
12-----	492	7,930	10,500	900	12,500	30,400	28	195	15
13-----	274	8,100	5,990	579	8,000	12,500	28	235	18
14-----	235	8,080	5,130	444	7,000	8,390	33	420	s 47
15-----	176	6,720	3,190	318	4,890	4,200	308	15,900	s 15,600
16-----	148	4,500	1,800	246	3,480	2,310	609	33,500	s 53,200
17-----	145	--	e 1,200	195	3,460	1,820	176	22,700	10,800
18-----	151	2,910	1,190	163	5,550	2,440	90	13,800	3,350
19-----	123	2,870	953	142	4,490	1,720	67	11,100	2,010
20-----	105	1,900	539	117	2,640	834	55	7,400	1,100
21-----	101	1,300	355	111	1,520	456	53	5,000	716
22-----	96	1,300	337	98	1,040	275	76	5,800	1,190
23-----	94	4,250	1,080	90	798	194	83	4,600	1,030
24-----	89	5,190	1,250	85	776	178	88	6,500	1,540
25-----	81	4,350	951	93	600	151	71	2,600	498
26-----	76	1,800	369	98	708	187	39	1,500	158
27-----	72	1,000	194	122	1,020	336	37	1,000	100
28-----	76	780	160	98	1,190	315	27	430	31
29-----	96	2,540	658	78	2,950	621	23	450	28
30-----	192	3,400	s 2,220	69	3,000	559	23	--	e 65
31-----	--	--	--	61	1,220	201	--	--	--
Total--	8,716	--	237,600	23,732	--	1,967,000	2,418	--	92,070
Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	33	16,900	1,510	30	13,400	1,090	63	10,000	1,700
2-----	30	11,100	899	19	7,100	364	81	9,600	2,100
3-----	135	11,400	s 6,480	18	4,400	214	46	10,000	1,240
4-----	196	29,800	s 14,000	19	1,500	77	31	5,100	427
5-----	71	16,800	3,220	455	43,600	s 63,200	21	2,990	170
6-----	48	10,700	1,390	202	26,700	14,600	18	1,140	55
7-----	51	12,200	1,680	189	28,900	14,700	19	260	13
8-----	51	15,900	2,190	103	27,700	7,700	13	190	7
9-----	26	9,600	674	39	25,300	2,660	11	180	5
10-----	17	3,380	155	401	45,800	s 77,000	77	19,200	s 8,640
11-----	13	960	34	1,090	54,000	s 180,000	226	41,600	26,300
12-----	10	1,020	28	346	24,000	22,400	272	41,100	31,300
13-----	15	630	26	1,210	41,800	s 176,000	151	33,600	14,200
14-----	13	410	14	1,020	43,900	s 133,000	76	23,500	4,820
15-----	8	380	8	493	17,800	23,700	69	19,800	s 3,740
16-----	75	23,500	s 9,920	261	11,700	8,240	174	21,100	s 10,400
17-----	243	41,500	28,200	125	7,900	2,670	434	34,400	41,800
18-----	306	47,200	40,400	69	6,700	1,250	206	22,200	12,500
19-----	250	40,300	s 28,900	54	8,600	1,250	136	13,000	4,770
20-----	572	51,100	s 83,700	157	--	e 7,000	403	34,200	s 57,700
21-----	212	27,400	15,700	78	13,100	2,760	1,710	66,600	s 331,000
22-----	108	17,800	5,190	45	13,000	1,580	1,580	59,700	s 277,000
23-----	222	22,200	s 15,400	31	11,800	988	645	32,200	58,200
24-----	148	25,600	10,200	22	12,000	713	306	21,300	17,600
25-----	57	17,800	2,740	26	13,300	s 1,010	218	16,700	9,830
26-----	36	12,400	1,210	265	28,900	s 21,300	154	13,800	5,740
27-----	43	11,000	1,280	326	30,800	s 33,400	93	9,100	2,290
28-----	166	20,300	s 9,380	411	33,500	38,600	69	7,200	1,540
29-----	119	27,300	8,740	229	19,800	12,200	176	--	e 7,100
30-----	49	17,600	2,350	228	25,200	s 17,200	148	13,700	5,470
31-----	73	16,500	s 3,380	83	13,600	3,050	--	--	--
Total--	3,366	--	299,000	8,044	--	869,900	7,628	--	937,400
Total discharge for year (second-foot-days)									79,891
Total load for year (tons)									5,594,000

e Estimated.

s Computed by subdividing day.

WHITE RIVER BASIN--Continued
WHITE RIVER NEAR KADOKA, S. DAK.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 5, 1949.....	4:20 p.m.	10	721	1,110	--	2	7	--	--	100	--	--	--	--	--	BN
Oct. 10.....	12:40 p.m.	3,280	67,800	1,730	36	48	58	71	84	93	98	99	--	100	--	BN
Oct. 20.....	9:30 a.m.	173	15,500	2,590	82	92	96	98	99	100	--	--	--	--	--	BN
Nov. 1.....	1:35 p.m.	28	1,860	1,470	--	--	3	--	--	99	100	--	--	--	--	BN
Feb. 24, 1950.....	4:40 p.m.	a170	5,220	4,000	--	89	--	96	--	99	99	--	--	100	--	SPWCM
Mar. 24.....	5:20 p.m.	1,610	21,900	15,900	--	46	--	66	--	94	98	100	--	--	--	SPWCM
Mar. 31.....	5:30 p.m.	912	13,400	10,500	--	47	--	67	67	94	98	99	--	100	--	SPWCM
Apr. 8.....	6:50 a.m.	330	4,130	4,460	--	2	67	92	95	97	--	--	--	--	--	SPN
Apr. 8.....	6:50 a.m.	330	4,130	1,490	55	69	82	90	93	96	98	99	--	100	--	BN
Apr. 13.....	5:30 p.m.	235	8,020	6,030	--	86	--	96	--	99	--	--	--	--	--	SPWCM
May 1.....	6:30 a.m.	525	15,000	11,400	--	60	--	84	--	98	100	--	--	--	--	SPWCM
May 3.....	6:20 p.m.	1,130	27,200	14,100	35	45	58	73	89	100	--	--	--	--	--	SPWCM
May 4.....	7:00 a.m.	1,400	25,600	3,510	--	37	--	69	--	98	--	--	--	--	--	SPWCM
May 6.....	4:30 p.m.	2,580	44,800	3,080	--	37	--	53	--	94	--	--	--	--	--	SPWCM
May 7.....	5:30 p.m.	1,080	23,600	3,940	--	54	--	73	--	96	--	--	--	--	--	SPWCM
May 9.....	5:50 p.m.	4,700	45,300	3,640	27	33	40	52	66	93	--	--	--	--	--	SPWCM
May 9.....	5:50 p.m.	4,700	45,300	980	1	5	11	61	66	87	95	98	--	99	--	BN
May 10.....	7:00 a.m.	2,400	34,000	3,140	--	44	--	62	--	93	--	--	--	--	--	SPWCM
May 17.....	6:45 a.m.	198	2,480	1,620	--	84	--	94	--	96	--	--	--	--	--	SPWCM
May 17.....	12:50 p.m.	189	2,210	1,640	--	89	--	96	--	98	--	--	--	--	--	SPWCM
May 17.....	5:30 p.m.	176	5,190	4,000	--	91	--	99	--	100	--	--	--	--	--	SPWCM
May 18.....	7:10 a.m.	160	5,190	3,850	--	93	--	98	--	100	--	--	--	--	--	SPWCM
June 15.....	5:30 p.m.	295	24,700	8,370	--	78	--	93	--	98	--	--	--	--	--	SPWCM
June 16.....	8:00 a.m.	908	30,400	5,960	--	77	--	98	--	99	--	--	--	--	--	SPWCM
June 16.....	5:30 p.m.	332	97,400	7,950	--	93	--	95	--	99	--	--	--	--	--	SPWCM
June 21.....	6:00 p.m.	53	4,900	2,650	93	98	98	98	99	100	--	--	--	--	--	SPWCM
June 21.....	5:30 p.m.	53	4,900	600	24	93	99	100	--	99	--	--	--	--	--	PN
June 24.....	8:00 a.m.	76	9,600	3,280	--	92	--	98	--	99	--	--	--	--	--	SPWCM
July 1.....	7:30 a.m.	34	17,800	3,230	--	92	--	98	--	100	--	--	--	--	--	SPWCM
July 1.....	7:30 a.m.	34	17,800	3,420	--	57	--	96	--	100	--	--	--	--	--	SPWCM

a Mean daily discharge.

July 2	6:30 p. m.	35	2,540	1,730	97	100	--	--	SPWCM
July 3	1:30 p. m.	225	15,800	4,080	58	89	98	--	SPWCM
July 5	2:00 p. m.	225	10,600	3,790	57	89	98	--	SPN
July 9	2:00 p. m.	229	10,600	4,080	56	86	94	--	SPWCM
July 9	6:30 a. m.	166	24,600	8,310	91	99	100	--	SPWCM
July 9	6:30 p. m.	28	12,000	4,130	100	--	--	--	PWCM
July 16	6:30 p. m.	128	52,400	4,720	77	94	100	--	SPWCM
July 17	2:15 p. m.	240	29,700	3,140	83	90	95	100	SPWCM
July 17	2:15 p. m.	240	29,700	3,090	78	95	100	--	SPN
July 25	1:30 p. m.	53	17,000	4,620	100	--	--	--	PWCM
July 25	1:30 p. m.	53	17,000	12,300	--	--	--	--	PN
July 28	7:30 a. m.	192	15,600	5,270	79	98	100	--	SPWCM
July 29	7:00 a. m.	142	28,700	8,790	88	99	100	--	SPWCM
Aug. 1	6:00 p. m.	28	11,600	3,860	99	100	--	--	PWCM
Aug. 5	7:15 a. m.	695	57,800	8,220	51	82	98	--	SPWCM
Aug. 6	7:30 a. m.	218	26,600	7,290	82	98	100	--	SPWCM
Aug. 7	1:45 p. m.	176	27,000	7,530	83	96	98	--	SPWCM
Aug. 11	6:00 p. m.	1,320	64,800	11,400	30	94	99	--	SPWCM
Aug. 11	3:30 p. m.	885	44,100	8,900	54	72	85	--	SPWCM
Aug. 11	3:30 p. m.	885	44,100	8,900	13	72	85	--	SPN
Aug. 12	8:00 p. m.	238	21,000	5,760	86	96	100	--	SPWCM
Aug. 13	4:45 p. m.	2,150	65,200	10,500	36	59	--	--	SPWCM
Aug. 14	3:45 p. m.	948	39,300	6,020	60	71	83	94	99
Aug. 14	3:45 p. m.	848	39,300	7,030	58	70	84	95	99
Aug. 15	2:00 p. m.	449	16,400	5,820	74	91	98	--	SPWCM
Aug. 16	1:30 p. m.	246	11,400	3,730	90	97	99	--	SPWCM
Aug. 17	6:15 p. m.	103	6,770	4,520	99	99	100	--	SPWCM
Aug. 26	12:00 m.	338	38,400	6,120	74	95	95	--	PWCM
Aug. 27	6:30 p. m.	568	44,900	6,700	55	81	97	--	SPWCM

WHITE RIVER BASIN--Continued
WHITE RIVER NEAR KADOKA, S. DAK.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950.--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Aug. 28, 1950	2:15 p. m.	407	34,400	7,640	60	74	86	94	98	99	--	--	--	--	--	SPWCM
Aug. 28	2:15 p. m.	407	34,400	7,670	54	73	86	94	98	99	--	--	--	--	--	SPWCM
Aug. 28	6:30 p. m.	360	21,700	7,530	--	83	--	97	--	99	--	--	--	--	--	SPWCM
Aug. 29	8:00 a. m.	232	22,200	7,330	--	85	--	99	--	100	--	--	--	--	--	SPWCM
Aug. 31	7:30 a. m.	93	18,100	5,330	--	98	--	100	--	--	--	--	--	--	--	PWCM
Sept. 2	8:00 a. m.	85	7,960	5,480	--	97	--	100	--	--	--	--	--	--	--	PWCM
Sept. 5	3:45 p. m.	21	2,770	3,280	--	98	--	98	--	98	--	--	--	--	--	SPWCM
Sept. 11	7:00 p. m.	229	39,200	11,700	--	76	--	95	--	100	--	--	--	--	--	SPWCM
Sept. 12	7:00 a. m.	308	42,200	6,830	--	79	--	94	--	100	--	--	--	--	--	SPWCM
Sept. 18	4:15 p. m.	179	19,000	11,000	77	88	95	97	97	100	--	--	--	--	--	SPWCM
Sept. 18	4:15 p. m.	179	19,000	10,800	64	88	96	98	98	100	--	--	--	--	--	SPN
Sept. 21	4:00 p. m.	2,210	74,400	11,400	33	40	48	61	79	95	--	--	--	--	--	SPWCM
Sept. 21	4:00 p. m.	2,210	74,400	11,600	24	37	46	60	78	94	--	--	--	--	--	SPN
Sept. 21	5:40 p. m.	2,340	70,600	5,930	--	45	--	68	--	96	--	--	--	--	--	SPWCM
Sept. 21	7:30 p. m.	2,600	71,200	6,340	--	46	--	66	--	96	--	--	--	--	--	SPWCM
Sept. 22	4:00 p. m.	1,320	54,900	8,470	45	56	66	77	87	95	98	100	--	--	--	BWCM
Sept. 28	7:00 a. m.	69	7,880	4,850	--	98	--	99	--	100	--	--	--	--	--	SPWCM

Chemical analyses, in parts per million, water year October 1949 to September 1950

[illegible]

PONCA CREEK BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN PONCA CREEK BASIN IN NEBRASKA

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- lids	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		
PONCA CREEK AT ANOKA																						
Dec. 14, 1949	±0.2	7.8	1,210	17	0.02	183	39	51		0	345	405	13	0.3	6.3	0.10	956	1.30		617	334	15
Mar. 28, 1950	1,640	7.2	101	20	.16	23	3.4	4.4		0	66	19	1.0	.2	6.0	.15	126	.17		72	18	12
May 8	209	8.0	602	16	.02	76	19	33		0	230	127	9.5	.2	4.8	.10	426	.58		268	79	21

PONCA CREEK AT ANOKA

a Mean daily discharge.

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
PONCA CREEK AT ANOKA			
Apr. 18, 1950	392	2,030	2,150
Apr. 19	220	1,270	754
May 8	209	1,800	1,020
May 27	31	138	12
June 5	26	288	20
June 17	25	524	35
July 6	7.5	82	1.7
July 20	55	694	94
Aug. 1	4.8	28	.4
Aug. 16	6.4	125	2.2
Sept. 14	2.0	38	.2
Sept. 22	107	1,200	347
Sept. 27	7.7	41	.9

PONCA CREEK BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN PONCA CREEK BASIN IN NEBRASKA--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: W, in distilled water; C, chemically dispersed; M, mechanically dispersed; P, in native water;
F, in filtered water; D, decantation; E, centrifugation; S, sediment; N, in native water;

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
PONCA CREEK AT ANOKA															
Apr. 18, 1950	5:10 p. m.	392	2,030	6,040	10	17	--	--	--	83	85	94	100	100	SPW/CM
Apr. 19	5:30 p. m.	220	1,270	4,490	--	49	--	68	78	84	91	--	99	99	SPW/CM
May 8	9:15 a. m.	209	1,800	1,850	57	81	73	78	84	91	--	--	--	--	SPW/CM
Aug. 16	10:30 a. m.	8.4	1,125	811	--	36	40	49	57	70	77	84	93	93	EWC
Sept. 22	10:00 a. m.	107	1,200	3,060	--	65	--	82	--	91	100	--	--	--	SPW/CM

MISSOURI RIVER BASIN

NIOBRARA RIVER BASIN

NIOBRARA RIVER NEAR GORDON, NEBR.

LOCATION.--At bridge on State Highway 27, just upstream from gaging station, about 4 miles downstream from Rush Creek, and 11 miles south of Gordon, Sheridan County.

DRAINAGE AREA.--2,595 square miles.

RECORDS AVAILABLE.--Sediment records: October 1947 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 4,700 ppm Aug. 26; minimum daily, 10 ppm Jan. 21, Feb. 3.

Sediment loads: Maximum daily, 12,700 tons Aug. 26; minimum daily 2 tons Feb. 3.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 5,360 ppm Mar. 15, 1948; minimum daily, not determined.

Sediment loads: Maximum daily, 22,900 tons June 17, 1948; minimum daily, 2 tons Feb. 3, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	80	200	43	105	200	57	110	410	120
2-----	82	250	55	102	290	80	110	290	86
3-----	82	250	55	105	460	130	110	300	89
4-----	88	150	36	108	460	130	100	370	100
5-----	96	190	49	108	450	130	90	240	58
6-----	105	240	68	111	550	160	95	330	85
7-----	114	270	83	114	350	110	90	110	27
8-----	111	230	69	118	500	160	90	940	230
9-----	114	220	58	111	580	170	88	650	150
10-----	149	1,200	480	111	410	120	96	310	80
11-----	131	470	170	118	490	160	85	150	34
12-----	118	410	130	125	380	130	85	80	18
13-----	105	340	96	121	240	78	90	70	17
14-----	105	290	82	118	330	110	80	50	11
15-----	102	300	83	111	460	140	80	30	6
16-----	102	280	77	118	620	200	80	40	9
17-----	99	380	100	114	480	150	90	50	12
18-----	102	480	130	114	380	120	95	60	15
19-----	108	460	130	111	300	90	95	50	13
20-----	114	320	98	110	350	100	85	50	11
21-----	111	170	51	110	340	100	80	50	11
22-----	105	250	71	110	410	120	90	50	12
23-----	102	380	100	110	500	150	100	40	11
24-----	94	290	74	110	410	120	110	50	15
25-----	94	220	56	110	290	86	110	70	21
26-----	96	510	130	110	530	160	100	40	11
27-----	96	330	86	110	600	180	100	30	8
28-----	105	340	96	110	460	140	100	20	5
29-----	105	500	140	110	330	98	110	20	6
30-----	102	410	110	110	360	110	110	50	15
31-----	105	330	94	--	--	--	90	50	12
Total--	3,222	--	3,110	3,353	--	3,790	2,944	--	1,300

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR GORDON, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	85	40	9	80	30	6	125	590	200
2-----	80	80	17	80	20	4	125	450	150
3-----	70	50	9	75	10	2	125	820	280
4-----	70	80	15	80	30	6	128	640	220
5-----	80	100	22	85	50	11	145	950	370
6-----	90	120	29	85	20	5	125	510	170
7-----	90	100	24	90	30	7	118	290	92
8-----	90	60	15	110	30	9	114	310	95
9-----	90	20	5	120	60	19	131	220	78
10-----	90	30	7	130	50	18	118	890	280
11-----	90	40	10	140	40	15	75	380	77
12-----	90	30	7	160	70	30	90	240	58
13-----	90	40	10	180	110	53	120	240	78
14-----	85	40	9	200	90	49	168	380	170
15-----	80	50	11	200	40	22	118	960	310
16-----	80	40	9	200	760	410	128	640	220
17-----	85	50	11	190	480	250	121	900	290
18-----	90	40	10	180	380	160	145	370	140
19-----	100	30	8	180	800	390	149	270	110
20-----	100	20	5	161	550	240	141	200	76
21-----	110	10	3	160	460	200	125	230	78
22-----	110	20	6	160	530	230	135	1,300	470
23-----	120	20	6	161	530	230	118	1,300	410
24-----	120	30	10	161	520	230	114	670	210
25-----	95	40	10	168	800	360	135	900	330
26-----	75	20	4	153	800	330	138	460	170
27-----	75	40	8	149	830	330	145	650	250
28-----	100	20	5	135	890	320	153	490	200
29-----	95	20	5	--	--	--	153	930	380
30-----	85	20	5	--	--	--	157	1,150	490
31-----	75	20	4	--	--	--	157	570	240
Total--	2,785	--	308	3,953	--	3,940	4,039	--	6,690
Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	149	630	250	172	--	e 390	91	340	84
2-----	153	620	260	168	920	420	88	250	59
3-----	135	490	180	164	880	390	85	180	41
4-----	135	410	150	168	880	400	85	280	64
5-----	161	380	170	172	580	270	85	180	41
6-----	135	380	140	188	940	480	80	150	32
7-----	131	360	130	188	840	430	75	160	32
8-----	131	340	120	180	900	440	72	150	29
9-----	125	410	140	184	1,200	600	72	100	19
10-----	145	520	200	206	1,500	830	75	100	20
11-----	145	580	230	149	1,400	560	72	80	16
12-----	121	500	160	135	550	200	68	80	15
13-----	128	410	140	128	400	140	68	200	37
14-----	118	340	110	145	480	190	80	570	120
15-----	128	600	210	135	270	98	88	320	76
16-----	172	410	190	138	380	140	82	310	69
17-----	188	580	290	131	390	140	82	320	71
18-----	176	870	410	111	370	110	102	1,600	440
19-----	184	600	270	108	890	260	121	400	130
20-----	145	380	150	108	410	120	118	290	92
21-----	164	200	89	108	330	96	108	230	67
22-----	176	220	100	105	820	230	108	270	79
23-----	180	260	130	99	320	86	108	210	61
24-----	180	400	190	94	270	69	105	180	51
25-----	188	300	150	111	520	160	96	250	65
26-----	197	220	120	121	360	120	85	160	37
27-----	210	390	220	114	290	89	82	140	31
28-----	233	500	310	114	190	58	75	150	30
29-----	210	520	290	121	230	75	77	110	23
30-----	197	--	e 340	102	300	83	80	230	50
31-----	--	--	--	94	330	84	--	--	--
Total--	4,820	--	5,840	4,261	--	7,760	2,613	--	1,980

e Estimated.

MISSOURI RIVER BASIN

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR GORDON, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	77	270	56	102	--	e 50	105	270	77
2-----	85	270	62	94	150	38	94	270	69
3-----	88	170	40	82	100	22	80	240	52
4-----	85	460	110	80	90	19	75	410	83
5-----	85	320	73	85	180	41	72	180	35
6-----	85	200	46	114	3,100	s 1,100	70	110	21
7-----	85	110	25	135	3,500	1,300	68	140	26
8-----	85	170	39	99	380	100	70	210	40
9-----	94	180	46	65	200	46	77	240	50
10-----	91	230	57	62	160	35	99	510	140
11-----	88	360	86	85	180	41	105	330	94
12-----	105	360	100	91	150	37	128	310	110
13-----	91	200	49	403	--	e 4,600	131	410	150
14-----	80	240	52	172	1,900	880	131	410	150
15-----	77	270	56	125	840	280	168	590	270
16-----	80	200	43	108	380	110	153	520	210
17-----	85	220	50	105	250	71	157	470	200
18-----	88	280	67	94	240	61	135	360	130
19-----	88	270	64	105	240	68	125	220	74
20-----	82	310	69	125	240	81	128	340	120
21-----	80	170	37	121	470	150	138	370	140
22-----	80	50	11	114	380	120	138	450	170
23-----	96	--	e 140	114	220	68	135	320	120
24-----	96	900	230	114	170	52	121	390	130
25-----	121	--	e 210	138	--	e 550	111	270	81
26-----	131	790	280	827	4,700	s 12,700	108	230	67
27-----	111	--	e 120	210	1,600	910	111	280	84
28-----	96	}	--	141	680	250	114	380	120
29-----	99		--	131	390	140	125	390	130
30-----	118		--	111	640	190	128	380	130
31-----	108		--	111	360	110	--	--	--
Total-	2,860	--	2,500	4,503	--	24,220	3,400	--	3,270

Total discharge for year (second-foot days) 42,753

Total load for year (tons) 64,710

e Estimated.

s Computed by subdividing day.

NIOBRARA RIVER BASIN--Continued
NIOBRARA RIVER NEAR GORDON, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 28, 1949.....	9:55 a. m.	108	346	--	--	--	--	--	--	15	40	93		100	--	SWM
Nov. 17.....	1:15 p. m.	114	527	--	--	--	--	--	--	8	24	81		100	--	SWM
Dec. 4.....	11:30 a. m.	108	551	--	--	--	--	--	--	17	45	92		100	--	SWM
Feb. 8, 1950.....	9:20 a. m.	119	45	--	--	--	--	--	--	45	63	92		100	--	SWM
Apr. 7.....	1:15 p. m.	138	330	--	--	--	--	--	--	36	72	96		100	--	SWM
Apr. 15.....	10:10 a. m.	125	575	--	--	--	--	--	--	20	54	97		100	--	SWM
May 2.....	2:30 p. m.	157	576	--	--	--	--	--	--	31	64	96		100	--	SWM
May 18.....	1:55 p. m.	114	366	--	--	--	--	--	--	26	56	91		99	100	SWM
July 6.....	10:15 a. m.	88	251	--	--	--	--	--	--	24	42	87		100	--	SWM
Aug. 2.....	12:10 p. m.	94	143	--	--	--	--	--	--	57	83	98		100	--	SWM
Aug. 6.....	3:20 p. m.	105	4,270	5,080	65	65	80	80	91	97	100			--	--	SPWCM
Aug. 7.....	7:15 a. m.	125	4,790	3,010	30	30	41	41	49	64	88			99	100	SPWCM
Aug. 13.....	4:30 p. m.	396	3,700	4,080	49	49	62	62	78	91	98			100	--	SPWCM
Aug. 26.....	10:20 a. m.	1,430	4,760	3,190	46	46	65	65	84	96	99			100	--	SPWCM
Aug. 29.....	11:15 a. m.	131	511	--	--	--	--	--	--	45	65	92		99	100	SWM
Sept. 13.....	11:55 a. m.	138	507	--	--	--	--	--	--	27	46	88		100	--	SWM

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR CODY, NEBR.

LOCATION.--At county bridge, a quarter of a mile downstream from gaging station, which is 3 miles upstream from Medicine Creek, 5 miles downstream from Bear Creek, and 10 miles south of Cody, Cherry County.

RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1950.

Sediment records: April 1948 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 87°F June 24; minimum, freezing point on several days in December and January.

Sediment concentrations: Maximum daily, 6,780 ppm Aug. 27; minimum daily, not determined.

Sediment loads: Maximum daily, 23,700 tons Aug. 27; minimum daily, 140 tons Dec. 12.

EXTREMES, 1948-50.--Water temperatures: Maximum, 87°F June 24, 1950; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 58,000 tons June 18, 1948; minimum daily, not determined.

REMARKS.--Investigations indicate that practically all the total sediment load is transported in suspension at this contracted section of the river. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950
/Once-daily temperature measurement usually between 4 p. m. and 7 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	50	43	36	33	37	55	60	72	72	79	80
2	65	47	44	--	33	38	47	64	66	79	77	80
3	61	51	43	--	36	43	38	50	69	79	80	75
4	62	52	40	--	34	49	43	45	72	70	78	77
5	68	51	39	--	36	49	53	44	78	79	80	74
6	58	50	39	32	37	53	53	61	74	79	79	72
7	54	57	33	35	35	33	47	41	79	82	83	78
8	48	46	--	34	36	35	39	54	70	81	83	74
9	47	50	36	34	36	41	44	63	71	82	75	73
10	57	50	38	35	33	33	37	65	74	80	66	56
11	57	50	--	35	33	--	54	66	79	80	79	60
12	57	47	--	--	33	35	42	62	80	70	74	57
13	48	49	--	--	33	35	54	74	82	51	79	55
14	49	46	--	34	34	40	58	70	83	74	80	59
15	55	46	--	--	36	46	58	69	84	79	82	57
16	56	40	35	--	38	39	66	70	69	72	68	57
17	56	44	35	--	35	39	67	74	67	78	72	60
18	57	40	39	--	38	33	54	68	65	70	76	71
19	42	52	--	--	38	33	49	69	78	76	68	69
20	42	41	--	34	34	39	62	63	81	65	73	69
21	43	39	32	35	33	40	63	73	81	80	73	59
22	50	41	34	35	35	51	71	77	81	80	74	69
23	45	42	--	34	33	48	69	77	80	79	76	68
24	52	41	33	--	36	52	53	59	87	67	74	72
25	50	46	--	--	35	52	50	57	73	79	67	68
26	53	47	34	34	46	33	51	55	75	75	71	68
27	55	49	34	32	42	36	59	64	77	80	70	69
28	52	49	34	36	39	37	41	68	75	84	70	62
29	45	44	35	34	--	49	46	70	79	80	69	56
30	44	44	35	33	--	52	57	64	82	75	70	58
31	56	--	36	34	--	52	--	64	--	74	80	--
Aver- age	53	47	--	--	36	42	53	63	76	76	75	67

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR CODY, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	278	900	680	293	1,400	1,110	308	1,700	1,410
2-----	268	960	690	278	1,500	1,130	308	1,570	1,310
3-----	268	1,010	730	283	1,520	1,160	308	1,610	1,340
4-----	268	1,140	820	283	1,840	1,410	298	2,000	1,610
5-----	278	1,080	s 840	283	1,550	1,180	288	1,770	1,380
6-----	371	1,810	s 1,930	288	1,550	1,210	283	1,940	1,480
7-----	308	1,520	1,260	293	1,600	1,270	283	1,840	1,410
8-----	298	1,400	1,130	303	1,370	1,120	283	--	e 1,300
9-----	298	1,600	1,290	303	1,420	1,160	258	1,700	1,180
10-----	425	1,870	2,140	298	1,400	1,130	250	1,730	1,170
11-----	392	2,110	2,230	303	1,780	1,460	120	--	e 290
12-----	361	2,210	2,150	303	1,830	1,500	85	--	e 140
13-----	345	1,750	1,630	298	1,700	1,370	150	--	e 380
14-----	324	1,650	1,440	303	1,580	1,300	200	--	e 450
15-----	308	1,670	1,390	308	2,060	1,710	240	--	e 510
16-----	278	1,520	1,140	298	2,620	2,110	250	790	550
17-----	278	1,550	1,160	298	1,980	1,590	240	2,010	1,300
18-----	283	1,490	1,140	298	1,960	1,580	240	2,370	1,540
19-----	293	1,560	1,250	293	1,820	1,440	250	2,050	1,380
20-----	298	1,910	1,540	293	1,720	1,360	300	--	e 1,100
21-----	293	1,860	1,470	298	1,810	1,460	300	--	e 760
22-----	288	1,650	1,280	303	1,640	1,340	230	1,130	700
23-----	283	1,630	1,250	303	1,710	1,400	230	--	e 680
24-----	283	1,580	1,210	314	1,690	1,430	250	1,030	700
25-----	283	1,760	1,360	308	1,700	1,410	240	--	e 600
26-----	293	1,750	1,380	308	1,570	1,300	220	840	500
27-----	283	1,730	1,320	308	2,030	1,690	220	850	500
28-----	283	1,440	1,100	308	1,820	1,510	220	1,100	650
29-----	293	1,460	1,170	308	1,700	1,410	220	1,120	670
30-----	298	1,430	1,150	308	1,750	1,460	240	1,330	860
31-----	293	1,720	1,360	--	--	--	240	1,410	910
Total--	9,393	--	40,630	8,966	--	41,710	7,562	--	28,760
	January			February			March		
1-----	240	1,790	1,160	260	710	500	382	2,600	2,680
2-----	220	930	550	280	--	e 570	366	2,220	2,190
3-----	180	--	e 330	270	600	580	366	2,220	2,190
4-----	180	--	e 320	270	820	600	366	2,080	2,060
5-----	240	--	e 470	260	710	500	382	2,260	2,330
6-----	250	570	380	270	720	520	382	1,920	1,980
7-----	230	950	590	300	690	560	366	2,420	2,390
8-----	230	990	610	300	690	560	324	2,360	2,060
9-----	230	870	540	300	640	520	324	1,900	1,680
10-----	240	930	600	330	770	690	355	2,310	2,210
11-----	220	810	480	320	720	620	300	--	e 1,600
12-----	240	--	e 450	310	580	490	180	2,030	990
13-----	240	--	e 450	310	800	500	200	1,660	900
14-----	230	720	450	310	650	540	350	2,050	1,940
15-----	230	--	e 380	320	610	530	442	2,000	2,390
16-----	220	--	e 460	310	700	590	408	2,680	2,950
17-----	220	--	e 310	414	800	890	382	2,280	2,350
18-----	220	--	e 420	398	1,080	1,160	366	2,790	2,760
19-----	220	--	e 500	414	1,030	1,150	324	2,280	1,990
20-----	220	840	500	420	1,000	1,130	355	1,960	1,880
21-----	230	940	580	403	1,110	1,210	376	1,890	1,920
22-----	240	1,230	800	376	1,250	1,270	376	1,860	1,890
23-----	240	870	560	403	1,470	1,600	403	1,880	2,050
24-----	240	--	e 360	398	1,810	1,940	382	2,060	2,120
25-----	260	--	e 290	414	1,860	2,080	361	1,990	1,940
26-----	270	440	320	436	1,930	2,270	371	2,020	2,020
27-----	260	760	530	452	2,330	2,640	355	2,090	2,000
28-----	260	850	640	425	2,610	2,990	334	1,900	1,710
29-----	300	670	540	--	--	--	334	1,500	1,350
30-----	280	720	540	--	--	--	376	1,620	1,640
31-----	290	610	480	--	--	--	392	1,730	1,830
Total--	7,390	--	15,610	9,673	--	29,400	10,980	--	62,170

e Estimated.

s Computed by subdividing day.

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR CODY, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	392	1,830	1,940	376	1,820	1,850	314	1,400	1,190
2-----	398	1,990	2,140	387	1,940	2,030	303	1,190	970
3-----	398	2,060	2,210	398	2,230	2,400	283	1,210	920
4-----	382	1,800	1,860	376	1,880	1,910	268	1,080	780
5-----	382	1,740	1,790	408	2,290	2,520	268	1,070	770
6-----	382	1,860	1,920	392	1,640	1,740	258	1,310	910
7-----	371	1,920	1,920	458	1,590	1,970	253	840	570
8-----	376	1,850	1,880	531	1,610	2,310	248	950	640
9-----	376	1,920	1,950	549	2,290	3,390	229	830	510
10-----	392	1,950	2,060	555	2,620	3,930	224	750	450
11-----	387	1,930	2,020	549	2,400	3,580	224	590	360
12-----	403	2,010	2,190	497	3,140	4,210	234	940	590
13-----	392	2,190	2,320	436	2,520	2,970	234	900	570
14-----	371	2,090	2,090	398	2,350	2,530	283	1,130	860
15-----	361	2,070	2,020	361	2,050	2,000	298	1,100	880
16-----	340	1,810	1,660	340	1,590	1,460	303	990	810
17-----	340	1,850	1,670	330	1,490	1,330	288	940	730
18-----	334	1,930	1,740	320	1,560	1,350	324	1,050	920
19-----	334	1,900	1,710	310	1,740	1,460	361	--	e 1,500
20-----	319	2,010	1,730	308	1,770	1,470	303	1,340	1,100
21-----	308	2,110	1,750	288	1,820	1,420	298	1,220	980
22-----	298	1,840	1,480	288	1,520	1,180	278	900	680
23-----	308	1,760	1,480	298	1,520	1,220	258	910	630
24-----	324	2,070	1,810	303	1,500	1,230	298	880	710
25-----	308	2,050	1,700	314	1,560	1,320	268	1,010	730
26-----	303	1,620	1,320	319	1,810	1,560	243	820	540
27-----	303	1,840	1,510	340	1,240	1,140	243	810	530
28-----	340	1,860	1,710	303	1,320	1,080	229	690	430
29-----	371	2,170	2,170	324	1,400	1,220	239	800	490
30-----	355	2,010	1,930	355	1,460	1,400	224	750	450
31-----	--	--	--	329	1,470	1,310	--	--	--
Total--	10,642	--	55,660	11,740	--	60,470	8,068	--	22,200
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	282	2,010	s 1,850	253	970	660	303	1,050	860
2-----	253	1,300	890	243	920	600	283	1,110	850
3-----	258	940	650	248	840	560	273	950	700
4-----	273	920	680	253	790	540	248	860	580
5-----	273	980	720	253	840	570	234	800	500
6-----	258	840	590	243	770	500	229	760	470
7-----	253	880	600	334	1,570	s 1,510	229	690	430
8-----	243	690	450	288	2,020	1,570	229	750	460
9-----	248	700	470	268	1,930	1,400	238	720	460
10-----	243	780	510	234	1,190	760	273	980	720
11-----	258	760	530	219	890	530	288	1,330	1,030
12-----	283	880	670	238	1,250	800	324	1,320	1,150
13-----	263	910	650	263	1,260	890	319	1,330	1,150
14-----	268	860	620	713	3,670	s 7,110	314	1,500	1,270
15-----	253	730	500	350	3,220	3,040	334	1,430	1,290
16-----	263	830	590	319	2,050	1,770	376	1,620	1,640
17-----	253	830	570	283	1,450	1,110	340	1,840	1,690
18-----	453	1,930	s 2,830	258	1,160	810	308	1,310	1,090
19-----	283	1,980	1,510	253	1,210	830	308	1,360	1,130
20-----	273	1,440	1,060	243	1,150	750	340	1,570	1,440
21-----	253	1,300	890	258	1,060	740	329	1,210	1,070
22-----	243	1,240	810	248	1,100	740	319	1,320	1,140
23-----	238	940	600	243	930	610	293	1,380	1,190
24-----	253	860	590	234	770	490	293	1,280	1,010
25-----	329	1,320	1,170	253	910	620	293	1,160	920
26-----	273	1,540	1,140	659	3,960	s 14,100	288	1,190	930
27-----	314	1,650	1,400	1,080	6,780	s 23,700	298	980	790
28-----	283	1,270	970	414	4,970	5,560	283	990	760
29-----	263	990	700	392	2,690	2,850	308	1,170	970
30-----	258	980	680	319	1,770	1,520	314	1,100	930
31-----	258	1,120	780	314	1,380	1,170	--	--	--
Total--	8,399	--	26,670	10,170	--	78,400	8,808	--	28,620
Total discharge for year (second-foot-days).....									
									111,791
Total load for year (tons).....									
									490,300

e Estimated.

s Computed by subdividing day.

NIOBRARA RIVER BASIN--Continued
 NIOBRARA RIVER NEAR CODY, NEBR.--Continued

 Particle-size analyses of suspended sediment, water year October 1949 to September 1950
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment														Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000		
Oct. 1, 1949	6:10 a. m.	298	1,000	470	--	--	--	--	--	16	23	74	99	--	--	BW	
Oct. 10	11:45 a. m.	458	1,500	--	--	--	--	--	--	23	50	87	99	100	--	SWC	
Oct. 15	12:15 p. m.	345	1,630	1,540	--	--	--	--	--	11	19	58	100	--	--	BW	
Oct. 22	1:50 p. m.	308	1,400	--	--	--	--	--	--	11	26	71	97	100	--	SWC	
Nov. 1	3:15 p. m.	298	1,210	--	--	--	--	--	--	12	30	69	95	99	100	SWC	
Nov. 8	10:00 a. m.	308	1,400	1,460	--	--	--	--	--	12	20	66	100	--	--	BW	
Nov. 20	10:00 a. m.	308	2,110	--	--	--	--	--	--	8	22	61	84	89	100	SPC	
Dec. 9	4:20 p. m.	273	1,700	--	--	--	--	--	--	9	24	65	90	100	--	SWC	
Dec. 31	9:20 a. m.	240	960	--	--	--	--	--	--	12	21	60	96	100	--	SWC	
Mar. 1, 1950	11:35 a. m.	387	2,640	--	--	--	--	--	--	12	28	72	97	100	--	SWC	
Mar. 3	11:35 a. m.	386	1,880	--	--	--	--	--	--	17	33	78	96	97	100	SWC	
Apr. 14	8:40 a. m.	395	2,060	--	--	--	--	--	--	7	20	62	96	100	--	SW	
May 11	8:40 a. m.	590	1,780	--	--	--	--	--	--	20	42	76	95	100	--	SW	
May 11	1:20 p. m.	549	2,680	--	--	--	--	--	--	9	24	68	97	100	--	SW	
June 7	8:15 a. m.	278	780	--	--	--	--	--	--	10	26	66	96	100	--	SW	
June 13	10:30 a. m.	234	790	--	--	--	--	--	--	8	23	64	96	100	--	SW	
July 9	1:36 p. m.	238	910	--	--	--	--	--	--	14	30	68	96	100	--	SW	
July 9	6:15 p. m.	234	670	--	--	--	--	--	--	15	31	69	96	100	--	SW	
Aug. 2	10:15 a. m.	253	1,000	--	--	--	--	--	--	10	26	68	96	100	--	SW	
Aug. 14	12:50 p. m.	578	3,560	3,130	--	--	--	--	--	58	89	99	100	--	--	SPWCM	
Aug. 27	11:30 a. m.	913	5,470	6,230	--	--	--	--	--	60	75	94	100	--	--	SPWCM	
Aug. 30	9:40 a. m.	366	1,780	--	--	--	--	--	--	17	27	40	68	96	100	SPWCM	
Sept. 20	1:05 p. m.	319	1,490	--	--	--	--	--	--	9	25	70	95	100	--	SW	

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR SPARKS, NEBR.

LOCATION.--At gaging station at bridge on State Highway 7, 2.2 miles downstream from Big Beaver Creek, 5½ miles downstream from Minnechadua Creek, and 6½ miles southwest of Sparks, Cherry County.

DRAINAGE AREA.--6,406 square miles.

RECORDS AVAILABLE.--Sediment records: May 1947 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 18,000 tons Aug. 27; minimum daily, 51 tons Jan. 27.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 6,300 ppm May 30, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 38,000 tons May 30, 1949; minimum daily, not determined.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	793	1,100	2,400	804	1,300	2,800	792	1,100	2,300
2-----	804	770	1,700	804	2,300	5,000	793	1,100	2,400
3-----	750	840	1,700	782	1,800	3,800	793	1,800	3,900
4-----	782	910	1,900	804	1,700	3,700	780	1,800	3,700
5-----	771	910	1,900	826	2,000	4,500	700	1,200	2,300
6-----	892	1,200	2,900	730	2,000	3,900	660	980	1,700
7-----	980	1,600	4,200	837	1,700	3,800	550	--	e 1,400
8-----	859	1,300	3,000	815	1,500	3,300	440	--	e 1,200
9-----	970	1,200	3,100	848	1,300	3,000	410	1,100	1,200
10-----	1,090	1,600	4,700	826	1,500	3,300	450	1,300	1,600
11-----	1,060	1,300	3,700	837	1,300	2,900	250	--	e 680
12-----	936	1,000	2,500	848	1,500	3,400	170	--	e 420
13-----	860	910	2,100	848	1,300	3,000	170	--	e 420
14-----	840	1,000	2,300	793	1,200	2,600	400	--	e 1,000
15-----	800	770	1,700	826	1,400	3,100	550	980	1,500
16-----	800	770	1,700	804	1,300	2,800	600	1,000	1,600
17-----	800	770	1,700	815	1,300	2,900	680	910	1,600
18-----	800	980	2,100	750	2,000	4,000	680	1,300	2,400
19-----	826	1,200	2,700	782	1,800	3,800	710	--	e 2,500
20-----	848	1,400	3,200	782	1,500	3,200	650	1,300	2,300
21-----	804	1,700	3,700	740	1,600	3,200	650	--	e 1,800
22-----	800	1,300	2,800	782	1,300	2,700	690	--	e 1,800
23-----	800	1,200	2,600	815	1,000	2,200	760	--	e 1,700
24-----	804	1,100	2,400	793	1,500	3,200	850	--	e 1,600
25-----	837	980	2,200	815	1,500	3,300	800	--	e 1,200
26-----	848	1,000	2,300	804	1,600	3,500	780	--	e 750
27-----	793	1,600	3,400	793	1,100	2,400	850	220	500
28-----	848	1,500	3,400	782	980	2,100	880	280	670
29-----	804	1,100	2,400	826	1,000	2,200	850	140	320
30-----	782	1,400	3,000	782	1,300	2,700	800	--	e 300
31-----	793	1,300	2,800	--	--	--	810	--	e 750
Total-	26,174	--	82,200	24,093	--	96,300	19,898	--	47,610

e Estimated.

NIORRARA RIVER BASIN--Continued

NIORRARA RIVER NEAR SPARKS, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	830	560	1,300	750	46	93	910	230	570
2-----	880	--	e 1,300	790	49	100	830	180	400
3-----				770	170	350		270	
4-----				800	210	450		360	
5-----				810	130	280		--	
6-----				780	110	230		--	
7-----				750	180	360		--	
8-----				740	250	500	800	--	e 2,600
9-----				740	200	400		--	
10-----				780	180	380		--	
11-----				780	--	e 360		--	
12-----	850	--	e 280	840	--	e 340		--	
13-----				860	--	e 300		--	
14-----				890	--	e 240		--	
15-----				930	--	e 280	1,000	2,000	5,400
16-----				1,050	--	e 280	1,200	--	e 5,500
17-----				1,050	98	280	950	1,200	3,100
18-----				1,100	--	e 550	850	--	e 3,900
19-----				1,100	490	1,500	850	2,000	4,600
20-----				1,100	210	620	920	2,100	5,200
21-----				1,100	500	1,500	1,080	1,900	5,600
22-----	880	70	170	1,050	220	620	1,080	1,500	4,400
23-----	850	--	e 180	1,050	360	1,000	1,210	--	e 4,200
24-----	820	--	e 150	1,050	280	790	1,110	--	e 2,700
25-----	820	--	e 120	1,000	360	970	1,170	910	2,900
26-----	830	--	e 120	1,000	600	1,600	1,160	--	e 2,600
27-----	790	24	51	1,050	980	2,800	1,090	--	e 2,500
28-----	820	--	e 60	1,000	670	1,800	947	--	e 2,000
29-----	760	--	e 70	--	--	--	969	910	2,400
30-----	760	--	e 80	--	--	--	1,050	1,300	3,700
31-----	760	--	e 85	--	--	--	1,060	1,100	3,100
Total-	25,950	--	8,990	25,710	--	18,970	29,046	--	95,970
Day	April			May			June		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,030	1,100	3,100	947	--	e 3,600	837	1,000	2,300
2-----	1,050	1,200	3,400	947	2,100	5,400	859	980	2,300
3-----	1,060	1,200	3,400	980	1,500	4,000	826	1,300	2,900
4-----	1,040	770	2,200	1,030	2,700	7,500	760	1,200	2,500
5-----	1,020	980	2,700	1,150	3,200	9,900	760	980	2,000
6-----	1,000	980	2,600	1,050	3,200	9,100	700	1,300	2,500
7-----	969	840	2,200	1,100	2,900	8,600	730	1,400	2,800
8-----	936	910	2,300	1,280	3,100	11,000	700	980	1,900
9-----	958	700	1,800	1,350	2,700	9,800	649	840	1,500
10-----	1,020	660	1,800	1,290	2,800	9,800	640	770	1,300
11-----	969	2,400	6,300	1,240	2,400	8,000	660	840	1,500
12-----	992	2,300	6,200	1,200	2,200	7,100	720	770	1,500
13-----	992	1,700	4,600	1,080	1,500	4,400	710	660	1,300
14-----	958	1,400	3,600	1,000	1,300	3,500	848	980	2,200
15-----	925	1,200	3,000	1,000	1,800	4,900	837	770	1,700
16-----	947	910	2,300	947	1,600	4,100	782	980	2,100
17-----	914	700	1,700	936	1,100	2,800	804	980	2,100
18-----	881	1,300	3,100	936	1,500	3,800	815	910	2,000
19-----	892	1,200	2,900	958	1,300	3,400	848	840	1,900
20-----	870	--	e 2,800	947	1,000	2,600	859	540	1,300
21-----	826	--	e 2,200	947	1,100	2,800	720	1,200	2,300
22-----	837	1,000	2,300	881	980	2,300	730	640	1,700
23-----	837	1,000	2,300	804	1,200	2,600	680	1,200	2,200
24-----	870	1,000	2,300	848	1,300	3,000	650	980	1,700
25-----	804	--	e 2,100	859	1,400	3,200	740	980	2,000
26-----	782	--	e 2,100	892	1,300	3,100	620	910	1,500
27-----	782	--	e 2,100	903	1,300	3,200	660	980	1,700
28-----	859	--	e 2,300	870	1,100	2,600	670	700	1,300
29-----	1,000	--	e 2,700	881	1,300	3,100	630	700	1,200
30-----	947	--	2,600	870	1,800	4,200	620	910	1,500
31-----	--	--	--	903	1,300	3,200	--	--	--
Total-	27,967	--	85,000	31,026	--	156,600	22,055	--	56,700

e Estimated.

MISSOURI RIVER BASIN

NIOBRARA RIVER BASIN--Continued

NIOBRARA RIVER NEAR SPARKS, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	640	610	1,100	660	980	1,700	848	700	1,600
2-----	690	910	1,700	730	910	1,800	848	640	1,500
3-----	690	610	1,100	710	660	1,300	815	--	e 1,000
4-----	690	700	1,300	720	840	1,600	793	480	1,000
5-----	690	620	1,200	690	660	1,200	750	670	1,400
6-----	690	590	1,100	730	910	1,800	760	500	1,000
7-----	690	570	1,100	670	840	1,500	730	430	850
8-----	630	470	800	730	910	1,800	740	560	1,100
9-----	680	600	1,100	750	770	1,600	740	770	1,500
10-----	680	840	1,500	740	910	1,800	793	--	e 1,900
11-----	700	1,300	2,500	782	1,100	2,300	848	1,000	2,300
12-----	892	1,300	3,100	848	1,500	3,400	848	1,000	2,300
13-----	740	910	1,800	848	--	e 2,100	892	1,500	3,600
14-----	760	840	1,700	1,190	--	e 5,000	870	1,500	3,500
15-----	750	770	1,600	1,090	1,900	5,600	859	1,300	3,000
16-----	720	570	1,100	936	910	2,300	870	1,500	3,500
17-----	760	840	1,700	804	--	e 2,000	947	--	e 3,800
18-----	804	840	1,800	690	1,100	2,000	881	--	e 3,600
19-----	1,100	1,800	5,300	680	980	1,800	848	1,500	3,400
20-----	782	1,200	2,500	680	640	1,200	903	--	e 3,200
21-----	730	910	1,800	680	--	e 1,200	1,030	--	e 3,600
22-----	710	470	900	660	910	1,600	903	980	2,400
23-----	720	--	e 800	690	660	1,200	881	1,000	2,400
24-----	750	450	910	670	510	920	859	--	e 2,300
25-----	740	560	1,100	690	440	820	892	1,000	2,400
26-----	859	910	2,100	782	--	e 1,300	793	980	2,100
27-----	750	1,200	2,400	1,600	--	e 18,000	804	770	1,700
28-----	771	550	1,100	1,110	2,700	8,100	793	--	e 1,600
29-----	710	910	1,700	969	1,300	3,400	837	--	e 1,700
30-----	740	770	1,500	1,040	1,200	3,400	838	--	e 1,800
31-----	740	680	1,400	848	--	e 1,900	--	--	--
Total-	22,998	--	50,810	25,417	--	85,640	25,223	--	67,050
Total discharge for year (second-foot-days)									305,557
Total load for year (tons)									851,800

e Estimated.

NIOBRARA RIVER BASIN--Continued
NIOBRARA RIVER NEAR SPARKS, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 7, 1949.....	10:08 a. m.	1,660	3,070	2,850	--	--	--	--	4	13	22	90		100		BW
Nov. 16.....	2:45 p. m.	793	690	--	--	--	--	--	--	9	24	93		100		SWCM
Feb. 19, 1950.....	3:45 p. m.	1,040	526	--	--	--	--	--	--	35	71	96		100		SWCM
Apr. 17.....	2:10 p. m.	881	460	--	--	--	--	--	--	22	47	94		100		SWM
May 24.....	3:55 p. m.	870	690	--	--	--	--	--	--	15	57	94		100		SWM
June 8.....	11:40 a. m.	740	570	--	--	--	--	--	--	24	65	96		100		SWM
July 13.....	2:30 p. m.	580	580	--	--	--	--	--	--	26	64	94		100		SWM
Aug. 28.....	2:00 p. m.	1,040	2,070	4,630	48	60	60	60	60	65	84	96		100		SPWCM
Aug. 28.....	9:35 a. m.	1,580	2,160	--	--	--	--	--	--	29	58	96		100		SWM
Aug. 30.....	4:55 p. m.	836	920	1,330	35	43	43	43	43	49	72	94		100		SPWCM
Sept. 15.....	3:25 p. m.	837	560	--	--	--	--	--	--	22	52	89		100		SWM

NIOBRARA RIVER BASIN--Continued

LONG PINE CREEK NEAR RIVERVIEW, NEBR.

LOCATION.--At gaging station at county highway bridge, about 1 mile downstream from Bone Creek, and 5 1/2 miles southwest of Riverview, Keyapaha County.

DRAINAGE AREA.--390 square miles.

RECORDS AVAILABLE.--Sediment records: April 1948 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 9,940 ppm May 7; minimum daily, 80 ppm May 13.

Sediment loads: Maximum daily, 14,200 tons Mar. 23; minimum daily, 27 tons May 13.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 9,940 ppm May 7, 1950; minimum daily, not determined.

Sediment loads: Maximum daily, 14,200 tons Mar. 23, 1950; minimum daily, 14 tons June 10, 1948.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Suspended sediment					
			Load (tons)	Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum daily
October	3,417	6,780	7,013	226	2,340	88	760	4,000
November	3,016	5,980	3,310	110	160	68	406	570
December	3,204	6,360	4,680	151	330	81	541	1,180
January	3,244	6,430	5,480	177	440	65	626	--
February	3,312	6,570	13,380	478	5,280	79	1,500	5,620
March	4,624	9,170	36,440	1,180	14,200	40	2,920	9,520
April	3,434	6,810	5,870	196	810	44	633	2,390
May	3,819	7,570	14,560	470	7,750	27	1,410	9,940
June	3,514	6,970	11,210	374	1,860	110	1,180	4,290
July	3,271	6,490	5,540	179	300	69	627	1,050
August	4,038	8,010	15,650	505	3,950	88	1,470	3,920
September	3,891	7,720	17,920	597	4,130	150	1,710	3,980
Water year 1949-50	42,784	84,860	141,000	386	14,200	27	--	9,940

NIOBRARA RIVER BASIN--Continued
 LONG PINE CREEK NEAR RIVERVIEW, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 3, 1949	11:00 a.m.	105	211	391	--	--	--	--	--	30	41	94	99	BW
Oct. 24	3:30 p.m.	116	377	717	--	--	--	--	14	21	34	96	99	BW
Nov. 28	3:45 p.m.	100	436	--	--	--	--	--	--	11	29	82	99	S
Dec. 15	4:10 p.m.	114	415	--	--	--	--	--	--	17	40	90	100	S
Feb. 4, 1950	12:30 p.m.	103	261	--	--	--	--	--	--	18	44	91	100	S
Feb. 22	2:00 p.m.	100	273	--	--	--	--	--	--	31	60	92	99	S
Feb. 28	6:40 p.m.	306	6,920	3,820	11	11	16	16	41	71	98	--	--	SPWCM
Mar. 3	8:30 p.m.	350	10,020	6,240	12	12	19	19	46	75	98	--	--	SPWCM
Mar. 23	7:20 p.m.	658	28,400	11,200	10	10	14	14	40	67	96	100	100	SPWCM
Mar. 24	7:00 a.m.	291	7,590	2,410	8	8	11	11	25	60	99	--	--	SPWCM
Apr. 18	12:30 p.m.	118	654	--	--	--	--	--	--	17	43	97	--	S
May 7	9:05 a.m.	352	15,300	8,900	9	9	--	14	42	75	99	--	--	SPWCM
May 8	6:35 a.m.	168	2,360	1,600	9	9	--	14	40	81	99	--	--	SPWCM
May 13	4:20 p.m.	128	533	1,592	6	6	7	7	22	56	97	--	--	SPWCM
June 21	10:50 a.m.	126	597	1,250	9	9	--	14	--	31	55	96	--	SPWCM
July 7	12:15 p.m.	109	303	--	--	--	--	--	--	34	59	95	100	S
July 21	10:30 a.m.	112	381	--	--	--	--	--	--	20	44	90	99	S
Aug. 5	9:20 a.m.	101	370	--	--	--	--	--	--	12	27	84	100	S
Aug. 11	7:30 a.m.	130	5,070	3,770	24	24	38	38	54	65	84	99	99	SPWCM
Aug. 12	6:50 a.m.	386	6,530	7,260	30	30	44	44	--	65	79	92	99	SPWCM
Aug. 13	7:55 p.m.	269	7,160	6,760	22	22	--	35	--	69	82	94	100	SPWCM
Aug. 17	10:35 a.m.	170	1,420	1,190	28	28	30	33	44	54	70	83	89	BW
Aug. 17	10:35 a.m.	170	1,420	1,180	21	21	26	31	38	50	62	83	94	BN
Aug. 31	10:50 a.m.	112	555	--	--	--	--	--	--	22	51	96	100	S
Sept. 21	4:20 p.m.	308	2,640	3,450	12	12	--	18	--	48	74	97	100	SPWCM

NIOBRARA RIVER BASIN --Continued
MISCELLANEOUS ANALYSES OF STREAMS IN NIOBRARA RIVER BASIN

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent non- so- luble	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non-car- bon- ate		
NIOBRARA RIVER NEAR HAY SPRINGS, NEBR.																							
July 22, 1949.....	--	8.4	412	54	0.05	44	5.3	44	10	220	22	4.5	4.5	0.6	0.8	--	--	293	0.40		132	0	42
July 4, 1950.....	18	7.8	385	42	.03	46	6.8	34	0	228	21	4.0	4.0	.5	1.8	0.10	278	.38		143	0	34	
Aug. 8.....	18	7.9	402	37	.33	52	6.9	30	0	237	21	3.0	3.0	.6	1.6	.17	280	.38		158	0	29	
Aug. 26.....	390	7.9	270	20	.10	43	2.1	10	0	158	5.0	5.5	5.5	.5	2.6	.12	190	.26		116	0	16	
Sept. 17.....	33	8.4	438	46	.04	60	6.9	33	10	245	23	4.0	4.0	.6	1.5	.18	320	.44		178	0	29	

NIOBRARA RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN NIOBRARA RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

NIOBRARA RIVER NEAR HAY SPRINGS, NEBR.

Apr. 15, 1950	30	162	13.1
July 4	18	124	6.0
July 10	25	354	23.9
July 18	22	134	8.0
July 25	126	2,780	946
Aug. 1	23	88	5.5
Aug. 8	18	98	4.8
Aug. 13	261	1,740	1,230
Aug. 26	412	3,800	4,230
Aug. 29	41	226	25
Sept. 8	15	42	1.7
Sept. 13	22	63	3.7
Sept. 17	33	125	11.1
Sept. 19	29	106	8.3

NIOBRARA RIVER NEAR NORDEN, NEBR.

Apr. 13, 1950	1,150	1,900	5,900
June 8	825	1,040	2,320
July 8	703	548	1,040
Aug. 4	790	750	1,600
Aug. 28	1,240	4,080	13,700
Sept. 21	1,220	1,510	4,970
Oct. 18	989	1,170	3,120

NIOBRARA RIVER AT MEADVILLE, NEBR.

Apr. 18, 1950	1,460	1,880	7,410
May 12	1,880	1,670	8,480
June 9	960	975	2,530
July 8	855	718	1,660
Aug. 4	806	515	1,120
Aug. 28	2,040	2,940	1 ⁸ 200
Sept. 11	926	990	2,480

SNAKE RIVER NEAR BURGE, NEBR.

Oct. 5, 1949	241	532	346
Oct. 14	289	727	567
Oct. 26	250	733	495
Nov. 7	263	834	592
Nov. 15	256	739	511
Nov. 30	260	771	541
Feb. 9, 1950	296	400	320
Feb. 26	276	1,350	1,010
Mar. 6	296	790	631
Mar. 15	256	860	594
Apr. 15	296	820	655
Apr. 17	282	1,000	761
May 10	367	940	931
May 11	371	830	831
May 29	282	810	617
June 7	211	674	384
June 19	266	856	615
July 11	230	516	320
July 14	233	562	354
July 29	230	368	229
Aug. 3	221	322	192
Aug. 11	227	385	236
Aug. 29	230	330	205
Aug. 31	236	404	257
Sept. 16	253	362	247

KEYAPAH RIVER NEAR HIDDEN TIMBER, S. DAK.

Feb. 28, 1950	81	25	5.5
May 19	67	286	52
June 1	22	72	4.3
June 21	23	123	7.6
July 12	44	165	20
Aug. 23	13	38	1.3
Sept. 14	11	31	.9

MISSOURI RIVER BASIN

NIOBRARA RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN NIOBRARA RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
KEYAPAH RIVER AT WEWELA, S. DAK.			
Oct. 20, 1949	33.4	64	5.8
Feb. 28, 1950	70	31	5.9
Mar. 29	211	466	285
Apr. 25	138	3,740	1,390
June 1	92	239	59
June 20	87	240	56
July 13	77	415	86
Aug. 24	39.2	96	10
Sept. 15	40.6	56	6.1
VERDIGRE RIVER AT VERDIGRE, NEBR.			
Octo 10, 1949	486	6,520	8,560
Oct. 25	114	2,600	800
Nov. 8	122	1,220	402
Nov. 21	133	1,430	514
Apr. 19, 1950	e 140	1,450	548

e Estimated.

NIOBRARA RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN NIOBRARA RIVER BASIN--Continued
Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000
NIOBRARA RIVER NEAR HAY SPRINGS, NEBR.														
Apr. 15, 1950	3:00 p. m.	30	182	--	--	--	--	--	--	31	68	96	100	S
July 10	8:50 a. m.	25	354	1,060	57	--	80	--	--	75	91	99	100	SPWCM
Aug. 13	12:10 p. m.	261	1,740	2,350	50	57	60	65	75	91	99	100	100	SPWCM
Aug. 13	12:10 p. m.	261	1,740	1,500	46	56	59	67	73	87	96	100	100	BN
Aug. 26	10:30 a. m.	412	3,800	8,150	40	--	51	--	--	65	82	93	99	SPWCM
Aug. 29	8:50 a. m.	41	228	--	--	--	--	--	--	51	75	97	100	S
Sept. 13	4:20 p. m.	22	63	--	--	--	--	--	--	42	71	92	100	S
Sept. 19	5:20 p. m.	29	106	--	--	--	--	--	--	28	42	75	100	S
NIOBRARA RIVER NEAR NORDEN, NEBR.														
Apr. 13, 1950	3:00 p. m.	1,150	1,900	--	--	--	--	--	--	31	43	88	100	S
June 8	2:15 p. m.	825	1,040	--	--	--	--	--	--	19	50	94	100	S
July 8	2:30 p. m.	703	548	--	--	--	--	--	--	24	54	94	100	S
Aug. 4	10:50 a. m.	790	750	--	--	--	--	--	--	22	56	95	100	S
Aug. 28	3:45 p. m.	1,240	4,080	6,440	30	--	38	--	--	53	74	95	100	SPWCM
Sept. 21	12:30 p. m.	1,220	1,510	--	--	--	--	--	--	31	61	92	99	S
Oct. 18	7:45 p. m.	989	1,170	--	--	--	--	--	--	11	44	94	100	S
NIOBRARA RIVER AT MEADVILLE, NEBR.														
Apr. 18, 1950	11:00 a. m.	1,460	1,880	--	--	--	--	--	--	30	57	92	100	SWM
May 12	10:50 a. m.	1,880	1,670	--	--	--	--	--	--	27	56	94	100	SWM
July 8	11:15 a. m.	718	718	--	--	--	--	--	--	17	45	87	99	SWM
Aug. 28	10:40 a. m.	2,040	2,940	--	--	--	--	--	--	48	68	95	100	SWM
SNAKE RIVER NEAR BURGE, NEBR.														
Oct. 5, 1949	1:30 p. m.	241	532	--	--	--	--	--	--	10	28	85	100	SMC
Oct. 14	4:05 p. m.	269	727	--	--	--	--	--	--	6	23	86	100	SMC
Nov. 7	2:45 p. m.	263	834	--	--	--	--	--	--	7	23	71	99	SMC
Nov. 30	11:40 a. m.	260	771	--	--	--	--	--	--	7	25	86	100	SMC
Feb. 9, 1950	1:00 p. m.	296	400	--	--	--	--	--	--	28	62	93	100	SM
Feb. 26	1:40 p. m.	276	1,350	--	--	--	--	--	--	10	25	76	100	SM

NIOBRARA RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN NIOBRARA RIVER BASIN--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample analyzed (ppm)		Percent finer than indicated size, in millimeters									
			0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	

SNAKE RIVER NEAR BURGE, NEBR.--Continued

Mar. 6, 1950	1:30 p. m.	296	790							12	32	77	99	100	SM
Mar. 15	11:00 a. m.	256	860							15	36	85	99	100	SM
Apr. 15	12:20 p. m.	296	820							10	40	86	100	--	SM
May 10	1:20 p. m.	367	940							16	43	92	100	--	SM
May 11	11:30 a. m.	371	830							14	38	91	99	100	SM
June 7	5:55 p. m.	211	674							15	40	85	99	100	SM
July 11	6:10 a. m.	230	516							13	33	77	99	100	SM
Aug. 3	11:10 a. m.	223	322							12	31	84	98	100	SM
Aug. 29	12:20 p. m.	230	330							7	22	80	99	100	SM
Aug. 31	6:49 a. m.	236	404							13	30	84	100	--	SM

KEYAPAH RIVER NEAR HIDDEN TIMBER, S. DAK.

June 1, 1950	1:40 p. m.	22	72	145			--	17	34	50	66	96	99	100	BWCM
Aug. 23	8:40 p. m.	13	38	69			40	48	62	69	80	96	100	--	BWCM
Sept. 14	12:00 m.	11	31	60			--	44	60	71	80	94	98	99	BWCM

KEYAPAH RIVER AT MEWELA, S. DAK.

June 1, 1950	10:45 a. m.	92	239							37	51	100			SWM
Sept. 15	9:50 a. m.	40.6	56							60	67	100			SWM

VERDIGRE RIVER AT VERDIGRE, NEBR.

Oct. 10, 1949	4:00 p. m.	466	6,520	4,690	23	28	34	39	47	66	78	97	100		SPWCM
Oct. 10	4:00 p. m.	466	6,520	3,685	13	16	26	34	48	64	81	92	98	100	BN
Oct. 23	6:00 p. m.	114	2,600	695	11	11	11	12	15	26	46	92	100		SPWCM
Oct. 23	6:00 p. m.	114	2,600	1,040	5	5	7	10	12	24	44	88	98	100	BN
Nov. 8	10:30 a. m.	122	1,220	--	--	--	--	--	--	37	55	93	100		S

JAMES RIVER BASIN

JAMES RIVER AT HURON, S. DAK.

LOCATION.--At gaging station at city dam, 150 feet downstream from Chicago and North Western Railway bridge, 150 feet upstream from bridge on U. S. Highway 14, at Huron, Beadle County.

DRAINAGE AREA.--16,800 square miles.

RECORDS AVAILABLE.--Chemical analyses: April to September 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, April to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-dium	
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbonate		
Apr. 3, 1950	2,580	7.4		239	11	0.20	21	5.3	20		77	37	9.0	0.1	4.6	0.20		182	0.25		75	12	37
Apr. 5	2,580	7.4		261	9.0	.04	26	7.0	17		88	41	10	.2	2.2	--		176	.24		94	22	28
May 5	2,520	7.2		503	14	.04	36	15	53		172	88	22	.2	2.6	.20		326	.44		152	11	43
May 16	3,080	7.6		456	8.4	.02	33	15	40		158	78	20	.2	2.9	.10		296	.40		144	14	40
May 17	3,520	7.2		423	8.0	.02	32	14	31		154	70	17	.4	2.4	.20		274	.37		138	12	39
June 15	2,650	7.5		456	17	.04	42	16	35		200	60	13	.2	2.8	.10		294	.40		171	7	31
July 13	1,100	7.8		522	22	.02	48	22	38		268	67	2.0	.2	.5	--		356	.48		211	0	28
Aug. 5	685	7.2		637	18	.04	58	27	46		299	79	17	.2	3.3	.14		440	.60		254	9	28
Aug. 14	524	8.6		700	26	.30	60	27	53		314	83	21	.2	1.5	--		452	.61		261	4	31
Sept. 6	39	8.1		601	23	.02	64	32	70		356	110	26	--	.9	--		520	.71		291	0	34
Sept. 28	2	7.8		975	17	.02	76	36	97		364	178	44	.2	1.4	--		630	.86		338	40	38

a Includes equivalent of 12 parts per million of carbonate (CO₃).

