

Quality of Surface Waters of the United States 1951

Parts 7-8. Lower Mississippi River Basin and Western Gulf of Mexico Basins

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

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of Arkansas, Louisiana, New Mexico,
Oklahoma, and Texas, and with other
agencies*



UNITED STATES DEPARTMENT OF THE INTERIOR

Douglas McKay, *Secretary*

GEOLOGICAL SURVEY

W. E. Wrather, *Director*

PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas, and with other agencies by personnel of the Water Resources Division under the direction of:

C. G. Paulsen Chief Hydraulic Engineer
S. K. Love Chief, Quality of Water Branch

P. C. Benedict, regional engineer Lincoln, Nebr.
G. A. Billingsley, district chemist .. Fayetteville, Ark.
J. D. Hem, district chemist Albuquerque, N. Mex.
C. S. Howard, regional chemist ... Salt Lake City, Utah
Burdge Irelan, district chemist. Austin, Tex.
I. W. Walling, district chemist .. Oklahoma City, Okla.

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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 1951.	Page 2
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QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1951

PARTS 7-8

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, 1950, to September 30, 1951. 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.

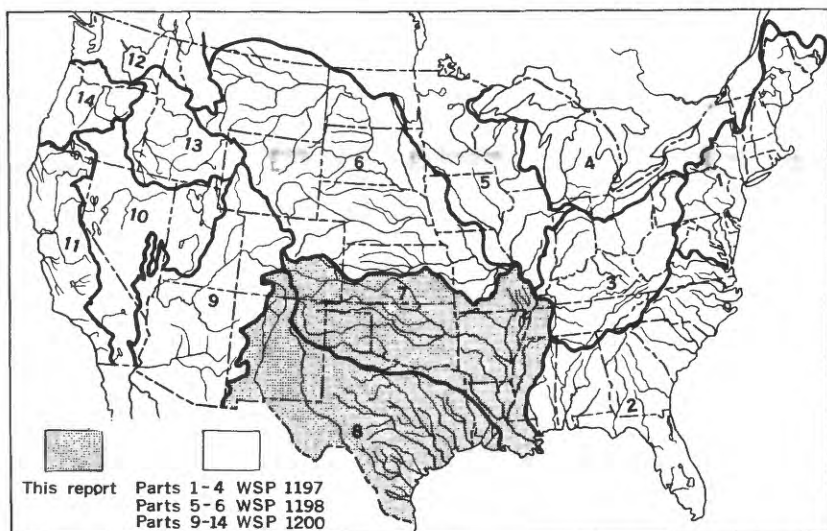


Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1951. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

Beginning with the series of reports for the water year ending September 30, 1951, the order of listing station records has been changed. In this report, stations on tributary streams are listed between stations on the main stream in the order in which those tributaries enter the main stem. Stations on tributaries to tributaries are inserted in a similar manner.

During the year ended September 30, 1951, 106 regular sampling stations on 58 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 96 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 19.

Quantities of suspended sediment are reported for 33 stations during the year ended September 30, 1951. The sediment samples were collected one or more 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 32 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 may 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 5,000 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 concentration at which analyses were made is indicated in the appropriate tables.

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. 19) 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, steam boilers, 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 (larger than 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, 1949, and 1950 for many of the stations listed in this report are given in Water-Supply Papers 942, 950, 970, 1022, 1030, 1050, 1102, 1133, 1163, and 1188.

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 southeastern 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

The table on p. 17-18 lists State and local agencies that cooperated in quality-of-water investigations in the drainage basins included in this volume. The locations of quality-of-water district or regional offices responsible for the data collected in the drainage basins are given in the table, also.

Financial assistance was furnished by the Bureau of Reclamation of the United States Department of the Interior, in the operation of some stations in Oklahoma, New Mexico, and Texas.

Financial assistance was also furnished by the Corps of Engineers, Department of Army, in the operation of some stations

State	Cooperating agency	Drainage basin	District or regional office
Arkansas	Institute of Science and Technology, University of Arkansas, Dr. W. W. Grigorieff, director.	Lower Mississippi River.	c/o Institute of Science and Technology, University of Arkansas, Fayetteville, Ark.
Louisiana	Louisiana Department of Public Works, J. Lester White, director.	Lower Mississippi River, Western Gulf of Mexico.	302 W. 15th St., Austin, Tex.
Missouri	--	Lower Mississippi River (sedimentation investi- gations at St. Louis).	510 Rudge-Guenzel Bldg., Lincoln, Nebr.
New Mexico	New Mexico Interstate Stream Commission, John H. Bliss, sec- retary.	Lower Mississippi River, Western Gulf of Mexico.	P. O. Box 293, University Station, Albuquerque, N. Mex.
Oklahoma	Oklahoma Planning and Resources Board, Division of Water Resources, Ira C. Husky, director, and Okla- homa A. & M. College, Division of Engineering Research, C. A. Dunn, executive director.	Lower Mississippi River.	P. O. Box 4355, Oklahoma City, Okla.

State	Cooperating agency	Drainage basin	District or regional office
Texas	<p>Texas State Board of Water Engineers, consisting of H. A. Beckwith, chairman, A. P. Rollins, and J. S. Guleke; Texas Red Bluff Water Power Control District, Lower Colorado River Authority, Brazos River Conservation and Reclamation District, Lower Neches Valley Authority, San Jacinto Conservation and Reclamation District, Sabine River Authority, Upper Red River Flood Control and Irrigation District, and the Texas Electric Company. Cities of Abilene, Amarillo, Fort Worth, and Midland.</p>	Lower Mississippi River, Western Gulf of Mexico.	302 W. 15th St., Austin, Tex.

in Texas. The Corps also provided financial assistance and made determinations of sediment concentrations in their laboratory in connection with the sedimentation investigations of the Mississippi River at St. Louis. Assistance in collecting records was given by many municipal, State, and Federal agencies.

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. Studies of suspended-sediment loads in the middle Rio Grande in New Mexico were initiated as a Federal project in 1948.

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 records were collected and prepared for publication under supervision of district or regional chemists and engineers as follows: In Arkansas--G. A. Billingsley; in Missouri--P. C. Benedict; in Oklahoma--I. W. Walling; in New Mexico and Rio Grande basin--J. D. Hem; in Colorado (except that part in Colorado River basin), C. S. Howard; In Texas and Louisiana--Burdge Ireland. Any additional analytical data on file for the sampling stations can be obtained by writing the responsible Survey district office.

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 7. LOWER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER MAIN STEM

MISSISSIPPI RIVER AT ST. LOUIS, MO.

LOCATION.--At MacArthur bridge, 1.1 miles below gaging station which is 15 miles downstream from Missouri River and 180 miles upstream from Ohio River.

DRAINAGE AREA.--701,000 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: April 1948 to September 1951.

EXTREMES, 1950-51.--Sediment loads: Maximum daily, 7,010,000 tons May 5; minimum daily, 4,340 tons Feb. 3.

EXTREMES, 1948-51.--Sediment loads: Maximum daily, 7,010,000 tons May 5, 1951; minimum daily, 4,340 tons Feb. 3, 1951.

REMARKS.--Suspended sediment data were computed from a continuous graph of concentration defined by one or more measurements on each of 251 days during the year and by the relative discharge of the Mississippi and Missouri Rivers above their junction. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	116,000	1,290	404,000	78,600	565	120,000	62,300	505	84,900
2-----	117,000	1,230	389,000	79,300	562	120,000	61,600	480	76,500
3-----	124,000	1,230	412,000	79,300	594	127,000	61,600	402	66,900
4-----	122,000	1,230	405,000	78,600	632	134,000	58,300	338	53,200
5-----	123,000	1,310	435,000	78,600	656	139,000	51,700	302	42,200
6-----	153,000	3,050	1,260,000	77,800	665	140,000	51,700	310	43,300
7-----	170,000	5,640	2,590,000	81,400	630	138,000	61,600	384	63,900
8-----	168,000	5,120	2,320,000	84,000	585	133,000	59,000	392	62,400
9-----	159,000	4,130	1,770,000	84,800	592	136,000	67,800	315	57,700
10-----	140,000	3,180	1,200,000	87,500	700	165,000	80,600	260	56,600
11-----	125,000	2,480	837,000	86,600	700	164,000	70,800	218	41,700
12-----	119,000	2,120	681,000	85,700	655	152,000	63,700	172	29,600
13-----	116,000	1,880	589,000	92,900	690	173,000	61,600	148	24,600
14-----	109,000	1,710	503,000	88,400	686	164,000	62,300	152	25,600
15-----	104,000	1,560	438,000	84,800	682	156,000	65,700	166	29,400
16-----	96,800	1,430	374,000	90,200	760	185,000	65,000	177	31,100
17-----	91,100	1,320	325,000	91,100	745	183,000	63,700	172	29,600
18-----	91,100	1,200	295,000	84,000	665	151,000	60,900	158	26,000
19-----	91,100	1,070	263,000	87,500	655	155,000	57,000	156	24,000
20-----	87,100	942	222,000	110,000	802	238,000	53,000	190	27,200
21-----	82,400	847	188,000	99,400	780	209,000	52,400	215	30,400
22-----	89,500	762	184,000	92,900	880	221,000	53,000	203	29,000
23-----	88,700	696	167,000	98,400	745	198,000	55,000	181	26,900
24-----	83,900	667	151,000	102,000	634	175,000	58,300	164	25,800
25-----	80,100	658	142,000	88,400	618	148,000	59,600	145	23,300
26-----	80,900	662	145,000	77,200	612	128,000	57,000	125	19,200
27-----	82,400	756	168,000	73,900	750	150,000	53,700	112	16,200
28-----	84,700	756	173,000	71,500	730	141,000	53,000	122	17,500
29-----	82,400	670	149,000	66,400	628	113,000	57,000	248	38,200
30-----	80,900	618	135,000	63,700	558	96,000	62,300	422	71,000
31-----	79,300	585	125,000	--	--	--	69,200	468	87,400
Total-3,337,400									
		--	17,439,000	2,544,900	--	4,652,000	1,870,400	--	1,281,300

LOWER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER MAIN STEM--Continued

MISSISSIPPI RIVER AT ST. LOUIS, MO.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	66,400	356	63,800	53,700	42	6,090	269,000	850	617,000
2-----	64,300	302	52,400	54,300	38	5,570	311,000	1,000	840,000
3-----	74,700	438	88,300	42,300	38	4,340	315,000	1,320	1,120,000
4-----	80,600	475	103,000	45,400	42	5,150	303,000	1,480	1,210,000
5-----	84,000	355	80,500	46,600	47	5,910	303,000	1,300	1,060,000
6-----	92,000	304	75,500	51,700	66	9,210	311,000	1,330	1,120,000
7-----	94,000	330	74,800	63,700	188	32,300	299,000	1,270	1,030,000
8-----	75,500	355	72,400	67,800	218	39,900	278,000	1,140	858,000
9-----	72,300	328	64,000	68,500	223	41,200	262,000	1,520	1,080,000
10-----	73,900	308	61,500	68,500	223	41,200	246,000	1,600	1,060,000
11-----	77,200	245	51,100	67,800	227	41,600	238,000	1,500	964,000
12-----	69,200	230	43,000	89,300	1,130	272,000	254,000	1,310	898,000
13-----	68,500	230	42,500	95,600	1,190	307,000	280,000	1,140	862,000
14-----	70,000	229	43,300	105,000	640	181,000	268,000	1,080	781,000
15-----	73,100	229	45,200	102,000	410	113,000	227,000	925	587,000
16-----	75,500	233	47,500	108,000	1,030	300,000	214,000	830	480,000
17-----	72,300	244	47,600	118,000	1,170	373,000	212,000	860	492,000
18-----	74,700	259	52,200	154,000	960	399,000	273,000	1,430	1,050,000
19-----	78,800	278	59,100	206,000	1,080	601,000	301,000	1,350	1,100,000
20-----	78,000	285	60,000	268,000	1,600	1,160,000	254,000	1,190	816,000
21-----	73,900	278	55,500	344,000	2,370	2,200,000	212,000	1,070	612,000
22-----	68,500	270	49,900	394,000	2,410	2,560,000	190,000	940	431,000
23-----	70,800	270	51,600	392,000	1,940	2,050,000	179,000	620	300,000
24-----	85,700	294	68,000	366,000	1,670	1,650,000	183,000	670	331,000
25-----	84,000	285	64,600	311,000	1,330	1,120,000	178,000	730	351,000
26-----	72,300	248	48,400	264,000	1,080	770,000	177,000	580	277,000
27-----	69,200	208	38,900	246,000	910	604,000	170,000	490	225,000
28-----	67,100	162	29,300	238,000	780	501,000	175,000	585	276,000
29-----	63,700	116	20,000	--	--	--	209,000	690	389,000
30-----	60,300	78	12,700	--	--	--	287,000	1,220	945,000
31-----	57,600	54	8,400	--	--	--	382,000	2,620	2,910,000
Total-	2,278,100	--	1,675,000	4,431,200	--	15,393,470	7,760,000	--	25,050,000
Day	April			May			June		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	423,000	3,900	4,450,000	443,000	1,650	1,970,000	287,000	2,050	1,590,000
2-----	432,000	4,150	4,850,000	446,000	1,340	1,610,000	287,000	1,710	1,230,000
3-----	423,000	3,750	4,280,000	461,000	1,610	2,000,000	251,000	1,470	996,000
4-----	397,000	2,900	3,110,000	513,000	3,510	4,860,000	240,000	1,350	875,000
5-----	373,000	2,040	2,050,000	539,000	4,820	7,010,000	282,000	2,100	1,600,000
6-----	362,000	1,720	1,680,000	552,000	3,780	5,630,000	338,000	3,030	2,770,000
7-----	366,000	1,520	1,500,000	560,000	2,820	4,260,000	357,000	6,420	6,190,000
8-----	394,000	1,530	1,630,000	549,000	2,180	3,230,000	387,000	4,380	4,340,000
9-----	409,000	1,630	1,800,000	523,000	1,670	2,360,000	387,000	3,460	3,430,000
10-----	416,000	2,020	2,270,000	499,000	1,280	1,720,000	390,000	3,160	3,350,000
11-----	431,000	2,240	2,610,000	482,000	950	1,240,000	399,000	3,310	3,570,000
12-----	458,000	2,600	3,220,000	465,000	845	1,060,000	408,000	3,840	4,230,000
13-----	478,000	2,550	3,290,000	468,000	940	1,190,000	422,000	3,470	3,950,000
14-----	498,000	2,570	3,460,000	475,000	1,350	1,730,000	410,000	2,830	3,130,000
15-----	513,000	2,360	3,270,000	468,000	1,400	1,770,000	387,000	2,470	2,580,000
16-----	521,000	2,120	2,980,000	456,000	1,370	1,690,000	361,000	2,460	2,400,000
17-----	527,000	1,970	2,800,000	439,000	1,130	1,340,000	342,000	2,490	2,300,000
18-----	508,000	1,820	2,500,000	417,000	780	878,000	323,000	2,540	2,220,000
19-----	496,000	1,630	2,180,000	396,000	655	700,000	321,000	3,130	2,760,000
20-----	481,000	1,450	1,880,000	378,000	660	674,000	332,000	4,560	4,060,000
21-----	468,000	1,270	1,600,000	361,000	720	702,000	299,000	4,160	3,360,000
22-----	456,000	1,140	1,400,000	348,000	1,190	1,120,000	290,000	3,530	2,760,000
23-----	446,000	1,110	1,340,000	357,000	1,830	1,760,000	323,000	3,190	2,780,000
24-----	441,000	1,140	1,360,000	355,000	1,980	1,900,000	394,000	4,120	4,380,000
25-----	433,000	920	1,080,000	330,000	1,870	1,670,000	441,000	5,720	6,810,000
26-----	423,000	875	999,000	313,000	1,470	1,240,000	465,000	4,130	5,190,000
27-----	418,000	910	1,030,000	299,000	1,220	985,000	492,000	2,950	3,920,000
28-----	418,000	965	1,090,000	278,000	1,180	886,000	518,000	2,400	3,360,000
29-----	441,000	1,380	1,640,000	276,000	1,290	961,000	542,000	2,030	2,970,000
30-----	448,000	1,400	1,690,000	302,000	1,570	1,280,000	556,000	1,870	2,810,000
31-----	--	--	--	306,000	2,050	1,690,000	--	--	--
Total-	13,299,000	--	69,039,000	13,054,000	--	61,116,000	11,171,000	--	95,871,000

MISSISSIPPI RIVER MAIN STEM--Continued

MISSISSIPPI RIVER AT ST. LOUIS, MO.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	572,000	1,720	2,660,000	350,000	910	860,000	334,000	2,210	1,990,000
2-----	576,000	1,530	2,380,000	308,000	840	699,000	297,000	1,650	1,320,000
3-----	592,000	1,400	2,240,000	276,000	750	559,000	265,000	1,400	1,000,000
4-----	604,000	1,330	2,170,000	250,000	705	476,000	251,000	1,280	867,000
5-----	617,000	1,210	2,020,000	219,000	630	373,000	254,000	1,350	926,000
6-----	622,000	1,150	1,930,000	191,000	595	307,000	275,000	1,670	1,240,000
7-----	632,000	1,110	1,890,000	178,000	605	291,000	301,000	1,960	1,590,000
8-----	639,000	1,120	1,930,000	175,000	540	255,000	319,000	2,080	1,790,000
9-----	645,000	1,150	2,000,000	179,000	575	278,000	323,000	2,110	1,840,000
10-----	645,000	1,100	1,920,000	185,000	630	315,000	334,000	2,000	1,800,000
11-----	648,000	1,140	1,990,000	195,000	535	282,000	336,000	1,630	1,480,000
12-----	659,000	1,100	1,960,000	206,000	620	345,000	332,000	1,520	1,360,000
13-----	671,000	1,000	1,810,000	216,000	790	461,000	340,000	1,530	1,400,000
14-----	683,000	920	1,700,000	206,000	630	350,000	361,000	1,650	1,610,000
15-----	694,000	950	1,780,000	190,000	695	357,000	372,000	1,700	1,710,000
16-----	704,000	840	1,600,000	186,000	650	326,000	383,000	1,790	1,850,000
17-----	715,000	900	1,740,000	192,000	605	314,000	387,000	1,930	2,020,000
18-----	725,000	1,000	1,960,000	208,000	825	463,000	381,000	2,000	2,060,000
19-----	744,000	1,220	2,450,000	245,000	1,890	1,250,000	378,000	1,990	2,030,000
20-----	772,000	1,350	2,810,000	254,000	2,220	1,520,000	370,000	1,880	1,880,000
21-----	779,000	1,180	2,480,000	273,000	3,170	2,340,000	342,000	1,530	1,410,000
22-----	765,000	930	1,920,000	283,000	2,570	1,960,000	310,000	1,290	1,080,000
23-----	754,000	810	1,650,000	256,000	1,970	1,360,000	288,000	1,270	988,000
24-----	736,000	735	1,460,000	232,000	1,540	965,000	283,000	1,260	963,000
25-----	710,000	655	1,260,000	232,000	1,470	921,000	265,000	1,040	744,000
26-----	680,000	660	1,210,000	229,000	1,560	965,000	240,000	850	551,000
27-----	645,000	705	1,230,000	246,000	1,750	1,180,000	223,000	780	470,000
28-----	602,000	770	1,250,000	280,000	2,230	1,690,000	216,000	805	469,000
29-----	544,000	860	1,260,000	317,000	2,980	2,550,000	213,000	750	431,000
30-----	472,000	920	1,170,000	344,000	3,160	2,940,000	213,000	660	380,000
31-----	406,000	920	1,010,000	348,000	2,880	2,710,000	--	--	--
Total--	20,252,000	--	56,840,000	7,449,000	--	29,642,000	9,186,000	--	39,249,000

Total discharge for year (cfs-days) 96,633,000
 Total load for year (tons) 417,247,770

MISSISSIPPI RIVER MAIN STEM--Continued
MISSISSIPPI RIVER AT ST. LOUIS, MO.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951
(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	Instantaneous discharge (cfs)	Water temperature- surface (° F)	Concen- tration (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	0.350	0.500	1.000	
Oct. 26, 1950	12:50 p. m.	80,100	--	643	23	28	41	56	74	89	95	98		99	BN	
Feb. 23, 1951	1:30 p. m.	392,000	36	1,880	16	22	32	45	63	75	85	97		100	BN	
Apr. 18	1:40 p. m.	508,000	47	1,800	14	19	29	42	63	81	88	91		95	BN	
July 16	10:50 p. m.	702,000	77	834	55	60	66	70	74	79	84	93		96	BW	
July 22	7:55 a. m.	767,000	81	952	58	64	70	74	78	81	85	94		97	BW	
July 22	7:55 a. m.	767,000	81	952	40	54	66	72	78	80	84	92		96	BN	
July 30	8:00 a. m.	484,000	82	926	45	50	55	64	78	89	96	99		100	BW	
Sept. 17	12:10 p. m.	387,000	70	1,950	39	44	51	60	75	89	97	100		--	BW	
Sept. 26	9:50 a. m.	240,000	68	863	47	54	62	70	81	91	98	100		--	BW	

ST. FRANCIS RIVER BASIN

ST. FRANCIS RIVER AT MARKED TREE, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 63 at Marked Tree, Poinsett County, 4.8 miles downstream from Little River, and 7 miles downstream from dam of Poinsett County Drainage District 7.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, November 1949 to September 1951.