JAMES RIVER BASIN—Continued

MISCELLANEOUS ANALYSES OF STREAMS IN JAMES RIVER BASIN

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- lids
																	Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate	
																	JAMES RIVER AT JAMESTOWN, N. DAK.				
Nov. 28, 1949	2,590	7.7	1,140	27	0.02	84	36	133	0	462	200	40	40	0.2	3.5	--	746	1.01	358	0	45
Feb. 4, 1950	a 1.7	7.3	1,080	27	.02	94	32	118	0	454	190	33	33	.2	6.7	--	776	1.06	366	0	41
Feb. 27	1.7	7.3	1,100	31	.04	--	28	--	0	502	197	33	3.0	.2	7.0	--	782	1.06	--	--	--
Apr. 13	1,470	7.1	273	15	.04	25	10	16	0	120	29	3.0	5.0	.2	5.1	0.10	184	.25	104	6	25
June 1	889	7.6	436	18	.04	39	17	30	0	190	65	5.0	5.0	.2	3.2	.10	290	.39	168	12	28
June 20	174	7.6	620	21	.04	51	23	38	0	215	102	13	13	.2	4.0	.20	408	.55	222	46	27
July 31	28	7.7	860	19	.40	88	34	87	0	344	168	29	29	.2	.3	--	590	.90	310	28	38
Aug. 9	a 16	7.6	1,260	24	.04	93	36	156	0	410	255	62	62	.4	6.5	--	823	1.13	355	19	49
Aug. 31	3.3	7.8	1,230	30	.04	93	35	141	0	438	238	51	51	.2	5.2	--	814	1.11	376	17	45
JAMES RIVER AT COLUMBIA, S. DAK.																					
May 2, 1950	2,590	7.4	304	14	0.20	26	11	24	0	134	38	8.0	8.0	0.3	0.6	0.20	200	0.27	110	0	32
June 15	1,480	7.6	420	15	.04	38	16	28	0	180	60	7.0	7.0	.2	2.6	.20	274	.37	161	13	28
July 12	501	7.9	578	22	.02	52	24	47	0	300	78	1.0	1.0	.2	.4	--	394	.54	228	0	31
July 26	142	7.3	619	20	.02	58	29	58	0	328	82	19	19	.2	1.0	--	472	.64	264	0	32
Aug. 2	31	7.3	679	21	.34	51	29	63	0	318	92	19	19	.2	.6	.10	458	.62	247	0	36
Aug. 16	31	8.1	765	28	.16	60	30	63	0	334	103	20	20	.2	.9	--	522	.71	273	0	33
Sept. 8	.1	8.1	1,010	23	.02	68	44	99	0	394	170	46	46	--	.6	--	660	.90	351	28	38

a Mean daily discharge.

LITTLE SIOUX RIVER BASIN

LITTLE SIOUX RIVER AT CORRECTIONVILLE, IOWA

LOCATION.--At gaging station at bridge on U. S. Highway 20, 0.2 mile upstream from Bacon Creek, half a mile west of Correctionville, Woodbury County, and three-quarters of a mile downstream from Pierson Creek.

DRAINAGE AREA.--2,450 square miles.

RECORDS AVAILABLE.--Sediment records: May to September 1950.

EXTREMES, May to September 1950.--Sediment concentrations: Maximum daily, 12,200 ppm July 12; minimum daily, 80 ppm June 9-10, Sept. 9.

Sediment loads: Maximum daily, 190,000 tons June 18; minimum daily, 20 tons Sept. 9.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, May to September 1950

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				--	--	--	250	110	74
2-----				--	--	--	265	170	120
3-----				--	--	--	265	150	110
4-----				--	--	--	236	100	64
5-----				--	--	--	208	100	56
6-----				--	--	--	198	120	64
7-----				--	--	--	183	110	54
8-----				--	--	--	173	90	42
9-----				--	--	--	159	80	34
10-----				--	--	--	144	80	31
11-----				--	--	--	138	90	34
12-----				--	--	--	729	7,010	s 28,800
13-----				--	--	--	458	850	s 1,210
14-----				--	--	--	316	500	430
15-----				--	--	--	303	570	470
16-----				--	--	--	256	420	290
17-----				--	--	--	394	1,400	s 1,980
18-----				--	--	--	6,180	11,400	190,000
19-----				--	--	--	2,230	3,040	s 20,900
20-----				--	--	--	1,400	2,300	8,690
21-----				--	--	--	1,440	1,920	7,460
22-----				--	--	--	1,620	3,740	s 17,200
23-----				--	--	--	1,280	2,110	7,290
24-----				439	210	250	1,000	1,100	2,970
25-----				420	200	230	880	750	1,780
26-----				401	140	150	780	620	1,310
27-----				358	120	120	672	560	1,020
28-----				323	110	96	565	430	660
29-----				337	--	e 220	475	330	420
30-----				340	280	260	420	300	340
31-----				284	120	92	--	--	--
Total-				2,902	--	1,420	23,617	--	293,900

e Estimated.

s Computed by subdividing day.

MISSOURI RIVER BASIN

LITTLE SIOUX RIVER BASIN--Continued

LITTLE SIOUX RIVER AT CORRECTIONVILLE, IOWA--Continued

Suspended sediment, May to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	371	220	220	640	450	780	131	120	42
2-----	336	180	160	625	600	1,010	127	120	41
3-----	301	170	140	565	650	990	120	110	36
4-----	290	160	130	505	400	550	112	90	27
5-----	270	150	110	460	350	430	108	90	26
6-----	244	130	86	420	260	290	103	90	25
7-----	219	120	71	445	--	e 1,200	99	90	24
8-----	199	90	48	432	800	930	95	90	23
9-----	232	160	100	359	250	240	91	80	20
10-----	279	200	150	336	250	230	89	90	22
11-----	293	--	e 2,600	411	--	e 3,800	88	100	24
12-----	1,820	12,200	s 62,800	1,070	--	e 36,000	85	90	21
13-----	800	2,650	s 6,260	347	600	560	82	130	29
14-----	655	800	1,410	312	600	510	82	100	22
15-----	725	--	e 5,400	279	400	300	82	110	24
16-----	1,000	7,620	s 23,200	255	270	190	81	110	24
17-----	708	1,370	2,620	336	790	s 760	81	110	24
18-----	980	2,430	s 7,000	259	260	180	79	110	23
19-----	1,080	2,980	8,690	219	200	120	77	120	25
20-----	980	1,250	3,310	195	140	74	114	--	e 48
21-----	1,440	2,380	930	182	150	74	201	--	e 200
22-----	1,540	1,730	720	172	170	79	445	990	s 1,240
23-----	1,490	1,340	540	162	170	74	505	1,500	2,050
24-----	1,720	1,630	760	150	160	65	445	950	1,140
25-----	1,580	1,250	530	142	150	58	383	600	620
26-----	1,240	960	320	138	130	48	301	300	240
27-----	1,080	960	280	142	120	46	249	200	130
28-----	1,000	1,730	4,670	145	110	43	206	150	83
29-----	840	980	2,220	140	110	42	187	190	96
30-----	725	590	1,150	138	130	48	173	150	70
31-----	672	400	730	136	130	48	--	--	--
Total-	25,109	--	137,400	10,117	--	49,800	5,021	--	6,420

Total discharge for period May 24 to Sept. 30 (second-foot-days) 66,766

Total load for period May 24 to Sept. 30 (tons) 490,900

e Estimated.

s Computed by subdividing day.

LITTLE SIOUX RIVER BASIN--Continued
LITTLE SIOUX RIVER AT CORRECTIONVILLE, IOWA--Continued

Particle-size analyses of suspended sediment, May to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters								
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
May 24, 1950.....	10:30 a.m.	439	228	700	--	39	--	58	--	73	100		SPWCM
June 18.....	7:00 a.m.	6,730	13,800	9,070	--	45	--	74	--	84	100		SPWCM
June 18.....	7:45 p.m.	6,360	5,120	4,760	58	71	83	--	89	96	100		SPWCM
June 18.....	7:45 p.m.	6,360	5,120	4,870	34	56	74	87	90	96	100		SPNM
July 6.....	7:30 p.m.	236	76	700	--	45	--	75	--	99	100		SPWCM
July 12.....	7:00 a.m.	2,400	13,800	10,700	--	37	--	63	--	99	100		SPWCM
July 12.....	9:10 a.m.	2,650	16,200	7,060	30	42	54	70	90	100			SPWCM
July 12.....	9:10 a.m.	2,650	16,200	6,830	4	11	26	61	89	99	100		SPNM
July 12.....	4:25 p.m.	1,625	8,920	17,800	--	50	--	83	--	100			SPWCM
July 14.....	7:00 a.m.	640	730	1,060	--	65	--	89	--	100			SPWCM
July 16.....	7:00 a.m.	1,280	10,500	14,300	--	41	--	77	--	100			SPWCM
July 17.....	7:00 a.m.	672	1,190	1,720	--	52	--	81	--	100			SPWCM
July 18.....	9:20 p.m.	1,240	3,310	4,860	--	43	--	67	--	100			SPWCM
July 20.....	7:00 a.m.	900	1,210	1,590	--	48	--	66	--	99	100		SPWCM
July 21.....	3:00 p.m.	1,580	2,420	9,340	--	35	--	58	--	97	100		SPWCM
July 24.....	12:55 p.m.	1,805	1,950	3,190	--	24	--	59	--	97	100		SPWCM
July 26.....	6:55 p.m.	1,160	888	1,370	--	35	--	60	--	97	100		SPWCM
Aug. 8.....	5:05 p.m.	395	601	1,230	47	68	71	86	92	100			SPWCM
Aug. 8.....	5:05 p.m.	395	601	766	35	47	67	81	91	97	100		SPWCM
Aug. 12.....	7:00 a.m.	1,200	6,720	4,360	--	46	--	80	--	99	100		SPWCM
Aug. 12.....	10:00 a.m.	655	3,440	1,930	--	50	--	85	--	99	100		SPWCM
Sept. 22.....	7:00 a.m.	420	699	1,000	--	35	--	52	--	96	100		SPWCM
Sept. 23.....	7:00 a.m.	505	1,720	2,640	--	55	--	83	--	100			SPWCM
Sept. 23.....	6:30 p.m.	505	1,560	2,290	--	64	--	88	--	99	100		SPWCM
Sept. 24.....	7:00 a.m.	460	830	1,180	--	60	--	84	--	99	100		SPWCM

LITTLE SIOUX RIVER BASIN--Continued

LITTLE SIOUX RIVER NEAR KENNEBEC, IOWA

LOCATION.--At gaging station at bridge on county road A, 1.3 miles south of Kennebec, Monona County, $5\frac{1}{2}$ miles northeast of Onawa, and $6\frac{1}{4}$ miles upstream from Maple River. DRAINAGE AREA.--2,730 square miles.

RECORDS AVAILABLE.--Sediment records: May to September 1950.

EXTREMES, May to September 1950.--Sediment concentrations: Maximum daily, 40,800 ppm June 18; minimum daily, 90 ppm Sept. 19.

Sediment loads: Maximum daily, 520,000 tons June 18; minimum daily, 27 tons Sept. 19. REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, May to September 1950									
Day	Mean discharge (second-foot)	April		Mean discharge (second-foot)	May		Mean discharge (second-foot)	June	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				--	--	--	283	920	700
2-----				--	--	--	305	2,280	1,880
3-----				--	--	--	316	1,520	1,300
4-----				--	--	--	283	820	630
5-----				--	--	--	247	600	400
6-----				--	--	--	235	510	320
7-----				--	--	--	227	410	250
8-----				--	--	--	210	380	220
9-----				--	--	--	197	330	180
10-----				--	--	--	176	360	170
11-----				--	--	--	167	310	140
12-----				--	--	--	2,040	33,200	s 316,000
13-----				--	--	--	1,120	20,900	s 74,800
14-----				--	--	--	398	4,400	4,730
15-----				--	--	--	931	29,600	s 122,000
16-----				--	--	--	643	13,700	s 27,800
17-----				--	--	--	422	2,000	2,280
18-----				--	--	--	4,650	40,800	s 520,000
19-----				--	--	--	4,850	8,800	s 121,000
20-----				--	--	--	1,850	5,000	25,000
21-----				--	--	--	1,700	5,800	26,600
22-----				--	--	--	2,290	22,100	s 149,000
23-----				420	1,300	1,470	2,050	28,800	s 170,000
24-----				398	1,120	1,200	1,280	7,900	27,300
25-----				398	1,020	1,100	998	2,240	6,040
26-----				410	800	890	866	1,840	4,300
27-----				386	680	710	802	1,390	3,010
28-----				362	550	540	680	870	1,600
29-----				410	--	e 8,200	592	560	900
30-----				510	--	e 19,000	522	510	720
31-----				328	1,660	1,470	--	--	--
Total-				3,622	--	34,600	31,330	--	1,609,000

e Estimated.

s Computed by subdividing day.

LITTLE SIOUX RIVER BASIN--Continued

LITTLE SIOUX RIVER NEAR KENNEBEC, IOWA--Continued

Suspended sediment, May to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day ^a
1-----	454	510	630	725	6,200	12,100	182	260	130
2-----	402	480	520	680	3,100	5,690	180	230	110
3-----	376	400	410	665	2,200	3,950	173	210	98
4-----	340	320	290	802	11,000	23,800	162	180	79
5-----	340	340	310	578	7,300	11,400	152	130	53
6-----	293	280	220	536	2,600	3,760	144	120	47
7-----	260	250	180	635	4,520	9,510	138	130	48
8-----	245	220	150	680	8,100	14,900	136	140	51
9-----	251	--	e 180	467	2,000	2,520	133	140	50
10-----	271	320	230	402	1,200	1,300	129	190	66
11-----	293	380	300	376	870	880	125	120	41
12-----	1,410	20,400	s 101,000	1,890	27,400	s 154,000	125	90	30
13-----	1,410	12,900	s 54,300	650	6,550	s 12,500	122	130	43
14-----	620	3,600	6,030	467	1,800	2,270	121	140	46
15-----	620	1,750	2,930	402	1,020	1,110	118	110	35
16-----	1,030	5,000	13,900	364	820	810	118	110	35
17-----	834	8,000	18,000	508	--	e 5,400	117	110	35
18-----	930	4,080	s 11,200	428	2,000	2,310	116	100	31
19-----	1,660	8,480	38,000	352	860	820	113	90	27
20-----	1,140	3,600	11,100	304	500	410	115	110	34
21-----	1,390	3,520	13,200	282	400	300	233	--	e 1,200
22-----	1,810	4,580	22,400	271	380	280	225	820	500
23-----	1,770	3,250	15,500	271	810	590	508	1,660	2,310
24-----	1,810	2,800	13,700	236	470	300	564	1,700	2,580
25-----	1,970	3,000	16,000	219	290	170	522	1,220	1,720
26-----	1,740	3,250	15,300	207	250	140	441	820	980
27-----	1,390	2,280	8,560	201	250	140	352	550	520
28-----	1,250	1,350	4,560	225	330	200	293	330	260
29-----	1,170	1,400	4,420	211	260	150	260	290	200
30-----	930	1,260	3,160	203	240	130	240	310	200
31-----	1,500	19,200	s 97,100	189	250	130	--	--	--
Total-	29,909	--	473,800	14,426	--	272,000	6,357	--	11,570
Total discharge for period May 23 to Sept. 30 (second-foot-days)									
									85,644
Total load for period May 23 to Sept. 30 (tons)									
									2,401,000

^a Estimated.

s Computed by subdividing day.

LITTLE SIOUX RIVER BASIN--Continued

LITTLE SIOUX RIVER NEAR KENNEBEC, IOWA--Continued

Particle-size analyses of suspended sediment, May to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
May 23, 1950	6:35 p. m.	422	1,390	4,750	--	20	--	36	--	--	99	100				SPWCM
June 12	1:10 p. m.	4,330	74,400	15,780	--	28	--	52	--	--	99	100				SPWCM
June 12	3:10 p. m.	4,330	56,600	25,200	--	29	--	57	--	--	100	100				SPWCM
June 12	7:00 p. m.	3,460	53,000	14,430	--	38	--	70	--	--	100	100				SPWCM
June 14	7:10 p. m.	351	1,886	1,550	--	46	--	68	--	--	99	100				SPWCM
June 18	8:00 a. m.	5,800	60,800	28,300	--	25	--	47	--	--	99	100				SPWCM
June 18	10:00 a. m.	6,080	59,800	23,300	--	28	--	52	--	--	99	100				SPWCM
June 18	2:45 p. m.	6,140	54,700	13,200	--	34	--	60	--	--	99	100				SPWCM
June 18	3:55 p. m.	6,080	25,600	14,000	28	4	46	59	82	99	100	100				SPWCM
June 18	3:55 p. m.	6,080	25,600	27,840	2	4	9	46	86	99	100	100				SPWCM
July 6	10:35 a. m.	304	291	990	--	39	--	50	--	--	92	100				SPWCM
July 12	1:00 p. m.	1,100	20,500	16,700	--	30	--	59	--	60	97	100				SPWCM
July 12	6:30 p. m.	2,170	32,900	17,300	27	35	45	60	60	99	100	100				SPWCM
July 12	6:30 p. m.	2,170	32,900	32,270	1	2	4	31	89	98	100	100				SPWCM
July 13	6:00 p. m.	964	8,210	10,900	--	41	--	67	--	--	99	100				SPWCM
July 17	5:50 p. m.	665	6,360	8,400	--	53	--	85	--	--	99	100				SPWCM
July 19	7:10 a. m.	1,740	9,600	13,000	--	26	--	46	--	--	98	100				SPWCM
July 20	6:10 p. m.	1,030	2,920	3,930	--	39	--	59	--	--	98	100				SPWCM
July 22	11:35 a. m.	1,850	3,950	6,030	--	26	--	45	--	--	96	100				SPWCM
July 23	6:40 a. m.	2,050	3,070	4,080	--	24	--	39	--	--	99	100				SPWCM
July 30	8:00 a. m.	930	46,300	8,560	24	28	36	53	81	100	--	--				SPWCM
July 30	8:00 a. m.	930	46,300	15,300	1	3	7	40	81	100	--	--				SPWCM
Aug. 8	10:20 a. m.	695	10,200	102,000	26	38	51	66	83	99	100	100				SPWCM
Aug. 8	10:20 a. m.	695	10,200	9,690	--	2	6	26	91	96	99	99				SPWCM
Aug. 12	7:10 a. m.	2,500	36,400	14,400	--	27	--	49	--	--	100	--				SPWCM
Aug. 12	9:00 a. m.	2,580	29,100	12,200	--	29	--	49	--	--	100	--				SPWCM
Aug. 12	11:05 a. m.	2,460	36,200	14,300	--	28	--	50	--	--	99	100				SPWCM
Sept. 21	6:15 p. m.	282	1,780	2,860	--	53	--	77	--	--	100	--				SPWCM
Sept. 23	5:50 p. m.	550	1,780	2,750	--	47	--	78	--	--	98	100				SPWCM
Sept. 24	6:25 p. m.	564	1,650	2,450	--	41	--	63	--	--	98	100				SPWCM
Sept. 26	6:30 a. m.	454	873	1,420	--	44	--	62	--	--	98	100				SPWCM

PLATTE RIVER BASIN

NORTH PLATTE RIVER NEAR GOOSE EGG, WYO.

LOCATION.--One hundred feet upstream from gaging station, 100 feet west of State Highway 220, 1 1/3 miles downstream from Poison Spring Creek, 3 miles south of Goose Egg, Natrona County, and 13 miles southwest of Casper.

DRAINAGE AREA.--11,500 square miles.

RECORDS AVAILABLE.--Water temperatures: June to September 1950.

Sediment records: June to September 1950.

EXTREMES, June to September 1950.--Water temperatures: Maximum, 75°F Sept. 9; minimum, 47°F Sept. 30.

Sediment concentrations: Maximum daily, 12,900 ppm July 23; minimum daily, 5 ppm Aug. 15.

Sediment loads: Maximum daily, 174,000 tons July 23; minimum daily, 10 tons Sept. 29, 30.

REMARKS.--Records of discharge for period May to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, June to September 1950
 /Once-daily temperature measurement at approximately 6 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1									--	61	63	68
2									--	61	65	68
3									--	62	65	68
4									--	61	65	68
5									--	61	65	--
6									--	--	66	--
7									--	62	66	66
8									--	65	65	--
9									--	66	64	75
10									--	--	64	60
11									--	61	63	58
12									--	63	65	61
13									--	64	65	60
14									--	--	66	52
15									--	--	68	61
16									--	--	--	60
17									--	61	65	64
18									--	60	65	64
19									--	63	--	--
20									--	62	64	57
21									--	66	65	59
22									--	62	64	63
23									--	58	65	60
24									--	64	68	--
25									--	61	65	60
26									--	66	64	58
27									--	64	65	56
28									--	62	64	56
29									--	--	67	--
30									--	63	61	47
31									--	62	63	--
Average									--	62	65	61

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER NEAR GOOSE EGG, WYO.--Continued

Suspended sediment, June to September 1950								
Day	April			May			June	
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm) Tons per day
1-----							--	-- --
2-----							--	-- --
3-----							--	-- --
4-----							--	-- --
5-----							--	-- --
6-----							--	-- --
7-----							--	-- --
8-----							--	-- --
9-----							--	-- --
10-----							--	-- --
11-----							--	-- --
12-----							--	-- --
13-----							--	-- --
14-----							--	-- --
15-----							--	-- --
16-----							--	-- --
17-----							--	-- --
18-----							--	-- --
19-----							--	-- --
20-----							--	-- --
21-----							--	-- --
22-----							--	-- --
23-----							--	-- --
24-----							--	-- --
25-----							--	-- --
26-----							--	-- --
27-----							--	-- --
28-----							5,060	58 793
29-----							5,120	63 871
30-----							5,340	71 1,020
31-----							--	-- --
Total-							15,520	-- 2,680
July			August			September		
1-----	5,380	75	1,090	5,120	46	636	4,120	18 200
2-----	5,400	67	977	5,140	44	811	4,130	18 201
3-----	5,360	--	e 4,000	5,260	41	582	4,160	18 202
4-----	5,420	1,000	s 15,500	5,540	32	478	4,250	22 252
5-----	5,480	500	7,400	5,540	36	538	4,470	-- e 280
6-----	5,300	--	e 1,600	5,540	28	419	4,540	-- e 300
7-----	4,850	65	851	5,540	32	478	4,540	24 294
8-----	4,880	57	752	5,520	28	417	4,490	24 291
9-----	4,900	51	675	5,380	48	697	4,210	22 250
10-----	4,900	46	609	5,140	25	347	3,900	18 190
11-----	4,900	40	529	5,150	30	417	3,760	15 152
12-----	4,900	40	529	5,140	24	333	3,350	11 100
13-----	4,850	55	720	5,100	24	330	2,960	12 96
14-----	4,780	--	e 750	4,120	30	334	2,080	12 67
15-----	4,810	--	e 600	3,640	5	49	1,550	30 126
16-----	4,810	--	e 500	3,740	--	e 70	1,500	21 85
17-----	4,670	35	442	4,460	14	169	1,390	10 38
18-----	3,540	20	191	4,970	24	322	980	12 32
19-----	3,420	13	120	5,020	18	244	954	-- e 30
20-----	3,020	14	114	5,000	13	175	837	1,090 s 2,850
21-----	3,120	--	e 7,900	4,880	10	132	417	4,560 s 6,430
22-----	4,020	7,700	83,600	4,700	13	165	231	451 282
23-----	5,000	12,900	174,000	4,700	15	190	196	228 121
24-----	5,660	3,530	54,000	4,710	14	178	160	-- e 55
25-----	6,110	288	4,750	4,710	19	242	140	94 36
26-----	5,630	98	1,490	4,350	14	164	120	148 48
27-----	4,680	72	909	3,820	7	72	100	95 26
28-----	4,400	61	725	3,820	14	144	85	53 12
29-----	4,390	61	723	3,820	12	124	75	50 10
30-----	4,400	54	641	3,820	9	93	70	51 10
31-----	4,610	50	622	3,900	12	126	--	-- --
Total-	147,590	--	367,300	147,290	--	9,280	63,765	-- 13,070
Total discharge for period June 28 to Sept. 30 (second-foot-days)								
								374,165
Total load for period June 28 to Sept. 30 (tons)								
								392,300

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued
NORTH PLATTE RIVER NEAR GOOSE EGG, WYO.--Continued

Particle-size analyses of suspended sediment, July to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment													Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
July 22, 1950	6:50 p. m.	3,920	4,920	3,520	46	56	71	87	97	100						BWC
Sept. 20	5:00 p. m.	1,080	782	388		48		96		100						SPWCM
Sept. 21	7:30 a. m.	467	7,100	4,290		76		99		100						SPWCM
Sept. 21	6:00 p. m.	284	834	500		66		79		100						SPWCM

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER BELOW CASPER, WYO.

LOCATION.--At cableway 500 feet upstream from gaging station, 6½ miles east of Casper, Natrona County, and 7½ miles downstream from Casper Creek.

DRAINAGE AREA.--12,600 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1949 to September 1950.

Sediment records: April 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum 68°F July 28, Aug. 4; minimum, freezing point on many days during December to February.

Sediment concentrations: Maximum daily, not determined; minimum daily, not determined. Sediment loads: Maximum daily, 150,000 tons July 24; minimum daily, less than 1 ton on many days.

EXTREMES, 1947-50.--Water temperatures (June 1949 to September 1950): Maximum, 72°F July 24, 1949; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 26,200 ppm June 7, 1949; minimum daily, 1 ppm Oct. 3, Nov. 5, 1948.

Sediment loads: Maximum daily, 269,000 tons July 11, 1949; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950

(Once-daily temperature measurement at approximately 6 p. m., except those Oct. 1 to Mar. 21 which were at approximately 10 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sept.
1	66	44	44	--	--	45	--	54	58	62	67	57
2	66	49	44	--	--	38	45	46	52	62	65	67
3	66	52	40	--	32	42	45	48	54	63	65	67
4	66	51	--	--	32	46	50	46	56	63	68	67
5	66	52	--	--	32	48	52	48	66	64	65	65
6	64	46	--	--	40	42	60	48	54	63	60	65
7	60	50	--	--	40	38	56	45	48	64	66	65
8	54	51	--	--	--	38	56	44	48	64	66	64
9	58	44	--	--	38	40	50	50	58	66	64	63
10	60	45	--	--	40	42	46	52	62	66	64	57
11	60	44	--	--	40	38	48	60	62	66	64	55
12	60	45	--	--	40	34	54	62	62	66	63	60
13	60	45	--	--	36	38	56	62	63	66	65	59
14	60	46	--	--	36	40	56	64	60	66	65	59
15	60	46	--	--	40	43	58	57	62	65	67	53
16	60	46	--	--	40	47	61	54	56	62	64	58
17	60	46	--	--	38	44	56	57	56	64	67	60
18	60	46	--	--	44	42	52	53	57	64	65	64
19	54	47	--	--	40	43	52	54	56	64	62	64
20	42	50	--	--	45	44	54	55	60	64	63	58
21	40	50	--	36	43	44	56	59	63	64	67	63
22	44	43	--	36	40	46	58	61	63	62	66	64
23	44	44	--	37	38	46	57	57	63	60	65	63
24	50	40	--	--	40	48	48	42	63	64	66	58
25	61	38	--	34	40	48	54	47	63	63	65	66
26	59	41	--	--	42	46	52	54	64	67	67	62
27	57	46	--	--	42	48	43	48	62	67	67	61
28	52	42	--	--	39	48	40	42	60	68	64	58
29	48	38	--	--	--	48	36	52	60	67	65	52
30	46	43	--	--	--	50	40	57	62	67	66	52
31	50	--	--	--	--	52	--	48	--	64	--	--
Average	57	46	--	--	39	44	51	53	59	64	65	61

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER BELOW CASPER, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment	
		Mean con- centration (ppm)	Tons per day		Mean con- centration (ppm)	Tons per day		Mean con- centration (ppm)	Tons per day
1-----	226	2	1	82	6	1	72	8	2
2-----	182	5	2	85			72	7	1
3-----	166	5	2	85			68	10	2
4-----	154	3	1	82			63		
5-----	141	5	2	80			72		
6-----	138	5	2	80	23	5	59		
7-----	144	17	7	80			59		
8-----	158	15	6	80			70		
9-----	141	6	2	80			65		
10-----	129	5	2	75			75		
11-----	120	3	1	72	5	1	68	--	e 2
12-----	114	4	1	75			60		
13-----	111	4	1	70			60		
14-----	114			70			60		
15-----	108			72			64		
16-----	102	3	(t)	72	5	1	66	--	e 1
17-----	102			72			64		
18-----	99			72			66		
19-----	99			72			64		
20-----	105			72			54		
21-----	108	9	3	75	5	1	54	--	e 1
22-----	105			75	8	2	58		
23-----	99			75	10	2	60		
24-----	96			75	11	2	58		
25-----	93			78	30	6	54		
26-----	96	3	(t)	72	24	5	58	--	e 1
27-----	93			72	18	4	64		
28-----	90			72	15	3	66		
29-----	88			72	7	1	68		
30-----	90			72	11	2	68		
31-----	88			--	--	--	66		
Total-	3,699	--	48	2,266	--	53	1,975	--	49
Day	January			February			March		
	Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment		Mean dis- charge (second- feet)	Suspended sediment	
		Mean con- centration (ppm)	Tons per day		Mean con- centration (ppm)	Tons per day		Mean con- centration (ppm)	Tons per day
1-----	68	--	e 1	50	4	(t)	72	6	1
2-----	56			56	--	--	68		
3-----	40			60	13	2	65		
4-----	46			68	21	4	63		
5-----	50			70	23	4	61		
6-----	52	--	(t)	64	12	2	59	5	(t)
7-----	54			62	10	2	59		
8-----	58			60	--	--	65		
9-----	54			58	9	1	68		
10-----	54			72	14	3	65		
11-----	54	--	e 1	78	8	2	57	9	1
12-----	53			75	--	--	53		
13-----	52			70	5	1	55		
14-----	50			72			53		
15-----	48			70			57		
16-----	50	--	e 2	72			61	15	2
17-----	48			78			63		
18-----	52			68			61		
19-----	58			72			65		
20-----	62			75			70		
21-----	62	11	2	80	6	1	65	5	(t)
22-----	60	13	2	65			63		
23-----	54	22	3	70			57		
24-----	50	11	1	72			55		
25-----	46	14	2	70			55		
26-----	48	--	e 1	70	--	--	53	5	(t)
27-----	46			68			55		
28-----	44			70			63		
29-----	44			--			61		
30-----	46			--			57		
31-----	47			--			51		
Total-	1,606	--	39	1,915	--	41	1,875	--	31

e Estimated.

t Less than 1 ton.

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER BELOW CASPER, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	53	4	(t)	580	106	166	2,010	34	185
2-----	51	5	(t)	564	99	151	2,020	31	169
3-----	93	--	e 44	572	119	184	2,010	21	114
4-----	182	--	e 190	612	198	327	1,960	22	116
5-----	126	350	119	997	--	e 850	1,920	21	109
6-----	88	140	33	817	375	827	1,900	34	174
7-----	72	32	6	612	253	418	1,930	53	276
8-----	99	--	e 12	512	462	639	1,930	67	349
9-----	208	--	e 130	334	207	187	1,930	69	360
10-----	204	115	63	260	112	79	2,400	--	e 1,100
11-----	166	112	50	226	69	42	3,280	237	2,100
12-----	138	21	8	204	73	40	4,010	--	e 4,400
13-----	111	22	7	204	85	47	4,540	304	3,730
14-----	99	19	5	270	--	e 260	4,580	217	2,680
15-----	102	23	6	1,270	839	s 3,550	4,620	222	2,770
16-----	117	32	10	2,500	819	5,530	5,020	240	3,250
17-----	111	40	12	2,600	440	3,080	5,000	223	3,010
18-----	96	42	11	2,630	409	2,900	5,340	234	3,380
19-----	90	27	7	2,630	305	2,180	5,260	196	2,780
20-----	90	17	4	2,660	254	1,820	4,660	81	1,020
21-----	82	8	2	2,640	205	1,460	3,890	38	399
22-----	72	48	9	2,660	202	1,450	3,480	26	244
23-----	324	314	s 294	3,110	610	5,120	3,500	54	510
24-----	400	--	e 240	3,840	493	5,110	4,220	60	684
25-----	684	591	s 1,280	4,240	346	3,960	4,560	55	677
26-----	1,220	1,180	3,890	3,210	158	1,370	4,640	43	529
27-----	1,880	1,400	7,110	3,090	57	476	4,940	64	854
28-----	2,030	718	3,940	3,090	53	442	5,000	74	999
29-----	1,140	328	s 1,080	2,600	46	323	5,080	64	878
30-----	612	104	172	2,290	44	272	5,220	145	2,040
31-----	--	--	--	2,020	39	213	--	--	--
Total-	10,740	--	18,730	53,644	--	43,460	110,850	--	39,900
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5,320	170	2,440	5,100	93	1,280	4,040	28	306
2-----	5,400	134	1,950	5,140	69	958	4,010	30	325
3-----	5,420	107	1,570	5,160	81	1,130	4,010	28	303
4-----	5,490	1,950	28,900	5,440	86	1,260	4,040	25	273
5-----	5,400	1,070	15,600	5,490	90	1,330	4,300	68	789
6-----	5,380	385	5,590	5,510	72	1,070	4,360	40	471
7-----	4,960	114	1,530	5,530	61	911	4,360	35	412
8-----	4,940	101	1,350	5,530	55	820	4,380	31	366
9-----	4,980	113	1,520	5,490	55	816	4,260	25	288
10-----	4,980	77	1,040	5,200	41	576	3,970	25	268
11-----	4,980	58	780	5,180	28	392	3,930	21	223
12-----	4,980	37	498	5,180	33	462	3,480	20	188
13-----	5,000	46	621	5,180	32	448	3,210	16	139
14-----	4,920	77	1,020	4,500	21	255	2,460	14	93
15-----	4,900	63	834	4,010	29	314	1,720	22	102
16-----	4,900	56	714	3,700	30	300	1,480	25	100
17-----	4,940	45	601	4,080	37	407	1,450	14	55
18-----	3,980	38	409	4,540	39	478	1,170	10	32
19-----	3,720	42	422	4,680	32	404	1,090	20	59
20-----	3,230	43	375	4,700	42	533	979	103	272
21-----	3,120	49	413	4,740	45	576	853	--	e 4,300
22-----	3,660	--	e 22,000	4,540	38	466	382	670	691
23-----	4,660	--	e 59,000	4,520	41	500	302	300	244
24-----	5,280	--	e 150,000	4,540	42	515	245	138	91
25-----	5,910	--	e 51,000	4,540	36	442	199	86	46
26-----	5,930	450	7,200	4,500	28	340	178	52	25
27-----	4,960	156	2,090	3,930	--	e 240	158	28	12
28-----	4,560	104	1,280	3,910	19	200	150	20	8
29-----	4,520	67	818	3,890	17	178	147	20	8
30-----	4,480	64	774	3,890	12	126	144	11	4
31-----	4,500	64	778	3,890	--	e 120	--	--	--
Total-	149,410	--	363,100	146,230	--	17,850	65,457	--	10,490
Total discharge for year (second-foot-days)									549,867
Total load for year (tons)									493,800

e Estimated.

s Computed by subdividing day.

t Less than 1 ton.

PLATTE RIVER BASIN--Continued
NORTH PLATTE RIVER BELOW CASPER, WYO.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000
Apr. 27, 1950	2:20 p. m.	1,980	1,400	3,340	45	54	73	82	93	94	96	98	100		SPWCM	
May 1	1:57 p. m.	580	105	334		38	80	94	100	--	--	--	--		BW	
Sept. 21	5:00 p. m.	684	1,060	472		8	--	25	--	43	57	70	84	96	100	SPWCM

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER ABOVE BEDTICK CREEK NEAR DOUGLAS, WYO.

LOCATION.--At county highway bridge, 1 mile upstream from Bedtick Creek, 2½ miles south of Douglas, Converse County, and 2½ miles upstream from gaging station near Douglas.

DRAINAGE AREA.--14,300 square miles (above gaging station).

RECORDS AVAILABLE.--Water temperatures: June 1949 to September 1950.

Sediment records: April 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 80°F July 15; minimum, freezing point on many days during December to April.

Sediment concentrations: Maximum daily, 3,000 ppm July 25; minimum daily, not determined.

Sediment loads: Maximum daily, 43,800 tons July 25; minimum daily, not determined.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 18,700 ppm July 12, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 349,000 tons July 12, 1949; minimum daily, less than 1 ton Jan. 11-12, 1949.

REMARKS.--Discharge records for gaging station near Douglas for water year October 1949 to September 1950 given in Water-Supply Paper 1176. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Temperature (°F) of water, water year October 1949 to September 1950

Once-daily temperature measurement at approximately 5 p.m.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	50	41	--		--	--	52	60	67	69	65
2	--	46	40	--		32	40	52	--	67	71	67
3	56	48	38	32		48	38	46	57	68	69	63
4	64	41	32	--		--	38	36	60	65	68	69
5	62	44	32	32		--	36	47	--	64	66	70
6	52	43	38	--		--	46	42	--	71	68	72
7	45	50	32	--		32	38	44	64	69	69	70
8	43	45	32	--		32	32	46	58	71	66	69
9	52	45	32	--		--	34	53	58	71	66	62
10	43	43	--	--		--	38	57	63	71	68	59
11	54	44	--	--		--	64	60	68	71	65	53
12	40	44	--	--		--	--	60	67	67	--	57
13	39	42	--	--		--	--	64	65	71	68	57
14	54	44	--	--		--	60	65	66	67	68	57
15	56	47	--	--		--	61	62	64	67	71	56
16	45	43	--	--		--	64	63	60	67	71	55
17	49	47	--	--		32	65	62	65	64	72	56
18	45	45	--	--		32	56	62	60	67	70	67
19	40	45	--	--		40	62	55	62	71	61	63
20	31	43	--	--		45	64	55	65	67	60	55
21	--	45	--	--		--	68	60	64	71	65	62
22	39	42	--	--		50	58	63	67	69	69	64
23	32	45	--	--		--	61	60	69	67	66	62
24	34	45	--	--		--	56	52	69	67	66	64
25	42	47	--	--		--	40	46	63	65	66	66
26	44	45	--	--		--	48	49	68	69	68	68
27	52	45	--	--		--	--	55	66	67	68	55
28	32	43	--	--		38	44	50	64	71	65	57
29	31	42	--	--		--	38	56	67	69	70	50
30	40	42	--	--		--	40	55	65	69	62	55
31	47	--	--	--		--	--	56	--	65	64	--
Average	45	45	--	--		--	50	54	64	67	67	61

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER ABOVE BEDTICK CREEK NEAR DOUGLAS, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	480	26	34	208	14	8	160	16	6
2-----	410	25	28	200			156		
3-----	374	22	22	195			148		
4-----	338	17	16	198			125		
5-----	321	11	10	198	9	5	130	14	4
6-----	304	15	12	198			120		
7-----	307			195			114		
8-----	307			192			104		
9-----	304	7	5	190	10	5	142	42	16
10-----	291			188			185	--	e 24
11-----	287			185			120	--	e 5
12-----	252			180	16	7	110	--	
13-----	255	25	16	175			105	--	
14-----	252			175			110	--	
15-----	240			180			125	--	e 4
16-----	231	30	20	178	21	9	120	--	
17-----	222			175			115	--	
18-----	231			172			120	--	
19-----	249			170	14	6	130	--	e 13
20-----	240	37	24	165			115	--	
21-----	240	35	23	162			115	--	
22-----	246	--	e 18	162			120	--	
23-----	246	13	9	165	--	--	130	--	e 16
24-----	240	8	5	165			120	--	
25-----	237	--	e 5	165			115	--	
26-----	237			160			130	--	e 17
27-----	231			162	--	--	140	--	
28-----	228			160			150	--	
29-----	222	8	5	156			160	--	
30-----	216			150			140	--	e 18
31-----	210			--	--	--	130	--	
Total-	8,428	--	355	5,324	--	200	4,004	--	130
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	135	8	2	155	--	e 6	170	26	12
2-----	105			160			182		
3-----	85			170			170		
4-----	90			180			168	--	
5-----	100	--	e 3	190	--	e 5	158	e 12	e 16
6-----	110			165			156		
7-----	120			175			150		
8-----	130			165			145		
9-----	125	--	e 8	170	--	e 14	165	e 17	e 13
10-----	125			175			180		
11-----	135			185			150		
12-----	120			180	--	e 4	125		
13-----	115	--	e 3	175			115		
14-----	125			175			135		
15-----	120			170			170		
16-----	125	--	e 8	190	--	e 14	190	e 16	e 17
17-----	125			190			210		
18-----	115			215			180		
19-----	135			235			195		
20-----	170	--	e 8	200	--	e 14	190	e 17	e 13
21-----	220			190			200		
22-----	240			190			225		
23-----	230			200			220		
24-----	225	--	e 8	210	--	e 14	245	e 17	e 13
25-----	190			225			260		
26-----	155			222			235		
27-----	180	--	e 8	192	--	e 14	225		
28-----	190			178			205		
29-----	160			--			215		
30-----	150			--			220		
31-----	150	--	e 8	--			215		
Total-	4,490	--	150	5,227	--	190	5,789	--	440

e Estimated.

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER ABOVE BEDTICK CREEK NEAR DOUGLAS, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	225			917	160	396	2,450	100	662
2-----	220	32	20	908	132	324	2,430	--	e600
3-----	235			803	119	258	2,480	100	670
4-----	255	114	78	803	114	247	2,440	95	626
5-----	276	187	139	953	148	381	2,360	--	e550
6-----	328	46	41	1,130	164	s533	2,310	--	e550
7-----	255	21	14	1,330	248	881	2,310	85	530
8-----	248	50	33	998	195	525	2,350	103	654
9-----	610	146	240	935	172	434	2,380	100	643
10-----	768	249	516	719	170	330	2,330	75	472
11-----	568	108	s178	562	182	276	2,710	145	1,060
12-----	414	50	56	500	64	88	3,470	205	1,920
13-----	356	31	30	490	64	85	4,010	310	3,360
14-----	318	148	127	525	72	102	4,480	430	5,200
15-----	418	244	275	628	104	176	4,540	395	4,840
16-----	515	124	172	1,660	569	s3,050	4,640	330	4,130
17-----	450	42	51	3,010	1,120	9,100	5,100	440	6,060
18-----	442	28	33	3,120	860	7,240	5,950	--	e24,000
19-----	500	30	40	3,180	650	5,580	5,750	750	11,600
20-----	402	35	38	3,180	545	4,680	5,610	1,840	27,900
21-----	342	39	36	3,170	385	3,300	4,660	630	7,930
22-----	342	57	53	3,080	340	2,830	3,800	320	3,280
23-----	328	42	37	3,100	345	2,890	3,620	220	2,150
24-----	434	50	59	3,500	510	4,820	3,590	225	2,180
25-----	761	108	222	4,320	880	10,300	4,190	390	4,410
26-----	768	135	280	4,400	930	11,000	4,460	460	5,780
27-----	1,310	487	s1,710	3,620	480	4,690	4,580	340	4,200
28-----	1,920	970	5,030	3,560	370	3,560	4,840	300	3,920
29-----	2,120	1,150	6,580	3,500	385	3,640	4,920	195	2,590
30-----	1,450	527	s2,250	2,970	280	2,080	5,050	310	4,230
31-----	--	--	--	2,700	160	1,170	--	--	--
Total-	17,576	--	18,380	64,271	--	84,970	113,810	--	136,700
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5,190	390	5,470	4,680	210	2,650	3,760	286	2,900
2-----	5,160	355	4,950	5,100	220	3,030	3,950	140	1,490
3-----	5,280	420	5,990	4,990	202	2,720	3,950	195	2,080
4-----	5,330	810	11,700	5,100	275	3,790	3,920	170	1,800
5-----	5,410	2,180	31,800	5,360	295	4,270	3,980	195	2,100
6-----	5,050	1,200	16,400	5,380	472	6,860	4,190	150	1,700
7-----	4,990	600	8,080	5,380	320	4,650	4,230	170	1,940
8-----	4,660	780	9,810	5,330	280	4,030	4,180	195	2,200
9-----	4,640	360	4,510	5,330	316	4,550	4,250	288	3,300
10-----	4,760	260	3,340	5,240	328	4,640	4,090	230	2,540
11-----	4,760	310	3,980	4,960	320	4,290	3,900	115	1,210
12-----	4,740	302	3,860	4,940	--	e4,000	3,780	160	1,630
13-----	4,780	295	3,810	4,880	354	4,660	3,340	141	1,270
14-----	4,780	265	3,420	4,840	218	2,850	3,140	120	1,020
15-----	4,720	335	4,270	4,210	172	1,960	2,500	58	392
16-----	4,700	315	4,000	3,770	140	1,430	1,980	39	208
17-----	4,720	311	3,960	3,660	100	988	1,740	55	258
18-----	4,680	282	3,560	4,210	232	2,640	1,670	37	167
19-----	3,710	155	1,550	4,600	136	1,690	1,440	23	89
20-----	3,560	150	1,440	4,680	166	2,100	1,360	210	771
21-----	3,120	105	885	4,700	136	1,730	1,400	--	e4,400
22-----	3,100	144	1,210	4,680	150	1,900	1,130	209	638
23-----	4,400	355	s4,380	4,600	132	1,640	754	126	257
24-----	5,050	662	9,030	4,420	202	2,410	556	232	348
25-----	5,410	3,000	43,800	4,400	80	950	505	94	128
26-----	5,840	1,300	20,500	4,400	106	1,260	450	51	62
27-----	4,920	740	9,830	4,280	120	1,390	422	33	38
28-----	4,540	342	4,190	3,820	119	1,230	410	33	37
29-----	4,380	214	2,530	3,780	121	1,230	390	33	35
30-----	4,300	177	2,050	3,760	140	1,420	378	25	26
31-----	4,340	182	2,130	3,710	216	2,160	--	--	--
Total-	145,020	--	236,400	143,190	--	85,120	71,745	--	35,030
Total discharge for year (second-foot-days)									588,854
Total load for year (tons)									598,100

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued
NORTH PLATTE RIVER ABOVE BEDTICK CREEK NEAR DOUGLAS, WYO.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000		2.000	
Apr. 28, 1950	7:40 a. m.	1,860	1,350	4,200	42	59	71	83	90	92	94	96	99	---	---	SPWCM	
May 19	12:45 p. m.	3,200	636	1,260	---	23	---	33	---	44	49	53	68	86	98	98	SPWCM
May 26	4:00 p. m.	4,720	935	1,070	---	35	---	60	---	72	81	91	98	---	---	---	SPWCM
June 20	1:30 p. m.	5,610	2,120	2,730	29	38	46	54	61	64	67	71	86	97	---	---	SPWCM
July 4	7:45 p. m.	5,280	1,580	1,030	---	69	---	86	---	88	92	97	---	---	---	---	SPWCM
July 5	7:45 p. m.	5,640	4,880	3,600	---	52	---	74	---	95	96	98	100	---	---	---	SPWCM
July 25	6:25 p. m.	5,880	9,850	3,900	---	86	---	93	---	98	---	---	---	---	---	---	SPWCM
Sept. 22	9:45 a. m.	1,230	1,155	1,400	67	77	85	94	96	97	98	99	100	---	---	---	BWC

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER NEAR CASSA, WYO.

LOCATION.--Four hundred feet upstream from gaging station which is 1½ miles south of Cassa, Platte County, 4½ miles downstream from Horseshoe Creek, and 6 miles upstream from high waterline of Guernsey Reservoir.

DRAINAGE AREA.--15,700 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1949 to September 1950.

Sediment records: March 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 78°F July 11; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 4,460 ppm July 26; minimum daily, not determined.

Sediment loads: Maximum daily, 66,800 tons July 26; minimum daily, not determined.

EXTREMES, 1947-50.--Water temperatures (June 1949 to September 1950): Maximum, 78°F July 11, 1950; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 10,500 ppm July 13, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 121,000 tons July 13, 1949; minimum daily, not determined.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950

(Once-daily temperature measurement at approximately 5 p. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	47	35	--	--	38	--	43	64	71	70	76
2	58	48	38	--	32	35	--	50	56	72	66	68
3	62	48	34	--	--	--	35	48	--	73	69	73
4	60	47	33	32	32	45	40	40	--	73	72	66
5	59	49	37	--	--	--	--	46	--	69	69	71
6	57	40	33	--	32	--	60	60	--	72	--	72
7	50	46	31	32	--	32	55	48	--	73	64	73
8	47	43	31	--	32	32	60	48	--	73	72	71
9	51	39	32	32	32	--	--	53	--	73	69	67
10	45	46	35	--	--	32	50	55	67	75	69	62
11	42	42	--	32	32	--	60	61	71	78	64	55
12	51	47	--	--	32	32	48	64	71	75	71	56
13	50	46	--	32	--	--	--	65	60	64	67	54
14	54	43	--	32	33	--	58	64	71	74	71	54
15	53	41	--	--	--	--	50	63	72	74	73	57
16	52	42	--	32	--	45	60	67	63	66	68	56
17	53	35	--	32	35	--	60	66	66	66	67	58
18	--	34	--	--	35	35	45	65	64	72	69	59
19	38	38	--	--	--	--	45	57	65	74	65	64
20	--	39	--	32	--	40	--	65	68	72	61	59
21	41	35	--	35	35	--	60	65	68	70	69	56
22	47	35	--	--	--	--	63	70	64	74	68	65
23	47	35	--	35	35	35	--	66	70	72	62	64
24	50	42	--	--	--	45	--	56	73	72	69	57
25	54	43	--	--	40	45	45	54	69	68	63	56
26	40	39	--	32	45	--	50	50	68	72	67	62
27	49	47	--	35	--	--	43	54	68	69	66	58
28	41	38	--	--	35	--	--	66	69	73	62	58
29	47	34	--	32	--	45	50	61	70	71	59	54
30	42	35	--	--	--	48	48	57	70	73	63	58
31	47	--	--	--	--	50	--	60	--	69	72	--
Average	50	41	--	--	--	--	--	58	--	72	67	62

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER NEAR CASSA, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	744	37	74	276			223		
2-----	610	28	46	271			227	14	9
3-----	521	15	21	271			231		
4-----	468	12	15	266	30	22	219		
5-----	425	13	15	266			171		
6-----	395	12	13	266			187		
7-----	395			266			167	44	20
8-----	390			262			171		
9-----	385	8	8	258	22	15	138		
10-----	380			258			183		
11-----	370			253			220	--	e 24
12-----	345			258			150	--	e 16
13-----	330	4	4	248	9	6	130	--	e 10
14-----	335			244			125		
15-----	335	23	21	248			130		
16-----	315			253			135		
17-----	305	10	8	248			130		
18-----	300			248	25	17	130		
19-----	375	--	e 350	244			135		
20-----	370	1,030	1,030	240			140	--	e 8
21-----	335	240	217	235			135		
22-----	330	137	122	235			135		
23-----	335	107	97	235			140		
24-----	330	138	123	235			150		
25-----	320	68	54	231	5	3	140		
26-----	305	32	26	231			155		
27-----	300			231			170		
28-----	290			231			180	--	e 10
29-----	285	14	11	231			185		
30-----	285			231			190		
31-----	280			--	--	--	160		
Total-	11,488	--	2,360	7,470	--	353	5,082	--	360
Day	January			February			March		
	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	150	--	e 8	170			230		
2-----	155			175			227	22	14
3-----	120			185	22	11	262		
4-----	105	13	4	195			227		
5-----	110			200			227		
6-----	120			200			215		
7-----	135			195			195		
8-----	140	14	5	205	17	9	171		
9-----	145			185			195	13	7
10-----	140			195			220		
11-----	140			200			187		
12-----	145			210			160		
13-----	130	21	8	195	12	6	145		
14-----	130			190			170		
15-----	140			185			190		
16-----	135			190			210	18	10
17-----	135	22	8	210			230		
18-----	130			230	14	8	240	40	26
19-----	140			240			225		
20-----	160	12	6	250			230	13	8
21-----	180			230			230		
22-----	200			220	6	4	240		
23-----	230			230			250		
24-----	240	36	23	250	--	e 20	260	8	6
25-----	230			265	63	45	290		
26-----	190			270	106	77	270		
27-----	175			250	--	e 40	260		
28-----	200	32	16	230	18	11	240		
29-----	200			--	--	--	220	7	4
30-----	180			--	--	--	230		
31-----	165			--	--	--	225		
Total-	4,895	--	307	5,950	--	375	6,871	--	251

e Estimated.

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER NEAR CASSA, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	240			1,590	480	2,080	2,820	150	1,140
2-----	235	34	22	1,130	215	656	2,640	110	784
3-----	253			1,050	140	397	2,680	152	1,080
4-----	240			1,080	145	415	2,730	132	973
5-----	290	--	e 50	1,130	165	503	2,680	102	738
6-----	355	85	81	1,280	265	916	2,530	75	512
7-----	410	122	135	1,590	433	s 2,010	2,430	53	348
8-----	375	103	104	1,680	960	4,350	2,370	35	224
9-----	355	--	e 150	1,460	745	2,940	2,460	32	213
10-----	696	530	996	1,310	220	778	2,390	43	277
11-----	841	615	1,400	1,070	155	448	2,480	41	275
12-----	673	255	463	920	140	348	3,070	210	1,740
13-----	552	--	e 130	832	80	180	3,830	370	3,830
14-----	509	38	52	805	50	109	4,300	550	6,390
15-----	503	37	50	850	55	126	4,490	520	6,300
16-----	652	151	s 287	1,110	220	6659	4,450	520	6,250
17-----	805	214	465	2,370	1,120	s 8,120	4,730	475	6,070
18-----	728	94	185	3,390	1,380	12,600	5,690	2,370	s 38,900
19-----	728	84	126	3,540	1,080	10,300	5,510	2,300	34,200
20-----	760	--	e 140	3,580	930	8,990	5,720	1,460	22,500
21-----	666	40	72	3,520	640	6,080	4,970	1,380	18,500
22-----	578	27	42	3,470	495	4,640	4,280	710	8,200
23-----	552	30	45	3,350	405	3,660	3,680	300	2,980
24-----	571	--	e 60	3,530	450	4,290	3,520	290	2,760
25-----	673	84	116	4,110	700	7,770	3,810	250	2,570
26-----	940	97	246	4,670	1,350	17,100	4,260	265	3,050
27-----	950	70	180	4,360	925	10,900	4,420	385	4,590
28-----	1,540	--	e 3,300	3,850	585	6,080	4,610	240	2,990
29-----	2,220	1,310	7,850	3,790	380	3,890	4,730	300	3,380
30-----	2,270	1,000	6,130	3,640	330	3,240	4,830	310	4,040
31-----	--	--	--	3,240	210	1,840	--	--	--
Total--	21,160	--	22,940	73,277	--	126,400	113,110	--	186,300
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	4,930	310	4,130	4,260	268	3,080	3,860		
2-----	5,060	290	3,960	4,650	210	2,640	4,020		
3-----	5,240	880	12,500	4,850	225	2,950	4,090	67	728
4-----	5,390	620	9,020	4,890	210	2,770	4,080		
5-----	5,420	770	11,300	5,060	275	3,760	4,060		
6-----	5,350	1,700	24,600	5,220	--	e 4,500	4,210	105	1,190
7-----	5,220	1,050	14,800	5,220	278	3,920	4,380	172	2,030
8-----	4,970	570	7,650	5,260	180	2,560	4,380	122	1,450
9-----	4,730	370	4,730	5,260	110	1,560	4,420		
10-----	4,750	270	3,460	5,300	165	2,360	4,450	156	1,810
11-----	4,850	340	4,450	5,110	233	3,210	4,150		
12-----	4,690	355	4,500	5,020	205	2,780	4,060		
13-----	4,690	270	3,670	5,000	275	3,710	3,770		
14-----	4,730	250	3,190	4,930	163	2,170	3,500	72	681
15-----	4,630	260	3,250	4,770	126	1,620	3,240		
16-----	4,630	220	2,750	4,110	100	1,110	2,590		
17-----	4,630	170	2,130	3,710	90	902	1,980	67	501
18-----	4,670	110	1,390	3,880	126	1,320	1,790		
19-----	4,280	105	1,210	4,470	184	2,220	1,730		
20-----	3,660	80	791	4,790	210	2,720	1,480	111	468
21-----	3,410	55	506	4,810	321	4,107	1,470		
22-----	3,180	205	1,780	4,810	250	3,250	1,400		
23-----	3,350	180	1,630	4,690	142	1,800	1,200	36	41
24-----	4,360	780	s 9,380	4,570			823		
25-----	4,970	1,900	25,500	4,570	96	1,190	631		
26-----	5,550	4,460	66,800	4,590			568	90	129
27-----	5,720	1,100	17,000	4,570			503		
28-----	4,930	930	12,400	4,240			446		
29-----	4,510	450	5,480	3,960	80	884	420	36	41
30-----	4,340	298	3,490	3,920			405		
31-----	4,280	270	3,120	3,880			--		
Total--	145,120	--	270,500	144,370	--	69,300	78,106	--	22,840
Total discharge for year (second-foot-days).....									616,899
Total load for year (tons).....									702,300

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued
NORTH PLATTE RIVER NEAR CASSA, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment													Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Oct. 20, 1949.....	4:40 p. m.	375	780	592	36	46	51	56	62	80	90	98		99	100	BW
May 2, 1950.....	8:30 a. m.	1,190	275	783	--	34	51	61	69	73	78	85		91	95	SPWCM
May 8.....	9:05 a. m.	1,750	969	1,140	--	66	--	84	--	93	--	--		--	--	SPWCM
May 19.....	8:40 a. m.	3,470	950	2,160	--	40	--	59	--	82	87	93		98	99	SPWCM
May 26.....	9:25 a. m.	4,750	1,560	1,080	--	36	--	50	--	77	85	93		97	98	SPWCM
May 28.....	8:00 a. m.	3,810	625	732	--	37	--	50	--	71	79	94		--	--	SPWCM
June 19.....	8:00 a. m.	5,550	2,520	3,150	--	48	--	66	--	85	89	96		100	--	SPWCM
June 20.....	5:00 p. m.	6,000	1,830	2,450	33	40	50	53	67	74	78	82		87	95	SPWCM
July 6.....	3:00 p. m.	5,420	3,820	4,850	54	67	79	89	93	95	--	--		--	--	SPWCM
July 6.....	3:00 p. m.	5,420	3,820	4,900	2	4	31	88	93	95	--	--		--	--	SPN
July 26.....	5:40 p. m.	5,720	6,920	5,670	--	63	--	88	--	95	97	98		--	--	SPWCM
Sept. 22.....	1:00 p. m.	1,460	527	2,370	64	73	82	87	89	90	94	96		96	97	BWC
Sept. 22.....	1:00 p. m.	1,450	527	2,620	3	4	12	77	80	86	81	86		90	98	BN

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER BELOW GUERNSEY RESERVOIR, WYO.

LOCATION.--Three hundred feet downstream from gaging station, which is three-quarters of a mile downstream from Guernsey Dam, and 1 mile northwest of Guernsey, Platte County.
DRAINAGE AREA.--16,200 square miles.

RECORDS AVAILABLE.--Sediment records: April 1947 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, not determined; minimum, less than 1 ton in October and November.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 1,370 ppm July 16, 1947; minimum daily, not determined.

Sediment loads: Maximum daily, 16,600 tons July 16, 1947; minimum daily, less than 1 ton on some days during fall and winter months each year.

REMARKS.--Records of discharge for water year October 1949 to September given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950													
Day	October			November			December						
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment					
Mean concentration (ppm)		Tons per day	Mean concentration (ppm)		Tons per day	Mean concentration (ppm)		Tons per day					
1-----	1,090	9	27	42	--	6	244	1					
2-----	1,090			36	--		236	--					
3-----	1,090			39	--		219	--					
4-----	1,100			31	--		225	--					
5-----	1,100			21	--		271	--					
6-----	1,120	10	30	21	--		247	18					
7-----	1,080			60	--		150	--					
8-----	1,120			85	--		175	--					
9-----	1,120			57	--		172	--					
10-----	762			89	--		193	--					
11-----	434	10	16	83	--		127	--					
12-----	60			--	85		--	162		--			
13-----	22			--	229		--	132		--			
14-----	22			--	86		4	165		--			
15-----	22			--	84		--	138		--			
16-----	22	4	(t)	87	--	e 1	117	--	e 4				
17-----	44			99	--		62	--					
18-----	38			93	--		21	--					
19-----	28			57	--		168	--					
20-----	28			21	--		169	--					
21-----	28	--	(t)	84	--		118	--					
22-----	22			84	--		102	--					
23-----	22			224	--		78	--					
24-----	40			21	--		74	--					
25-----	39			147	4		73	--					
26-----	28	--		286	--		55	--					
27-----	43			111	--		86	--					
28-----	41			301	--		90	--					
29-----	22			279	--		94	--					
30-----	22			279	--		83	13					
31-----	38	--		--	--		61	--					
Total-	11,737			--	290		3,221	--		30	4,347	--	120

e Estimated.

t Less than 1 ton.

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER BELOW GUERNSEY RESERVOIR, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	81			167	14		368	--	
2-----	100			171	--		378	10	
3-----	211			178	--		380	--	
4-----	226			232	--		329	--	
5-----	188			617	--		330	--	
6-----	96			275	--		389	--	
7-----	71			184	--		383	--	
8-----	67			161	--		386	--	
9-----	191			189	--		363	--	
10-----	200			139	--		446	--	
11-----	175			147	--		453	--	
12-----	239			137	--		480	--	
13-----	170			225	--		340	--	
14-----	108			167	--		171	--	
15-----	21			171	--		148	--	
16-----	209		e 6	169	--	e 7	121	--	
17-----	208			122	--		107	--	
18-----	157			142	--		21	--	
19-----	154			137	--		21	--	
20-----	194			148	--		173	--	
21-----	190			182	--		488	6	8
22-----	83			179	--		576	--	e 9
23-----	152			189	--		774	7	15
24-----	150			227	--		942		
25-----	202			227	--		950	9	23
26-----	149			223	--		934		
27-----	163			360	--		974		
28-----	160			366	--		926		
29-----	162			--	--	--	886	7	17
30-----	169			--	--	--	886		
31-----	170			--	--	--	878		
Total--	4,816	--	190	5,831	--	200	15,002	--	350
	April			May			June		
1-----	725			1,040			1,160		
2-----	704			1,040			1,640	16	74
3-----	704	8	15	1,030	19	51	2,350		
4-----	697			1,010			2,880		
5-----	704			999			3,130	8	67
6-----	697			886			3,150		
7-----	690			774	9	18	3,230		
8-----	690	14	28	690			3,450		
9-----	664			466			3,690	11	109
10-----	918			350			3,910		
11-----	697			310	8	9	4,250		
12-----	711			455			4,580	18	222
13-----	697	8	15	704	--	e 16	4,850		
14-----	664			781			4,960		
15-----	697			1,020	8	22	4,940	24	318
16-----	690			1,440	9	35	4,920		
17-----	704	4	8	2,320	7	44	4,850		
18-----	767			3,020	10	82	4,690		
19-----	870			3,320			4,600	38	465
20-----	870	2	5	3,540	--	e 190	4,300		
21-----	870			3,470			4,080		
22-----	974			3,660			4,000	32	347
23-----	1,050			3,910	32	339	3,980		
24-----	1,040	3	8	4,210			4,050		
25-----	1,040			3,690			4,210		
26-----	1,030			3,320	34	299	4,350	29	339
27-----	1,050			2,760			4,410		
28-----	999	--	e 28	2,210			4,540		
29-----	982			2,140	22	122	4,680	21	264
30-----	1,020			1,790			4,770		
31-----	--	--	--	1,380	18	67	--	--	--
Total--	24,555	--	478	57,725	--	3,510	118,530	--	7,350

e Estimated.

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

NORTH PLATTE RIVER BELOW GUERNSEY RESERVOIR, WYO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	4,940	22	293	4,600	23	297	4,410	14	168
2-----	4,960			4,790			4,410		
3-----	4,960			4,860			4,450		
4-----	4,880			4,850			4,480		
5-----	4,770			4,850			4,480		
6-----	4,600	22	273	4,810	24	308	4,450	21	235
7-----	4,480			4,750			4,390		
8-----	4,520			4,690			4,280		
9-----	4,600			4,750			4,140		
10-----	4,620			4,790			3,910		
11-----	4,730	15	190	4,750	18	231	3,740	22	172
12-----	4,630			4,730			3,330		
13-----	4,940			4,430			3,070		
14-----	4,980			3,210			2,880		
15-----	5,040			3,130			2,760		
16-----	4,960	23	307	4,140	11	141	2,480	12	64
17-----	5,000			4,730			2,200		
18-----	4,940			4,750			2,010		
19-----	4,900			4,730			2,000		
20-----	4,850			4,680			1,890		
21-----	4,790	18	232	4,660	18	225	1,790	6	21
22-----	4,690			4,640			1,600		
23-----	4,470			4,640			1,410		
24-----	4,350			4,640			1,210		
25-----	4,170			4,540			1,130		
26-----	4,010	36	388	3,960	16	174	1,120	2	6
27-----	3,960			3,930			1,130		
28-----	3,960			3,930			1,100		
29-----	4,070			3,940			1,100		
30-----	4,280			4,010			1,110		
31-----	4,500	26	308	4,390	--	--	--	--	--
Total-	143,750	--	9,500	138,300	--	6,550	82,460	--	3,560
Total discharge for year (second-foot-days)									610,374
Total load for year (tons)									32,130

PLATTE RIVER BASIN--Continued

PLATTE RIVER NEAR ODESSA, NEBR.

LOCATION.--At gaging station at highway bridge, 2½ miles south of Odessa, Buffalo County, and 5 miles downstream from Elm Creek.
DRAINAGE AREA.--59,800 square miles.

RECORDS AVAILABLE.--Chemical analyses: January to September 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- dium	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		Non- carbon- ate
Jan. 20, 1950	1,990	8.2	873	27	0.02	76	22	87	11	6	227	240	30	0.5	2.6	0.51	621	0.84		280	84	39
Feb. 3	2,870	8.2	860	27	.02	74	20	98		6	226	236	25	.4	2.7	--	626	.85		287	72	44
Mar. 2	1,440	8.1	823	28	.04	73	24	79		0	226	220	24	.5	2.8	--	604	.82		281	96	38
Mar. 27	2,240	8.0	842	30	.06	77	23	84		0	218	240	26	.5	3.2	--	622	.85		287	108	39
May 4	1,300	8.1	909	24	.02	79	23	99		0	208	280	29	.6	1.7	--	656	.89		292	121	42
June 15	532	8.3	813	22	.03	65	20	83		6	186	215	25	.6	2.6	.20	565	.77		245	83	43
July 6	1,167	7.9	942	23	.02	76	24	91		0	212	260	29	.4	1.2	.30	634	.86		290	116	40
Aug. 9	1,116	8.5	967	26	.02	82	22	101		14	193	274	30	.6	2.4	.29	670	.91		294	113	43
Aug. 31	1,080	7.9	789	23	.02	63	17	86		0	213	197	22	.5	2.5	.22	534	.71		277	52	45
Sept. 28	1,440	8.3	718	25	.02	59	14	80		7	198	165	22	.5	1.7	.30	476	.65		206	32	46

a Mean daily discharge.

PLATTE RIVER BASIN--Continued
CASPER CREEK AT CASPER, WYO.

LOCATION.--At gaging station at west edge of Casper, Natrona County, 500 feet upstream from bridge on U. S. Highway 20, and a quarter of a mile upstream from mouth.

DRAINAGE AREA.--662 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	Specific conduct-ance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-dum
																Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate	
Dec. 3, 1949.....	0.3	8.0	3,560	15	0.04	177	79	626	310	1,720	51	0.8	1.1	0.40	2,820	3.84	767	513	64		
Jan. 6, 1950.....	a.2	7.8	3,570	20	--	192	89	582	350	1,680	51	1.1	1.1	--	2,790	3.79	845	558	60		
Feb. 3.....	a.4	7.6	3,930	16	.04	195	90	729	400	1,940	65	1.0	1.0	--	3,230	4.39	857	529	65		
Mar. 1.....	a.7	8.0	3,260	20	.02	165	78	543	300	1,560	29	.8	.9	.10	2,540	3.45	732	486	62		
Apr. 7.....	.5	7.8	3,540	15	.04	198	83	557	300	1,650	50	.6	1.1	.20	2,700	3.67	836	590	59		
May 1.....	.9	7.8	3,620	12	.02	172	77	601	292	1,660	58	.8	.7	.20	2,730	3.71	746	507	64		
June 2.....	9.0	7.7	1,790	16	.04	102	38	265	221	735	27	.4	.7	.30	1,290	1.75	411	230	58		
July 18.....	5.9	7.8	1,280	14	.02	78	31	158	196	453	21	.4	1.0	.30	890	1.21	321	159	52		
Aug. 1.....	7.2	7.8	1,070	11	.02	69	25	132	182	370	18	.3	.4	.35	748	1.02	275	126	51		
Sept. 15.....	1.5	7.8	3,270	15	.02	167	67	576	312	1,560	46	.7	.3	.30	2,590	3.52	694	438	64		

^a Mean daily discharge.

PLATTE RIVER BASIN--Continued
SOUTH PLATTE RIVER NEAR KERSEY, COLO.

LOCATION.--At gaging station at bridge on State Highway 37, 1½ miles north of Kersey, Weld County, and 2½ miles downstream from Cache la Poudre River.
DRAINAGE AREA.--9,500 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- dium
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate	
Oct. 14, 1949.....	556	8.1	8.1	1,480	19	0.02	108	61	149	234	550	48	1.1	12	--	--	1,080	1.44		521	329	38
Nov. 17.....	598	7.4	7.4	1,600	17	0.01	141	54	171	405	518	53	1.1	8	--	--	1,150	1.56		574	242	39
Jan. 17, 1950.....	360	7.6	7.6	1,610	19	0.02	148	68	148	330	600	43	1.0	15	--	--	1,210	1.65		649	378	33
Feb. 3.....	a 398	8.1	8.1	1,520	16	0.02	143	69	146	330	588	42	1.0	17	--	--	1,190	1.62		641	370	33
Feb. 25.....	522	7.6	7.6	1,310	14	0.02	124	56	129	296	473	51	1.0	13	--	--	1,010	1.37		540	297	34
Mar. 8.....	392	8.1	8.1	1,550	16	0.02	138	65	131	312	538	47	1.0	16	--	--	1,110	1.51		612	356	32
Apr. 3.....	239	8.2	8.2	1,560	24	0.02	146	70	153	b 292	650	41	1.0	11	0.39	0.39	1,240	1.69		653	414	34
May 1.....	508	8.0	8.0	1,240	13	0.02	102	44	126	246	405	52	1.2	12	0.20	0.20	924	1.26		436	234	39
May 29.....	780	7.4	7.4	1,280	16	0.04	101	50	115	244	425	39	9	10	--	--	948	1.29		458	258	35
July 3.....	138	7.9	7.9	1,580	11	0.02	148	67	135	283	618	38	1.0	9.0	0.20	0.20	1,170	1.59		645	413	31
Aug. 2.....	97	8.0	8.0	1,580	17	0.06	127	67	187	177	695	39	1.0	8.8	--	--	1,200	1.63		591	446	37
Sept. 5.....	70	8.0	8.0	1,740	22	0.06	165	72	155	314	690	41	1.1	9.1	--	--	1,310	1.78		708	451	32

^a Mean daily discharge.