Water temperatures: October 1945 to September 1946, November 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 310 ppm Feb. 5-6; minimum, 87 ppm Jan. 15-18.

Hardness: Maximum, 239 ppm Sept. 1-10; minimum, 82 ppm Jan. 15-18.

Specific conductance: Maximum daily, 527 microhos Sept. 8; minimum daily, 99.3 microhos Jan. 27.

Water temperatures: Maximum, 87°F Aug. 31, Sept. 1; minimum, freezing point Feb. 1-2.

EXTREMES, 1945-46, 1949-51.--Dissolved solids: 329 ppm Nov. 21-30, 1949; minimum, 87 ppm Jan. 15-18, 1951.

Hardness: Maximum, 263 ppm Nov. 21-30, 1949; minimum, 82 ppm Jan. 15-18, 1951.

Specific conductance: Maximum daily, 527 microhos Sept. 8; minimum daily, 99.3 microhos Jan. 27, 1951.

Water temperatures: Maximum, 87°F Aug. 31, Sept. 1; minimum, freezing point Feb. 1-2, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180° C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950.....	2,511	19	0.03	51	15	11	6.4	219	18	8.2	0.1	1.0	238	189	10	374	8.3	7
Oct. 11-20.....	2,271	23	.04	52	16	11	5.6	232	15	8.2	.2	1.0	247	196	5	386	8.3	11
Oct. 21-26.....	2,148	20	.04	55	14	11	3.5	236	17	8.8	.1	.8	247	195	1	388	8.2	10
Oct. 27-31.....	2,352	12	.13	37	12	9.2	4.3	163	20	7.2	.2	1.0	187	142	8	300	8.0	21
Nov. 1-10.....	2,364	26	.04	47	13	9.9	5.9	205	15	9.2	.2	1.2	230	171	3	361	8.2	7
Nov. 11-16.....	1,945	25	.03	56	15	9.9	2.4	a236	18	8.2	.1	1.0	201	201	8	381	8.7	7
Nov. 17-20.....	2,142	--	--	45	12	8.4	--	185	17	6.2	--	1.5	207	162	10	354	8.0	20
Nov. 21-27.....	2,493	20	.06	42	12	7.3	2.2	171	13	9.8	--	1.4	194	184	14	321	8.4	21
Nov. 28-30.....	1,193	--	--	66	16	8.3	--	201	22	3.8	--	.9	275	230	17	431	8.1	12
Dec. 1-2.....	1,065	--	--	74	18	7.6	--	b293	28	3.5	--	1.4	304	258	18	483	8.5	20
Dec. 3-10.....	1,746	22	.02	50	12	6.4	3.1	196	22	3.8	.1	2.0	219	174	14	342	8.4	17
Dec. 11-20.....	1,259	28	.01	67	17	8.4	3.1	268	30	4.5	.0	1.2	232	237	18	452	8.2	8
Dec. 21-31.....	962	30	.02	69	19	10	2.6	287	27	4.8	.0	1.0	305	250	2	491	8.2	4
Jan. 1-10, 1951.....	1,048	26	.04	67	17	9.7	3.5	273	28	4.2	.0	1.4	297	237	1	463	7.9	7
Jan. 11-14.....	2,542	--	--	40	11	9.1	--	173	19	7.2	--	1.6	179	145	3	302	8.2	11
Jan. 15-18.....	2,978	--	--	21	7.2	3.7	--	78	13	2.0	--	2.2	87	102	18	154	7.9	22
Jan. 19-31.....	2,815	10	.30	29	8.6	6.6	1.9	120	14	4.0	.2	1.4	136	88	9	231	7.7	25
Feb. 1-4, 7-10.....	2,618	22	.14	45	13	8.7	3.2	166	18	7.2	.1	1.0	215	166	13	327	8.1	21
Feb. 5-6.....	1,420	--	--	66	18	10	--	283	24	4.8	--	1.0	310	238	6	473	8.0	17
Feb. 11-20.....	2,722	18	.18	40	12	7.8	3.0	175	19	4.8	.0	1.5	204	149	6	314	7.9	18
Feb. 21-28.....	3,535	14	.44	34	8.4	6.7	3.8	131	19	4.0	.0	1.7	164	119	12	245	7.8	33

a Includes equivalent of 12 parts per million of carbonate (CO₃).

b Includes equivalent of 10 parts per million of carbonate (CO₃).

ST. FRANCIS RIVER BASIN--Continued
ST. FRANCIS RIVER AT MARKED TREE, ARK.--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Mar. 1-10, 1951.....	2,772	20	0.04	41	11	7.4	2.0	167	18	4.5	0.1	1.4	191	153	16	295	8.0	13
Mar. 11-20.....	2,480	20	.02	47	12	9.6	1.5	194	17	6.5	.1	1.3	216	167	8	346	7.5	8
Mar. 21-31.....	2,405	16	.04	44	11	8.2	1.4	183	17	6.2	.1	1.2	203	155	5	324	7.7	13
Apr. 1-10.....	2,162	21	.04	56	14	9.0	2.6	c227	20	8.2	.1	1.1	251	197	11	377	8.6	15
Apr. 11-20.....	2,020	20	.06	63	16	11	2.6	d250	22	9.5	.1	.7	275	223	18	459	8.2	12
Apr. 21-30.....	2,388	18	.02	54	14	9.3	2.1	d214	18	8.2	.0	2.1	241	192	17	372	8.3	10
May 1-10.....	2,056	23	.03	56	14	10	3.2	233	16	9.0	.0	1.4	251	197	6	389	8.2	12
May 11-20.....	1,500	28	.03	64	18	12	3.2	269	18	9.2	.0	1.7	287	234	13	446	7.9	10
May 21-31.....	1,940	28	.04	62	16	12	3.2	262	16	10	.0	1.7	279	220	6	435	8.0	12
June 1-10.....	2,466	20	.02	51	14	9.8	2.4	211	15	8.2	.1	1.5	236	185	12	370	7.4	7
June 11-20.....	2,027	24	.02	51	14	10	2.4	206	20	8.5	.2	1.7	238	185	16	387	7.6	8
June 21-30.....	1,874	25	.02	53	14	10	2.4	215	17	9.0	.1	1.7	248	190	14	384	7.6	9
July 1-10.....	1,827	--	--	57	14	12	--	236	19	12	--	1.7	248	209	16	406	8.2	7
July 11-20.....	2,504	--	--	34	7.9	9.9	--	183	13	7.2	--	2.2	146	114	12	234	7.6	13
July 21-30.....	2,123	22	.02	42	12	7.3	2.2	172	13	7.0	.1	1.9	186	154	13	389	7.4	13
Aug. 1-10.....	2,005	23	.03	50	14	10	2.2	208	14	9.2	.1	1.9	230	182	12	353	8.2	10
Aug. 11-20.....	2,436	18	.09	49	15	9.9	2.4	211	13	9.5	.2	1.2	235	184	11	366	8.0	11
Aug. 21-30.....	1,778	20	.07	53	16	10	2.3	226	15	11	.2	1.6	248	188	13	393	7.8	10
Sept. 1-10.....	1,856	21	.02	48	16	9.1	2.3	214	13	8.5	.2	.6	230	186	10	369	7.9	12
Sept. 11-20.....	582	26	.06	71	20	10	2.3	299	20	6.8	.2	1.4	309	259	14	481	8.0	5
Sept. 21-30.....	1,309	20	.12	50	15	11	2.4	215	18	8.5	.1	1.4	238	186	10	371	8.1	8
Average.....	2,008	18	.21	36	11	6.6	2.5	147	14	6.8	.2	1.9	170	135	15	272	8.0	12
	2,077	21	0.07	51	14	9.1	2.9	211	18	7.0	0.1	1.4	232	184	11	363	--	13

c Includes equivalent of 8 parts per million of carbonate (CO₃).d Includes equivalent of 2 parts per million of carbonate (CO₃).

ST. FRANCIS RIVER BASIN--Continued

ST. FRANCIS RIVER AT MARKED TREE, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	70	46	43	32	55	57	73	80	78	86	87
2	72	70	50	48	32	58	57	75	82	78	85	84
3	72	67	50	53	33	60	54	76	81	77	86	79
4	69	58	50	50	36	60	55	76	78	76	85	79
5	66	55	50	50	43	56	58	72	73	77	83	77
6	66	57	46	55	45	58	58	70	75	77	83	76
7	68	55	42	42	37	60	60	66	74	78	84	76
8	67	57	39	40	39	58	56	66	75	80	85	77
9	64	57	39	42	41	56	55	68	75	82	86	75
10	65	50	44	45	40	56	55	70	77	82	85	75
11	65	50	42	42	43	54	54	68	77	82	83	75
12	65	48	42	43	43	48	52	72	78	81	83	79
13	65	46	42	43	48	45	51	70	77	82	83	78
14	67	46	45	48	46	44	55	70	78	82	85	73
15	65	53	46	45	45	45	56	72	76	81	85	75
16	67	57	48	45	44	45	54	73	77	82	83	75
17	68	56	46	45	46	48	55	76	77	82	82	75
18	69	53	42	46	49	48	58	75	81	84	80	73
19	70	53	41	48	52	46	60	78	80	84	81	74
20	69	55	41	--	56	51	60	75	80	84	83	75
21	68	57	42	55	52	50	65	76	80	86	84	73
22	69	54	44	49	52	51	62	76	82	--	83	72
23	67	55	44	45	52	55	61	74	84	86	84	72
24	64	42	46	46	52	55	62	75	82	85	78	74
25	65	42	50	--	53	55	66	75	84	85	82	71
26	63	40	50	44	52	55	67	75	85	85	82	73
27	70	40	41	45	54	56	68	72	84	84	82	75
28	69	43	40	48	55	56	66	74	85	83	82	70
29	69	44	41	40	--	57	67	74	84	85	84	74
30	69	46	45	38	--	56	70	75	--	--	86	74
31	70	--	43	36	--	56	--	78	--	85	87	--
Average	67	53	43	45	45	53	59	73	79	82	84	76

WHITE RIVER BASIN

WHITE RIVER AT BEAVER, ARK.

LOCATION.--At gaging station at Missouri and North Arkansas Railway bridge, a quarter of a mile east of Beaver, Carroll County, and 2½ miles upstream from Leatherwood Creek.

DRAINAGE AREA.--1,238 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1949 to September 1951.

Water temperatures: October 1945 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: 102 ppm Jan. 17; minimum, 47 ppm Feb. 17, 19-22.

Hardness: Maximum, 135 ppm Dec. 1950; minimum, 36 ppm Jan. 17; minimum, 47 ppm Feb. 17, 19-22.

Water temperatures: Maximum, 88°F Aug. 6; minimum, 57.1°F daily, 57.1°F microthos Feb. 21.

Water to be used: Maximum, 111 ppm daily, 102 ppm Jan. 17; minimum, 47 ppm Feb. 17, 19-22.

EXTREMES, 1945-46.--Dissolved solids: Maximum, 150 ppm Jan. 11-15, 1951; minimum, 41 ppm Feb. 13-15, 1950.

Hardness: Maximum, 133 ppm Dec. 1-10, 1950; minimum, 33 ppm Feb. 13-15, 1950.

Specific conductance: Maximum daily, 263 microthos Jan. 15, 1951; minimum daily, 57.1 microthos Feb. 21, 1951.

Water temperatures: Maximum, 88°F Aug. 8-9, 17, 1946; minimum, freezing point on several days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950.....	584	9.8	0.04	35	4.2	2.6	1.7	116	5.2	3.8	0.0	1.6	122	105	10	196	8.2	3
Oct. 11-20.....	302	--	--	36	4.3	2.7	--	127	5.9	2.8	--	1.0	126	108	3	215	8.1	5
Oct. 21-31.....	205	--	--	41	4.4	2.1	--	a134	9.9	3.2	--	1.1	130	120	11	228	8.3	6
Nov. 1-10.....	162	--	--	43	4.2	2.0	--	144	3.7	2.9	--	1.7	140	125	7	239	8.2	5
Nov. 11-20.....	161	--	--	44	4.1	2.0	--	a147	4.7	3.0	--	1.7	140	125	7	244	8.2	5
Nov. 21-30.....	163	--	--	45	3.7	3.0	--	--	4.9	4.2	--	1.7	140	126	7	246	8.3	5
Dec. 1-10.....	152	--	--	46	4.4	1.5	--	144	6.5	4.5	--	1.7	141	133	15	244	8.2	10
Dec. 11-20.....	143	--	--	43	4.3	2.8	--	145	8.6	5.0	--	1.8	145	125	6	249	8.2	9
Dec. 21-31.....	139	--	--	44	4.3	3.5	--	143	13	4.8	--	1.7	141	128	10	243	8.1	7
Jan. 1-10, 1951.....	145	5.6	.02	42	4.1	3.9	2.3	140	14	4.8	.0	1.4	147	122	7	242	7.9	2
Jan. 11-15.....	368	--	--	42	5.0	3.3	--	145	10	5.0	--	1.7	150	125	7	245	8.2	7
Jan. 16-20.....	2,306	--	--	22	2.6	2.7	--	64	10	3.5	--	1.9	75	66	13	131	7.6	10
Jan. 21-31.....	600	--	--	28	3.1	2.6	--	83	8.5	3.2	--	2.0	88	83	15	154	7.7	22
Feb. 1-8.....	643	--	--	30	3.6	2.6	--	97	7.4	3.8	--	1.8	104	90	10	173	8.1	7
Feb. 9-16, 18.....	3,713	--	--	21	3.2	2.2	--	63	5.8	3.0	--	1.5	68	66	14	120	7.6	10
Feb. 17, 19-22.....	30,680	--	--	12	1.5	3.2	--	37	6.4	4.2	--	1.9	47	36	6	86.2	7.7	10
Feb. 23-28.....	5,363	--	--	22	2.8	2.2	--	63	7.7	3.5	--	2.3	72	66	15	114	7.8	7
Mar. 1-10.....	2,462	--	--	23	2.6	2.3	--	71	5.9	2.2	--	2.1	80	68	10	135	7.9	10
Mar. 11-20.....	4,465	--	--	23	2.6	2.3	--	71	5.9	2.2	--	2.1	80	68	10	135	7.9	10
Mar. 21-31.....	1,433	--	--	24	3.1	1.4	--	70	5.7	2.5	--	1.7	82	73	9	147	8.1	8

a includes equivalent of 1 part per million of carbonate (CO₃).

Apr. 1-6.....	1,148	--	--	28	2.2	2.4	--	84	7.5	3.2	--	1.0	90	79	10	153	7.5	7
Apr. 7-12.....	1,830	--	--	20	2.3	2.3	--	65	5.0	2.0	--	1.8	76	59	6	127	8.1	6
Apr. 13-20.....	2,680	--	--	20	2.5	2.2	--	63	6.6	3.2	--	1.0	60	60	9	121	7.6	17
Apr. 21-30.....	2,449	--	--	20	2.7	2.9	--	66	5.3	3.0	--	1.8	90	61	7	125	7.3	22
May 1-10.....	1,942	--	--	24	3.5	2.3	--	76	5.9	2.2	--	2.1	95	74	12	148	7.5	18
May 11-20.....	1,277	--	--	21	2.9	2.0	--	75	5.1	3.0	--	1.2	81	64	3	140	7.6	10
May 21-31.....	1,644	9.8	.03	30	2.2	2.2	2.0	97	5.3	2.8	.0	1.5	104	84	4	170	8.0	7
June 1-9.....	825	--	--	33	3.4	2.7	--	110	5.1	3.5	--	1.5	115	96	6	184	7.9	8
June 10-16.....	3,557	--	--	20	2.2	2.6	--	70	4.7	2.8	--	2.1	95	59	2	133	7.4	40
June 17-30.....	2,075	--	--	27	4.0	2.3	--	95	5.3	2.8	--	2.0	102	84	6	172	7.7	23
July 1-10.....	5,201	--	--	22	3.8	2.6	--	76	3.0	2.5	--	3.1	93	70	8	136	7.4	22
July 11-20.....	1,411	--	--	34	4.6	2.8	--	115	3.0	2.5	--	1.6	115	104	10	188	7.5	7
July 21-31.....	1,529	--	--	34	4.0	2.8	--	119	2.9	3.5	--	1.9	117	101	4	197	7.4	4
Aug. 1-10.....	273	--	--	34	3.0	2.4	--	117	3.7	2.2	--	2.4	112	97	1	200	8.0	6
Aug. 11-20.....	238	--	--	37	3.3	2.6	--	125	3.9	3.0	--	1.6	122	106	3	210	7.7	5
Aug. 21-31.....	181	11	--	34	4.5	2.9	1.4	121	4.6	4.0	.0	1.0	126	103	4	206	7.6	5
Sept. 1-10.....	141	--	.06	36	2.7	3.1	--	123	4.1	3.5	--	1.5	134	101	0	207	7.8	5
Sept. 11-20.....	163	--	--	40	2.8	2.8	--	131	4.3	3.2	--	1.0	125	111	4	212	7.6	6
Sept. 21-30.....	204	--	--	40	4.4	2.8	--	135	4.4	3.5	--	.9	130	118	7	220	8.0	5
Average.....	1,836	--	--	31	3.4	2.6	--	103	6.2	3.3	--	1.6	109	92	8	181	--	10

LOWER MISSISSIPPI RIVER BASIN

 WHITE RIVER BASIN--Continued
 WHITE RIVER AT BEAVER, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	66	48	45	31	52	54	65	79	70	85	86
2	70	--	48	40	31	55	47	66	80	70	85	82
3	66	50	45	41	31	52	57	67	73	70	86	83
4	65	54	42	43	37	52	48	66	72	70	86	81
5	65	57	37	45	36	53	54	67	73	71	87	78
6	66	60	32	41	37	56	58	64	72	74	88	80
7	64	58	33	37	35	57	52	65	73	77	87	77
8	63	56	36	37	36	53	52	65	74	80	85	76
9	63	50	39	38	39	50	50	67	69	81	82	75
10	63	45	38	40	42	57	52	64	74	79	85	79
11	65	46	39	37	47	47	50	66	69	80	84	--
12	65	47	38	40	50	43	47	65	69	80	85	75
13	65	47	38	44	42	41	49	66	71	78	85	74
14	66	48	41	42	33	42	53	64	68	78	86	75
15	68	56	38	43	36	44	48	75	69	76	85	74
16	67	52	40	44	45	44	54	70	70	80	84	71
17	67	50	40	46	40	48	54	72	74	82	83	71
18	67	50	39	47	45	46	57	72	78	--	84	72
19	67	52	38	48	46	48	58	73	79	--	85	72
20	65	50	37	43	47	47	60	75	80	85	85	74
21	65	50	38	42	50	49	55	78	79	--	82	71
22	67	49	42	42	50	54	59	77	77	--	80	72
23	61	48	43	43	49	55	60	73	77	84	79	71
24	64	36	44	41	50	54	62	71	77	85	80	73
25	66	38	45	40	52	56	63	73	78	85	83	73
26	66	43	38	46	52	54	65	74	78	81	83	74
27	67	43	36	40	54	56	67	72	80	84	84	71
28	68	43	35	31	57	59	70	75	75	84	85	68
29	69	43	37	31	--	51	67	76	73	85	85	70
30	69	44	38	31	--	48	70	79	71	85	87	72
31	68	--	40	31	--	55	--	78	--	81	83	--
Average	66	49	39	41	43	51	56	70	74	79	84	75

WHITE RIVER BASIN--Continued

WHITE RIVER AT COTTER, ARK.

LOCATION.--At bridge on U. S. Highway 62 at Cotter, Baxter County, about 5 miles downstream from gaging station near Flippin.

DRAINAGE AREA.--1,967 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 196 ppm Nov. 21-30; minimum, 115 ppm Mar. 1-6.

Hardness: Maximum, 186 ppm Nov. 11-20; minimum, 86 ppm Feb. 21-28.

Specific conductance: Maximum daily, 381 microhos Jan. 16; minimum daily, 148 microhos Mar. 3.

Water temperatures: Maximum, 79°F Sept. 1; minimum, 33°F Feb. 1-2.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 196 ppm Nov. 21-30, 1950; minimum, 110 ppm Aug. 11-12, 1950.

Hardness: Maximum, 186 ppm Nov. 11-20, 1950; minimum, 66 ppm Aug. 16-20, 1949.

Specific conductance: Maximum daily, 381 microhos Jan. 16, 1951; minimum daily, 113 microhos, Aug. 19, 1948.

Water temperatures: Maximum, 84°F on several days during summer months; minimum, 33°F Feb. 1-2, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 based on records for White River near Flippin, which are given in Water-Supply Paper 1211. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (microhos at 25°C)	pH	Color
														Calcium, mg./ml.	Non-carbonate			
Oct. 1-10, 1950	2,594	--	--	44	13	2.6	--	184	9.3	3.2	--	2.8	169	163	12	291	8.2	5
Oct. 11-20	1,637	--	--	44	14	2.6	--	a153	9.3	2.8	--	1.9	170	167	9	300	8.4	7
Oct. 21-31	1,091	--	--	46	15	2.1	--	203	10	3.5	--	1.9	180	176	10	323	8.2	5
Nov. 1-10	1,003	--	--	47	16	3.2	--	210	5.4	3.8	--	1.3	180	183	11	328	8.0	5
Nov. 11-20	874	--	--	48	16	2.5	--	213	6.4	4.0	--	1.0	185	186	11	334	8.1	7
Nov. 21-31	982	5.0	0.04	48	15	3.8	2.2	218	5.2	5.0	0.0	.8	196	181	3	343	8.2	4
Dec. 1-10	848	--	--	46	16	2.8	--	205	5.8	4.5	--	2.4	182	181	13	325	8.2	7
Dec. 11-20	878	--	--	42	16	2.9	--	199	5.9	3.8	--	1.8	175	171	8	311	8.2	7
Dec. 21-31	802	--	--	45	16	3.0	--	202	6.1	4.8	--	1.5	181	178	13	323	8.1	5
Jan. 1-10, 1951	931	--	--	46	16	3.5	--	215	6.3	4.8	--	1.7	188	181	4	330	8.2	5
Jan. 11-20	2,512	--	--	44	17	3.0	--	203	6.9	4.0	--	1.9	183	180	13	322	8.1	6
Jan. 21-31	3,975	7.4	.11	30	14	3.0	2.0	153	8.0	4.0	.1	1.8	148	132	7	250	8.0	13
Feb. 1-10	3,976	--	--	43	14	2.7	--	184	8.0	4.5	--	2.7	174	165	14	296	8.2	10
Feb. 11-20	4,580	--	--	40	14	2.6	--	176	8.1	4.5	--	2.7	167	157	13	290	8.2	8
Feb. 21-28	41,020	--	--	20	6.3	4.0	--	90	8.2	5.5	--	2.4	120	106	12	180	7.7	30
Mar. 1-6	33,100	--	--	25	6.3	1.5	--	91	5.7	2.2	--	2.9	115	88	14	160	7.7	30
Mar. 7-10	30,120	--	--	35	8.7	1.9	--	134	7.0	2.8	--	3.4	123	138	13	229	8.2	30
Mar. 11-20	22,640	--	--	38	11	2.3	--	145	7.2	2.5	--	2.6	145	135	16	246	8.0	15
Mar. 21-31	6,846	--	--	38	11	1.7	--	165	6.9	3.2	--	3.3	151	140	5	274	8.1	10
Apr. 1-10	5,725	--	--	40	12	2.4	--	168	5.8	3.0	--	3.1	165	149	12	279	7.6	8
Apr. 11-20	13,650	--	--	40	12	2.5	--	159	5.9	2.8	--	3.0	152	149	19	266	7.7	7
Apr. 21-30	9,688	10	.02	38	11	2.3	1.8	163	6.6	3.2	.0	2.5	161	140	6	287	7.8	5

a Includes equivalent of 2 parts per million of carbonate (CO₃).

WHITE RIVER BASIN--Continued
 WHITE RIVER AT COTTER, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg.	Non-carbonate			
May 1-10, 1951	8,902	--	--	39	12	2.9	--	169	5.5	3.2	--	2.2	168	147	8	275	8.2	8
May 11-20	6,252	--	--	39	13	2.7	--	178	5.5	3.2	--	2.1	174	151	5	288	8.2	6
May 21-31	2,712	--	--	38	13	2.7	--	182	5.4	3.2	--	2.0	169	148	0	286	8.0	4
June 1-13	3,568	--	--	43	13	3.0	--	186	5.4	3.2	--	2.5	175	161	8	307	7.6	5
June 14-20	7,963	--	--	35	9.3	3.0	--	138	4.6	2.5	--	3.8	147	126	12	237	7.7	11
June 21-30	16,880	--	--	38	9.7	2.7	--	190	6.3	2.8	--	3.5	149	135	12	254	7.7	12
July 1-10	23,940	--	--	35	9.7	2.4	--	145	7.0	1.8	--	3.9	138	127	8	234	7.3	10
July 11-20	20,210	--	--	36	9.8	2.0	--	151	6.3	1.8	--	3.6	136	130	6	241	7.8	10
July 21-31	2,260	12	0.02	43	14	2.4	1.5	188	5.5	3.0	0.0	3.7	178	165	11	304	7.5	6
Aug. 1-10	235	--	--	44	16	2.2	--	198	4.3	3.5	--	2.6	172	176	15	305	7.9	3
Aug. 11-20	240	--	--	45	14	1.9	--	200	4.5	3.0	--	2.2	197	170	8	311	7.8	4
Aug. 21-31	237	--	--	46	15	2.2	--	204	3.5	3.2	--	2.5	179	178	9	317	7.8	6
Sept. 1-10	248	--	--	45	13	2.8	--	200	3.7	2.6	--	2.9	174	166	2	308	8.2	7
Sept. 11-20	238	--	--	47	13	2.9	--	207	3.8	3.2	--	2.9	171	170	12	304	8.1	4
Sept. 21-30	140	--	--	52	13	2.8	--	207	5.5	4.2	--	2.1	183	163	14	323	7.6	5
Average	6,804	--	--	41	13	2.7	--	177	6.2	3.5	--	2.5	166	155	10	286	--	9

WHITE RIVER BASIN--Continued

WHITE RIVER AT COTTER, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	--	54	46	33	50	52	68	74	70	76	79
2	72	62	56	48	33	50	50	64	76	70	78	78
3	64	58	50	46	34	54	48	64	76	70	76	76
4	64	52	40	38	38	50	48	64	70	70	76	74
5	62	54	44	40	38	50	54	65	70	70	76	72
6	62	54	38	44	44	54	54	64	71	70	--	72
7	64	64	36	38	36	54	54	61	70	70	76	72
8	60	58	36	40	38	54	50	61	70	72	77	70
9	58	54	38	40	38	52	50	64	70	71	78	70
10	58	48	40	44	38	54	48	66	70	72	76	70
11	62	--	42	46	38	54	48	64	70	70	76	70
12	62	44	48	50	36	46	48	62	72	72	76	74
13	60	44	48	46	40	46	48	62	70	72	76	70
14	62	48	42	46	38	44	48	64	70	72	77	68
15	66	54	45	42	38	44	50	64	70	72	78	69
16	64	53	40	46	40	44	48	65	70	72	77	69
17	66	45	42	46	40	46	47	65	70	76	75	66
18	64	50	38	44	42	46	50	66	71	76	74	67
19	66	54	38	42	44	46	52	68	72	76	75	66
20	66	48	44	46	46	46	52	68	71	76	75	68
21	64	46	42	38	44	--	54	70	76	76	77	70
22	68	48	44	40	44	46	56	72	74	78	74	66
23	62	46	46	42	44	48	54	68	76	78	72	66
24	62	42	42	40	46	48	54	68	76	76	64	70
25	62	40	42	42	46	48	58	68	77	76	74	70
26	64	42	42	42	48	50	64	70	76	76	73	70
27	66	46	40	44	48	51	64	68	76	76	76	68
28	64	48	38	40	50	52	64	68	76	76	74	66
29	64	42	50	36	--	52	68	70	76	76	76	66
30	64	46	42	34	--	52	68	72	72	76	76	66
31	64	--	38	36	--	50	--	--	--	76	78	--
Average	64	50	43	42	41	49	53	66	73	74	76	70

WHITE RIVER BASIN--Continued

WHITE RIVER AT NEWPORT, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 67 at Newport, Jackson County, 7.2 miles downstream from Black River.
DRAINAGE AREA.--19,812 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1951.

Water temperatures: October 1945 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 182 ppm Dec. 11-20, 21-31; minimum, 93 ppm Jan. 15-17.

Specific conductance: Maximum daily, 347 micromhos Dec. 26; minimum daily, 169 micromhos Mar. 1.

Water temperatures: Maximum, 84° F Sept. 1-2; minimum, 34° F Feb. 2-4.

EXTREMES, 1945-51.--Dissolved solids: Maximum, 194 ppm Oct. 1-10, 11-20, 1948; minimum, 98 ppm Feb. 1-3, 1949.

Hardness: Maximum, 182 ppm Dec. 11-20, 21-31, 1950; minimum, 54 ppm Jan. 23-31, 1949.

Specific conductance: Maximum daily, 400 micromhos Sept. 22, 347 ppm Jan. 23-31, 1951.

Water temperatures: Maximum, 84° F Aug. 2-4, 1949; minimum, 34° F Feb. 2-4, 1951.

REMARKS.--Specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

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

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180° C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950.....	12,660	11	0.04	40	17	5.1	3.6	198	6.6	3.8	0.1	3.5	188	170	7	322	7.6	6
Oct. 11-20.....	10,940	10	.03	42	17	5.1	2.7	210	4.8	5.0	.0	2.5	193	175	3	334	7.7	5
Oct. 21-31.....	12,960	11	.04	38	17	4.2	3.5	196	11	4.2	.1	1.5	188	165	4	312	8.0	11
Nov. 1-10.....	10,300	11	.01	40	17	3.3	2.2	206	7.3	3.8	.0	2.5	189	170	1	317	8.3	7
Nov. 11-20.....	12,440	9.6	.04	37	19	2.4	1.9	192	9.1	4.0	.0	1.4	175	170	13	305	8.1	10
Nov. 21-30.....	12,100	11	.04	37	18	2.2	2.2	192	6.7	4.0	.0	1.2	179	168	9	301	8.0	11
Dec. 1-10.....	11,040	8.7	.04	39	19	3.4	.8	202	5.2	4.0	.0	2.2	184	175	10	317	8.2	4
Dec. 11-20.....	9,665	11	.04	40	20	3.6	1.1	213	4.7	4.0	.0	1.2	192	182	8	324	8.3	3
Dec. 21-31.....	8,964	10	.02	40	20	3.7	2.1	214	5.2	4.8	.0	1.5	193	182	6	339	8.0	4
Jan. 1-10, 1951.....	13,650	8.0	.07	36	17	3.5	2.2	185	5.6	4.2	.0	1.5	170	160	8	297	8.0	13
Jan. 11-14, 18-20.....	24,060	9.0	.09	31	15	3.4	1.9	159	6.3	3.0	.1	2.0	151	139	9	254	8.0	12
Jan. 15-17.....	36,170	--	--	24	8.1	2.5	--	97	7.4	3.8	--	2.8	130	93	14	169	8.0	15
Jan. 21-31.....	25,890	7.7	.02	43	13	3.5	1.9	187	7.3	4.8	.0	2.6	176	161	8	307	8.2	3
Feb. 1-10.....	20,940	4.6	.06	34	15	3.2	1.4	167	8.4	3.5	.1	1.7	154	147	10	270	7.8	8
Feb. 11-20.....	33,060	8.5	.16	30	13	3.6	1.6	146	6.7	3.2	.0	3.0	144	128	9	244	7.8	22
Feb. 21-28.....	94,160	8.6	.26	24	8.3	3.6	1.0	103	8.4	3.2	.0	3.9	127	94	9	187	7.2	50
Mar. 1-10.....	73,900	8.3	.08	23	9.1	2.4	.8	111	5.6	2.5	.1	2.5	123	97	6	191	7.8	32
Mar. 11-20.....	54,280	7.5	.10	26	12	3.6	.8	141	5.0	2.0	.0	1.9	139	114	0	231	7.6	16
Mar. 21-31.....	37,690	7.0	.06	34	13	1.7	1.5	156	5.4	2.8	.1	1.7	145	138	10	255	7.7	7
Apr. 1-10.....	26,870	8.5	.10	37	15	2.2	1.8	183	4.4	3.5	.1	1.7	165	154	4	277	8.2	8
Apr. 11-20.....	41,240	7.0	.03	32	12	1.5	1.4	136	5.0	2.5	.1	1.7	148	137	6	247	8.2	15
Apr. 21-30.....	43,710	7.6	.06	32	11	2.2	1.8	142	5.3	2.2	.0	2.6	136	125	9	222	8.1	15

May 1-10.....	33,350	11	.03	37	14	2.0	1.7	173	4.9	2.5	.0	1.6	160	150	8	267	8.0	8
May 11-20.....	23,200	11	.04	38	16	2.6	2.0	188	5.0	8.5	.0	2.2	179	161	7	295	7.8	10
May 21-31.....	16,310	9.8	.03	38	16	2.5	1.6	194	4.8	3.5	.0	2.0	175	161	2	302	8.1	7
June 1-10.....	14,750	9.9	.04	37	18	2.8	1.4	189	6.6	3.0	.0	1.7	174	166	11	296	7.2	5
June 11-20.....	21,460	10	.02	37	15	2.6	1.4	176	6.3	2.8	.0	1.8	166	154	10	278	7.3	5
June 21-30.....	28,590	11	.05	36	14	3.1	1.4	166	6.7	4.0	.0	2.3	171	147	11	274	7.2	4
July 1-10.....	47,840	11	.02	30	13	2.7	1.5	151	5.0	2.8	.1	.9	148	128	5	244	7.2	7
July 11-20.....	49,960	12	.03	32	14	2.4	1.5	154	4.9	3.0	.0	4.0	151	137	11	253	7.2	11
July 21-31.....	32,330	13	.03	31	14	2.3	1.6	150	4.0	5.5	.0	3.5	152	135	12	252	7.3	17
Aug. 1-10.....	16,680	12	.06	31	15	2.1	2.0	170	4.4	2.8	.1	2.5	159	139	0	264	8.2	6
Aug. 11-20.....	13,850	11	.04	33	17	2.4	1.5	176	4.3	2.6	.1	2.7	164	102	6	270	7.5	6
Aug. 21-31.....	12,800	9.9	.06	32	11	2.8	1.6	182	4.5	2.0	.1	2.7	162	103	8	190	7.5	17
Sept. 1-10.....	12,740	9.9	.06	36	16	2.5	1.6	171	4.5	2.5	.1	1.9	158	143	3	267	7.8	5
Sept. 11-20.....	10,760	13	.08	31	19	2.1	1.1	196	3.5	2.8	.1	1.8	177	168	7	308	7.9	6
Sept. 21-30.....	14,390	6.1	.18	31	17	2.2	1.5	187	4.4	3.0	.1	2.3	151	147	10	263	7.7	10
Sept. 31-30.....	11,080	4.8	.09	34	18	2.3	1.5	184	4.6	2.5	.1	1.4	161	159	8	282	7.5	8
Average.....	25,710	9.5	0.06	34	15	2.8	1.6	170	5.7	3.5	0.0	2.2	161	147	8	272	--	11

LOWER MISSISSIPPI RIVER BASIN

WHITE RIVER BASIN--Continued

WHITE RIVER AT NEWPORT, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	67	48	43	36	53	--	70	75	76	79	84
2	62	62	49	43	34	54	--	72	74	75	80	84
3	62	60	47	46	34	54	57	70	72	73	79	80
4	--	56	46	--	34	54	57	70	72	74	78	81
5	58	59	47	44	38	52	56	66	72	73	78	79
6	59	59	42	46	40	52	56	68	72	73	78	79
7	60	59	38	45	40	53	56	67	73	74	79	78
8	60	59	42	42	40	55	55	67	74	74	80	76
9	64	55	40	42	--	54	55	66	74	74	80	73
10	63	54	41	42	41	53	55	67	74	74	80	73
11	68	52	40	43	42	53	54	68	75	74	82	80
12	68	51	41	43	42	55	54	68	75	75	79	77
13	68	52	40	--	43	49	53	68	75	74	82	75
14	66	52	42	43	--	43	55	70	74	74	82	73
15	65	53	43	44	42	43	53	69	75	74	83	72
16	68	52	41	43	42	45	53	72	75	76	82	71
17	67	52	41	44	43	46	52	70	74	78	82	71
18	68	52	42	46	44	48	53	72	77	78	81	71
19	68	54	--	48	46	46	53	72	78	79	78	71
20	67	52	43	50	48	46	54	74	76	--	78	73
21	70	51	42	48	49	45	54	74	76	81	79	73
22	68	50	43	--	48	48	55	75	78	81	81	71
23	68	51	43	45	50	55	55	71	77	81	76	70
24	67	46	46	45	50	54	55	74	78	81	78	72
25	67	45	44	43	49	55	55	74	--	80	80	72
26	67	44	42	--	50	55	56	72	78	80	80	71
27	68	45	42	45	50	55	62	74	79	80	81	72
28	68	45	42	43	50	55	60	70	79	79	80	69
29	68	45	42	42	--	56	62	71	78	80	80	66
30	68	47	42	40	--	56	70	71	77	--	82	69
31	68	--	42	39	--	55	--	74	--	79	83	--
Average	63	53	43	44	43	52	56	71	75	77	80	74

WHITE RIVER BASIN--Continued

LITTLE RED RIVER NEAR HEBER SPRINGS, ARK.