^b Includes equivalent of 8 parts per million of carbonate (CO₃).

PLATTE RIVER BASIN--Continued
SOUTH PLATTE RIVER AT BALZAC, COLO.

LOCATION --At gaging station at bridge at Balzac siding, 1½ miles northeast of Union, Morgan County.
DRAINAGE AREA --17,700 square miles.
RECORDS AVAILABLE --Chemical analyses: January to September 1950.
REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, January to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (°F)	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Jan. 18, 1950	14	7.7	1,590	17	0.02	157	57	159		228	683	50	0.8	2.2	0.37	1,240	1.69		626	439	36
Feb. 6	47	7.8	1,760	18	.02	184	53	155		310	660	46	.8	7.2	.35	1,280	1.74		677	423	33
Feb. 18	160	7.9	1,660	19	.02	188	52	157		310	668	48	.8	6.1	.26	1,290	1.75		683	429	33
Mar. 6	261	7.8	1,590	18	.02	160	56	152		234	668	47	.8	6.2	.33	1,220	1.66		630	438	34
Apr. 6	254	7.7	1,590	27	.02	150	56	161		200	685	51	.9	4.6	.43	1,230	1.67		605	441	37
May 2	259	7.8	1,640	14	.02	145	62	164		180	718	51	1.0	6.2	.10	1,250	1.70		617	469	37
May 31	323	7.7	1,700	21	.04	160	57	166		300	645	49	.9	5.4	.30	1,230	1.70		624	385	36
July 2	180	7.7	1,630	43	.02	172	53	197		270	715	48	.8	3.5	.26	1,230	1.71		655	424	34
Aug. 4	160	7.9	1,600	30	.04	206	53	174		276	755	53	.8	3.3	.30	1,420	1.91		738	483	34
Sept. 5	134	7.9	1,650	17	.04	191	59	173		216	755	53	.8	3.3	.30	1,390	1.89		718	492	34

PLATTE RIVER BASIN--Continued

SOUTH PLATTE RIVER AT JULESBURG, COLO.

LOCATION.--At gaging station at bridge on State Highway 51, 0.5 mile east of Julesburg, Sedgwick County, and 4 miles upstream from Colorado-Nebraska State line.

DRAINAGE AREA.--22,800 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1950.

EXTREMES, 1949-50.--Dissolved solids: Minimum, 478 ppm Aug. 5-7.

Hardness: Maximum, 694 ppm Dec. 1-11; minimum, 232 ppm Aug. 5-7.

Daily specific conductance: Maximum, 1,940 micromhos Jan. 28, 29; minimum, 635 micromhos Aug. 5.

Water temperatures: Maximum, not determined; minimum, freezing point on many days during December to February.

EXTREMES, 1945-50.--Dissolved solids: Maximum, 1,510 ppm Jan. 1-10, 1947; minimum, 478 ppm Aug. 5-7, 1950.

Hardness: Maximum, 780 ppm Jan. 1-10, 1947; minimum, 232 ppm Aug. 5-7, 1950.

Daily specific conductance: Maximum, 1,940 micromhos Jan. 28, 29; minimum, 635 micromhos Aug. 5, 1950.

Water temperatures: Maximum, not determined; minimum, freezing point on many days during winter months.

REMARKS.--Daily samples for chemical analysis composited by equal volume, daily samples collected from channel 2, the main channel. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-foot)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium carbonate
																	Parts per million	Tons per acre-foot	Tons per day	Total		Non-carbonate
Oct. 1-31, 1949	376		7.7	1,760	--	--	--	--	186	288	700	62	0.5	3.1	--	--	--	--	651	415	38
Oct. 1, Channel 1 a	--	--	--	1,700	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 1, Channel 2 a	151	--	--	1,710	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 1, Channel 4 a	38	--	--	1,690	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 15, Channel 1 a	--	--	--	1,770	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 15, Channel 2 a	375	--	--	1,770	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 15, Channel 4 a	78	--	--	1,760	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 1-30	405		7.7	1,830	--	--	--	--	182	322	695	62	.5	2.7	--	--	--	--	682	418	27
Nov. 1, Channel 1 a	--	--	--	1,820	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 1, Channel 2 a	355	--	--	1,840	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 1, Channel 4 a	76	--	--	1,820	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 15, Channel 1 a	--	--	--	1,770	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 15, Channel 2 a	322	--	--	1,840	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 15, Channel 4 a	68	--	--	1,830	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 1-11	384	7.8	8.0	1,850	--	--	--	--	193	338	715	62	.6	3.3	--	--	--	--	694	417	38
Dec. 12-28	305	--	--	1,780	36	0.10	183	48	172	16	316	700	61	.6	3.9	0.30	1,380	1.88	1,140	654	395
Dec. 15, Channel 1 a	--	--	--	1,860	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 15, Channel 2 a	241	--	--	1,860	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 15, Channel 4 a	45	--	--	1,860	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a. Not included in weighted average.

PLATTE RIVER BASIN--Continued
SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium	
																	Parts per million	Tons per acre-foot	Tons per day	Total		Non-carbonate
Jan. 7-15, 1950	378	7.9		1,810	--	--	--	--	194	308	715	60	0.6	4.0	--	--	--	--	664	411	39	
Jan. 15, Channel 1 a	--	--	--	1,830	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Jan. 15, Channel 2 a	215	--	--	1,820	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Jan. 15, Channel 4 a	92	--	--	1,810	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Jan. 24-Feb. 24	447	8.0	--	1,710	--	--	--	--	176	300	690	57	.6	4.4	--	--	--	--	668	422	36	
Feb. 1, Channel 2 a	260	--	--	1,880	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Feb. 1, Channel 4 a	140	--	--	1,850	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Feb. 15, Channel 1 a	--	--	--	1,770	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Feb. 15, Channel 2 a	299	--	--	1,790	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Feb. 15, Channel 4 a	89	--	--	1,790	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Feb. 25-Mar. 2	450	7.9	--	1,720	--	--	--	--	180	294	695	57	.6	4.2	--	--	--	--	659	418	37	
Mar. 3-31	595	8.2	--	1,680	30	.10	173	55	150	13	b296	685	55	.7	4.6	.30	1,310	1.78	2,100	658	415	33
Mar. 15, Channel 1 a	--	--	--	1,750	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Mar. 15, Channel 4 a	116	--	--	1,740	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Apr. 1-30	299	7.9	--	1,720	--	--	--	--	166	268	675	56	.6	3.6	--	--	--	--	647	427	36	
Apr. 1, Channel 2 a	294	--	--	1,760	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Apr. 1, Channel 4 a	68	--	--	1,760	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
May 1-5	78.6	8.1	--	1,570	--	--	--	--	149	248	605	56	.6	3.0	--	--	--	--	592	399	35	
May 12-16	60.4	7.7	--	1,590	--	--	--	--	141	235	595	59	.3	3.8	--	--	--	--	582	397	35	
May 17-25	44.0	7.9	--	1,570	26	.10	152	41	143	17	226	620	54	.6	2.4	.34	1,160	1.58	138	548	368	35
May 26-June 2	56.8	8.0	--	1,530	40	.04	160	44	148	16	248	610	58	.6	3.2	.37	1,200	1.63	184	580	377	35
July 16-20	31.6	7.9	--	1,590	33	.10	155	40	147	18	215	605	57	.7	2.4	--	--	--	552	376	36	
July 19, Channel 2 a	25	--	--	1,610	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
July 19, Channel 4 a	6.5	--	--	1,610	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
July 21-23	104	7.7	--	1,300	29	.10	123	31	120	17	177	478	44	.5	.6	.30	966	1.31	271	434	289	36
July 24-Aug. 4	78.4	8.0	--	1,630	42	.10	162	43	149	17	257	605	57	.7	3.5	.56	1,210	1.65	256	580	369	35
Aug. 1, Channel 1 a	--	--	--	1,330	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 1, Channel 2 a	42	--	--	1,660	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 1, Channel 4 a	6.5	--	--	1,660	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Not included in weighted average.

b Includes equivalent of 8 parts per million of carbonate (CO₃).

Aug. 5-7	377	7.8	687	24	.10	72	13	51	14	156	100	19	3	2.5	--	478	65	487	232	104	31
Aug. 8-11	246	7.7	1,470	37	.10	149	36	133	16	250	523	51	.6	2.4	--	1,070	1.46	716	518	313	35
Aug. 12-13	180	7.7	1,050	23	.10	102	22	96	14	182	353	35	.4	1.2	.20	762	1.04	370	346	197	36
Aug. 14-19	117	7.8	1,650	32	.04	168	42	157	16	260	610	59	.7	3.5	.12	1,220	1.66	385	592	379	38
Aug. 15, Channel 1 a	--	--	1,750	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 15, Channel 2 a	116	--	1,760	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 15, Channel 4 a	24	--	1,730	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 20-31	43.3	7.7	1,560	33	.04	158	40	147	17	248	565	58	.7	2.9	.33	1,140	1.55	133	558	355	36
Sept. 1, Channel 2	30	8.2	1,580	36	.04	154	40	144	17	214	580	63	.4	3.2	.19	1,140	1.55	92	548	373	35
Sept. 1, Channel 4 a	1.8	8.0	1,690	39	.04	170	43	154	17	252	635	59	.4	5.1	.16	1,250	--	--	600	393	35
Sept. 2-14	38.9	7.7	1,640	29	.04	168	43	155	16	264	615	56	.7	3.2	.25	1,220	1.66	128	596	380	35
Sept. 15-30	222	7.8	1,640	28	.06	170	43	150	15	277	615	57	.7	3.7	.40	1,220	1.66	731	602	375	34
Sept. 15, Channel 2 a	59	--	1,730	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sept. 15, Channel 4 a	3.0	--	1,720	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weighted average c	d 303	--	1,720	--	--	--	--	163	15	294	675	58	0.6	3.7	--	--	--	--	648	407	35

a Not included in weighted average.

c For period sampled only

d Mean discharge for water year October 1949 to September 1950 was 270 second feet.

PLATTE RIVER BASIN--Continued

BIJOU CREEK NEAR WIGGINS, COLO.

LOCATION.--At gaging station at bridge on U. S. Highways 6 and 34, 2 miles northeast of Wiggins, Morgan County, and 5.7 miles downstream from Antelope Creek.

DEATH RIVER, 49.2 square miles.

RECORDS AVAILABLE.--Sediment records: April to September 1950.

EXTREMES AVAILABLE.--Sediment concentrations: Maximum daily, 127,000 ppm July 30; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 55,000 tons July 31; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, July 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	pH	Specific conduct- (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tassium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃	
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate
July 12, 1950	7.5	6.9		1,430	22	0.02	214	36	77	833	151	5.5	5.5	0.7	0.5	0.30	932	1.27		682	0
July 29	10	6.8		1,330	28	.02	220	25	74	676	238	6.5	6.5	.7	.9	.20	944	1.28		652	98
July 31	689	7.0		1,130	27	.02	182	25	53	518	230	5.0	5.0	.6	.9	.20	796	1.08		558	133
																					133
																					17

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued
 BIJOU CREEK NEAR WIGGINS, COLO.--Continued
 Suspended sediment, April to September 1950

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							0		0
2-----							0		0
3-----							0		0
4-----							0		0
5-----							0		0
6-----							0		0
7-----							0		0
8-----							0		0
9-----							0		0
10-----							0		0
11-----							0		0
12-----							0		0
13-----							0		0
14-----							0		0
15-----							0		0
16-----							0		0
17-----							5.9		e 1,700
18-----							.2		e 20
19-----							0		0
20-----							0		0
21-----							0		0
22-----							0		0
23-----							0		0
24-----							0		0
25-----							0		0
26-----							0		0
27-----							0		0
28-----							0		0
29-----							0		0
30-----							0		0
31-----							--		--
Total-	0		0	0		0	6.1		1,720
Day	July			August			September		
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	0	--	0	55	70,600	s 10,900	0	--	0
2-----	0	--	0	15	71,800	s 3,880	0	--	0
3-----	0	--	0	.9	39,000	s 131	0	--	0
4-----	0	--	0	0	--	0	0	--	0
5-----	0	--	0	0	--	0	0	--	0
6-----	0	--	0	0	--	0	0	--	0
7-----	0	--	0	0	--	0	0	--	0
8-----	0	--	0	0	--	0	0	--	0
9-----	0	--	0	0	--	0	0	--	0
10-----	0	--	0	0	--	0	0	--	0
11-----	0	--	0	0	--	0	0	--	0
12-----	1.9		e 750	0	--	0	0	--	0
13-----	0		0	0	--	0	0	--	0
14-----	0		0	0	--	0	0	--	0
15-----	0		0	0	--	0	6.0	39,400	s 1,520
16-----	0		0	0	--	0	7.0	47,000	921
17-----	0		0	0	--	0	78	--	e 20,000
18-----	0		0	0	--	0	6.0	--	e 1,000
19-----	0		0	0	--	0	1.4	--	e 500
20-----	0		0	0	--	0	0	--	0
21-----	0		0	0	--	0	0	--	0
22-----	0		0	0	--	0	0	--	0
23-----	0		0	0	--	0	0	--	0
24-----	0		0	0	--	0	0	--	0
25-----	0		0	0	--	0	0	--	0
26-----	0		0	0	--	0	0	--	0
27-----	0		0	0	--	0	0	--	0
28-----	0		0	0	--	0	0	--	0
29-----	1.6	31,900	s 717	0	--	0	0	--	0
30-----	6.7	127,000	s 2,480	0	--	0	0	--	0
31-----	166	99,600	s 55,000	0	--	0	--	--	--
Total-	176.2	--	58,950	70.9	--	14,910	98.4	--	23,900

Total discharge for period Apr. 1 to Sept. 30 (second-foot-days) 351.6

Total load for period Apr. 1 to Sept. 30 (tons) 99,480

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued
 BJOU CREEK NEAR WIGGINS, COLO.--Continued
 Particle-size analyses of suspended sediment, June to September 1950
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.500	1.000
June 17, 1950	5:40 p.m.	2.8	24,200	3,560	59	72	80	83	85	92				SPWCM
June 17	5:40 p.m.	2.8	24,200	3,560	15	--	67	82	90	92				SPN
June 17	8:40 p.m.	8.0	141,000	3,410	--	88	--	96	--	98				SPWCM
July 12	6:50 p.m.	10	161,000	7,280	--	91	--	98	--	99				SPWCM
July 29	11:20 p.m.	6.7	138,000	7,020	--	94	--	100	--	--				PWCM
July 30	12:10 a.m.	7.2	138,000	5,640	82	92	97	98	98	99				SPWCM
July 30	1:50 a.m.	10	131,000	5,400	82	93	98	98	98	98				SPWCM
July 30	11:20 a.m.	6.0	134,000	5,780	--	93	--	--	--	98				SPWCM
July 30	12:00 m.	6.0	134,000	7,570	80	93	99	100	--	--				PWCM
July 30	12:00 m.	6.0	134,000	7,620	2	5	14	89	99	100				SPN
July 31	8:15 a.m.	12	99,200	9,310	71	88	96	97	97	97				SPWCM
July 31	8:15 a.m.	12	99,200	9,220	--	3	8	96	99	100				SPN
July 31	8:45 a.m.	12	99,200	8,600	--	91	--	99	--	100				SPWCM
July 31	12:00 m.	741	157,000	7,150	62	72	84	92	98	99				SPWCM
July 31	12:00 m.	741	157,000	6,870	3	4	16	91	97	98				SPN
July 31	1:05 p.m.	728	140,000	5,740	--	73	--	92	--	96				SPWCM
July 31	5:40 p.m.	264	92,800	8,220	62	80	90	96	98	99				SPWCM
July 31	5:40 p.m.	264	92,800	8,360	2	4	12	96	98	99				SPN
July 31	9:40 p.m.	137	78,800	6,330	--	83	--	97	--	99				SPWCM
July 31	11:30 p.m.	88	77,900	6,960	--	86	--	98	--	99				SPWCM
Aug. 1	4:30 a.m.	55	66,600	6,490	--	93	--	99	--	100				SPWCM
Aug. 1	11:00 a.m.	33	67,300	6,480	--	93	--	100	--	--				PWCM
Aug. 1	2:45 p.m.	30	81,400	8,680	68	84	95	97	97	99				SPWCM
Aug. 1	2:45 p.m.	30	81,400	8,600	1	2	10	97	97	99				SPN
Aug. 1	3:10 p.m.	117	82,700	8,580	--	88	--	97	--	99				SPWCM
Aug. 2	7:55 a.m.	20	72,400	7,470	--	86	--	99	--	99				SPWCM
Aug. 2	8:45 p.m.	11	79,700	8,660	--	98	--	100	--	--				PWCM
Aug. 2	8:40 a.m.	3	56,200	5,800	--	98	--	100	--	--				PWCM
Sept. 15	4:25 p.m.	14	106,000	5,910	--	94	--	100	--	--				PWCM
Sept. 16	8:40 a.m.	7.0	47,600	9,800	--	97	--	100	--	--				PWCM

PLATTE RIVER BASIN--Continued
WOOD RIVER NEAR RIVERDALE, NEBR.

LOCATION.--At gaging station at bridge on State Highway 40, 1½ miles northwest of Riverdale, Buffalo County.

DRAINAGE AREA.--379 square miles.

RECORDS AVAILABLE.--Sediment records: March 1947 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 8,300 tons July 9; minimum daily, less than 1 ton on many days.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 356,000 tons June 22, 1947; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, June to October 1949

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	Specific con- duct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- so- cent Non- carbon- ate
																Tons per mil- lion	Tons per acre- foot	Total	Non- carbon- ate	
June 7, 1949,	a 729	7.1	160	19	0.07	20	4.0	8.7	92	6.0	0.6	0.4	2.0	2.0	0.20	118	0.16	67	0	22
Oct. 6,	1.5	7.6	550	21	.02	76	9.3	37	344	16	4.5	.2	2.1	2.1	0.20	363	.49	228	0	26

a Mean daily discharge.

PLATTE RIVER BASIN--Continued

WOOD RIVER NEAR RIVERDALE, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.8	76	(t)	2.5	50	(t)	2.6	51	(t)
2-----	.8			2.8			2.9	52	(t)
3-----	.6			2.6			3.2	54	(t)
4-----	.7			2.4			3.2	68	(t)
5-----	.8			2.2			3.2	117	1
6-----	1.4	79	1	2.3	50	(t)	3.6	150	1
7-----	2.0			2.4			4.1	88	1
8-----	4.4			2.5			4.1		
9-----	5.5			2.6			4.1		
10-----	18	--	e 26	2.6			4.1		
11-----	17	--	e 55	2.7	50	(t)	3.6		
12-----	7.4	--	e 11	2.7			3.2		
13-----	3.8	163	2	2.6			2.9		
14-----	4.0	143	2	2.6			2.9		
15-----	4.4	116	1	3.4			2.9		
16-----	4.8	79	1	4.2	50	(t)	3.2		
17-----	4.8			2.6			3.2		
18-----	4.9			2.5			2.9		
19-----	4.6			2.7			3.2	61	(t)
20-----	3.0			2.6			3.6		
21-----	2.0	49	(t)	2.4	50	(t)	3.2		
22-----	2.0			2.6			2.6		
23-----	2.0			2.6			2.9		
24-----	2.0			3.0			2.6		
25-----	2.0			3.6			2.9		
26-----	2.0	49	(t)	3.2	50	(t)	2.2		
27-----	2.0			3.2			2.2		
28-----	2.0			2.9			2.2		
29-----	2.1			3.2			2.2		
30-----	2.2			3.6			2.6	153	1
31-----	2.2	--	--	--	--	--	2.9	115	(t)
Total--	116.2	--	108	83.8	--	11	95.2	--	17
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.9	31	(t)	3.2	21	(t)	10	50	1
2-----	2.9			4.1			7.2	52	1
3-----	2.9			5.0			7.2		
4-----	2.6			4.1			7.2		
5-----	2.6			4.1			7.2		
6-----	2.6	31	(t)	4.1	21	(t)	7.2		
7-----	2.6			4.6					
8-----	2.9			4.6					
9-----	2.9			4.8			6		
10-----	2.9			4.1					
11-----	2.6	125	1	5.0	21	(t)			
12-----	2.9			10					
13-----	2.9			7.2					
14-----	2.9			6.6			5	27	(t)
15-----	2.9	122	1	6.1					
16-----	2.6	22	(t)	5.0	21	(t)			
17-----	2.9			10					
18-----	2.6			100			6.1		
19-----	2.2			80			5.6		
20-----	2.6			60			5.0		
21-----	2.9	22	(t)	40	232	25	5.0		
22-----	4.1			26	90	6	6.6		
23-----	4.1			28	90	7	12	47	2
24-----	4.1			25	138	9	15	120	5
25-----	3.6			35	36	3	20	139	8
26-----	3.6	22	(t)	14	40	2	25	115	8
27-----	3.6			15	43	2	24	80	5
28-----	3.6			13	47	2	18	53	3
29-----	3.6			--	--	--	11	38	1
30-----	3.6			--	--	--	10	26	(t)
31-----	3.6			--	--	--	8.8	21	(t)
Total--	95.3	--	8	528.4	--	662	277.1	--	44

e Estimated.

t Less than 1.0 tons.

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

WOOD RIVER NEAR RIVERDALE, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	7.8			4.1			14	1,070	40
2-----	6.6			3.9			11	590	18
3-----	7.2			4.8			5.6	378	6
4-----	6.1			3.8			3.7	250	2
5-----	6.1			5.2	39	(t)	2.8	167	1
6-----	6.1			6.4			2.5	171	1
7-----	5.0			6.0			2.3	200	1
8-----	5.0			5.9	79	1	2.0		
9-----	5.0			5.8	79	1	2.0		
10-----	4.6			5.8	63	1	2.2		
11-----	4.6			5.7	63	1	2.5	103	(t)
12-----	4.1			5.6	60	(t)	2.2		
13-----	4.1			6.5	75	1	2.2		
14-----	4.1			5.4	89	1	2.2		
15-----	4.6	50	(t)	4.6	70	(t)	2.4		
16-----	5.6			4.1	65	(t)	2.9	141	1
17-----	5.6			4.2	111	1	3.8	127	1
18-----	5.0			4.8	--	e 2	14	162	6
19-----	4.6			7.6	--	e 4	196	6,000	s 3,460
20-----	4.1			7.7	146	3	145	4,180	s 1,760
21-----	4.1			39	326	s 40	29	3,000	235
22-----	3.5			42	918	104	13	950	33
23-----	3.2			22	964	57	7.3	385	8
24-----	3.0			17	680	31	4.9	241	3
25-----	3.2			9.0	425	10	3.7	175	2
26-----	2.6			6.6	265	5	2.2	186	1
27-----	2.8			6.6	151	3	1.8	200	1
28-----	3.3			110	5,720	s 1,990	2.0	135	(t)
29-----	3.3			55	1,620	s 274	1.8	150	(t)
30-----	3.7			50	2,780	s 387	1.8	136	(t)
31-----	--	--	--	24	1,800	117	--	--	--
Total--	138.6	--	16	488.1	--	3,040	488.7	--	5,590
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.8	84	(t)	2.6			1.5		
2-----	1.8	132	(t)	2.4			2.4		
3-----	2.2	96	(t)	3.1			2.5		
4-----	2.7	120	(t)	5.2			1.9		
5-----	2.9	130	1	3.3			1.6		
6-----	3.7	132	1	3.7			1.4		
7-----	5.3	100	(t)	4.2			1.4		
8-----	21	--	e 380	3.2			1.4		
9-----	362	--	e 8,300	2.2			1.6		
10-----	31	2,740	s 271	2.4	81	(t)	1.9		
11-----	29	--	e 240	2.2			1.8		
12-----	104	--	e 1,200	2.0			1.4		
13-----	26	2,200	154	2.0			1.9		
14-----	13	1,180	41	2.0			1.9		
15-----	6.6	408	7	2.0			48	4,770	s 1,180
16-----	4.9	220	3	2.0			10	980	s 33
17-----	3.2	140	1	1.8			2.3	152	(t)
18-----	4.0	136	2	2.2			1.6	212	(t)
19-----	2.9	112	(t)	8.3	175	4	16	990	s 127
20-----	2.6	88	(t)	27	640	47	263	--	e 3,600
21-----	37	2,020	s 226	37	950	95	60	2,480	s 408
22-----	28	1,660	125	21	1,060	60	57	1,600	246
23-----	36	1,080	105	8.0	900	19	30	1,800	130
24-----	59	2,280	363	6.0	480	8	11	1,130	34
25-----	28	1,900	144	3.6	343	3	5.0	530	7
26-----	14	1,420	54	4.9	292	4	3.2	290	2
27-----	7.3	555	11	4.1	247	3	2.6	187	1
28-----	2.9	259	2	3.7	171	2	2.8	118	(t)
29-----	3.2	136	1	2.9	131	1	3.3	110	1
30-----	4.0	90	1	2.1	111	(t)	2.9	98	(t)
31-----	5.4	113	2	2.0	107	(t)	--	--	--
Total--	853.4	--	11,640	179.1	--	257	563.3	--	5,780

Total discharge for year (second-foot-days) 3,907.2

Total load for year (tons) 27,170

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

PLATTE RIVER BASIN--Continued
WOOD RIVER NEAR RIVERDALE, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
			0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Oct. 11, 1949.....	5:40 p. m.	19	1,180	863	89	95	97	99	99	100	--	--	--	--	BW
Oct. 12.....	10:25 a. m.	10	615	542	83	96	99	100	--	--	--	--	--	--	BW
May 21, 1950.....	3:45 p. m.	69	289	1,080	43	53	67	81	93	96	97	100	--	--	BWC
May 28.....	7:20 a. m.	201	10,300	7,360	--	54	--	77	--	100	--	--	--	--	SPWCM
May 28.....	7:20 p. m.	72	4,700	3,400	--	68	--	99	--	100	--	--	--	--	SPWCM
May 30.....	8:20 a. m.	55	2,910	2,380	71	89	96	100	--	--	--	--	--	--	BWC
June 19.....	4:30 p. m.	237	7,130	4,330	--	76	--	87	--	99	--	--	--	--	SPWCM
June 19.....	6:00 p. m.	261	6,970	5,690	--	78	--	90	--	99	--	--	--	--	SPWCM
June 19.....	8:15 p. m.	274	8,370	5,360	76	87	94	96	--	98	--	--	--	--	SPWCM
June 21.....	7:15 a. m.	511	8,140	4,440	78	87	94	96	--	98	--	--	--	--	BWC
July 9.....	7:25 a. m.	580	8,050	6,770	--	60	--	75	--	95	--	--	--	--	SPWCM
July 9.....	9:20 a. m.	492	5,170	4,180	--	74	--	90	--	99	--	--	--	--	SPWCM
July 9.....	10:00 a. m.	444	7,360	4,860	67	71	83	84	87	100	--	--	--	--	SPWCM
July 9.....	10:00 a. m.	444	7,360	4,770	38	54	71	78	87	98	--	--	--	--	SPN
July 10.....	8:55 a. m.	35	3,060	2,730	62	76	88	95	98	99	100	--	--	--	BWC
July 12.....	9:00 a. m.	134	4,220	5,960	--	69	--	81	--	99	99	99	100	--	SPWCM
July 21.....	11:35 p. m.	41	1,880	1,460	39	53	64	78	89	95	97	98	--	--	BWC
July 24.....	7:20 a. m.	66	2,220	1,270	40	48	60	74	86	95	96	98	100	--	BWC
July 25.....	3:20 p. m.	23	1,940	1,330	52	61	63	83	90	96	98	99	100	--	BWC
Sept. 15.....	1:15 p. m.	147	18,400	7,770	--	52	--	78	--	97	--	--	--	--	SPWCM
Sept. 20.....	8:05 a. m.	416	4,360	3,360	--	73	--	84	--	98	--	--	--	--	SPWCM
Sept. 20.....	2:50 p. m.	283	2,980	2,080	61	69	76	84	91	97	98	99	100	--	BWC
Sept. 20.....	4:30 p. m.	232	2,720	1,230	544	68	76	85	91	96	99	--	--	--	BWC

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT DUNNING, NEBR.

LOCATION.--At county bridge at north limits of Dunning, Blaine County, 50 feet upstream from gaging station which is 1½ miles upstream from Dismal River.

DRAINAGE AREA.--1,760 square miles, of which about 80 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Water temperatures: April 1948 to September 1949.

Sediment records: April 1946 to March 1950 (discontinued).

EXTREMES, October 1949 to March 1950.--Sediment concentrations: Maximum daily, 4,500 ppm Dec. 8; minimum daily, 50 ppm Feb. 13.

Sediment loads: Maximum daily, 4,820 tons Dec. 8; minimum daily 43 tons Jan. 3.

EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, 5,160 ppm Dec. 7, 1949; minimum daily, 40 ppm Jan. 9-10, 1949.

Sediment loads: Maximum daily, 5,400 tons Dec. 6-7, 1949; minimum daily, 42 tons Jan. 4, 1949.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, October 1949 to March 1950

Day	October			November			December		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	355	660	630	344	820	760	382	1,490	1,540
2-----	364	840	830	338	1,000	910	388	1,600	1,680
3-----	373	870	870	336	750	680	397	1,230	1,320
4-----	358	520	500	355	770	740	388	1,160	1,220
5-----	364	450	440	379	700	720	376	1,010	1,030
6-----	376	720	730	379	710	730	379	1,070	1,090
7-----	361	660	640	385	800	830	379	1,740	1,780
8-----	364	530	520	388	990	1,040	397	4,500	4,820
9-----	344	920	850	382	1,280	1,320	403	2,650	2,880
10-----	415	960	1,080	409	1,000	1,100	379	1,850	1,890
11-----	379	930	950	421	970	1,100	340	1,720	1,580
12-----	341	1,070	990	394	1,080	1,150	300	320	260
13-----	338	1,170	1,070	388	760	800	200	110	59
14-----	333	1,090	980	409	710	780	200	180	97
15-----	336	1,100	1,000	403	1,050	1,140	220	90	53
16-----	344	1,070	990	379	1,320	1,350	250	180	120
17-----	336	880	800	364	1,300	1,280	300	310	250
18-----	352	730	690	388	940	980	330	300	270
19-----	358	930	900	403	850	920	330	280	250
20-----	333	1,080	970	391	1,200	1,270	300	190	150
21-----	325	1,020	900	385	1,350	1,400	310	190	160
22-----	317	880	750	379	1,250	1,280	320	180	160
23-----	327	520	460	403	830	900	340	160	150
24-----	336	660	600	415	850	950	310	300	250
25-----	344	1,070	990	388	860	900	310	700	590
26-----	333	1,010	910	376	990	1,010	310	750	630
27-----	344	830	770	394	940	1,000	360	400	390
28-----	350	610	580	397	690	740	370	240	240
29-----	350	740	700	382	970	1,000	400	220	240
30-----	341	840	770	379	1,200	1,230	370	170	170
31-----	336	650	590	--	--	--	370	130	130
Total-	10,827	--	24,250	11,533	--	30,010	10,408	--	25,450

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT DUNNING, NEBR.--Continued

Suspended sediment, October 1949 to March 1950--Continued

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	370	110	110	360	510	500	376	1,620	1,640
2-----	340	150	140	360	200	190	350	1,630	1,540
3-----	160	100	43	360	420	410	358	1,800	1,740
4-----	170	--	e 100	360	380	370	397	1,350	1,450
5-----	200	420	230	390	200	210	431	1,100	1,280
6-----	270	240	170	440	260	310	440	1,070	1,270
7-----	340	200	180	450	350	430	300	500	400
8-----	380	200	210	490	360	480	230	170	110
9-----	390	280	290	450	270	330	320	650	560
10-----	440	370	440	430	130	150	420	670	760
11-----	470	270	340	390	70	74	290	560	440
12-----	450	200	240	360	120	120	350	750	710
13-----	410	330	370	330	50	45	380	770	790
14-----	350	530	500	320	140	120	410	820	910
15-----	320	470	410	360	500	490	430	740	860
16-----	270	220	160	370	430	430	430	1,950	2,260
17-----	360	100	97	370	440	440	516	2,450	3,410
18-----	370	130	130	390	360	380	479	3,060	3,960
19-----	320	220	190	400	950	1,030	450	3,160	3,840
20-----	370	250	250	420	1,200	1,360	463	--	e 3,200
21-----	420	250	280	379	2,200	2,250	489	1,750	2,310
22-----	470	200	250	376	1,400	1,420	--	--	--
23-----	450	210	260	347	1,490	1,400	--	--	--
24-----	410	130	140	355	--	e 1,400	--	--	--
25-----	270	210	150	361	1,690	1,650	--	--	--
26-----	220	480	290	382	1,850	1,910	--	--	--
27-----	300	280	230	400	1,600	1,730	--	--	--
28-----	410	200	220	400	1,670	1,800	--	--	--
29-----	430	130	150	--	--	--	--	--	--
30-----	330	210	190	--	--	--	--	--	--
31-----	330	--	e 500	--	--	--	--	--	--
Total-	10,790	--	7,260	10,800	--	21,430	8,309	--	33,440
Total discharge for period Oct. 1 to Mar. 21 (second-foot-days)									62,667
Total load for period Oct. 1 to Mar. 21 (tons)									141,800

e Estimated.

PLATTE RIVER BASIN--Continued
MIDDLE LOUP RIVER AT DUNNING, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Tem- pera- ture (° F)	Concen- tration of sample (ppm)	Concentration of suspension analyzed (ppm)	Suspended sediment										Methods of analysis	
						Percent finer than indicated size, in millimeters											
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 5, 1949	1:45 p. m.	361	65	382	--						9	31	75	98	--		S
Oct. 12	11:15 a. m.	394	49	836	2,680						9	30	74	96	--		BW
Oct. 18	3:45 p. m.	347	60	617	--						6	26	78	99	--		S
Nov. 1	11:30 a. m.	347	47	634	--						16	47	95	100	--		SWCM
Nov. 15	12:45 p. m.	412	42	880	--						8	30	89	100	--		SWCM
Nov. 30	12:00 m.	364	39	934	--						8	32	83	99	--		SWCM
Dec. 9	11:00 a. m.	388	32	1,060	--						7	24	86	99	--		SWCM
Jan. 11, 1950	4:30 p. m.	460	32	198	--						18	34	83	99	--		SWCM
Feb. 22	1:30 p. m.	400	36	1,470	--						22	50	94	100	--		SWCM
Mar. 6	11:20 a. m.	472	34	1,280	--						26	52	93	99	--		SWCM
Mar. 8	2:15 p. m.	210	32	1,660	--						8	25	79	97	--		SWCM
Mar. 21	2:15 p. m.	450	34	1,660	1,410				5		5	25	--	--	--		BN
Mar. 21	10:30 a. m.	421	41	1,820	--						12	39	88	99	--		SWCM
Apr. 12	1:00 p. m.	421	41	1,090	--						11	40	90	99	--		SWCM
Apr. 25	10:45 a. m.	463	40	1,090	--						13	40	94	100	--		SWCM
May 9	8:25 a. m.	444	43	1,230	--						13	46	91	98	--		SWCM
May 23	8:20 a. m.	406	62	801	--						13	34	80	95	--		SWCM
June 6	8:45 a. m.	391	65	747	--						10	26	64	91	97		SW
June 20	8:45 a. m.	397	64	524	--						16	41	83	98	--		SW
July 6	7:55 a. m.	361	64	629	--						13	37	78	93	98		SW
July 18	8:50 a. m.	376	64	526	--						13	39	83	99	--		SW
Aug. 1	9:00 a. m.	376	62	871	--						22	38	76	97	100		SW
Aug. 26	9:10 a. m.	479	64	550	--						27	60	94	--	--		SW

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT DUNNING, NEBR. (Total load section)

LOCATION.--At downstream measuring sill of turbulence flume beneath bridge on State Highway 2 at northeast limits of Dunning, Blaine County, 1,150 feet downstream from gaging station, and 1 mile upstream from Dismal River.

DRAINAGE AREA.--1,760 square miles, of which about 80 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1950.

Sediment records: March to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 71°F July 10; minimum, freezing point on many days during November to March.

Sediment concentrations (March to September 1950): Maximum daily, 3,290 ppm Apr. 30; minimum daily, 510 ppm June 16.

Sediment loads (March to September 1950): Maximum daily, 4,000 tons Mar. 25; minimum daily 490 tons June 16.

REMARKS.--Investigations indicate that practically all the total sediment load is transported in suspension at this section of the river. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950
/Once-daily temperature measurement usually between 7 a. m. and 8 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	42	36	32	32	35	40	44	53	66	61	65
2	56	39	37	32	32	32	44	47	59	66	61	65
3	57	36	39	32	32	33	33	57	55	68	65	66
4	51	41	33	32	32	37	33	56	52	66	67	64
5	58	42	32	32	33	42	36	33	59	61	70	62
6	58	42	35	32	32	42	38	38	63	63	67	49
7	53	42	32	32	32	32	44	45	61	64	66	58
8	51	42	32	32	32	32	41	46	--	68	69	61
9	46	42	32	32	33	--	40	43	57	70	65	61
10	48	45	33	32	33	32	38	50	57	71	65	61
11	48	46	32	32	32	32	34	51	60	70	70	51
12	45	37	--	32	32	32	40	55	61	70	68	53
13	47	38	32	32	32	32	34	55	70	57	68	53
14	48	40	32	32	32	32	38	56	66	62	68	54
15	46	35	32	32	32	32	41	58	70	62	69	58
16	48	36	32	32	32	36	49	58	70	68	70	56
17	47	37	32	32	32	39	48	59	62	61	66	58
18	53	37	32	32	32	33	46	59	60	65	62	60
19	49	41	32	32	32	33	40	55	57	61	64	60
20	42	37	32	32	32	33	38	55	64	65	55	61
21	40	32	32	32	33	33	44	51	66	62	59	47
22	37	34	32	32	33	36	51	58	66	68	62	54
23	43	39	32	32	36	40	53	61	67	68	63	56
24	42	40	32	32	35	36	51	57	70	65	66	56
25	43	39	32	32	37	39	34	52	70	60	62	57
26	43	42	32	32	35	42	42	50	60	65	63	57
27	45	41	32	32	39	32	41	50	62	64	61	57
28	45	44	32	32	37	32	38	53	62	67	61	55
29	45	38	32	32	--	--	34	59	60	69	64	57
30	37	35	32	32	--	--	36	58	62	67	62	56
31	36	--	33	32	--	42	--	54	--	65	62	--
Average	47	39	33	32	33	35	41	52	62	65	65	58

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT DUNNING, NEBR. (Total load section)--Continued

Suspended sediment, March to September 1950									
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----							--	--	--
2-----							--	--	--
3-----							--	--	--
4-----							--	--	--
5-----							--	--	--
6-----							--	--	--
7-----							--	--	--
8-----							--	--	--
9-----							--	--	--
10-----							--	--	--
11-----							--	--	--
12-----							--	--	--
13-----							--	--	--
14-----							--	--	--
15-----							--	--	--
16-----							--	--	--
17-----							--	--	--
18-----							--	--	--
19-----							--	--	--
20-----							--	--	--
21-----							--	--	--
22-----							472	2,700	3,440
23-----							479	2,980	3,850
24-----							447	1,730	2,090
25-----							472	3,140	4,000
26-----							509	2,190	3,010
27-----							450	--	e2,400
28-----							421	1,600	1,820
29-----							428	--	e2,900
30-----							415	2,930	3,280
31-----							434	1,860	2,180
Total-							4,527	--	28,970
	April			May			June		
1-----	437	1,900	2,240	412	--	e2,900	338	800	730
2-----	447	1,690	2,040	421	1,580	1,800	352	660	630
3-----	460	2,650	3,290	428	1,740	2,010	336	890	810
4-----	406	2,370	2,600	428	1,620	1,870	336	850	770
5-----	385	2,200	2,290	424	2,860	3,270	350	820	780
6-----	367	1,360	1,350	394	2,460	2,620	341	720	660
7-----	400	1,550	1,670	431	1,970	2,290	327	860	760
8-----	385	2,220	2,310	418	2,000	2,260	333	820	740
9-----	376	1,950	1,980	364	1,500	1,470	335	800	720
10-----	364	1,790	1,760	367	1,560	1,550	333	920	830
11-----	330	2,080	1,850	397	1,730	1,850	330	760	680
12-----	341	1,710	1,570	400	1,720	1,860	336	720	650
13-----	333	1,960	1,760	400	1,650	1,780	350	620	590
14-----	330	1,590	1,420	376	1,540	1,560	388	870	910
15-----	333	2,090	1,880	364	1,530	1,500	391	750	790
16-----	330	1,920	1,710	367	--	e1,200	355	510	490
17-----	370	1,660	1,660	373	--	e800	350	750	710
18-----	367	1,320	1,310	367	990	980	364	820	810
19-----	327	1,640	1,450	367	1,130	1,120	347	660	620
20-----	322	1,720	1,500	379	1,160	1,190	341	730	670
21-----	352	1,410	1,340	370	1,170	1,170	341	930	860
22-----	376	1,470	1,490	352	1,110	1,050	344	780	720
23-----	388	1,490	1,560	358	860	830	347	660	620
24-----	385	1,720	1,790	338	990	900	336	600	540
25-----	341	1,800	1,660	344	1,130	1,050	347	610	570
26-----	338	2,110	1,930	347	1,260	1,180	338	880	800
27-----	352	2,050	1,950	350	1,630	1,540	333	810	730
28-----	394	1,820	1,940	355	950	910	338	770	700
29-----	397	2,420	2,590	364	1,060	1,040	338	810	740
30-----	379	3,290	3,370	367	1,000	990	336	860	780
31-----	--	--	--	352	1,120	1,060	--	--	--
Total-	11,112	--	57,260	11,774	--	47,600	10,329	--	21,410

e Estimated.

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT DUNNING, NEBR. (Total load section)--Continued

Suspended sediment, March to September 1950--Continued

Day	July			August			September		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	341	640	590	336	700	640	344	1,040	970
2-----	361	750	730	333	870	780	341	810	750
3-----	361	750	730	341	900	830	338	680	620
4-----	358	650	630	364	730	720	333	660	590
5-----	355	940	900	367	590	580	330	680	610
6-----	338	760	690	338	870	810	330	580	520
7-----	336	780	690	350	970	920	325	650	570
8-----	336	660	600	350	1,010	950	336	950	860
9-----	336	870	790	400	--	e 2,100	330	920	820
10-----	336	580	530	409	1,350	1,490	355	870	830
11-----	350	760	720	361	890	870	355	1,100	1,050
12-----	344	830	770	352	950	900	333	920	830
13-----	325	810	710	352	790	750	361	870	850
14-----	330	750	670	358	790	760	347	1,060	990
15-----	370	930	930	352	660	630	406	970	1,060
16-----	355	970	930	350	600	570	394	1,340	1,430
17-----	347	850	800	336	650	590	364	1,020	1,000
18-----	361	970	950	333	700	630	382	920	950
19-----	400	1,060	1,140	344	670	620	364	760	750
20-----	358	650	630	341	960	880	415	770	860
21-----	388	990	1,040	341	830	760	424	1,000	1,140
22-----	415	1,410	1,580	336	780	710	358	1,400	1,350
23-----	352	1,280	1,220	338	640	580	347	970	910
24-----	350	910	860	336	600	540	350	1,060	1,000
25-----	373	1,000	1,010	341	1,000	920	361	890	870
26-----	364	660	650	406	1,330	1,460	352	1,020	970
27-----	358	830	800	370	920	920	352	1,000	950
28-----	341	570	520	358	780	750	355	980	940
29-----	347	640	600	370	790	790	361	820	800
30-----	355	650	620	367	700	690	358	710	680
31-----	373	790	800	364	830	820	--	--	--
Total-	11,014	--	24,830	10,994	--	25,760	10,701	--	26,520

Total discharge for period Mar. 21 to Sept. 30 (second-foot-days) 70,451

Total load for period Mar. 21 to Sept. 30 (tons) 232,400

e Estimated.

PLATTE RIVER BASIN--Continued
MIDDLE LOUP RIVER AT DUNNING, NEBR. (Total load section)--Continued

Particle-size analyses of suspended sediment, March to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000		2.000	
Mar. 1, 1950	3:00 p.m.	472	2,310								14	30	67	90	96	99	SWCM
Mar. 21	11:25 a.m.	466	2,440								7	25	63	92	98	--	SWCM
Mar. 30	6:55 p.m.	421	2,320								6	19	55	86	96	99	SWCM
Apr. 10	8:15 a.m.	370	1,930								7	22	65	91	98	--	SWCM
Apr. 12	4:10 p.m.	421	1,500								8	27	68	95	--	--	SWCM
Apr. 20	7:40 a.m.	307	1,850								6	26	73	91	97	--	SWCM
Apr. 25	2:00 p.m.	437	1,480								7	25	70	93	98	--	SWCM
May 1	7:15 a.m.	421	2,790								4	16	46	78	89	95	SW
May 9	11:15 a.m.	447	1,340								9	35	74	91	96	--	SWCM
May 10	7:20 a.m.	370	1,680								8	33	72	93	99	--	SW
May 20	7:00 a.m.	384	1,250								7	29	74	94	98	--	SW
May 22	10:20 a.m.	397	1,750								12	33	77	97	--	--	SWCM
June 1	7:00 a.m.	344	855								10	32	70	91	96	98	SW
June 6	11:30 a.m.	364	632								10	26	65	83	98	--	SW
June 14	7:05 a.m.	391	877								15	33	72	95	99	--	SW
June 20	4:15 p.m.	400	553								14	32	71	94	98	--	SW
June 24	6:30 a.m.	350	649								13	32	76	96	99	--	SW
July 6	7:00 a.m.	370	966								12	28	63	96	100	--	SW
July 6	10:50 a.m.	355	687								10	30	65	88	95	98	SW
July 16	7:30 a.m.	361	1,040								10	23	51	83	91	96	SW
July 25	7:05 a.m.	364	1,070								14	32	65	94	99	--	SW
Aug. 1	2:45 p.m.	364	576								24	42	77	96	99	--	SW
Aug. 10	7:00 a.m.	456	1,560		29		34				48	63	86	96	98	--	SPWCM
Aug. 20	7:30 a.m.	344	1,090								10	26	64	94	99	--	SW
Aug. 26	7:25 p.m.	447	1,300								8	21	46	96	100	--	SW
Aug. 30	7:00 a.m.	379	757								14	36	70	88	92	93	SW
Sept. 13	7:15 a.m.	358	931								10	32	74	94	98	--	SW

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT ST. PAUL, NEBR.

LOCATION.--At bridge on U. S. Highway 281 at St. Paul, Howard County, 600 feet downstream from gaging station, which is 6 miles upstream from confluence with North Loup River.

DRAINAGE AREA.--7,720 square miles, of which only 3,200 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Sediment records: April 1946 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 9,930 ppm July 9; minimum daily, 240 ppm Feb. 17.

Sediment loads: Maximum daily, 182,000 tons July 9; minimum daily, 190 tons Mar. 11.

EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 1,600,000 tons June 23, 1947; minimum daily, not determined.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, October 1949 to July 1950

Date of collection	Dis-charge (second-feet)	Tem-perature ('F)	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent so-dium
																Parts per million	Tons per acre-foot	Total	Non-carbonate	
Oct. 6, 1949	906	7.7	253	51	0.02	34	4.2	14		144	8.0	2.5	0.4	1.7	0.10	197	0.27	103		0
July 9, 1950	9,050	7.2	112	18	.02	12	3.6	3.2		59	1.0	.5	.4	1.0	0.10	86	.12	45		13

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT ST. PAUL, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	755	440	900	1,030	980	2,730	1,050	1,680	4,760
2-----	822	400	890	943	920	2,340	906	1,320	3,230
3-----	846	400	910	1,050	1,010	2,860	930	1,560	3,920
4-----	882	420	1,000	995	1,060	2,850	943	1,410	3,590
5-----	969	480	1,260	943	1,160	2,950	1,030	1,770	4,920
6-----	930	410	1,030	1,060	1,170	3,350	1,050	1,970	5,590
7-----	943	570	1,450	1,090	1,160	3,410	918	2,230	5,530
8-----	1,050	600	1,700	943	1,170	2,980	700	--	e 4,900
9-----	1,260	720	2,450	1,020	1,160	3,190	600	--	e 3,500
10-----	1,400	1,190	4,500	1,100	1,190	3,530	630	1,850	3,150
11-----	1,720	1,400	6,500	995	1,170	3,140	610	--	e 4,200
12-----	1,340	1,020	3,690	1,220	1,070	3,520	480	1,910	2,480
13-----	1,220	910	3,000	1,340	1,100	3,980	180	--	e 340
14-----	1,120	910	2,750	1,070	1,150	3,320	250	690	470
15-----	1,090	850	2,500	906	1,300	3,180	230	640	400
16-----	1,030	610	1,700	930	1,300	3,260	440	950	1,130
17-----	1,050	590	1,670	956	1,410	3,640	780	970	2,040
18-----	1,020	710	1,960	969	1,820	4,760	1,100	1,310	3,890
19-----	969	770	2,010	906	1,670	4,090	1,200	2,110	6,840
20-----	1,140	800	2,460	870	1,360	3,200	770	--	e 3,900
21-----	1,160	1,040	3,260	995	1,780	4,780	880	--	e 4,400
22-----	1,020	1,080	2,970	930	1,960	4,920	930	1,840	4,620
23-----	982	1,120	2,970	1,090	1,770	5,210	910	--	e 4,400
24-----	1,070	1,270	3,670	969	1,190	3,110	940	--	e 4,200
25-----	1,030	1,130	3,140	969	1,170	3,060	870	--	e 3,200
26-----	1,090	940	2,770	1,010	1,500	4,090	870	1,100	2,580
27-----	943	650	1,650	1,020	1,350	3,720	1,100	1,460	4,340
28-----	1,190	780	2,510	918	1,210	3,000	1,100	1,750	5,200
29-----	1,230	860	2,860	956	1,420	3,670	1,000	1,650	4,460
30-----	1,220	1,010	3,330	995	1,630	4,380	880	1,440	3,420
31-----	1,100	1,190	3,530	--	--	--	790	1,230	2,620
Total-	33,591	--	76,990	30,188	--	106,200	25,067	--	112,200
Day	January			February			March		
	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	860	910	2,110	890	--	e 1,500	1,600	570	2,460
2-----	820	--	e 1,900	960	--	e 1,700	1,600	480	2,070
3-----	520	--	e 1,100	910	430	1,060	1,400	380	1,440
4-----	280	--	e 550	880	340	810	1,400	480	1,810
5-----	210	710	400	940	370	940	1,700	980	4,500
6-----	280	--	e 650	920	370	920	3,200	3,510	s 28,600
7-----	230	--	e 500	950	310	780	1,800	--	e 17,000
8-----	250	400	270	1,000	470	1,270	420	--	e 1,800
9-----	410	400	440	1,200	540	1,750	340	2,660	2,440
10-----	540	420	610	1,200	570	1,850	280	--	e 1,100
11-----	680	540	990	1,200	470	1,520	200	--	e 190
12-----	750	440	890	1,300	380	1,330	310	--	e 200
13-----	920	--	e 1,500	1,100	--	e 1,000	320	280	240
14-----	950	--	e 2,200	1,100	270	800	1,000	860	2,320
15-----	870	--	e 2,300	1,100	270	800	1,600	1,690	7,300
16-----	840	1,000	2,270	1,100	280	830	1,900	2,740	14,100
17-----	800	--	e 2,000	1,000	240	650	2,200	2,430	14,400
18-----	780	1,060	2,230	1,100	420	1,250	1,900	--	e 12,000
19-----	730	1,030	2,030	1,300	500	1,760	1,700	2,590	11,900
20-----	720	750	1,460	1,600	650	2,810	1,300	2,240	7,860
21-----	850	970	2,230	1,700	--	e 3,000	1,100	2,120	6,300
22-----	920	790	1,960	1,500	550	2,230	1,600	2,990	12,900
23-----	890	--	e 1,600	1,500	480	1,940	2,000	2,610	14,100
24-----	900	--	e 1,600	1,400	470	1,780	2,640	2,980	21,200
25-----	940	--	e 1,700	1,300	460	1,610	2,420	2,410	15,700
26-----	1,000	--	e 1,700	1,300	540	1,900	1,960	2,080	11,000
27-----	1,000	--	e 1,600	1,500	550	2,230	1,880	1,740	8,830
28-----	840	460	1,040	1,600	540	2,330	1,380	1,500	5,590
29-----	570	--	e 600	--	--	--	1,290	1,660	5,780
30-----	570	--	e 750	--	--	--	1,350	1,630	6,670
31-----	690	--	e 1,100	--	--	--	1,050	1,940	5,500
Total-	21,610	--	42,280	33,530	--	42,350	44,840	--	247,300

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued

MIDDLE LOUP RIVER AT ST. PAUL, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,050	1,760	4,990	1,230	1,310	4,350	1,010	1,000	2,730
2-----	1,060	1,590	4,550	1,070	1,120	3,240	1,020	780	2,150
3-----	1,300	1,900	6,670	1,160	1,290	4,040	995	870	2,340
4-----	1,350	2,100	7,660	1,140	1,300	4,000	956	--	e 2,300
5-----	1,370	1,760	6,510	1,450	1,860	7,280	870	740	1,740
6-----	1,240	1,480	4,960	1,530	1,840	7,600	799	740	1,600
7-----	1,320	1,040	3,710	1,460	1,450	5,720	744	640	1,290
8-----	1,360	1,140	4,250	1,450	1,330	5,210	740	510	1,020
9-----	1,410	1,350	5,140	1,810	1,640	8,020	730	500	990
10-----	1,410	1,410	5,370	1,700	1,970	9,040	700	400	760
11-----	1,320	1,410	5,030	1,240	1,420	4,760	680	380	700
12-----	1,380	1,490	5,550	1,120	1,120	3,390	650	400	700
13-----	1,290	1,320	4,600	1,300	1,030	3,620	630	410	700
14-----	1,230	1,140	3,790	1,260	1,010	3,440	1,190	2,000	6,430
15-----	1,220	1,120	3,690	1,170	900	2,840	1,010	1,780	4,850
16-----	1,340	1,180	4,270	1,220	950	3,130	1,010	780	2,130
17-----	1,460	1,040	4,100	1,160	840	2,630	1,320	--	e 7,700
18-----	1,320	740	2,640	1,100	912	2,710	3,120	7,520	s 66,700
19-----	1,340	1,020	3,690	3,920	6,640	s 71,800	1,900	6,420	31,900
20-----	1,230	1,050	3,490	2,940	4,660	37,000	1,230	2,470	8,200
21-----	1,160	1,180	3,700	2,440	3,220	21,200	918	1,560	3,870
22-----	1,030	930	2,590	1,810	2,850	13,900	810	930	2,030
23-----	1,200	1,020	3,310	1,290	1,690	5,890	777	720	1,510
24-----	1,380	1,080	4,020	1,020	1,230	3,390	766	620	1,280
25-----	1,450	1,220	4,780	1,090	1,400	4,120	700	580	1,100
26-----	1,300	1,070	3,760	1,090	1,210	3,560	640	580	1,000
27-----	1,130	920	2,810	1,220	870	2,870	640	500	860
28-----	1,030	960	2,670	1,540	1,020	4,240	755	660	1,750
29-----	1,240	1,390	4,650	2,010	3,960	s 23,700	722	800	1,560
30-----	1,300	1,460	5,120	1,460	2,780	s 11,400	680	500	920
31-----	--	--	--	1,130	1,310	4,000	--	--	--
Total--	38,240	--	132,100	46,530	--	292,100	28,712	--	163,800
Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	670	450	810	906	740	1,810	1,030	600	1,670
2-----	700	500	950	930	770	1,930	1,030	590	1,640
3-----	788	570	1,210	834	640	1,440	962	600	1,580
4-----	788	620	1,320	846	570	1,300	834	450	1,010
5-----	846	620	1,420	1,030	1,310	3,640	788	390	830
6-----	918	810	2,010	918	710	1,760	711	540	1,040
7-----	834	760	1,710	995	620	1,670	744	630	1,270
8-----	810	590	1,290	1,030	750	2,090	744	600	1,210
9-----	6,510	9,930	s 182,000	894	660	1,640	744	480	960
10-----	4,830	8,180	s 105,000	1,070	890	2,570	744	450	900
11-----	2,480	5,760	s 39,100	1,140	670	2,060	744	480	960
12-----	2,660	4,610	33,100	1,120	--	e 2,200	882	730	1,740
13-----	1,500	3,980	s 16,300	1,420	--	e 7,600	882	630	1,500
14-----	1,130	2,760	8,420	3,140	4,130	s 36,100	882	560	1,330
15-----	969	1,670	4,370	2,070	2,400	13,400	943	590	1,500
16-----	1,260	1,510	5,140	1,820	1,780	8,750	1,050	740	2,100
17-----	1,200	1,410	4,570	1,600	1,110	4,800	1,070	--	e 3,400
18-----	1,430	1,480	5,710	1,560	950	4,000	930	750	1,880
19-----	1,810	1,950	9,530	2,050	1,990	s 14,000	1,010	830	2,260
20-----	1,700	2,200	10,100	1,670	3,340	s 15,900	1,720	3,010	s 17,400
21-----	1,510	1,580	6,440	1,300	2,070	7,270	1,450	2,550	9,980
22-----	2,130	3,590	s 20,800	982	1,330	3,530	1,240	1,680	5,620
23-----	4,230	6,410	s 82,200	882	1,020	2,430	1,120	1,000	3,020
24-----	5,380	7,900	s 115,000	870	690	1,620	1,090	820	2,410
25-----	2,120	4,800	s 30,800	982	730	1,940	1,050	640	1,810
26-----	1,350	2,360	8,600	1,100	690	2,050	995	670	1,800
27-----	1,230	2,130	7,080	1,260	840	s 3,000	966	780	2,040
28-----	930	1,270	3,190	1,420	--	e 5,500	1,030	740	2,060
29-----	788	1,290	2,740	1,160	820	2,570	1,140	680	2,090
30-----	969	1,110	2,900	1,030	980	2,730	1,130	740	2,260
31-----	930	720	1,810	943	770	1,960	--	--	--
Total--	55,400	--	715,600	38,972	--	163,300	29,878	--	79,300

Total discharge for year (second-foot-days)..... 426,358
 Total load for year (tons)..... 2,177,000

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued
MIDDLE LOUP RIVER AT ST. PAUL, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 6, 1949	12:50 p. m.	894	367	334	--	22	25	27	36	54	74	98		100	--	SPWCM
Oct. 10	12:30 p. m.	1,450	1,276	1,610	--	--	10	14	24	47	65	92		100	--	SPWCM
Oct. 11	5:15 p. m.	1,920	1,520	1,588	--	--	--	--	--	40	61	91		100	--	S
Oct. 20	5:45 p. m.	1,230	912	575	--	1	2	6	12	25	41	82		97	--	BN
Oct. 20	5:45 p. m.	1,230	912		--	--	10	14	20	28	49	91		99	--	BWC
Oct. 30	3:50 p. m.	1,120	1,070		--	--	--	--	--	26	52	93		100	--	S
Nov. 20	3:45 p. m.	894	1,290	785	7	--	--	10	11	24	47	96		100	--	SPWCM
Dec. 10	4:20 p. m.	672	1,720	1,000	--	5	9	11	15	25	43	95		99	--	BN
Dec. 10	4:20 p. m.	672	1,720	837	--	6	7	10	14	25	45	91		100	--	BWC
Dec. 31	5:30 p. m.	812	1,190	290	6	--	--	7	--	12	32	91		100	--	SPWCM
Jan. 20, 1950	5:05 p. m.	852	634	---	--	--	--	--	--	9	17	68		100	--	S
Feb. 9	5:00 p. m.	1,200	564	742	--	--	8	9	16	23	34	77		99	100	SPWCM
Mar. 1	4:50 p. m.	1,530	595	472	--	--	7	9	12	20	29	74		99	100	SPWCM
Mar. 9	6:05 p. m.	1,298	2,310	2,420	4	4	--	--	--	23	40	61		95	100	SPWCM
Mar. 21	4:45 p. m.	1,090	2,180	4,030	4	5	--	--	--	35	58	94		100	--	SPWCM
Mar. 21	5:20 p. m.	1,090	2,200	4,170	4	5	--	--	--	37	60	91		99	100	SPWCM
Mar. 24	1:00 p. m.	2,480	3,070	3,360	--	7	--	13	--	46	66	92		100	--	SPWCM
Mar. 30	3:15 p. m.	1,470	1,810	2,360	9	11	--	--	--	40	60	94		100	--	SPWCM
Mar. 30	3:40 p. m.	1,370	1,360	1,740	--	10	14	17	25	40	57	100		---	--	BWC
May 9	5:10 p. m.	1,750	1,440	1,760	--	19	--	24	--	49	67	95		100	--	SPWCM
May 10	3:00 p. m.	1,720	2,440	3,350	--	45	--	54	--	68	83	99		100	--	SPWCM
May 19	5:50 a. m.	4,190	7,290	12,800	--	16	--	24	--	65	72	95		100	--	SPWCM
May 19	12:05 p. m.	5,120	8,530	4,880	--	27	35	39	52	70	86	94		97	--	BN
May 19	5:12 p. m.	8,530	4,670		--	22	31	38	51	69	89	95		98	--	BN
May 19	5:45 p. m.	4,750	6,190	12,400	--	38	--	49	--	81	90	98		100	--	SPWCM
May 21	11:10 a. m.	2,530	3,140	5,140	--	42	--	52	--	65	76	96		100	--	SPWCM
May 29	5:15 p. m.	2,530	5,680	11,200	--	37	--	51	--	77	89	98		100	--	SPWCM
May 29	8:00 p. m.	2,610	8,050	4,280	--	48	56	63	73	82	92	99		100	--	BWC

May 29	8:00 p. m.	2,610	8,050	4,800	16	26	40	53	66	77	89	97	100	BN
May 30	6:40 p. m.	1,400	3,200	5,710	--	49	--	60	--	74	87	98	100	SPWCM
June 5	1:30 p. m.	1,870	720	1,140	--	12	--	15	--	36	63	94	100	SPWCM
June 10	3:00 p. m.	350	1,080	3,600	--	26	--	34	--	57	76	97	100	SPWCM
June 14	4:30 p. m.	1,580	1,250	3,600	--	15	--	26	--	57	73	96	100	SPWCM
June 15	5:25 p. m.	995	1,380	5,100	--	50	--	64	--	76	84	96	100	SPWCM
June 18	2:20 p. m.	3,630	6,650	8,800	21	23	34	43	59	81	92	99	100	SPWCM
June 18	6:45 p. m.	3,720	8,760	9,760	30	39	48	56	67	84	92	100	--	SPWCM
June 18	6:45 p. m.	3,720	8,760	10,000	16	32	44	54	66	83	92	100	--	SPWCM
June 19	6:40 p. m.	1,600	4,910	11,600	--	65	--	79	--	91	98	99	100	SPWCM
June 22	5:00 p. m.	755	800	2,710	--	33	--	46	--	64	78	97	100	SPWCM
July 1	3:35 p. m.	670	440	1,040	--	22	--	31	--	50	66	92	99	SPWCM
July 9	12:00 m.	9,300	11,200	13,600	--	22	--	47	--	87	99	99	100	SPWCM
July 13	1:30 a. m.	1,305	1,710	3,130	--	24	--	52	--	87	91	93	100	SPWCM
July 15	7:50 p. m.	1,940	2,040	3,840	--	28	--	35	--	68	80	95	100	SPWCM
July 22	3:35 p. m.	2,130	3,400	6,040	--	33	--	48	--	70	80	95	100	SPWCM
July 23	12:10 p. m.	6,350	10,800	5,620	--	22	29	38	53	74	84	92	98	BWC
July 23	12:10 p. m.	6,350	10,800	5,720	--	16	22	31	48	66	76	91	96	BN
July 27	4:45 p. m.	1,170	2,020	3,450	--	39	--	47	--	64	74	95	100	SPWCM
Aug. 5	6:20 a. m.	1,100	1,520	2,930	--	42	--	55	--	76	84	97	100	SPWCM
Aug. 19	7:30 p. m.	3,420	4,610	2,610	--	13	16	23	37	53	64	80	94	BWC
Aug. 19	7:30 p. m.	3,420	4,610	2,790	--	10	14	20	33	52	61	71	84	BN
Aug. 27	5:30 p. m.	1,140	685	1,710	--	--	20	23	30	38	45	61	82	BWC
Sept. 3	1:55 p. m.	969	530	1,200	--	17	--	21	--	42	59	90	100	SPWCM
Sept. 12	3:20 p. m.	894	760	2,130	--	6	13	17	23	32	44	79	96	BWC
Sept. 20	10:55 a. m.	2,250	3,910	11,200	--	--	--	11	--	53	66	92	100	SPWCM
Sept. 22	9:15 a. m.	1,280	1,700	3,000	--	33	--	44	--	61	78	98	100	SPWCM

a Mean daily discharge.

PLATTE RIVER BASIN--Continued

SOUTH LOUP RIVER AT ST. MICHAEL, NEBR.

LOCATION.--At gaging station at county highway bridge, 0.8 mile northeast of St. Michael, Buffalo County, and 5 miles upstream from Sweet Creek.

DRAINAGE AREA.--2,560 square miles, of which only about 1,650 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Sediment records: June 1946 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 13,900 ppm July 10; minimum daily, 50 ppm Jan. 29, Feb. 4, 5, 13.

Sediment loads: Maximum daily, 52,500 tons July 24; minimum daily, 20 tons Jan. 29.

EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, 19,100 ppm June 19, 1946; minimum daily, 30 ppm Nov. 20-21, 1948.

Sediment loads: Maximum daily, 672,000 tons June 22, 1947; minimum daily, 14 tons Nov. 20, 1948.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	140	--	e 120	187	300	150	187	270	140
2-----	144	330	130	187	280	140	190	340	170
3-----	148	310	120	190	280	130	192	320	170
4-----	154	310	130	192	280	140	197	370	200
5-----	160	330	140	197	270	140	197	390	210
6-----	162	330	140	192	300	160	180	380	180
7-----	166	270	120	192	290	150	180	360	180
8-----	166	280	120	192	290	150	170	290	130
9-----	174	320	150	190	300	150	170	--	e 120
10-----	214	920	530	194	330	170	170	330	150
11-----	233	1,240	780	192	360	190	140	--	e 140
12-----	258	1,000	700	194	340	180	100	140	38
13-----	216	690	400	202	280	150	120	70	23
14-----	194	480	250	192	320	170	140	90	34
15-----	192	360	190	192	350	180	170	210	96
16-----	187	360	180	190	330	170	180	--	e 100
17-----	192	340	180	192	300	160	200	200	110
18-----	187	310	160	194	270	140	190	110	56
19-----	187	300	150	194	230	120	180	100	49
20-----	194	310	160	194	270	140	180	110	53
21-----	192	280	140	187	270	140	170	140	64
22-----	192	290	150	192	310	160	170	190	87
23-----	190	250	130	199	350	190	170	160	73
24-----	192	270	140	190	330	170	160	100	43
25-----	187	390	200	192	350	180	170	90	41
26-----	192	--	e 230	192	330	170	180	150	73
27-----	192	360	190	190	270	140	180	180	87
28-----	192	240	120	187	230	120	170	180	83
29-----	192	330	170	190	210	110	180	190	92
30-----	197	350	190	190	250	130	180	180	87
31-----	192	260	140	--	--	--	190	160	82
Total-	5,778	--	6,650	5,758	--	4,590	5,353	--	3,160

e Estimated.

PLATTE RIVER BASIN--Continued

SOUTH LOUP RIVER AT ST. MICHAEL, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	190	180	82	180	60	29	370	550	550
2-----	200	180	86	170	60	26	360	670	650
3-----	170	180	73	170	90	41	340	--	e 720
4-----	130	120	42	180	50	24	380	930	950
5-----	120	180	52	170	50	23	384	1,880	1,930
6-----	85	110	25	170	70	32	331	1,220	1,090
7-----	110	200	59	180	70	34	290	--	e 130
8-----	130	290	100	210	90	51	210	200	110
9-----	140	300	110	230	90	56	150	410	170
10-----	150	220	89	250	80	54			
11-----	180	180	78	250	70	47			
12-----	160	140	60	280	60	45	180	390	190
13-----	180	140	68	300	50	40			
14-----	180	110	53	300	60	49		200	380
15-----	170	100	46	310	60	50	250		
16-----	160	160	69	290	80	63	420	2,220	2,520
17-----	150	120	49	280	110	83	400	2,140	2,310
18-----	140	120	45	320	220	s 200	366	1,450	1,430
19-----	140	140	53	530	600	860	344	1,140	1,060
20-----	150	110	45	530	380	540	348	1,710	1,610
21-----	150	100	41	520	170	240	341	2,190	2,020
22-----	180	70	30	460	210	260	315	2,010	1,710
23-----	180	70	30	430	--	e 230	328	1,840	1,630
24-----	170	90	41	450	160	190	369	2,660	2,650
25-----	180	70	34	380	170	170	392	3,680	3,890
26-----	180	100 ^e	49	380	290	300	429	2,830	3,280
27-----	180	100	49	380	430	440	392	1,960	2,070
28-----	170	60	28	350	460	440	355	1,660	1,590
29-----	150	50	20	--	--	--	318	1,850	1,590
30-----	170	80	37	--	--	--	293	1,380	1,090
31-----	180	80	39	--	--	--	283	1,200	920
Total-----	4,865	--	1,680	8,650	--	4,620	9,588	--	38,980
Day	April			May			June		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	309	1,180	980	228	1,520	940	306	1,230	1,020
2-----	299	920	740	223	1,230	740	277	1,080	790
3-----	312	1,140	960	223	890	540	280	850	600
4-----	306	1,200	990	235	1,170	740	247	700	470
5-----	283	1,150	880	274	2,050	1,520	230	--	e 360
6-----	283	1,070	820	290	1,560	1,220	211	540	310
7-----	286	1,050	810	286	1,140	880	202	580	320
8-----	286	1,050	810	338	1,150	1,050	194	580	300
9-----	286	1,350	1,040	442	4,890	s 6,040	185	490	240
10-----	296	1,190	950	380	5,360	5,500	185	440	220
11-----	283	1,150	880	328	3,000	2,660	187	510	260
12-----	272	1,130	830	299	1,200	970	190	690	350
13-----	255	1,150	790	299	1,050	850	190	510	260
14-----	258	1,020	710	296	1,140	910	223	1,090	660
15-----	247	650	430	283	1,160	890	218	700	410
16-----	252	480	330	277	1,120	840	238	940	600
17-----	242	490	320	260	830	580	336	2,340	s 2,230
18-----	238	--	e 320	335	980	890	1,320	11,500	s 44,100
19-----	235	700	440	882	10,600	s 26,000	748	9,570	19,300
20-----	223	1,130	680	570	7,900	12,200	309	3,900	3,250
21-----	223	1,110	670	470	5,400	6,850	218	2,110	1,240
22-----	218	1,130	660	404	2,910	3,170	202	1,150	630
23-----	218	1,180	700	325	2,450	2,150	190	950	490
24-----	223	1,110	670	255	1,630	1,120	194	990	520
25-----	216	1,020	600	255	960	660	187	810	410
26-----	216	--	e 470	252	920	630	166	630	280
27-----	211	650	370	266	530	600	152	560	230
28-----	197	480	365	3,270	s 3,550	156	156	550	230
29-----	230	930	580	465	7,340	9,220	150	490	200
30-----	235	940	600	353	4,020	3,890	144	430	170
31-----	--	--	--	312	1,830	1,540	--	--	--
Total-----	7,638	--	20,510	10,475	--	99,340	8,015	--	80,450

e Estimated.

s Computed by subdividing day.

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

SOUTH LOUP RIVER AT ST. MICHAEL, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	152	--	e 180	174	590	280	174	590	280
2-----	138	450	170	170	600	280	176	570	270
3-----	148	550	220	174	610	290	176	490	230
4-----	138	560	210	174	460	220	168	510	230
5-----	168	760	340	170	490	220	156	460	190
6-----	168	1,330	600	172	580	260	152	440	180
7-----	158	1,020	440	194	900	470	148	470	190
8-----	152	830	340	176	570	270	144	410	160
9-----	761	13,300	s 32,400	172	550	260	142	340	130
10-----	860	13,900	32,300	192	1,140	590	146	340	130
11-----	565	3,980	s 6,720	172	630	290	150	370	150
12-----	537	7,420	10,800	182	1,000	490	158	410	180
13-----	424	6,350	7,270	674	9,080	s 17,600	170	480	220
14-----	331	4,810	4,300	1,190	7,780	s 26,300	176	450	210
15-----	260	2,400	1,680	644	4,920	8,560	216	440	260
16-----	233	1,200	780	331	2,650	2,370	235	--	e 360
17-----	221	780	460	228	1,200	740	214	460	270
18-----	223	900	540	240	2,930	1,900	211	460	260
19-----	250	1,300	880	392	9,560	s 11,200	216	1,660	970
20-----	325	3,100	2,720	328	6,450	5,710	628	10,600	s 18,200
21-----	550	5,600	8,320	260	--	e 2,500	452	4,510	5,500
22-----	786	7,580	16,100	197	1,760	950	293	1,550	1,230
23-----	1,270	10,200	s 36,100	180	1,040	500	230	820	510
24-----	1,580	12,300	52,500	172	820	380	202	700	380
25-----	845	6,800	15,500	168	660	300	197	660	350
26-----	501	4,680	6,330	176	830	390	190	660	340
27-----	338	2,470	2,250	182	970	480	178	640	310
28-----	286	2,090	1,610	194	900	470	182	700	340
29-----	228	1,320	810	190	--	e 420	182	570	280
30-----	204	900	500	194	810	420	178	480	230
31-----	187	760	330	185	700	350	--	--	--
Total-	12,987	--	243,700	8,247	--	85,460	6,240	--	32,540
Total discharge for year (second-foot-days)									93,594
Total load for year (tons)									621,700

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued

SOUTH LOUP RIVER AT ST. MICHAEL, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 6, 1949	11:45 a.m.	166	332	569	32	39	46	55	87	--	--	--	--	--	SBWCM
Oct. 13	12:30 p.m.	216	657	955	41	48	55	65	83	--	--	--	--	--	SBWCM
Oct. 20	3:30 p.m.	202	308	528	43	54	59	69	86	--	--	--	--	--	SBWCM
Oct. 27	12:15 p.m.	194	366	697	29	36	44	62	87	--	--	--	--	--	SBWCM
Nov. 2	2:45 p.m.	185	308	638	35	41	48	60	79	--	--	--	--	--	SBWCM
Nov. 9	12:45 p.m.	185	332	596	34	38	45	54	73	82	96	100	100	100	SBWCM
Nov. 17	11:00 a.m.	202	300	613	38	42	50	60	76	84	97	100	100	100	SBWCM
Mar. 6, 1950	11:30 a.m.	325	1,580	5,970	18	--	34	--	79	88	98	100	100	100	SPWCM
Mar. 14	11:45 a.m.	213	297	1,300	26	--	46	--	91	100	--	--	--	--	SPWCM
Mar. 22	3:45 p.m.	315	1,830	6,130	16	--	29	--	70	85	99	100	100	100	SPWCM
Apr. 6	1:10 p.m.	293	1,010	3,560	13	--	53	--	73	88	98	100	100	100	SPWCM
Apr. 19	1:30 p.m.	245	832	2,890	14	--	24	--	72	88	98	100	100	100	SPWCM
May 9	10:30 a.m.	478	4,610	7,600	7	--	15	--	73	91	99	100	100	100	SPWCM
May 16	12:00 m.	272	1,120	1,900	18	--	25	--	70	87	99	100	100	100	SPWCM
May 28	6:15 p.m.	412	5,120	2,000	30	37	44	55	74	86	94	96	96	96	BWCM
May 28	6:15 p.m.	412	5,720	1,920	--	18	39	58	71	85	93	96	96	96	BN
May 31	4:45 p.m.	315	1,500	4,000	--	--	56	--	83	94	99	100	100	100	SPWCM
June 29	11:45 a.m.	148	1,801	1,740	40	--	55	--	81	93	99	100	100	100	SPWCM
July 7	2:40 p.m.	156	762	4,440	53	53	70	--	93	98	100	100	100	100	SPWCM
Aug. 2	10:45 a.m.	174	580	1,320	52	--	67	--	89	96	100	100	100	100	SPWCM
Aug. 11	3:00 p.m.	168	652	2,110	56	--	73	--	96	99	100	100	100	100	SPWCM
Aug. 14	11:50 a.m.	1,520	5,780	2,900	38	46	49	60	70	80	90	92	98	98	BWCM
Aug. 14	11:50 a.m.	1,520	5,780	3,030	28	34	42	52	66	78	92	100	100	100	BN
Aug. 23	12:30 p.m.	176	766	1,660	48	--	67	--	91	98	100	100	100	100	SPWCM
Sept. 13	1:00 p.m.	168	438	1,620	32	--	49	--	77	90	99	100	100	100	SPWCM
Sept. 21	12:10 p.m.	447	3,190	2,970	48	--	62	--	78	92	99	100	100	100	SPWCM

PLATTE RIVER BASIN--Continued

NORTH LOUP RIVER NEAR ST. PAUL, NEBR.

LOCATION.--At bridge on U. S. Highway 281, 60 feet upstream from gaging station, which is 3 miles north of St. Paul, Howard County, and 4 miles upstream from confluence with Middle Loup River.

DRAINAGE AREA.--4,460 square miles, of which only about 1,270 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Water temperatures: April to November 1948.

Sediment records: April 1946 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 12,400 ppm July 23; minimum daily, not determined.

Sediment loads: Maximum daily, 299,000 tons, July 9; minimum daily, 27 tons Jan. 6.

EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, 17,000 ppm Aug. 12, 1948; minimum daily, not determined.

Sediment loads: Maximum daily, 463,000 tons June 22, 1947; minimum daily, 20 tons Aug. 3, 1946.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	742	270	541	805	470	1,020	851	420	965
2-----	742	310	621	828	470	1,060	828	480	1,070
3-----	732	330	652	816	470	1,040	862	470	1,090
4-----	700	270	510	828	400	894	886	460	1,100
5-----	700	270	510	828	320	715	874	530	1,250
6-----	742	320	641	816	340	749	897	550	1,330
7-----	752	340	690	805	370	804	908	530	1,300
8-----	752	410	832	805	380	804	820	--	e 1,200
9-----	752	460	934	805	380	826	760	--	e 1,200
10-----	946	700	1,790	805	380	826	650	640	1,120
11-----	1,080	700	2,040	840	400	907	600	1,040	s 1,700
12-----	1,100	580	1,720	886	460	1,100	390	--	e 850
13-----	1,050	490	1,390	920	530	1,320	250	230	155
14-----	920	380	944	920	500	1,240	180	--	e 95
15-----	862	340	791	862	510	1,190	390	350	369
16-----	851	330	758	886	520	1,240	660	480	855
17-----	851	300	689	874	450	1,060	1,000	640	1,730
18-----	862	310	721	874	390	920	1,100	720	2,140
19-----	874	320	755	862	370	861	1,100	640	1,900
20-----	897	400	969	851	420	965	1,100	610	1,810
21-----	972	590	1,550	851	530	1,220	890	--	e 1,200
22-----	933	550	1,390	840	570	1,290	720	420	816
23-----	920	440	1,090	828	530	1,180	650	480	842
24-----	851	440	1,010	816	500	1,100	660	440	784
25-----	851	430	988	862	450	1,050	760	--	e 900
26-----	840	390	885	840	500	1,130	690	--	e 900
27-----	828	420	939	805	420	913	690	560	1,040
28-----	828	420	939	805	400	869	710	670	1,280
29-----	840	370	839	816	440	969	780	750	1,580
30-----	840	390	885	840	400	907	810	780	1,710
31-----	840	430	975	--	--	--	810	770	1,680
Total-	26,450	--	29,990	25,219	--	30,160	23,276	--	35,960

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued

NORTH LOUP RIVER NEAR ST. PAUL, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	690	650	1,210	700	100	189	1,800	660	3,210
2-----	680	--	e 1,000	700	90	170	1,300	350	1,230
3-----	470	--	e 500	760	100	205	1,100	190	564
4-----	260	--	e 50	760	130	267	1,300	140	491
5-----	290	--	e 100	790	140	299	2,300	--	e 14,000
6-----	250	40	27	790	140	299	2,000	2,290	s 13,000
7-----	430	--	e 120	840	150	340	1,600	--	e 6,300
8-----	590	--	e 280	910	170	418	350	--	e 600
9-----	710	--	e 480	990	230	615	210	--	e 280
10-----	760	310	636	990	250	668	220	--	e 240
11-----	780	360	758	990	200	535	350	--	e 360
12-----	780	290	611	970	180	471	740	--	e 750
13-----	760	280	575	940	--	e 460	1,100	380	1,130
14-----	730	250	493	890	--	e 500	1,300	420	1,470
15-----	700	--	e 360	850	--	e 600	1,300	350	1,230
16-----	680	130	239	830	--	e 550	1,440	340	1,290
17-----	650	--	e 160	870	--	e 500	1,600	530	2,290
18-----	680	80	147	960	290	752	1,600	580	2,510
19-----	730	80	158	1,100	270	802	1,500	600	2,430
20-----	720	--	180	1,200	240	778	1,100	450	1,340
21-----	770	--	240	1,200	260	842	1,200	410	1,330
22-----	780	180	379	1,100	240	713	1,800	1,000	4,860
23-----	800	290	628	1,100	180	535	3,500	4,100	3 ^s 800
24-----	820	--	e 650	1,300	140	491	2,600	3,810	2 ^s 700
25-----	850	--	e 550	1,300	160	562	2,050	2,200	12,000
26-----	590	--	e 260	1,200	180	583	1,780	1,420	6,820
27-----	640	--	e 220	1,300	190	667	2,020	1,540	8,400
28-----	690	120	224	1,700	440	s 1,980	1,550	1,500	6,280
29-----	740	150	300	--	--	--	1,200	1,110	3,600
30-----	790	140	299	--	--	--	1,110	900	2,700
31-----	720	--	e 220	--	--	--	1,230	1,050	3,490
Total-	20,520	--	12,050	28,030	--	15,790	44,210	--	169,700
Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,430	970	3,750	920	630	1,560	920	270	671
2-----	1,500	950	1,385	946	530	1,350	874	280	661
3-----	1,640	1,070	4,740	985	500	1,330	920	--	e 700
4-----	1,430	1,030	3,980	1,010	560	1,530	851	--	e 700
5-----	1,230	840	2,790	1,140	1,180	3,630	874	330	779
6-----	1,100	710	2,110	1,280	1,000	3,460	886	320	776
7-----	1,100	610	1,810	1,330	520	1,870	816	260	573
8-----	1,050	660	1,870	1,660	2,650	s 13,300	732	210	415
9-----	1,110	760	2,280	1,780	2,700	13,000	672	200	363
10-----	1,120	730	2,210	1,460	1,350	5,320	614	240	398
11-----	1,020	700	1,930	1,360	610	2,240	596	230	370
12-----	1,020	640	1,760	1,280	490	1,690	578	220	343
13-----	998	660	1,780	1,390	610	2,290	560	300	461
14-----	1,010	600	1,640	1,250	540	1,820	752	1,250	2,540
15-----	998	510	1,370	1,120	410	1,240	794	780	1,670
16-----	998	510	1,370	1,060	500	1,430	742	490	982
17-----	959	460	1,190	1,040	410	1,150	972	2,480	6,510
18-----	998	570	1,540	1,020	480	1,320	972	1,800	4,720
19-----	1,010	660	1,800	2,270	4,900	s 32,800	998	870	2,340
20-----	998	700	1,890	1,340	3,420	12,400	897	430	1,040
21-----	959	600	1,550	1,360	1,800	6,610	851	340	781
22-----	908	540	1,320	1,260	830	2,280	794	390	836
23-----	886	390	933	1,170	570	1,800	763	420	865
24-----	886	400	957	1,040	460	1,290	681	330	607
25-----	946	580	1,480	946	420	1,070	605	280	457
26-----	897	600	1,450	985	480	1,280	560	320	484
27-----	862	450	1,050	998	490	1,320	560	270	408
28-----	920	460	1,140	1,140	540	1,660	551	220	327
29-----	1,110	680	2,040	1,220	610	2,010	551	210	312
30-----	1,050	730	2,070	1,170	530	1,670	551	220	327
31-----	--	--	--	998	340	916	--	--	--
Total-	32,143	--	59,650	37,928	--	127,200	22,496	--	32,420

e Estimated.

s Computed by subdividing day.

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

NORTH LOUP RIVER NEAR ST. PAUL, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	533	240	345	745	420	845	729	390	768
2-----	574	--	e 2,400	737	410	816	737	390	776
3-----	824	--	e 10,000	713	350	674	718	320	620
4-----	662	850	1,520	745	360	724	689	290	539
5-----	710	700	1,340	817	560	1,240	673	280	509
6-----	784	600	1,270	769	660	1,370	623	240	404
7-----	721	400	779	834	640	1,440	616	230	383
8-----	837	--	e 3,500	924	380	1,200	623	200	336
9-----	10,200	9,710	s 299,000	982	490	1,300	602	210	341
10-----	2,350	4,100	26,000	1,210	990	3,230	588	400	635
11-----	1,280	6,490	s 24,200	1,380	1,530	5,700	556	230	345
12-----	1,950	--	e 53,000	1,060	840	2,400	550	240	356
13-----	1,010	1,700	4,640	1,340	1,220	4,410	588	290	460
14-----	934	640	1,610	1,280	1,160	4,010	602	320	520
15-----	852	600	1,380	1,140	950	2,920	658	410	728
16-----	1,090	1,800	5,300	991	520	1,390	870	640	1,500
17-----	1,230	1,850	6,140	897	370	896	1,160	840	2,630
18-----	2,540	5,720	s 47,300	861	400	930	1,010	570	1,550
19-----	3,090	5,600	46,700	962	510	1,320	982	400	1,060
20-----	1,480	2,350	9,390	962	740	1,920	962	390	1,010
21-----	1,270	1,490	5,070	897	490	1,160	1,010	490	1,340
22-----	1,270	1,060	3,630	817	310	694	1,100	720	2,140
23-----	6,590	12,400	s 212,000	761	340	699	1,210	760	2,460
24-----	2,570	5,900	40,900	705	380	723	1,100	530	1,570
25-----	1,210	2,160	7,060	689	330	614	982	390	1,030
26-----	1,060	1,080	3,090	705	310	590	934	340	857
27-----	962	810	2,100	769	440	914	924	280	699
28-----	915	610	1,510	915	620	1,530	870	240	564
29-----	852	490	1,130	852	550	1,270	943	250	569
30-----	817	440	971	753	370	753	943	230	523
31-----	769	390	810	745	370	744	--	--	--
Total-	51,936	--	824,100	27,957	--	48,420	24,352	--	27,240
Total discharge for year (second-foot-days)									364,517
Total load for year (tons).....									1,413,000

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued

NORTH LOUP RIVER NEAR ST. PAUL, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 9, 1949	4:35 p. m.	742	431	--	--	--	--	--	--	43	57	87		98	100	SW
Oct. 19	4:30 p. m.	874	393	347	--	--	4	6	15	38	51	81		100	100	SW
Oct. 26	4:10 p. m.	816	368	--	--	--	--	--	--	38	54	90		100	--	SW
Nov. 1	12:05 p. m.	805	468	384	--	--	3	6	14	37	53	87		100	--	SW
Nov. 20	5:35 p. m.	828	422	333	--	--	--	5	11	35	52	82		99	100	SW
Dec. 10		650	654	470	--	--	3	5	10	30	48	86		98	100	SW
Feb. 9, 1950	9:45 a. m.	980	256	400	--	--	5	8	15	33	41	73		98	100	SW
Mar. 1	2:45 p. m.	1,700	542	--	--	--	--	--	--	48	58	83		98	100	SW
Mar. 6	5:30 p. m.	1,900	1,940	--	--	--	--	--	--	41	60	88		98	100	SW
Mar. 13	3:15 p. m.	1,200	379	--	--	--	--	--	--	14	26	68		97	100	SW
Mar. 21	1:00 p. m.	1,100	374	543	--	--	--	8	13	31	48	82		98	100	SW
Mar. 24	2:30 p. m.	2,490	4,240	6,870	--	--	6	--	9	--	35	54	75	95	100	SW
Mar. 30	11:25 a. m.	1,110	832	1,680	--	--	8	--	--	38	56	90		99	100	SW
Apr. 14	5:00 p. m.	1,040	637	1,410	--	--	13	17	--	42	58	87		99	100	SW
May 8	1:00 p. m.	1,500	1,950	2,200	--	--	33	40	49	58	67	90		99	--	BWC
May 8	1:00 p. m.	1,500	1,950	2,170	--	--	21	29	42	50	68	75	96	100	--	BN
May 9	11:00 a. m.	1,800	2,650	9,340	--	--	30	--	42	--	72	83	95	99	100	SW
May 18	1:15 p. m.	903	338	--	--	--	--	--	--	37	50	85		99	--	SW
May 19	2:05 a. m.	1,880	2,310	3,590	--	--	20	--	27	--	71	80	95	100	--	SW
May 19	4:40 a. m.	2,150	5,410	9,010	--	--	31	--	--	77	83	95		100	--	SW
May 19	11:15 a. m.	3,910	6,500	9,420	--	--	14	--	--	--	58	76	93	99	100	SW
May 20	4:30 p. m.	1,330	3,540	577	--	--	57	--	74	--	85	90	98	100	--	SW
May 24	12:30 p. m.	1,100	422	1,240	--	--	23	--	--	56	70	93		100	--	SW
June 7	6:30 p. m.	752	229	829	--	--	24	--	33	--	71	80	92	98	100	SW
June 17	5:00 p. m.	897	2,380	1,170	--	--	53	61	74	84	92	95	99	100	--	BWC
June 18	9:45 a. m.	1,080	1,910	4,280	--	--	29	--	49	--	87	91	97	100	--	SW
July 9	5:30 a. m.	19,320	14,995	6,095	--	--	97	--	38	--	66	77	92	99	100	SW
July 12	5:30 p. m.	1,270	4,300	4,960	--	--	41	--	56	--	90	94	99	100	--	SW
July 18	3:00 p. m.	1,310	3,200	6,230	--	--	22	--	32	--	75	82	86	100	--	SW
July 18	10:30 p. m.	5,280	10,100	6,180	--	--	35	38	45	55	68	81	89	98	--	BWC

PLATTE RIVER BASIN--Continued
NORTH LOUP RIVER NEAR ST. PAUL, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
July 18, 1950	10:30 p. m.	5,280	10,100	6,370		22	36	40	51	65	78	90		99	BN
July 19	6:35 p. m.	2,060	4,080	4,500	57			70	--	92	96	99		100	SPWCM
July 20	1:45 p. m.	1,390	1,980	4,460	51			66	--	87	93	99		100	SPWCM
July 23	10:40 a. m.	7,600	11,000	7,220	21	28	35	49	64	75	83	93		93	BWC
July 23	10:40 a. m.	7,600	11,000	7,070	--	--	32	39	53	67	79	83		93	BWC
July 23	1:00 p. m.	8,150	9,080	8,610	32			45	--	78	86	95		99	SPWCM
July 23	8:25 p. m.	7,980	11,400	13,100	29		--	43	--	82	91	96		100	SPWCM
July 24	4:15 p. m.	1,880	7,370	7,370	55		--	67	--	86	91	98		100	SPWCM
Aug. 4	2:00 p. m.	1,737	353	1,180	23		--	36	--	66	76	93		--	SPWCM
Aug. 12	3:30 p. m.	1,040	617	1,430	27	35		39	48	60	68	82		95	BWC
Aug. 13	1:10 p. m.	1,590	1,500	2,520	19		--	29	--	65	73	87		99	SPWCM
Aug. 15	6:30 p. m.	1,050	860	1,850	47		--	63	--	84	90	98		--	SPWCM
Aug. 28	5:30 p. m.	943	656	2,810	15	18	23	31	41	51	63	86		86	BWC
Sept. 8	6:30 p. m.	609	190	993	--	--	26	36	46	63	70	85		96	BWC
Sept. 25	6:00 p. m.	972	368	1,720	15	17	22	28	31	40	57	80		80	BWC

PLATTE RIVER BASIN--Continued

BEAVER CREEK AT LORETTO, NEBR.

LOCATION.--At county highway bridge just upstream from gaging station at west edge of Loretto, Boone County.

DRAINAGE AREA.--311 square miles.

RECORDS AVAILABLE.--Water temperatures: April 1948 to March 1949.

Sediment records: June 1946 to September 1950.

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, 6,500 ppm June 2; minimum daily, not determined.

Sediment loads: Maximum daily, 39,000 tons June 2; minimum daily, 1 ton Jan. 14, 18.

EXTREMES, 1946-50.--Sediment concentrations: Maximum daily, 11,200 ppm May 15, 1947, minimum daily, not determined.

Sediment loads: Maximum daily, 39,000 tons June 2, 1950; minimum daily, 1 ton Feb. 6, 7, 9, 1948, Jan. 14, 18, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	41	--	e 9	48	120	16	52	47	7
2-----	41	87	10	49	88	12	52	58	8
3-----	41	86	10	49	95	13	52	56	8
4-----	41	78	9	49	82	11	52	52	7
5-----	41	87	10	49	--	e 12	51	50	.7
6-----	42	170	19	50	96	13	50	50	7
7-----	43	140	16	50	96	13	45	--	e 12
8-----	44	84	10	50	76	10	40	110	12
9-----	45	88	11	50	82	11	42	160	18
10-----	59	250	40	50	--	e 12	54	--	e 30
11-----	72	270	52	50	100	14	53	140	20
12-----	58	170	27	51	--	e 14	50	82	11
13-----	52	140	20	53	100	14	47	70	9
14-----	47	120	15	52	98	14	44	92	11
15-----	47	--	e 14	51	100	14	44	110	13
16-----	47	120	15	50	90	12	45	120	15
17-----	47	110	14	50	78	11	48	--	e 14
18-----	48	120	16	50	82	11	50	110	15
19-----	48	97	13	52	--	e 11	52	76	11
20-----	48	94	12	52	79	11	55	74	11
21-----	49	110	15	51	88	12	40	65	7
22-----	49	100	13	51	62	9	51	62	9
23-----	49	110	15	52	56	8	51	44	6
24-----	48	82	11	52	74	10	51	--	e 7
25-----	48	78	10	54	80	12	50	46	6
26-----	48	--	e 16	53	--	e 9	48	91	12
27-----	48	120	16	53	64	9	50	92	12
28-----	49	92	12	53	73	10	51	62	9
29-----	49	94	12	52	57	8	50	58	8
30-----	48	93	12	52	50	7	51	71	10
31-----	48	70	9	--	--	--	52	--	e 10
Total-	1,485	--	483	1,528	--	343	1,523	--	342

e Estimated.

MISSOURI RIVER BASIN

PLATTE RIVER BASIN--Continued

BEAVER CREEK AT LORETTO, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	51	62	9	45	24	3	91	--	e17
2-----	50	--	e6	45	--	e4	75	--	e14
3-----	40			45	--	e5	69	100	19
4-----	38			45	40	5	108	100	s 120
5-----	38			49	48	6	270	1,600	1,200
6-----	36	38	4	52	45	6	218	1,200	710
7-----	37	27	3	57	62	10	150	--	e200
8-----	39	24	3	62	150	25	90	--	e24
9-----	40	28	3	60	150	24	65	}	e8
10-----	37	27	3	58	140	22	60		
11-----	34	18	2	58	--	e19	60		
12-----	37	24	2	59	}	e15	63	}	130
13-----	37	20	2	50			63		
14-----	32	17	1	57			63		
15-----	34	18	2	63	130	22	75		
16-----	34	22	2	63	160	27	100	--	e14
17-----	36	21	2	61	--	e20	174	--	e32
18-----	34	--	e1	64	61	11	192	--	e180
19-----	36	28	3	54	32	5	158	--	e75
20-----	39	31	3	61	37	6	136	}	e34
21-----	40	38	4	60	45	7	126		
22-----	38	42	4	52	130	18	116		
23-----	37	27	3	62	130	22	192	--	e320
24-----	38	--	e3	58	46	7	350	--	e1,400
25-----	35	--	e2	46	32	4	290	1,300	1,000
26-----	30	--	e2	57	39	6	274	1,300	960
27-----	40	32	3	61	32	7	280	1,600	1,200
28-----	44	--	e7	80	80	17	196	840	440
29-----	44	81	10	--	--	--	143	590	230
30-----	41	58	6	--	--	--	130	--	e200
31-----	45	26	3	--	--	--	127	470	160
Total-	1,191	--	116	1,584	--	353	4,504	--	8,670
Day	April			May			June		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	130	500	180	82	--	e22	66	170	30
2-----	117	210	66	77	82	17	1,810	6,500	s 30,000
3-----	114	230	71	75	160	32	929	1,200	3,000
4-----	106	260	74	72	--	e36	677	220	400
5-----	101	220	60	76	--	e38	481	440	570
6-----	95	260	67	101	--	e85	288	770	600
7-----	90	150	36	103	190	53	165	580	260
8-----	90	140	34	104	--	e170	119	--	e110
9-----	91	--	e44	154	780	320	95	210	54
10-----	88	--	e40	167	810	370	80	480	100
11-----	85	160	37	136	680	250	72	210	41
12-----	84	140	32	111	480	140	66	120	21
13-----	83	160	36	133	730	260	60	90	15
14-----	82	110	24	124	530	180	64	60	10
15-----	79	97	21	102	--	e120	86	190	44
16-----	77	130	27	91	330	91	73	120	24
17-----	77	150	31	88	250	59	64	70	12
18-----	74	150	30	85	--	e85	82	--	e130
19-----	72	130	25	110	1,200	360	149	420	170
20-----	68	120	22	126	970	330	137	330	120
21-----	68	80	15	141	700	270	91	370	91
22-----	65	170	30	124	720	240	76	270	55
23-----	63	--	e34	102	600	170	71	200	38
24-----	60	140	23	99	1,200	320	66	130	23
25-----	59	91	14	81	310	68	60	120	19
26-----	58	81	13	77	170	35	55	100	15
27-----	58	81	13	77	180	37	52	75	11
28-----	59	65	10	75	190	38	52	64	9
29-----	69	--	e11	78	420	88	50	110	15
30-----	86	--	e26	86	380	88	48	52	7
31-----	--	--	--	74	220	44	--	--	--
Total-	2,448	--	1,150	3,131	--	4,410	6,184	--	44,990

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued

BEAVER CREEK AT LORETTO, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	47	91	12	74	85	17	50	60	8
2-----	46	93	12	69	80	15	48	72	9
3-----	47	74	9	66	75	13	48	68	9
4-----	47	90	11	68	340	62	46	76	9
5-----	53	130	19	85	420	s 110	447	82	10
6-----	50	200	27	80	490	110	46	69	9
7-----	46	130	16	68	220	40	46	80	10
8-----	146	--	e 1,300	64	--	e 26	45	120	15
9-----	1,620	4,800	s 22,000	61	140	23	45	84	10
10-----	353	1,500	s 1,600	62	190	32	45	79	10
11-----	119	520	170	65	--	e 38	45	--	e 9
12-----	616	2,100	s 3,900	200	--	e 900	47	58	7
13-----	165	350	160	153	120	50	51	98	13
14-----	103	300	83	191	470	240	91	100	25
15-----	94	--	e 75	177	--	e 440	119	--	e 65
16-----	584	3,300	s 11,000	113	520	160	138	230	86
17-----	1,200	--	e 18,000	96	260	67	114	--	e 60
18-----	607	1,400	s 2,800	84	180	41	72	170	33
19-----	805	1,300	s 3,300	76	--	e 32	65	--	e 24
20-----	507	1,000	1,400	71	--	e 26	82	120	27
21-----	404	1,400	s 1,600	68	120	22	69	90	17
22-----	197	420	s 240	64	110	19	60	--	e 11
23-----	426	--	e 2,200	60	210	34	58	--	e 11
24-----	348	430	400	56	140	21	54	81	12
25-----	424	910	1,000	54	110	16	52	110	15
26-----	328	650	s 620	54	120	17	52	65	9
27-----	190	360	180	58	110	17	54	36	5
28-----	134	220	80	58	120	19	54	60	9
29-----	105	150	43	55	76	11	52	68	10
30-----	91	130	32	53	200	29	50	78	11
31-----	82	97	21	52	84	12	--	--	--
Total-	9,964	--	72,310	2,555	--	2,660	1,845	--	558

Total discharge for year (second-foot-days) 37,962

Total load for year (tons) 136,400

e Estimated.

s Computed by subdividing day.

PLATTE RIVER BASIN--Continued
BEAVER CREEK AT LORETTO, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 11, 1949	4:15 p. m.	70	230	458	--	--	35	41	58	86	100	--	--	--	--	SBWCM
Mar. 5, 1950	12:10 p. m.	358	1,780	1,520	--	21	--	25	--	59	81	97	--	100	--	SPWCM
Mar. 6	5:00 p. m.	191	866	1,140	--	38	--	46	--	99	100	--	--	--	--	SPWCM
Mar. 25	10:00 a. m.	304	1,450	2,160	--	--	--	36	--	83	94	98	--	100	--	SPWCM
Mar. 25	6:10 p. m.	266	1,170	1,750	--	28	--	--	--	83	94	100	--	--	--	SPWCM
Mar. 27	2:10 p. m.	274	1,580	2,210	14	16	19	23	34	63	73	94	--	100	--	SPWCM
Mar. 27	2:10 p. m.	274	1,580	1,590	--	10	12	19	31	55	74	100	--	--	--	BN
Apr. 4	1:30 p. m.	106	269	1,270	--	25	--	31	--	79	92	99	--	100	--	SPWCM
Apr. 19	3:20 p. m.	70	156	860	--	31	--	40	--	85	94	99	--	100	--	SPWCM
Apr. 24	2:20 p. m.	60	129	700	--	33	--	42	--	89	97	100	--	--	--	SPWCM
May 9	12:00 m.	160	1,170	4,770	--	20	--	30	--	87	95	99	--	100	--	SPWCM
May 19	3:00 p. m.	122	955	3,460	--	28	--	40	--	93	98	100	--	--	--	SPWCM
June 2	7:10 a. m.	872	7,470	3,860	--	71	--	85	--	91	94	100	--	--	--	SPWCM
June 2	8:55 a. m.	1,880	12,800	6,050	--	39	--	50	--	57	64	93	--	100	--	SPWCM
June 2	11:00 a. m.	4,570	10,800	5,640	--	65	--	88	--	97	98	100	--	--	--	SPWCM
June 2	2:50 p. m.	3,000	6,750	4,080	68	82	92	97	97	99	100	--	--	--	--	SPWCM
June 2	3:00 p. m.	3,000	6,750	4,130	44	66	86	96	97	99	100	--	--	--	--	SPN
June 2	2:50 p. m.	2,520	5,880	4,800	--	84	--	97	--	99	99	100	--	--	--	SPWCM
June 11	4:00 p. m.	711	158	903	--	42	--	55	--	92	97	100	--	--	--	SPWCM
June 19	6:20 p. m.	181	549	2,690	--	28	--	43	--	95	98	100	--	--	--	SPWCM
July 9	9:15 a. m.	2,880	5,640	4,170	--	81	--	92	--	96	97	100	--	--	--	SPWCM
July 9	1:45 p. m.	2,080	3,580	4,260	--	88	--	96	--	98	100	--	--	--	--	SPWCM
July 9	6:00 p. m.	1,270	2,900	3,700	--	91	--	96	--	100	--	--	--	--	--	SPWCM
July 18	7:30 p. m.	918	2,870	3,460	66	78	87	94	97	99	100	--	--	--	--	SPWCM
July 18	7:30 p. m.	918	2,870	3,530	35	56	77	90	94	98	100	--	--	--	--	SPN
Sept. 12	11:15 a. m.	47	54	220	--	61	67	71	78	87	93	98	--	100	--	BWCM
Sept. 28	4:20 p. m.	52	61	298	--	29	42	47	61	76	91	96	--	99	100	BWCM

PLATTE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second-feet)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ton (B)	Dissolved solids		Hardness as CaCO ₃		
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate
McCONAUGHY LAKE, NEBR.																				
Jan. 21, 1950		8.0	707	25	0.02	50	16	79	9.8	0	231	147	24	0.4	2.3	468	0.64	191	2	
Apr. 26		7.7	727	30	.02	57	15	87	0	244	158	18	18	.5	1.5	506	.69	204	4	
June 13, at surface		7.9	689	20	.04	41	17	87	0	212	143	22	22	.4	1.7	454	.62	173	0	
June 13, depth 15 ft.		7.9	690	21	.04	44	16	88	0	216	150	22	22	.4	1.6	454	.62	176	0	
June 13, depth 30-50 ft.		7.9	683	26	.04	43	17	87	0	217	150	22	22	.4	1.7	462	.63	176	0	
NORTH PLATTE RIVER AT NORTH PLATTE, NEBR.																				
Jan. 20, 1950	471	8.5	445	41	0.02	46	8.7	35	6.8	10	157	75	13	0.3	1.3	321	0.44	151	6	
Feb. 17	704	7.7	423	34	.02	44	6.7	42	0	166	74	9.0	9.0	.4	1.7	312	.42	138	2	
Mar. 26	417	8.1	556	40	.04	57	10	77	0	192	120	15	15	.5	2.2	432	.57	183	26	
Apr. 26	1,140	8.1	660	28	.02	55	14	77	0	224	143	19	19	.6	2.1	462	.63	195	11	
May 31	876	8.0	712	30	.04	54	13	84	0	222	151	20	20	.5	1.9	476	.65	188	6	
July 19	986	8.1	795	28	.02	66	18	80	0	230	180	22	22	.7	3.5	538	.72	239	50	
Sept. 27	378	8.4	729	36	.02	75	12	73	8	209	171	21	21	.6	3.8	520	.71	238	53	
PLATTE RIVER AT BRADY, NEBR.																				
Jan. 20, 1950	a120	8.4	491	39	0.02	53	9.8	37	7.4	10	169	86	14	0.3	3.6	351	0.48	173	18	
Mar. 26	a237	8.3	492	32	.06	55	9.6	42	6	174	93	11	11	.4	2.2	370	.50	177	24	
June 14	a93	7.8	550	37	.02	53	11	56	0	187	118	15	15	.8	4	400	.54	178	25	
Sept. 27	a126	8.2	302	45	.02	41	3.8	20	5	148	26	3.0	3.0	.3	1.2	220	.30	118	0	
PLATTE RIVER NEAR ASHLAND, NEBR.																				
Jan. 19, 1950	2,500	8.3	543	49	0.01	56	12	49	5	223	84	10	10	0.4	2.1	394	0.54	189	0	
Mar. 30	15,680	8.1	304	22	.04	41	4.9	20	0	150	29	4.8	4.8	.3	5.1	216	.29	123	0	
Apr. 19	6,330	8.5	435	41	.08	52	11	32	12	180	60	7.5	7.5	.3	2.8	354	.48	176	9	
Aug. 31	5,290	8.4	398	34	.02	56	7.2	24	8	196	34	5.5	5.5	.3	3.1	270	.37	169	0	
SOUTH PLATTE RIVER AT FORT LUPTON, COLO.																				
Jan. 17, 1950	75	8.0	1,250	19	0.02	117	31	134	0	310	340	62	62	1.0	16	920	1.25	420	166	
Feb. 3	a67	8.3	1,210	19	.02	112	26	131	6	255	313	64	64	1.0	17	884	1.20	395	117	
Mar. 8	131	8.4	1,030	18	.02	86	22	116	10	247	218	71	71	1.0	9.7	716	.97	305	86	
Apr. 3	14	7.7	1,060	20	.02	100	23	121	0	280	255	72	72	1.2	8.8	974	1.32	344	114	
May 1	181	7.3	961	13	.02	82	21	106	0	238	216	65	65	1.2	8.1	660	.90	291	96	
A mean daily discharge.																				

a Mean daily discharge.

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- di- um (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- di- um	
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		
SOUTH PLATTE RIVER AT FORT LUPTON, COLO.--Continued																						
May 29, 1950	299	7.2	804	14	0.04	66	18	85	0	206	180	46	0.9	0.0	0.0	0.20	520	0.71		239	70	44
July 3	365	7.1	550	9.8	.02	48	11	56	0	136	115	33	0.7	8.8	1.0	.30	368	.80		165	53	42
Aug. 3	126	8.2	928	14	.02	73	17	103	5	211	172	75	1.0	11	1.0	.30	590	.80		253	72	47
Sept. 5	64	8.1	1,080	13	.02	89	20	123	0	267	212	84	1.1	14	1.1	.30	718	.98		303	86	47
SOUTH PLATTE RIVER AT NORTH PLATTE, NEBR.																						
Jan. 20, 1950	120	8.2	748	40	0.01	71	19	68	0	208	190	21	0.5	3.1	0.37	.18	540	0.73		255	84	37
Feb. 17	201	8.0	788	34	.04	87	17	69	0	235	197	24	5	4.5	3.0	.30	594	.81		287	94	34
Mar. 26	174	7.8	709	36	.04	75	15	63	0	232	156	21	4	3.5	3.0	.30	530	.72		249	59	36
Apr. 26	270	8.0	1,120	30	.04	103	24	117	0	207	370	36	6	2.7	3.0	.30	836	1.14		356	186	42
May 31	220	7.8	943	24	.04	83	22	95	0	212	275	30	5	1.5	2.0	.30	662	.90		298	124	41
July 19	163	7.9	791	34	.02	73	19	64	0	207	187	23	5	1.7	3.0	.30	536	.73		261	91	35
Sept. 27	179	8.2	779	43	.02	87	14	65	6	226	181	22	5	2.4	1.8	.18	544	.74		276	81	34
ST. VRAIN CREEK AT MOUTH NEAR PLATTEVILLE, COLO.																						
Jan. 17, 1950	a 74	7.7	1,550	13	0.02	112	77	149	0	332	585	19	1.2	11	0.36	.42	1,130	1.54		596	324	35
Mar. 8	a 61	8.3	1,730	14	.02	112	98	166	10	319	688	26	1.2	13	.42	.42	1,290	1.76		683	405	35
May 29	a 171	7.9	1,650	14	.04	114	86	158	0	298	670	22	1.2	7.6	.42	.42	1,220	1.66		638	394	35
Sept. 5	73	8.3	2,080	8.7	.02	134	118	213	11	278	955	24	1.4	5.3	.30	.30	1,610	2.19		820	574	36
BIG THOMPSON RIVER AT MOUTH NEAR LA SALLE, COLO.																						
Jan. 17, 1950	a 29	7.8	2,880	15	0.02	206	184	259	0	330	1,450	30	1.2	9.8	0.61	.66	2,320	3.16		1,270	999	31
Mar. 8	18	8.0	2,710	14	.02	191	179	261	0	253	1,460	28	1.2	12	.66	.66	2,270	3.09		1,210	1,000	32
May 29	17	8.0	2,560	13	.04	206	154	227	0	344	1,260	29	9	6.5	6.0	.60	2,070	2.82		1,150	863	30
Sept. 5	14	7.8	2,520	13	.02	210	135	242	0	298	1,280	29	1.1	6.7	.52	.52	2,040	2.77		1,080	836	33
CACHE LA POUDE RIVER NEAR GREELEY, COLO.																						
Jan. 17, 1950	66	8.1	1,880	16	0.02	196	100	141	0	365	820	29	1.0	12	0.36	.36	1,500	2.04		900	601	25
Mar. 8	46	7.2	1,810	14	.02	175	96	142	0	322	785	29	1.0	19	.35	.35	1,420	1.93		832	568	27
May 29	19	8.1	1,940	14	.04	190	95	145	0	350	805	31	8	11	.37	.37	1,460	1.99		865	578	27
Sept. 5	12	7.9	1,880	14	.02	181	86	163	0	288	835	31	8	8.9	.39	.39	1,460	1.99		804	568	31
a Mean daily discharge.																						

a Mean daily discharge.

BIJOU CREEK NEAR MOUTH NEAR FORT MORGAN, COLO.

Jan. 17, 1950	8.0	1,320	19	0.02	177	30	95	0	238	495	31	0.6	19	0.27	984	1.34	565	370	27	
Mar. 8	7.6	1,300	22	.02	171	35	83	8.9	0	214	495	36	.7	15	.30	972	1.32	571	396	24
May 29	8.2	1,240	18	.04	120	43	98	0	214	435	36	.8	10	.30	942	1.28	477	302	31	
Sept. 15	8.1	1,310	22	.04	160	34	90	0	187	505	34	.7	10	.20	948	1.29	540	387	27	

JOHNSON RESERVOIR, NEBR.

Jan. 19, 1950	7.8	894	30	0.01	73	22	97	0	238	240	25	0.5	1.1	0.38	620	0.84	273	78	44
May 3	7.8	923	24	.02	79	26	95	0	198	293	29	.4	1.4	.10	676	.92	304	142	40
June 14	8.0	717	22	.02	60	18	73	0	203	174	22	.4	2.3	.20	485	.66	224	58	41
Sept. 28	8.3	690	25	.02	53	16	78	8	191	159	20	.5	1.1	.25	470	.64	196	26	46

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

PLATTE RIVER NEAR OVERTON, NEBR.

Jan. 19, 1950.....	1,820	52	256
Feb. 1.....	1,800	32	156
Feb. 3.....	2,020	57	311
Mar. 1.....	2,160	222	1,290
Mar. 2.....	2,020	82	450
Mar. 27.....	1,220	173	570
Apr. 5.....	2,480	268	1,790
Apr. 6.....	1,720	313	1,450
May 3.....	1,300	121	425
May 4.....	634	18	31
May 21.....	1,110	356	1,070
May 25.....	958	368	1,000
July 6.....	140	81	31
July 21.....	446	210	253
Aug. 9.....	222	92	55
Aug. 31.....	512	70	97
Sept. 27.....	1,850	114	569
Sept. 28.....	977	41	108

PLUM CREEK NEAR SMITHFIELD, NEBR.

Mar. 1, 1950.....	3.6	2,610	25
May 11.....	.3	1,550	1.3
May 20.....	218	8,660	5,100
May 20.....	225	8,300	5,040
May 21.....	27	4,270	311
May 22.....	10	3,220	87
May 25.....	.8	1,610	3.5
May 30.....	227	10,000	6,130
May 30.....	287	12,200	9,450
May 30.....	303	15,100	12,400
May 30.....	380	12,800	13,100
May 30.....	399	10,000	10,800
June 1.....	6.2	2,140	36
June 21.....	7.4	2,880	58
July 13.....	5.3	665	9.5
July 21.....	66	7,900	1,410
July 21.....	104	13,200	3,710
July 21.....	123	10,900	3,620
July 21.....	133	11,500	4,130
July 21.....	136	8,200	3,010
July 22.....	82	3,670	812
July 25.....	12	944	31
July 27.....	2.4	854	5.5
Aug. 10.....	24	4,200	272

MIDDLE LOUP RIVER NEAR SENECA, NEBR.

Oct. 13, 1949.....	186	552	277
Nov. 1.....	186	568	285
Nov. 6.....	184	492	244
Nov. 15.....	196	551	292
Nov. 29.....	186	554	278
Dec. 12.....	188	466	237
Dec. 28.....	196	398	211
Jan. 10, 1950.....	191	429	221
Jan. 24.....	188	704	357
Feb. 2.....	184	548	272
Feb. 22.....	186	706	355
Mar. 9.....	204	475	262
Apr. 4.....	191	670	346
Apr. 17.....	204	767	422
May 3.....	218	648	381
May 17.....	194	384	201
June 2.....	194	509	287
June 14.....	230	904	561
June 28.....	171	366	169
July 12.....	194	363	190

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

MIDDLE LOUP RIVER NEAR SENECA, NEBR.--Continued

July 26, 1950	188	1,760	893
Aug. 9	194	1,520	796
Aug. 23	174	778	366
Sept. 7	188	605	307
Sept. 20	283	1,920	1,470

MIDDLE LOUP RIVER NEAR MILBURN, NEBR.

Nov. 1, 1949	817	1,090	2,400
Nov. 15	798	896	1,930
Nov. 29	799	1,000	2,160
Dec. 14	584	174	274
Dec. 28	826	453	1,010
Jan. 10, 1950	711	250	480
Feb. 1	670	279	505
Mar. 20	817	2,130	4,700
Apr. 5	840	2,670	6,060
Apr. 13	804	1,220	2,650
Apr. 18	908	1,300	3,190
May 2	839	964	2,180
May 10	885	1,100	2,630
May 17	840	875	1,980
May 30	848	727	1,660
June 12	680	438	805
June 21	726	415	813
June 28	669	1,170	2,110
July 12	756	562	1,150
July 17	814	596	1,310
July 25	833	665	1,500
Aug. 9	808	590	1,290
Aug. 22	774	340	710
Sept. 7	875	432	787
Sept. 26	803	1,850	4,010

MIDDLE LOUP RIVER AT ARCADIA, NEBR.

Oct. 11, 1949	985	2,620	6,970
Nov. 8	882	972	2,310
Nov. 15	804	1,160	2,520
Nov. 22	838	2,530	5,720
Nov. 29	873	1,140	2,690
Dec. 6	795	2,450	5,260
Dec. 14	152	1,080	443
Dec. 21	824	1,770	3,940
Dec. 29	852	1,860	4,280
Jan. 18, 1950	580	191	299
Jan. 26	698	282	531
Feb. 2	788	468	996
Feb. 7	918	279	692
Feb. 14	768	180	373
Feb. 23	1,030	345	959
Mar. 2	1,040	309	868
Mar. 9	181	617	302
Mar. 16	1,300	1,250	4,390
Mar. 22	1,040	1,770	4,970
Mar. 29	842	2,910	6,620
Apr. 5	975	1,210	3,190
Apr. 13	910	1,150	2,830
Apr. 19	1,000	1,120	3,020
Apr. 26	787	1,020	2,170
May 2	838	1,500	3,390
May 9	1,160	1,750	5,480
May 17	714	813	1,570
May 23	691	610	1,140
June 1	738	640	1,280
June 6	661	607	1,080
June 13	547	431	637
June 21	624	442	745

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

MIDDLE LOUP RIVER AT ARCADIA, NEBR.--Continued

June 27, 1950.....	521	400	563
July 5	722	510	994
July 11	730	421	830
July 17	873	433	1,020
July 18	1,160	712	2,230
July 25	1,110	556	1,670
Aug. 2	699	576	1,090
Aug. 8	706	496	945
Aug. 15	812	424	930
Aug. 22	779	498	1,050
Aug. 29	763	529	1,090
Sept. 7	638	950	1,640
Sept. 14	714	440	848
Sept. 21	947	1,060	2,710
Sept. 27	795	740	1,590

MIDDLE LOUP RIVER AT LOUP CITY, NEBR.

Oct. 10, 1949.....	1,140	1,530	4,710
Nov. 8	788	936	1,990
Nov. 15	814	1,260	2,770
Nov. 22	870	1,290	3,030
Nov. 29	912	1,060	2,610
Dec. 6	884	1,380	3,290
Dec. 15	293	1,240	981
Dec. 21	732	1,850	3,660
Dec. 29	773	1,740	3,630
Jan. 11, 1950	1,070	370	1,070
Jan. 27	584	150	237
Feb. 6	794	378	810
Feb. 15	719	117	227
Feb. 23	1,010	445	1,210
Mar. 9	284	600	460
Mar. 16	1,140	3,690	11,400
Mar. 22	1,530	2,200	9,090
Mar. 29	984	2,050	5,450
Apr. 6	884	1,280	3,060
Apr. 13	1,020	1,140	3,140
Apr. 19	972	1,040	2,730
Apr. 26	800	632	1,370
May 2	842	944	2,150
May 9	1,180	972	3,100
May 17	856	660	1,530
May 23	814	518	1,140
June 1	764	394	813
June 7	600	327	530
June 13	493	282	375
June 21	600	308	499
June 27	500	253	342
July 6	680	635	1,170
July 9	1,240	1,420	4,750
July 13	842	387	880
July 19	1,300	1,170	4,110
July 25	1,050	1,010	2,860
Aug. 2	752	255	518
Aug. 10	956	515	1,330
Aug. 16	704	431	819
Aug. 23	728	337	662
Aug. 30	776	403	844
Sept. 7	600	270	437
Sept. 14	660	470	838
Sept. 20	788	445	947
Sept. 27	740	625	1,250

DISMAL RIVER NEAR GEM, NEBR.

Nov. 1, 1949.....	276	600	447
Nov. 15	310	773	647

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

DISMAL RIVER NEAR GEM, NEBR.--Continued

Nov. 29, 1949	276	741	552
Dec. 14	293	1,370	1,080
Dec. 28	271	860	629
Jan. 10, 1950	333	380	342
Feb. 7	331	1,540	1,380
Feb. 23	282	939	715
Feb. 28	274	1,070	792
Mar. 21	279	895	674
Apr. 5	262	724	512
Apr. 19	271	849	621
May 3	279	448	337
May 16	290	448	351
June 1	262	413	292
June 14	272	266	195
June 27	262	463	328
July 13	284	561	430
July 25	318	418	359
Aug. 8	278	351	263
Aug. 23	273	295	217
Sept. 6	276	370	276
Sept. 19	294	485	385

DISMAL RIVER AT DUNNING, NEBR.

Oct. 11, 1949	342	962	888
Nov. 6	312	1,320	1,110
Nov. 15	306	1,160	958
Nov. 29	294	1,190	945
Dec. 14	306	796	658
Dec. 21	297	1,600	1,280
Dec. 28	330	1,740	1,550
Jan. 12, 1950	346	364	340
Jan. 25	93	60	15
Feb. 3	315	340	289
Feb. 7	405	417	456
Feb. 14	310	1,670	1,400
Feb. 22	330	1,400	1,250
Mar. 8	252	312	212
Mar. 21	336	1,390	1,260
Apr. 4	324	1,270	1,110
Apr. 17	327	902	796
May 3	300	1,010	818
May 16	309	2,640	2,200
June 1	306	591	488
June 15	300	606	491
June 27	300	502	407
July 13	318	795	688
July 25	333	434	390
Aug. 8	289	541	422
Aug. 23	265	420	300
Sept. 6	306	525	434
Sept. 19	312	480	404

SOUTH LOUP RIVER NEAR CUMRO, NEBR.

Oct. 10, 1949	149	560	225
Oct. 31	144	314	122
Nov. 2	147	314	125
Nov. 16	153	439	181
Nov. 28	146	344	136
Dec. 15	122	362	119
Dec. 27	113	157	47
Jan. 9, 1950	127	104	36
Jan. 23	154	157	65
Feb. 4	129	61	21
Feb. 15	147	248	98
Feb. 21	216	347	202

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

Mar. 6, 1950	206	676	376
Mar. 14	179	312	151
Mar. 22	194	855	448
Apr. 5	186	690	365
Apr. 18	177	514	246
May 2	160	378	163
May 9	212	1,100	630
May 17	165	431	192
May 25	158	460	196
June 13	126	266	90
June 18	237	2,270	1,450
June 26	129	538	187
July 9	536	8,320	12,000
July 11	146	1,030	406
July 12	155	1,280	536
July 27	160	530	229
Aug. 7	144	540	210
Aug. 21	124	440	147
Sept. 5	126	287	98
Sept. 18	141	370	141

MUD CREEK NEAR SWEETWATER, NEBR.

May 9, 1950	189	6,440	3,290
May 19	191	7,200	3,710
May 21	157	7,360	3,120
June 18	673	9,020	16,400
July 10	1,030	5,920	16,500
July 24	1,290	5,400	18,800

NORTH LOUP RIVER AT BREWSTER, NEBR.

Oct. 13, 1949	388	438	459
Oct. 31	352	399	379
Nov. 6	360	333	324
Nov. 30	349	602	567
Feb. 3, 1950	334	192	173
Feb. 7	378	126	129
Feb. 23	a 660	320	570
Mar. 9	322	1,400	1,140
Apr. 4	455	995	1,220
Apr. 17	392	466	493
May 3	473	746	953
May 15	446	453	545
June 1	400	255	275
June 15	477	601	774
June 27	330	209	166
July 12	345	188	175
July 26	388	250	262
Aug. 9	392	200	212
Aug. 22	300	250	202
Sept. 6	315	175	149
Sept. 19	376	275	279

NORTH LOUP RIVER AT BURWELL, NEBR.

Oct. 10, 1949	760	1,240	2,540
Oct. 24	494	614	820
Nov. 7	500	423	571
Nov. 21	523	1,060	1,500
Dec. 5	506	924	1,260
Dec. 8	447	747	902
Dec. 20	506	629	859
Jan. 4, 1950	135	140	51
Jan. 18	377	276	281
Feb. 7	540	308	449
Mar. 28	653	1,190	2,100
Apr. 12	632	1,030	1,760

a Mean daily discharge.

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
NORTH LOUP RIVER AT BURWELL, NEBR.--Continued			
May 9, 1950	831	840	1,880
May 23	609	493	811
May 24	635	362	621
June 6	440	237	282
June 20	550	438	650
July 4	417	535	602
July 17	421	341	388
Aug. 1	387	228	238
Aug. 16	440	233	277
Aug. 30	467	260	328
Sept. 13	381	326	335
Sept. 27	509	450	618
NORTH LOUP RIVER AT ORD, NEBR.			
Apr. 24, 1950	937	532	1,350
May 8	1,700	1,280	5,880
June 5	983	460	1,220
June 19	836	266	600
July 3	722	1,890	2,680
July 17	922	764	1,900
July 31	709	2,390	4,580
Aug. 15	960	321	832
Aug. 29	858	274	635
Sept. 12	654	260	459
Sept. 26	900	233	566
NORTH LOUP RIVER NEAR COTESFIELD, NEBR.			
Dec. 22, 1949	566	376	575
Jan. 19, 1950	530	179	256
May 17	1,120	374	1,130
CALAMUS RIVER NEAR BURWELL, NEBR.			
Oct. 10, 1949	308	415	346
Oct. 17	279	200	151
Oct. 24	282	280	214
Oct. 26	273	239	177
Oct. 31	279	257	194
Nov. 7	298	282	227
Nov. 14	302	354	289
Nov. 21	276	286	214
Nov. 28	273	229	169
Dec. 5	270	266	194
Dec. 7	279	392	296
Dec. 13	233	298	188
Dec. 20	286	392	303
Dec. 27	306	98	81
Jan. 4, 1950	182	184	91
Jan. 9	263	104	74
Jan. 24	307	80	50
Jan. 31	249	65	44
Feb. 6	329	82	73
Feb. 22	270	370	270
Feb. 28	292	380	300
Mar. 15	360	222	216
Mar. 20	312	366	309
Mar. 27	380	735	756
Apr. 4	454	415	509
Apr. 12	358	250	242
Apr. 17	340	315	290
Apr. 25	312	390	329
May 10	376	240	244
May 16	322	303	264
May 22	343	208	193
May 24	332	537	482
June 5	504	627	854
June 12	282	124	95

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

CALAMUS RIVER NEAR BURWELL, NEBR.--Continued

June 20, 1950.....	305	210	173
June 26	238	150	97
July 4	312	236	199
July 11	295	162	129
July 17	289	160	125
July 26	279	208	157
Aug. 1	273	195	144
Aug. 9	343	255	237
Aug. 16	302	185	151
Aug. 21	289	142	111
Aug. 30	292	190	150
Sept. 20	312	210	177
Sept. 27	332	255	229

LOUP RIVER POWER CANAL NEAR GENOA, NEBR.

Apr. 21, 1950	2,030	230	1,260
Apr. 26	2,430	304	1,990
May 23	2,650	1,180	8,440
June 21	2,040	1,230	6,770
Aug. 9	2,200	770	4,570
Sept. 8	1,490	140	563
Sept. 22	2,520	1,270	8,640

ELKHORN RIVER AT EWING, NEBR.

Oct. 16, 1949	56	12	1.8
Nov. 9	71	8	1.5
Dec. 20	64	10	1.7
Jan. 17, 1950	45	8	1.0
Jan. 20	35	8	.8
Feb. 1	41	5	.6
Feb. 22	66	13	2.3
Mar. 25	581	211	331
Mar. 29	1,050	533	1,510
Apr. 5	1,270	450	1,540
Apr. 12	543	175	257
Apr. 19	570	170	262
Apr. 26	222	40	24
May 10	1,020	313	862
May 12	876	1,350	3,190
May 18	402	65	71
May 26	352	158	150
June 6	375	112	113
June 12	176	61	29
June 17	162	58	25
June 20	548	1,770	2,620
June 26	270	111	81
July 7	128	76	26
July 19	507	176	241
Aug. 2	153	59	24
Aug. 15	495	130	174
Aug. 30	152	56	23
Aug. 31	140	55	21
Sept. 13	78	32	6.7
Sept. 28	394	185	197

ELKHORN RIVER AT NELIGH, NEBR.

Oct. 16, 1949	188	122	62
Nov. 9	180	126	61
Jan. 6, 1950	123	72	24
Mar. 28	2,250	1,200	7,290
Apr. 19	880	553	1,310
May 10	1,340	723	2,620
May 12	1,120	811	2,450
May 19	825	442	985
May 26	680	304	558
May 26	680	290	532

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950--Continued

Periodic determinations of suspended-sediment discharge, water, year October 1946 to September 1950--Continued			
Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
ELKHORN RIVER AT NELIGH, NEBR.--Continued			
June 11, 1950.....	416	216	243
June 27	442	259	309
July 7	266	192	138
July 11	1,570	937	3,970
July 19	1,620	772	3,380
Aug. 3	359	268	279
Aug. 14	1,070	621	1,790
Aug. 17	1,300	622	2,190
Aug. 28	374	276	279
Sept. 12	207	102	57
Sept. 29	660	445	773

PLATTE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000

PLATTE RIVER NEAR OVERTON, NEBR.

Feb. 1, 1950	6:30 p.m.	1,800	32	588	11	14	18	22	25	29	32	36	40	90		BW
Mar. 1	6:25 p.m.	2,160	222	3,850	2	3	5	6	9	11	14	20	--	--		BW
Apr. 6	10:30 a.m.	1,720	313	5,900	--	2	3	5	5	8	10	15	--	--		BW
May 21	6:00 p.m.	1,110	356	1,450	51	60	68	72	78	82	90	91	92	95		BWCM
May 25	5:20 p.m.	958	388	--	--	--	--	--	--	15	16	30	58	83		S
Sept. 27	6:15 p.m.	1,850	114	3,070	20	23	26	30	34	38	46	75	--	--		BWCM

PLUM CREEK NEAR SMITHFIELD, NEBR.

Mar. 1, 1950	12:45 p.m.	3.6	2,610	1,780	40	60	72	77	81	86	90	98	100			BW
May 20	3:20 p.m.	218	8,660	4,330	61	65	70	77	86	100						PWCM
May 20	3:20 p.m.	218	8,660	4,330	10	11	12	35	91	100						PN
May 20	4:45 p.m.	225	8,300	13,300	--	58	--	73	--	100						SPWCM
May 21	5:20 p.m.	27	4,270	10,100	--	88	--	95	--	100						SPWCM
May 22	10:50 a.m.	10	3,220	6,080	--	97	--	100	--	--						PWCM
May 30	4:55 a.m.	227	10,000	11,800	--	41	--	57	--	86						SPWCM
May 30	5:00 a.m.	287	12,200	9,900	--	42	--	67	--	98						SPWCM
May 30	5:30 a.m.	335	15,100	11,900	--	43	--	66	--	98						SPWCM
May 30	5:30 a.m.	380	12,800	8,430	--	45	--	66	--	98						SPWCM
May 30	7:30 a.m.	399	10,000	5,010	47	56	64	73	87	100						PWCM
May 30	7:30 a.m.	399	10,000	5,370	24	35	49	61	80	94						PN
June 21	2:50 p.m.	7.4	2,880	5,400	--	84	--	97	--	98						SPWCM
July 21	5:00 p.m.	104	13,200	9,020	--	56	--	76	--	97						SPWCM
July 21	6:55 p.m.	133	11,500	6,470	43	57	67	80	92	98						SPWCM
July 21	6:55 p.m.	133	11,500	5,920	25	36	52	71	92	99						SPN
Aug. 10	10:00 a.m.	24	4,200	9,100	--	86	--	94	--	98						SPWCM

MIDDLE LOUP RIVER NEAR SENECA, NEBR.

Oct. 13, 1949	7:45 p.m.	186	552	1,610					9	14	31	99	100	--		BW
Nov. 1	9:30 a.m.	186	568	1,310					5	17	31	96	99	--		BW
Nov. 6	3:25 p.m.	186	492	1,170					7	15	31	90	98	--		BW
Nov. 29	9:30 a.m.	186	554	1,390						12	28	93	99	--		BW

Jan. 10.	10:30 a. m.	191	429	1,100				10	15	35	94	100	--	EW
Jan. 24.	9:40 a. m.	188	704	--				--	8	31	94	100	--	SWCM
Feb. 2.	11:30 a. m.	194	548	--				--	9	39	97	100	--	SWCM
Feb. 23.	9:25 a. m.	186	706	--				--	16	42	87	100	--	SWCM
Mar. 9.	11:45 a. m.	204	475	--				--	21	48	95	100	--	SWCM
Apr. 17.	6:45 p. m.	204	767	--				--	17	43	93	99	100	SWCM
May 17.	10:15 a. m.	194	384	--				--	32	66	96	99	100	SWM
June 2.	11:50 a. m.	194	509	--				--	18	50	94	100	--	SWM
Aug. 9.	12:30 p. m.	194	1,520	--				--	50	73	93	99	100	SWM
Sept. 20.	9:45 a. m.	283	1,920	--				--	54	79	97	100	--	SWM

MIDDLE LOUP RIVER NEAR MILBURN, NEBR.

Nov. 15, 1949.	9:15 a. m.	798	896	2,400				--	16	32	87	98	--	EW
Nov. 29.	9:20 a. m.	799	1,000	2,550				--	18	33	95	99	--	EW
Dec. 14.	1:45 p. m.	834	174	453				--	26	42	90	98	--	EW
Dec. 28.	12:30 p. m.	826	453	1,200				9	13	19	76	96	--	EW
Jan. 10, 1950.	2:10 p. m.	711	230	668				--	22	30	74	94	--	EW
Feb. 1.	3:30 p. m.	670	279	--				--	16	29	82	99	100	SWCM
Mar. 20.	3:00 p. m.	817	2,130	--				--	28	57	94	98	100	SWCM
Apr. 5.	11:00 a. m.	840	2,670	--			6	--	8	25	49	70	88	92 SWCM
Apr. 13.	12:00 m.	804	1,220	2,090				5	11	26	73	100	--	SWCM
Apr. 13.	12:00 m.	804	1,220	2,000				3	9	24	88	100	--	EN
Apr. 18.	11:15 a. m.	908	1,300	--				--	16	51	96	99	100	SWCM
May 2.	1:15 p. m.	839	964	--				--	17	49	93	100	--	SWCM
May 10.	1:00 p. m.	885	1,100	--				--	17	50	96	100	--	SWCM
May 17.	11:00 a. m.	840	875	--				--	19	51	95	100	--	SWCM
May 30.	11:20 a. m.	848	727	--				--	21	52	95	100	--	SWCM
June 12.	3:30 p. m.	680	438	--				--	20	48	90	100	--	SWM
June 21.	2:30 p. m.	728	415	--				--	22	55	94	100	--	SWM
July 12.	10:00 a. m.	756	862	--				--	20	49	89	100	--	SWM
July 17.	1:00 p. m.	814	596	--				--	20	60	96	100	--	SWM
Sept. 26.	10:20 a. m.	803	1,850	--				--	5	12	33	67	88	96 SWM

PLATE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN PLATE RIVER BASIN--Continued

Particle-size analyses of suspended-sediment, water year October 1949 to September 1950--Continued
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
			0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000	
MIDDLE LOUP RIVER AT ARCADIA, NEBR.																
Oct. 11, 1949	8:50 a.m.	985	2,620		9,070					--	9	17	64	--		BW
Nov. 15	1:45 p.m.	804	1,160		3,030						27	43	99	--		BW
Dec. 6	12:55 p.m.	795	2,450		5,620					4	16	34	--	--		BW
Jan. 18, 1950	4:30 p.m.	580	191		--					--	13	30	92	100	--	S
Jan. 28	4:35 p.m.	698	282		--					--	15	41	89	100	--	S
Feb. 2	2:00 p.m.	788	468		--					--	10	20	73	99	--	S
Feb. 7	3:45 p.m.	918	279		--					--	19	39	84	99	100	S
Feb. 14	6:30 p.m.	768	180		--					--	13	30	79	99	100	S
Mar. 2	1:55 p.m.	1,040	309		--					--	20	43	82	99	100	S
Mar. 22	2:30 p.m.	1,040	1,770		--					--	17	59	98	100	--	S
Mar. 29	10:45 a.m.	842	2,910		--					--	8	35	92	100	--	S
Mar. 29	10:45 a.m.	842	2,910		3,520					4	8	29	100	--	--	BN
Apr. 5	6:45 p.m.	975	1,210		--					--	22	53	86	99	100	S
May 2	11:45 a.m.	838	1,500		--					--	12	48	97	100	--	S
June 13	12:50 p.m.	547	431		--					--	20	44	91	100	--	S
July 5	3:30 p.m.	722	510		--					--	26	55	83	100	--	S
Aug. 29	6:00 p.m.	763	529		--					--	17	46	89	100	--	S

MIDDLE LOUP RIVER AT LOUP CITY, NEBR.

Oct. 10, 1949	7:15 p.m.	1,140	1,530	3,190						10	17	30	77	95	EW
Nov. 8	4:50 p.m.	788	1,986	2,300					10	21	31	54	99	99	EW
Nov. 13	8:14 p.m.	874	1,290	3,060					5	10	21	41	99	100	EW
Nov. 15	5:00 p.m.	893	1,290	3,290					6	10	24	45	94	99	EW
Dec. 15	4:00 p.m.	283	1,240	3,030					--	11	27	81	98	--	EW
Dec. 21	4:30 p.m.	732	1,850	5,830					--	5	13	78	96	--	EW
Dec. 29	4:00 p.m.	773	1,740	4,380					--	7	20	85	98	--	EW
Jan. 11, 1950	5:35 p.m.	1,070	370	--					--	28	31	54	82	--	EW
Jan. 27	3:15 p.m.	584	150	--					--	20	60	95	99	100	SWMC
Feb. 6	5:20 p.m.	794	378	--					--	15	36	85	100	--	SWMC
Feb. 23	1:01 p.m.	445	3,690	--					--	11	27	79	99	100	SWMC
Mar. 16	4:15 p.m.	1,140	3,690	4,440					--	3	13	74	100	--	BWC
Mar. 16	4:15 p.m.	1,140	3,690	3,840					--	5	17	80	100	--	BN

Mar. 22	6:40 p. m.	1,530	2,200	--	--	9	39	96	100	--	SWMC
Mar. 29	2:15 p. m.	984	2,050	--	--	24	58	97	100	--	SWMC
Apr. 6	12:00 m.	884	1,280	--	--	18	44	89	100	--	SWM
May 2	3:30 p. m.	842	944	--	--	18	54	96	100	--	SWM
May 9	6:00 p. m.	1,180	972	--	--	28	59	94	100	--	SWM
June 7	12:45 p. m.	1,600	327	--	--	27	56	90	99	100	SPWCM
July 25	5:30 p. m.	1,050	1,010	--	43	52	73	95	100	--	SWM
Aug. 16	12:30 p. m.	704	431	--	--	24	53	84	95	100	SWM

DISMAL RIVER NEAR GEM, NEBR.