LOCATION --At gaging station at bridge on State Highway 25, 2½ miles downstream from Peter Creek, and 3 miles northeast of Heber Springs, Cleburne County.
DRAINAGE AREA --1,141 square miles.

RECORDS AVAILABLE --Chemical analyses: November 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 34 ppm Nov. 11-16; minimum, 21 ppm Mar. 17-20.

Water temperatures: Maximum, 31 ppm Nov. 11-16; minimum, 21 ppm Feb. 17-20.

Water hardness: Maximum, 31 ppm Nov. 11-16; minimum, 21 ppm Feb. 17-20.

Water pH: Maximum, 9.0° Aug. 6-30; minimum, freezing point, Feb. 2.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 58 ppm Aug. 21-24, 1950; minimum, 21 ppm Mar. 17-20, 1951.

Hardness: Maximum, 31 ppm Nov. 11-16, 1950; minimum, 14 ppm Dec. 11-20, 1949.

Specific conductance: Maximum daily, 126 micromhos Jan. 21, 1951; minimum daily, 26.5 micromhos Jan. 3, 1950.

Water temperatures: Maximum, 90°F Aug. 6-30, 1951; minimum, freezing point Feb. 2, 1951.

REMARKS --Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos/cm at 25°C)	pH	Color
														Calcium, mg/l	Non-carbonate, mg/l			
Oct. 1-10, 1950	421	7.6	0.07	7.4	1.4	2.4	1.8	28	6.2	2.5	0.0	0.7	51	34	1	54.6	7.5	9
Oct. 11-20	221	8.3	.07	7.4	1.2	4.0	.2	23	3.9	2.5	.2	.6	43	23	0	38.9	7.5	7
Oct. 21-30	858	7.9	.10	6.2	1.3	2.1	.4	23	3.9	3.0	.2	.2	48	23	2	52.1	7.4	18
Oct. 31-10, 1951	585	7.2	.10	7.2	1.3	4.0	.2	23	3.9	3.0	.2	.2	48	23	2	52.1	7.4	18
Nov. 1-10	550	5.0	.10	8.0	1.5	2.8	.8	27	5.7	3.2	.0	1.0	42	26	4	64.3	7.1	12
Nov. 11-16	1,452	9.7	.17	9.0	2.0	2.3	.6	31	4.9	2.8	.1	.5	54	31	5	66.0	7.7	23
Nov. 17-20	2,795	--	--	5.1	2.2	2.8	--	19	5.9	2.0	--	1.1	28	22	6	43.9	7.5	45
Nov. 21-30	1,164	6.8	.04	5.6	1.6	2.0	.2	23	3.7	2.8	.0	.7	38	21	2	47.8	7.4	12
Dec. 1-10	607	8.8	.16	5.6	1.5	2.0	.5	23	4.0	2.0	.0	.5	37	20	1	49.6	7.4	11
Dec. 11-20	413	5.9	.19	5.5	1.6	2.5	1.1	23	5.1	3.5	.0	.4	37	20	2	54.3	7.3	9
Dec. 21-31	288	4.6	.18	6.2	1.7	2.5	.5	23	5.4	3.5	.0	.2	36	22	4	52.8	7.2	9
Jan. 1-10, 1951	3,257	5.0	.07	5.5	1.7	1.9	.6	18	4.7	2.2	.1	1.0	33	21	6	46.0	7.3	38
Jan. 11-20	6,754	4.8	.16	4.7	1.5	2.7	1.9	17	3.8	2.2	.1	.9	30	18	4	41.2	6.8	35
Jan. 21-31	1,317	8.0	.08	5.5	1.2	2.7	.8	20	4.8	2.5	.1	.5	38	19	2	45.8	7.3	11
Feb. 1-10	2,956	7.0	.15	5.2	1.3	2.7	2.2	19	5.9	2.2	.1	.4	37	18	3	54.1	7.1	23
Feb. 11-20	5,071	5.9	.15	4.6	1.2	2.1	1.0	17	4.4	2.0	.3	.4	37	16	2	40.0	7.1	37
Feb. 21-31	7,785	3.4	.13	5.8	1.3	1.9	.7	21	3.8	2.5	.1	.6	38	19	3	48.5	7.3	20
Mar. 1-10	1,388	4.7	.13	5.9	1.6	1.6	--	20	3.8	2.0	--	1.0	40	21	5	49.5	7.2	12
Mar. 11-16	1,512	--	--	4.1	1.4	1.8	--	14	4.0	1.5	--	1.1	21	16	5	36.0	7.1	40
Mar. 17-20	4,020	--	--	4.1	1.4	1.8	--	14	4.0	1.5	--	1.1	21	16	5	36.0	7.1	40
Mar. 21-31	1,593	6.6	.08	4.8	1.4	2.3	.4	18	3.8	2.0	.1	.5	34	18	3	44.7	7.0	18

WHITE RIVER BASIN--Continued
LITTLE RED RIVER NEAR HEBER SPRINGS, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium-magnesium	Non-carbonate			
Apr. 1-10, 1951	1,752	4.2	0.17	5.8	1.0	1.3	1.0	20	3.1	2.0	0.1	0.8	35	19	2	46.2	6.6	20
Apr. 11-20	2,866	5.1	0.19	5.8	1.0	1.0	1.0	19	3.8	2.0	0.1	0.7	30	19	3	44.1	7.5	35
Apr. 21-30	3,956	5.6	0.35	5.7	1.3	1.3	1.0	20	3.5	1.8	0.1	0.5	32	20	3	44.0	7.0	40
May 1-10	2,098	6.3	0.13	5.8	1.3	1.0	0.7	18	4.3	2.8	0.1	1.2	39	20	5	57.2	7.6	15
May 11-20	631	5.3	0.05	7.6	1.4	1.1	0.7	25	4.4	2.2	0.0	1.1	36	23	4	60.9	7.3	17
May 21-31	305	5.6	0.03	8.5	1.4	1.8	1.4	30	4.4	2.5	0.0	1.4	43	27	2	67.4	7.5	15
June 1-10	960	5.7	0.1	8.1	1.6	2.3	1.4	30	4.2	2.2	0.1	1.0	45	27	2	64.7	8.0	7
June 11-20	1,148	6.6	0.02	6.6	1.6	2.5	1.4	28	3.8	2.0	0.1	1.3	45	24	2	54.3	8.6	22
June 21-30	421	6.3	0.02	7.0	1.4	2.6	1.4	28	3.5	2.0	0.1	1.1	41	23	0	57.8	8.8	10
July 1-10	4,102	6.5	0.14	5.0	1.2	1.9	1.7	19	3.3	1.8	0.1	1.3	33	18	2	43.8	7.1	27
July 11-20	695	7.7	0.17	7.0	1.2	1.9	1.7	28	3.4	2.0	0.0	1.0	45	22	0	57.3	7.2	7
July 21-31	473	8.0	0.07	7.2	1.5	1.9	1.6	27	3.9	2.2	0.0	1.0	41	24	2	52.1	7.0	10
Aug. 1-10	219	9.4	0.00	7.8	1.6	2.0	0.9	30	3.2	1.8	0.0	1.0	46	26	1	61.2	7.8	8
Aug. 11-20	300	6.1	0.04	6.6	1.7	1.4	1.2	26	3.3	2.0	0.2	1.0	42	23	2	55.7	6.9	8
Aug. 21-31	342	5.0	0.02	4.6	1.5	1.0	1.0	20	2.9	1.5	0.3	1.3	38	18	1	46.4	6.7	21
Sept. 1-10	258	5.4	0.28	4.8	1.5	1.8	1.4	20	3.4	1.5	0.1	2.1	38	18	2	46.1	6.9	27
Sept. 11-20	1,287	5.4	0.08	5.3	1.6	1.5	1.5	19	3.7	1.5	0.2	1.8	38	20	4	42.3	6.9	35
Sept. 21-30	314	6.5	0.09	6.8	2.3	2.0	1.0	27	4.0	2.2	0.1	1.3	42	26	4	54.1	7.3	22
Average	1,642	6.3	0.13	6.2	1.5	2.1	1.0	23	4.1	2.3	0.1	1.1	39	21	3	51.8	--	20

WHITE RIVER BASIN--Continued

LITTLE RED RIVER NEAR HEBER SPRINGS, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	69	48	40	33	54	54	67	84	77	--	84
2	71	66	49	42	32	55	50	66	84	73	85	83
3	--	63	48	42	33	53	52	66	83	74	86	84
4	69	58	46	46	34	53	54	66	77	73	87	80
5	67	61	44	45	34	53	53	65	76	74	88	80
6	--	61	42	45	36	54	54	65	76	72	90	78
7	70	59	41	40	35	56	54	65	76	74	89	78
8	68	60	40	41	35	55	52	65	73	78	88	78
9	--	56	39	41	37	53	53	66	74	80	87	77
10	--	54	39	41	41	52	52	65	74	81	86	76
11	69	50	39	40	43	51	51	66	72	82	--	76
12	--	51	37	43	44	48	49	66	72	82	85	75
13	--	50	39	42	44	43	48	67	74	83	84	74
14	68	48	39	43	42	43	51	70	74	82	88	72
15	69	49	39	44	43	43	52	77	74	85	85	72
16	68	51	40	44	42	44	53	80	73	83	83	72
17	69	50	39	45	43	45	54	72	75	82	86	72
18	68	51	39	45	45	46	53	74	78	84	85	72
19	68	52	38	--	46	47	59	77	80	85	86	72
20	68	52	37	44	49	48	60	78	79	86	87	73
21	67	51	40	45	49	45	56	78	79	88	83	72
22	66	52	43	42	48	49	57	78	80	89	79	72
23	65	52	43	42	47	51	59	76	82	89	78	72
24	65	51	44	43	47	51	60	76	83	88	78	73
25	63	47	44	42	49	54	62	76	84	87	82	74
26	65	46	41	43	49	52	63	76	85	85	84	73
27	66	45	40	42	50	52	64	77	86	84	85	73
28	67	41	38	40	54	53	56	78	84	84	88	71
29	66	43	40	38	--	52	67	78	84	84	89	71
30	68	45	38	--	--	51	68	79	82	85	90	72
31	69	--	39	34	--	50	--	84	--	85	86	--
Average	68	53	41	42	42	50	56	72	79	82	85	75

WHITE RIVER BASIN--Continued

WHITE RIVER AT CLARENDON, ARK.

LOCATION --At gaging station on Cottonbelt Railroad bridge at Clarendon, Monroe County.

DRAINAGE AREA --25,467 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1948 to September 1951.

EXTRIMES, 1950-51. --Dissolved solids: Maximum, 185 ppm Sept. 11-15; minimum, 103 ppm Jan. 18-31.

Hardness: Maximum, 166 ppm Oct. 11-20, 21-27; minimum, 55 ppm Jan. 14-17.

Specific conductance: Maximum daily, 335 microhos Oct. 20; minimum daily, 111 microhos Feb. 25.

Water temperatures: Maximum, 87°F Sept. 1; minimum, 35°F Jan. 31, Feb. 1.

EXTRIMES, 1947-51. --Dissolved solids: Maximum, 198 ppm Sept. 1-10, 21-30, 1948; minimum, 38 ppm Feb. 1-9, 1950.

Hardness: Maximum, 175 ppm Oct. 11-20, 1947; minimum, 29 ppm Mar. 1-10, 1948.

Specific conductance: Maximum daily, 366 microhos Oct. 10, 1947; minimum daily, 60.7 microhos Feb. 3, 1950.

Water temperatures (1948-51): Maximum, 88°F Sept. 24, 1949; minimum, 35°F Jan. 31, Feb. 1, 1951.

REMARKS --Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 obtained from Corp of Engineers, Memphis District.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (microhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950	20,290	16	0.07	32	13	4.1	2.6	162	3.9	4.0	0.2	2.2	158	133	1	279	8.2	4
Oct. 11-20	13,130	--	--	40	16	4.7	--	194	4.2	5.5	--	2.4	176	166	6	319	8.0	5
Oct. 21-27	13,286	--	--	40	16	4.4	--	194	4.3	5.8	--	.9	167	166	7	300	8.3	15
Oct. 28-31	16,720	--	--	29	12	4.2	--	144	4.0	5.5	--	1.1	137	122	4	243	8.0	12
Nov. 1-10	13,230	--	--	35	14	3.5	--	171	5.0	4.8	--	1.4	161	145	5	275	6.1	7
Nov. 11-20	17,100	--	--	30	13	3.0	--	147	7.9	5.0	--	1.4	139	128	8	244	7.9	15
Nov. 21-30	21,440	--	--	24	10	3.9	--	113	5.8	5.5	--	2.3	125	101	8	205	7.8	17
Dec. 1-10	19,910	--	--	24	10	2.9	--	111	4.4	5.2	--	2.5	129	101	10	195	8.0	35
Dec. 11-20	18,250	--	--	21	10	3.2	--	109	3.7	5.0	--	1.7	127	94	4	195	7.8	30
Dec. 21-31, 1951	12,200	--	--	32	10	3.2	--	133	3.9	5.2	--	1.7	135	121	13	254	8.9	19
Jan. 1-10	15,860	--	--	23	10	3.9	--	106	11	5.5	--	2.1	143	132	9	274	8.9	23
Jan. 11-20	2,680	--	--	23	10	3.9	--	106	11	5.5	--	2.1	143	132	9	191	8.2	37
Jan. 14-17	20,600	--	--	14	4.9	11	--	73	6.0	7.8	--	1.6	111	55	0	152	8.1	40
Jan. 18-31	48,070	6.6	.54	14	5.5	5.0	2.8	68	6.3	4.5	.1	1.8	103	58	2	121	7.5	65
Feb. 1-10	32,970	--	--	18	8.6	2.3	--	89	5.3	3.5	--	1.4	118	80	7	155	8.0	30
Feb. 11-20	37,640	--	--	18	7.5	2.3	--	83	5.8	2.8	--	1.2	110	76	8	148	7.9	50
Feb. 21-28	59,060	--	--	16	6.6	2.0	--	70	6.0	3.5	--	1.0	109	67	9	131	7.6	40
Mar. 1-10	99,320	--	--	16	6.3	3.0	--	74	4.9	3.2	--	1.8	116	66	5	133	8.0	32
Mar. 11-20	79,650	--	--	18	7.3	2.5	--	82	4.8	3.0	--	1.8	112	75	8	146	7.6	35
Mar. 21-31	65,920	--	--	19	8.7	2.5	--	93	4.8	2.8	--	1.6	115	83	7	162	7.6	30
Apr. 1-10	49,120	--	--	21	8.7	3.6	--	98	4.2	3.0	--	1.8	119	88	8	175	7.7	38
Apr. 11-20	41,940	--	--	25	10	2.9	--	119	4.4	3.2	--	1.4	121	104	6	202	7.9	21
Apr. 21-30	47,670	7.8	.04	26	11	2.8	2.6	129	4.9	3.0	--	1.4	126	110	4	212	7.9	12

a Includes equivalent of 1 part per million of carbonate (CO₃).