July 26, 1949	4:15 p. m.	250	401	746	8	13	27	49	97	100	BN
Sept. 7	12:45 p. m.	261	733	1,870	5	6	14	32	87	98	BN
Nov. 1	2:30 p. m.	276	600	1,630	--	16	33	48	94	99	BN
Nov. 29	2:30 p. m.	276	741	1,910	--	--	23	38	87	99	BN
Dec. 28	2:30 p. m.	271	860	--	--	--	23	60	98	100	SCM
Feb. 7, 1950	5:25 p. m.	331	1,540	--	--	--	24	56	98	100	SCM
Feb. 22	3:45 a. m.	332	839	--	--	--	28	65	98	99	SCM
Feb. 28	3:45 p. m.	274	1,070	1,990	--	13	21	45	93	100	BN/CM
Feb. 28	3:45 p. m.	274	1,070	1,830	--	14	20	44	87	100	BN
Mar. 21	4:30 p. m.	279	895	--	--	--	29	60	95	100	S
Apr. 5	9:40 a. m.	262	724	--	--	--	25	64	97	100	S
May 3	3:50 p. m.	279	448	--	--	--	25	60	95	100	S
June 1	10:20 a. m.	262	413	--	--	--	33	62	91	99	S
June 14	4:15 p. m.	272	266	--	--	--	40	70	95	98	S
Aug. 8	12:45 p. m.	278	351	--	--	--	26	55	92	100	S

DISMAL RIVER AT DUNNING, NEBR.

Oct. 11, 1949	5:55 p. m.	342	962	2,230	--	11	18	38	88	100	BN
Nov. 6	8:50 a. m.	312	1,320	--	--	--	11	36	88	100	SWCM
Nov. 15	5:30 p. m.	306	1,160	2,970	--	--	14	31	100	--	BN

PLATTE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN PLATTE RIVER BASIN--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250			0.500	1.000	2.000
DISMAL RIVER AT DUNNING, NEBR.--Continued															
Dec. 14, 1949.....	5:35 p. m.	308	796	1,900											BW
Jan. 12, 1950.....	11:30 a. m.	348	364								10	21	100		SWCM
Jan. 25.....	1:00 p. m.	93	60								18	36	89	100	
Feb. 3.....	5:45 p. m.	315	340								65	81	95	100	SWCM
Feb. 7.....	2:30 p. m.	405	417								22	43	91	100	SWCM
Feb. 14.....	2:00 p. m.	310	1,670								37	52	94	100	SWCM
Feb. 22.....	3:25 p. m.	330	1,400	1,250	3	4	6	8	22	53	94	100			SWCM
Mar. 8.....	3:00 p. m.	252	312								20	41	88	100	SBWCM
Mar. 21.....	12:10 p. m.	336	1,390								31	70	95	99	SWCM
Apr. 4.....	11:45 a. m.	324	1,270	2,010	5	6	7	9	20	49	92	100			SWCM
Apr. 4.....	11:45 a. m.	324	1,270	1,840							7	12	32	79	BN
Apr. 17.....	10:45 a. m.	327	902								4	11	26	74	BWC
May 3.....	6:00 p. m.	300	1,010								23	56	96	100	SWCM
June 27.....	12:30 p. m.	300	502								17	51	95	100	SWM
Aug. 8.....	3:45 p. m.	289	541								19	50	90	100	SWM
											17	42	78	92	SWM
														97	100
SOUTH LOUP RIVER NEAR CUMBO, NEBR.															
Oct. 10, 1949.....	4:10 p. m.	147	560	1,400											BW
Oct. 31.....	1:30 p. m.	144	314	753							39	70	81	98	BW
Nov. 16.....	2:00 p. m.	153	439	1,140							44	53	66	100	BW
Nov. 28.....	3:00 p. m.	146	344		16	19	27	34	45	62	100	99			SWCM
Dec. 15.....	1:25 p. m.	122	362								54	68	98	100	SWCM
Dec. 27.....	2:15 p. m.	113	157								38	50	92	100	SWCM
Jan. 23, 1950.....	1:45 p. m.	157	157								47	58	94	100	SWCM
Feb. 4.....	12:50 p. m.	129	61								35	44	89	100	SWCM
Feb. 15.....	5:00 p. m.	147	248								69	78	95	100	SWCM
Feb. 21.....	4:05 p. m.	216	347	897	17	21					29	41	94	100	SWCM
Mar. 6.....	4:15 p. m.	206	676								52	65	97	100	SPWCM
Mar. 14.....	4:40 p. m.	179	312	2,490							67	79	98	100	SPWCM
				954	12	16					62	72	97	100	SPWCM

Mar. 22.....	11:20 a. m.	194	855	2,680	11	11	--	--	82	77	98	100	--	SPWCM
Apr. 5.....	4:00 p. m.	196	680	1,040	--	10	13	18	25	67	88	96	100	SEWCM
Apr. 18.....	4:15 p. m.	177	514	1,730	--	2	6	10	18	79	98	99	100	SEWCM
May 17.....	5:30 p. m.	165	431	2,410	--	12	--	22	--	87	98	100	--	SPWCM
June 18.....	10:45 a. m.	237	2,270	7,460	--	38	--	57	--	86	91	99	--	SPWCM
July 9.....	2:00 p. m.	536	8,320	5,550	32	42	54	62	73	91	96	100	--	SPWCM
July 9.....	2:00 p. m.	536	8,320	6,140	13	30	48	61	72	92	96	99	--	SPN
Aug. 7.....	6:30 p. m.	144	540	2,480	--	23	--	38	--	86	98	100	--	SPWCM

MUD CREEK NEAR SWEETWATER, NEBR.

May 9, 1950.....	2:15 p. m.	189	6,440	7,560	--	7	--	81	--	99	100	--	--	SPN
May 9.....	2:15 p. m.	189	6,440	7,160	46	57	68	78	88	95	99	100	--	BWCM
May 19.....	4:30 p. m.	191	7,200	14,600	--	6	--	65	--	99	100	--	--	SPWCM
May 21.....	8:23 a. m.	137	7,360	6,360	--	67	--	90	--	100	--	--	--	SPWCM
June 18.....	2:15 p. m.	673	9,020	8,310	46	62	76	86	93	99	100	--	--	SPWCM
June 18.....	2:15 p. m.	673	9,020	8,350	--	51	--	87	--	99	100	--	--	SPN
July 10.....	2:45 p. m.	1,030	5,920	7,700	--	70	--	87	--	99	100	--	--	SPWCM
July 24.....	8:10 a. m.	1,290	5,400	5,310	--	73	--	88	--	99	100	--	--	SPWCM

NORTH LOUP RIVER AT BREWSTER, NEBR.

Oct. 13, 1949.....	3:40 p. m.	388	438	967	--	--	--	--	--	19	37	89	100	--	BWCM
Oct. 31.....	3:30 p. m.	352	399	998	--	--	--	--	--	19	34	100	--	--	BWCM
Nov. 6.....	10:15 a. m.	360	333	860	--	--	--	--	--	21	33	100	--	--	BWCM
Nov. 30.....	3:00 p. m.	349	602	1,400	--	--	--	--	--	13	21	89	100	--	SWCM
Feb. 7, 1950.....	10:55 a. m.	378	126	--	--	--	--	--	--	17	41	87	100	--	SWCM
Feb. 23.....	12:50 p. m.	a 660	320	--	--	--	--	--	--	13	27	74	94	96	SWCM
Apr. 4.....	3:40 p. m.	455	955	--	--	--	--	--	--	10	36	82	99	100	SW
May 3.....	12:45 p. m.	473	746	--	--	--	--	--	--	10	36	82	100	--	SW
June 1.....	4:10 p. m.	255	400	--	--	--	--	--	--	20	54	90	100	--	SW
Nov. 1.....	4:00 p. m.	368	384	--	--	--	--	--	--	8	36	79	100	--	SW

a. Mean daily discharge.

PLATIE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF SIREAMS IN PLATIE RIVER BASIN--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000
NORTH LOUP RIVER AT BURWELL, NEBR.															
Oct. 10, 1949.....	4:30 p. m.	308	415	1,110					16	21	32	82	98	--	BW
Nov. 7.....	12:40 p. m.	298	282	891					9	12	21	86	99	--	B-W
Nov. 14.....	2:10 p. m.	302	354	853					--	19	26	78	96	--	BW
Nov. 21.....	1:50 p. m.	276	286	683					--	13	25	91	100	--	BW
Dec. 5.....	1:40 p. m.	270	266	640					--	19	29	80	99	--	B-W
Dec. 7.....	3:30 p. m.	279	392	1,550					--	14	27	92	99	--	BW
Dec. 13.....	3:30 p. m.	233	298	821					--	13	22	92	99	--	BW
Dec. 20.....	11:30 a. m.	286	392	865					--	13	27	98	100	--	BW
Jan. 9, 1950.....	5:30 p. m.	263	104	278					--	22	30	80	95	--	BW
Feb. 26.....	6:10 p. m.	292	380	--					--	19	44	88	100	--	SWM
Mar. 15.....	6:15 p. m.	360	222	--					--	23	37	88	100	--	SWM
Mar. 20.....	7:00 p. m.	312	366	--					--	19	57	93	100	--	SWM
Mar. 27.....	6:30 p. m.	380	735	--					--	25	55	94	100	--	SWM
Apr. 12.....	10:30 a. m.	358	250	--					--	18	46	94	100	--	SWM
Apr. 17.....	4:15 p. m.	340	315	--					--	23	48	89	100	--	SWM
Apr. 25.....	11:30 a. m.	312	390	--					--	26	53	88	99	100	SWM
June 5.....	8:00 p. m.	508	627	--					--	20	42	85	99	100	SWM
Aug. 21.....	7:00 p. m.	289	142	--					--	23	47	89	100	--	SWM
NORTH LOUP RIVER AT ORD, NEBR.															
Apr. 24, 1950.....	4:00 p. m.	937	532	2,700						17	40	81	98	100	S
May 8.....	5:00 p. m.	1,700	1,280					11		38	66	95	100	--	SPWCM
Aug. 29.....	6:00 p. m.	858	274			9				50	67	85	95	100	S
Sept. 26.....	6:00 p. m.	900	233							39	60	87	99	100	S
NORTH LOUP RIVER NEAR COTESFIELD, NEBR.															
Jan. 19, 1950.....	12:30 p. m.	530	179							16	25	56	97	100	--
Apr. 14.....	3:15 p. m.	1,110	--							30	47	79	96	99	100
May 17.....	4:20 p. m.	1,120	374							35	50	76	96	99	100

CALAMUS RIVER NEAR BURWELL, NEBR.

Oct. 19, 1949.....	6:00 p. m.	760	1,240	3,250				4	5	9	22	48	87	88	--		BW
Nov. 7.....	2:30 p. m.	500	423	2,660							19	30	88	88	--		BW
Nov. 21.....	11:50 a. m.	523	1,060								12	23	77	100	--		BW
Dec. 5.....	3:05 p. m.	506	924	2,520							15	30	84	100	--		BW
Dec. 8.....	2:15 p. m.	447	747	5,200							8	21	79	100	--		BW
Jan. 18, 1950.....	11:10 a. m.	377	276	--							20	38	87	100	--		SPWCM
Feb. 2.....	3:15 p. m.	340	1,308	--							8	21	87	85	100		SPWCM
Mar. 26.....	3:50 p. m.	523	1,180	--							22	51	87	85	100		SPWCM
Apr. 12.....	12:50 p. m.	632	1,080	--							12	40	86	89	100		SPWCM
May 24.....	2:00 p. m.	635	382	--							24	54	89	100	--		SPWCM
June 6.....	9:30 a. m.	440	237	--							30	58	91	99	100		SPWCM
Sept. 27.....	10:30 a. m.	509	450	--							12	35	84	100	--		SPWCM

LOUP RIVER POWER CANAL NEAR GENOA, NEBR.

Apr. 21, 1950.....	2:00 p. m.	2,030	230	643	--	34	--	--	53	100	--	--					SPN
Apr. 21.....	2:00 p. m.	2,030	230	621	30	39	45	--	54	77	98	100	54				BWCM
Apr. 26.....	12:00 m.	2,430	304	1,680	--	31	--	--	46	--	93	100	100				SPWCM
May 23.....	12:00 m.	2,650	1,180	1,340	--	45	--	--	62	--	100	--	100				SPN
May 23.....	12:00 m.	2,650	1,180	1,350	48	55	61	64	75	94	99	99	100				BWCM
June 21.....	2:30 p. m.	2,040	1,230	3,630	--	70	--	--	84	--	99	100					SPWCM
Aug. 9.....	11:44 a. m.	2,200	770	2,050	33	33	--	--	52	--	97	100					SPWCM
Sept. 22.....	2:15 p. m.	2,520	1,270	4,070	--	67	--	--	84	--	99	100					SPWCM

ELKHORN RIVER AT EWING, NEBR.

Jan. 17, 1950.....	3:30 p. m.	45	8	--	--	--	--	--	--	--	86	100	--	--	--		S
Mar. 29.....	6:20 p. m.	1,050	533	--	--	--	--	--	--	--	26	43	93	100	--		S
Apr. 5.....	3:45 p. m.	1,270	450	--	--	--	--	--	--	--	12	22	69	99	100		S
Apr. 12.....	1:05 p. m.	543	1,715	--	--	--	--	--	--	--	27	43	88	99	100		S
May 12.....	2:40 p. m.	876	1,350	--	--	--	--	--	--	--	14	29	82	99	100		S

PLATIE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN PLATIE RIVER BASIN--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950.--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.500	1.000
ELKHORN RIVER AT EWING, NEBR.--Continued															
May 18, 1950.....	4:30 p. m.	402	65	382		33	38	44	57	66	81	93	98	--	BWC
Aug. 30.....	12:50 p. m.	152	56	308	41	45	49	54	61	68	72	85	94	--	BWC
Aug. 31.....	4:00 p. m.	140	55	359		46	51	55	64	69	78	84	92	--	BWC
Sept. 28.....	4:40 p. m.	394	185	1,130		16	17	20	24	32	37	72	93	--	BWC
ELKHORN RIVER AT NELIGH, NEBR.															
Mar. 28, 1950.....	4:55 p. m.	2,250	1,200	1,500	6	7				26	42	85	99	100	SPWCM
Apr. 19.....	2:15 p. m.	880	553	--		--	--	--	--	18	31	79	100	--	S
May 10.....	6:00 a. m.	1,340	723	1,140		13	14	14	14	33	48	87	100	--	SPWCM
May 12.....	4:30 p. m.	1,120	811	--		--	--	--	--	17	29	67	94	100	S
July 7.....	4:15 p. m.	266	192	--		--	--	--	--	29	39	67	85	100	S
Aug. 14.....	6:30 p. m.	1,070	621	1,110		14	17	17	17	35	52	83	99	100	SPWCM
Sept. 29.....	1:10 p. m.	660	445	518		9		10	10	19	34	77	98	100	SPWCM

KANSAS RIVER BASIN

ARIKAREE RIVER AT HAIGLER, NEBR.

*LOCATION.--At bridge on U. S. Highway 34, a quarter of a mile upstream from gaging station, three-quarters of a mile upstream from confluence with North Fork Republican River, and 1 mile northwest of Haigler, Dundy County.

DRAINAGE AREA.--1,460 square miles, of which only 1,330 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Water temperatures: April to September 1950.

Sediment records: March 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures (April to September): Maximum, 93°F Aug. 15.

Sediment concentrations: Maximum daily, 8,630 ppm Sept. 15; minimum daily, no flow June 27, 28, July 1-3.

Sediment loads: Maximum daily, 30,000 tons Aug. 26; minimum daily, 0 tons June 27, 28, July 1-3.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 90,000 tons June 16, 1948; minimum daily, 0 tons on some days in 1947, 1949, and 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, April to September 1950
/Once-daily temperature measurement usually between 3 p.m. and 7 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		51			32		--	65	80	87	86	82
2		--			--		--	75	72	85	80	85
3		--		32	--		--	70	68	83	80	84
4		--			--		55	55	80	85	90	83
5		--			--		60	65	86	--	85	77
6		--			--		70	70	72	86	80	74
7		--			--		70	55	78	85	89	80
8		--			--		50	63	82	87	83	82
9		--			--		60	75	75	90	79	70
10		--			--		55	68	79	90	81	62
11		--			--		61	70	80	85	85	69
12		--			--		61	70	82	78	70	63
13		--			--		60	77	87	85	70	60
14		--			--	33	62	72	80	80	80	--
15		--			--		48	70	80	91	93	65
16		--			--		55	80	67	85	82	59
17		--			--		71	75	--	82	85	75
18		--			--		58	65	80	78	70	75
19		--			--		55	73	80	86	65	77
20		--			--		70	72	85	77	80	72
21		--			--		69	75	89	85	85	65
22		--			--		76	83	87	80	64	72
23		--			--		80	85	87	80	80	77
24		--			--		50	68	89	72	85	--
25		--			--		65	50	70	80	70	65
26		--			--		70	55	83	74	62	70
27		--			--		60	70	77	80	74	70
28		--			35		60	64	75	75	75	65
29		48			--		45	67	80	92	73	58
30		--			--		65	78	--	70	78	78
31		--			--		--	70	--	70	83	--
Average		--			--		62	69	80	82	79	72

KANSAS RIVER BASIN--Continued

ARIKAREE RIVER AT HAIGLER, NEBR.--Continued

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Suspended sediment					
			Load (tons)	Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum daily
October	631.5	1,250	3,450	111	3,200	(t) --	2,020	--
November	444	881	93	3.1	10	(t) --	78	179
December	286.5	568	45	1.4	5	(t) --	58	154
January	451.4	895	178	5.7	48	--	144	380
February	750	1,490	1,260	45	134	3	622	1,770
March	657.1	1,300	533	17	71	1	300	660
April	527.0	1,050	280	9.3	28	1	197	412
May	910.4	1,810	2,800	90	1,700	(t)	1,140	--
June	247.6	491	94	3.1	18	0	140	370
July	318.2	631	270	8.7	130	0	268	1,630
August	2,144.3	4,250	52,800	1,700	30,000	1	9,120	--
September	652.0	1,690	12,870	429	12,500	1	5,600	8,630
Water year 1949-50 ..	8,220.0	16,310	74,670	205	30,000	0	--	--

t Sediment discharge less than 1.0 ton.

KANSAS RIVER BASIN--Continued
ARTKAREE RIVER AT HAIGLER, NEBR.--Continued

Particle-size analyses of suspended sediment, November 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically-dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Nov. 1, 1949	11:05 a.m.	26	190	901	22	30	42	52	62	67	71	84			BW
Feb. 1, 1950	11:05 a.m.	12	84	1,130	10	17	23	48	66	69	74	89			BW
Feb. 9	4:15 p.m.	30	913	1,440	15	22	34	46	61	72	88	97			BW
Feb. 21	8:35 a.m.	29	328	1,400	25	34	49	64	72	82	94				BW
Feb. 28	9:25 a.m.	26	194	861	35	44	53	61	66	70	76	88			BW
May 8	9:40 a.m.	129	8,280	6,320		46			71	86	95	100			SPWCM
May 8	11:00 a.m.	129	5,720	3,300	31	44	56	68	71	80	96	100			SPWCM
May 8	11:50 a.m.	129	5,720	3,340	4		31	67	80	92	100				SPN
July 30	8:40 p.m.	25	1,810	3,840		79			94	96	100				SPWCM
Aug. 10	12:00 m.	180	12,300	8,500		68			88	98	100				SPWCM
Aug. 10	2:00 p.m.	123	8,860	4,840		76		90		97	100				SPWCM
Aug. 11	6:00 a.m.	70	7,720	5,540		70		87	97	99	100				SPWCM
Aug. 11	12:00 m.	54	6,910	5,470	24	33	41	50	58	67	78	90			BWCM
Aug. 12	12:30 p.m.	24	1,230	1,710	80	90	96	97	88	99	100				BWCM
Aug. 13	5:30 p.m.	38	3,040	1,990	67	72	75	76	78	79	80	88			BWCM
Aug. 14	8:30 a.m.	46	1,630	1,080	46	52	58	64	74	82	94	100			BWCM
Aug. 25	9:10 p.m.	186	15,600	7,590	28	41	60	81	85	93	96	99	100		SPWCM
Aug. 25	9:10 p.m.	186	15,600	7,680	3	6	36	74	90	95	98	100			SPN
Aug. 25	9:20 p.m.	186	4,680	4,680		48			81	95	98	100			SPWCM
Aug. 26	7:05 a.m.	1,740	9,600	5,250		40		50		80	96	100			SPWCM
Aug. 26	1:15 p.m.	272	4,280	2,030		68		82		98	100				SPWCM
Aug. 29	9:00 a.m.	385	7,620	2,960		28		36		47	55	78	98		100
Sept. 15	6:15 a.m.	993	20,100	5,430		34		52		89	97	99	100		SPWCM
Sept. 15	11:00 a.m.	239	7,400	5,670		58		74		99	100				SPWCM
Sept. 15	12:40 p.m.	211	6,980	6,980	42	55	67	76	84	92	97	100			SPWCM
Sept. 15	12:40 p.m.	211	6,980	7,340	3	6	40	78	86	94	98	100			SPN
Sept. 15	1:10 p.m.	194	6,320	5,520		57		80		99	100				SPWCM
Sept. 15	2:50 p.m.	142	5,800	5,410		53		70		87	93	99	100		SPWCM

KANSAS RIVER BASIN--Continued

REPUBLICAN RIVER AT TRENTON, NEBR.

LOCATION.--At gaging station at bridge on State Highway 25, about half a mile upstream from Elm Creek, and three-quarters of a mile south of Trenton, Hitchcock County.
DRAINAGE AREA.--8,120 square miles, of which only 4,910 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Chemical analyses: November 1946 to September 1949.

Water temperatures: November 1946 to September 1950.

Sediment records: November 1946 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 92°F June 12, 23; minimum, freezing point on several days in December and January.

Sediment concentrations: Maximum daily, 14,600 ppm Aug. 3; minimum daily, no flow June 25-29, July 1-3, 7, 22.

Sediment loads: Maximum daily, 178,000 tons Aug. 3; minimum daily, 0 tons June 25-29, July 1-3, 7, 22.

EXTREMES, 1946-50.--Water temperatures: Minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, not determined; minimum daily, no flow on many days each year.

Sediment loads: Maximum daily, 492,000 tons June 16, 1948; minimum daily, 0 tons on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950

Once-daily temperature measurement at approximately 4 p.m., except during Mar. 1-18 and July 24 to Sept. 18 most measurements at approximately 8 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	--	50	--	36	33	59	67	78	--	67	66
2	--	--	55	51	--	37	32	65	75	74	--	69
3	--	--	58	38	33	34	33	42	66	71	--	65
4	--	--	62	38	35	--	--	54	57	--	--	69
5	--	--	62	49	34	38	--	60	57	89	77	73
6	--	--	59	40	40	38	43	65	72	81	--	74
7	--	--	58	37	35	35	--	70	55	80	--	66
8	--	--	55	32	35	36	42	45	71	85	--	72
9	--	--	46	37	37	39	33	63	73	87	--	65
10	65	55	41	--	37	34	55	65	68	--	66	--
11	62	44	33	36	35	33	42	79	70	79	69	52
12	64	50	35	35	--	--	59	64	92	81	71	53
13	63	55	33	37	34	--	--	76	90	84	78	55
14	60	53	35	34	35	33	60	--	89	77	69	64
15	65	55	35	34	36	33	50	73	90	--	72	72
16	67	49	36	34	37	33	53	83	78	--	73	60
17	66	50	36	34	36	38	73	80	78	--	68	62
18	70	57	35	34	36	34	58	60	77	--	86	80
19	51	54	34	35	41	36	58	75	85	79	67	79
20	56	46	33	39	44	38	67	70	88	--	--	75
21	50	46	34	37	36	50	76	80	87	--	60	68
22	38	51	34	37	--	55	72	86	90	--	64	71
23	49	49	35	36	--	55	78	88	92	--	62	--
24	--	45	35	--	--	60	50	74	--	70	70	70
25	--	52	--	33	--	63	--	50	--	63	68	66
26	--	54	34	--	--	--	65	55	--	60	67	70
27	--	55	35	34	--	45	--	65	--	63	77	74
28	--	54	--	--	38	49	46	70	--	70	76	61
29	--	50	--	--	--	52	53	70	--	74	65	75
30	--	49	--	33	--	58	62	75	--	72	67	--
31	--	--	--	37	--	63	--	73	--	80	83	--
Average	--	53	37	--	--	--	59	70	--	--	70	--

KANSAS RIVER BASIN--Continued

REPUBLICAN RIVER AT TRENTON, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	86	320	57	167	1,410	636	171	1,180	545
2-----	80	--	e 160	162	1,310	573	158	1,700	725
3-----	86	--	e 170	162	1,120	490	191	3,200	1,650
4-----	89	515	124	158	940	401	191	5,600	2,890
5-----	89	380	91	156	1,270	535	158	2,650	1,130
6-----	96	510	132	155	1,820	762	158	1,980	845
7-----	96	360	93	155	1,150	481	162	2,000	875
8-----	96	285	74	154	810	337	217	2,110	1,240
9-----	99	235	63	160	600	259	181	2,030	992
10-----	220	--	e 2,000	158	810	346	191	1,820	938
11-----	441	--	e 6,900	159	1,220	524	160	2,470	1,070
12-----	234	2,870	1,810	161	880	382	50	620	84
13-----	196	1,540	815	162	1,100	481	30	275	22
14-----	162	860	376	159	1,200	515	20	250	13
15-----	150	818	331	154	1,180	491	20	270	14
16-----	137	890	329	154	1,280	532	40	430	46
17-----	128	1,050	363	153	1,210	500	50	1,130	152
18-----	132	880	314	155	1,650	690	65	1,840	323
19-----	132	850	303	145	1,530	599	75	1,000	202
20-----	128	845	292	156	1,700	716	100	370	100
21-----	132	1,020	363	168	1,650	748	120	350	113
22-----	154	715	297	154	1,510	628	110	350	104
23-----	138	900	384	157	1,220	517	110	281	83
24-----	162	1,000	437	160	1,180	510	110	290	86
25-----	154	1,550	644	162	1,920	840	120	343	111
26-----	158	1,400	597	164	2,010	890	130	382	134
27-----	158	2,120	904	166	1,980	887	140	350	132
28-----	154	1,520	632	170	1,430	656	150	363	147
29-----	154	1,380	574	186	1,770	889	150	370	150
30-----	154	1,710	711	176	1,650	784	160	371	160
31-----	171	1,450	669	--	--	--	170	385	177
Total-	4,566	--	21,010	4,808	--	17,600	3,858	--	15,250
Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	180	393	191	160	302	130	181	560	274
2-----	160	377	163	180	418	203	150	1,520	616
3-----	80	122	26	200	423	228	171	1,930	891
4-----	80	111	18	230	--	e 200	158	--	e 650
5-----	65	125	22	270	210	153	167	--	e 450
6-----	65	131	23	270	253	184	196	840	444
7-----	60	192	31	300	294	238	207	--	e 500
8-----	65	183	32	320	348	301	120	1,080	350
9-----	75	163	33	300	402	326	150	1,380	559
10-----	85	180	41	310	632	529	140	1,200	454
11-----	95	175	45	320	669	578	110	345	102
12-----	100	154	42	320	--	e 480	90	--	e 50
13-----	110	151	45	280	450	340	106	--	e 90
14-----	110	150	44	260	576	404	230	--	e 1,700
15-----	110	176	52	280	920	695	560	2,830	4,280
16-----	100	152	41	440	1,500	1,780	398	3,850	4,140
17-----	110	172	51	830	2,250	5,040	288	2,340	1,820
18-----	120	208	67	640	4,700	8,120	186	2,000	1,000
19-----	170	181	83	350	7,400	6,960	167	2,450	1,100
20-----	220	236	140	234	6,400	4,040	207	3,250	1,820
21-----	240	255	165	246	3,300	2,190	196	3,590	1,900
22-----	230	267	178	246	--	e 850	228	3,760	2,310
23-----	230	368	241	234	--	e 700	252	4,220	2,870
24-----	220	180	107	246	--	e 750	263	2,770	1,970
25-----	200	158	85	222	--	e 650	240	940	609
26-----	190	161	82	186	--	e 550	222	--	e 500
27-----	180	165	80	181	--	e 550	228	1,850	1,140
28-----	150	171	69	207	1,510	844	212	1,480	847
29-----	140	192	72	--	--	--	171	1,760	812
30-----	150	229	53	--	--	--	167	1,230	554
31-----	150	263	106	--	--	--	162	670	293
Total-	4,220	--	2,470	8,262	--	38,040	6,323	--	35,100

e Estimated.

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

REPUBLICAN RIVER AT TRENTON, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	158	580	247	110	540	160	121	830	271
2-----	176	490	233	106	260	74	103	454	126
3-----	196	820	434	110	250	74	78	328	69
4-----	217	2,040	1,200	117	250	79	63	--	e 60
5-----	207	2,700	1,510	186	940	472	56	383	58
6-----	181	1,750	855	269	1,970	1,430	52	245	34
7-----	167	1,220	550	329	1,640	1,460	40	276	30
8-----	158	--	e 360	422	2,720	3,100	26	--	e 14
9-----	162	800	350	390	3,210	3,380	16	108	5
10-----	176	1,550	737	263	2,330	1,650	10	95	2
11-----	162	475	208	257	1,820	1,260	6.9	95	2
12-----	154	425	177	240	2,100	1,360	3.6	110	1
13-----	150	450	182	217	1,240	727	41	--	e 80
14-----	150	410	166	186	800	402	21	605	34
15-----	158	375	160	158	770	328	6.2	213	4
16-----	162	325	142	158	780	333	.9	130	(t)
17-----	176	420	200	141	810	308	5.8	126	2
18-----	171	1,090	e 503	137	1,130	418	30	280	23
19-----	162	1,190	520	128	760	263	15	150	6
20-----	137	780	288	128	840	290	17	--	e 5
21-----	137	1,090	403	114	700	215	28	120	9
22-----	145	1,040	407	89	418	100	15	88	4
23-----	145	825	323	83	400	90	7.6	56	1
24-----	128	355	123	72	365	71	.7	--	(t)
25-----	117	305	96	75	208	42	0	--	0
26-----	117	335	106	110	420	125	0	--	0
27-----	121	290	95	137	950	351	0	--	0
28-----	117	230	73	154	822	342	0	--	0
29-----	110	330	98	181	440	215	0	--	0
30-----	121	607	198	150	723	293	1.8	--	(t)
31-----	--	--	--	128	902	312	--	--	--
Total--	4,638	--	10,940	5,345	--	19,720	765.5	--	841
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	754	6,300	12,800	196	1,600	847
2-----	0	--	0	590	2,800	4,460	162	904	395
3-----	0	--	0	2,980	14,600	s 178,000	132	530	189
4-----	.2	--	e 2	754	5,740	s 12,000	106	423	121
5-----	9.7	--	e 55	366	3,400	3,360	92	570	142
6-----	.2	--	(t)	671	6,430	s 26,100	80	--	e 110
7-----	0	--	0	302	4,110	s 3,630	72	390	76
8-----	60	--	e 90	257	1,300	902	63	313	53
9-----	123	--	e 1,200	1,890	--	e 110,000	61	--	e 50
10-----	45	400	49	576	--	e 17,000	61	--	e 55
11-----	48	--	e 180	770	--	e 21,000	66	380	68
12-----	37	450	45	610	6,800	11,200	72	--	e 95
13-----	19	200	10	511	3,280	4,520	80	644	139
14-----	8.2	85	2	998	10,200	s 34,300	106	900	258
15-----	1.7	--	(t)	475	6,250	8,020	558	--	e 16,000
16-----	.2	--	(t)	374	3,600	3,640	448	4,850	5,870
17-----	1.4	112	(t)	309	1,860	1,550	246	4,200	2,790
18-----	(t)	--	(t)	252	1,300	884	196	1,950	1,030
19-----	2.2	119	(t)	196	1,000	529	176	1,510	718
20-----	1.7	120	(t)	162	--	e 420	158	1,600	682
21-----	.1	--	(t)	137	932	345	124	1,760	589
22-----	0	--	0	132	880	314	114	1,150	354
23-----	17	--	e 180	132	745	266	114	--	e 360
24-----	132	--	e 2,000	128	595	206	114	1,500	462
25-----	252	--	e 1,400	124	520	174	117	950	300
26-----	300	--	e 2,800	1,300	8,300	s 68,100	110	820	244
27-----	210	1,230	s 768	731	8,570	s 18,600	110	797	237
28-----	124	400	134	382	3,900	4,020	96	745	193
29-----	99	540	144	438	--	e 6,500	92	655	163
30-----	160	--	e 2,400	481	--	e 6,500	86	--	e 140
31-----	985	9,290	s 26,700	309	3,100	2,590	--	--	--
Total--	2,636.6	--	38,160	18,071	--	562,100	4,208	--	32,730

Total discharge for year (second-foot-days)..... 67,701.1

Total load for year (tons)..... 794,000

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued
REPUBLICAN RIVER AT TRENTON, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949	9:40 a. m.	207	2,740	8,560	12	18	24	32	40	56	67	76		--	BW
Oct. 11	4:00 p. m.	350	4,530	1,870	30	44	57	64	69	72	78	89		95	BW
Oct. 12	4:00 p. m.	222	2,580	1,900	37	52	62	68	71	75	77	84		93	BW
Oct. 13	4:00 p. m.	191	1,380	577	34	49	59	62	66	68	70	77		87	BW
Oct. 14	4:00 p. m.	162	802	356	36	47	59	64	69	73	74	80		94	BW
Oct. 18	4:00 p. m.	137	814	518	23	31	42	46	51	56	61	72		92	BW
Oct. 19	3:30 p. m.	132	880	514	24	35	42	46	49	54	60	72		88	BW
Oct. 27	4:00 p. m.	158	2,340	1,400	33	46	59	71	79	83	85	91		97	BW
Oct. 31	4:00 p. m.	181	1,300	733	14	16	23	34	40	56	70	79		93	BW
Nov. 1	4:00 p. m.	176	1,380	709	10	19	28	36	48	65	71	80		94	BW
Nov. 1	5:45 p. m.	176	1,220	3,500	17	24	36	43	52	61	63	70		88	BW
Nov. 11	4:00 p. m.	159	1,280	971	12	19	26	32	42	59	77	88		97	BW
Dec. 1	4:00 p. m.	207	1,800	930	11	17	24	32	41	61	--	--		--	BW
Dec. 1	4:00 p. m.	a160	3,190	1,840	7	9	12	13	16	23	31	63		75	BW
Feb. 1, 1950	2:15 p. m.	a160	302	2,520	9	13	16	20	23	28	36	48		74	BW
Feb. 14	3:00 p. m.	a260	593	2,750	12	15	20	23	28	35	39	48		79	BW
Feb. 19	4:00 p. m.	a350	7,640	7,370	6	9	14	18	25	42	58	66		78	BW
Feb. 28	1:50 p. m.	222	2,080	1,660	7	11	18	26	31	41	59	74		83	BN
Feb. 28	1:50 p. m.	222	2,080	1,410	36	39	46	50	63	68	72	79		91	BWC
Mar. 14	4:15 p. m.	316	3,860	4,240	9	13	17	23	34	70	89	99		--	SPWCM
Mar. 14	4:15 p. m.	316	3,860	4,240	2	5	12	21	35	69	89	99		--	SPN
Apr. 4	5:10 p. m.	234	2,800	9,340	8	12	13	16	32	47	54	70		94	BWCM
May 9	12:15 p. m.	343	3,580	8,260	--	19	--	--	31	122	92	--		--	SPWCM
July 5	9:45 a. m.	13	1,580	4,330	--	93	--	97	--	100	--	--		--	SPWCM
July 31	11:20 a. m.	1,610	14,800	14,800	--	19	--	28	--	89	95	--		100	SPWCM
July 31	11:45 a. m.	1,610	14,200	6,880	--	23	--	33	--	72	86	91		99	SPWCM
July 31	12:25 p. m.	1,810	11,400	4,770	24	30	34	38	47	72	86	97		100	SPN
July 31	12:45 p. m.	1,810	11,400	5,460	4	8	29	38	47	71	86	97		100	SPN
Aug. 3	7:40 a. m.	9,100	29,200	7,160	--	29	--	40	--	70	84	94		100	SPWCM
					--	34	--	46	--	82	94	99		100	SPWCM
Mean daily discharge															

KANSAS RIVER BASIN--Continued
REPUBLICAN RIVER AT TRENTON, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Aug. 3, 1950.....	11:15 a.m.	3,170	20,600	6,580	--	37	--	51	--	83	95	99		100		SPWCM
Aug. 4.....	8:00 a.m.	814	6,160	4,280	--	60	--	76	--	97	--	--		--		SPWCM
Aug. 6.....	8:00 p.m.	4,040	31,200	4,020	--	29	--	33	--	74	90	96		100		SPWCM
Aug. 9.....	7:30 a.m.	5,370	30,800	9,180	--	24	--	37	--	69	89	97		100		SPWCM
Aug. 13.....	8:00 a.m.	320	3,170	1,700	--	46	--	57	--	83	--	--		--		SPWCM
Aug. 14.....	8:00 a.m.	2,920	19,700	4,360	--	22	--	34	--	68	91	98		100		SPWCM
Aug. 14.....	12:00 p.m.	1,800	12,600	5,320	26	35	41	48	58	83	--	--		--		SPWCM
Aug. 14.....	10:45 a.m.	1,800	12,600	5,170	5	10	38	48	60	82	--	--		--		SPN
Aug. 26.....	4:20 p.m.	3,950	22,600	5,450	--	30	--	43	--	76	90	98		100		SPWCM
Sept. 15.....	4:25 p.m.	302	3,240	3,450	--	44	--	55	--	83	--	--		--		SPWCM

KANSAS RIVER BASIN--Continued
REPUBLICAN RIVER NEAR ORLEANS, NEBR.

LOCATION.--At gaging station at bridge on State Highway 89, 100 feet downstream from Chicago, Burlington & Quincy Railroad bridge, 2 miles west of Orleans, Harlan County, and 2½ miles upstream from Sappa Creek.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, October 1948 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- lids	
																Bo- ron (B)	Parts per mil- lion	Tons per acre- foot	Tons per day	Total		Non- carbon- ate
Oct. 1, 1948.....	341	7.4	440	42	0.02	46	14	32		0	257	18	8.0	0.6	0.6	0.11	308	0.42		172	0	29
Dec. 1, 1949.....	323	8.4	510	45	.02	58	11	44		11	250	41	9.5	1.0	3.9	.20	362	.49		190	0	33
Dec. 14.....	120	8.3	640	46	.02	70	12	63		7	334	50	12	1.0	4.6	.20	445	.61		224	0	38
Jan. 22, 1950.....	230	8.0	522	46	.02	58	16	28	13	0	275	44	11	.8	4.1	--	358	.48		211	0	21
Feb. 2.....	220	8.2	565	50	.04	65	17	40		8	293	45	9.2	1.0	5.1	.20	404	.55		232	0	27
Mar. 2.....	620	8.1	483	38	.02	55	14	35		0	253	42	8.2	.9	6.3	.30	346	.47		195	0	28
Apr. 6.....	442	8.4	514	44	.04	59	15	35		11	245	46	9.0	.9	2.4	.20	358	.49		209	0	27
Apr. 30.....	263	8.1	539	42	.02	60	15	39		0	283	47	8.4	1.0	1.5	.20	380	.52		211	0	29
June 26.....	355	8.2	576	45	.05	64	16	42		9	278	50	12	.8	2.6	.20	401	.55		226	0	29
July 6.....	502	7.9	329	22	.02	43	8.4	12		0	183	13	1.5	.4	1.6	.30	204	.28		142	0	15
Aug. 31.....	141	8.0	382	26	.02	50	4.6	27		0	177	42	4.5	.7	6.8	.30	250	.34		144	0	23
Sept. 28.....	178	8.3	529	40	.02	65	11	38		6	253	52	7.5	.9	4.0	.30	350	.48		206	0	28

a Mean daily discharge.

KANSAS RIVER BASIN--Continued
REPUBLICAN RIVER NEAR HARDY, NEBR.

LOCATION.--At gaging station at highway bridge, 1½ miles southwest of Hardy, Nuckolls County.
DRAINAGE AREA.--22,400 square miles, of which about 16,700 square miles contribute directly to surface runoff.
RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Dec. 19, 1949	414	7.7		579	26	0.02	72	16	37		303	54	11	0.6	4.4	0.30	390	0.53		246	0	24
a 320		8.4		492	44	.02	43	18	39		b 231	56	11	.6	3.4	.43	342	.47		182	0	32
a 550		8.0		401	30	.04	47	11	26		204	35	10	6.8	6.2	.20	278	.38		163	0	26
a 400		8.1		547	36	.04	63	15	42		288	51	10	.8	6.2	.20	380	.52		219	0	30
Mar. 14		8.3		546	37	.02	65	13	39		c 281	48	9.6	.8	4.3	.20	386	.52		216	0	28
Apr. 10	580	8.3																				
May 8	519	7.9		493	32	.02	52	15	38		248	50	11	.8	3.0	.30	336	.46		192	0	30
June 6	728	7.7		419	26	.06	48	11	24		200	35	7.5	.5	6.9	.10	277	.38		166	2	24
July 10	5,220	7.7		259	14	.04	37	3.8	9.9		142	10	5	.4	1.1	.20	158	.21		108	0	17
Aug. 1	2,550	8.0		263	20	.02	38	3.6	13		137	15	1.0	.6	7.8	.30	174	.24		110	0	20
Sept. 5	917	7.8		385	25	.02	48	6.8	28		185	37	5.5	.6	6.8	.30	250	.34		148	0	28

a Mean daily discharge.

b Includes equivalent of 8 parts per million of carbonate (CO₃).

c Includes equivalent of 10 parts per million of carbonate (CO₃).

Periodic determinations of suspended-sediment discharge, water years October 1947 to September 1950

Date	Suspended sediment	
	Instantaneous water discharge (second-foot)	Instantaneous discharge (tons per day)
	Mean concentration (ppm)	
June 23, 1947	15,600	783,400
July 9, 1950	19,800	615,000

KANSAS RIVER BASIN--Continued

SOUTH FORK REPUBLICAN RIVER NEAR COLORADO-KANSAS STATE LINE

LOCATION.--At gaging station at bridge on county road 2 miles downstream from Colorado-Kansas State line, 5 miles downstream from Beaver Creek, 11 miles downstream from Bonny Dam, and 15 miles southwest of St. Francis, Cheyenne County, Kans.

DRAINAGE AREA.--1,860 square miles.

RECORDS AVAILABLE.--Sediment records: October 1948 to September 1950. (discontinued)

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, no flow June 27, 28, July 15.

Sediment loads: Maximum daily, 1,300 tons Aug. 10; minimum daily, 0 tons June 27, 28, July 15.

EXTREMES, 1948-50.--Sediment concentrations: Maximum daily, 7,690 ppm May 30, 1949; minimum daily, no flow Aug. 7-14, 1949, June 27, 28, July 15, 1950.

Sediment loads: Maximum daily, 32,100 tons Aug. 17, 1949; minimum daily, 0 tons Aug. 7-14, 1949, June 27, 28, July 15, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply paper 1176.

Periodic determinations of suspended-sediment discharge

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

JULY TO SEPTEMBER 1946

July 16, 1946	45	198	24
July 30	31	58	4.9
Aug. 13	15	82	3.3
Aug. 27	28	164	12
Sept. 4	24	250	16
Sept. 24	24	131	8.5

WATER YEAR OCTOBER 1946 TO SEPTEMBER 1947

Oct. 1, 1946	26	128	9.0
Oct. 21	33	142	13
Nov. 4	50	224	30
Nov. 26	48	155	20
Dec. 16	39	124	13
Dec. 23	47	172	22
Jan. 7, 1947	50	81	11
Jan. 20	64	158	27
Feb. 4	42	129	15
Feb. 18	101	2,600	709
Mar. 4	73	131	26
Mar. 18	53	724	104
Apr. 14	50	454	61
Apr. 28	2,160	18,400	107,000
Apr. 28	733	11,500	22,800
May 12	55	500	74
May 27	59	209	33
May 28	2,430	15,400	101,000
May 28	3,480	21,600	238,000
May 29	754	20,600	41,900
June 10	42	442	50
June 30	23	401	25
Aug. 6	7.7	82	1.7
Aug. 26	6.3	75	1.3
Sept. 4	1.0	26	.07
Sept. 15	4.7	50	.6
Sept. 22	3.7	34	.3

WATER YEAR OCTOBER 1947 TO SEPTEMBER 1948

Oct. 6, 1947	16	124	5.4
Oct. 20	27	227	17
Nov. 3	39	180	19
Nov. 17	42	298	34
Dec. 1	39	363	38
Dec. 16	47	170	22
Dec. 30	37	261	26
Jan. 12, 1948	45	364	44
Jan. 27	21	27	1.5
Feb. 24	61	818	135
Mar. 9	43	182	21
Apr. 5	43	331	38
Apr. 19	39	198	21
May 3	74	400	80
May 17	26	125	8.8

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

SOUTH FORK REPUBLICAN RIVER NEAR COLORADO-KANSAS STATE LINE--Continued

Periodic determinations of suspended-sediment discharge--Continued

Period determinations of suspended sediment discharge--Continued			
Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
WATER YEAR OCTOBER 1947 TO SEPTEMBER 1948--Continued			
June 14, 1948.....	24	185	12
June 16.....	327	12,800	11,300
June 24.....	258	22,800	15,900
June 30.....	81	570	125
July 12.....	20	111	6.0
July 26.....	17	106	4.9
Aug. 11.....	42	1,160	132
Aug. 23.....	14	129	4.9
Sept. 7.....	12	76	2.5

Monthly and annual summary of water and suspended-sediment discharge, water year October 1949 to September 1950

Month	Discharge (second- foot-days)	Runoff (acre-feet)	Suspended sediment					
			Load (tons)	Daily load (tons)			Concentration (ppm)	
				Mean	Maximum	Minimum	Weighted mean	Maximum daily
October	1, 439	2, 850	1, 760	56	700	5	450	--
November	1, 449	2, 870	468	16	32	3	120	205
December	1, 402	2, 780	411	13	28	2	108	197
January	1, 712	3, 400	482	16	90	1	104	--
February	1, 634	3, 240	994	36	112	9	225	415
March	1, 559	3, 099	865	28	76	5	205	457
April	1, 379	2, 740	380	13	--	--	102	--
May	1, 289	2, 560	371	12	--	--	107	--
June	528.9	1, 050	184	6.1	40	0	129	--
July	569.3	534	700	23	400	0	963	--
August	1, 283.1	2, 540	3, 000	97	1, 300	(t)	866	--
September	826	1, 640	210	7.0	30	--	94	--
Water year 1949-50	14, 770.3	29, 290	9, 820	27	1, 300	0	--	--

t Sediment discharge less than 1.0 ton.

KANSAS RIVER BASIN--Continued
SOUTH FORK REPUBLICAN RIVER NEAR COLORADO-KANSAS STATE LINE--Continued

Particle-size analyses of suspended sediment, October 1949 to April 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949	3:25 a. m.	68	4,170	2,950	36	50	65	75	80	85	92	96		98	BW
Oct. 10	4:20 a. m.	70	3,750	2,560	36	54	66	78	82	89	92	96		100	BW
Oct. 10	5:00 a. m.	70	961	409	52	54	59	64	68	74	78	78		90	BW
Oct. 10	6:30 a. m.	70	2,180	1,420	24	36	49	59	68	76	84	92		98	BW
Oct. 10	2:45 p. m.	79	1,410	5,210	13	22	30	37	45	52	60	68		79	BW
Oct. 11	8:40 a. m.	62	676	539	32	38	44	56	64	70	78	84		88	BW
Nov. 1	8:40 a. m.	57	192	448	23	24	30	36	40	44	50	64		82	BW
Jan. 2, 1950	3:00 p. m.	52	710	4,340	5	8	10	12	16	18	20	22		51	BW
Jan. 31	4:35 p. m.	41	172	1,250	16	19	24	32	38	44	51	57		65	BW
Jan. 31	4:50 p. m.	41	134	1,420	14	17	22	30	36	44	52	63		76	BW
Mar. 6	3:40 p. m.	53	273	1,300	7	12	17	29	40	56	71	90		96	BWCM
Apr. 3	3:20 p. m.	47	216	1,420	8	13	16	22	26	32	41	50		72	BW

KANSAS RIVER BASIN--Continued

RED WILLOW CREEK NEAR RED WILLOW, NEBR.

LOCATION.--At gaging station at bridge on U.S. Highways 6 and 34, three-quarters of a mile north of Red Willow, Red Willow County, and 2½ miles upstream from mouth.

DRAINAGE AREA.--710 square miles, of which only about 400 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Water temperatures: January to September 1950.

Sediment records: January to September 1950.

EXTREMES, January to September 1950.--Water temperatures: Maximum, 84°F June 12, 13, 24, July 1; minimum, freezing point on several days during January to March.

Sediment concentrations: Maximum daily, 28,100 ppm May 8; minimum daily, 85 ppm Jan. 5.

Sediment loads: Maximum daily, 45,000 tons July 31; minimum daily, 4 tons Jan. 5.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids		Hardness as CaCO ₃		Per- cent Non- carbon- ate		
																Bo- ron (B)	Parts per mil- lion	Tons per acre- foot	Tons per day		Total	Non- carbon- ate
Dec. 1, 1949	25	8.4	541	51	0.02	68	13	41	15	303	21	9.0	0.8	0.30	3.8	0.30	378	0.51	223	0	29	
Dec. 27	45	7.8	532	47	.02	67	16	32	0	324	18	8.5	.8	4.3	.10	.10	368	.50	233	0	23	
Feb. 28, 1950	53	8.0	472	46	.04	61	13	28	0	282	20	5.8	.8	6.3	.30	.30	342	.47	206	0	23	
May 9	84	7.7	413	31	.02	54	10	24	0	234	24	7.0	.6	.9	.20	.20	288	.39	176	0	23	
July 12	a 174	7.4	300	34	.08	43	9.1	7.1	0	183	4.0	2.0	.4	2.8	.20	.20	209	.28	145	0	10	
Sept. 29	22	8.2	518	49	.02	65	17	29	6	301	22	6.5	.8	3.8	3.8	.07	358	.49	231	0	21	

a Mean daily discharge.

KANSAS RIVER BASIN--Continued

RED WILLOW CREEK NEAR RED WILLOW, NEBR.--Continued

Temperature (°F) of water, January to September 1950
 /Once-daily temperature measurement generally between 1 p. m. and 7 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			--	34	32	40	52	56	65	84	69	75
2			--	--	--	35	57	60	66	80	74	78
3			--	--	--	41	44	55	65	77	68	78
4			--	32	--	47	45	53	70	64	67	76
5			--	32	37	52	49	52	75	72	73	72
6			--	32	--	50	49	62	77	73	74	68
7			--	33	--	--	54	55	77	67	69	68
8			--	33	--	34	47	59	74	72	71	69
9			--	33	--	43	48	59	75	75	71	70
10			--	34	--	34	47	59	73	74	69	70
11			--	34	--	32	48	65	77	77	71	61
12			--	--	--	32	50	65	84	69	71	54
13			--	33	--	33	47	64	84	63	71	58
14			--	32	--	34	52	65	82	65	69	60
15			--	32	35	39	51	67	83	73	79	58
16			--	34	--	42	--	71	73	73	78	60
17			--	33	35	45	55	72	66	66	74	63
18			--	32	35	34	--	67	68	68	78	70
19			--	33	36	38	53	65	69	70	62	71
20			--	34	36	37	56	65	74	68	68	70
21			--	35	33	41	59	69	80	65	73	64
22			--	37	34	45	68	71	82	67	69	63
23			35	33	37	48	67	74	81	72	75	65
24			--	--	38	46	53	64	84	69	69	64
25			--	--	39	53	53	50	82	68	75	62
26			--	--	41	49	53	49	--	66	68	61
27			--	--	41	42	55	58	75	64	69	66
28			--	--	39	42	48	55	74	69	--	59
29			--	--	--	43	44	51	75	71	65	72
30			33	--	--	43	56	65	80	73	64	71
31			34	--	--	45	--	66	--	78	63	--
Average			--	--	--	41	52	62	76	71	70	66

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

RED WILLOW CREEK NEAR RED WILLOW, NEBR.--Continued

Suspended sediment, January to September 1950

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	50	472	64	30	159	13	52	5,500	772
2-----	50	437	59	25	--	e 10	51	3,960	545
3-----	20	349	19	25	--	e 9	49	3,840	508
4-----	15	175	7	35	--	e 11	48	4,630	600
5-----	20	85	4	45	106	13	46	4,880	606
6-----	20	138	7	50	--	e 18	46	3,980	494
7-----	20	135	7	45	--	e 20	50	--	e 500
8-----	25	144	10	35	--	e 20	50	4,190	566
9-----	30	157	13	50	--	e 34	39	3,860	406
10-----	30	189	15	60	292	47	44	4,740	563
11-----	30	124	10	55	--	e 44	40	3,050	329
12-----	25	121	8	45	--	e 36	49	1,040	138
13-----	25	176	12	40	--	e 32	46	1,040	129
14-----	20	209	11	40	300	32	61	--	e 900
15-----	25	183	12	50	270	36	50	8,050	1,090
16-----	25	179	12	55	352	52	43	5,640	655
17-----	20	185	10	55	522	78	40	4,770	515
18-----	20	132	7	95	1,560	400	40	3,940	426
19-----	25	140	9	90	2,110	513	40	4,670	504
20-----	30	160	13	80	2,550	550	42	4,860	551
21-----	40	226	24	75	2,300	466	42	4,130	468
22-----	40	310	33	65	2,900	509	41	4,250	470
23-----	35	282	27	55	5,120	760	41	4,600	509
24-----	40	--	e 28	50	9,310	1,260	42	4,040	458
25-----	20	--	e 13	50	9,720	1,310	42	4,770	541
26-----	25	--	e 15	50	7,760	1,050	44	4,940	587
27-----	40	--	e 22	52	6,970	978	50	4,510	609
28-----	30	--	e 16	54	6,740	983	56	4,760	720
29-----	25	--	e 12	--	--	--	54	4,000	583
30-----	25	--	e 12	--	--	--	50	3,570	462
31-----	30	162	13	--	--	--	49	3,590	475
Total-	875	--	524	1,456	--	9,280	1,437	--	16,700
Day	April			May			June		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	47	3,360	426	32	1,500	130	37	2,000	200
2-----	46	3,300	410	32	1,580	136	36	2,050	199
3-----	46	3,940	489	33	1,560	139	34	2,020	185
4-----	46	3,500	435	33	1,540	137	33	1,850	165
5-----	45	3,670	446	88	2,400	246	32	1,770	153
6-----	46	4,030	500	38	2,230	229	30	1,540	125
7-----	49	3,960	524	40	2,150	232	29	1,380	108
8-----	57	4,660	717	124	28,100	s 10,400	28	1,210	91
9-----	60	4,940	600	101	17,800	s 5,300	27	1,080	79
10-----	60	5,050	818	54	7,020	1,020	26	1,000	70
11-----	56	4,260	644	51	5,510	759	26	980	69
12-----	51	3,730	514	48	4,460	578	27	1,140	83
13-----	47	3,210	407	48	4,160	539	26	1,130	79
14-----	46	3,090	384	45	3,740	454	25	1,020	69
15-----	44	2,850	338	43	3,230	375	25	1,000	68
16-----	43	3,150	368	40	3,230	349	27	--	e 400
17-----	42	3,100	352	38	3,020	310	43	--	e 1,800
18-----	39	2,740	288	39	3,800	400	28	3,200	242
19-----	37	2,360	236	38	3,460	355	26	2,120	149
20-----	36	2,070	201	38	3,700	380	28	2,780	210
21-----	36	1,980	192	36	2,840	276	26	2,400	168
22-----	35	2,220	210	32	2,420	209	26	2,030	142
23-----	35	2,210	209	30	2,320	188	25	1,900	128
24-----	35	2,090	198	29	2,110	165	24	1,850	120
25-----	35	1,820	172	28	1,490	113	24	1,370	89
26-----	34	1,600	147	27	1,360	99	23	1,150	71
27-----	33	1,530	136	27	1,410	103	22	1,320	78
28-----	33	1,320	118	94	--	e 6,400	21	1,060	60
29-----	34	1,350	124	177	16,600	s 11,700	21	850	48
30-----	34	1,550	142	44	3,590	426	21	860	49
31-----	--	--	--	38	2,020	207	--	--	--
Total-	1,287	--	10,940	1,515	--	42,350	826	--	5,500

e Estimated.

s Computed by subdividing day.

KANSAS RIVER BASIN--Continued

RED WILLOW CREEK NEAR RED WILLOW, NEBR.--Continued

Suspended sediment, January to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	21	1,010	57	155	12,300	s 5,240	28	1,470	111
2-----	21	980	56	100	7,700	2,080	28	1,400	106
3-----	21	950	54	74	5,350	1,070	26	1,140	80
4-----	54	7,430	s 3,070	155	17,200	s 9,110	26	1,010	71
5-----	69	14,300	s 3,940	66	3,800	877	24	792	51
6-----	22	1,700	101	55	2,370	352	23	721	45
7-----	21	1,200	68	48	2,130	276	22	620	37
8-----	23	--	e 160	41	1,430	158	22	631	37
9-----	40	--	e 1,500	31	780	65	21	527	30
10-----	21	1,500	85	38	--	e 600	21	501	28
11-----	25	--	e 340	29	842	66	21	500	28
12-----	174	27,600	s 14,800	29	807	63	21	461	26
13-----	32	6,470	s 672	28	1,010	76	22	550	33
14-----	31	--	e 850	28	782	59	23	604	38
15-----	34	--	e 750	27	798	58	249	9,510	s 10,300
16-----	22	1,190	71	26	790	55	48	4,200	s 596
17-----	58	--	e 2,900	26	766	54	38	1,010	104
18-----	46	--	e 1,500	25	626	42	37	914	e 91
19-----	94	15,300	s 4,570	25	503	34	34	790	e 72
20-----	47	5,670	s 748	24	445	29	33	723	64
21-----	288	24,600	s 22,800	23	490	30	31	626	52
22-----	90	10,300	s 2,700	23	478	30	29	538	42
23-----	78	--	e 2,000	22	428	25	29	497	39
24-----	80	8,570	s 2,120	22	566	34	28	456	34
25-----	221	22,700	s 14,700	22	579	34	26	410	29
26-----	342	14,700	s 17,000	23	1,140	71	25	373	25
27-----	128	11,500	s 4,230	23	811	50	24	364	24
28-----	70	4,150	784	22	697	41	23	328	20
29-----	150	--	e 7,800	56	6,600	s 1,240	23	353	22
30-----	510	26,600	s 38,500	31	2,640	s 226	22	343	20
31-----	587	25,000	s 45,000	26	1,200	84	--	--	--
Total--	3,420	--	193,900	1,323	--	22,030	1,027	--	12,260

Total discharge for period Jan. 1 to Sept. 30 (second-foot-days) 13,166
 Total load for period Jan. 1 to Sept. 30 (tons) 313,500

e Estimated.

s Computed by subdividing. day.

KANSAS RIVER BASIN--Continued
RED WILLOW CREEK NEAR RED WILLOW, NEBR.--Continued

Particle-size analyses of suspended sediment, November 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.500	1.000
Nov. 2, 1949.....	9:45 a. m.	23	990	723	9	17	22	32	50	76	88	94	--	BW
Jan. 21, 1950.....	5:15 p. m.	a 40	253	545	15	20	25	29	40	60	92	98	100	BW
Feb. 1.....	4:15 p. m.	a 30	160	854	29	40	48	52	60	70	80	88	--	BW
Feb. 18.....	6:00 p. m.	a 55	1,960	2,850	17	28	44	60	78	90	98	99	100	BW
Feb. 28.....	3:45 p. m.	54	6,720	9,620	6	8	14	20	34	56	80	90	95	BW
Mar. 9.....	3:00 p. m.	40	3,630	1,960	--	14	--	25	--	83	98	100	--	SPWCM
Mar. 10.....	1:00 p. m.	48	5,180	2,630	--	10	--	21	--	87	99	100	--	SPWCM
Mar. 14.....	1:00 p. m.	78	2,970	1,900	--	15	--	31	--	91	100	--	--	SPWCM
Mar. 15.....	3:30 p. m.	50	8,030	4,870	--	8	--	19	--	89	99	100	--	SPWCM
Mar. 16.....	3:30 p. m.	41	5,400	2,970	6	9	15	23	53	84	98	100	--	SPWCM
Mar. 16.....	3:30 p. m.	41	5,400	3,900	2	4	8	18	43	84	99	100	--	SPN
Mar. 19.....	3:00 p. m.	40	4,900	2,950	--	13	--	22	--	87	98	100	--	SPWCM
Mar. 27.....	1:00 p. m.	50	4,680	3,040	--	10	--	--	--	88	99	100	--	SPWCM
Mar. 28.....	12:30 p. m.	56	4,520	2,800	--	--	--	23	--	87	99	100	--	SPWCM
Apr. 5.....	1:45 p. m.	45	3,660	4,230	--	12	--	21	--	81	99	100	--	SPWCM
May 8.....	9:25 a. m.	57	9,890	6,280	--	31	--	52	--	93	100	--	--	SPWCM
May 8.....	12:30 p. m.	168	43,000	8,090	--	31	--	52	--	94	97	100	--	SPWCM
May 8.....	6:30 p. m.	145	22,500	8,430	--	25	--	45	--	97	100	--	--	SPWCM
May 9.....	2:20 p. m.	85	16,600	8,970	19	24	32	44	62	93	100	--	--	SPWCM
May 9.....	2:20 p. m.	85	16,600	8,630	3	6	26	40	60	90	100	--	--	SPN
May 29.....	6:15 a. m.	197	22,400	8,650	--	30	--	46	--	94	98	98	100	SPWCM
June 17.....	12:00 a. m.	40	12,200	9,020	--	53	--	72	--	97	100	--	--	SPWCM
June 17.....	8:30 p. m.	204	33,800	6,110	--	30	--	51	--	97	100	--	--	SPWCM
July 4.....	7:15 a. m.	73	19,400	7,880	--	39	--	66	--	95	100	--	--	SPWCM
July 5.....	9:20 a. m.	54	15,500	5,300	--	48	--	74	--	93	100	--	--	SPWCM
July 5.....	5:45 p. m.	27	6,680	5,170	--	53	--	73	--	93	100	--	--	SPWCM
July 12.....	7:15 a. m.	256	33,100	4,790	--	32	--	54	--	98	100	--	--	SPWCM
July 12.....	10:00 a. m.	160	33,500	4,810	--	34	--	55	--	96	100	--	--	SPWCM
July 12.....	7:00 p. m.	127	24,800	9,260	--	30	--	51	--	98	100	--	--	SPWCM
July 19.....	12:00 m.	153	30,300	10,300	--	23	--	38	--	95	100	--	--	SPWCM
July 21.....	7:45 a. m.	427	36,400	5,800	--	18	--	30	--	95	100	--	--	SPWCM

a Mean daily discharge.

a Mean daily discharge.

July 21	10:15 a. m.	578	26,500	4,820	--	26	--	42	--	93	100	--	SPWCM
July 25	7:15 p. m.	155	18,800	6,480	--	31	--	53	--	97	100	--	SPWCM
July 26	5:20 p. m.	1,020	15,800	4,940	--	28	--	42	--	83	99	100	SPWCM
July 28	7:15 p. m.	912	24,400	8,090	--	32	--	48	--	94	100	--	SPWCM
July 30	7:15 a. m.	722	29,800	8,300	--	24	--	38	--	92	100	--	SPWCM
July 30	4:45 p. m.	324	22,600	7,720	--	24	--	38	--	97	100	--	SPWCM
July 31	7:15 a. m.	1,060	30,600	5,040	--	33	--	47	--	94	100	--	SPWCM
July 31	2:55 p. m.	326	24,400	8,170	--	29	--	44	--	97	100	--	SPWCM
Aug. 1	8:00 a. m.	177	13,400	5,130	--	26	--	41	--	99	100	--	SPWCM
Aug. 4	7:30 a. m.	334	29,200	9,330	--	26	--	40	--	98	100	--	SPWCM
Sept. 15	11:00 a. m.	959	16,200	6,430	--	35	--	51	--	94	100	--	SPWCM
Sept. 15	1:30 p. m.	411	14,800	4,940	--	39	--	58	--	94	100	--	SPWCM
Sept. 15	6:15 p. m.	148	12,400	4,280	--	40	--	61	--	95	100	--	SPWCM
Sept. 15	6:40 p. m.	145	12,600	4,930	--	42	--	61	--	94	99	100	SPWCM
Sept. 19	4:45 p. m.	34	788	1,620	--	36	46	53	61	66	67	94	BWCM

KANSAS RIVER BASIN--Continued

MEDICINE CREEK AT CAMBRIDGE, NEBR.

LOCATION.--At bridge in City Park at east edge of Cambridge, Furnas County, about 500 feet upstream from bridge on U. S. Highways 6 and 34, half a mile upstream from mouth, 2 miles downstream from gaging station, and 9½ miles downstream from Medicine Creek Dam.

DRAINAGE AREA.--1,070 square miles above gaging station, of which only about 680 miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Sediment records: November 1945 to December 1949. (discontinued).

EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 380 tons Oct. 10; minimum daily, less than 1 ton on many days.

EXTREMES, 1945-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.

Sediment loads: Maximum daily, 3,700,000 tons June 22, 1947; minimum daily, less than 1 ton on many days during August to December 1949.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Suspended sediment, October to December 1949

Day	October			November			December		
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	3.8	30	(t)	4.8	47	(t)	3.0	34	(t)
2-----	4.5	48	(t)	4.8	43	(t)	3.2	74	(t)
3-----	3.5	38	(t)	5			5.5	182	3
4-----	2.5	34	(t)	5.5			4.5		
5-----	2.5	30	(t)	5.5			4		
6-----	4.4	65	(t)	5.5	23	(t)	3	64	(t)
7-----	5.0	64	(t)	6			3		
8-----	5.5	54	(t)	4.5			3		
9-----	6.6	--	e 12	4			3		
10-----	20	--	e 380	4.2			3.5		
11-----	5.5	225	3	6.5	71	1	2		
12-----	5.5	114	2	10	120	3	2		
13-----	5.5	86	2	15	106	4	2		
14-----	5.2			15	106	4	2.5		
15-----	5.5			20	86	5	3		
16-----	5.8			26	294	21	3.5		
17-----	5.8			30	311	25	3		
18-----	6.0			29	284	22	2.5		
19-----	6.2			28	328	25	2		
20-----	6.2			26	211	15	1.5	--	(t)
21-----	6.0	63	1	27	199	14	1.5		
22-----	5.5			27	193	14	1.5		
23-----	5.5			26	181	13	1.5		
24-----	5.5			12	84	3	2		
25-----	5.5			6.0	42	(t)	2.5		
26-----	5.5			4.5	31	(t)	3		
27-----	5.2			4.0	28	(t)	3.5		
28-----	5.0			3.8	25	(t)	4.5		
29-----	5.0	33	(t)	3.2	21	(t)	5		
30-----	4.5	33	(t)	3.0	20	(t)	5		
31-----	4.8	47	(t)	--	--	--	4.5		
Total-	173.5	--	420	371.8	--	176	94.2	--	10

Total discharge for period Oct. 1 to Dec. 31 (second-foot-days) 639.5
 Total load for period Oct. 1 to Dec. 31 (tons) 606

e Estimated.

t Less than 1 ton.

KANSAS RIVER BASIN--Continued
MEDICINE CREEK AT CAMBRIDGE, NEBR.--Continued

Particle-size analyses of suspended sediment, October 1949
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949.....	1:30 p. m.	6.6	3,720	2,590	56	68	90	95	96	98	98	99	100	BW
Oct. 11.....	12:50 p. m.	5.8	210	147	53	72	84	92	92	94	96	99	100	BW

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR BEAVER CITY, NEBR.

LOCATION.--At bridge on U. S. Highway 283, 200 feet upstream from gaging station, and 7 miles southwest of Beaver City, Furnas County.

DRAINAGE AREA.--1,500 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949.

Water temperatures: January 1949 to September 1950.

Sediment records: April 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 82°F June 15, 17; minimum, freezing point on several days during December to March.

Sediment concentrations: Maximum daily, 12,800 ppm July 26; minimum daily, not determined.

Sediment loads: Maximum daily, 39,700 tons Aug. 7; minimum daily, less than 1 ton on many days.

EXTREMES, 1947-50.--Water temperatures (January 1949 to September 1950): Maximum, not determined; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 14,500 ppm June 18, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 42,700 tons June 22, 1947; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, water year October 1949 to September 1950
/Once-daily temperature measurement generally between 9 a. m. and 6 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	51	43	35	34	34	52	53	58	68	69	70
2	--	44	45	34	32	35	54	62	62	68	69	74
3	59	49	39	32	34	36	38	59	60	65	69	72
4	58	50	39	33	35	36	45	59	66	69	70	70
5	59	50	39	32	37	41	41	44	75	64	72	67
6	61	--	39	35	35	39	54	64	73	67	70	67
7	59	49	--	--	35	32	48	58	78	68	66	68
8	58	41	33	35	35	34	50	70	--	71	70	65
9	48	50	32	36	36	40	57	66	70	73	69	68
10	55	49	38	34	36	34	51	64	63	73	71	62
11	53	49	33	35	47	32	53	57	75	72	74	59
12	53	47	34	35	35	32	56	71	71	71	75	57
13	52	49	33	34	35	34	52	58	73	67	69	58
14	52	45	33	34	33	34	51	60	80	65	70	60
15	--	46	34	35	35	35	--	68	82	60	71	61
16	51	42	37	35	36	39	49	64	69	71	72	63
17	51	43	36	34	38	42	--	64	32	60	73	64
18	51	46	35	34	35	33	54	65	69	60	74	63
19	54	42	35	34	35	35	51	67	74	65	68	66
20	49	43	32	35	36	35	57	60	71	66	65	68
21	--	43	34	36	34	43	61	50	80	68	68	63
22	45	42	34	36	35	45	68	60	75	68	70	64
23	48	43	36	35	37	38	68	64	80	68	70	62
24	43	43	35	33	38	47	54	--	73	69	73	63
25	45	46	33	35	35	43	--	53	73	67	74	62
26	47	49	34	32	38	52	54	51	78	68	68	63
27	48	48	35	32	37	45	55	52	66	62	65	63
28	47	43	36	34	35	39	49	48	72	72	68	60
29	52	45	35	23	--	44	45	65	75	72	66	68
30	44	42	38	33	--	48	51	58	68	66	66	74
31	49	--	35	34	--	--	--	60	--	73	67	--
Average	52	46	36	34	36	38	52	60	72	69	70	65

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR BEAVER CITY, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	15			14			16		
2-----	14			13			15		
3-----	16			13			16		
4-----	17			14			15		
5-----	18			14			15		
6-----	15	41	2	15	35	1	14	17	(t)
7-----	14			14			12		
8-----	14			14			14		
9-----	14			14			16		
10-----	28	1,500	s 131	14			16		
11-----	38	866	89	15			14		
12-----	62	1,780	s 313	14			12		
13-----	54	1,250	182	14			10		
14-----	30	1,650	134	14			10		
15-----	31	1,130	98	14			10		
16-----	31	800	67	16	27	1	10	13	(t)
17-----	24	473	31	17			10		
18-----	20	249	13	16			10		
19-----	19	188	10	15			12		
20-----	19	180	9	15			14		
21-----	17	102	5	16			14		
22-----	16	79	3	15			12		
23-----	17	76	4	15			10		
24-----	15	66	3	16			10		
25-----	14	50	2	15			10		
26-----	14	45	2	15	10	(t)	10	10	(t)
27-----	15			15			10		
28-----	14			16			12		
29-----	14	36	1	16			12		
30-----	15			16			12		
31-----	14			--	--	--	12		
Total-	658	--	1,120	444	--	24	385	--	14
Day	January			February			March		
	Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment		Mean dis-charge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	14			6			28	105	8
2-----	14			6			30	90	7
3-----	12			6			30	93	8
4-----	12			6			30	55	4
5-----	10			8	14	(t)	30	188	15
6-----	8			10			30	174	14
7-----	6	12	(t)	10			26	177	12
8-----	8			10			25	144	10
9-----	8			12			20	215	12
10-----	10			12			15	98	4
11-----	10			12			15	72	3
12-----	10			12			15	75	3
13-----	10			12	20	(t)	10	65	2
14-----	10			12			10	70	2
15-----	12			12			10	68	2
16-----	12			12			10	36	1
17-----	12			14			10	70	2
18-----	12	26	(t)	16			15	50	2
19-----	12			17			15	130	5
20-----	10			17			20	125	7
21-----	10			18	14	(t)	21	76	4
22-----	10			20			19	45	2
23-----	10			20			18	39	2
24-----	10			22			20	39	2
25-----	10			22			17	41	2
26-----	10	11	(t)	24	42	3	18	35	2
27-----	10			26	53	4	18	41	2
28-----	10			28	115	9	20	56	3
29-----	8			--	--	--	15	23	1
30-----	6			--	--	--	15	36	2
31-----	6			--	--	--	22	--	e 4
Total-	312	--	13	402	--	30	597	--	149

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR BEAVER CITY, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	18	30	1	15	60	2	25	805	54
2-----	13	27	1	13	47	2	36	1,640	s 176
3-----	12			13	50	2	44	1,620	192
4-----	11			14	76	3	24	774	50
5-----	12			14	96	4	13	446	16
6-----	12			16	75	3	10	351	10
7-----	14			16	63	3	10	286	8
8-----	12	12	(t)	14	64	2	10	228	6
9-----	14			17	101	5	10	208	6
10-----	14			22	124	7	10	202	5
11-----	14			14	69	3	10	199	5
12-----	14			29	5,110	s 1,130	9.9	192	5
13-----	12			16	2,820	122	7.5	182	4
14-----	11			14	244	9	9.0		
15-----	15			14	160	6	8.1		
16-----	15			14	164	6	8.1		
17-----	14			14	141	5	8.7		
18-----	12			14	135	5	9.0	160	4
19-----	13	16	(t)	14	122	5	8.4		
20-----	13			34	3,980	s 506	8.7		
21-----	14			21	2,350	s 154	9.0		
22-----	16			21	354	20	9.0		
23-----	16			15	238	10	9.0		
24-----	14			14	175	7	9.0	129	3
25-----	15			12	136	4	9.0	123	3
26-----	14			13	113	4	8.4	122	3
27-----	14	23	(t)	13	110	4	8.1	117	3
28-----	14			72	11,400	s 2,690	5.6	113	2
29-----	14			64	8,400	s 2,180	8.4	225	5
30-----	14	46	2	37	1,380	146	100	5,870	s 2,270
31-----	--	--	--	36	1,500	146	--	--	--
Total--	410	--	20	669	--	7,170	454.9	--	2,870
	July			August			September		
1-----	52	5,360	s 792	478	5,940	s 8,180	102	3,370	928
2-----	20	2,000	108	162	3,230	s 1,630	66	1,780	317
3-----	15	650	26	250	3,400	s 2,400	45	1,030	125
4-----	12	1,310	s 61	214	2,560	s 1,440	37	630	63
5-----	90	9,590	s 2,420	131	1,830	647	32	506	44
6-----	82	7,530	s 1,760	412	--	e 17,000	28	380	29
7-----	60	4,490	727	2,240	5,890	s 39,700	26	314	22
8-----	32	2,990	s 278	613	--	e 7,700	23	269	17
9-----	15	1,080	44	240	--	e 2,900	22	240	14
10-----	12	480	16	185	--	e 2,400	21	202	11
11-----	20	1,050	57	419	6,550	s 7,210	19	174	9
12-----	618	8,930	s 17,700	417	10,900	s 12,800	19	160	8
13-----	1,140	5,050	15,500	574	12,400	s 20,000	19	150	8
14-----	312	5,340	s 4,840	158	4,880	s 2,180	18	144	7
15-----	64	3,270	s 603	97	2,340	613	18	152	7
16-----	38	1,640	s 175	77	1,300	270	18	140	7
17-----	28	585	44	77	1,050	218	18	131	6
18-----	451	9,890	s 15,600	104	1,150	322	18	131	6
19-----	443	8,380	s 11,000	158	2,090	892	18	127	6
20-----	87	4,230	s 1,040	182	2,360	1,160	17	117	5
21-----	49	3,080	408	140	1,760	665	17	109	5
22-----	520	12,000	s 18,900	92	1,180	293	17	106	5
23-----	333	8,340	s 7,780	64	1,040	180	18	94	5
24-----	77	5,400	s 1,190	56	940	142	15	97	4
25-----	118	5,870	s 2,530	51	930	128	16	136	6
26-----	1,120	12,800	s 34,600	72	1,760	s 369	15	120	5
27-----	2,730	3,780	27,900	104	4,660	1,310	13	100	4
28-----	1,580	4,160	s 17,000	102	4,250	1,170	13	101	4
29-----	388	7,590	s 8,290	125	5,160	1,740	13	108	4
30-----	244	5,940	s 5,250	222	6,330	s 3,980	14	111	4
31-----	925	9,750	s 23,900	170	5,860	s 2,880	--	--	--
Total--	11,675	--	220,500	8,406	--	142,500	735	--	1,680
Total discharge for year (second-foot-days)									25,147.9
Total load for year (tons)									376,100

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR BEAVER CITY, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000	
Oct. 10, 1949	4:00 a.m.	34	7,880	2,760	40	52	78	91	98	99	99	--	--	--	--	BW	
	4:00 a.m.	34	7,880	2,740	15	27	64	92	99	--	--	--	--	--	100	BW	
	8:10 a.m.	21	432	309	35	56	73	92	96	97	98	99	98	99	--	BW	
	10:10 a.m.	77	2,400	1,190	43	71	82	99	94	97	98	100	99	100	--	BW	
	8:30 a.m.	56	1,020	739	42	68	88	94	97	98	99	100	--	--	--	BW	
	May 12, 1950	6:00 p.m.	117	32,400	11,300	--	35	--	69	--	100	--	--	--	--	--	SPWCM
		11:50 a.m.	60	15,100	6,520	--	50	--	85	--	100	--	--	--	--	--	SPWCM
		6:00 a.m.	68	16,400	6,580	--	44	--	69	--	99	--	--	--	--	--	SPWCM
		6:45 p.m.	41	10,200	7,120	--	68	--	95	--	100	--	--	--	--	--	SPWCM
		1:50 p.m.	52	5,280	2,530	--	59	--	80	--	99	--	--	--	--	--	SPWCM
May 29	10:00 p.m.	31	5,940	3,970	--	79	--	95	--	100	--	--	--	--	--	SPWCM	
	June 30	176	11,000	7,620	--	57	--	88	--	100	--	--	--	--	--	SPWCM	
	6:30 a.m.	70	9,460	7,390	--	67	--	94	--	100	--	--	--	--	--	SPWCM	
	5:10 p.m.	155	8,500	4,250	28	40	61	84	94	99	99	--	--	--	--	SPWCM	
	5:10 p.m.	155	8,500	4,060	9	23	51	78	93	99	100	--	--	--	--	SPN	
July 6	8:45 a.m.	100	8,710	5,810	--	69	--	97	--	100	--	--	--	--	--	SPWCM	
	7:05 a.m.	322	16,600	7,540	--	40	--	68	--	98	--	--	--	--	--	SPWCM	
	July 12	1,020	7,760	5,820	--	59	--	82	--	98	--	--	--	--	--	SPWCM	
	1:10 p.m.	882	11,700	5,720	30	45	62	75	90	99	100	--	--	--	--	SPWCM	
	1:10 p.m.	882	11,700	5,770	9	23	52	70	91	98	100	--	--	--	--	SPN	
July 13	9:45 a.m.	1,200	5,200	5,260	--	68	--	82	--	98	--	--	--	--	--	SPWCM	
	1:30 p.m.	1,260	4,750	4,000	--	71	--	84	--	98	--	--	--	--	--	SPWCM	
	6:00 a.m.	638	6,380	4,270	--	62	--	77	--	99	--	--	--	--	--	SPWCM	
	9:30 a.m.	622	21,000	8,560	--	44	--	82	--	100	--	--	--	--	--	SPWCM	
	8:45 p.m.	214	5,760	3,380	--	66	--	82	--	99	--	--	--	--	--	SPWCM	
July 22	1:55 p.m.	718	15,800	5,110	--	41	--	63	--	97	--	--	--	--	--	SPWCM	
	6:45 p.m.	754	10,300	4,210	35	51	59	67	78	90	92	100	--	--	--	SPWCM	
	7:54	754	10,300	4,080	19	35	52	65	77	90	92	100	--	--	--	SPN	
	2:50 p.m.	1,720	18,300	7,680	30	40	50	62	81	99	--	--	--	--	--	SPWCM	
	2:50 p.m.	1,720	18,300	7,680	30	40	50	62	81	99	--	--	--	--	--	SPWCM	

KANSAS RIVER BASIN--Continued
SAPPA CREEK NEAR BEAVER CITY, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
July 26, 1950	2:50 p. m.	1,720	18,500	7,920	3	10	37	56	81	98	--	--			SPN
July 26	9:55 p. m.	2,180	5,900	6,170	--	68	--	93	--	99	--	--			SPWCM
July 27	1:15 p. m.	3,270	3,920	2,940	--	81	--	94	--	100	--	--			SPWCM
July 30	11:50 a. m.	1,000	8,960	3,730	40	50	58	68	83	99	--	--			SPWCM
July 31	11:50 a. m.	1,000	8,960	3,520	15	31	45	62	81	98	--	--			SPN
Aug. 7	12:30 a. m.	3,670	9,320	6,280	--	46	--	82	--	100	--	--			SPWCM
Aug. 7	4:00 a. m.	2,820	6,450	4,650	--	63	--	91	--	99	--	--			SPWCM
Aug. 7	4:15 p. m.	1,930	4,540	3,280	--	71	--	89	--	99	--	--			SPWCM
Aug. 12	1:15 a. m.	610	16,800	6,500	--	35	--	56	--	99	--	--			SPWCM
Aug. 13	9:20 a. m.	854	14,700	9,570	--	44	--	71	--	99	--	--			SPWCM
Aug. 29	8:30 a. m.	134	5,860	3,860	--	45	--	72	--	99	--	--			SPWCM
Aug. 30	5:45 p. m.	280	6,920	5,010	--	52	--	79	--	99	--	--			SPWCM
Aug. 31	9:10 a. m.	180	6,470	4,760	--	54	--	82	--	100	--	--			SPWCM
Sept. 1	7:20 p. m.	87	2,760	3,860	--	68	--	91	--	100	--	--			SPWCM

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR STAMFORD, NEBR.

LOCATION.--At county highway bridge, 500 feet upstream from gaging station which is 2 miles east of Stamford, Harlan County, and 5½ miles upstream from mouth.

DRAINAGE AREA.--3,840 square miles, of which only 3,560 square miles contribute directly to surface runoff.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949.

Water temperatures: November 1949 to September 1950.

Sediment records: March 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum 85°F June 23; minimum, freezing point on many days during December to February.

Sediment concentrations: Maximum daily, 9,550 ppm July 20; minimum daily, not determined.

Sediment loads: Maximum daily, 25,300 tons Aug. 8; minimum daily, less than 1 ton on many days in January and February.

EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 15,900 ppm Mar. 3, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 180,000 tons (estimated) June 22, 1947; minimum daily, less than 1 ton on many days 1948-50.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Temperature (°F) of water, November 1949 to September 1950

/Once-daily temperature measurement between 10 a. m. and 6 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--	40	36	35	35	48	60	65	--	73	71
2		--	45	--	32	33	55	53	60	77	70	75
3		--	45	32	35	35	--	--	68	79	72	75
4		--	40	--	--	42	40	--	68	68	68	76
5		--	38	--	36	36	42	55	71	68	69	70
6		--	41	36	37	40	51	67	75	73	76	--
7		--	35	36	34	--	60	59	62	--	72	63
8		--	--	--	--	--	51	69	76	80	77	70
9		--	33	38	35	39	47	59	77	81	78	70
10		--	35	38	35	--	--	65	--	--	72	65
11		--	--	--	--	--	49	70	70	75	78	61
12		--	--	35	--	--	52	69	84	74	75	58
13		--	--	--	--	--	53	55	84	74	76	59
14		--	--	35	--	--	53	70	--	76	77	62
15		--	--	--	55	38	53	73	--	71	73	64
16		--	37	34	37	38	53	69	71	77	72	63
17		39	--	35	37	39	65	--	82	75	71	67
18		37	36	--	35	--	57	75	68	75	70	70
19		40	35	35	37	--	58	57	77	74	67	68
20		42	--	36	38	37	--	64	--	70	65	73
21		35	--	34	--	44	--	68	81	69	65	66
22		49	35	35	35	44	72	74	--	75	70	64
23		40	40	33	36	45	72	75	85	77	68	65
24		45	35	--	37	50	55	66	--	75	73	65
25		--	--	--	--	48	55	--	--	73	75	63
26		50	--	--	--	--	59	--	73	70	69	65
27		43	37	35	37	47	58	62	80	72	72	67
28		60	37	38	35	--	50	58	70	78	72	60
29		48	35	--	--	47	47	62	--	78	68	72
30		45	40	--	--	44	55	63	83	80	72	73
31		--	37	34	--	--	--	68	--	76	71	--
Average		--	--	--	--	--	54	65	--	75	72	67

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR STAMFORD, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	33	94	8	34	120	11	32	21	2
2-----	33	94	8	33	91	8	32	35	3
3-----	34	86	8	32			32	48	4
4-----	35	77	7	32			32	39	3
5-----	33	71	6	31			39	66	5
6-----	32	84	7	31	63	5	25	74	5
7-----	33	87	8	31			25	52	4
8-----	32	87	8	33			20	85	4
9-----	31	87	7	32			30	86	7
10-----	272	--	e 4,100	32	72	6	20	87	5
11-----	225	--	e 2,300	34	79	7	15	79	3
12-----	76	--	e 355	32	63	5	20	--	e 5
13-----	75	--	e 300	32	52	4	35	--	e 12
14-----	89	--	e 300	32	58	5	30	78	6
15-----	77	998	207	32	70	6	25	53	4
16-----	65	784	138	32	60	5	25	37	2
17-----	60	642	104	31	64	5	30	36	3
18-----	53	590	84	33	77	7	30	36	3
19-----	55	545	81	35	72	7	30	26	2
20-----	50	477	64	35			25	32	2
21-----	43	395	46	34	44	4	30	36	3
22-----	40	294	32	33			30	33	3
23-----	38	211	22	32			30	26	2
24-----	36	144	14	34			25	47	3
25-----	38	108	11	33			25	36	2
26-----	37	117	12	33	29	3	25	27	2
27-----	35	133	12	32			25		
28-----	35	160	15	32			25		
29-----	35	209	20	32			20	20	1
30-----	34	185	17	32	--	--	20		
31-----	34	145	13	--	--	--	20		
Total--	1,798	--	8,310	976	--	150	818	--	104
Day	January			February			March		
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	20	18	1	15	9	(t)	55	410	61
2-----	20	24	1	15	13	(t)	55	375	56
3-----	20	51	3	15	38	2	65	285	50
4-----	20	--	e 3	15	45	2	65	734	129
5-----	20	47	2	15	40	2	65	868	152
6-----	20	41	2	15			65	980	172
7-----	15	37	2	15	35	1	65	1,050	184
8-----	15			15			30	--	e 95
9-----	15			15	39	2	35	1,460	138
10-----	15			15	40	2	30		
11-----	15	37	2	15	39	2	30		
12-----	15			20			25	--	e 90
13-----	15			20			30		
14-----	15			20			40	704	76
15-----	15	37	2	20	39	2	55	794	118
16-----	15			25			45	648	79
17-----	15			25	52	4	50	484	65
18-----	15			25	49	3	50	484	65
19-----	15	21	(t)	30	43	3	30	425	34
20-----	15			30	56	4	35	493	46
21-----	15			30	80	6			
22-----	15			35	--	e 11	45	418	51
23-----	15	21	(t)	35	107	10	59	472	75
24-----	15			40	119	13	56	510	77
25-----	15			40	111	12	54	450	66
26-----	15			40	138	15	47	366	46
27-----	15	21	(t)	40	--	e 22	53	392	56
28-----	15			45	347	42	49	444	59
29-----	15			55	454	67	45	351	43
30-----	15			--	--	--	41	257	28
31-----	15	21	(t)	--	--	--	44	243	29
				--	--	--	39	221	23
Total--	495	--	45	710	--	236	1,452	--	2,430

e Estimated.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

SAPPA CREEK NEAR STAMFORD, NEBR.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	36	217	21	35	187	18	146	5,260	2,070
2-----	44	241	29	34	187	17	148	3,530	1,410
3-----	43	233	27	38	132	14	140	3,530	1,330
4-----	39	206	22	35	116	11	111	3,070	920
5-----	36	197	19	37	184	18	91	3,030	744
6-----	33	194	17	58	--	e 340	67	1,770	320
7-----	35	146	14	49	3,340	442	53	1,070	153
8-----	35			38	1,650	169	46	810	100
9-----	38			38	410	42	40	676	73
10-----	38	158	16	37	280	28	36	592	58
11-----	35			36	240	23	34	519	48
12-----	38			152	--	e 3,200	38	460	41
13-----	37	120	12	142	6,270	2,400	32	413	36
14-----	38			89	3,420	822	31	393	33
15-----	36			49	2,500	331	30	388	31
16-----	37	132	14	48	1,350	175	27	384	28
17-----	40			49	860	114	26	350	24
18-----	44			39	640	67	25	309	21
19-----	41	38	38	550	56	24	303	20	20
20-----	31			93	3,460	s 1,480	25	303	20
21-----	38			103	5,710	1,590	25	283	19
22-----	39	142	15	89	3,320	798	23	270	17
23-----	40			54	3,240	472	22	242	14
24-----	40			43	1,330	154	21	212	12
25-----	38	37	32	34	920	84	20	183	10
26-----	37			32	610	53	18	184	9
27-----	36			39	--	e 75	16	204	9
28-----	35	110	11	248	--	e 4,900	15	235	10
29-----	35			665	7,540	13,500	15	237	10
30-----	35			753	6,060	12,300	17	238	11
31-----	--	--	--	271	5,940	4,370	--	--	--
Total--	1,134	--	456	3,465	--	48,060	1,357	--	7,600
Day	July			August			September		
	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day	Mean dis-charge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	26	--	e 340	940	7,110	s 18,700	324	5,390	4,710
2-----	117	7,220	2,280	914	5,060	12,500	195	4,000	2,100
3-----	53	3,690	528	366	4,380	4,330	158	2,400	1,020
4-----	63	3,640	s 1,090	347	3,530	3,310	121	2,040	666
5-----	170	--	e 3,500	313	3,180	2,690	101	1,080	294
6-----	125	6,980	2,360	225	2,530	1,540	90	736	179
7-----	191	--	e 3,900	787	8,240	17,500	82	599	133
8-----	92	5,660	1,400	2,220	4,510	s 25,300	75	470	95
9-----	74	4,080	815	2,360	2,940	18,700	73	430	85
10-----	42	3,620	410	548	4,440	6,570	68	391	72
11-----	82	--	e 1,200	445	3,380	4,060	65	342	60
12-----	89	4,740	1,140	982	5,880	s 16,100	64	293	51
13-----	376	7,320	e 10,400	784	5,920	12,500	63	272	46
14-----	980	6,720	17,800	823	6,130	18,100	61	270	44
15-----	936	4,350	11,000	608	7,950	s 13,500	59	257	41
16-----	367	3,560	3,530	249	3,620	2,430	58	268	42
17-----	136	3,050	1,120	202	2,220	1,210	57	249	38
18-----	91	2,170	533	186	1,580	793	56	243	37
19-----	332	6,970	s 9,290	226	--	e 1,700	54	215	31
20-----	553	9,550	14,200	270	3,520	2,560	52	205	29
21-----	284	5,680	4,360	261	1,960	1,380	50	179	24
22-----	134	4,200	1,520	243	1,930	1,270	49	153	20
23-----	492	7,820	s 13,300	186	1,860	934	47	143	18
24-----	656	8,050	14,200	157	1,560	661	46	143	18
25-----	316	5,600	4,780	133	1,300	467	48	148	19
26-----	182	3,090	1,520	147	1,960	778	43	126	15
27-----	800	9,270	s 20,900	202	2,880	1,570	42	121	14
28-----	1,460	3,940	15,500	177	3,150	1,500	41	112	12
29-----	2,080	2,880	16,200	628	7,840	s 15,000	41	180	20
30-----	1,850	3,060	s 14,500	604	5,380	8,770	37	165	16
31-----	553	4,200	6,270	323	5,700	4,970	--	--	--
Total--	13,702	--	199,900	16,856	--	221,400	2,320	--	9,950

Total discharge for year (second-foot-days) 43,083
 Total load for year (tons) 49,600

e Estimated.

s Computed by subdividing day.

KANSAS RIVER BASIN--Continued
SAPPA CREEK NEAR STAMFORD, NEBR.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 29, 1949.....	9:50 a. m.	36	214	538	43	57	69	79	88	96	97	98		99	BW
Mar. 9, 1950.....	4:00 p. m.	44	1,840	1,150	20	31	43	59	73	85	90	93		98	BW
Mar. 22.....	1:00 p. m.	58	506	819	27	40	56	66	76	85	90	93		98	BW
May 20.....	6:00 p. m.	171	7,890	4,960	--	62	--	87	--	99	100	--		--	SPWCM
May 29.....	5:20 p. m.	762	7,400	3,480	46	54	67	71	82	98	100	--		--	SPWCM
May 29.....	5:20 p. m.	762	7,400	3,620	9	23	60	68	80	96	100	--		--	SPN
May 29.....	8:45 p. m.	851	7,430	4,170	45	58	67	72	85	97	100	--		--	SPWCM
May 31.....	8:45 p. m.	851	7,430	4,370	10	24	60	70	82	97	100	--		--	SPN
May 31.....	10:15 a. m.	262	6,080	3,520	44	56	66	76	89	96	100	--		--	SPWCM
May 31.....	10:15 a. m.	262	6,080	3,510	8	18	63	78	89	96	100	--		--	SPN
June 1.....	6:00 p. m.	139	4,650	5,860	--	74	--	91	--	99	100	--		--	SPWCM
July 2.....	2:00 p. m.	119	6,720	8,600	--	73	--	73	--	100	--	--		--	SPWCM
July 4.....	8:15 p. m.	190	10,000	8,900	29	42	58	73	92	100	--	--		--	SPWCM
July 4.....	8:15 p. m.	190	10,000	9,170	5	9	45	66	89	99	100	--		--	SPN
July 4.....	9:00 p. m.	200	8,700	5,310	--	50	--	74	--	99	100	--		--	SPWCM
July 13.....	6:00 p. m.	685	12,700	4,490	40	56	70	83	92	99	100	--		--	SPWCM
July 13.....	6:00 p. m.	685	12,700	4,040	9	25	60	83	95	99	100	--		--	SPN
July 14.....	4:20 a. m.	941	8,670	4,630	58	70	78	85	93	98	--	--		--	SPWCM
July 14.....	4:20 a. m.	941	8,670	4,240	9	25	66	82	91	98	--	--		--	SPN
July 14.....	11:05 a. m.	990	6,440	6,020	--	62	--	83	--	98	--	--		--	SPWCM
July 15.....	1:55 p. m.	921	3,860	7,420	--	66	--	82	--	98	--	--		--	SPWCM
July 19.....	10:20 p. m.	624	10,300	5,240	42	58	73	86	95	99	--	--		--	SPWCM
July 19.....	10:20 p. m.	624	10,300	5,410	10	22	64	84	93	99	--	--		--	SPN
July 24.....	11:40 a. m.	641	7,960	3,960	49	60	75	85	93	99	--	--		--	SPWCM
July 24.....	11:40 a. m.	641	7,960	3,810	10	29	69	85	95	99	--	--		--	SPN
July 27.....	12:25 p. m.	928	11,200	5,090	41	54	66	77	93	99	--	--		--	SPWCM
July 27.....	12:25 p. m.	928	11,200	4,970	10	25	54	74	91	99	--	--		--	SPN
Aug. 1.....	1:15 p. m.	990	8,580	5,870	--	51	--	77	--	99	--	--		--	SPWCM
Aug. 2.....	8:00 a. m.	1,160	4,680	2,850	--	61	--	73	--	97	--	--		--	SPWCM
Aug. 2.....	12:10 p. m.	1,010	4,760	9,250	--	56	--	77	--	98	--	--		--	SPWCM

Aug. 7	9:00 a.m.	544	6,420	4,290	--	45	--	67	--	89	--	--	SPWCM
Aug. 8	4:00 a.m.	1,350	5,170	4,600	--	66	--	77	--	97	--	--	SPWCM
Aug. 8	6:00 p.m.	3,040	3,780	2,410	--	73	--	82	--	90	--	--	SPWCM
Aug. 9	8:30 a.m.	2,540	2,640	1,800	65	77	79	80	86	93	95	97	BWCM
Aug. 11	8:00 a.m.	469	3,710	2,360	43	56	70	81	89	94	96	--	BWCM
Aug. 12	5:50 a.m.	1,130	8,020	3,520	37	50	59	70	86	98	--	--	SPWCM
Aug. 12	5:50 a.m.	1,130	8,020	3,440	13	29	48	68	85	98	--	--	SPN
Aug. 14	3:00 p.m.	869	7,220	4,560	--	55	--	78	--	99	--	--	SPWCM
Aug. 29	11:00 a.m.	838	13,600	4,960	--	45	--	71	--	99	--	--	SPWCM
Aug. 31	5:10 p.m.	321	6,410	4,560	--	62	--	90	--	99	--	--	SPWCM
Sept. 1	12:00 m.	356	5,280	4,000	--	60	--	88	--	99	--	--	SPWCM
Sept. 2	4:00 p.m.	181	3,830	2,100	52	70	81	93	97	98	99	--	BWCM
Sept. 3	1:00 p.m.	156	2,180	1,270	56	73	87	91	97	99	100	--	BWCM

KANSAS RIVER BASIN--Continued

PRAIRIE DOG CREEK AT NORTON, KANS.

LOCATION.--At gaging station at bridge on U. S. Highway 283, half a mile south of Norton, Norton County.

DRAINAGE AREA.--721 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949.

Water temperatures: December 1948 to September 1950.

Sediment records: March 1947 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 79° F May 16, Aug. 4; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 9,990 ppm Aug. 7; minimum daily, not determined.

Sediment loads: Maximum daily, 43,700 tons Aug. 12; minimum daily, less than 1 ton on many days during October to April.

EXTREMES, 1947-50.--Water temperatures (1948-50): Maximum, 83° F June 30, July 18, 1949; minimum, freezing point on many days during winter months each year.

Sediment concentrations: Maximum daily, 14,100 ppm May 19, 1949; minimum daily, not determined.

Sediment loads: Maximum daily, 95,800 tons June 22, 1947; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, July 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent so- di- um
																Parts per mil- lion	Tons per acre- foot per day	Total	Non- carbon- ate	
July 12, 1950.....	894	7.2	280	17	0.20	46	3.0	8.7	176	132	1.0	0.5	0.2	0.8	0.20	178	0.24	127	0	13
July 25, 1950.....	2,940	7.4	216	18	.04	38	1.9	6.4	132	132	1.0	.5	.3	1.6		138	.19	98	0	13

KANSAS RIVER BASIN--Continued

PRAIRIE DOG CREEK AT NORTON, KANS.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Once-daily temperature measurement generally at 8:30 p. m., except January to April most measurements at about 5 p. m.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	51	43	--	33	34	42	64	56	67	67	74
2	--	--	43	34	33	34	63	69	61	72	66	65
3	55	51	36	--	35	42	41	63	57	67	78	68
4	64	52	32	--	32	34	50	60	--	65	79	--
5	68	42	--	32	--	54	55	58	57	64	71	--
6	60	--	32	--	37	53	58	52	62	68	71	68
7	58	49	33	32	32	33	67	53	64	67	67	71
8	--	50	31	34	36	33	--	62	63	71	70	--
9	46	47	--	--	37	32	45	52	60	75	72	--
10	55	41	33	36	37	33	54	64	64	74	71	--
11	58	48	33	35	34	32	53	--	--	72	78	--
12	48	41	--	--	34	--	54	63	69	69	73	56
13	49	50	--	34	32	--	54	--	71	64	70	--
14	50	45	32	32	32	37	--	63	70	76	72	59
15	48	--	--	--	33	40	--	73	--	72	73	--
16	58	44	36	34	36	49	48	79	70	--	70	--
17	49	--	32	32	38	45	49	--	66	64	71	62
18	57	45	33	32	34	32	52	63	67	64	67	--
19	55	38	34	32	33	32	--	59	62	64	65	63
20	47	39	--	--	37	33	--	57	64	66	62	73
21	44	38	--	36	--	47	71	57	--	68	59	--
22	43	41	--	36	37	49	78	60	70	66	61	--
23	41	43	33	--	37	54	60	64	--	71	--	--
24	49	--	33	32	33	49	53	63	72	66	68	57
25	57	47	--	--	36	44	53	54	78	65	68	56
26	54	42	32	--	36	53	--	48	--	69	64	--
27	41	45	--	--	38	46	53	53	70	62	65	60
28	45	43	38	35	38	43	47	59	66	67	65	56
29	45	39	34	--	--	45	40	58	65	76	65	67
30	--	43	--	--	--	45	--	55	67	69	64	68
31	33	--	32	33	--	52	--	--	--	69	62	--
Average	51	44	34	--	35	42	--	60	65	68	68	--

a Includes estimated temperature 32°F on missing days, December 12-30.

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

PRAIRIE DOG CREEK AT NORTON, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6.2			8.3			8.3		
2-----	7.7			8.3			8.6		
3-----	7.4			8.3			8.6	14	(t)
4-----	7.4			8.3			8.3		
5-----	8.0	42	1	8.3			8.3		
6-----	7.7			8.6			9.8		
7-----	6.8			8.9			8.9		
8-----	6.8	26	1	8.6	26	(t)	8.0		
9-----	113	7,440	s 3,130	8.6			13	30	(t)
10-----	315	9,770	s 11,600	8.6			9.8		
11-----	28	2,280	172	9.2			9.8		
12-----	32	2,550	220	8.9			9		
13-----	19	1,200	62	8.9			8		
14-----	12	660	21	9.2			8		
15-----	10	408	11	8.9			8		
16-----	9.2	218	5	8.9			8		
17-----	8.3	189	4	8.9			8		
18-----	8.0	143	3	8.9			8		
19-----	8.0	111	2	9.5			8		
20-----	8.0	90	2	9.2			7		
21-----	8.0	89	2	8.6			7	12	(t)
22-----	8.0	89	2	8.9	15	(t)	7		
23-----	8.0	85	2	9.2			7		
24-----	8.0	78	2	9.2			7		
25-----	9.2	103	2	9.8			7		
26-----	8.3	82	2	8.9			7		
27-----	8.3	68	2	8.9			7		
28-----	8.0	60	1	8.9			8		
29-----	8.3	62	1	8.9			8		
30-----	8.0	--	e 1	5.9			8	--	e 1
31-----	8.3	38	(t)	--			9	81	2
Total-	718.9	--	15,260	265.5	--	14	255.4	--	14
Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	9	--	e 2	6			17	1,700	78
2-----	9			6			15	600	24
3-----	9			6			14	218	8
4-----	7	41	(t)	6	17	(t)	15	278	11
5-----	6			6			13	193	7
6-----	5			6			12	125	4
7-----	5			6			12	155	5
8-----	5			7	30	(t)	12	182	6
9-----	5			8	25	(t)	13	251	9
10-----	5			9	28	(t)	13	129	4
11-----	5			9	100	2	16	51	2
12-----	6			8	59	1	21	54	3
13-----	6			8	35	(t)	20	62	3
14-----	7			9	40		17	128	6
15-----	7	19	(t)	11	42	1	14	110	4
16-----	8			13	64	2	11	136	4
17-----	9			15	45	2	12	123	4
18-----	9			14	59	2	11	78	2
19-----	8			21	60	3	15	149	6
20-----	7			16	88	4	13	103	4
21-----	7			16	47	2	12	142	5
22-----	7			15	61	2	11	90	3
23-----	7			21	110	6	11	81	2
24-----	8	40		16	66	3	11	72	2
25-----	8	--		16	146	6	11	83	2
26-----	7	--		20	105	6	11	89	3
27-----	6		(t)	18	412	20	10	73	2
28-----	6	11		36	--	e 550	9.8	46	1
29-----	6	--		--	--	--	10	36	1
30-----	6	--		--	--	--	10	30	(t)
31-----	6	20		--	--	--	10	28	(t)
Total-	211	--	15	348	--	620	402.8	--	217

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

PRAIRIE DOG CREEK AT NORTON, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	Mean discharge (second-foot)	April		Mean discharge (second-foot)	May		Mean discharge (second-foot)	June	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	10	27	(t)	8.6	48	1	14	152	6
2-----	9.5			8.6			11	114	3
3-----	9.8			8.9			9.5	140	4
4-----	10			9.2			8.3	139	3
5-----	9.8			12			7.7	132	3
6-----	9.8	20	(t)	9.8	41	1	7.4	125	2
7-----	9.8			9.5			7.1	118	2
8-----	9.8			10			6.5	100	2
9-----	9.8			9.5			6.2	82	1
10-----	9.8			9.2			6.2		
11-----	9.8	12	(t)	9.2	56	1	6.2		
12-----	9.8			9.5			5.6		
13-----	9.8			8.9			5.3		
14-----	9.5			8.9			5.3		
15-----	9.2			8.3			5.0		
16-----	10	12	(t)	8.3	68	2	4.8	108	1
17-----	11			8.3			4.5		
18-----	10			8.0			4.5		
19-----	9.2			8.0			4.5		
20-----	8.6			8.9			4.8		
21-----	8.6	12	(t)	8.9	68	2	4.5	108	1
22-----	8.6			8.9			4.5		
23-----	8.6			8.6			4.2		
24-----	8.9			8.0			4.0		
25-----	8.6			8.0			3.8		
26-----	8.3	12	(t)	8.6	68	2	3.5	108	1
27-----	8.6			9.2			3.5		
28-----	8.3			9.2			12	1,990	s 82
29-----	8.6			11			26	2,020	s 177
30-----	8.6			10			15	1,870	76
31-----	--	--	--	14	--	e 12	--	--	--
Total-	280.7	--	14	286.0	--	67	215.4	--	379
July		August		September					
1-----	7.4	770	15	110	1,800	535	57	820	126
2-----	5.6	430	6	88	1,510	359	56	630	95
3-----	97	--	e 3,100	69	1,060	197	51	500	69
4-----	87	5,090	s 1,230	57	780	120	46	--	--
5-----	60	4,570	s 791	48	560	72	42	--	--
6-----	91	5,970	s 1,480	77	2,380	s 2,040	39	317	e 35
7-----	40	3,340	s 386	507	9,990	s 15,900	38	288	
8-----	19	1,590	82	924	8,240	s 20,000	36	--	
9-----	12	930	30	1,640	5,020	22,200	35	--	
10-----	9.5	600	15	492	6,290	8,360	34	--	
11-----	103	--	e 2,500	195	3,710	s 1,980	32	--	e 18
12-----	1,360	8,680	s 31,500	1,940	8,900	s 43,700	32	199	
13-----	62	3,640	s 622	1,450	6,390	25,000	31	--	
14-----	30	1,810	147	1,180	5,140	16,400	30	227	
15-----	17	790	36	432	5,340	s 6,440	30	--	
16-----	12	460	15	425	5,380	6,170	30	--	14
17-----	343	9,930	s 13,500	349	4,250	s 4,230	28	--	
18-----	34	4,580	s 487	176	2,500	1,190	28	--	
19-----	10	1,360	37	129	1,610	561	28	--	
20-----	5.1	620	8	106	1,030	294	26	195	
21-----	448	8,740	s 12,300	90	773	188	25	--	8
22-----	117	4,960	s 1,970	81	582	127	24	--	
23-----	101	--	e 2,300	72	492	96	24	--	
24-----	61	4,960	s 1,070	66	480	88	22	--	
25-----	1,960	7,700	s 31,500	65	940	165	22	139	
26-----	1,980	7,450	s 38,800	547	8,930	s 14,900	22	--	7
27-----	1,680	6,690	s 26,400	272	5,400	3,970	20	--	
28-----	229	4,350	s 2,890	238	4,530	2,910	20	128	
29-----	172	3,080	s 1,730	113	2,860	s 906	20	112	
30-----	718	7,940	s 16,400	89	1,830	440	19	162	
31-----	168	3,410	s 1,650	72	1,780	346	--	--	--
Total-	10,038.6	--	193,000	12,101	--	199,900	947	--	771

Total discharge for year (second-foot-days)..... 26,070.3
 Total load for year (tons)..... 410,300

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

PRAIRIE DOG CREEK AT NORTON, KANS.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 9, 1949.....	9:55 a.m.	199	8,830	3,520	22	32	46	60	73	84	92	96				BW
Oct. 9.....	9:55 a.m.	199	8,830	3,470	12	18	36	56	71	79	83	91				3N
Oct. 9.....	10:30 a.m.	176	9,060	3,560	24	34	48	64	77	86	94	98				BW
Oct. 9.....	11:30 a.m.	188	8,890	3,000	25	35	52	66	78	88	96	98				BW
Oct. 9.....	12:40 p.m.	193	9,940	3,140	24	36	52	67	80	90	96	98				BW
Oct. 9.....	2:05 p.m.	171	9,100	2,840	26	38	52	66	80	90	98	100				BW
Oct. 9.....	5:25 p.m.	70	4,580	3,420	38	52	66	80	90	95	98	100				BW
Oct. 9.....	10:35 p.m.	74	9,060	3,070	16	24	33	43	56	66	80	93				BW
Oct. 9.....	11:10 p.m.	176	18,400	3,230	17	24	36	50	70	77	88	95				BW
Oct. 9.....	11:10 p.m.	176	18,400	3,240	12	18	33	41	72	83	89	96				BN
Oct. 10.....	12:15 a.m.	524	21,600	3,430	14	21	32	42	55	64	74	90				BW
Oct. 10.....	12:45 a.m.	761	20,500	5,050	14	22	34	48	70	85	95	98				BW
Oct. 10.....	1:15 a.m.	799	17,400	2,480	13	21	31	44	58	84	94	98				BW
Oct. 10.....	1:45 a.m.	799	18,800	2,560	18	27	41	57	69	83	92	97				BW
Oct. 10.....	5:05 a.m.	595	15,100	4,570	18	28	40	54	61	70	74	90				BW
Oct. 10.....	8:50 a.m.	441	11,600	1,940	55	68	76	82	90	95	97	98				BWCM
Oct. 10.....	8:50 a.m.	441	11,600	1,700	15	28	47	67	81	90	95	99				BN
Oct. 11.....	1:15 p.m.	24	1,860	1,150	52	72	92	95	98	99	100	100				BW
Oct. 11.....	5:20 p.m.	22	2,070	1,470	60	82	96	98	99	100	--	--				BW
Oct. 12.....	7:20 a.m.	40	3,740	2,210	30	44	58	68	78	80	82	88				BW
Oct. 12.....	9:50 a.m.	38	3,170	2,090	37	56	78	87	92	96	97	99				BW
Oct. 13.....	7:50 p.m.	15	1,200	799	63	80	92	95	97	98	98	100				BW
Feb. 27, 1950.....	6:00 p.m.	16	342	298	12	16	28	50	68	84	92	96				BW
Feb. 28.....	7:15 a.m.	34	6,850	5,070	24	35	50	64	80	88	92	98				BW
Feb. 28.....	8:00 a.m.	33	7,410	5,910	16	27	38	56	78	87	93	97				BW
Feb. 28.....	11:15 a.m.	33	3,640	3,940	45	61	76	87	93	96	96	98				BW
Feb. 28.....	11:15 a.m.	33	3,640	4,010	8	14	46	91	92	94	98	100				BN
Feb. 28.....	9:15 p.m.	24	1,820	1,320	37	52	66	76	88	92	96	99				BW
Mar. 1.....	9:00 a.m.	17	2,800	1,770	53	73	84	88	94	96	98	99				BW
Mar. 1.....	1:05 p.m.	18	1,770	1,260	44	60	73	80	87	92	94	98				BW

June 28	9:40 a.m.	31	2,670	3,810	--	77	--	94	--	100	--	--	SPWCM
June 28	10:55 a.m.	26	2,480	3,080	--	74	--	95	--	100	--	--	SPWCM
June 28	1:35 p.m.	52	2,010	3,080	--	63	--	91	--	100	--	--	SPWCM
June 28	3:40 p.m.	47	3,270	4,960	--	76	--	94	--	100	--	--	SPWCM
July 4	11:05 a.m.	102	5,260	5,960	--	87	--	93	--	100	--	--	SPWCM
July 4	1:45 p.m.	131	6,200	5,560	--	69	--	91	--	100	--	--	SPWCM
July 6	11:05 a.m.	106	5,930	6,320	--	72	--	96	--	100	--	--	SPWCM
July 8	7:45 a.m.	20	1,740	937	73	92	96	98	99	100	--	--	BWCM
July 8	7:30 a.m.	2,340	5,280	3,360	--	68	--	87	--	97	--	--	SPWCM
July 12	8:45 a.m.	2,450	4,880	6,500	--	64	--	82	--	91	92	95	SPWCM
July 12	3:05 p.m.	856	7,720	4,440	--	52	--	84	--	99	100	--	SPWCM
July 12	7:20 p.m.	182	7,680	4,960	--	61	--	85	--	99	--	--	SPWCM
July 13	7:45 p.m.	47	2,780	2,030	49	63	65	72	78	82	82	91	BWCM
July 17	7:20 a.m.	248	14,200	8,620	--	47	--	78	--	98	--	--	SPWCM
July 17	8:30 a.m.	410	18,700	6,220	--	45	--	80	--	99	--	--	SPWCM
July 17	9:30 a.m.	577	18,400	7,320	--	44	--	76	--	99	--	--	SPWCM
July 17	11:05 a.m.	818	17,300	5,400	--	46	--	78	--	96	--	--	SPWCM
July 17	11:45 a.m.	886	18,200	8,920	40	47	62	76	93	96	--	--	SPWCM
July 17	1:35 p.m.	991	15,600	6,420	11	21	45	69	91	99	100	--	SPN
July 17	1:55 p.m.	951	15,600	6,380	41	48	66	78	96	99	--	--	SPWCM
July 17	9:30 p.m.	96	10,400	8,260	5	15	49	74	95	99	--	--	SPN
July 21	7:40 a.m.	77	9,640	6,800	--	35	--	69	--	99	--	--	SPWCM
July 21	9:00 a.m.	365	11,200	6,960	--	40	--	69	--	99	--	--	SPWCM
July 21	10:20 a.m.	457	12,000	7,400	--	45	--	74	--	99	--	--	SPWCM
July 21	11:35 a.m.	524	10,200	2,860	45	52	65	78	91	99	--	--	SPWCM
July 21	1:40 p.m.	761	10,200	2,950	17	28	51	71	86	98	--	--	SPN
July 21	1:40 p.m.	1,010	11,300	4,230	61	52	60	72	88	99	--	--	SPWCM
July 21	4:30 p.m.	1,010	11,300	4,180	22	35	53	67	89	98	--	--	SPN
July 21	4:30 p.m.	1,010	10,200	4,540	--	52	--	74	--	99	--	--	SPWCM

KANSAS RIVER BASIN--Continued
PRAIRIE DOG CREEK AT NORTON, KANS.--Continued

Particle-size analyses of suspended sediment, October 1948 to August 1950--Continued

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
July 22, 1950	3:30 a. m.	193	6,970	5,460	--	58	--	84	--	99	--	--	--	--	SPWCM
July 22	8:45 p. m.	60	4,520	2,920	48	60	64	69	72	76	--	--	--	--	BWCM
July 23	9:30 a. m.	28	3,960	2,030	54	64	74	80	86	90	91	96	100	--	SPWCM
July 23	10:45 p. m.	139	7,650	4,800	--	65	--	88	--	99	--	--	--	--	SPWCM
July 24	10:55 p. m.	176	13,000	5,480	--	50	--	76	--	99	--	--	--	--	SPWCM
July 25	1:20 a. m.	280	16,600	7,090	--	44	--	74	--	99	--	--	--	--	SPWCM
July 25	5:25 a. m.	1,420	12,100	4,950	--	53	--	76	--	98	--	--	--	--	SPWCM
July 25	8:25 a. m.	1,670	6,520	4,280	--	61	--	79	--	97	--	--	--	--	SPWCM
July 25	5:05 p. m.	2,800	4,220	8,790	--	71	--	91	--	96	--	--	--	--	SPWCM
July 25	11:45 p. m.	2,840	4,440	2,910	49	58	66	70	74	76	78	--	--	--	BWCM
July 26	9:05 a. m.	894	6,740	6,230	--	48	--	62	--	97	--	--	--	--	SPWCM
July 26	7:00 p. m.	3,040	10,000	3,520	--	59	--	78	--	96	--	--	--	--	SPWCM
July 26	8:45 p. m.	2,940	8,250	2,910	--	66	--	83	--	98	--	--	--	--	SPWCM
July 27	7:00 a. m.	2,870	4,120	3,020	73	73	64	73	85	96	--	--	--	--	SPWCM
July 27	4:30 p. m.	818	8,480	3,750	51	54	64	73	85	96	--	--	--	--	SPWCM
July 27	4:30 p. m.	818	8,480	3,860	25	37	50	66	81	97	--	--	--	--	SPN
July 30	12:05 a. m.	350	7,860	5,060	--	51	--	72	--	96	--	--	--	--	SPWCM
July 30	1:10 a. m.	1,380	10,200	7,640	--	45	--	66	--	98	--	--	--	--	SPWCM
July 30	12:20 p. m.	1,110	6,460	7,200	--	57	--	77	--	100	--	--	--	--	SPWCM
July 31	1:20 p. m.	139	3,210	2,280	52	66	76	85	92	96	98	99	100	--	BWCM
Aug. 6	9:40 p. m.	110	10,500	6,970	--	34	--	60	--	97	--	--	--	--	SPWCM
Aug. 7	12:05 a. m.	837	18,300	5,330	--	45	--	69	--	97	--	--	--	--	SPWCM
Aug. 7	2:30 a. m.	1,090	16,300	6,270	--	45	--	70	--	98	--	--	--	--	SPWCM
Aug. 7	8:00 a. m.	425	8,240	6,600	--	57	--	76	--	98	--	--	--	--	SPWCM
Aug. 7	1:35 p. m.	267	7,700	4,020	--	59	--	80	--	99	--	--	--	--	SPWCM
Aug. 8	3:15 a. m.	613	9,180	4,600	--	48	--	69	--	98	--	--	--	--	SPWCM
Aug. 8	6:35 a. m.	595	7,740	3,480	51	54	65	74	87	98	--	--	--	--	SPN
Aug. 8	6:35 a. m.	595	7,740	3,360	25	37	58	69	84	97	--	--	--	--	SPWCM
Aug. 8	2:10 p. m.	970	9,320	6,420	--	48	--	67	--	97	--	--	--	--	SPWCM
Aug. 8	3:20 p. m.	1,050	8,860	3,570	47	51	59	64	80	96	--	--	--	--	SPWCM

Aug. 8	3:20 p.m.	1,050	8,880	3,350	20	32	48	55	74	84	--	SPN
Aug. 8	6:35 p.m.	1,770	8,890	5,120	--	42	--	63	--	86	--	SPWCM
Aug. 8	12:05 a.m.	1,360	7,050	5,500	--	52	--	63	--	85	--	SPWCM
Aug. 9	12:05 a.m.	1,580	5,620	3,800	--	59	--	72	--	100	--	SPWCM
Aug. 9	6:45 a.m.	2,020	4,920	3,000	--	59	--	67	--	89	--	SPWCM
Aug. 10	8:00 a.m.	577	6,720	4,230	--	51	--	69	--	98	--	SPWCM
Aug. 10	12:45 a.m.	1,250	22,000	8,080	--	34	--	58	--	96	--	SPWCM
Aug. 12	2:45 a.m.	2,520	11,300	8,780	--	44	--	85	--	96	--	SPWCM
Aug. 12	7:20 a.m.	2,590	5,260	3,510	--	73	--	88	--	93	--	SPWCM
Aug. 12	4:00 p.m.	1,730	8,330	6,020	--	54	--	76	--	97	--	SPWCM
Aug. 13	11:55 a.m.	1,780	5,360	3,210	--	58	--	67	--	91	--	SPWCM
Aug. 16	1:00 p.m.	441	5,670	3,680	--	53	--	67	--	96	--	SPWCM
Aug. 26	10:00 a.m.	818	11,900	7,920	--	50	--	72	--	96	--	SPWCM

KANSAS RIVER BASIN--Continued

WHITE ROCK CREEK NORTHWEST OF LOVEWELL, KANS.

LOCATION.--At county bridge, approximately half a mile northwest of Lovewell, Jewell County, and 1.2 miles upstream from gaging station at Lovewell.
DRAINAGE AREA.--358 square miles (above gaging station).
RECORDS AVAILABLE.--Water temperatures: February to September 1950.

Sediment records: February to September 1950.
EXTREMES, February to September 1950.--Water temperatures: Maximum, 81°F June 18, Aug. 2; minimum, freezing point on some days in February.

Sediment concentrations: Maximum daily, 19,800 ppm May 20; minimum daily, not determined.
Sediment loads: Maximum daily, 264,000 tons July 10; minimum daily, less than 1 ton on many days.

REMARKS.--Samples for chemical analysis obtained at gaging station. Discharge records for gaging station at Lovewell for water year October 1949 to September 1950 given in Water-Supply Paper 1176. No appreciable inflow between sediment sampling station and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Dis-charge (second-feet)	Tem-perature (° F)	pH	Specific conduct-ance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-dium	
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate		
Dec. 19, 1949.....	4.6	7.5		1,450	16	0.02	223	36	84		528	362	32	0.3	39	0.14		1,050	1.43		705	272	21
Jan. 16, 1950.....	4.0	7.8		1,170	15	.01	127	40	62		192	368	33	.3	34	.38		886	1.20		482	325	22
Mar. 14.....	6.9	7.6		1,080	12	.04	131	15	86		204	327	32	.3	25	.30		794	1.08		404	155	32
Apr. 10.....	15	7.8		1,040	5.8	.02	111	30	83		228	325	32	.3	33	.30		746	1.01		401	214	31
May 8.....		7.5		707	15	.02	92	15	43		190	171	28	.6	11	.10		494	.67		291	135	24
May 20.....	918	7.8		335	14	.02	54	5.3	12		188	22	2.0	.8	4.5	.20		214	.29		157	4	15
July 10.....	11,500	7.3		213	12	.04	33	2.3	5.8		124	6	0	.3	1.8	.20		124	.17		92	0	12
Sept. 21.....	1,300	7.7		336	11	.04	52	6.2	13		167	35	4.5	.6	2.2	.09		224	.30		155	18	16
Sept. 29.....	1,300	7.7		349	12	.04	58	6.2	12		200	25	2.5	.5	.4	.10		224	.30		170	6	13

KANSAS RIVER BASIN--Continued

WHITE ROCK CREEK NORTHWEST OF LOVEWELL, KANS.--Continued

Temperature (°F) of water, February to September 1950
 /Once-daily temperature measurement between 12 m. and 4 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--	--	--	--	--	52	54	65	--	77	77
2		--	--	--	--	33	55	--	61	--	81	74
3		--	--	--	--	35	47	56	--	--	73	69
4		--	--	--	--	--	30	67	65	--	72	75
5		--	--	--	--	42	50	50	--	--	--	69
6		--	35	--	--	45	50	57	65	--	72	70
7		48	--	--	--	39	50	57	65	--	73	70
8		--	--	--	--	33	54	61	74	--	74	69
9		--	--	--	--	35	54	55	68	74	76	70
10		--	--	--	34	34	49	59	72	--	75	65
11		--	--	--	--	35	46	63	74	73	77	64
12		--	--	--	33	35	51	64	75	72	73	63
13		--	--	--	34	34	50	64	75	72	75	62
14		--	--	--	--	33	54	62	76	73	75	64
15		--	--	--	35	36	55	62	75	--	74	63
16		--	--	32	36	41	62	64	79	--	--	65
17		--	--	--	32	41	64	64	78	70	71	65
18		--	--	--	--	34	62	--	81	68	71	70
19		--	32	--	35	35	63	65	78	69	67	--
20		--	--	--	--	39	61	62	77	70	65	69
21		40	--	--	--	38	63	60	76	74	75	66
22		--	--	--	--	39	70	60	77	75	76	65
23		--	--	--	35	41	73	74	75	76	77	66
24	48	--	--	--	--	45	63	63	79	70	76	66
25		--	--	--	34	48	59	61	77	68	73	65
26		--	--	--	--	42	59	60	--	71	74	65
27		--	--	--	34	41	60	64	--	69	73	64
28		--	--	--	34	41	58	62	--	70	72	55
29		--	--	--	--	41	57	61	75	76	69	65
30		--	--	--	--	41	50	62	68	78	71	62
31		--	--	32	--	47	--	63	--	76	73	--
Average		--	--	--	--	39	56	61	73	--	73	67

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

WHITE ROCK CREEK NORTHWEST OF LOVEWELL, KANS.--Continued

Suspended sediment, February to September 1950

Day	January			February			March		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				--	--	--	6	52	(t)
2-----				--	--	--	6	62	1
3-----				--	--	--	5.8	99	
4-----				--	--	--	5.5	105	
5-----				--	--	--	5.5	117	2
6-----				--	--	--	6.4	107	
7-----				--	--	--	7	106	
8-----				--	--	--	6	110	
9-----				--	--	--	5	109	1
10-----				4	108	1	4	130	
11-----				4	99	1	3	226	2
12-----				5	73	(t)	4	110	
13-----				5	77	1	5	81	1
14-----				5	70	(t)	5.5	77	
15-----				4	87	(t)	6.6	77	
16-----				3	98	(t)	6.9	73	2
17-----				3	142	1	6.4	94	
18-----				3	81		5.5	196	3
19-----				4	20		4.8	82	1
20-----				4	24		4.8	69	(t)
21-----				4	39		5.3	68	(t)
22-----				4	37		6.0	40	(t)
23-----				4	23	(t)	6.4	54	(t)
24-----				4	18		6.4	78	1
25-----				4	21		5.5	77	1
26-----				5	23		5.5	59	(t)
27-----				5	31		5.7	59	
28-----				6	51		5.7	60	
29-----				--	--	--	4.8	52	
30-----				--	--	--	3.7	20	
31-----				--	--	--	3.4	20	
Total-----				80	--	12	168.1	--	39

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.1	37	(t)	2.3			56	1,530	s 248
2-----	3.1	48	(t)	2.5			33	890	79
3-----	3.3	49	(t)	2.4			21	346	20
4-----	4.0			2.3			13	290	10
5-----	4.3			46	9,370	s 1,380	8.9	282	7
6-----	3.8			53	3,560	s 748	8.0	302	6
7-----	3.3			48	5,450	707	6.6	278	5
8-----	3.1	119	1	16	3,250	140	6.6	237	4
9-----	3.3			21	--	e 180	5.8	271	4
10-----	3.7			14	2,260	s 111	4.8	261	3
11-----	3.7			4.4	400	5	4.1	232	3
12-----	3.6			3.4	--	e 4	4.0	252	3
13-----	2.8			4.1	--	e 13	3.6	244	2
14-----	2.5			4.6	--	e 22	3.3	228	2
15-----	2.5			2.9	--	e 12	3.1	207	2
16-----	2.7	101	(t)	2.4	--	e 8	2.9	198	2
17-----	2.9			1.1	--	e 4	2.7	228	2
18-----	3.4			.3	500	(t)	2.0	229	1
19-----	3.6			210	17,400	s 15,400	1.8	205	1
20-----	3.0			476	19,800	s 27,800	1.8	182	
21-----	2.9			130	14,400	5,050	1.8	183	
22-----	2.8			156	12,100	s 5,310	1.5	198	
23-----	2.6			38	6,800	s 787	1.4	184	
24-----	3.6			13	1,820	s 72	1.3	216	
25-----	2.8	68	(t)	4.9	890	12	1.1	202	(t)
26-----	2.5			3.0	780	6	.9	150	
27-----	2.2			2.7	360	3	.6	143	
28-----	2.0			2.3	280	2	.5	156	
29-----	2.2			710	18,400	s 43,200	.6	154	
30-----	2.3			1,700	9,740	s 43,700	.5	178	
31-----	--	--	--	201	5,470	s 3,090	--	--	--
Total-----	91.6	--	21	3,877.6	--	147,800	203.2	--	410

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

WHITE ROCK CREEK NORTHWEST OF LOVEWELL, KANS.--Continued

Suspended sediment, February to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.4			17	282	13	33	473	42
2-----	.4			14	242	9	21	345	20
3-----	1.2			11	254	8	17	292	13
4-----	2.1	--	(t)	9.4	262	7	14	240	9
5-----	2.5			8.4	264	6	12	229	7
6-----	1.2			8.0	270	6	11	179	5
7-----	1.4			8.0	186	4	10	183	5
8-----	19		e 4	8.4	181	4	9.7	181	5
9-----	2,210	10,400	63,900	8.2	249	6	9.2	190	5
10-----	16,700	6,120	s 284,900	7.1	234	4	8.9	159	4
11-----	3,090	4,140	s 33,900	54	1,570	s 370	11	139	4
12-----	253	5,620	s 3,800	1,970	9,300	s 42,200	10	143	4
13-----	201	2,750	1,490	1,740	5,160	s 24,400	8.4	197	4
14-----	189	1,130	377	606	11,900	18,500	8.7	214	5
15-----	185	830	414	428	--	e 8,900	8.7	172	4
16-----	181	650	318	259	--	e 4,800	8.9	154	4
17-----	1,000	8,520	s 30,800	110	6,950	2,060	8.9	140	3
18-----	1,650	6,220	27,700	52	2,400	s 406	8.7	184	4
19-----	1,010	6,920	s 18,600	31	716	60	10	--	e 22
20-----	173	6,860	s 3,300	26	568	40	810	12,000	26,200
21-----	130	4,700	1,650	22	304	18	1,140	9,580	s 30,800
22-----	104	1,850	519	18	299	14	244	8,370	5,510
23-----	112	2,380	s 787	18	255	12	100	6,190	s 1,720
24-----	229	8,820	s 6,380	14	258	9	62	2,280	382
25-----	503	10,400	s 16,600	12	266	9	44	700	83
26-----	334	4,840	s 4,430	12	260	8	35	405	38
27-----	210	5,790	s 3,230	58	2,040	319	31	300	25
28-----	76	4,650	954	338	7,900	s 7,390	340	6,600	s 15,600
29-----	47	2,140	272	175	5,020	s 2,470	1,010	12,200	s 34,300
30-----	34	650	60	64	2,860	494	485	12,400	s 17,200
31-----	25	408	28	39	1,080	114	--	--	--
Total-	28,674.2	--	503,800	6,145.5	--	113,700	4,530.1	--	132,000

Total discharge for period Feb. 10 to Sept. 30 (second-foot-days) 43,770.3

Total load for period Feb. 10 to Sept. 30 (tons) 897,800

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

Periodic determinations of suspended-sediment discharge, October 1949 to January 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
Oct. 10, 1949.....	2,280	6,830	42,000
Oct. 24.....	3.6	126	1.2
Nov. 7.....	3.4	97	.9
Nov. 21.....	1.0	146	.4
Nov. 28.....	4.4	56	.7
Dec. 6.....	4.4	37	.4
Dec. 19.....	6.2	94	1.6
Jan. 16, 1950.....	3.3	165	1.5
Jan. 31.....	2.1	133	.8

KANSAS RIVER BASIN--Continued
WHITE ROCK CREEK NORTHWEST OF LOVEWELL, KANS.--Continued

Particle-size analyses of suspended sediment, May to September, 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
May 5, 1950	7:00 a. m.	130	11,900	9,650	--	54	--	--	88	--	100	--	--	--	--	SPWCM
May 5	1:00 p. m.	49	12,000	9,350	--	54	--	--	87	--	100	--	--	--	--	SPWCM
May 6	4:00 p. m.	130	5,600	4,970	--	73	--	--	100	--	--	--	--	--	--	SPWCM
May 6	10:00 a. m.	45	3,540	4,680	--	73	--	--	100	--	--	--	--	--	--	SPWCM
May 8	8:00 a. m.	17	3,720	3,120	--	87	--	--	99	--	100	--	--	--	--	SPWCM
May 19	12:00 m.	98	29,000	6,220	--	61	--	--	90	--	100	--	--	--	--	SPWCM
May 19	6:00 p. m.	509	27,900	5,560	--	62	--	--	91	--	100	--	--	--	--	SPWCM
May 19	8:05 p. m.	672	26,000	10,300	41	59	73	89	98	100	--	--	--	--	--	SPWCM
May 19	8:05 p. m.	672	26,000	7,080	4	6	42	89	100	--	--	--	--	--	--	SPN
May 20	12:01 a. m.	882	30,300	10,900	--	50	--	--	85	--	99	100	--	--	--	SPWCM
May 20	5:05 a. m.	720	20,200	7,170	46	60	76	89	98	100	--	--	--	--	--	SPWCM
May 20	5:05 a. m.	720	20,200	10,700	2	6	58	81	98	100	--	--	--	--	--	SPN
May 20	12:00 m.	328	16,900	7,130	--	61	--	--	87	--	100	--	--	--	--	SPWCM
May 21	8:00 a. m.	89	12,600	10,200	--	71	--	--	97	--	100	--	--	--	--	SPWCM
May 21	8:00 p. m.	281	16,200	6,560	--	62	--	--	88	--	100	--	--	--	--	SPWCM
May 22	7:00 a. m.	181	12,800	10,500	--	63	--	--	91	--	100	--	--	--	--	SPWCM
May 23	7:30 a. m.	462	19,000	7,250	--	55	--	--	77	--	100	--	--	--	--	SPWCM
May 23	11:30 a. m.	846	26,800	11,200	--	45	--	--	78	--	100	--	--	--	--	SPWCM
May 23	1:010	1,010	31,400	6,500	--	47	--	--	74	--	100	--	--	--	--	SPWCM
May 23	5:30 p. m.	1,260	24,400	10,200	--	40	--	--	72	--	100	--	--	--	--	SPWCM
May 30	12:50 a. m.	1,500	18,800	6,850	44	55	67	79	94	100	--	--	--	--	--	SPWCM
May 30	12:50 a. m.	1,500	18,800	6,630	1	6	53	79	94	100	--	--	--	--	--	SPN
May 30	3:40 p. m.	1,940	7,300	5,800	--	76	--	--	92	--	100	--	--	--	--	SPWCM
May 31	8:00 a. m.	154	13,800	11,400	--	57	--	--	88	--	100	--	--	--	--	SPWCM
July 9	4:05 p. m.	2,580	10,400	6,770	--	75	--	--	97	--	100	--	--	--	--	SPWCM
July 9	5:00 p. m.	3,280	10,200	6,300	70	83	90	97	99	100	--	--	--	--	--	SPWCM
July 9	5:00 p. m.	3,280	10,200	6,100	7	14	80	97	100	--	--	--	--	--	--	SPN
July 9	8:10 p. m.	5,020	8,970	8,530	53	71	87	96	100	--	--	--	--	--	--	SPWCM
July 9	8:10 p. m.	5,020	8,970	8,780	2	12	74	94	100	--	--	--	--	--	--	SPN
July 11	7:30 a. m.	6,180	3,780	3,880	78	89	95	98	100	--	--	--	--	--	--	SPWCM

July 11	7:30 a.m.	6,180	3,780	3,460	13	57	91	97	100	--	--	SPN
July 11	10:50 a.m.	5,280	3,380	7,630	--	84	--	99	--	100	--	SPWCM
July 17	7:10 p.m.	1,590	9,600	9,060	--	56	--	89	--	100	--	SPWCM
July 17	10:10 p.m.	1,650	7,780	4,940	--	70	--	91	--	100	--	SPWCM
July 18	7:30 a.m.	1,770	5,410	4,370	--	80	--	94	--	100	--	SPWCM
July 19	6:00 p.m.	348	7,080	5,780	--	74	--	96	--	100	--	SPWCM
July 24	4:00 p.m.	227	12,800	9,630	--	65	--	95	--	100	--	SPWCM
July 25	2:15 p.m.	972	14,600	11,100	--	52	--	81	--	100	--	SPWCM
July 25	8:00 p.m.	576	7,990	5,820	--	67	--	91	--	100	--	SPWCM
July 26	2:00 p.m.	338	3,180	2,420	--	59	--	84	--	100	--	SPWCM
July 26	4:00 p.m.	368	3,660	2,730	--	65	--	87	--	100	--	SPWCM
Aug. 11	7:30 p.m.	1,136	3,360	1,760	--	55	--	73	--	100	--	SPWCM
Aug. 12	6:00 a.m.	1,740	7,720	5,560	--	71	--	88	--	100	--	SPWCM
Aug. 12	3:10 p.m.	2,890	7,820	6,360	--	78	--	97	--	100	--	SPWCM
Aug. 13	8:00 a.m.	1,770	5,640	4,110	--	79	--	98	--	100	--	SPWCM
Aug. 14	11:00 a.m.	688	14,700	9,960	--	50	--	80	--	100	--	SPWCM
Aug. 15	8:00 a.m.	378	5,360	3,830	--	70	--	88	--	100	--	SPWCM
Aug. 28	2:30 p.m.	358	6,900	4,770	--	70	--	89	--	100	--	SPWCM
Aug. 28	6:00 p.m.	473	11,200	8,260	--	62	--	84	--	100	--	SPWCM
Sept. 20	11:00 a.m.	1,220	9,360	6,570	--	62	--	82	--	100	--	SPWCM
Sept. 20	3:00 p.m.	1,040	10,200	6,650	--	66	--	86	--	100	--	SPWCM
Sept. 20	5:30 p.m.	1,080	10,800	6,910	--	57	--	78	--	100	--	SPWCM
Sept. 20	7:00 p.m.	1,100	15,400	6,190	--	60	--	82	--	100	--	SPWCM
Sept. 20	9:00 p.m.	1,160	15,000	8,420	--	57	--	83	--	100	--	SPWCM
Sept. 20	10:50 p.m.	1,200	14,100	9,260	--	60	--	87	--	100	--	SPWCM
Sept. 21	1:00 a.m.	1,240	12,000	7,400	--	65	--	85	--	100	--	SPWCM
Sept. 21	2:35 a.m.	1,280	9,660	4,500	58	65	75	83	94	100	--	SPWCM
Sept. 21	2:35 a.m.	1,280	9,660	4,410	8	25	62	78	94	100	--	SPWCM
Sept. 21	4:20 a.m.	1,300	8,640	6,200	--	66	--	84	--	100	--	SPWCM
Sept. 21	11:00 a.m.	1,380	10,200	7,280	--	66	--	87	--	100	--	SPWCM

KANSAS RIVER BASIN--Continued

WHITE ROCK CREEK NORTHWEST OF LOVEWELL, KANS.--Continued

Particle-size analyses of suspended sediment, May to September 1950.--Continued

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Sept. 21, 1950	3:00 p.m.	1,220	8,560	5,980	--	70	--	90	--	100	--	--	--	--	--	SP, WCM
Sept. 28	6:00 p.m.	900	25,800	8,010	--	51	--	71	--	99	--	--	--	--	--	SP, WCM
Sept. 28	8:00 p.m.	1,260	15,600	4,960	--	62	--	80	--	100	--	--	--	--	--	SP, WCM
Sept. 28	10:00 p.m.	1,330	14,200	8,840	--	56	--	80	--	100	--	--	--	--	--	SP, WCM
Sept. 29	12:50 a.m.	1,360	16,100	9,860	--	51	--	79	--	100	--	--	--	--	--	SP, WCM
Sept. 29	1:15 a.m.	1,360	17,400	9,090	41	50	67	80	94	100	--	--	--	--	--	SP, WCM
Sept. 29	1:15 a.m.	1,360	17,400	9,410	1	4	42	75	95	99	100	--	--	--	--	SPN
Sept. 29	3:45 a.m.	1,260	13,800	9,510	--	57	--	85	--	100	--	--	--	--	--	SP, WCM
Sept. 29	6:00 a.m.	1,030	11,000	7,020	--	64	--	86	--	100	--	--	--	--	--	SP, WCM
Sept. 29	3:30 p.m.	828	11,200	8,330	--	60	--	83	--	100	--	--	--	--	--	SP, WCM
Sept. 29	10:00 p.m.	1,030	14,000	10,100	--	51	--	76	--	100	--	--	--	--	--	SP, WCM

KANSAS RIVER BASIN--Continued
SMOKY HILL RIVER NEAR ELLIS, KANS.