May 1-10.....	53,580	--	--	23	10	3.6	--	116	10	4.0	--	1.9	123	98	3	207	7.5	22
May 11-20.....	38,280	--	--	24	11	3.7	--	130	3.6	4.2	--	1.8	135	105	0	220	7.9	22
May 21-31.....	21,770	--	--	32	14	3.2	--	171	4.1	3.8	--	1.6	159	137	0	278	8.0	12
June 1-10.....	15,600	--	--	37	15	4.2	--	181	4.0	4.2	--	2.6	168	154	6	295	8.2	7
June 11-20.....	22,040	--	--	35	13	3.7	--	163	4.5	4.0	--	2.5	154	141	7	269	8.0	8
June 21-30.....	25,610	--	--	34	12	3.8	--	150	4.4	3.2	--	1.7	151	134	11	259	7.6	8
July 1-10.....	34,950	--	--	32	11	3.5	--	139	6.6	3.2	--	3.6	131	125	11	228	7.7	8
July 11-20.....	49,480	--	--	28	11	3.4	--	127	2.5	3.8	--	3.2	131	115	11	209	7.4	12
July 21-31.....	53,480	17	1.7	29	11	2.9	1.7	136	4.6	3.2	1.1	2.4	140	118	6	234	8.1	12
Aug 1-10.....	35,760	--	--	28	12	3.0	--	140	2.8	3.0	--	2.4	135	119	4	236	7.9	8
Aug 11-20.....	17,320	--	--	31	13	3.7	--	137	3.2	4.2	--	3.0	149	139	10	259	7.9	7
Aug 21-30.....	21,400	--	--	35	12	3.7	--	129	3.1	4.0	--	1.8	143	132	6	249	7.6	7
Sept. 1-10.....	14,590	--	--	32	14	4.1	--	127	4.3	3.9	--	1.8	149	132	11	259	7.6	7
Sept. 11-15.....	12,840	--	--	38	17	4.9	--	127	5.1	5.5	--	2.6	185	165	11	292	8.2	5
Sept. 16-20.....	20,120	--	--	28	10	3.7	--	128	4.1	4.5	--	2.1	142	111	6	214	7.8	8
Sept. 21-30.....	15,070	--	--	30	13	4.0	--	155	3.5	4.8	--	1.7	151	126	1	248	8.0	6
Average	33,090	--	--	27	11	3.7	--	131	5.0	4.3	--	1.9	137	113	6	221	--	20

LOWER MISSISSIPPI RIVER BASIN

WHITE RIVER BASIN--Continued

WHITE RIVER AT CLARENDON, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	67	53	44	35	55	54	70	80	79	81	87
2	71	67	48	45	36	57	55	72	76	79	82	84
3	68	60	48	45	36	55	57	71	75	79	83	82
4	67	61	47	47	37	56	58	70	74	79	83	83
5	67	61	46	49	39	56	58	69	75	77	82	83
6	67	62	44	46	39	58	60	68	76	75	84	83
7	69	62	43	45	39	59	57	68	76	78	84	78
8	69	64	44	46	40	58	57	68	78	79	84	80
9	68	55	43	46	39	56	56	70	77	79	84	78
10	68	55	42	46	39	55	57	70	77	79	84	79
11	64	54	42	45	42	54	56	70	76	79	81	80
12	67	53	42	45	45	54	55	70	76	80	82	80
13	68	53	42	46	50	50	56	71	77	80	83	75
14	68	52	44	46	44	50	--	71	76	80	85	75
15	69	57	42	47	45	48	56	72	78	81	81	76
16	69	53	41	48	44	49	56	70	75	81	78	74
17	70	51	40	50	44	49	55	71	77	80	82	72
18	71	54	40	53	45	50	54	73	78	81	82	73
19	69	54	42	54	49	48	60	74	78	81	82	74
20	68	52	43	52	51	50	62	74	78	82	83	74
21	68	53	42	48	51	50	60	75	79	81	80	73
22	67	54	45	48	51	55	59	75	79	82	79	71
23	65	53	45	49	52	55	59	74	79	82	78	72
24	65	47	46	49	52	55	63	73	81	81	79	71
25	68	46	49	46	53	56	65	--	82	80	81	76
26	68	47	45	46	54	55	65	75	82	--	82	75
27	67	47	43	46	55	56	67	75	82	80	81	72
28	68	47	42	46	57	59	65	75	82	83	82	--
29	69	46	43	--	--	55	68	77	82	80	83	65
30	69	47	42	39	--	51	68	79	82	79	84	64
31	70	--	44	35	--	55	--	79	--	82	85	--
Average	68	54	44	47	45	54	59	72	78	80	82	76

WHITE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN WHITE RIVER BASIN IN ARKANSAS
Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
WEST FORK WHITE RIVER AT GREENLAND																		
Apr. 6, 1951	149	5.0	0.08	10	1.9	3.0	0.3	35	5.7	2.5	0.1	0.4	47	33	4	74.3	7.2	10
Sept. 10	1.5							54	6.0	2.8		.8		47	3	107	7.8	
KINGS RIVER NEAR BERRYVILLE																		
Jan. 15, 1951	1,620							112	7.0	2.2		2.3		99	7	198	8.5	
Sept. 10	67							a159	4.0	2.5		1.8		142	12	245	8.5	
BUFFALO RIVER NEAR ST. JOE																		
Jan. 16, 1951	2,370							87	4.0	1.8		1.1		73	2	149	8.5	
Sept. 11	83							144	5.0	3.5		.8		127	9	238	8.3	
BUFFALO RIVER NEAR RUSH																		
Jan. 16, 1951	3,580							95	7.0	2.0		1.1		63	5	166	8.3	
Sept. 11	132							129	5.0	3.2		.6		117	11	212	8.3	
BLACK RIVER NEAR CORNING																		
Jan. 16, 1951	8,330							37	5.0	2.8		2.4		32	2	82.1	8.0	
Sept. 12	837							156	4.0	6.5		3.8		136	11	262	7.5	
BLACK RIVER AT POCAHONTAS																		
Jan. 16, 1951	11,600							111	3.0	2.0		1.4		94	3	180	8.5	
Sept. 12	3,680							a181	4.0	2.8		1.8		165	17	273	8.5	
SPRING RIVER AT IMBODEN																		
Jan. 17, 1951	3,210							b213	4.0	2.0		2.1		178	0	315	8.7	
Sept. 12	752							a193	3.0	3.0		2.6		173	15	288	8.4	

a Includes equivalent of 5 parts per million of carbonate (CO₃).
b Includes equivalent of 10 parts per million of carbonate (CO₃).

WHITE RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN WHITE RIVER BASIN IN ARKANSAS--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued																			
Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180° C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25° C)	pH	Color	
														Calcium, mag- nesium	Non-carbon- ate				
ELEVEN POINT RIVER NEAR RAVENDEN SPRINGS																			
Jan. 17, 1951.....	2,090							c204	3.0	2.5			2.5	169	2	300	8.8		
Sept. 13.....	1,620							a174	2.0	2.0			3.0	156	13	265	8.4		
BLACK RIVER AT BLACK ROCK																			
Feb. 13, 1951.....	11,900							155	3.0	2.5			1.7	130	3	245	8.0		
Sept. 20.....	6,200							198	2.0	1.2			1.8	170	8	303	7.5		
STRAWBERRY RIVER NEAR EVENING SHADE																			
Feb. 7, 1951.....	988							93	7.0	1.0			1.9	80	4	157	7.7		
Sept. 5.....	38							d186	5.0	2.5			1.3	184	11	279	8.5		
STRAWBERRY RIVER NEAR POUGHKEEPSIE																			
Feb. 7, 1951.....	1,850							23	3.0	2.0			.8	21	2	48.1	6.9		
Sept. 5.....	125							177	4.0	2.8			6.4	163	18	279	8.4		
MIDDLE FORK LITTLE RED RIVER AT SHIRLEY																			
Feb. 8, 1951.....	1,460							e79	4.0	2.0			1.2	26	0	132	9.1		
Sept. 6.....	38							61	6.0	2.8			.6	55	5	113	7.8		
WHITE RIVER AT DEVALLS BLUFF																			
Feb. 8, 1951.....	26,400							a138	6.0	3.8			1.7	116	2	226	8.6		
Sept. 17.....	21,200							114	4.0	2.2			1.3	102	9	184	8.3		
NORTH FORK RIVER AT NORFORK DAM NEAR NORFORK																			
Oct. 27, 1950.....	1,930	5.9	0.04	32	17	2.4	1.8	184	4.4	2.5		0.0	1.2	160	150	382	7.9	8	
Dec. 5.....	2,370	5.7	.04	33	17	1.5	1.4	180	4.0	2.8		.0	1.6	160	152	5	281	7.4	7
Jan. 4, 1951.....	1,960	5.4	.04	34	18	1.6	.9	197	4.2	1.8		.0	1.1	165	159	0	302	8.2	7
Feb. 12.....	1,170	5.2	.02	33	21	1.7	2.2	194	15	2.5		.0	.9	178	169	10	298	8.2	3
a Includes equivalent of 5 parts per million of carbonate (CO ₃). b Includes equivalent of 11 parts per million of carbonate (CO ₃). c Includes equivalent of 22 parts per million of carbonate (CO ₃). d Includes equivalent of 6 parts per million of carbonate (CO ₃). e Includes equivalent of 22 parts per million of carbonate (CO ₃).																			

a Includes equivalent of 5 parts per million of carbonate (CO₃).
c Includes equivalent of 11 parts per million of carbonate (CO₃).
d Includes equivalent of 6 parts per million of carbonate (CO₃).
e Includes equivalent of 22 parts per million of carbonate (CO₃).

Mar. 2	2,140	7.0	.03	32	20	2.1	.6	194	6.7	2.0	.0	.9	168	162	3	285	8.0	2
Apr. 5	2,520	5.0	.05	31	19	1.5	1.3	192	4.3	2.0	.0	1.1	168	155	0	291	7.9	6
May 16	1,800	7.2	.02	29	20	1.3	1.7	187	4.0	3.0	.0	2.0	173	155	1	286	7.6	4
June 12	2,430	6.3	.04	34	19	1.2	2.4	188	4.4	2.2	.0	3.1	170	163	9	299	7.4	7
June 27	2,230	7.2	.02	34	19	1.2	2.0	190	4.0	1.8	.0	2.1	166	163	7	299	7.5	7
Aug. 16	1,860	7.2	.03	33	20	1.3	1.4	191	5.4	3.5	.0	2.3	169	165	8	304	7.4	5

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN
ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.

LOCATION.--At gaging station just upstream from Caddoa Creek and 1½ miles downstream from John Martin Dam, Bent County.
DRAINAGE AREA.--18,935 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1942 to August 1943, October 1945 to July 1949 (intermittent and weekly samples) January to September 1951 (daily samples).

EXTREMES, 1951--Dissolved solids: Maximum, 3,380 ppm Feb. 11-20; minimum, 1,320 ppm Sept. 1-10.

Hardness: Maximum, 1,590 ppm Jan. 21-31, Feb. 1-10; minimum, 702 ppm Sept. 1-10.

Specific conductance: Maximum daily, 4,260 micromhos Feb. 2; minimum daily, 1,680 micromhos Sept. 1, 3, 4.

Water temperature: Maximum observed, 85°F Aug. 6.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, January to September 1951

Date of collection	Mean discharge (cfs)	Temp-erature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Specific conduct-ance (micro-mhos at 25°C)	pH	Color	
															Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate				
Jan. 11-20, 1951..	4.55		21	0.00	347	170	464	5.6	371	2,000	116	0.8	5.0	0.71	3,310	4.50	41	1,560	1,260	39	3,890	7.7	1
Jan. 21-31.....	4.72		20	0.00	353	173	460	6.2	382	2,010	118	7	4.7	0.70	3,330	4.53	42	1,590	1,280	38	3,960	7.7	2
Feb. 1-10.....	4.26		22	0.00	352	174	468	8.6	386	2,010	117	7	5.6	0.72	3,350	4.56	39	1,580	1,280	39	3,950	7.7	2
Feb. 11-20.....	4.48		20	0.00	346	175	483	6.6	379	2,040	120	7	4.3	0.72	3,380	4.60	41	1,580	1,270	40	3,980	7.7	2
Feb. 21-28.....	4.25		20	0.00	332	175	477	7.0	371	2,020	118	7	3.3	0.72	3,340	4.54	38	1,550	1,240	40	3,940	7.7	2
Mar. 1-10.....	5.66		19	0.00	341	177	470	6.8	373	2,050	118	7	4.0	0.68	3,370	4.58	52	1,580	1,270	39	3,990	7.7	2
Mar. 11-20.....	11.4		16	0.00	326	160	418	5.6	382	1,920	99	7	3.3	0.51	3,040	4.13	94	1,470	1,160	38	3,630	7.7	3
Mar. 21-31.....	43.2		13	0.01	266	109	287	4.4	244	1,370	68	7	4.2	0.47	2,240	3.05	261	1,110	912	36	2,780	7.7	3
Apr. 1-10.....	463		11	0.01	252	99	256	7.4	216	1,270	61	8	3.4	0.34	2,070	2.82	2,990	1,040	858	35	2,580	7.8	3
Apr. 11-20.....	441		11	0.00	258	101	260	7.2	221	1,300	62	8	3.3	0.37	2,110	2.87	2,510	1,060	878	35	2,620	7.8	2
Apr. 21-30.....	446		9.6	0.02	266	99	258	8.2	217	1,300	55	5	3.0	0.36	2,110	2.87	2,540	1,070	892	34	2,630	7.9	2
May 1-10.....	725		12	0.02	264	101	253	10	215	1,320	64	7	3.0	0.36	2,130	2.90	4,170	1,070	898	34	2,660	7.9	2
May 11-20.....	375		17	0.02	314	125	351	10	237	1,660	93	7	3.4	0.37	2,300	3.67	2,793	1,300	1,090	37	3,300	7.9	2
May 21-31.....	18.3		18	0.02	338	153	423	13	b304	1,860	112	6	3.4	0.48	3,090	4.20	153	1,470	1,220	38	3,730	7.9	2
June 1-10.....	204		12	0.02	284	114	289	12	216	1,470	74	7	3.7	0.41	2,170	3.22	1,310	1,180	1,000	35	2,910	7.9	1
June 11-20.....	15.7		18	0.02	334	148	426	9.8	278	1,880	109	8	3.7	0.72	3,070	4.18	130	1,440	1,210	39	3,670	7.9	1
June 21-30, July 1-5.....	7.82		20	0.00	338	154	458	8.4	288	1,970	114	8	3.9	0.63	3,210	4.37	68	1,480	1,240	40	3,830	7.6	4
July 6-10.....	317		14	0.00	218	87	236	6.8	182	1,120	56	8	3.9	0.30	1,830	2.49	1,970	902	752	36	2,340	7.7	5
July 11-20.....	519		13	0.00	208	85	217	7.4	177	1,060	53	8	3.8	0.25	1,740	2.37	2,440	868	724	35	2,230	7.8	5
July 21-31.....	741		14	0.00	204	83	209	6.2	178	1,030	51	7	4.5	0.24	1,690	2.30	3,380	850	704	35	2,170	7.6	5
Aug. 1-10.....	959		14	0.00	190	73	184	6.2	167	922	43	6	4.2	0.26	1,520	2.07	3,940	774	637	34	1,970	7.8	5
Aug. 11-20.....	623		15	0.01	185	66	157	12	163	849	38	8	4.7	0.26	1,410	1.82	2,970	733	690	31	1,820	7.8	2
Aug. 21-31.....	898		14	0.02	183	63	149	10	159	817	34	6	5.9	0.22	1,350	1.84	3,270	716	585	31	1,770	7.7	2

a Includes equivalent of 10 parts per million of carbonate (CO₃).

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

Sept. 1-10.....	556	13	.01	181	61	139	11	158	802	31	.6	4.8	.27	1,320	1.80	1,980	702	573	30	1,730	7.7	5
Sept. 11-20.....	307	8.9	.02	185	66	132	13	166	848	35	.6	4.6	.28	1,400	1.80	1,160	773	572	31	1,810	7.6	7
Sept. 21-30.....	402	3.4	.02	184	68	140	11	151	862	36	.6	4.1	.28	1,360	1.88	1,300	738	615	29	1,820	7.5	7
Weighted average ...	c.309	13	0.01	219	83	203	8.9	187	1,070	50	0.7	4.2	0.30	1,750	2.38	1,460	888	735	34	2,230	--	--

c Mean discharge for water year October 1950 to September 1951 was 252 second-feet. Runoff for period Jan. 11, 1951 to Sept. 30, 1951 was 88 percent of total for water year.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Temperature (°F) of water, January to September 1951
 /Once-daily temperature measurement at approximately 8 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				--	39	49	44	55	63	73	77	74
2				--	40	47	45	55	62	66	77	72
3				--	37	41	48	56	63	64	75	71
4				--	39	44	47	57	61	67	76	72
5				--	40	--	46	55	63	69	78	70
6				--	40	44	46	53	63	69	85	70
7				--	40	43	46	55	63	73	76	71
8				--	43	43	46	57	63	72	76	70
9				--	45	38	48	56	64	72	76	71
10				--	45	50	45	55	63	70	74	68
11				39	44	39	44	59	61	70	75	68
12				39	--	48	44	58	60	69	75	66
13				41	37	41	45	59	63	70	74	65
14				39	39	46	48	59	62	74	73	66
15				40	42	49	44	59	62	73	72	66
16				40	39	50	46	59	67	67	73	65
17				39	41	40	48	57	68	72	74	63
18				39	43	38	48	61	63	74	74	66
19				41	47	42	48	60	66	75	75	63
20				39	40	40	45	60	67	74	74	63
21				38	43	51	--	58	65	75	71	60
22				43	39	43	47	61	63	72	71	62
23				40	45	41	51	63	65	71	71	63
24				40	42	41	50	65	64	73	72	63
25				40	40	--	54	64	72	--	73	64
26				42	42	47	50	61	66	72	74	61
27				38	46	44	48	--	70	74	71	60
28				37	53	--	52	63	65	76	72	59
29				--	--	39	55	68	65	75	72	61
30				36	--	39	54	66	62	77	73	62
31				36	--	43	--	63	--	71	73	--
Average				--	42	44	48	59	64	72	74	66

ARKANSAS RIVER BASIN--Continued
NORTH FORK MINNESCAH RIVER NEAR CHENEY, KANS.

LOCATION --At gaging station at bridge on U. S. Highway 54, 4 miles upstream from Spring Creek, and 2 miles north and 1 mile east of Cheney, Sedgwick County.
DRAINAGE AREA 147 square miles.
RECORDS AVAILABLE--Chemical analyses: September 1950 to September 1951.

Water temperatures: September 1950 to September 1951.
EXTREMES 1950-51 --Dissolved solids: Maximum 771 ppm Mar. 30-31; minimum, 83 ppm Sept. 5, 1951.

Hardness: Maximum, 276 ppm Feb. 15-17; minimum, 59 ppm Sept. 5, 1951.

Specific conductance: Maximum daily, 1,520 microhos Feb. 28; minimum daily, 139 microhos Sept. 5, 1951.