LOCATION --At gaging station at county bridge, 1½ miles south of Ellis, Ellis County.
DRAINAGE AREA 650 square miles.
RECORDS AVAILABLE --Sediment records: March 1947 to September 1950.
EXTREMES 1949-50 --Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.
Sediment loads: Maximum daily 207,000 tons July 31; minimum daily, not determined.
EXTREMES 1947-50 --Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.
Sediment loads: Maximum daily 207,000 tons July 31, 1950; minimum daily, less than 1 ton on many days 1947-49.
REMARKS --Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, July to August 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- di- um
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate	
July 13, 1950	1,410	7.6	709	17	0.02	113	12	22	11	142	243	4.0	0.6	2.7	0.30	504	0.69	322	44	331	215	13
July 26,	5,040	7.8	482	17	.02	78	5.7	11	118	133	133	5	4	5.9		322	.44		218	121	10	
Aug. 14,	8,960	7.6	315	17	.02	53	1.0	14	145	145	39	2.5	.3	3.9		208	.28		136	17	19	

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

SMOKY HILL RIVER NEAR ELLIS, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	20	142	8	40	105	11	33		
2-----	41	88	10	40	96	10	33		
3-----	50	83	11	40	86	9	33		
4-----	44	83	10	38			33		
5-----	43	84	10	37			33	62	5
6-----	37	83	8	37			33		
7-----	35	74	7	37	71	7	33		
8-----	37	78	8	36			32		
9-----	53	--	e 95	36			23		
10-----	112	1,400	423	35			27		
11-----	166	1,290	578	35	125	*12	41	75	8
12-----	166	1,010	453	35	115	11	25	82	6
13-----	140	944	307	35	98	9	22	83	5
14-----	102	925	255	34	95	9	22	82	5
15-----	76	--	e 130	34	88	8	22	82	5
16-----	76	293	60	34			24	81	5
17-----	72	307	60	33			26	80	6
18-----	68	310	57	33			28	80	6
19-----	66	305	54	33			32	79	7
20-----	63	--	e 46	33			35	90	8
21-----	54	206	30	34			38	--	e 12
22-----	51	179	25	34	74	7	40	--	e 15
23-----	48	184	24	34			43	--	e 20
24-----	47	188	24	34			45	--	e 24
25-----	45	--	e 15	34			44	--	e 26
26-----	43	71	8	33			40	--	e 28
27-----	40	87	9	33			40	--	e 30
28-----	40	72	8	32	68	6	40	304	33
29-----	40	78	8	29	65	5	40	298	32
30-----	40	140	15	32	64	5	44	185	22
31-----	40	159	17	--	--	--	45	270	33
Total--	1,955	--	2,820	1,044	--	228	1,049	--	386
Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	50	--	e 24	25			40	164	18
2-----	52	42	6	25			35	154	14
3-----	45	41	5	25			32	--	e 12
4-----	40			30	34	3	47	--	
5-----	35			35			40	130	
6-----	30			40			37	--	
7-----	25			45	--	e 12	37	141	
8-----	25	--	e 4	50	--	e 30	25	--	
9-----	25			60	311	50	28	175	e 14
10-----	25			68	315	58	36	143	
11-----	25			65	308	54	35	--	
12-----	25			68	171	31	30	--	
13-----	25	102	7	66	121	22	25	170	11
14-----	25	--	e 12	65	175	31	20	175	9
15-----	25	--	e 19	65	168	20	20	175	9
16-----	25	--	e 26	50	160	23	15	--	e 6
17-----	25	--	e 34	63	--	e 36	15	--	e 6
18-----	25	565	38	51	295	41	20	121	6
19-----	20	551	30	45	--	e 32	21	116	7
20-----	20	--	e 30	44	249	30	26	117	8
21-----	20	--	e 28	43	--	e 28	25	153	10
22-----	25	505	34	33	--	e 22	37	--	e 16
23-----	30	--	e 38	43	--	e 26	36	133	13
24-----	35	--	e 40	43	223	26	35	80	8
25-----	35	--	e 36	41	224	25	34	75	7
26-----	34	--	e 32	38	227	23	32	66	6
27-----	24	--	e 19	40	227	24	32	63	5
28-----	25	--	e 16	40	--	e 20	29	47	4
29-----	25	--	e 13	--	--	--	28	47	4
30-----	25	--	e 10	--	--	--	27	45	3
31-----	25	--	e 7	--	--	--	26	44	3
Total--	895	--	540	1,306	--	691	925	--	311

e Estimated.

KANSAS RIVER BASIN--Continued

SMOKY HILL RIVER NEAR ELLIS, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	26			21	--	e 4	74	1,200	240
2-----	24			21	--	e 5	53	699	100
3-----	21			21	--	e 6	44	571	68
4-----	21			21	--	e 15	38	328	34
5-----	21			32	--	e 85	36	313	30
6-----	21			44	--	e 120	33	244	22
7-----	21			26	337	24	26	152	11
8-----	20			27	260	19	21	126	7
9-----	20			438	5,860	s 11,100	20	110	6
10-----	18			391	4,420	s 5,180	18	134	6
11-----	18			166	1,350	605	16	137	6
12-----	18			102	415	114	14	132	5
13-----	18			78	330	69	12	100	3
14-----	18			70	433	82	11	66	2
15-----	21			66	410	73	10	67	2
16-----	21			51	260	36	10	75	2
17-----	22			45	220	27	14	83	3
18-----	22			43	210	24	35	--	e 1,200
19-----	22			41	224	25	56	9,800	s 1,580
20-----	22			43	240	28	44	2,000	238
21-----	22			40	153	17	35	403	38
22-----	23			36	109	11	28	304	23
23-----	23			33	102	9	25	296	20
24-----	23			28	111	8	21	290	16
25-----	22			24	108	7	15	242	10
26-----	22			25	103	7	11	139	4
27-----	22			26	98	7	8	77	2
28-----	21			25	96	6	10	121	3
29-----	21			188	--	e 3,000	10	1,430	39
30-----	21			202	--	e 2,200	24	--	e 1,300
31-----	--	--	--	115	3,500	1,090	--	--	--
Total--	635	--	136	2,487	--	23,980	772	--	5,020
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	21	--	e 750	2,900	3,200	s 27,200	494	820	1,090
2-----	8	--	e 26	2,320	4,080	25,600	415	570	639
3-----	4	240	3	1,850	3,050	s 15,600	327	402	355
4-----	31	7,460	s 1,290	1,240	2,100	7,030	257	407	282
5-----	105	12,200	3,460	900	1,860	4,520	237	381	244
6-----	441	13,000	s 16,200	693	2,240	s 4,280	213	390	224
7-----	300	3,740	3,030	2,430	4,480	s 39,800	187	388	196
8-----	370	5,050	5,040	3,920	4,230	s 48,600	183	345	152
9-----	261	2,980	2,100	3,240	3,230	s 29,300	160	325	140
10-----	210	1,410	799	1,800	2,520	s 12,700	146	308	121
11-----	160	1,080	468	1,560	2,270	s 9,880	143	290	112
12-----	139	1,120	s 550	3,480	4,920	s 47,300	140	273	103
13-----	857	6,210	s 19,100	8,020	5,830	s 130,000	137	265	98
14-----	712	3,320	6,380	7,580	4,430	90,700	137	275	102
15-----	380	2,530	2,600	4,720	3,680	46,900	134	320	116
16-----	187	1,430	722	2,630	2,610	s 19,100	130	368	129
17-----	97	728	191	1,450	1,910	7,480	128	412	142
18-----	65	463	81	998	1,500	4,040	127	421	144
19-----	54	461	67	766	930	1,920	124	442	148
20-----	34	332	30	660	742	1,300	120	429	139
21-----	61	--	e 420	544	708	1,040	115	398	124
22-----	555	6,090	s 11,600	484	520	680	115	335	104
23-----	278	1,680	s 1,380	420	452	512	107	236	68
24-----	156	700	295	365	421	415	102	250	89
25-----	1,750	5,940	s 51,400	309	410	342	100	269	73
26-----	2,900	4,520	s 42,500	395	880	938	99	290	78
27-----	2,600	4,670	s 41,600	638	--	e 1,600	97	298	78
28-----	2,760	4,550	s 36,300	2,540	--	e 42,000	99	252	67
29-----	1,540	2,430	10,100	2,210	2,580	s 20,200	99	269	72
30-----	1,340	--	e 28,000	960	1,820	4,720	94	280	71
31-----	8,960	8,680	s 207,000	726	1,460	2,860	--	--	--
Total--	27,336	--	493,500	62,738	--	848,600	4,946	--	5,480
Total discharge for year (second-foot-days)									106,088
Total load for year (tons)									1,180,000

e Estimated.

s Computed by subdividing day.

KANSAS RIVER BASIN--Continued

SMOKY HILL RIVER NEAR ELLIS, KANS.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000
Oct. 10, 1949	9:30 a.m.	97	1,360	814	37	58	74	84	92	96	97	100	--	--	BW
Oct. 11	10:45 a.m.	186	1,320	902	41	58	74	82	90	96	98	100	--	--	BW
Oct. 11	1:30 p.m.	170	1,092	700	44	68	84	90	96	99	100	--	--	--	BW
Oct. 12	1:30 p.m.	140	944	503	41	68	86	90	96	98	98	100	--	--	BW
Oct. 14	1:30 p.m.	105	935	503	48	69	89	94	98	98	98	100	--	--	BW
Mar. 1, 1950	11:50 a.m.	41	162	362	16	47	65	81	88	94	97	98	--	--	BW
May 9	10:30 a.m.	89	11,000	7,630	--	55	--	79	--	100	--	--	--	--	SPWCM
May 9	3:30 p.m.	808	9,910	6,240	--	67	--	89	--	99	--	--	--	--	SPWCM
May 9	7:38	738	8,060	5,340	50	73	86	91	93	99	--	--	--	--	SPWCM
May 9	12:00 m.	738	8,060	5,580	4	6	44	90	97	99	--	--	--	--	SPN
May 10	7:00 a.m.	472	5,030	3,260	--	70	--	98	--	100	--	--	--	--	SPWCM
May 31	1:45 p.m.	105	4,500	6,320	--	76	--	96	--	98	--	--	--	--	SPWCM
June 19	6:30 a.m.	63	14,900	10,600	--	82	--	99	--	100	--	--	--	--	SPWCM
June 30	2:50 p.m.	28	22,000	7,010	54	81	94	96	98	98	100	--	--	--	SPWCM
June 30	4:50 p.m.	28	22,000	6,780	2	4	9	92	96	96	98	98	100	--	BN
July 4	9:45 p.m.	94	24,400	8,960	--	84	--	99	--	100	--	--	--	--	SPWCM
July 4	10:45 p.m.	109	27,000	8,720	56	74	93	98	99	--	--	--	--	--	BWCM
July 5	3:35 a.m.	97	18,100	3,680	--	89	--	94	--	95	--	--	--	--	SPWCM
July 6	6:25 a.m.	609	21,200	7,640	--	78	--	94	--	100	--	--	--	--	SPWCM
July 13	10:40 a.m.	787	12,800	9,460	--	74	--	95	--	99	--	--	--	--	SPWCM
July 13	11:40 a.m.	930	14,100	8,450	--	77	--	96	--	99	--	--	--	--	SPWCM
July 13	3:45 p.m.	1,450	10,900	9,290	35	56	74	82	90	94	96	98	100	--	BWCM
July 13	3:45 p.m.	1,450	10,900	9,740	1	4	9	94	94	96	96	98	98	--	BN
July 22	9:30	930	9,140	6,530	--	80	--	98	--	99	--	--	--	--	SPWCM
July 22	5:20 p.m.	700	5,760	3,720	--	81	--	96	--	99	--	--	--	--	SPWCM
July 25	7:00 p.m.	4,100	11,100	7,890	--	72	--	88	--	98	--	--	--	--	SPWCM
July 25	10:00 p.m.	5,400	11,400	9,870	55	75	87	91	95	98	98	98	99	100	SPWCM
July 25	10:00 p.m.	5,400	11,400	9,710	4	6	30	88	91	97	98	98	100	--	SPN
July 25	11:50 p.m.	5,780	10,600	7,900	--	70	--	91	--	96	96	97	99	--	SPWCM
July 26	4:10 a.m.	4,180	6,620	9,340	--	75	--	98	--	98	98	98	99	100	SPWCM

July 27	7:30 p.m.	4,690	8,900	7,750	--	71	--	89	--	98	--	--	SPWCM
July 28	6:25 a.m.	3,030	5,460	3,520	--	68	--	86	--	93	--	--	SPWCM
July 29	7:30 a.m.	1,690	2,480	1,730	52	63	72	81	88	92	95	98	BWCM
July 30	6:55 a.m.	8,730	9,200	6,090	--	71	--	86	97	98	100	--	SPWCM
July 31	12:05 p.m.	9,890	7,840	6,090	--	69	--	86	--	98	--	--	SPWCM
July 31	2:25 p.m.	10,600	8,440	4,570	--	62	--	80	--	91	92	95	100 SPWCM
July 31	5:30 p.m.	10,100	7,300	5,300	--	69	--	88	98	99	100	--	SPWCM
Aug. 2	4:00 p.m.	2,140	3,240	2,500	56	74	83	90	94	96	98	100	BWCM
Aug. 2	5:35 p.m.	2,200	3,430	2,510	--	--	79	82	86	90	92	95	BWCM
Aug. 7	6:30 p.m.	5,400	7,490	5,520	44	57	67	74	77	80	81	82	SPWCM
Aug. 7	6:30 p.m.	5,400	7,490	4,840	9	14	58	72	77	82	83	85	SPN
Aug. 7	9:45 p.m.	6,170	6,300	3,910	--	72	--	87	93	94	94	94	SPWCM
Aug. 8	8:00 a.m.	3,050	3,680	2,220	35	55	70	78	84	90	93	96	BWCM
Aug. 8	5:35 p.m.	4,350	4,820	3,470	--	73	--	89	--	95	--	--	SPWCM
Aug. 8	11:15 p.m.	4,690	4,270	2,970	57	70	78	84	90	95	98	99	BWCM
Aug. 10	3:00 p.m.	1,740	1,970	1,170	60	78	85	89	94	96	99	100	BWCM
Aug. 11	11:55 p.m.	2,960	4,820	3,810	--	68	--	85	--	94	--	--	SPWCM
Aug. 12	9:00 p.m.	3,620	4,540	2,880	62	76	86	92	--	--	--	--	SPWCM
Aug. 12	1:00 p.m.	3,400	4,060	2,620	58	68	80	85	88	92	94	98	BWCM
Aug. 13	12:45 p.m.	8,500	6,630	3,880	--	73	--	89	--	96	--	--	SPWCM
Aug. 13	1:30 p.m.	8,730	6,510	6,360	--	72	--	88	--	96	96	98	SPWCM
Aug. 13	4:55 p.m.	9,430	6,460	4,240	--	74	--	89	97	97	97	98	SPWCM
Aug. 13	6:25 p.m.	9,430	6,710	7,730	--	72	--	90	--	96	--	--	SPWCM
Aug. 13	8:15 p.m.	9,650	6,490	3,700	--	73	--	88	--	96	96	97	SPWCM
Aug. 14	11:15 a.m.	8,960	4,980	8,320	--	68	--	89	--	95	96	97	SPWCM
Aug. 14	1:05 p.m.	8,280	4,420	2,560	46	56	62	67	73	78	80	84	BWCM
Aug. 14	4:40 p.m.	7,620	4,120	6,250	--	71	--	90	--	97	98	99	SPWCM
Aug. 15	5:30 p.m.	4,520	3,640	2,290	62	62	66	70	75	78	83	90	BWCM
Aug. 16	5:30 p.m.	2,140	2,380	1,330	37	43	52	60	70	81	88	100	BWCM
Aug. 28	6:00 p.m.	3,180	7,060	4,910	--	63	--	82	--	99	--	--	SPWCM
Aug. 29	9:40 a.m.	1,800	2,470	1,520	40	46	50	57	67	76	77	89	BWCM

KANSAS RIVER BASIN--Continued

SALINE RIVER NEAR RUSSELL, KANS.--Continued

Temperature (°F) of water, January to September 1946
 [Once-daily temperature measurement generally between 6 a.m. and 9 a.m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				--	32	44	60	60	60	70	70	--
2				--	32	38	55	50	54	72	71	--
3				--	34	45	54	50	55	68	72	--
4				--	34	42	45	51	62	71	72	--
5				--	45	36	55	58	61	72	70	--
6				--	32	36	52	55	68	67	68	--
7				--	32	39	56	50	65	70	72	--
8				--	32	33	55	55	67	78	73	--
9				--	32	38	48	57	--	72	70	--
10				--	32	35	49	56	--	73	67	--
11				--	32	38	45	42	69	71	68	66
12				--	36	48	49	48	68	70	67	67
13				--	32	50	50	54	64	70	66	68
14				--	32	52	50	58	--	71	69	65
15				--	32	50	52	56	70	72	71	65
16				--	34	50	48	60	71	77	73	64
17				--	32	42	52	57	71	75	74	62
18				--	40	41	55	58	70	70	72	65
19				--	39	42	60	57	65	72	71	61
20				--	42	44	56	60	56	68	--	58
21				--	40	48	57	54	64	68	--	60
22				38	40	47	60	59	71	71	--	68
23				34	38	45	60	65	70	70	--	50
24				34	38	48	55	58	71	70	--	53
25				35	41	52	59	54	66	70	--	60
26				32	42	48	58	55	69	--	--	66
27				32	34	48	59	68	70	70	--	67
28				33	39	52	60	55	70	77	--	67
29				32	--	56	55	59	67	74	--	52
30				31	--	52	58	61	72	73	--	54
31				31	--	56	--	61	--	73	--	--
Average				--	36	45	54	52	66	72	--	--

Temperature (°F) of water, water year October 1949 to September 1950
 [Once-daily temperature measurement generally between 7 a.m. and 9 a.m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	44	39		--	34	43	39	58	72	--	--
2	55	47	34		--	33	46	51	64	70	71	--
3	--	40	38	32	--	34	46	58	58	71	71	--
4	--	--	39		--	35	38	50	66	71	71	--
5	--	44	--		33	41	38	49	63	67	74	--
6	--	44	36		34	45	38	52	64	67	73	--
7	--	44	35		34	40	44	53	65	68	70	--
8	--	45	32		34	33	48	65	66	72	74	73
9	--	46	32		--	33	54	53	65	75	74	61
10	--	46	35		33	36	50	54	64	75	75	65
11	--	47	43		35	33	41	54	66	74	75	59
12	--	44	32		39	--	43	57	70	73	75	57
13	--	41	32		34	--	38	60	72	69	74	58
14	--	44	--		--	33	45	61	74	64	77	61
15	--	42	--		34	35	44	64	71	68	76	68
16	--	41	--		34	38	51	64	71	68	78	66
17	--	38	--		35	39	52	65	69	68	76	60
18	--	36	--		34	34	51	65	70	69	71	67
19	--	40	--		34	34	43	63	--	68	71	60
20	--	39	--		37	33	42	62	68	68	65	71
21	--	33	--		36	34	48	57	72	70	64	65
22	--	33	--		33	35	58	64	71	70	68	60
23	--	37	--		33	42	60	65	72	72	69	60
24	--	42	--		36	40	60	67	75	70	71	63
25	49	39	--		39	45	42	60	74	--	70	60
26	45	43	--		36	55	45	52	69	69	69	63
27	47	41	--		38	40	46	53	66	--	68	62
28	49	43	--		40	35	45	60	65	71	69	62
29	49	41	--		--	36	--	62	70	72	70	64
30	49	36	--		--	39	--	61	68	74	--	66
31	39	--	--		--	44	--	63	--	75	--	--
Average	--	41	36		35	38	46	58	68	70	72	63

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

SALINE RIVER NEAR RUSSELL, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	19	312	16	33			27		
2-----	22	278	16	32			27		
3-----	20	197	11	32			27		
4-----	17	144	7	32	30	3	27	16	1
5-----	15	122	5	32			27		
6-----	15	160	6	32			27		
7-----	15	162	7	32			27		
8-----	15	121	5	31	45	4	27	75	6
9-----	74	--	e 600	31	51	4	26	46	3
10-----	1,060	6,440	s 21,500	31	40	3	30	40	3
11-----	113	1,670	s 575	31			29	35	3
12-----	84	745	169	29			26	67	5
13-----	62	490	82	29			24		
14-----	88	1,030	245	29			22		
15-----	84	1,270	288	29			22		
16-----	70	640	121	29	23	2	22	41	3
17-----	59	195	31	29			22		
18-----	52	146	20	29			22		
19-----	49	95	12	30			28		
20-----	46	--	e 11	29			25	31	2
21-----	44	67	8	30			22	16	
22-----	43	42	5	30			20	--	
23-----	43	46	5	30			20	--	
24-----	42	57	6	29			20	--	(t)
25-----	40	66	7	30			20	--	
26-----	39	70	7	31	15	1	20	--	
27-----	38	61	6	30			26	--	
28-----	36	37	4	30			20	--	
29-----	36	26	2	29			25	--	
30-----	36	19	2	28	--	--	25	25	e 2
31-----	35	28	3	--	--	--	25	64	4
Total-	2,411	--	23,780	908	--	63	751	--	64
Day	January			February			March		
	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day	Mean discharge (second-foot)	Mean concentration (ppm)	Tons per day
1-----	25	33	2	15	30	1	36	36	4
2-----	25	74	5	15	30	1	35		
3-----	25	30	2	15	29	1	35		
4-----	25			15	28	1	35		
5-----	25			20			32	66	6
6-----	25	--	e 1	20	29	2	32		
7-----	25			25			33		
8-----	20			35	48	4	32	72	6
9-----	20	15	(t)	101	--	e 380	35	133	12
10-----	20			46	101	12	32	82	7
11-----	20			46	68	8	30	130	10
12-----	20			63	202	34	45	--	e 14
13-----	20	--	e 2	66	309	55	48	--	e 12
14-----	20			88	--	e 48	38		
15-----	20			51	101	14	40		
16-----	20			48	116	15	36		
17-----	20	76	4	49	84	11	34		
18-----	20			51	104	14	34	50	5
19-----	20			46	76	9	49	64	8
20-----	20	--	e 3	44	48	6	33	54	5
21-----	20			43	43	5	32		
22-----	20	44	2	55	122	s 22	29	55	5
23-----	20	42	2	40	38	4	28		
24-----	15	41	2	38	34	4	28		
25-----	15			37			28	91	7
26-----	15			37			28		
27-----	15			36	33	3	26		
28-----	15	--	e 1	36			25	157	11
29-----	15			--	--	--	24		
30-----	15			--	--	--	24	31	2
31-----	15			--	--	--	23		
Total-	615	--	57	1,181	--	669	1,019	--	213

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

SALINE RIVER NEAR RUSSELL, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	22			20	21	1	45	118	14
2-----	23			20	22	1	44	120	14
3-----	22			19	48	2	43	128	15
4-----	22			20	89	5	42	139	16
5-----	21			35	--	e 240	39	143	15
6-----	20			61	4,990	s 962	38	134	14
7-----	22			29	865	68	36	137	13
8-----	20			32	465	40	33	137	14
9-----	20			1,740	9,650	s 63,200	37	--	e 22
10-----	19			1,830	6,920	s 36,000	27	168	12
11-----	19			317	4,220	s 3,900	28	158	12
12-----	19			178	1,500	721	26	137	11
13-----	19			164	--	e 750	25	137	10
14-----	18			144	1,680	653	25	171	12
15-----	18			123	980	325	24	195	13
16-----	19			98	395	104	22	163	10
17-----	22			84	277	63	22	160	10
18-----	23			75	213	43	22	153	9
19-----	22			66	138	24	24	152	10
20-----	22			63	100	17	27	150	11
21-----	21			79	--	e 60	28	280	s 23
22-----	19			143	3,240	s 1,310	21	227	13
23-----	18			74	750	150	19	209	11
24-----	18			58	382	60	18	197	10
25-----	18			51	213	29	18	183	9
26-----	18			51	235	32	17	178	8
27-----	18			49	200	26	15	214	9
28-----	18			47	174	22	62	--	e 900
29-----	20			103	3,630	s 1,300	337	7,890	s 11,600
30-----	19			56	285	43	190	4,110	s 2,380
31-----	--	--	--	48	146	19	--	--	--
Total-	599	--	50	5,877	--	110,200	1,354	--	15,220
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	87	1,220	286	516	1,800	2,510	485	--	e 1,300
2-----	56	428	87	411	1,060	1,180	426	--	e 1,000
3-----	48	212	26	325	770	676	345	--	e 550
4-----	222	7,180	s 6,990	293	650	514	295	--	e 360
5-----	729	11,000	s 22,300	260	400	281	257	--	e 250
6-----	217	6,200	s 3,770	244	370	244	230	--	e 180
7-----	108	2,280	665	328	1,780	s 1,760	210	--	e 150
8-----	102	1,080	s 307	1,550	4,980	s 24,800	200	259	140
9-----	142	1,880	721	5,160	5,220	s 73,000	195	276	145
10-----	101	1,060	289	2,750	3,720	s 27,100	192	193	100
11-----	85	510	117	1,510	4,050	16,500	178	188	90
12-----	76	415	85	1,390	3,840	s 14,900	166	202	90
13-----	74	435	87	4,100	5,090	s 55,100	159	148	64
14-----	61	222	36	4,200	3,680	s 42,100	152	139	57
15-----	124	--	e 1,100	2,980	2,870	23,100	155	128	54
16-----	1,460	8,410	s 35,400	2,350	3,680	23,300	155	141	59
17-----	339	4,570	s 4,630	1,230	3,520	11,700	148	153	61
18-----	174	4,020	s 2,120	782	2,700	5,700	144	172	67
19-----	1,320	7,960	s 29,800	612	1,560	2,580	136	226	83
20-----	1,260	7,100	24,200	500	1,020	1,380	130	256	90
21-----	365	5,060	s 5,170	440	730	867	123	228	76
22-----	244	1,980	s 1,340	396	580	620	118	185	59
23-----	155	940	393	356	530	509	113	150	46
24-----	122	440	145	328	455	403	108	172	50
25-----	378	--	e 6,500	382	--	e 2,400	106	160	46
26-----	4,370	7,520	s 103,000	376	2,810	s 2,990	110	174	52
27-----	6,950	5,080	s 102,600	980	--	e 52,000	108	168	49
28-----	1,570	3,740	s 16,400	926	3,940	s 10,300	107	200	58
29-----	728	2,150	4,230	1,260	--	e 20,000	104	156	44
30-----	532	1,270	1,820	1,340	--	e 16,000	102	224	62
31-----	628	1,620	s 2,760	677	--	e 3,500	--	--	--
Total-	22,627	--	377,400	38,952	--	438,000	5,457	--	5,400

Total discharge for year (second-foot-days).....

77,951

Total load for year (tons).....

971,100

e Estimated.

s Computed by subdividing day.

KANSAS RIVER BASIN--Continued
SALINE RIVER NEAR RUSSELL, KANS.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)		Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
			0.002	0.004		0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949	7:25 a.m.	2,130	7,080	3,990	30	48	64	76	89	94	96	99			BW
Oct. 10	10:55 a.m.	1,070	6,800	3,740	38	57	72	81	91	94	96	98		99	BW
Oct. 10	1:00 p.m.	764	6,680	4,600	36	54	72	78	86	89	94	95		97	BW
Oct. 10	9:15 p.m.	252	3,720	2,690	41	61	78	85	95	97	98	99		100	BW
Oct. 11	7:35 a.m.	130	2,020	1,340	52	71	83	88	92	93	94	95		96	BW
Oct. 12	7:40 a.m.	104	816	487	58	76	88	92	94	96	97	98		99	BW
May 6, 1950	7:05 a.m.	75	6,400	2,970	--	78	--	94	--	99	--	--		--	PWCM
May 9	11:15 a.m.	1,540	31,700	5,220	35	55	--	77	--	94	--	--		--	PWCM
May 9	2:00 p.m.	2,850	14,800	5,820	65	82	--	82	--	89	--	--		--	PWCM
May 9	3:15 p.m.	3,250	12,700	6,220	82	90	--	84	--	90	--	--		--	PWCM
May 9	7:00 p.m.	3,430	11,200	8,590	--	75	--	92	--	97	--	--		--	PWCM
May 9	7:40 p.m.	3,430	11,200	8,370	--	73	--	94	--	100	--	--		--	PN
May 10	2:20 a.m.	4,000	8,730	4,980	--	74	--	89	--	94	--	--		--	PWCM
May 10	4:05 a.m.	4,100	7,470	7,140	52	72	82	87	90	92	--	--		--	PWCM
May 10	4:05 a.m.	4,100	7,470	6,910	5	9	61	91	95	97	--	--		--	PN
May 10	6:55 a.m.	3,250	6,430	3,980	--	73	--	89	--	96	--	--		--	PWCM
May 10	1:20 p.m.	856	6,500	5,010	--	68	--	85	--	94	--	--		--	PWCM
May 11	6:40 p.m.	244	2,790	6,010	--	77	--	96	--	98	--	--		--	PWCM
May 29	11:00 a.m.	142	8,110	10,500	--	70	--	93	--	100	--	--		--	PWCM
May 29	5:35 p.m.	102	4,100	4,820	--	82	--	94	--	98	--	--		--	PWCM
June 29	1:55 p.m.	677	19,600	12,400	--	64	--	90	--	99	--	--		--	PWCM
June 29	6:20 p.m.	470	9,350	6,800	--	72	--	92	--	99	--	--		--	PWCM
June 29	9:05 p.m.	455	9,280	9,160	--	71	--	93	--	98	--	--		--	PWCM
June 30	7:50 p.m.	127	2,420	5,150	--	83	--	97	--	99	--	--		--	PWCM
July 4	5:00 p.m.	398	15,400	6,970	3	31	95	99	100	--	--	--		--	??
July 4	5:00 p.m.	328	15,400	7,200	56	72	87	95	98	99	--	--		--	PWCM
July 4	5:20 p.m.	270	15,400	8,850	--	74	--	95	--	98	--	--		--	PWCM
July 5	5:30 a.m.	564	9,810	5,670	--	70	--	93	--	98	--	--		--	PWCM
July 7	1:04 p.m.	1,910	1,910	1,640	62	78	88	92	94	96	97	99		100	BWCM
July 16	7:15 a.m.	1,860	15,800	10,400	--	60	--	80	--	98	--	--		--	PWCM

July 16	11:45 a.m.	2,000	8,640	3,950	--	76	--	89	--	96	--	--	--	PWCM
July 16	7:00 p.m.	2,900	6,440	5,247	--	76	--	90	--	98	--	--	--	PWCM
July 19	7:30 a.m.	2,650	6,270	4,240	--	61	--	77	--	96	--	--	--	PWCM
July 19	5:30 p.m.	2,150	9,100	6,100	--	71	--	90	--	98	--	--	--	PWCM
July 20	12:30 p.m.	1,280	6,500	4,080	--	67	--	88	--	98	--	--	--	PWCM
July 22	12:50 p.m.	232	1,880	3,460	--	74	--	92	--	99	--	--	--	PWCM
July 26	10:55 a.m.	1,230	13,000	7,460	--	61	--	82	--	98	--	--	--	PWCM
July 26	1:00 p.m.	1,510	12,000	5,900	--	69	--	84	--	98	--	--	--	SPWCM
July 26	10:35 p.m.	13,600	6,880	4,670	--	74	--	86	--	93	--	94	94	SPWCM
July 27	12:25 a.m.	12,500	6,020	4,940	--	80	--	91	--	96	--	--	--	PWCM
July 27	7:10 a.m.	8,400	4,960	3,120	--	81	--	92	--	97	--	--	--	PWCM
July 27	4:45 p.m.	5,000	4,200	2,830	--	67	--	81	--	99	--	--	--	PWCM
Aug. 1	7:10 a.m.	1,832	3,320	1,280	52	72	72	81	89	93	96	97	99	PWCM
Aug. 8	10:00 a.m.	1,450	6,320	4,310	--	64	--	82	--	98	--	--	--	PWCM
Aug. 8	4:35 p.m.	2,130	6,320	4,310	--	68	--	83	--	97	--	--	--	PWCM
Aug. 8	5:35 p.m.	2,200	5,550	3,730	--	73	--	89	--	98	--	--	--	PWCM
Aug. 8	6:50 p.m.	2,300	5,890	11,600	--	66	--	80	--	92	--	93	94	SPWCM
Aug. 9	10:00 a.m.	6,200	6,920	3,780	--	71	--	85	--	93	--	--	--	PWCM
Aug. 9	1:30 p.m.	7,100	5,260	2,810	--	76	--	90	--	95	--	--	--	PWCM
Aug. 9	2:45 p.m.	7,000	4,940	8,500	--	83	--	94	--	97	--	--	--	PWCM
Aug. 9	3:15 p.m.	6,900	5,140	3,310	--	79	--	83	--	86	--	--	--	PWCM
Aug. 10	8:00 a.m.	3,700	3,450	2,210	61	67	72	76	82	88	92	94	98	BWCM
Aug. 11	6:30 p.m.	1,600	4,260	2,600	53	61	69	71	75	78	79	82	100	BWCM
Aug. 12	7:40 a.m.	1,020	3,420	2,120	50	56	60	64	68	71	73	--	--	BWCM
Aug. 12	7:30 p.m.	1,860	4,380	2,650	--	68	--	79	--	98	--	--	--	PWCM
Aug. 13	9:35 a.m.	3,250	5,580	5,760	--	94	--	93	--	97	--	--	--	PWCM
Aug. 13	5:00 p.m.	5,700	3,070	3,850	--	91	--	90	--	95	--	--	--	PWCM
Aug. 13	5:30 p.m.	5,800	4,870	3,360	--	81	--	98	--	99	--	--	--	PWCM
Aug. 13	5:30 p.m.	5,200	3,200	3,210	--	83	--	83	--	98	--	--	--	PWCM
Aug. 14	12:35 p.m.	4,960	3,340	4,610	--	83	--	91	--	91	--	--	--	PWCM
Aug. 14	7:40 p.m.	4,400	3,980	2,730	--	80	--	90	--	94	--	--	--	PWCM
Aug. 26	7:25 a.m.	3,379	3,460	2,260	58	68	79	88	92	95	97	98	99	BWCM
Aug. 28	7:40 a.m.	1,200	5,260	3,720	--	70	--	85	--	98	--	--	--	PWCM

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KANSAS RIVER BASIN--Continued
SALINE RIVER NEAR WILSON, KANS.

LOCATION --At gaging station at highway bridge, three quarters of a mile upstream from Hell Creek and 8 miles northwest of Wilson, Ellsworth County.
DRAINAGE AREA --1,900 square miles.

RECORDS AVAILABLE --Chemical analyses: February 1948 to September 1950.

Water temperatures: March 1948 to September 1950.

EXTREMES, 1949-50. --Dissolved solids: Maximum, 4,430 ppm Oct. 1-8; minimum, 250 ppm July 27-28, Aug. 9-17.

Hardness: Maximum, 814 ppm Oct. 9; minimum, 145 ppm June 14-15.

Specific conductance: Maximum daily, 7,730 microhos June 27; minimum daily, 332 microhos Aug. 10.

Water temperatures: Maximum, 88°F June 16; minimum, freezing point on many days during December to March.

EXTREMES, 1948-50. --Dissolved solids: Maximum, 4,520 ppm Oct. 1-31, 1948; minimum, 250 ppm July 27-28, Aug. 9-17, 1950.

Hardness: Maximum, 814 ppm Oct. 9, 1949; minimum, 145 ppm June 14-15, 1950.

Specific conductance: Maximum daily, 8,210 microhos May 22, 24, 26, 28, 29, 1948; minimum daily, 332 microhos Aug. 10, 1950.

Water temperatures: Maximum, 91°F Aug. 16, 1949; minimum, freezing point on many days during winter months.

REMARKS. --Daily samples for chemical analysis composited by discharge. Records of specific conductance of daily samples available in regional office at Lincoln, Nebr. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1116.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-foot)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Chemical analyses, in parts per million, water year October 1949 to September 1950										Dissolved solids			Hardness as CaCO ₃		Percent non-carbonate		
					Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Bo-ron (B)	Parts per million		Tons per acre-foot		Tons per day	
Oct. 1-8, 1949.....	25.6	7.8		7,250	18	0.08	175	88	1,340	15	288	684	1,970	0.5	1.3	0.71	4,430	6.02	306	769	563	78
Oct. 9.....	116	7.8		6,940	20	0.04	181	88	1,310	14	298	640	1,900	8	8	50	4,300	5.85	1,350	814	570	77
Oct. 10.....	2,320	7.4		1,190	22	0.10	108	6.8	1,163	14	288	112	208	--	3.0	20	786	1,97	4,920	268	62	53
Oct. 11-17.....	200	7.6		1,040	17	0.10	90	8.0	1,116	12	174	134	173	5	3.1	20	660	90	356	258	115	48
Oct. 18-31.....	55.4	8.0		3,750	18	0.02	134	46	622	13	272	386	870	4	1.4	47	2,230	3.03	334	524	301	72
Nov. 1-28.....	39.1	7.7		4,630	18	0.02	166	66	835	12	316	505	1,210	5	2.5	30	2,970	4.04	314	686	427	73
Nov. 29-Dec. 31.....	33.8	7.8		4,790	16	0.01	164	68	884	11	320	551	1,300	5	5.8	38	3,160	4.30	288	689	427	73
Jan. 1-31, 1950.....	20.6	8.1		5,210	17	0.01	190	73	900	11	400	565	1,330	5	5.7	28	3,290	4.47	183	774	446	71
Feb. 1-28.....	48.0	8.0		4,000	18	0.01	170	59	670	9.8	336	430	975	5	4.5	30	2,510	3.41	325	667	375	68
Mar. 1-29.....	38.7	8.0		4,790	14	0.03	168	68	845	11	337	503	1,230	4	3.2	42	3,000	4.08	313	699	423	72
Mar. 30-Apr. 30.....	27.8	8.0		5,840	10	0.01	157	83	1,090	14	302	608	1,590	4	1.8	48	3,700	5.03	278	733	485	76
May 1-4.....	27.5	7.7		6,190	8.0	0.02	160	77	1,120	18	284	580	1,620	6	3.0	30	3,730	5.07	277	714	481	77
May 5.....	194	7.4		1,350	29	0.06	97	9.4	175	11	220	122	245	8	1.7	30	818	1.11	428	281	401	56
May 6-9.....	133	7.8		3,260	17	0.04	132	40	506	15	230	405	700	8	4.7	39	1,950	2.65	700	514	335	55
May 10, 11:10 a.m.....	4,750	7.4		645	16	0.04	64	6.0	38	9.9	240	69	50	8	2.0	428	5.56	a 5,200	234	37	25	
May 10, 11:25 a.m.....	4,790	7.3		551	15	0.02	76	7.7	33	10	204	75	41	4	6	10	376	51	--	221	54	24
May 11-16.....	424	7.7		889	23	0.04	90	7.0	84	11	210	99	124	4	6.1	10	582	79	666	254	82	41
May 17-28.....	102	7.8		2,330	25	0.04	131	32	320	12	248	288	500	4	4.1	20	1,400	1.90	386	459	256	59
May 29-30.....	365	7.7		976	21	0.10	74	8.2	112	8.0	172	95	181	4	3.7	30	586	80	578	218	77	52
May 31-June 13.....	61.0	7.6		4,011	20	0.04	155	45	656	14	232	440	958	4	2.0	62	2,410	3.28	397	570	363	71

a Mean for day.

June 14-15	214	7.7	518	24	.10	54	2.5	48	5.5	182	18	59	4	3.2	25	316	43	183	145	0	41
June 16-27	33.3	7.7	4,110	18	.10	121	45	706	12	234	398	1,020	4	1.9	1.0	2,449	3.32	219	488	286	75
June 28-July 1	237	7.7	1,310	28	.10	81	12	176	8.6	216	118	231	4	1.7	20	782	1.06	500	251	74	59
July 2	116	7.5	1,050	21	.04	81	13	11	13	186	128	161	6	5.2	--	650	.88	204	256	103	49
July 3-4	76.5	7.9	1,890	22	.04	104	15	259	12	200	205	364	4	1.6	.30	1,080	1.47	223	321	157	63
July 5-6	1,040	7.4	457	14	--	74	7.1	33	8.2	244	48	35	4	.8	--	350	.48	983	214	14	24
July 7-15	157	7.5	1,130	23	.04	79	11	133	9.8	187	114	195	4	2.3	.30	678	.92	287	244	91	53
July 16-20	2,375	7.6	407	21	.16	52	4.5	23	6.4	150	42	28	4	1.4	.20	264	.36	1,690	148	25	24
July 21-26	419	7.6	712	24	.04	65	7.5	68	8.8	166	78	93	4	1.6	.30	440	.60	498	193	57	42
July 27-28	6,125	7.9	380	26	.10	51	5.6	18	8.2	176	25	20	4	1.3	1.3	250	.34	4,130	150	6	20
July 29-31	1,045	8.0	728	23	.10	70	6.7	65	9.2	180	79	90	4	1.8	.91	456	.62	1,290	202	54	40
Aug. 1-3	503	7.7	1,510	21	.04	105	15	185	12	222	168	264	4	2.9	.20	904	1.23	1,230	322	140	54
Aug. 9-18	3,089	7.6	394	20	.04	54	4.5	18	9.3	160	36	19	4	9	.10	250	.34	2,090	153	22	19
Aug. 19-31	845	7.3	839	24	.10	77	11	75	9.8	188	102	101	4	1.4	.10	506	.69	1,130	256	82	40
Sept. 1-30	235	7.6	2,160	25	.04	113	27	293	12	248	240	420	4	3.2	.10	1,260	1.71	799	400	197	61
Weighted average ..	302	--	1,050	21	0.07	77	13	131	9.6	195	111	184	0.4	1.8	0.32	656	0.89	535	246	86	52

KANSAS RIVER BASIN--Continued

SALINE RIVER NEAR WILSON, KANS.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement usually between 8 a. m. and 12 m /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	54	46	39	32	--	60	58	62	75	76	73
2	71	50	39	45	32	33	55	56	70	--	77	78
3	75	54	39	32	33	45	45	74	69	73	--	73
4	--	45	37	31	34	45	43	75	68	65	79	76
5	75	45	34	32	34	50	57	53	79	67	76	73
6	61	47	43	32	33	51	55	75	80	--	75	70
7	--	46	36	33	33	40	49	59	77	72	76	66
8	--	48	32	33	35	32	57	75	82	84	75	--
9	56	51	32	33	32	46	58	72	77	79	76	--
10	61	47	41	32	34	37	--	57	81	77	78	70
11	59	49	45	32	39	32	63	55	79	83	76	--
12	61	51	31	34	39	31	59	65	82	77	77	--
13	61	44	32	32	32	32	60	68	87	76	78	--
14	61	52	32	32	33	34	60	66	65	76	79	61
15	62	51	34	32	32	37	58	72	78	83	77	60
16	62	44	34	32	44	41	53	68	88	66	79	70
17	--	--	35	34	49	47	59	73	86	67	76	72
18	--	37	32	32	43	34	54	71	80	71	--	--
19	62	52	34	32	38	36	45	65	81	71	--	79
20	57	42	32	32	42	33	66	65	84	72	67	76
21	56	39	31	32	38	35	--	69	80	74	--	--
22	57	--	32	34	32	41	80	--	82	76	--	68
23	56	38	32	35	35	49	69	73	87	77	71	69
24	56	44	32	36	49	60	56	75	--	--	--	65
25	56	44	31	32	--	54	53	61	76	74	77	67
26	51	53	31	32	--	57	62	51	79	75	73	68
27	--	46	34	32	--	--	57	63	77	67	70	--
28	50	54	32	--	--	--	49	63	74	70	78	64
29	61	45	33	32	--	--	46	62	--	74	72	--
30	48	38	37	32	--	--	44	65	81	78	72	--
31	--	--	38	32	--	--	--	66	--	77	72	--
Average	--	47	35	33	37	40	56	66	78	69	75	--

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)
Oct. 25, 1949	50	58	7.8
Oct. 31	46	5	.6
Nov. 1	24	6	.4
Nov. 28	37	32	3.2
Jan. 4, 1950	25	37	2.5

KANSAS RIVER BASIN--Continued
SALINE RIVER AT TESCOTT, KANS.

LOCATION. --At gaging station at highway bridge, half a mile south of Tescott, Ottawa County, and half a mile upstream from Dry Creek.
DRAINAGE AREA. --2,820 square miles.
RECORDS AVAILABLE. --Chemical analyses: December 1949 to September 1950.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Dec. 28, 1949.....	55	8.1		4,960	18	0.03	112	57	700	10	206	445	1,000	0.3	5.7	0.39	2,450	3.33	364	514	345	74
Jan. 1, 1950.....	7.5	4.310	18	4,310	18	0.01	132	59	718	9.4	414	455	1,020	7.0	2.1	3.30	2,680	3.64	217	722	368	68
Feb. 1, 1950.....	56	8.1	3,140	18	0.02	132	43	502	8.8	296	340	700	1,020	7.0	2.1	3.30	2,680	3.64	217	722	368	68
Mar. 1, 1950.....	52	8.2	4,120	12	0.01	138	54	724	9.6	297	435	1,010	1,010	4.0	2.3	3.35	2,530	3.44	375	567	332	73
Apr. 3, 1950.....	45	8.1	4,380	14	0.01	133	58	760	10	297	448	1,080	1,080	3	1.9	3.37	2,650	3.60	332	571	327	74
Apr. 4-May 5.....																						
May 5, 10-15 p.m.....	a44	7.6		4,780	18	--	--	--	855	312	485	1,210	1,210	4	1.6	--	--	--	--	610	354	75
May 6-10.....	396	8.1	1,550	20	0.05	80	20	257	366	199	278	540	540	--	--	--	1,520	2.07	--	419	256	65
May 11, 12-50 p.m.....	a550	7.3	2,450	--	--	--	--	--	573	231	373	825	825	--	--	--	2,140	2.91	--	498	307	72
May 11, 1-40 p.m.....	a810	7.2	3,490	--	--	--	--	--	623	247	408	923	923	--	--	--	2,360	3.21	--	574	371	70
May 11, 2-00 p.m.....	a848	7.2	3,820	--	--	--	--	--	--	237	473	923	923	--	--	--	2,360	3.21	--	574	371	70
May 11, 3-00 p.m.....	a905	7.2	3,870	14	0.02	170	37	605	11	246	450	911	911	4	3.2	3.0	2,320	3.16	4,980	576	374	69
May 11, 4-40 p.m.....	a1,110	7.2	1,980	--	--	--	--	--	270	206	310	367	367	--	--	--	1,270	1.73	--	421	252	58
May 11, 5-00 p.m.....	a1,650	7.2	1,990	--	--	--	--	--	280	244	218	403	403	--	--	--	1,230	1.67	--	365	185	63
May 11, 6-00 p.m.....	a1,890	7.3	1,882	--	--	--	--	--	104	192	95	130	130	--	--	--	556	0.76	--	214	57	51
May 11, 12-00 p.m.....	a2,220	7.4	597	--	--	--	--	--	50	146	88	62	62	--	--	--	402	0.55	--	190	70	36
May 12, 8-10 a.m.....																						
May 12, 11-30 p.m.....	a2,690	7.5	397	12	0.06	47	5.5	25	7.2	136	43	30	30	6	2.6	2.0	288	3.39	1,880	140	28	27
May 13, 4-18.....	2,010	7.9	948	17	0.02	50	6.0	28	8.3	156	50	28	28	3	2.3	3.0	276	3.38	1,500	250	27	28
May 14, 2-00.....	2,233	8.0	1,310	20	0.02	88	7	159	11	190	170	221	221	3	3.7	1.4	818	1.11	515	290	129	53
May 30-31.....	959	7.5	677	20	0.04	63	13	55	7.4	246	35	72	72	4	5.0	1.0	402	0.55	1,040	212	10	35
June 1-4.....	195	7.5	862	22	0.04	69	7.8	99	8.8	185	78	130	130	4	1.5	1.0	516	0.70	2,072	204	52	50
June 10-30.....	142	8.1	1,590	20	0.04	87	14	215	9.4	216	138	312	312	3	7	2.0	924	1.26	354	273	96	62
July 1-6.....	173	7.6	1,500	19	0.04	81	13	206	10	197	150	282	282	4	2.4	2.0	878	1.19	410	257	95	62
July 7-16.....	429	7.6	1,987	21	0.04	81	11	107	9.4	223	89	147	147	4	7	2.0	590	0.80	663	247	64	47

a Discharge at time of sampling.

KANSAS RIVER BASIN--Continued
SALINE RIVER AT TESCOTT, KANS.--Continued

Chemical analyses, in parts per million, December 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
July 17, 1950.....	1,530		7.4	403	13	0.10	56	6.3	29	7.4	212	11	37	0.4	0.6	--	288	0.39	1,190	166	0	26
July 18.....	2,900		7.4	301	15	.10	49	5.4	16	7.6	198	9.0	11	.4	.4	--	228	.31	1,790	145	0	19
July 19.....	3,920		7.5	339	15	.40	52	4.6	17	7.6	182	28	15	.3	1.2	--	234	.32	2,480	149	0	19
July 20.....	3,520		7.9	325	17	.04	42	3.9	12	7.9	159	26	18	.0	.8	--	230	.26	2,350	120	0	17
July 21.....	4,370		7.9	325	27	.04	43	4.2	10	7.9	159	26	18	.0	.8	--	232	.33	2,350	120	0	22
July 22.....	3,120		7.5	476	17	.10	61	6.2	30	8.5	180	48	46	.4	1.2	0.10	312	.33	2,650	178	30	26
July 23-28.....	745		7.6	645	19	.04	67	7.5	49	8.5	194	64	66	.4	1.2	0.10	396	.64	797	198	39	34
July 29.....	2,610		7.5	557	19	.10	70	7.7	45	10	232	55	52	.3	.3	--	378	.51	2,670	206	16	31
July 30.....	3,540		7.6	341	19	.10	52	5.1	17	9.5	176	28	15	.3	1.4	--	238	.32	2,280	151	7	19
July 31.....	4,100		7.6	355	19	.04	50	4.9	14	9.0	168	30	14	.3	5.0	--	234	.32	2,590	145	15	16
Aug. 1-3.....	1,475		7.7	745	20	.04	70	7.2	65	9.9	189	78	89	.4	2.1	.20	446	.61	1,780	204	49	40
Aug. 4-8.....	575		7.7	1,290	26	.04	96	14	150	11	232	140	207	.4	4.2	.20	774	1.05	1,200	296	106	51
Aug. 9.....	1,000		7.6	2,070	28	.04	122	25	285	12	286	225	397	.4	3.3	--	1,240	1.69	3,350	408	173	59
Aug. 10-16.....	2,517		7.7	479	20	.04	56	6.0	29	9.4	178	43	36	.4	1.2	.10	288	.39	1,960	164	18	26
Aug. 17.....	3,620		7.5	328	29	.04	51	4.6	14	8.4	168	31	14	.2	1.2	.09	254	.35	2,480	146	8	16
Aug. 18.....	4,100		7.5	361	17	.04	61	4.8	12	8.8	184	35	15	.2	3.4	.04	262	.36	2,900	172	21	12
Aug. 19.....	3,860		7.5	327	27	.04	55	4.5	13	9.2	188	24	10	.4	3.5	.09	256	.35	2,670	156	2	15
Aug. 20-Sept. 3.....	1,057		7.7	889	20	.04	77	11	88	10	200	98	118	.4	3.0	.20	943	.73	1,520	238	74	43
Sept. 4-30.....	277		7.7	2,110	27	.04	123	26	285	11	283	230	405	.4	4.2	.20	1,250	1.70	985	412	180	59

KANSAS RIVER BASIN--Continued

SALINE RIVER AT TESCOTT, KANS.--Continued

Temperature (°F) of water, April to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							--	--	62	75	75	71
2							--	--	66	76	75	70
3							48	--	62	76	74	--
4							48	--	64	75	76	72
5							48	60	--	74	75	71
6							45	60	--	73	75	70
7							48	57	--	75	77	69
8							54	60	--	73	75	69
9							58	59	--	75	76	69
10							60	62	65	75	75	70
11							50	61	71	76	77	66
12							51	62	75	76	78	65
13							48	60	77	71	77	64
14							49	61	79	72	77	64
15							50	65	78	75	78	65
16							54	68	79	--	77	66
17							56	69	75	71	77	66
18							54	63	76	72	75	68
19							50	69	72	71	75	71
20							--	68	76	69	71	73
21							54	69	76	71	70	70
22							--	68	78	71	72	67
23							68	70	78	73	72	65
24							66	70	79	75	73	66
25							54	66	79	75	77	68
26							53	62	77	74	74	65
27							55	62	74	74	72	65
28			33				--	66	75	75	73	65
29							--	--	72	73	72	67
30							--	63	72	73	70	69
31							--	64	--	75	69	--
Average							--	64	73	74	74	68

KANSAS RIVER BASIN--Continued

PARADISE CREEK NEAR PARADISE, KANS.

LOCATION.--at gaging station at bridge on U. S. Highway 281, 4½ miles southeast of Paradise, Russell County.
 DRAINAGE AREA.--212 square miles.
 RECORDS AVAILABLE.--Chemical analyses: March to October 1947, March to November 1948, February to September 1949.
 Water temperatures: June 1949 to September 1950.
 Chemical records: March 1947 to September 1950.
 EXTREMES, 1947-50: Water temperatures: Maximum, 86°F June 14, 23, 24; minimum, not determined.
 Sediment concentrations: Maximum daily, 60, 100 tons May 9, minimum daily, 0 tons Oct. 1-8.
 Sediment loads: Maximum daily, 60, 100 tons May 9, minimum daily, 0 tons Oct. 1-8.
 EXTREMES, 1947-50:--Water temperatures (June 1949 to September 1950): Maximum, 86°F June 14, 23, 24, 1950; minimum, not determined.
 Sediment concentrations: Maximum observed, 22,500 ppm July 4, 1950; minimum daily, no flow on some days each year.
 Sediment loads: Maximum daily, 60,100 tons May 9, 1950; minimum daily, 0 tons on some days each year.
 REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, May 1950

Date of collection	Dis-charge (second-foot)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Percent Non-carbonate
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
May 9, 1950	3,590	7.3	312	16	0.02	56	3.0	8.5	0	188	13	1.0	0.4	0.4	0.20	212	0.29		152	0	11

KANSAS RIVER BASIN--Continued

PARADISE CREEK NEAR PARADISE, KANS.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement generally between 8 a. m. and 12 m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	--	46	--	--	44	49	62	61	--	75	68
2	--	--	--	--	--	36	--	62	63	--	73	69
3	--	--	48	--	--	38	54	71	61	--	73	71
4	--	--	--	--	36	42	46	66	72	64	79	70
5	--	44	--	--	--	60	60	52	61	61	72	68
6	--	--	--	--	--	64	48	59	70	70	78	65
7	--	--	34	34	--	36	48	57	68	71	73	62
8	--	--	--	--	--	38	57	65	75	74	78	71
9	--	53	--	--	--	44	70	55	74	81	83	67
10	--	--	42	--	--	38	60	56	73	78	76	74
11	--	--	--	--	37	37	60	62	78	76	78	68
12	54	--	--	--	--	--	57	59	81	77	77	60
13	58	--	--	--	--	49	38	63	81	69	74	--
14	52	--	33	36	--	38	52	66	86	69	69	60
15	53	--	--	--	--	44	62	65	85	78	76	61
16	--	--	--	--	--	51	56	66	76	66	70	65
17	--	--	38	--	40	54	67	67	79	69	72	68
18	64	--	--	--	34	36	54	68	70	70	68	78
19	62	--	--	--	44	36	49	66	71	65	62	71
20	53	46	--	--	47	35	52	65	--	72	65	65
21	--	--	--	37	37	41	56	65	84	71	65	67
22	50	--	--	--	35	45	67	67	83	71	72	62
23	--	--	--	--	42	42	75	70	86	75	78	61
24	--	--	--	--	36	44	60	71	86	74	72	68
25	--	--	--	--	41	58	49	63	--	--	71	64
26	56	48	--	--	42	54	71	54	--	73	69	65
27	55	--	--	--	41	56	55	58	--	67	70	--
28	56	--	--	34	40	--	47	61	68	70	68	68
29	--	--	--	--	--	--	45	67	74	71	69	65
30	--	--	--	--	--	56	65	66	73	79	62	68
31	--	--	35	--	--	54	--	62	--	77	65	--
Average	--	--	--	--	--	45	56	63	74	72	72	67

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

PARADISE CREEK NEAR PARADISE, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	0.1	--	--	0.2	35	--
2-----	0	--	0	.1	--	--	.2	--	--
3-----	0	--	0	.1	--	--	.2	10	--
4-----	0	--	0	.1	--	--	.2	--	--
5-----	0	--	0	.1	108	--	.2	--	--
6-----	0	--	0	.1	--	--	.1	--	--
7-----	0	--	0	.2	--	--	.1	128	--
8-----	0	--	0	.2	--	--	.2	--	--
9-----	154	--	e 7,200	.3	100	--	.3	--	--
10-----	448	--	e 16,000	.3	--	--	.2	141	--
11-----	11	3,150	s 188	.3	--	--	.1	--	--
12-----	2.2	700	4	.1	--	--	.2	--	--
13-----	.8	252	(t)	.1	--	--	.3	--	--
14-----	.8	179	(t)	.2	--	--	.3	22	--
15-----	.4	147	(t)	.2	--	--	.3	--	--
16-----	.3	111	(t)	.1	--	(t)	.5	--	(t)
17-----	.2	77	(t)	.2	--	--	.2	14	--
18-----	.2	--	--	.2	--	--	.1	--	--
19-----	.1	--	--	.2	--	--	.3	--	--
20-----	.1	--	--	.2	57	--	.3	--	--
21-----	.1	--	--	.1	--	--	.2	--	--
22-----	.1	--	--	.2	--	--	.2	--	--
23-----	.1	--	--	.3	--	--	.2	--	--
24-----	.1	62	(t)	.2	--	--	.2	--	--
25-----	.1	--	--	.2	--	--	.2	--	--
26-----	.1	--	--	.2	62	--	.2	--	--
27-----	.1	--	--	.3	--	--	.1	--	--
28-----	.1	--	--	.2	--	--	.1	--	--
29-----	.1	--	--	.2	--	--	.1	--	--
30-----	.1	--	--	.2	--	--	.1	--	--
31-----	.1	--	--	--	--	--	.1	29	--
Total--	619.2	--	23,400	5.5	--	1	6.2	--	(t)
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.5	--	--	0.5	--	--	0.1	--	--
2-----	.5	--	--	.4	--	--	.1	--	--
3-----	.3	--	--	.4	--	--	.1	--	--
4-----	.3	--	--	.4	38	--	.1	--	--
5-----	.4	--	--	.5	--	--	.1	--	--
6-----	.5	--	--	.5	--	--	.1	--	--
7-----	.6	77	--	.4	--	--	.1	--	--
8-----	.7	--	--	.4	--	--	.1	--	--
9-----	.8	--	--	.6	--	(t)	.1	--	--
10-----	.6	--	--	.5	--	--	.1	--	--
11-----	.4	--	--	.3	16	--	.1	--	--
12-----	.5	--	--	.6	--	--	.1	--	--
13-----	.4	--	--	.8	--	--	.1	--	--
14-----	.3	28	--	.6	--	--	.1	--	--
15-----	.2	--	--	.2	--	--	.1	--	--
16-----	.1	--	(t)	.2	6	--	.1	39	(t)
17-----	.1	--	--	.1	53	--	.1	--	--
18-----	.1	--	--	.1	--	--	.1	--	--
19-----	.3	--	--	.1	--	--	.1	--	--
20-----	.3	--	--	.1	--	--	.1	--	--
21-----	.3	13	--	.1	--	--	.1	--	--
22-----	.2	--	--	.1	--	--	.1	--	--
23-----	.1	--	--	.1	7	(t)	.1	--	--
24-----	.1	--	--	.1	--	--	.1	--	--
25-----	.1	--	--	.1	--	--	.1	--	--
26-----	.2	--	--	.1	--	--	.1	--	--
27-----	.3	--	--	.1	--	--	.1	--	--
28-----	.5	19	--	.1	--	--	.1	--	--
29-----	.4	--	--	--	--	--	.1	--	--
30-----	.4	--	--	--	--	--	.1	--	--
31-----	.5	--	--	--	--	--	.1	--	--
Total--	11.0	--	2	8.5	--	(t)	3.1	--	(t)

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

PARADISE CREEK NEAR PARADISE, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.1			0.1			4	180	2
2-----	.1			.1			4.2	143	2
3-----	.1			.1	51	(t)	4	190	2
4-----	.1			.1			3.6	168	2
5-----	.1			16	2,720	s 174	3.6	155	2
6-----	.1			23	--	e 400	3.5	141	1
7-----	.1			3.8	430	4	3.3	155	1
8-----	.1			1.8	330	2	3.2	142	1
9-----	.1			2,450	9,720	s 60,100	2.7	142	1
10-----	.1			1,010	6,580	s 18,500	2.5		
11-----	.1			77	4,500	s 1,080	2.5		
12-----	.1			29	--	e 220	2.4		
13-----	.1			60	4,700	s 769	2.4		
14-----	.1			34	1,300	s 135	2.2		
15-----	.1			19	446	23	2.1		
16-----	.1	68	(t)	16	272	12	2.1		
17-----	.1			10	212	6	2.0		
18-----	.1			8	183	4	1.6	118	(t)
19-----	.1			6.7	171	3	1.6		
20-----	.1			6.7	--	e 10	1.5		
21-----	.1			9	208	5	1.5		
22-----	.1			6.3	--	e 6	1.4		
23-----	.1			5.3			1.1		
24-----	.1			5.3	685	10	1.0		
25-----	.1			5.1			1.0		
26-----	.1			4.7	898	11	1.0		
27-----	.1			4.5			1.0		
28-----	.1			4.7	171	2	159	--	e 6,700
29-----	.1			5.3			12	1,470	s 74
30-----	.1			4.9	111	2	7.3	556	11
31-----	--	--	--	5.3			--	--	--
Total--	3.0	--	(t)	3,831.8	--	81,490	241.3	--	€ ,800
Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	7.3	--	e 5	6.3	150	2	8.0	335	7
2-----	6.0	--	e 2	2.8	105	(t)	5.3	142	2
3-----	5.6	--	e 2	3.8	294	3	4.2	80	(t)
4-----	299	10,600	s 12,100	6.7	--	e 16	3.6	54	(t)
5-----	489	11,800	s 15,400	4.2	260	3	3.2		
6-----	175	4,720	s 3,270	4.7	110	1	2.8		
7-----	16	1,780	s 93	154	--	e 2,400	2.8	32	(t)
8-----	7.0	525	10	22	655	39	3.0		
9-----	4.5	300	4	8.6	135	3	2.5		
10-----	3.2	150	1	8.6	95	2	2.4		
11-----	2.5	90	(t)	12	95	3	2.2		
12-----	2.0	775	(t)	11	130	4	2.2		
13-----	1.8	90	(t)	226	--	e 3,600	2.1		
14-----	2.2	55	(t)	951	5,460	s 18,600	2.1		
15-----	85	--	e 3,500	39	1,220	s 151	2.2	32	(t)
16-----	1,710	10,100	s 42,400	11	328	10	2.2		
17-----	185	9,800	s 4,830	6.7	195	4	2.1		
18-----	103	5,620	s 1,600	7.0	--	e 12	2.0		
19-----	520	11,400	s 17,000	5.6			1.9		
20-----	121	6,800	s 2,370	4.7			1.8		
21-----	73	3,680	725	4.2	85	1	1.6		
22-----	26	1,370	96	3.8			1.4		
23-----	8.3	365	8	3.6			1.3		
24-----	5.3	310	4	3.0			1.3		
25-----	28	927	s 101	9.3	--	e 34	1.3	27	(t)
26-----	210	--	e 7,600	8.6	--	e 26	1.3		
27-----	730	8,670	s 17,400	154	--	e 4,600	1.4		
28-----	226	4,780	s 3,850	302	--	e 7,100	1.4		
29-----	44	1,180	140	96	--	e 1,900	1.4		
30-----	17	530	24	149	--	e 2,400	1.3		
31-----	11	515	15	29	3,470	s 344	--	--	--
Total--	5,125.7	--	132,600	2,258.2	--	41,260	72.3	--	15

Total discharge for year (second-foot-days) 12,183.8

Total load for year (tons) 285,600

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued
PARADISE CREEK NEAR PARADISE, KANS.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500		1.000	2.000
Oct. 10, 1949	8:50 a.m.	790	13,400	4,120	32	50	64	78	88	95	98	99	100	---	BW	
Oct. 10	8:50 a.m.	790	13,400	4,300	12	18	53	81	93	95	97	99	100	---	BN	
Oct. 10	11:30 a.m.	382	11,200	3,860	30	46	55	66	78	88	96	98	100	---	BW	
Oct. 10	11:30 a.m.	382	11,200	3,610	4	14	40	62	76	87	96	99	100	---	BN	
Oct. 10	8:45 p.m.	62	7,520	2,400	39	57	74	84	92	94	98	100	---	---	BW	
Oct. 10	8:45 p.m.	62	7,520	2,300	17	32	70	85	92	96	97	99	100	---	BN	
Oct. 11	10:20 a.m.	11	2,880	1,690	62	80	90	96	98	98	100	---	---	---	BW	
Oct. 12	9:40 a.m.	2.7	710	418	87	94	98	99	100	---	---	---	---	---	BW	
May 5, 1950	9:10 a.m.	40	3,200	2,110	51	60	72	80	89	94	98	99	100	---	BWCM	
May 9	6:35 a.m.	2,440	11,900	8,090	63	---	---	82	---	94	95	97	100	---	SPWCM	
May 9	9:30 a.m.	3,510	9,770	6,820	---	---	---	80	---	94	96	98	100	---	SPWCM	
May 9	10:30 a.m.	3,770	10,100	7,650	---	---	---	77	---	92	93	95	99	100	SPWCM	
May 9	11:15 a.m.	3,860	9,290	5,600	---	---	---	86	---	97	98	98	100	---	SPWCM	
May 9	12:20 p.m.	3,770	8,360	6,630	---	---	---	96	---	97	98	99	100	---	SPWCM	
May 9	1:10 p.m.	3,590	7,810	4,980	---	---	---	84	---	92	93	94	97	99	100	SPWCM
May 9	2:15 p.m.	3,430	7,330	3,880	---	---	---	86	---	96	97	97	100	---	SPWCM	
May 9	3:30 p.m.	3,190	7,360	5,360	---	---	---	74	---	94	---	---	---	---	SPWCM	
May 9	6:15 p.m.	2,750	6,870	7,120	---	---	---	87	---	97	97	98	100	---	SPWCM	
May 9	7:50 p.m.	2,560	7,170	3,460	58	72	79	84	90	97	98	98	100	---	SPWCM	
May 9	7:50 p.m.	2,560	7,170	3,570	10	26	69	80	88	94	96	98	100	---	SPN	
May 9	9:00 p.m.	2,440	7,140	4,850	---	---	---	88	---	97	---	---	---	---	SPWCM	
May 9	9:40 p.m.	2,320	7,160	5,340	---	---	---	90	---	100	---	---	---	---	SPWCM	
May 10	2:50 a.m.	1,820	6,630	6,120	77	---	---	91	---	98	---	---	---	---	SPWCM	
May 10	5:20 a.m.	1,580	6,580	6,280	76	---	---	90	---	99	---	---	---	---	SPWCM	
May 10	7:10 a.m.	1,440	6,670	3,770	73	---	---	85	---	95	---	---	---	---	SPWCM	
May 10	12:15 p.m.	1,060	6,590	4,420	68	---	---	81	---	94	---	---	---	---	SPWCM	
May 10	8:00 p.m.	294	6,160	7,130	64	---	---	78	---	96	---	---	---	---	SPWCM	
May 10	8:00 p.m.	254	9,030	7,130	62	---	---	83	---	98	100	---	---	---	SPWCM	
May 11	6:45 a.m.	90	5,860	6,610	74	---	---	92	---	98	100	---	---	---	SPWCM	
May 11	5:35 p.m.	53	2,880	6,690	78	---	---	93	---	99	---	---	---	---	SPWCM	

May 13	6:20 a.m.	59	7,220	4,470	--	78	--	95	--	98	100	--	--	SPWCM
June 28	9:00 a.m.	254	17,600	6,440	--	57	--	79	--	97	100	--	--	SPWCM
July 30	9:20 p.m.	7,0	454	1,420	--	90	--	94	--	100	100	--	--	SPWCM
July 4	8:20 p.m.	345	21,800	6,670	--	52	--	78	--	99	100	--	--	SPWCM
July 4	9:10 a.m.	446	22,200	8,680	--	52	--	77	--	99	100	--	--	SPWCM
July 4	9:40 a.m.	480	22,500	8,620	--	54	--	77	--	98	100	--	--	SPWCM
July 4	9:55 a.m.	497	22,500	11,500	39	51	65	77	91	99	100	--	--	SPWCM
July 4	9:55 a.m.	497	22,500	11,700	2	4	24	66	85	98	99	100	--	SPN
July 4	11:55 a.m.	591	19,200	5,380	--	55	--	80	--	97	--	--	--	SPWCM
July 4	1:50 p.m.	572	14,700	8,900	--	52	--	79	--	97	98	100	--	SPWCM
July 4	6:30 p.m.	324	10,200	8,400	--	59	--	82	--	99	100	--	--	SPWCM
July 4	9:50 p.m.	317	11,800	9,580	--	52	--	77	--	98	100	--	--	SPWCM
July 5	2:55 a.m.	463	20,300	8,130	--	58	--	79	--	99	100	--	--	SPWCM
July 16	6:30 a.m.	3,770	7,440	4,640	--	75	--	92	--	98	100	--	--	SPWCM
July 16	12:40 p.m.	2,500	7,790	3,990	58	68	78	87	93	99	--	--	--	SPWCM
July 16	12:40 p.m.	2,500	7,790	3,900	1	15	67	85	95	99	--	--	--	PN
July 27	12:15 a.m.	219	8,180	7,300	--	42	--	88	--	98	98	--	--	SPWCM
July 27	12:15 a.m.	621	18,200	7,160	--	82	--	78	--	96	98	--	--	SPWCM
July 27	2:35 a.m.	915	8,380	4,650	--	56	--	70	--	92	93	94	97	SPWCM
Aug. 7	7:00 p.m.	84	4,880	2,130	--	53	--	62	--	72	72	75	88	SPWCM
Aug. 13	11:15 a.m.	158	7,670	3,450	--	51	--	61	--	71	72	80	--	SPWCM
Aug. 14	12:30 a.m.	1,920	15,600	6,400	--	52	--	71	--	98	--	--	--	SPWCM
Aug. 14	2:50 a.m.	3,000	7,980	7,350	--	42	--	60	--	91	93	93	95	SPWCM
Aug. 14	6:30 a.m.	1,980	6,720	4,700	--	65	--	81	--	98	--	--	--	SPWCM
Aug. 28	10:30 a.m.	240	6,120	3,430	--	46	--	57	--	65	66	67	87	SPWCM
Aug. 30	9:30 a.m.	205	5,380	4,080	--	66	--	85	--	98	100	--	--	SPWCM

KANSAS RIVER BASIN--Continued
WOLF CREEK NEAR SYLVAN GROVE, KANS.