Water temperatures: Maximum, 95°F July 8; minimum, freezing point Nov. 9, 28, Jan. 2.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, September 1950 to September 1951

Date of collection	Mean dis- charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO ₃)	Sol- 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- lution	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium	Non- mag- nesium			
Sept. 1-10, 1950.....	247	--	--	50	10	98	4.5	194	0	32	131	--	1.9	--	443	0.60	295	166	7	56	775	--
Sept. 11-20.....	189	19	0.00	57	12	118	3.7	202	0	42	161	0.0	2.6	--	522	.72	143	186	26	56	962	7.8
Sept. 21-30.....	133	21	.00	58	12	126	3.7	234	0	45	174	0.0	4.2	--	556	.81	209	222	28	56	1,030	8.0
Oct. 1-10.....	390	--	--	68	14	129	4.5	151	0	27	197	--	5.1	--	323	.44	341	148	24	50	620	--
Oct. 11-20.....	80.9	20	.00	58	13	140	4.5	209	0	48	192	.5	3.2	--	594	.81	130	188	26	60	1,050	8.0
Oct. 21-31.....	78.1	19	.00	60	14	139	4.3	223	0	48	180	.5	2.8	--	600	.82	127	208	24	59	1,050	7.8
Nov. 1-10.....	89.4	--	--	70	14	139	4.3	244	0	59	195	--	3.5	--	620	.84	150	232	32	57	1,090	--
Nov. 11-20.....	101	19	.00	76	15	131	4.8	263	0	49	192	.7	5.0	--	640	.87	175	251	44	53	1,120	8.1
Nov. 21-30.....	107	21	.00	74	14	142	4.8	280	0	49	198	.5	5.7	--	640	.87	185	242	29	55	1,120	7.9
Dec. 1-10.....	97.9	--	--	80	17	145	4.5	276	0	52	212	--	6.0	--	684	.93	181	270	44	54	1,190	--
Dec. 11-20.....	124	--	--	80	12	148	4.4	237	0	44	185	--	6.3	--	616	.84	206	199	5	62	1,070	--
Dec. 21-31.....	111	16	.00	72	14	138	4.4	246	0	48	188	.5	5.1	--	615	.84	184	237	35	55	1,080	8.0
Jan. 1-10, 1951.....	116	--	--	70	14	144	3.6	254	0	48	200	--	6.0	--	656	.89	203	232	24	57	1,120	--
Jan. 11-20.....	129	12	.00	68	13	138	3.6	241	0	49	195	.3	5.3	--	668	.83	215	223	26	57	1,090	8.0
Jan. 21-31.....	93.2	--	--	75	13	133	3.6	241	0	47	198	--	5.5	--	637	.87	160	240	43	55	1,110	--
Feb. 1-10.....	77.5	--	--	71	14	132	5.2	228	0	48	198	--	6.6	--	612	.83	128	234	48	55	1,080	--
Feb. 11-20.....	213	--	--	83	15	143	5.2	276	0	50	165	--	8.0	--	632	.73	326	282	36	53	1,200	--
Feb. 21-31.....	219	--	--	74	15	143	5.2	259	0	58	240	--	4.1	--	685	.93	256	276	56	53	1,210	--
Feb. 1-10, 1951.....	197	--	--	64	13	128	5.2	225	0	48	180	--	4.0	--	586	.98	427	246	34	60	1,260	--
Feb. 11-20.....	164	14	.00	75	13	155	5.2	266	0	52	202	.3	4.6	--	672	.91	298	240	22	58	1,160	7.9
Mar. 1-10.....	127	--	--	78	15	121	5.2	230	0	50	195	--	4.7	--	624	.85	214	258	68	51	1,110	--
Mar. 11-20.....	100	--	--	72	13	140	5.2	238	0	51	202	--	4.6	--	630	.86	170	233	38	57	1,120	7.9
Mar. 21-27.....	231	--	--	55	13	93	5.2	191	0	50	125	--	10	--	468	.64	292	190	34	51	808	7.6
Mar. 28-29.....	320	--	--	72	15	187	5.2	247	0	69	262	--	4.6	--	771	1.05	666	241	38	63	1,350	7.9

ARKANSAS RIVER BASIN--Continued
NORTH FORK MINNESCAH RIVER NEAR CHENEY, KANS.--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ton (lb)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-dium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per acre-foot	Calcium	Non-carbonate			
Apr. 1-4, 8-10, 1951	177	--	--	75	16	148		270	0	55	208	--	3.0	--	683	0.83	326	253	32	56	1,170	8.2
Apr. 5-7,	240	15	--	66	15	112		238	0	55	155	--	3.6	--	545	.74	353	226	31	52	1,944	8.2
Apr. 11-20,	132	15	0.00	74	15	137	4.4	262	0	55	192	0.3	3.5	0.09	626	.85	223	246	32	54	1,100	7.9
Apr. 21,	178	--	--	56	15	92		217	9	51	123	--	3.9	--	536	.73	258	201	30	50	816	8.6
Apr. 22-29,	130	--	--	59	15	129		180	0	53	180	--	3.0	--	618	.83	214	208	30	57	1,040	7.6
Apr. 30,	405	--	--	40	12	49		148	0	30	70	--	7.0	--	388	.53	424	150	28	42	518	8.2
May 1,	678	--	--	47	14	56		166	6	36	77	--	5.5	--	438	.59	800	174	28	41	591	8.5
May 2, 9-10,	207	--	--	55	14	108		208	0	48	146	--	3.0	--	530	.72	296	194	24	55	900	7.9
May 3-8,	160	--	--	68	17	128		259	0	54	175	--	2.5	--	633	.86	273	240	28	54	1,070	8.2
May 11-15,	123	--	--	56	16	120		213	0	55	165	--	2.3	--	574	.76	191	206	31	56	971	8.1
May 16-17,	5,145	--	--	24	8.4	13		95	0	13	20	--	2.8	--	428	.57	160	94	16	23	745	7.6
May 18-20,	4,065	--	--	20	13	81		200	0	38	46	--	2.9	--	359	.63	181	126	16	33	376	8.5
May 21-23,	1,794	--	--	27	10	52		134	0	24	60	--	2.4	--	327	.44	2,630	156	0	42	539	--
May 24-27,	1,974	--	--	47	9.4	60		192	0	24	60	--	2.4	--	327	.44	1,210	156	0	42	539	--
May 28-31,	4,112	--	--	64	14	60		233	7	41	72	--	2.7	--	454	.62	505	217	14	38	738	8.5
June 1-6, 9-10,	356	--	--	62	15	89		227	4	45	120	--	2.3	--	475	.65	457	216	24	47	816	8.4
June 7,	3,070	--	--	22	7.9	21		92	0	21	23	--	4.1	--	179	.24	1,480	83	12	34	258	8.2
June 8,	1,460	--	--	32	9.0	47		135	3	26	54	--	2.9	--	323	.44	1,270	117	3	47	439	8.4
June 11-14, 17-20,	493	--	--	52	12	72		207	2	32	91	--	1.9	--	398	.54	530	180	6	47	682	8.3
June 15-16,	626	--	--	31	8.1	37		127	0	20	45	--	2.4	--	245	.33	414	111	7	42	393	8.1
June 21-22, 29,	502	--	--	56	11	71		213	4	33	87	--	1.9	--	403	.55	546	184	4	46	676	8.3
June 23, 26, 30,	4,187	--	--	23	8.0	17		93	0	22	18	--	2.4	--	198	.27	2,240	90	14	28	238	8.1
June 24-25,	2,505	--	--	30	7.4	32		122	4	17	35	--	2.5	--	236	.32	1,600	106	0	40	354	8.4
June 27-28,	1,058	--	--	42	9.6	57		190	3	22	60	--	1.5	--	322	.44	920	144	0	37	316	8.4
July 1,	4,850	--	--	31	7.0	29		118	4	30	30	--	1.1	--	220	.30	2,860	106	4	46	374	8.4
July 2-5,	813	--	--	52	10	63		219	0	29	69	--	2.5	--	357	.49	884	271	6	45	593	7.8
July 6-10,	326	--	--	54	13	81		144	4	43	19	--	3.7	--	486	.64	331	164	8	43	799	8.4
July 11-20,	209	22	.00	51	12	88	4.5	192	11	43	117	.1	3.0	.74	444	.60	251	176	19	52	770	7.6
July 21-26, 31,	603	--	--	38	6.9	66		146	0	28	80	--	3.0	--	347	.47	565	124	2	54	549	7.7
Aug. 1-8,	130	--	--	42	13	102		165	0	47	137	--	3.7	--	453	.62	159	158	24	58	806	7.9
Aug. 9-10,	354	--	--	43	11	66		160	0	39	85	--	5.5	--	362	.49	346	152	22	44	616	7.8
Aug. 11-20,	208	--	--	45	12	98		170	5	42	128	--	3.9	--	453	.62	254	162	14	57	792	8.4
Aug. 21-31,	141	18	.00	44	13	114	3.8	171	0	47	158	.1	2.8	.59	494	.67	188	164	24	60	843	7.8
Sept. 1-4,	146	--	--	41	11	121		167	2	49	154	--	4.1	--	507	.69	200	148	8	64	873	8.3
Sept. 5,	7,330	--	--	15	5.2	4.1		58	0	7.6	8.0	--	14	--	83	.11	1,640	59	12	13	139	7.7
Sept. 6,	5,230	--	--	24	9.3	19		97	0	19	22	--	9.8	--	212	.29	2,990	98	18	23	261	8.1

Sept. 7-8	2,280	--	--	34	7.7	35	132	0	25	40	--	3.0	--	246	.33	1,520	116	8	40	385	8.1
Sept. 9-10	1,885	--	--	42	10	60	180	4	31	63	--	2.7	--	326	.44	1,220	146	0	47	527	8.3
Sept. 11, 13-14	1,077	--	--	54	12	55	209	0	32	69	--	2.7	--	360	.49	1,050	184	14	39	587	8.1
Sept. 12	2,080	--	--	25	9.5	31	105	0	25	34	--	11	--	204	.28	1,150	102	--	--	311	8.2
Sept. 15-20	415	--	--	70	17	81	270	2	44	105	--	3.9	--	488	.66	547	244	20	42	798	8.3
Sept. 21-23, 25-30	231	--	--	73	19	86	258	3	48	125	--	5.5	--	508	.69	317	260	44	42	690	8.3
Sept. 24	529	--	--	42	13	32	144	0	30	52	--	5.7	--	258	.35	577	158	40	30	464	8.1
Weighted average...	396	--	--	44	11	63	a168	--	30	83	--	4.3	--	353	0.48	377	155	18	47	584	--

a Includes equivalent of individual carbonate values shown above.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

NORTH FORK NINNESCAH RIVER NEAR CHENEY, KANS.--Continued

Temperature (°F) of water, September 1950												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1												75
2												78
3												75
4												78
5												74
6												63
7												64
8												65
9												72
10												65
11												78
12												65
13												62
14												67
15												61
16												72
17												67
18												70
19												73
20												72
21												68
22												64
23												75
24												73
25												61
26												63
27												70
28												70
29												70
30												70
31												--
Average												69

Temperature (°F) of water, water year October 1950 to September 1951												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	65	45	--	--	40	50	--	75	74	84	82
2	67	54	38	32	--	58	53	71	62	73	90	81
3	56	--	39	37	35	50	58	75	65	73	88	82
4	55	38	37	39	40	50	59	78	70	75	84	74
5	62	55	34	37	42	58	51	67	70	82	85	69
6	59	52	--	34	39	55	49	64	75	84	87	74
7	62	47	--	38	37	55	55	62	72	84	82	68
8	56	46	34	35	38	37	48	67	75	95	87	80
9	55	32	43	--	38	36	60	70	--	78	86	75
10	57	35	44	40	51	44	47	65	76	85	82	72
11	70	42	36	36	38	38	47	72	75	80	--	78
12	64	38	33	38	40	38	53	70	71	77	82	68
13	60	37	33	42	--	42	58	68	75	73	80	66
14	62	46	38	44	--	--	58	70	73	78	83	73
15	71	53	36	41	65	--	50	--	85	85	74	61
16	62	44	34	50	38	--	53	65	87	82	--	66
17	71	40	33	47	49	--	59	65	84	85	83	68
18	62	41	36	46	46	--	62	70	72	85	86	70
19	61	46	--	48	47	--	--	73	--	87	83	66
20	59	34	33	42	45	--	65	75	79	86	84	71
21	67	35	40	35	50	--	55	70	83	85	74	63
22	54	42	39	39	56	--	56	64	78	83	76	63
23	50	37	45	42	50	--	65	70	73	82	75	70
24	54	34	43	40	54	--	67	79	76	80	76	63
25	52	35	44	36	53	--	58	74	77	83	83	--
26	57	36	36	46	43	--	77	73	85	85	80	78
27	61	37	36	33	54	55	72	65	82	--	77	67
28	59	32	38	--	55	42	82	75	76	90	85	64
29	67	35	35	--	--	40	--	78	74	85	86	65
30	57	36	40	--	--	53	68	83	74	88	88	76
31	60	--	44	--	--	56	--	85	--	83	85	--
Average	61	42	38	--	46	--	58	71	76	82	83	71

ARKANSAS RIVER BASIN--Continued
SOUTH FORK NINNESCAH RIVER NEAR MURDOCK, KANS.

LOCATION --At gaging station at bridge on county road, 3½ miles south and 4½ miles east of Murdock, Kingman County.

DRAINAGE AREA --650 square miles.

RECORDS AVAILABLE --Chemical analyses: September 1950 to September 1951.

Water temperatures: September 1950 to September 1951.

EXTREMES, 1950-51. --Dissolved solids: Maximum, 1,030 ppm Dec. 6-8; minimum, 190 ppm Sept. 6-7, 1951.

Hardness: Maximum, 362 ppm Dec. 6-8; minimum, 90 ppm Sept. 6-7, 1951.

Specific conductance: Maximum daily, 1,870 micromhos Dec. 8; minimum daily, 269 micromhos Sept. 6, 1951.

Water temperatures: Maximum, 91°F Aug. 31; minimum, freezing point on several days during November to March.

REMARKS --Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, September 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-sodium			
Sept. 1-2, 1950.....	506	--	--	58	9.6	78	182	0	25	126	--	--	2.3	--	414	0.56	566	184	35	48	716	--
Sept. 3-10.....	218	--	--	78	12	163	228	0	42	258	--	--	4.0	--	727	.99	428	244	57	59	1,250	--
Sept. 11-20.....	175	23	0.00	79	13	187	231	0	47	282	0.0	0.0	4.1	--	790	1.07	373	256	61	61	1,370	8.0
Sept. 21-30.....	164	22	0.00	83	13	205	233	0	46	276	0.0	0.0	3.7	--	850	1.03	335	239	56	63	1,310	8.2
Oct. 1-10.....	162	21	0.00	76	12	212	234	0	50	323	3	3	7.2	--	863	1.17	279	252	60	64	1,490	8.1
Oct. 11-20.....	120	22	0.00	81	12	211	230	0	48	320	--	--	3.9	--	841	1.14	261	249	60	64	1,460	--
Oct. 21-31.....	115	--	--	80	12	204	234	0	48	312	3	3	6.0	--	811	1.10	274	258	66	63	1,430	7.6
Nov. 1-10.....	125	20	0.00	82	13	204	234	0	48	302	1	4.6	--	--	816	1.11	333	258	58	62	1,440	7.8
Nov. 11-20.....	151	20	0.00	82	13	197	244	0	47	300	3	5.8	--	--	806	1.10	326	247	48	63	1,430	7.7
Nov. 21-30.....	150	21	0.00	81	11	200	242	0	47	300	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 1-5, 9-10.....	164	--	--	82	13	213	232	0	45	338	--	--	8.8	--	814	1.11	360	259	68	64	1,420	--
Dec. 6-8.....	138	--	--	112	20	234	305	0	60	390	--	--	8.7	--	1,030	1.40	384	362	111	58	1,790	--
Dec. 11-20.....	182	--	--	74	12	187	223	0	43	290	--	--	5.2	--	756	1.03	371	234	51	63	1,320	--
Dec. 21-31.....	173	19	0.00	78	11	197	238	0	43	292	3.3	3.3	5.2	--	789	1.07	369	240	44	64	1,400	8.0
Jan. 1-10, 1951.....	165	--	--	77	11	195	229	0	44	300	--	--	4.6	--	790	1.07	352	237	50	64	1,390	--
Jan. 11-20.....	154	18	0.00	76	11	193	226	0	48	282	3	5.7	--	--	760	1.03	316	234	50	63	1,350	7.9
Jan. 21-31.....	121	--	--	86	14	188	237	0	38	312	--	--	7.8	--	832	1.13	272	272	78	60	1,460	--
Feb. 1-10.....	121	--	--	68	10	176	200	0	42	270	--	--	5.3	--	718	.98	235	210	46	65	1,260	--
Feb. 11-20.....	193	18	0.00	72	12	186	234	0	43	280	2	6.1	--	--	862	1.09	324	244	52	62	1,560	8.0
Feb. 21-28.....	239	--	--	74	11	183	239	0	43	284	2	6.1	--	--	862	1.09	324	244	52	62	1,560	8.0
Mar. 1-10.....	187	19	0.00	79	12	179	238	0	46	265	2	4.8	--	--	741	1.01	374	246	52	61	1,310	8.0
Mar. 11-20.....	170	--	--	80	12	180	227	0	46	285	--	--	6.0	--	763	1.04	350	249	63	61	1,380	--
Mar. 21-27.....	136	--	--	77	11	193	218	0	48	302	--	--	3.7	--	814	1.11	299	237	58	64	1,440	--
Mar. 28-31.....	280	--	--	66	10	129	202	0	38	198	--	--	3.5	--	603	.82	456	206	40	58	1,040	--
Apr. 1-10.....	208	--	--	88	10	144	232	0	40	240	--	--	4.0	--	690	.94	388	260	70	55	1,200	8.1
Apr. 11-20.....	164	18	0.00	78	11	194	236	0	47	285	2	3.9	--	0.08	787	1.07	348	240	46	63	1,380	--

ARKANSAS RIVER BASIN--Continued
SOUTH FORK MINNESCAH RIVER NEAR MURDOCK, KANS.--Continued

Chemical analyses, in parts per million, September 1950 to September 1951--Continued