LOCATION.--At gaging station, at bridge 3 miles upstream from mouth, and 4½ miles west of Sylvan Grove, Lincoln County.
DRAINAGE AREA.--261 square miles.
RECORDS AVAILABLE.--Water temperatures: February to September 1949.
Sediment records: April 1947 to September 1950.
EXTREMES, 1949-50.--Sediment concentrations: Maximum daily, not determined; minimum daily, not determined.
Sediment loads: Maximum daily, 43,200 tons July 16; minimum daily, less than 1 ton on many days.
EXTREMES, 1947-50.--Sediment concentrations: Maximum daily, 16,600 ppm Apr. 10, 1947; minimum daily, not determined.
Sediment loads: Maximum daily, 43,200 tons July 16, 1950; minimum daily, less than 1 ton on many days each year.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, May to July 1950

Date of collection	Dis-charge (second- feet)	Tem- pera- ture (° F)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		
																	Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non- carbon- ate	
May 5, 1950	465	7.6		719					83	170	73	95	7.4	0.50			456	0.62		175	36	
May 8	282	8.1		450				1.8	39	178	53	21	2.8	.40				286	.40		149	3
May 9	3,680	8.0		290	15	0.10	45		14	148	17	5.0	0.3	2.9	.10			194	.26		120	0
July 16																					20	

KANSAS RIVER BASIN--Continued

WOLF CREEK NEAR SYLVAN GROVE, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	0.5	199	(t)	2.2	--		3.2	54	
2-----	.5			2.2	--		3.2	--	
3-----	.6			2.2	--		3.2	41	
4-----	.7			2.2	--		3.2	37	
5-----	.6			2.4	--		3.3	31	
6-----	.7	--	e 200	2.4	--		3.4	29	
7-----	.6			2.4	79		3.4	--	
8-----	.6			2.4	39		3.5	27	
9-----	.19			2.5	--		3.6	24	
10-----	1,070	8,200	23,700	2.5	--		3.6	22	
11-----	216	6,320	s 4,440	2.6	75	(t)	3.8	--	(t)
12-----	4.9	692	9	2.6	--		3.9	20	
13-----	3.0	135	1	2.5	62		3.7	--	
14-----	2.4	122		2.5	56		3.7	--	
15-----	2.2			2.4	--		3.6	37	
16-----	2.1	--	(t)	2.4	--		3.8	--	
17-----	2.1	--		2.4	27		3.9	23	
18-----	2.0	--		2.5	16		4.1	--	
19-----	2.3	93		2.5	9		4.3	36	
20-----	2.2	102		2.6	--		4.0	--	
21-----	2.1	100	(t)	2.6	28		3.5	--	
22-----	2.0	100		2.6	23		3.5	25	
23-----	2.0	--		2.7	--		3.5	--	
24-----	2.0	--		2.8	--		3.0	--	
25-----	2.0	142		2.9	--		3.0	--	
26-----	2.0	--		2.9	10		2.5	18	
27-----	2.0	155		3.0	--		2.5	17	
28-----	2.1	--		3.0	51		2.5	--	
29-----	2.1	151		3.0	52		2.5	17	
30-----	2.2	--		3.1	54		3.0	12	
31-----	2.2	147		--	--	--	3.0	10	
Total-	1,355.7	--	28,400	77.0	--	12	104.9	--	6
Day	January			February			March		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day	Mean discharge (second-feet)	Mean concentration (ppm)	Tons per day
1-----	3.0	--		3.2	25		3.8	--	
2-----	2.5	8		3.2	--		3.6	--	
3-----	2.5	--		3.2	--		3.5	10	
4-----	2.5	6		3.3	--		3.4	--	
5-----	2.5	--		3.4	--		3.4	--	
6-----	3.0	--	(t)	3.6	--		3.4	8	(t)
7-----	3.0	--		3.9	--		3.4	--	
8-----	3.6	--		4.0	38		3.4	--	
9-----	3.9	--		3.9	18		3.2	--	
10-----	4.0	--		3.9	7		3.2	12	
11-----	4.1	23		3.9	--	(t)	3.2	--	
12-----	4.1	--		4.2	--		3.0	--	
13-----	3.9	--		4.2	--		3.0	19	
14-----	3.9	--		4.0	10		3.0	--	
15-----	3.9	--		4.0	--		3.2	--	
16-----	3.6	--	(t)	3.9	20		3.3	--	
17-----	3.6	--		3.8	--		3.4	--	
18-----	3.5	--		3.8	12		3.4	--	
19-----	3.3	--		3.8	--		3.3	--	
20-----	3.5	--		3.8	--		3.3	--	
21-----	3.6	--		3.7	--		3.3	--	
22-----	3.6	--		3.8	11		3.4	--	
23-----	3.6	--		3.7	--		3.3	--	
24-----	3.6	--		3.8	7		3.3	20	
25-----	3.5	--		3.7	--		3.3	--	
26-----	3.2	--		3.6	--		3.2	--	
27-----	3.1	--		3.6	--		3.0	--	
28-----	3.1	--		3.6	--		3.0	--	
29-----	3.4	--		--	--		2.9	--	
30-----	3.4	--		--	--		2.8	--	
31-----	3.3	--		--	--	--	2.7	--	
Total-	105.3	--	6	104.5	--	6	100.6	--	3

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

WOLF CREEK NEAR SYLVAN GROVE, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued^a

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.7	14		2.4	44	(t)	6.3	111	2
2-----	2.7	--		2.4	44	(t)	5.7	105	2
3-----	2.7	18		2.4	44	(t)	5.2	106	1
4-----	2.7	--		2.5	45	(t)	4.9	--	e1
5-----	2.9	--		307	--	e9,600	4.8	--	e1
6-----	2.9	45		26	1,970	s193	4.6	122	2
7-----	2.7	--		9.0	230	6	4.5	125	2
8-----	2.6	46		6.3	--	e3	4.3	125	1
9-----	2.7	--		76	6,680	s3,960	23	3,120	s251
10-----	2.7	--		65	3,380	s1,110	5.5	320	5
11-----	2.6	46		11	857	s20	4.2	--	e2
12-----	2.6	--		6.1	585	10	3.9	--	e2
13-----	2.6	--		7.0	383	7	3.8	200	2
14-----	2.5	46		9.2	--	e8	3.7	200	2
15-----	2.5	--	(t)	6.8	341	6	5.5	680	10
16-----	2.5	--		5.3	209	3	3.6	103	
17-----	2.7	--		4.8	200	3	3.5	--	
18-----	2.8	--		7.7	--	e7	3.3	--	
19-----	2.9	--		6.6	330	6	3.1	124	
20-----	2.7	46		7.3	390	8	3.1	--	
21-----	2.6	--		35	--	e340	3.1	--	(t)
22-----	2.6	--		15	400	s20	3.0	--	
23-----	2.5	--		6.3	--	e4	3.0	--	
24-----	2.4	--		4.8	--	e4	2.9	--	
25-----	2.4	44		4.3	395	5	2.8	--	
26-----	2.4	--		4.3	259	3	2.6	112	
27-----	2.3	44		4.5	175	2	6.6	--	e80
28-----	2.2	--		4.4	175	2	29	3,000	s306
29-----	2.2	--		327	6,080	s5,090	5.9	500	8
30-----	2.2	--		51	1,870	s366	3.6	--	e3
31-----	--	--	--	8.5	253	6	--	--	--
Total--	77.5	--	9	1,035.9	--	20,790	169.0	--	693
	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.3	--	e2	68	2,310	s493	13	--	e6
2-----	3.5	--	e2	16	--	e55	10	--	e4
3-----	3.2	130	1	10	--	e27	8.7	--	e4
4-----	3.2	89	(t)	8.7	--	e19	8.0	--	e3
5-----	17	755	s44	8.0	--	e13	7.6	--	e3
6-----	22	3,260	s273	7.7	--	e9	7.3	--	e3
7-----	6.6	--	e4	301	--	e11,000	6.8	--	e3
8-----	4.5	--	e2	282	--	e5,400	6.7	135	
9-----	7.9	--	e60	20	1,340	s79	6.6	--	
10-----	22	2,300	s162	11	--	e10	6.6	--	
11-----	6.6	750	13	9.0	--	e5	6.3	--	
12-----	5.2	--	e8	8.5	--	e5	6.1	--	
13-----	9.2	550	14	269	--	e9,400	5.9	--	e2
14-----	4.7	--	e2	732	3,440	s7,520	6.0	--	
15-----	3.8	--	e1	582	--	e1,100	6.0	--	
16-----	1,810	7,200	s43,200	432	540	630	6.0	--	
17-----	2,220	5,420	32,500	169	--	e240	6.0	--	
18-----	545	5,190	s7,410	14	--	e20	5.9	--	e1
19-----	536	6,500	s10,600	11	510	15	5.7	--	e1
20-----	450	4,150	s5,130	9.2	--	e12	5.5	--	e1
21-----	28	1,770	s154	8.8	--	e10	5.3	75	1
22-----	27	2,500	s209	8.2	--	e8	5.1	--	e1
23-----	9.9	--	e26	8.2	330	7	5.0	--	
24-----	7.4	--	e13	7.7	270	6	5.0	--	
25-----	7.3	420	8	33	--	e320	4.8	--	
26-----	9.8	575	s19	35	--	e180	4.9	--	(t)
27-----	797	6,690	s12,900	72	--	e660	4.9	--	
28-----	801	2,980	s6,590	119	--	e3,000	5.0	--	
29-----	150	2,720	1,100	266	--	e6,600	5.3	44	
30-----	9.2	--	e40	44	3,300	s425	5.1	--	
31-----	158	5,580	2,380	20	--	e30	--	--	--
Total--	7,688.3	--	122,900	3,600.0	--	47,300	191.1	--	57
Total discharge for year (second-foot-days)									14,609.8
Total load for year (tons)									220,200

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued
WOLF CREEK NEAR SYLVAN GROVE, KANS.--Continued

Particle-size analyses of suspended sediment, October 1949 to July 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters								Methods of analysis		
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949	8:45 a.m.	1,470	8,490	3,080	27	45	64	80	94	98	99	100	--	BW	
Oct. 10	8:45 a.m.	1,470	8,490	2,860	15	30	36	72	96	98	98	100	--	BN	
Oct. 10	11:45 a.m.	1,380	8,150	3,300	33	43	66	82	94	96	97	99	100	BW	
Oct. 10	2:45 p.m.	1,230	7,310	2,690	34	53	70	88	98	98	98	100	--	BW	
Oct. 10	4:50 p.m.	1,150	6,740	3,410	43	59	79	90	96	98	100	--	--	BW	
Oct. 10	5:40 p.m.	1,140	7,440	5,440	34	58	78	92	--	--	--	--	--	BW	
Oct. 10	11:00 p.m.	760	8,860	3,650	44	63	83	94	98	98	100	--	--	BN	
Oct. 10	11:00 p.m.	760	8,860	3,950	12	32	82	96	98	98	100	--	--	BN	
Oct. 11	8:20 a.m.	284	6,620	3,320	46	72	88	96	98	98	100	--	--	BW	
Oct. 11	1:35 p.m.	88	7,650	5,330	44	62	73	85	95	98	99	100	--	BW	
Oct. 11	5:00 p.m.	35	6,260	4,760	42	67	83	92	98	98	99	100	--	BW	
Oct. 12	8:25 a.m.	465	8,100	5,773	60	88	94	98	99	100	--	--	--	SPWCM	
May 5, 1950	7:30 p.m.	119	7,500	6,200	64	94	--	92	--	100	--	--	--	SPWCM	
May 9	5:35 p.m.	140	22,600	8,050	--	36	--	68	--	99	--	--	--	SPWCM	
May 9	7:05 p.m.	238	29,900	10,400	--	55	--	83	--	100	--	--	--	SPWCM	
May 9	8:30 p.m.	291	23,200	9,340	--	62	--	89	--	100	--	--	--	SPWCM	
May 9	10:50 p.m.	291	14,800	7,460	60	69	82	91	97	98	--	--	--	SPWCM	
May 9	10:50 p.m.	291	14,800	7,690	3	6	50	90	97	100	--	--	--	SPN	
May 10	7:40 a.m.	65	5,710	3,770	--	78	--	93	--	100	--	--	--	SPWCM	
May 29	8:40 a.m.	346	14,400	5,710	--	43	--	76	--	99	--	--	--	SPWCM	
May 29	10:35 a.m.	520	6,890	5,780	--	59	--	86	--	100	--	--	--	SPWCM	
May 29	7:50 p.m.	443	4,080	3,920	--	74	--	96	--	100	--	--	--	SPWCM	
June 9	8:05 a.m.	44	3,740	2,090	35	47	59	70	86	94	97	99	100	BWCM	
June 9	1:00 p.m.	42	5,800	5,870	--	68	--	96	--	100	--	--	--	SPWCM	

KANSAS RIVER BASIN--Continued

WOLF CREEK NEAR SYLVAN GROVE, KANS.--Continued

Particle-size analyses of suspended sediment, October 1949 to July 1950.--Continued
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
July 16, 1950	3:00 p. m.	2,910	10,600	7,140	--	74	--	96	--	100	--	--	--	--	SPWCM
July 16	3:05 p. m.	3,400	8,820	5,630	--	78	--	97	--	100	--	--	--	--	SPWCM
July 16	7:05 p. m.	3,760	7,700	4,680	--	80	--	99	--	100	--	--	--	--	SPWCM
July 16	9:30 p. m.	3,880	6,790	4,440	74	84	93	100	--	--	--	--	--	--	PWCM
July 16	9:30 p. m.	3,880	6,790	4,300	11	28	87	98	100	--	--	--	--	--	FN
July 17	7:35 p. m.	1,280	6,720	4,180	--	71	--	96	--	100	--	--	--	--	SPWCM
July 19	8:00 p. m.	1,120	6,140	3,800	--	81	--	96	--	100	--	--	--	--	SPWCM
July 27	11:35 a. m.	970	7,940	4,980	--	68	--	91	--	100	--	--	--	--	SPWCM
July 31	8:35 a. m.	222	8,820	6,480	--	54	--	78	--	100	--	--	--	--	SPWCM
July 31	10:30 a. m.	238	4,900	3,360	--	65	--	86	--	100	--	--	--	--	SPWCM

KANSAS RIVER BASIN--Continued

SOUTH FORK SOLOMON RIVER AT ALTON, KANS.

LOCATION.--At gaging station at bridge 1.1 miles south of Missouri Pacific Railroad in Alton, Osborne County.

DRAINAGE AREA.--1,720 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1949 to September 1950.

Sediment records: June 1946 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 89° F July 9; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 9,900 ppm July 14; minimum daily, not determined.

Sediment loads: Maximum daily, 139,300 tons July 26; minimum daily, less than 1 ton on many days.

EXTREMES, 1946-50.--Water temperatures (June 1949 to September 1950): Maximum, 89° F July 9, 1950; minimum, freezing point on many days during December 1949 to March 1950.

Sediment concentrations: Maximum daily, not determined; minimum daily, less than 1 ton on many days each year.

Sediment loads: Maximum daily, 168,000 tons Oct. 8, 1946; minimum daily, less than 1 ton on many days each year.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, July 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃		Per- cent non- car- bon- ate
																	Parts per mil- lion	Tons per acre- foot	Total	Non- carbon- ate	
July 20, 1950	2,140	7.6	388	16	0.02	59	4.3	16		185	37	5.0	0.3	1.0	0.20		244	0.33	165	13	17
July 28	9,300	7.8	324	20	.02	55	3.2	11		173	25	3.0	.3	.7			218	.30	150	8	14

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

SOUTH FORK SOLOMON RIVER AT ALTON, KANS.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 /Once-daily temperature measurement mostly between 5 p. m. and 8 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	52	42	36	--	43	58	61	65	83	76	74
2	--	44	--	--	--	35	60	64	64	77	74	80
3	--	49	43	32	--	44	43	62	67	78	--	76
4	--	51	39	--	34	52	48	68	63	67	78	76
5	--	--	39	32	--	58	49	61	75	65	78	68
6	68	42	39	34	36	58	54	63	74	76	78	68
7	--	53	36	34	34	35	65	64	75	76	74	70
8	--	--	33	35	34	37	61	69	--	--	76	72
9	--	54	33	35	35	46	70	71	81	89	79	72
10	65	56	42	33	34	33	52	67	75	79	80	70
11	--	50	32	33	35	32	56	71	--	75	--	63
12	--	52	33	32	--	32	51	65	80	76	76	62
13	61	51	33	33	34	34	53	--	80	69	78	64
14	--	49	31	35	33	36	57	73	81	76	79	65
15	--	46	34	32	33	37	53	73	78	--	77	67
16	--	40	37	33	38	52	53	79	77	79	80	70
17	--	43	--	31	38	49	65	75	--	75	78	70
18	--	47	--	--	38	33	--	--	77	74	--	74
19	--	49	--	--	32	33	51	70	75	75	75	75
20	--	45	--	--	48	34	--	62	--	74	--	76
21	--	39	--	--	34	46	66	72	77	75	65	64
22	--	42	--	--	43	51	77	--	79	78	72	--
23	--	44	--	--	--	55	75	84	82	78	--	--
24	49	47	--	--	48	57	55	69	84	75	77	65
25	51	48	--	--	42	63	60	57	78	74	73	67
26	45	--	--	--	43	56	60	54	75	68	73	64
27	--	50	35	--	52	49	55	61	--	73	66	68
28	--	49	35	--	42	48	46	68	78	77	70	--
29	--	47	40	--	--	51	--	--	80	78	69	61
30	--	44	--	--	--	57	58	63	81	79	72	73
31	--	--	33	--	--	57	--	66	--	79	69	--
Average	--	47	--	--	38	45	57	67	76	76	74	69

455

SOUTH FORK SOLOMON RIVER AT ALTON, KANS.--Continued

[illegible]

e Estimated.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued
SOUTH FORK SOLOMON RIVER AT ALTON, KANS.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 13, 1949	5:15 p.m.	56	1,960	1,240	59	80	94	96	98	99	99	100			BW
Oct. 14	7:15 a.m.	49	2,880	2,430	56	82	94	98	98	99	99	100			BW
Feb. 11, 1950	5:30 p.m.	59	393	648	44	66	83	94	98	99	99	100			BW
Feb. 12	4:45 p.m.	73	502	424	50	66	86	92	94	99	99	100			BW
Feb. 16	3:30 p.m.	50	187	539	44	61	84	95	97	98	99	100			BW
Feb. 17	6:10 p.m.	74	600	1,040	32	52	70	86	96	98	99	100			BW
Mar. 1	1:30 p.m.	36	80	555	32	52	68	84	91	94	97	99	100		BW
May 10	8:10 a.m.	76	3,060	4,050	--	82	--	99	--	100	--	--			SPWCM
June 29	11:00 p.m.	144	4,440	8,020	--	82	--	97	--	100	--	--			SPWCM
July 4	11:20 p.m.	80	4,270	3,240	--	87	--	99	--	100	--	--			SPWCM
July 6	4:15 p.m.	176	5,620	4,080	--	87	--	99	--	100	--	--			SPWCM
July 16	5:15 p.m.	260	7,520	5,760	--	80	--	99	--	100	--	--			SPWCM
July 18	2:00 p.m.	1,220	1,800	8,440	--	53	--	76	--	93	94	94	96		SPWCM
July 18	10:40 p.m.	2,510	9,300	10,700	--	77	--	93	--	100	--	--			SPWCM
July 20	12:40 a.m.	2,700	8,780	4,530	59	78	89	93	97	100	--	--			SPWCM
July 20	12:40 a.m.	2,700	8,780	4,340	6	16	78	96	99	100	--	--			SPN
July 20	2:45 a.m.	2,060	9,110	7,240	--	72	--	91	--	99	--	--			SPWCM
July 20	5:30 a.m.	1,130	10,900	9,360	--	64	--	83	--	99	--	--			SPWCM
July 26	1:00 a.m.	3,970	9,800	5,660	--	79	--	94	--	99	--	--			SPWCM
July 26	3:10 a.m.	7,640	8,960	4,370	56	74	79	91	91	99	--	--			SPWCM
July 26	3:10 a.m.	7,640	8,960	4,320	3	11	79	90	93	99	--	--			SPN
July 26	6:00 a.m.	11,400	8,400	6,090	--	84	--	97	--	99	--	--			SPWCM
July 26	6:25 a.m.	11,700	8,090	4,480	57	77	89	94	97	98	--	--			SPWCM
July 26	6:25 a.m.	11,700	8,090	4,480	5	14	83	95	98	100	--	--			SPN
July 26	9:45 a.m.	10,400	7,410	7,280	--	79	--	96	--	100	--	--			SPWCM
July 38	5:00 p.m.	5,190	6,920	4,480	--	80	--	97	--	99	--	--			SPWCM
July 38	6:00 p.m.	4,850	7,270	5,430	--	75	--	94	--	100	--	--			SPWCM
Aug. 7	6:00 p.m.	1,750	14,500	9,360	--	44	--	87	--	97	--	--			SPWCM

KANSAS RIVER BASIN--Continued
SOUTH FORK SOLOMON RIVER AT ALTON, KANS.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis			
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Aug. 7, 1950	10:00 p.m.	2,460	9,750	8,520	--	67	--	85	--	97	--	--	--	--	--	SPWCM
Aug. 8	1:00 a.m.	3,970	8,960	4,190	--	77	--	93	--	99	--	--	--	--	--	SPWCM
Aug. 8	4:00 a.m.	6,080	7,620	5,060	--	78	--	95	--	99	--	--	--	--	--	SPWCM
Aug. 8	9:55 a.m.	7,060	7,770	6,720	--	79	--	97	--	99	--	--	--	--	--	SPWCM
Aug. 8	1:30 p.m.	7,200	7,540	6,790	--	78	--	95	--	98	--	--	--	--	--	SPWCM
Aug. 8	10:55 p.m.	3,730	6,860	3,470	--	76	--	94	--	100	--	--	--	--	--	SPWCM
Aug. 12	6:45 a.m.	2,500	13,000	10,600	--	42	--	66	--	98	--	--	--	--	--	SPWCM
Aug. 13	12:05 a.m.	4,150	6,400	3,210	--	76	--	89	--	94	--	--	--	--	--	SPWCM
Aug. 14	5:45 a.m.	8,500	6,520	5,810	--	74	--	91	--	99	--	--	--	--	--	SPWCM
Aug. 14	10:50 a.m.	7,200	5,200	4,870	--	76	--	93	--	99	--	--	--	--	--	SPWCM
Aug. 14	3:00 p.m.	5,730	5,300	4,550	--	74	--	92	--	98	--	--	--	--	--	SPWCM
Aug. 15	7:10 a.m.	2,220	7,400	6,530	--	50	--	69	--	98	--	--	--	--	--	SPWCM
Aug. 27	9:15 a.m.	1,080	6,880	6,150	--	48	--	70	--	96	--	--	--	--	--	SPWCM
Aug. 29	4:30 a.m.	4,640	10,800	7,990	--	33	--	57	--	99	--	--	--	--	--	SPWCM
Aug. 29	1:20 p.m.	4,150	5,800	4,330	--	55	--	74	--	93	--	--	--	--	--	SPWCM
Aug. 29	7:00 p.m.	4,640	5,290	4,500	--	69	--	85	--	98	--	--	--	--	--	SPWCM
Aug. 29	9:45 p.m.	4,240	5,380	4,650	--	74	--	90	--	98	--	--	--	--	--	SPWCM
Aug. 30	9:15 a.m.	2,750	6,160	5,130	--	59	--	76	--	95	--	--	--	--	--	SPWCM
Aug. 30	6:40 p.m.	1,170	7,600	6,510	--	52	--	70	--	96	--	--	--	--	--	SPWCM
Aug. 31	8:10 a.m.	680	4,920	4,160	--	62	--	95	--	97	--	--	--	--	--	SPWCM
Sept. 29	8:00 a.m.	120	4,140	3,880	--	75	--	99	--	100	--	--	--	--	--	SPWCM

KANSAS RIVER BASIN--Continued
SOLONOM RIVER AT BELOIT, KANS.

LOCATION.--At bridge on State Highway 14 in Beloit, Mitchell County, 300 feet downstream from dam at city water plant, 450 feet downstream from gaging station, and about 1½ miles upstream from Leban Creek.

DRAINAGE AREA.--5,430 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to August 1950.

Water temperatures: February 1949 to September 1950.

Sediment records: May 1948 to September 1950.

EXTREMES, 1949-50.--Water temperatures: Maximum, 83°F June 25; minimum, freezing point on several days during December to February.

Sediment concentrations: Maximum daily, 12,900 ppm Oct. 10; minimum daily, 2 ppm Jan. 3, 4.

Sediment loads: Maximum daily, 185,000 tons Aug. 14; minimum daily, less than 1 ton Jan. 2-4.

EXTREMES, 1948-50.--Water temperatures (February 1949 to September 1950): Maximum, 83°F June 25, 1950; minimum, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 15,100 ppm Aug. 6, 1948; minimum daily, 2 ppm Jan. 3, 4, 1950.

Sediment loads: Maximum daily, 185,000 tons Aug. 14, 1950; minimum daily, less than 1 ton Jan. 2-4, 1950.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, December 1949 to August 1950

Date of collection	Dis-charge (second-foot)	Tem-perature (° F)	pH	Specific conductance (micro-mhos at 25° C)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum
																	Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate	
Dec. 28, 1949.....	85	7.9	7.9	1,050	18	0.02	98	20	108	288	178	93	93	0.3	9.0	0.30	691	0.94		327	91	42
Jan. 1, 1950.....	74	7.5	7.5	1,180	18	0.04	135	18	114	398	178	99	99	3	8.7		780	1.07		411	85	38
Mar. 2.....	156	8.0	8.0	709	22	0.04	72	15	60	204	124	54	54	3	5.7		474	.64		241	74	36
Apr. 3.....	85	8.2	8.2	904	10	0.02	88	19	84	264	148	77	77	4	1.5	20	582	.79		298	82	38
May 4.....	88	8.2	8.2	926	14	0.02	84	19	93	268	138	89	89	4	2.0	20	600	.82		298	70	41
May 10.....	8,640	7.5	7.5	268	13	0.02	48	4.3	6.9	163	13	2.0	2.0	4	2.0	10	186	.25		138	4	10
June 9.....	114	8.1	8.1	1,020	21	0.02	102	18	96	310	135	98	98	4	3.5	20	660	.90		329	75	39
July 11.....	6,250	7.7	7.7	257	11	0.02	42	3.0	7.1	136	15	1.5	1.5	5	3.0	10	160	.22		118	6	12
July 27.....	4,040	7.6	7.6	256	16	0.04	40	2.4	12	123	24	4.0	4.0	5	3.0		192	.28		110	9	19
July 29.....	6,680	7.3	7.3	254	15	0.04	42	2.1	13	137	20	3.5	3.5	5	2.8		192	.28		114	2	20
July 30.....	6,530	7.8	7.8	312	17	0.02	49	2.3	14	142	30	6.5	6.5	1	5.7		210	.29		132	16	18
Aug. 10.....	6,040	7.8	7.8	353	22	0.04	57	4.6	11	180	26	4.0	4.0	4	3.9		224	.30		161	13	13
Aug. 15.....	22,500	7.7	7.7	274	16	0.02	44	3.4	9.2	150	17	1.5	1.5	3	.9		190	.26		124	1	14

a includes equivalent of 8 parts per million of carbonate (CO₃).

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

SOLOMON RIVER AT BELOIT, KANS.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
 (Once-daily temperature measurement generally between 8 a. m. and 10 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	46	45	37	32	40	48	52	62	78	78	69
2	60	47	46	34	38	34	54	56	67	73	77	72
3	61	43	45	--	38	34	50	54	64	72	76	72
4	62	45	44	--	39	40	44	62	66	78	76	70
5	65	45	42	32	40	40	54	53	68	68	75	68
6	64	46	41	32	40	39	46	57	71	72	74	68
7	66	47	39	37	35	36	50	59	70	73	74	65
8	69	47	35	38	35	38	51	62	73	74	72	66
9	64	--	35	37	40	38	57	60	72	70	75	65
10	60	--	37	38	36	40	60	63	73	72	74	67
11	59	--	39	37	35	32	53	61	78	74	77	62
12	56	--	39	36	38	32	52	63	79	76	76	62
13	54	--	35	32	32	32	50	65	81	75	72	--
14	55	--	35	38	32	34	49	67	82	73	71	--
15	54	--	38	32	38	40	51	68	82	75	78	--
16	55	45	37	36	32	40	53	68	78	70	82	--
17	57	48	36	38	40	40	55	72	76	68	76	--
18	59	46	37	32	34	38	50	69	81	68	72	--
19	62	49	35	32	40	36	52	68	72	68	72	--
20	58	47	32	38	38	38	52	65	72	68	70	70
21	55	44	--	38	38	38	53	57	78	72	68	69
22	--	43	32	37	37	40	60	63	80	72	70	64
23	51	43	36	36	40	40	65	69	82	74	70	65
24	49	45	36	32	40	40	--	73	82	76	72	64
25	49	47	32	32	38	47	56	66	83	68	70	62
26	47	47	34	--	40	57	55	60	80	72	72	64
27	49	48	36	36	40	50	56	58	78	74	69	63
28	48	49	37	38	40	45	56	63	75	75	66	62
29	52	48	36	32	--	46	49	64	72	74	68	64
30	56	47	37	32	--	45	48	64	73	77	65	64
31	47	--	35	32	--	48	--	63	--	78	68	--
Average	57	--	37	35	37	40	53	65	73	73	73	--

KANSAS RIVER BASIN--Continued

SOLOMON RIVER AT BELOIT, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	54	98	14	114	54	16	118	17	5
2-----	78	120	25	110			118		
3-----	78	91	19	110			114		
4-----	74	102	20	110			114		
5-----	78	109	23	110			114		
6-----	74	181	36	110	13	4	110	18	4
7-----	74	109	22	110			110		
8-----	74	102	20	114			110		
9-----	88	427	s 133	118			106		
10-----	3,100	12,900	s 115,000	122			110		
11-----	5,900	6,700	s 105,000	122	26	8	110	35	10
12-----	3,120	7,660	s 57,200	122			110		
13-----	900	9,350	s 23,400	118			81		
14-----	466	8,310	10,500	114			60		
15-----	350	4,310	s 4,160	114			81		
16-----	278	1,020	766	110	13	4	122	18	4
17-----	224	491	297	106			126		
18-----	192	230	119	106			126		
19-----	174	175	82	106			106		
20-----	164	169	75	106			110		
21-----	151	121	49	106	26	8	42	18	4
22-----	138	108	40	110			44		
23-----	134	102	37	114			74		
24-----	130	98	34	114			118		
25-----	126	81	28	114			110		
26-----	126	63	21	118	26	8	95	18	4
27-----	122	55	18	114			95		
28-----	122	50	16	118			95		
29-----	126	51	17	118			95		
30-----	122	48	16	118			95		
31-----	118	52	16	--	--	--	90	--	--
Total-	16,955	--	317,200	3,396	--	286	3,109	--	194
Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	85	5	1	74	83	15	151	22	9
2-----	80	3	(t)	67			160	23	10
3-----	80	2	(t)	64			160	42	18
4-----	78	2	(t)	62			130	36	13
5-----	118	34	11	64			126	43	15
6-----	142	73	22	74	66	17	138	56	21
7-----	106			81			138	79	29
8-----	92			88			138	68	25
9-----	84			92			134	70	25
10-----	88			106			126	45	15
11-----	95	66	16	110	43	17	130	35	12
12-----	130			110			81	28	6
13-----	98			134			64	30	5
14-----	60			142			114	29	9
15-----	98			146			106	39	11
16-----	81	28	7	169	21	8	130	57	20
17-----	95			169			134	68	25
18-----	67			169			142	73	28
19-----	88			178			151	47	19
20-----	92			219			160	32	14
21-----	92	32	6	224	38	17	138	38	14
22-----	102			192			122	75	25
23-----	106			164			122	69	23
24-----	110			156			160	66	28
25-----	62			146			142	97	37
26-----	70	14	3	146	21	8	142	88	34
27-----	95			146			134	72	26
28-----	92			156			122	49	16
29-----	95			--	--	--	118	40	13
30-----	88			--	--	--	106	32	9
31-----	78			--	--	--	102	22	6
Total-	2,647	--	293	3,648	--	441	4,021	--	560

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

MISSOURI RIVER BASIN

KANSAS RIVER BASIN--Continued

SOLOMON RIVER AT BELOIT, KANS.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	92	27	7	88	48	11	582	4,530	s 7,790
2-----	92	39	10	92	55	14	300	870	704
3-----	92	56	14	92	63	16	240	389	252
4-----	92	69	17	92	73	18	192	198	103
5-----	92			437	6,040	s 7,640	169	179	82
6-----	95			333	--	e 8,600	151	132	54
7-----	95	58	15	573	6,160	s 10,900	134	144	52
8-----	98			1,740	11,700	s 57,300	126	173	59
9-----	98			7,840	7,680	s 153,000	118	102	32
10-----	98			8,930	5,220	126,000	110	104	31
11-----	95			5,400	4,160	60,700	98	133	35
12-----	95	32	8	500	6,460	8,720	92	165	41
13-----	92			312	2,160	1,820	84	122	28
14-----	88			317	1,450	1,240	81	87	19
15-----	88			312	920	775	278	--	e 190
16-----	88	53	13	256	714	494	142	261	100
17-----	88			198	286	153	88	161	38
18-----	95			178	222	107	74	172	34
19-----	102			489	--	e 6,300	62	221	37
20-----	110	33	10	2,100	9,900	s 60,000	70	218	41
21-----	114			4,090	7,870	86,900	64	178	31
22-----	110			2,220	8,650	51,800	62	164	27
23-----	102			680	6,680	12,300	54	145	21
24-----	102			334	2,870	2,590	60	140	23
25-----	98	11	3	224	641	388	54	147	21
26-----	95			174	329	154	47	150	19
27-----	92			156	223	94	44	143	17
28-----	88	33	8	138	144	54	44	146	17
29-----	84			651	2,910	s 7,120	50	174	23
30-----	88			2,040	9,410	s 53,400	47	145	18
31-----	--	--	--	1,620	9,790	s 44,000	--	--	--
Total--	2,658	--	319	42,606	--	762,600	3,717	--	9,940
Day	July			August			September		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	42	132	15	1,500	3,210	13,000	8,620	2,280	53,100
2-----	130	198	s 88	1,240	3,270	10,900	3,990	3,740	s 39,500
3-----	169	148	68	730	3,370	6,640	3,130	2,670	s 23,000
4-----	141	--	e 260	488	2,420	3,190	1,620	1,690	7,390
5-----	494	--	e 1,600	374	1,410	1,420	1,080	1,180	3,440
6-----	690	--	e 5,200	300	1,010	818	850	910	2,090
7-----	790	7,170	15,300	661	--	e 6,900	772	681	1,420
8-----	504	6,350	8,640	3,580	8,050	77,800	703	555	1,050
9-----	2,820	8,120	s 60,500	5,190	4,980	69,800	660	498	887
10-----	5,550	5,250	s 77,600	5,970	4,360	70,300	618	433	722
11-----	4,320	5,420	s 54,400	5,550	4,030	60,400	578	380	593
12-----	456	3,370	s 4,970	3,530	6,880	65,600	558	357	538
13-----	235	524	332	6,760	5,090	s 87,400	520	320	449
14-----	164	152	67	18,500	3,700	185,000	484	339	443
15-----	836	5,540	s 24,600	22,200	3,070	164,000	484	341	446
16-----	3,800	8,600	88,200	16,200	2,940	128,000	466	305	384
17-----	7,250	4,940	s 95,300	9,650	2,510	65,400	466	298	375
18-----	7,830	4,380	92,600	4,310	4,200	s 46,400	466	270	340
19-----	7,920	5,510	96,600	2,100	3,430	19,400	448	230	278
20-----	8,010	3,940	85,200	1,680	2,510	11,400	430	229	266
21-----	7,250	3,890	s 77,600	1,410	1,770	6,740	412	232	258
22-----	2,310	6,270	s 36,200	1,220	1,380	4,540	484	308	386
23-----	930	5,280	13,200	1,060	1,100	3,150	502	507	687
24-----	614	3,150	950	--	--	2,200	395	1,020	1,090
25-----	1,980	6,390	s 36,600	1,100	--	e 7,400	350	750	709
26-----	4,330	7,610	s 83,900	3,430	6,700	62,000	350	389	368
27-----	4,140	6,090	s 66,200	3,980	6,280	67,500	336	292	265
28-----	4,520	7,410	s 89,300	7,720	3,240	67,500	336	253	230
29-----	6,390	4,450	76,800	8,730	3,200	75,400	336	290	263
30-----	6,480	3,020	s 51,400	9,660	3,340	87,100	2,800	9,550	s 76,500
31-----	2,100	5,080	s 29,900	9,550	2,920	75,300	--	--	--
Total--	93,195	--	1,278,000	159,333	--	1,573,000	33,244	--	217,500
Total discharge for year (second-foot-days).....									368,929
Total load for year (tons).....									4,160,000

e Estimated.

s Computed by subdividing day.

KANSAS RIVER BASIN--Continued
 SOLOMON RIVER AT BELOIT, KANS.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950

(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 10, 1949	7:40 a. m.	2,770	19,400	4,020	29	42	60	75	89	97	99	100			BW
Oct. 10	7:40 a. m.	2,770	19,400	4,090	5	12	35	73	87	95	99	100			BN
Oct. 10	5:55 p. m.	4,420	12,000	4,800	28	42	60	74	89	96	99	100			BW
Oct. 10	9:30 p. m.	4,730	9,860	4,090	7	23	67	79	95	99	100				BN
Oct. 11	1:20 a. m.	5,130	8,130	2,730	16	44	73	91	97	99	99	100			BN
Oct. 11	1:20 a. m.	5,130	8,130	2,770	39	64	80	89	96	98	99	100			BW
Oct. 11	8:00 a. m.	5,760	7,360	3,380	47	65	82	91	97	99	100				BW
Oct. 11	10:15 a. m.	5,900	7,080	6,110	51	70	86	93	98	98	100				BW
Oct. 11	11:40 a. m.	5,970	6,780	6,880	40	66	82	89	94	96	96	99		100	BW
Oct. 11	12:00 p. m.	5,970	6,460	4,580	50	67	85	93	98	98	100				BW
Oct. 11	6:45 p. m.	6,320	5,660	4,200	52	73	87	93	98	99	99	100			BW
Oct. 12	7:50 a. m.	3,570	6,000	4,020	49	64	81	92	97	98	99	100			BW
Oct. 12	12:10 p. m.	2,500	7,400	5,400	44	62	76	86	95	98	99	100			BW
Oct. 13	8:10 a. m.	1,000	11,000	3,640	35	49	70	84	94	97	99	100			BW
Oct. 13	6:05 p. m.	710	7,460	3,010	41	58	74	89	98	100					BW
Oct. 14	7:55 a. m.	504	9,210	3,650	46	64	80	93	99	99	100				BW
Oct. 14	5:45 p. m.	410	7,820	3,070	41	67	83	94	98	99	100				BW
Oct. 15	7:55 a. m.	382	5,080	4,100	45	71	88	97	99	99	100				BW
Oct. 16	7:25 a. m.	295	1,280	1,090	59	80	93	98	99	100					BW
May 5, 1950	10:10 a. m.	596	10,700	9,070	--	59	--	98	--	100	--	--			SPWCM
May 5	5:30 p. m.	438	3,300	2,550	42	64	79	91	96	97	99	100			BWCM
May 8	8:45 a. m.	2,390	13,300	11,600	--	40	--	70	--	100	--	--			SPWCM
May 10	12:45 a. m.	8,550	5,260	4,100	--	79	--	97	--	100	--	--			SPWCM
May 10	2:10 a. m.	8,550	5,070	4,760	62	77	90	96	98	100					SPWCM
May 10	2:10 a. m.	8,550	5,070	4,810	14	46	88	98	100	--	--	--			SPN
May 10	6:40 a. m.	8,830	5,370	4,870	--	83	--	98	--	100	--	--			SPWCM
May 10	9:10 a. m.	3,360	3,650	3,650	--	88	--	99	--	100	--	--			BWCM
May 11	5:30 p. m.	3,100	3,980	2,930	61	74	80	88	95	97	99	100			BWCM
May 11	11:40 p. m.	1,110	5,260	8,640	--	70	--	94	--	100	--	--			SPWCM
May 21	8:45 a. m.	4,320	7,460	6,270	--	57	--	82	--	99	--	--			SPWCM

KANSAS RIVER BASIN--Continued
SOLOMON RIVER AT BELOIT, KANS.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment										Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
May 21, 1950	3:25 p. m.	3,920	7,740	4,040	--	68	--	87	--	100	--	--	--	SPWCM
May 21	4:35 p. m.	4,040	7,840	4,730	42	61	73	83	93	98	100	--	--	BWCM
May 22	12:45 p. m.	2,160	9,400	8,050	--	65	--	89	--	100	--	--	--	SPWCM
May 30	4:00 a. m.	1,800	8,710	5,520	29	44	66	76	96	100	--	--	--	SPWCM
May 30	4:00 a. m.	1,800	8,710	5,560	3	7	42	73	88	100	--	--	--	SPN
May 30	6:00 p. m.	2,390	13,900	9,560	--	53	--	81	--	100	--	--	--	SPWCM
July 9	11:30 a. m.	3,490	7,760	3,130	--	60	--	82	--	99	--	--	--	SPWCM
July 9	5:30 p. m.	4,140	8,390	3,810	--	58	--	80	--	100	--	--	--	SPWCM
July 9	9:25 p. m.	4,680	6,460	6,980	--	64	--	86	--	100	--	--	--	SPWCM
July 9	10:50 p. m.	4,780	5,200	8,100	--	63	--	87	--	100	--	--	--	SPWCM
July 10	8:15 a. m.	5,190	6,770	3,740	--	78	--	93	--	100	--	--	--	SPWCM
July 10	8:15 p. m.	6,390	3,800	1,870	73	79	87	90	90	93	99	100	--	BWCM
July 10	11:45 p. m.	6,530	4,140	8,650	--	80	--	96	--	100	--	--	--	SPWCM
July 11	6:45 p. m.	1,680	7,660	4,010	--	79	--	87	--	100	--	--	--	SPWCM
July 15	8:30 p. m.	1,980	17,200	6,140	--	57	--	91	--	100	--	--	--	SPWCM
July 16	3:15 p. m.	3,920	6,370	4,170	--	74	--	91	--	100	--	--	--	SPWCM
July 17	12:50 p. m.	5,620	6,730	4,060	--	77	--	95	--	100	--	--	--	SPWCM
July 17	3:00 p. m.	7,830	4,500	6,500	--	84	--	97	--	100	--	--	--	SPWCM
July 19	8:01 p. m.	8,010	3,990	2,500	72	79	86	88	89	90	97	100	--	BWCM
July 20	7:00 a. m.	8,010	3,640	6,490	--	80	--	97	--	100	--	--	--	SPWCM
July 26	12:45 p. m.	4,320	6,710	4,270	--	60	--	80	--	99	--	--	--	SPWCM
July 27	10:35 p. m.	3,690	8,040	4,250	50	70	82	90	97	100	--	--	--	SPWCM
July 27	10:35 p. m.	3,690	8,040	4,380	7	19	77	92	100	--	--	--	--	SPN
July 28	1:25 p. m.	4,680	7,440	5,390	--	71	--	90	--	100	--	--	--	SPWCM
July 28	3:30 p. m.	4,730	6,840	5,400	--	72	--	90	--	100	--	--	--	SPWCM
July 28	6:20 p. m.	4,950	5,540	3,560	--	82	--	98	--	100	--	--	--	SPWCM
July 29	9:25 p. m.	7,250	3,770	2,360	75	84	92	94	97	98	99	100	--	BWCM
July 30	3:15 a. m.	7,410	3,100	2,060	72	80	84	86	88	89	95	99	--	BWCM
Aug. 9	6:00 p. m.	5,490	4,310	2,360	--	88	--	93	--	100	--	--	--	SPWCM
Aug. 13	8:00 a. m.	5,690	5,170	3,320	--	75	--	91	--	100	--	--	--	SPWCM

KANSAS RIVER BASIN--Continued
SOLOMON RIVER AT BELOIT, KANS.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment												Methods of analysis	
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Aug. 13, 1950	9:15 p.m.	9,130	3,900	2,520	66	70	72	73	74	75	86	97		99	100	BWCM
Aug. 14	3:00 p.m.	21,200	3,590	2,000	59	80	90	95	98	99	100	--		--	--	BWCM
Aug. 14	7:10 p.m.	22,500	3,450	1,880	56	79	92	95	98	99	100	--		--	--	BWCM
Aug. 14	8:00 p.m.	22,500	3,450	7,320	--	82	--	99	--	100	--	--		--	--	SPWCM
Aug. 14	8:35 p.m.	22,800	3,450	1,880	58	81	93	97	98	99	100	--		--	--	BWCM
Aug. 15	8:15 a.m.	23,600	3,090	1,590	66	86	96	96	99	99	100	--		--	--	BWCM
Aug. 15	8:00 p.m.	20,600	2,940	1,660	52	76	90	95	98	99	100	--		--	--	BWCM
Aug. 17	12:05 a.m.	11,900	2,700	8,010	--	88	--	100	--	--	--	--		--	--	SPWCM
Aug. 26	12:45 p.m.	3,800	7,450	3,750	--	50	--	75	--	100	--	--		--	--	SPWCM
Aug. 27	5:15 p.m.	4,470	10,200	5,550	--	46	--	72	--	100	--	--		--	--	SPWCM
Aug. 28	7:15 a.m.	7,450	3,280	1,800	75	83	88	93	98	99	100	--		--	--	BWCM
Aug. 28	6:40 p.m.	8,280	2,920	9,790	--	79	--	99	--	100	--	--		--	--	SPWCM
Aug. 29	7:15 a.m.	8,460	3,400	1,850	78	88	92	95	97	98	99	100		--	--	BWCM
Aug. 30	7:15 a.m.	9,980	3,560	2,050	73	84	91	94	98	99	100	--		--	--	BWCM
Aug. 30	12:30 p.m.	9,770	3,540	2,230	63	79	91	95	98	99	100	--		--	--	BWCM
Aug. 31	9:230	9,230	3,040	1,900	71	83	90	94	100	--	--	--		--	--	BWCM
Aug. 31	12:30 p.m.	9,440	3,060	2,040	61	75	84	90	95	98	99	100		--	--	BWCM
Sept. 1	9:380	9,380	2,220	1,190	74	83	90	94	98	99	99	100		--	--	BWCM
Sept. 2	7:15 a.m.	4,470	3,930	1,880	49	64	76	88	97	99	100	--		--	--	BWCM
Sept. 3	8:30 a.m.	3,530	2,840	1,440	42	61	75	84	95	98	100	--		--	--	BWCM
Sept. 30	5:15 p.m.	3,300	8,710	4,740	--	62	--	88	--	100	--	--		--	--	SPWCM

KANSAS RIVER BASIN--Continued
NORTH FORK SOLOMON RIVER AT KIRWIN, KANS.

LOCATION.--At gaging station at bridge on county road, half a mile south of Kirwin, Phillips County, three-quarters of a mile downstream from Bow Creek, and 1½ miles upstream from Deer Creek.
DRAINAGE AREA.--1,290 square miles.

ROADS AVAILABLE.--Water temperatures: February to September 1950.

Records: February to September 1950.--Water temperatures: Maximum, 80°F July 24; minimum, not determined.

EXTREMES, February to September 1950.--Water temperatures: Maximum, 80°F July 24; minimum, not determined.

Records: February to September 1950.--Water temperatures: Maximum, 80°F July 24; minimum, not determined.

Sediment loads: Maximum daily 320,000 tons Aug. 12; minimum daily less than 1 ton many days.

REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1176.

Chemical analyses, in parts per million, July 1950

Date of collection	Dis-charge (second-foot)	pH	Specific conductance (micro-mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Car-bonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent sodium
																	Parts per million	Tons per acre-foot	Total	Non-carbonate	
July 27, 1950	4,740	7.9	266	18	0.04	44	3.4	7.8	7.8	0	154	10	0.5	0.4	3.8		174	0.24	124	0	12

KANSAS RIVER BASIN--Continued

NORTH FORK SOLOMON RIVER AT KIRWIN, KANS.--Continued

Temperature (°F) of water, February to September 1950

[Once-daily temperature measurement generally between 7 a. m. and 9 a. m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					--	36	--	49	58	70	--	66
2					--	33	--	50	64	70	68	68
3					--	35	--	55	58	70	68	69
4					--	35	--	--	60	70	72	62
5					--	43	--	48	63	64	71	65
6					--	47	--	50	66	70	70	--
7					--	39	46	51	66	69	67	60
8					37	33	46	65	67	70	69	60
9					--	39	48	56	63	75	75	69
10					34	34	50	58	75	75	74	63
11					--	33	46	55	70	72	74	55
12					--	34	46	59	73	75	72	56
13					--	33	38	57	75	70	74	56
14					--	35	44	61	74	68	72	57
15					--	36	45	68	75	70	75	61
16					38	39	54	63	71	69	76	63
17					--	42	55	69	69	70	71	64
18					--	39	52	65	70	72	--	66
19					--	34	45	62	65	77	68	65
20					36	33	46	60	69	69	62	68
21					33	36	52	58	72	69	61	62
22					34	39	58	69	72	70	64	56
23					34	46	62	67	73	71	67	57
24					35	41	59	68	--	80	70	58
25					35	45	44	59	78	69	--	56
26					35	58	51	51	69	72	72	61
27					38	40	48	58	66	69	64	58
28					38	39	48	59	70	76	65	58
29					--	--	42	64	68	71	61	64
30					--	--	44	63	70	73	66	67
31					--	--	--	69	--	70	62	--
Average					--	38	49	60	69	71	69	62

KANSAS RIVER BASIN--Continued

NORTH FORK SOLOMON RIVER AT KIRWIN, KANS.--Continued

Suspended sediment, February to September 1950

Day	January			February			March		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----				8	--		37	83	8
2-----				8	--		29	--	e 13
3-----				8	--		29	--	e 9
4-----				9	--		36	49	5
5-----				10	--	(t)	34	50	4
6-----				11	--		30	47	4
7-----				14	--		26	42	3
8-----				17	28		28	--	e 9
9-----				20	--		31	--	e 10
10-----				30	30		23	47	3
11-----				39	--		21	29	2
12-----				46	--		25	30	2
13-----				40	--		26	32	2
14-----				46	--		32	--	e 13
15-----				53	--	e 4	33	75	7
16-----				44	34		37	70	7
17-----				41	--		34	53	5
18-----				47	--		24	51	3
19-----				41	--		19	49	2
20-----				33	--	e 26	25	--	e 13
21-----				47	145	18	25	71	5
22-----				37	--	e 22	31	55	5
23-----				41	180	20	30	92	7
24-----				45	110	13	26	72	5
25-----				40	68	7	28	50	4
26-----				34	--	e 10	28	61	5
27-----				38	60	6	28	54	4
28-----				40	89	10	21	50	3
29-----				--	--	--	22	48	3
30-----				--	--	--	24	43	3
31-----				--	--	--	22	42	2
Total--				887	--	182	864	--	170
Day	April			May			June		
	Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment		Mean dis-charge (second-foot)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	22			19	38	2	20	179	10
2-----	21			25	52	4	17	115	5
3-----	21	--	e 2	25	56	4	14	122	5
4-----	21			25	48	3	12	122	4
5-----	21			75	3,900	s 1,410	9	114	3
6-----	21			40	1,380	s 172	9	175	2
7-----	21			25	235	16	7	96	2
8-----	24	19	1	25	160	11	6	86	1
9-----	22			24	130	8	4		
10-----	23			18	87	4	6		
11-----	19			17	88	4	6		
12-----	19			16	99	4	4	86	1
13-----	18	14	(t)	21	--	e 20	4		
14-----	18			18	112	5	4		
15-----	25	--	e 90	18	--	e 40	4	150	2
16-----	24			17	--	e 60	20	1,490	s 121
17-----	26			14	106	4	5	144	2
18-----	26			14	103	4	3		
19-----	24	20	1	17	--	e 28	3		
20-----	23			15	120	5	3		
21-----	24			20	124	7	3		
22-----	25	--	e 36	16	--	e 15	3	86	(t)
23-----	24			14	--	e 10	2		
24-----	21			9	98	2	2		
25-----	18			14	--	e 30	1		
26-----	17			10	115	3	1		
27-----	17	16	(t)	12	76	2	1		
28-----	21			15	--	e 20	2		
29-----	22			25	--	e 70	128	13,670	s 5,190
30-----	21			25	--	e 24	44	3,800	s 525
31-----	--	--	--	34	587	54	--	--	--
Total--	649	--	157	662	--	2,040	237	--	5,880

e Estimated.

s Computed by subdividing day.

t Less than 1.0 ton.

KANSAS RIVER BASIN--Continued

NORTH FORK SOLOMON RIVER AT KIRWIN, KANS.--Continued

Suspended sediment, February to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment		Mean discharge (second-foot)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	17	541	25	142	2,800	1,070	252	2,150	1,460
2-----	8	269	6	79	1,210	258	181	1,080	528
3-----	6	168	3	58	620	97	148	670	268
4-----	120	--	e 5,700	46	385	48	136	467	171
5-----	334	--	e 13,000	37	275	27	130	378	133
6-----	101	8,200	s 2,420	34	221	20	123	350	116
7-----	59	2,550	406	1,890	12,000	s 62,700	119	280	90
8-----	37	1,150	115	1,300	11,600	s 42,900	104	245	69
9-----	32	1,010	87	1,360	10,300	s 37,900	96	228	59
10-----	17	466	21	935	5,720	s 15,200	95	202	52
11-----	18	274	13	474	--	e 10,000	92	178	44
12-----	18	465	s 32	11,800	--	e 320,000	86	169	39
13-----	600	14,800	s 24,900	3,520	7,640	s 70,100	79	146	31
14-----	215	5,680	s 3,580	2,170	8,480	s 50,000	79	140	30
15-----	76	2,350	482	1,060	6,300	s 18,300	83	139	31
16-----	36	800	78	740	4,210	8,410	85	114	26
17-----	1,570	13,600	s 57,000	482	3,350	4,360	82	98	22
18-----	616	9,020	s 16,100	374	1,590	1,600	82	83	18
19-----	1,080	9,850	s 29,800	292	1,580	1,240	79	68	14
20-----	181	4,490	s 2,310	260	1,050	737	76	54	11
21-----	71	1,700	326	217	590	346	71	54	10
22-----	101	--	e 1,600	196	383	203	68	56	10
23-----	131	7,500	s 2,800	178	333	160	66	58	10
24-----	59	3,100	494	160	285	123	66	--	e 120
25-----	593	7,110	s 14,400	176	--	e 1,200	61	385	63
26-----	835	10,300	s 25,000	878	--	e 36,000	61	195	32
27-----	3,470	9,820	s 93,400	938	11,200	s 28,700	60	202	33
28-----	821	6,570	s 15,300	616	9,250	s 15,600	60	201	32
29-----	338	--	e 4,500	915	7,180	s 17,600	62	185	31
30-----	238	--	e 2,400	422	3,360	3,830	59	174	28
31-----	326	6,640	s 6,410	374	4,580	4,620	--	--	--
Total-	12,124	--	322,700	32,123	--	753,300	2,841	--	£,580

Total discharge for period Feb. 1 to Sept. 30 (second-foot-days) 50,497

Total load for period Feb. 1 to Sept. 30 (tons) 1,086,000

e Estimated.

s Computed by subdividing day.

KANSAS RIVER BASIN--Continued
NORTH FORK SOLOMON RIVER AT KIRWIN, KANS.--Continued

Particle-size analyses of suspended sediment May to August 1950
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
May 5, 1950	5:10 p. m.	162	9,710	6,830	--	58	--	89	--	100	--	--	--	--	--	SPWCM
May 13	8:15 a. m.	34	1,180	702	46	61	73	85	90	96	98	99	100	100	--	BWCM
May 28	8:30 a. m.	15	2,490	1,580	35	48	59	75	86	93	95	98	99	99	--	BWCM
May 29	9:30 a. m.	29	2,500	1,740	27	43	56	73	86	93	96	98	100	100	--	BWCM
June 16	8:10 a. m.	92	3,240	4,040	20	31	40	50	67	83	98	100	--	--	--	BWCM
June 29	11:55 p. m.	72	7,790	7,530	41	55	65	75	84	87	89	95	--	--	--	BWCM
July 1	11:55 p. m.	72	7,790	7,830	3	7	43	--	92	95	96	98	--	--	--	BN
July 4	12:35 a. m.	29	1,900	2,810	--	90	--	96	--	100	--	--	--	--	--	SPWCM
July 5	10:10 p. m.	575	12,000	7,830	--	53	--	79	--	98	--	--	--	--	--	SPWCM
July 5	5:45 a. m.	272	7,900	11,100	--	62	--	91	--	99	--	--	--	--	--	SPWCM
July 13	12:15 a. m.	362	20,700	6,920	--	49	--	80	--	98	--	--	--	--	--	SPWCM
July 13	1:35 a. m.	725	25,800	7,260	42	56	74	89	--	99	--	--	--	--	--	SPWCM
July 13	1:35 a. m.	725	25,800	7,260	2	5	35	79	93	98	--	--	--	--	--	SPN
July 13	3:30 a. m.	850	19,900	9,330	44	52	71	83	91	98	--	--	--	--	--	SPWCM
July 13	3:30 a. m.	850	19,900	9,110	--	4	48	80	93	98	--	--	--	--	--	SPN
July 13	5:30 a. m.	755	17,600	5,440	--	61	--	87	--	99	--	--	--	--	--	SPWCM
July 13	5:00 p. m.	560	10,600	11,500	61	--	87	--	97	98	--	--	--	--	--	SPWCM
July 17	9:30 p. m.	1,270	13,600	7,050	38	51	67	78	91	98	--	--	--	--	--	SPWCM
July 17	9:30 p. m.	1,270	13,600	7,060	2	7	59	78	90	98	--	--	--	--	--	SPN
July 19	12:50 p. m.	1,060	8,830	7,850	--	57	--	77	--	98	--	--	--	--	--	SPWCM
July 25	10:25 p. m.	1,160	11,400	7,520	48	49	63	74	86	95	--	--	--	--	--	SPWCM
July 25	10:25 p. m.	1,160	11,400	7,460	3	10	55	74	86	97	--	--	--	--	--	SPN
July 27	1:10 a. m.	3,400	13,200	10,200	--	43	--	63	--	85	86	87	--	--	92	SPWCM
July 27	4:10 a. m.	4,070	10,400	10,300	--	55	--	79	--	97	--	--	--	--	--	SPWCM
July 27	8:25 a. m.	4,750	8,760	8,630	--	61	--	81	--	93	--	--	--	--	--	SPWCM
Aug. 7	2:50 a. m.	785	14,800	8,520	--	31	--	50	--	96	97	--	--	--	--	SPWCM
Aug. 7	2:450 a. m.	2,450	12,600	11,100	--	44	--	67	--	97	98	98	--	--	--	SPWCM
Aug. 7	9:00 a. m.	2,650	12,000	6,950	--	46	--	67	--	99	90	92	--	--	--	SPWCM
Aug. 8	11:55 p. m.	725	7,860	6,520	--	58	--	76	--	96	--	--	--	--	--	SPWCM
Aug. 9	7:00 p. m.	1,720	10,100	6,660	--	48	--	65	--	94	--	--	--	--	--	SPWCM

KANSAS RIVER BASIN--Continued
NORTH FORK SOLOMON RIVER AT KIRWIN, KANS.--Continued

Particle-size analyses of suspended sediment, May to August 1950.--Continued
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (second- feet)	Suspended sediment											Methods of analysis		
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Aug. 12, 1950.....	10:45 a. m.	10,300	5,320	3,470	--	70	--	90	--	98	--	--	--	--	--	SPWCM
Aug. 12.....	11:45 a. m.	10,100	5,550	4,450	--	69	--	91	--	97	--	--	--	--	--	SPWCM
Aug. 12.....	3:15 p. m.	10,100	7,430	7,100	--	69	--	92	--	99	--	--	--	--	--	SPWCM
Aug. 13.....	5:10 p. m.	3,020	8,100	5,340	--	64	--	80	--	97	--	--	--	--	--	SPWCM
Aug. 14.....	7:35 a. m.	2,350	12,600	6,290	--	41	--	55	--	77	78	79	--	88	--	SPWCM
Aug. 26.....	7:30 p. m.	2,040	16,000	10,250	38	49	61	73	86	97	--	--	--	--	--	SPWCM
Aug. 26.....	7:30 p. m.	2,040	16,000	10,800	2	6	50	71	89	96	--	--	--	--	--	SPN
Aug. 28.....	7:45 a. m.	635	9,600	4,960	--	55	--	76	--	98	--	--	--	--	--	SPWCM
Aug. 29.....	1:00 p. m.	1,680	6,460	6,090	--	57	--	79	--	93	--	--	--	--	--	SPWCM

KANSAS RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN KANSAS RIVER BASIN

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Dis-charge (second- feet)	pH	Specific conduct- ance (micro- mhos at 25° C.)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Car- bo- nate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Per- cent Non- carbon- ate	
																Parts per mil- lion	Tons per acre- foot	Tons per per day	Total			
REPUBLICAN RIVER AT CLAY CENTER, KANS.																						
May 4, 1950	501	7.7	602	32	0.02	64	16	49	0	280	62	24	24	1.0	1.9	0.10	400	0.54		226	0	32
June 26, 1950	666	7.4	434	17	.07	42	9.2	33	0	163	26	33	33	.5	4.4	.20	273	.37		143	9	33
July 11, 1950	23,400	7.8	281	16	.02	41	5.1	11	0	194	14	2.5	2.5	.5	2.1	.20	172	.23		123	0	16
REPUBLICAN RIVER AT MILFORD, KANS.																						
Dec. 28, 1949		8.2	865	31	0.02	87	20	83	6	346	85	66	66	0.6	4.6	0.30	572	0.78		300	6	38
Sept. 11, 1950		8.0	637	24	.02	74	12	47	0	232	68	38	38	.5	4.7	.11	438	.60		235	28	30
BEAVER CREEK NEAR BEAVER CITY, NEBR.																						
Dec. 1, 1949	18	8.3	669	33	0.02	67	19	66	8	352	53	19	19	1.0	1.8	0.20	468	0.64		245	0	37
Mar. 2, 1950	a 35	8.4	466	25	.04	52	12	44	14	227	42	12	12	.9	4.6	.30	338	.46		180	0	35
July 13, 1950	359	7.7	302	21	.02	43	3.9	12	0	175	1.0	.5	.5	.3	2.8	.30	182	.25		123	0	17
July 26, 1950	2,300	7.5	211	18	.06	34	2.7	6.5	0	130	1.0	.5	.5	.1	2.3	.20	146	.20		96	0	13
Sept. 28, 1950	13	8.5	674	35	.02	88	18	46	16	352	52	14	14	.7	3.9	.14	454	.62		284	0	25
THOMPSON CREEK AT RIVERTON, NEBR.																						
Dec. 29, 1949	a 25	8.2	400	35	0.02	54	3.5	29	6	188	31	8.5	8.5	0.1	5.8	0.200	276	0.38		150	0	30
Mar. 23, 1950	28	8.1	386	38	.02	57	9.0	22	0	206	40	8.0	8.0	.1	6.2	.30	326	.44		179	10	21
June 15, 1950	23	8.3	381	34	.02	58	8.7	13	7	184	30	7.5	7.5	.2	3.8	.20	270	.37		181	19	13
KANOPOLIS RESERVOIR, KANS.																						
Dec. 28, 1949, outlet	b 43,760	8.1	1,030	5.7	0.01	90	15	104	0	149	178	145	145	0.4	0.0	0.30	670	0.91		286	164	44
May 6, 1950, outlet	b 42,910	8.0	1,360	7.1	--	116	22	139	0	176	232	216	216	.5	1.5	.10	904	1.23		380	236	44
May 6, depth 15 ft.	b 42,880	7.8	1,460	--	--	--	--	157	0	174	234	240	240	--	1.6	.05	958	1.30		384	241	47
May 6, depth 8.0 ft.	b 42,880	7.9	1,450	--	.01	--	--	160	0	176	232	239	239	.4	1.7	--	964	1.31		377	233	48
May 6, depth 18 ft.	b 42,880	8.0	1,360	--	--	--	--	157	0	175	219	217	217	--	1.7	.30	900	1.22		338	194	50
May 6, surface	b 42,880	8.0	1,360	--	--	--	--	143	0	176	217	217	217	--	1.6	.30	908	1.23		367	223	46
May 6, surface	b 42,910	8.0	1,370	--	--	--	--	136	0	176	205	218	218	--	1.4	.30	904	1.23		371	227	44
Sept. 12, outlet	b 220,320	8.1	1,494	17	.04	59	6.8	33	0	123	84	39	39	.4	1.9	.20	304	.41		175	74	29

a Mean daily discharge.

b Reservoir storage, in acre-feet.

KANSAS RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN KANSAS RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1949 to September 1950

Date	Instantaneous water discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Instantaneous discharge (tons per day)

REPUBLICAN RIVER AT BENKELMAN, NEBR.

Nov. 1, 1949.....	112	768	232
Nov. 29.....	121	954	312
Jan. 3, 1950.....	30	185	15

SOUTH FORK REPUBLICAN RIVER NEAR BENKELMAN, NEBR.

Nov. 1, 1949.....	29.2	349	28
Nov. 29.....	19.0	387	20
Jan. 3, 1950.....	10.1	127	4

SAPPA CREEK NEAR OBERLIN, KANS.

Oct. 31, 1949.....	8	7	0.2
Nov. 28.....	8	35	.8

BEAVER CREEK NEAR BEAVER CITY, NEBR.

Nov. 2, 1949.....	17	73	3.4
Jan. 3, 1950.....	16	30	1.3
Mar. 2.....	44	128	15
Apr. 6.....	19	128	6.6
July 4.....	31	7,560	633
Aug. 7.....	824	6,160	13,700

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