Date of collection	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- rate (B)	Dissolved solids			Hardness as CaCO ₃	Per- cent so- dium	Specific conduct- ance (micro- mhos at 25° C)	pH
														Parts per mil- lion	Tons per acre- foot	Tons per acre- foot	Calcium, magn- esium			
Apr. 21-29, 1951....	164	--	72	12	188	--	215	0	45	292	--	2.2	--	756	1.03	335	229	53	1,350	7.7
Apr. 30.....	308	--	50	7.6	103	--	155	4	27	151	--	5.6	--	455	.62	378	156	22	59	8.1
May 1.....	288	--	47	8.0	100	--	149	6	28	144	--	4.2	--	447	.61	360	150	18	59	781
May 2-10.....	187	--	74	10	180	--	219	7	44	268	--	2.5	--	742	1.01	335	226	34	63	1,300
May 11-15.....	147	--	70	12	188	--	208	0	46	292	--	2.2	--	761	1.03	302	224	54	65	1,350
May 16-18.....	2,923	--	37	8.3	82	--	133	0	15	49	--	2.3	--	238	.32	1,880	126	17	35	740
May 19-20.....	795	--	65	9.7	82	--	201	11	30	115	--	5.1	--	456	.62	975	202	19	47	768
May 21, 26, 29.....	1,314	--	54	7.9	65	--	184	0	23	94	--	2.7	--	368	.50	1,310	168	16	46	649
May 22-24.....	2,460	--	39	6.2	25	--	142	0	12	34	--	1.7	--	222	.30	1,490	123	6	31	563
May 26-28, 30-31.....	367	--	70	10	105	--	223	0	34	138	--	2.5	--	526	.72	921	216	32	51	526
June 1-6.....	285	--	69	12	142	--	233	1	41	208	--	2.5	--	637	.87	490	222	29	58	1,110
June 7-9.....	1,880	--	28	5.9	40	--	126	0	14	44	--	2.4	--	229	.31	1,160	94	0	48	379
June 10.....	495	--	42	8.3	77	--	161	7	28	93	--	2.7	--	369	.50	493	139	0	55	609
June 11-15, 18-20.....	272	--	60	11	127	--	192	3	38	190	--	2.4	--	572	.78	420	194	32	59	1,010
June 16-17.....	478	--	42	8.5	89	--	161	4	27	116	--	4.0	--	394	.54	508	140	2	58	688
June 21, 28-30.....	736	--	54	8.1	84	--	184	0	25	123	--	1.9	--	412	.56	819	168	18	52	732
June 22, 25.....	1,550	--	40	3.9	47	--	149	0	14	56	--	2.2	--	251	.34	1,050	116	0	47	450
June 23-24, 26-27.....	1,812	--	36	5.2	30	--	139	0	11	34	--	2.9	--	213	.29	1,040	112	0	37	349
July 1-2.....	1,715	--	33	4.4	39	--	139	0	11	41	--	1.8	--	212	.29	982	100	0	46	371
July 3-4.....	514	--	64	8.3	79	--	204	0	25	121	--	2.7	--	416	.57	577	194	26	47	743
July 5-10.....	285	--	71	11	123	--	224	0	37	187	--	5.1	--	580	.79	446	222	38	55	1,030
July 11-13, 18-20.....	298	--	66	12	121	--	209	0	40	185	--	4.6	--	588	.76	389	214	43	55	1,010
July 14, 17.....	618	--	44	8.0	56	--	157	0	19	80	--	3.9	--	306	.42	511	143	14	46	580
July 18-19.....	1,612	--	38	5.9	34	--	135	3	14	44	--	3.0	--	223	.30	971	120	34	49	366
July 19-21, 27-31.....	996	--	55	11	132	--	181	0	11	223	--	5.9	--	416	.84	326	132	34	64	7.3
July 24-26.....	316	--	57	8.6	104	--	199	0	30	146	--	5.1	--	476	.65	406	178	18	56	555
Aug. 1-3, 9-10.....	185	--	52	13	142	--	199	0	44	198	--	5.0	--	581	.79	290	184	20	63	1,040
Aug. 4-8.....	128	--	44	11	182	--	113	0	46	280	--	1.9	--	688	.94	238	155	62	72	1,260
Aug. 11-20.....	170	--	00	48	11	7.8	154	0	43	288	--	0.2	0.37	671	.91	208	165	39	68	1,180
Aug. 21-31.....	137	16	02	48	11	3.6	147	0	46	282	--	2.2	0.82	699	.95	259	165	44	70	1,240
Sept. 1-4.....	110	--	28	11	219	--	136	0	48	332	--	1.4	--	788	1.07	234	155	44	75	1,450
Sept. 5-8.....	1,814	--	36	6.2	43	--	141	0	14	55	--	2.0	--	265	.36	1,300	116	0	45	448
Sept. 6-7.....	3,605	--	28	5.0	22	--	116	0	9.5	124	--	3.9	--	190	.26	1,850	90	0	35	269
Sept. 8-10.....	466	--	60	8.7	82	--	194	0	26	124	--	3.9	--	428	.58	1,539	186	26	49	754
Sept. 11, 14, 16-17.....	1,360	--	30	5.6	40	--	116	0	12	52	--	4.4	--	241	.33	885	98	3	47	394

Sept. 15, 18-20	318	--	--	74	12	111	228	0	36	175	--	4.8	--	567	77	487	234	47	51	1,000	8.2
Sept. 21-30	216	22	.00	74	12	148	237	0	45	225	.1	4.8	.81	666	.83	400	238	40	58	1,180	--
Weighted average ...	337	--	--	55	8.8	102	a 180	--	28	151	--	3.5	--	474	0.64	431	173	26	56	823	--

a Includes equivalent of individual carbonate values shown above.

ARKANSAS RIVER BASIN--Continued

SOUTH FORK NINNESCAH RIVER NEAR MURDOCK, KANS.--Continued

Temperature (°F) of water, September 1950												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1												70
2												71
3												71
4												80
5												72
6												66
7												75
8												73
9												70
10												80
11												--
12												75
13												79
14												80
15												78
16												79
17												79
18												78
19												--
20												--
21												67
22												64
23												63
24												71
25												62
26												62
27												62
28												65
29												67
30												69
31												--
Average												71

Temperature (°F) of water, water year October 1950 to September 1951												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	54	44	38	--	49	50	62	--	70	--	77
2	61	55	42	34	--	57	--	69	61	76	--	82
3	55	42	38	45	--	40	--	60	61	79	--	78
4	53	48	34	36	--	50	--	58	71	80	--	76
5	54	58	35	34	38	61	--	62	72	82	--	66
6	58	55	32	33	33	55	52	61	80	83	--	71
7	62	49	32	--	33	42	50	58	68	74	--	--
8	56	49	39	34	34	37	54	67	71	--	--	71
9	65	32	--	32	32	35	65	70	72	--	84	70
10	57	35	35	38	38	43	46	58	75	76	80	69
11	72	35	38	33	39	33	45	76	74	82	79	71
12	59	40	35	34	39	32	38	60	77	76	85	68
13	71	40	33	33	32	35	65	71	70	74	82	62
14	63	50	40	32	32	34	51	59	75	71	81	72
15	73	53	34	34	32	47	51	65	84	80	70	61
16	59	50	33	43	32	43	60	66	72	84	70	69
17	73	45	45	47	35	40	48	62	77	84	75	68
18	69	43	38	35	37	44	51	66	78	84	84	65
19	69	47	40	53	51	37	48	69	90	85	82	76
20	60	40	35	32	42	41	60	74	81	89	90	71
21	60	37	44	34	49	47	40	69	86	74	74	--
22	62	43	48	34	51	--	60	61	74	74	75	70
23	58	32	44	45	55	39	62	61	72	75	76	71
24	54	32	42	40	50	41	64	69	74	76	82	54
25	62	33	44	42	52	62	52	72	75	85	78	65
26	68	34	32	32	50	--	53	--	76	75	78	74
27	63	46	32	32	52	49	64	74	83	78	78	62
28	57	46	34	--	49	39	85	63	72	--	86	54
29	64	43	34	32	--	39	66	78	--	80	75	62
30	60	35	36	--	--	51	69	85	62	--	74	--
31	62	--	33	--	--	39	--	74	--	--	91	--
Average	62	43	38	37	41	43	56	67	74	76	--	69

ARKANSAS RIVER BASIN--Continued

MINNESCAH RIVER NEAR PECK, KANS.

LOCATION ---At gaging station at bridge on county highway, 28 miles upstream from mouth, and 3 miles southwest of Peck, Sumner County.
DRAINAGE AREA ---2,129 square miles.

RECORDS AVAILABLE ---Chemical analyses: April 1951 to September 1951.

EXTREMES EMPLOYED ---To September 1951: Dissolved solids: Maximum, 702 ppm Apr. 21-26; minimum, 95 ppm Sept. 6.

Hardness: Maximum, 254 ppm May 4-10; minimum, 54 ppm May 17-18.

Specific conductance: Maximum daily, 1,210 micromhos Apr. 19; minimum daily, 144 micromhos May 17.

Water temperatures: Maximum, 90°F Aug. 29.

REMARKS ---Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year

October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, April to September 1951.

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids			Hardness as CaCO ₃	Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate		
Apr. 1-4, 10, 1951...	507			72	14	162		232	9	54	215		5.5	655	0.89	897	237	32	1,160	8.6
Apr. 5-9	602			68	14	119		232	0	47	172		5.5	552	.75	897	227	37	977	8.2
Apr. 11-20	367	17	0.00	76	14	149	5.6	256	0	54	222	0.1	3.6	671	.91	668	247	37	56	8.0
Apr. 21-26	386			74	15	140		226	0	56	215		4.1	702	.95	637	246	61	55	6.9
Apr. 27	621			46	12	88		139	2	60	120		10	410	.56	687	164	48	54	8.3
Apr. 28, 30	3,865			22	5.7	24		79	0	17	32		2.7	208	.28	2,180	78	14	40	7.0
Apr. 29	1,220			36	8.8	52		128	3	31	67		8.5	288	.39	949	131	21	46	8.4
May 1	6,360			19	5.6	15		70	0	11	19		8.1	158	.21	2,710	70	13	31	199
May 2-3	1,590			50	12	55		182	0	34	75		3.2	340	.46	1,460	174	26	40	600
May 4-10	577			74	17	117		253	0	54	172		2.3	597	.80	883	254	47	50	7.8
May 11-15	389			69	16	119		221	0	55	182		1.7	579	.79	608	238	57	52	1,020
May 16, 19	6,670			23	6.4	22		94	0	16	26		2.3	188	.26	3,390	84	7	37	267
May 17-18	19,300			19	1.7	16		76	0	7.7			2.9	184	.13	5,000	54	0	39	176
May 20	3,320			46	9.8	49		159	12	31	53		5.7	299	.41	2,680	156	5	41	497
May 21, 23	6,960			30	6.4	27		116	0	17	32		3.7	240	.33	4,510	102	6	37	290
May 22, 24-25	7,140			34	7.2	33		136	0	15	40		2.9	209	.28	4,030	114	3	38	368
May 26-28	2,037			56	11	59		203	6	31	72		3.2	361	.49	1,990	184	4	41	616
May 29-31	1,310			68	13	74		215	13	44	98		3.9	444	.60	1,570	223	14	42	760
June 1-6	922			68	15	87		239	0	49	121		3.7	504	.69	1,250	231	35	45	845
June 7-8	6,480			24	6.4	23		90	0	16	31		2.8	222	.30	3,860	96	12	37	286
June 9-10	2,486			40	7.9	43		146	6	20	52		3.3	288	.39	1,940	132	0	42	449
June 11-16	1,998			58	8.1	76		161	0	27	66		3.6	308	.52	1,280	142	10	44	752
June 17-15, 18-20	1,998			58	8.1	76		161	0	27	66		3.6	308	.52	1,280	142	10	44	752
June 21-22	1,110			52	10	87		179	10	40	113		1.8	418	.59	1,250	171	11	53	716
June 23, 28-29	2,393			44	7.3	68		164	4	21	82		2.7	315	.43	2,040	140	0	51	472
June 24, 27, 30	6,763			25	8.2	15		98	0	14	22		2.2	178	.24	3,250	96	16	25	252
June 25-26	4,860			33	6.3	32		134	0	21	32		2.3	196	.27	2,570	109	0	39	348

ARKANSAS RIVER BASIN--Continued
MINNESOTA RIVER NEAR PECK, KANS.--Continued

Chemical analyses, in parts per million, April to September 1951--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent or- gani- c	Specific conductance (micro- mhos at 25°C)	pH
															Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium mag- nesium	Non- carbon- ate			
July 1-2, 1951.....	7,355			26	7.2	32		120	0	24	28		2.3		200	0.27	3,970	94	0		315	7.8
July 3-4.....	2,025			53	10	52		203	0	39	54		2.2		315	.43	1,720	173	6		533	8.2
July 5-10.....	1,051			69	13	79		244	0	45	105		3.6		462	.63	1,310	228	26		783	
July 11-12, 19-20.....	1,688			53	16	78		220	0	43	119		3.0		370	.47	1,460	228	26		510	8.2
July 13-14, 17-18.....	2,583			34	12	51		184	0	33	46		3.7		243	.39	1,750	116	13		390	7.6
July 15-16.....	2,589			34	7.6	35		196	0	45	125		2.5		466	.39	1,716	197	40		395	7.7
July 21-22, 28-31.....	2,485			56	14	85		181	0	45	135		3.2		198	.27	1,330	92	27		269	7.6
July 23-24.....	1,485			23	8.4	17		179	0	19	30		3.2		376	.51	1,150	162	24		640	8.1
July 25-27.....	1,137			47	11	67		169	0	35	92		3.5									
Aug. 1-8.....	323			52	16	106		181	0	52	157		1.7		503	.68	439	196	48		902	7.2
Aug. 9-10.....	1,050			33	10	40		111	0	27	64		3.3		276	.38	782	124	32		446	7.4
Aug. 11, 13.....	818			39	11	58		134	0	35	84		2.8		332	.45	733	142	32		569	7.6
Aug. 12, 14-20.....	424			52	16	95		172	0	47	150		2.2		484	.66	554	196	55		857	7.4
Aug. 21-25, 28-31.....	302			49	16	112		169	0	49	170		1.4		512	.70	417	188	50		919	7.7
Aug. 26-27.....	582			38	13	69		139	0	39	106		3.2		374	.51	588	148	42		643	7.8
Sept. 1-4.....	231			49	14	136		177	0	58	189		2.8		580	.79	362	180	34		994	8.2
Sept. 5, 7.....	8,645			24	9.1	16		95	0	17	25		2.8		194	.26	4,530	98	20		266	7.8
Sept. 6.....	16,300			16	10	4.6		71	0	9.1	12		8.2		95	.13	4,180	81	23		175	7.7
Sept. 8-10.....	4,667			35	7.8	31		137	0	24	34		3.2		237	.32	2,980	120	8		368	8.0
Sept. 11-12, 15-20.....	1,368			43	11	31		182	0	22	56		4.2		286	.41	2,260	136	6		533	7.9
Sept. 13-14.....	4,060			30	6.6	31		123	0	20	30		4.4		199	.27	2,500	102	0		327	7.9
Weighted average	1,995			35	8.4	41		a 135	--	23	53		3.4		260	0.35	1,400	122	12		423	--

a Includes equivalents of individual carbonate values shown above.

ARKANSAS RIVER BASIN--Continued

NINNESCAH RIVER NEAR PECK, KANS.--Continued

Temperature (°F) of water, April to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							45	62	76	70	85	76
2							52	69	73	72	87	75
3							58	64	69	86	89	79
4							54	72	64	75	80	73
5							54	65	66	82	80	70
6							56	49	74	78	87	70
7							50	58	66	84	79	70
8							54	61	74	78	78	70
9							51	66	74	77	80	72
10							52	63	77	78	81	74
11							44	69	75	74	75	87
12							34	63	74	77	84	70
13							45	67	75	74	80	68
14							52	61	73	71	82	68
15							52	71	81	77	81	67
16							43	65	76	81	82	--
17							59	64	79	88	85	--
18							51	66	80	84	84	--
19							55	67	79	88	78	--
20							56	65	82	87	85	--
21							55	69	84	79	75	--
22							50	69	81	87	79	--
23							51	65	75	78	76	--
24							46	67	71	78	84	--
25							49	68	76	83	82	--
26							58	71	78	84	75	--
27							74	70	79	86	75	--
28							67	70	78	86	86	--
29							72	71	75	88	90	--
30							69	69	68	88	77	--
31							--	80	--	85	79	--
Average							54	66	75	81	81	--

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT KAW CITY, OKLA.

LOCATION --At bridge in Kaw City, Kay County, a quarter of a mile upstream from Beaver Creek.
 RECORDS AVAILABLE --Chemical analyses: October 1948 to September 1951.
 Water temperatures: October 1948 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,650 ppm Feb. 22-24, 26; minimum, 254 ppm Apr. 29-30.
 Hardness: Maximum, 564 ppm Feb. 22-24, 26; minimum, 119 ppm Apr. 29-30.

Specific conductance: Maximum, 364 microhos Feb. 24, 26; minimum daily, 361 microhos May 4.
 Water temperature: Maximum, 86°F July 6, Aug. 7; minimum, 68°F Aug. 10, 15.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 1,730 ppm Apr. 29-30, 1950; minimum, 193 ppm Aug. 1-4, 1950.
 Hardness: Maximum, 573 ppm Jan. 21-31, 1950; minimum, 94 ppm July 26-31, 1950.

Specific conductance: Maximum daily, 3,160 microhos Apr. 29, May 1-2, 1950; minimum daily, 272 microhos Aug. 2, 1950.
 Water temperatures: Maximum, 90°F July 2, 1949; minimum, freezing point on several days during winter months.

REMARKS --Records of specific conductance of daily samples available in district office at Stillwater, Oklahoma. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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 carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Oct. 1-2, 4-5, 10, 1950.....		--	--	62	14	59	150	0	124	122	--	--	4.6	--	527	0.72		212	89	50	874	--
Oct. 3.....		--	--	113	34	187	223	0	291	240	--	--	4.0	--	1,020	1.39		422	239	49	1,650	--
Oct. 11.....		--	--	70	16	109	163	0	321	140	--	--	4.6	--	618	.84		240	107	50	1,975	--
Oct. 12-20.....		--	--	117	34	220	235	0	321	270	--	--	3.5	--	1,160	1.58		432	240	53	1,770	--
Oct. 21-31.....		15	0.00	121	36	274	252	0	324	362	0.5	4.1	8.2	--	1,310	1.78		465	256	56	2,060	7.6
Nov. 1-10.....		--	--	123	37	300	286	0	343	420	--	--	4.6	--	1,410	1.80		482	242	58	2,180	--
Nov. 11-20.....		--	--	133	37	324	286	0	343	420	--	--	4.6	--	1,410	1.82		482	242	59	2,200	--
Nov. 21-30.....		18	.00	150	41	319	308	0	379	425	.6	9.1	--	--	1,540	2.06		542	290	56	2,430	8.1
Dec. 1-10.....		18	.00	156	42	333	315	0	373	450	.7	8.9	--	--	1,610	2.19		562	304	56	2,550	7.9
Dec. 11-20.....		15	.00	142	39	328	290	0	346	440	.5	8.7	--	--	1,490	2.03		515	278	58	2,420	7.8
Dec. 21-31.....		13	.00	140	38	322	285	0	343	435	.5	7.7	--	--	1,480	2.01		506	272	58	2,380	8.0
Jan. 1-10, 1951.....		--	--	143	39	324	276	0	327	460	--	--	8.2	--	1,440	1.96		518	292	58	2,360	--
Jan. 11-20.....		16	.00	140	40	334	278	0	355	445	.3	9.6	--	--	1,520	2.07		514	287	58	2,420	7.9
Jan. 21-28.....		--	--	141	45	357	278	0	367	495	--	--	7.7	--	1,630	2.22		537	309	59	2,570	--
Feb. 4-10.....		--	--	139	43	337	275	0	338	480	--	--	3.2	--	1,560	2.12		524	298	58	2,510	--
Feb. 11-16, 18-20.....		--	--	136	40	294	255	0	303	435	--	--	6.5	--	1,400	1.90		504	295	56	2,280	--
Feb. 17.....		--	--	99	29	196	187	0	212	292	--	--	7.7	--	969	1.32		366	213	54	1,630	--
Feb. 21, 23-27, 28.....		--	--	121	35	249	216	0	279	365	--	--	5.5	--	1,220	1.66		446	269	55	1,980	--
Feb. 22-24, 26.....		--	--	152	45	359	239	0	347	565	--	--	6.3	--	1,680	2.24		564	368	58	2,670	--
Mar. 1-3, 7, 9-10.....		--	--	139	41	304	262	0	365	410	--	--	3.6	--	1,500	1.99		526	301	57	2,420	--
Mar. 4-6, 8-10.....		16	.00	141	40	323	286	0	343	462	.5	9.3	--	--	1,560	2.12		544	324	57	2,480	8.1
Mar. 21-23, 25, 27.....		--	--	142	43	333	269	0	390	468	--	--	3.3	--	1,560	2.12		544	324	57	2,480	--
Mar. 24, 26, 28-31.....		--	--	118	35	225	229	0	240	345	--	--	4.0	--	1,140	1.55		438	251	53	1,890	--

Apr. 1-4,	132	35	300	226	11	250	465	--	7.7	1,360	1.85	474	270	58	2,260	8.5
Apr. 2-3, 5-10,	114	29	228	228	0	190	362	--	6.5	1,060	1.47	404	218	35	1,820	7.8
Apr. 11-20,	106	32	266	187	0	227	410	--	4.4	1,360	1.86	386	234	60	2,380	7.9
Apr. 21-22, 24-28,	93	30	315	166	4	246	485	--	13.4	1,360	1.86	386	234	60	2,380	7.9
Apr. 23,	107	31	342	166	12	253	485	--	13.4	1,440	1.96	392	223	65	2,340	8.7
Apr. 24-30,	97	6.4	37	109	0	29	54	--	4.2	254	35	119	29	40	418	7.3
May 1-10,	39	6.6	37	110	0	32	54	--	5.2	257	35	124	34	39	419	7.4
May 5-10,	74	16	128	167	0	103	200	--	4.0	662	90	250	114	53	1,100	7.4
May 11-15, 17,	74	17	140	180	0	110	208	--	4.0	724	98	254	107	54	1,160	8.1
May 16, 18-20,	50	9.6	47	144	0	55	64	--	2.2	343	47	164	46	38	552	7.8
May 21-25,	52	9.7	55	147	0	73	64	--	3.3	357	49	170	50	41	582	7.8
May 26-31,	106	24	145	218	9	254	152	--	6.0	872	1.19	363	170	46	1,310	8.5
June 1-3, 5,	118	31	187	220	9	305	212	--	20	1,040	1.41	422	227	49	1,600	8.5
June 4, 6, 8, 10,	48	11	70	134	0	95	74	--	3.7	379	.52	165	55	48	622	7.8
June 7, 9,	71	16	87	167	5	132	103	--	5.8	520	.71	243	98	44	820	8.5
June 11-20,	65	14	74	153	0	119	89	--	6.8	466	.63	220	94	42	777	8.2
June 21-30,	48	8.5	51	144	0	62	53	--	4.0	304	.41	150	32	42	613	7.7
July 4-7, 9,	56	13	61	161	0	87	164	--	6.1	523	.72	251	100	42	858	8.4
July 6, 10,	71	16	74	171	7	127	105	--	3.0	480	.62	198	64	45	742	7.4
July 11-20,	58	13	86	163	0	95	195	--	4.6	501	.68	236	94	44	866	8.1
July 21-22, 24,	68	10	86	173	0	98	125	--	4.6	501	.68	236	94	44	866	8.1
July 23, 25-31,	103	30	187	261	0	225	238	--	3.2	946	1.28	380	166	52	1,550	8.1
Aug. 1-10,	98	25	173	230	0	202	245	.5	14	942	1.28	348	159	51	1,500	--
Aug. 11-20,	76	20	158	202	0	140	210	--	8.4	797	1.08	272	106	56	1,280	7.7
Aug. 21-31,	85	24	190	218	0	170	258	--	5.2	886	1.22	310	132	57	1,480	7.7
Sept. 1,	95	25	198	208	2	181	288	--	4.6	957	1.30	340	166	56	1,580	8.3
Sept. 4-10,	47	10	73	146	0	64	90	--	3.5	394	.54	158	38	50	659	7.8
Sept. 11-15,	50	11	84	155	0	81	98	--	4.8	435	.59	170	43	52	738	8.0

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT KAW CITY, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	74	44	42	--	54	52	64	74	--	84	82
2	72	66	44	40	--	55	50	65	70	--	84	--
3	62	44	44	40	--	55	54	65	68	--	85	--
4	62	46	40	42	36	--	56	67	68	76	85	81
5	72	48	37	42	36	--	56	69	70	88	85	80
6	--	50	33	42	39	--	57	70	70	89	87	77
7	--	57	33	--	35	52	56	66	71	79	89	77
8	--	45	34	36	32	--	56	68	74	79	85	77
9	--	42	35	38	32	51	56	68	74	82	82	77
10	65	41	36	37	32	50	56	68	73	82	79	79
11	67	41	37	42	50	41	56	67	73	82	82	79
12	72	41	36	43	46	36	--	68	76	80	--	71
13	74	42	36	48	42	36	57	67	76	81	83	71
14	74	44	36	42	40	46	59	68	--	79	--	66
15	71	46	38	45	32	47	56	68	75	82	--	67
16	70	46	36	45	36	46	57	68	76	86	83	--
17	71	44	36	46	42	48	57	67	77	86	84	--
18	71	47	34	45	42	41	60	68	75	82	84	--
19	71	47	35	48	50	54	60	68	76	84	82	--
20	64	45	38	40	57	46	58	68	77	86	82	--
21	65	47	40	40	46	46	59	67	79	85	--	--
22	60	46	42	42	47	57	60	67	77	86	82	--
23	60	46	42	42	52	55	63	68	76	84	85	--
24	71	47	44	42	54	57	66	69	79	82	84	--
25	64	46	45	44	55	56	71	68	79	82	84	--
26	71	47	36	44	55	56	71	69	81	84	84	--
27	74	48	35	45	55	56	74	68	81	82	82	--
28	74	44	41	42	55	44	72	69	80	80	83	--
29	74	42	38	--	--	50	70	80	81	81	84	--
30	72	42	39	--	--	52	68	79	79	83	84	--
31	74	--	42	--	--	54	--	79	--	85	84	--
Average	69	47	38	42	44	50	60	69	75	83	81	--

ARKANSAS RIVER BASIN--Continued

SALT FORK ARKANSAS RIVER AT ALVA, OKLA.

LOCATION.--At Atchison, Topeka, and Sante Fe Railway Bridge, just north of Alva, Woods County, 1 mile upstream from gaging station, and 23 miles upstream from Medicine Lodge River.

DRAINAGE AREA.--1,009 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.

Water temperatures: October 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 2,370 ppm Feb. 1-2; minimum, 429 ppm Sept. 11.

Salt: Maximum, 1,470 ppm Feb. 1-2; minimum, 240 ppm Sept. 10.

Specific conductance: Maximum daily, 2,900 micromhos Jan. 29; minimum daily, 627 micromhos Sept. 11.

Water temperature: Maximum, 94.7 deg. F. minimum, freezing point on several days in December, January, and February.

REMARKS.--General character of daily samples obtained in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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-dium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-mag-nesium			
Oct. 1-10, 1950	22.4	19	0.00	276	52	189	8.8	145	0	769	265	0.3	0.9		1,770	2.41	107	902	784	31	2,290	7.8
Oct. 11-20	11.1	22	.00	281	60	189	7.6	140	0	817	288	.3	.5		1,820	2.48	55	948	833	30	2,350	7.7
Oct. 21-31	13.4			278	62	177		140	0	795	278				1,840	2.50	67	948	834	29	2,340	
Nov. 1-10	20.4	18	.00	278	56	185	13	152	0	770	262	.5	.9		1,710	2.33	94	924	799	30	2,280	7.7
Nov. 11-20	28.9	19	.00	282	55	178	8.0	171	0	714	252	.0	1.3		1,850	2.24	129	880	740	30	2,220	7.7
Nov. 21-30	33.3	19	.00	253	50	177	5.6	166	0	694	250	.6	1.4		1,900	2.18	144	838	700	31	2,150	7.8
Dec. 1-4, 8-10	28.6			251	53	147		168	0	674	230		1.8		1,560	2.12	120	844	707	28	2,090	
Dec. 5-7	12.3			341	72	205		211	0	945	308		1.7		2,130	2.90	171	1,150	974	28	2,720	
Dec. 8-20	40.9			251	43	157		183	0	649	225		2.2		1,850	2.03	165	804	654	30	2,040	
Dec. 21-31	29.4	19	.00	282	52	192	4.0	188	0	688	270	.5	2.5		1,860	2.24	131	888	714	32	2,240	7.8
Jan. 1-10, 1951	37.4			252	49	148		178	0	678	248		1.8		1,560	2.12	156	830	684	28	2,140	
Jan. 11-20	49.3	15	.00	251	49	183	4.4	189	0	668	255	.3	2.4		1,800	2.16	213	828	672	32	2,160	7.7
Jan. 21-27	38.6			256	52	180		183	0	689	282		1.7		1,720	2.34	179	853	703	33	2,260	
Jan. 28-31	5.00			342	68	214		238	0	915	320		2.0		2,150	2.92	29	1,300	940	29	2,740	
Feb. 1-2	5.00			453	82	133		277	0	1,240	168		2.3		2,370	3.22	32	1,470	1,240	16	2,720	
Feb. 3-4, 7-10	36.8			262	52	133		195	0	695	192		2.3		1,520	2.07	151	888	708	25	2,000	
Feb. 5-6	22.5			191	41	80		147	0	505	122		1.8		1,060	1.44	64	645	524	21	1,450	
Feb. 11-20	60.4	18	.00	248	45	143	8.4	202	0	641	190	.3	2.5		1,450	1.97	236	799	634	28	1,920	7.9
Feb. 21-28	132			282	44	122		154	0	686	182		3.0		1,470	2.00	524	834	708	24	1,940	
Mar. 1-10	55.7	21	.00	260	47	178	8.0	173	0	695	255	.4	2.2		1,630	2.22	245	842	700	31	2,190	7.9
Mar. 11-20	40.7			275	55	180		173	0	733	282		1.9		1,740	2.27	191	912	770	30	2,340	
Mar. 21-28	53.8			295	55	180		154	0	798	280		2.0		1,840	2.50	287	962	826	29	2,390	8.1
Mar. 29-31	173			236	39	76		158	0	610	105		2.4		1,260	1.71	588	750	620	18	1,900	7.8
Apr. 1-10	80.1	16	.00	264	47	152	8.0	174	0	686	210	.3	1.7		1,560	2.12	337	852	709	28	2,060	8.0
Apr. 11-20	45.7	16	.00	258	54	200		153	0	733	290		3.2		1,740	2.37	215	886	740	33	2,330	7.8
Apr. 21-30	48.0	18	.00	263	49	207	8.0	147	0	754	292	.3	.4		1,890	2.57	245	858	737	34	2,370	8.2

ARKANSAS RIVER BASIN--Continued
SALT FORK ARKANSAS RIVER AT ALVA, OKLA. --Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃) (B)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-dium	Specific conductance (micro-mhos at 25 C)	pH
															Parts per million	Tons per acre-foot	Tons per million-day	Calcium	Non-carbonate			
May 1, 5-10, 1951...	95.1	--	--	285	51	185		144	0	779	278	--	1.4		1,770	2.41	454	920	802	30	2,360	8.2
May 2-4	108	--	--	265	43	95		147	8	681	140	--	4.2		1,430	1.94	417	838	704	20	1,840	8.6
May 11-15	21.0	--	--	279	55	211		139	4	786	312	--	2.7		1,920	2.61	109	922	802	33	2,470	8.3
May 16, 19-20	2,075	--	--	290	32	39		130	4	723	52	--	1.4		1,360	1.85	7,820	855	742	9	1,550	8.4
May 17-18	4,740	--	--	280	25	39		139	3	399	46	--	34		862	1.17	11,030	502	383	20	1,180	8.4
May 21, 25-27	515	--	--	258	38	81		167	0	657	109	--	1.8		1,460	1.99	2,030	800	662	18	1,690	8.2
May 22-24	1,612	--	--	199	24	49		135	0	488	58	--	2.3		1,010	1.37	4,400	595	484	15	1,240	8.2
May 28-31	211	--	--	313	54	130		158	0	867	180	--	.8		1,890	2.57	1,080	1,000	874	22	2,160	8.0
June 1-7	185	--	--	326	56	126		147	0	887	202	--	1.4		1,830	2.49	915	1,050	932	21	2,280	8.1
June 8-10	47	--	--	146	21	24		138	7	331	94	--	2.5		1,374	1.93	1,030	1,050	459	13	1,000	8.5
June 11-13	483	--	--	263	38	72		142	0	881	111	--	1.7		1,380	1.85	1,030	827	446	13	1,020	8.5
June 14-15, 18	188	--	--	221	33	45		166	0	533	66	--	1.8		1,170	1.59	934	687	551	13	1,860	7.9
June 21-23, 30	6,335	--	--	170	18	28		105	0	407	30	--	2.9		824	1.12	14,090	498	412	10	994	7.8
June 24-25, 28	3,133	--	--	222	22	30		119	0	546	30	--	2.8		1,060	1.44	8,970	644	547	9	1,200	7.6
June 26-27, 29	647	--	--	294	39	70		156	0	765	84	--	2.5		1,580	2.15	2,760	894	766	14	1,730	7.9
July 1-2	2,085	--	--	200	35	14		137	0	490	35	--	2.2		834	1.27	5,180	643	531	5	1,140	7.7
July 3-10	380	--	--	312	62	91		141	0	892	132	--	1.8		1,730	2.35	1,770	1,030	981	16	2,020	7.7
July 11-13, 18-20	184	--	--	302	58	126		124	0	890	168	--	2.3		1,770	2.41	879	992	880	22	2,120	7.7
July 14-17	440	--	--	256	42	76		128	0	715	89	--	1.9		1,380	1.89	1,650	811	708	17	1,870	7.5
July 21-24, 31	94.8	--	--	324	65	149		138	0	1,010	165	--	1.9		1,950	2.65	499	1,080	962	23	2,290	7.6
July 25-30	120	--	--	278	55	109		105	0	841	138	--	1.9		1,650	2.24	535	920	834	21	1,980	7.4
Aug. 1-10	48.8	25	0.0	299	63	148	8.4	121	0	917	193	0.4	1.4		1,890	2.57	248	1,000	906	24	2,240	7.7
Aug. 11-20	54.0	--	--	342	69	122		178	0	983	165	--	2.2		1,950	2.65	126	1,140	991	19	2,350	7.8
Aug. 21-27, 31	19.6	--	--	306	96	96		91	0	948	132	--	1.1		1,760	2.42	94	1,040	860	27	2,460	8.0
Aug. 28-30	55.3	--	--	360	97	190		140	0	1,001	242	--	1.1		2,000	2.56	281	1,060	954	19	2,120	8.0
Sept. 4-5	55.1	--	--	314	87	175		108	0	875	193	--	1.8		1,830	2.22	1,870	974	868	14	1,820	7.9
Sept. 6-9	428	--	--	348	27	81		108	0	875	193	--	1.8		1,830	2.22	1,870	974	868	14	1,820	7.9
Sept. 10	2,090	--	--	85	6, 8	50		134	0	189	26	--	5.8		468	.64	2,640	240	130	31	632	8.2
Sept. 11	491	--	--	92	15	19		104	0	200	23	--	9.6		407	.58	569	291	208	13	627	8.0
Sept. 12-15	256	--	--	191	32	32		130	0	451	71	--	2.8		909	1.23	627	608	502	10	1,220	7.8
Sept. 16-20	182	--	--	268	48	85		144	0	788	153	--	1.9		1,410	1.92	579	866	748	18	1,820	8.0
Sept. 21-30	57.4	21	0.0	260	49	135	8.4	147	0	739	182	--	1.9		1,560	2.12	242	850	730	25	1,990	7.9
Weighted average...	261	--	--	217	30	60		a 131	--	553	77	--	5.5		1,130	1.54	796	665	556	16	1,390	--

a Includes equivalent of individual carbonate values shown above.

ARKANSAS RIVER BASIN--Continued

SALT FORK ARKANSAS RIVER AT ALVA, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	57	--	43	32	50	48	69	79	72	93	86
2	66	53	46	38	32	62	52	--	--	78	91	82
3	68	44	44	42	34	52	--	72	70	78	84	82
4	65	50	39	42	48	56	46	64	76	80	90	88
5	70	65	33	--	40	59	56	75	78	82	90	80
6	71	58	32	--	36	56	55	56	80	78	94	80
7	65	64	33	36	34	60	55	55	82	76	93	74
8	69	43	38	40	45	46	54	74	83	82	89	76
9	67	36	38	44	42	38	56	68	79	78	90	75
10	68	36	32	41	--	52	48	65	78	78	79	78
11	69	43	36	35	68	42	46	72	74	82	86	82
12	69	48	41	42	36	40	52	69	77	79	87	72
13	69	46	45	36	32	45	64	--	77	80	86	72
14	77	58	46	46	32	54	62	74	80	80	86	79
15	72	54	43	56	32	56	56	64	84	82	86	68
16	69	50	50	62	38	60	65	62	89	82	--	72
17	63	48	43	54	40	50	65	68	85	80	84	72
18	69	52	42	54	56	50	59	69	84	82	87	72
19	70	40	41	44	58	55	69	68	90	81	87	72
20	66	60	--	42	54	52	66	69	86	80	90	72
21	65	50	46	36	54	59	65	70	78	83	72	58
22	62	52	--	44	58	69	64	70	86	80	75	68
23	58	33	52	50	58	56	68	69	78	78	72	74
24	67	36	48	46	56	58	71	68	76	80	82	72
25	64	45	48	48	53	66	68	--	82	80	88	72
26	67	48	35	50	58	59	75	69	84	78	78	78
27	70	50	35	32	62	65	74	65	82	78	84	60
28	70	44	36	32	56	44	75	75	74	88	92	63
29	66	44	35	32	--	50	76	--	82	85	83	74
30	65	45	49	32	--	60	69	65	72	88	88	80
31	68	--	46	32	--	--	--	82	--	84	80	--
Average	68	48	41	42	46	54	61	68	80	80	86	74

ARKANSAS RIVER BASIN--Continued
CHIKASKIA RIVER NEAR CORBIN, KANS.

LOCATION.--At gaging station at bridge on State Highway 49, 1 mile upstream from Prairie Creek, and 3 miles west of Corbin, Sumner County.
DRAINAGE AREA.--794 square miles.
RECORDS AVAILABLE.--Chemical analyses: September 1950 to September 1951.
Water temperatures: September 1950 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 401 ppm Feb. 1-5; minimum, 56 ppm July 14-15.
Hardness: Maximum, 276 ppm Feb. 1-5; minimum, 56 ppm July 14-15.
Specific conductance: Maximum daily, 729 micromhos Feb. 1; minimum daily, 96.8 micromhos July 14.
Specific temperatures: Maximum, 86.7 Aug. 6; minimum, freezing point on many days during November to March.
REMARKS.--Remarks: Specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, September 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum	Specific conduct-ance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./mil-lesium	Non-carbon-ate			
Sept. 1-10, 1950.....	305	--	--	58	14	21		238	0	33	11	--	2.5	--	286	0.39	236	202	12	18	458	--
Sept. 11-20.....	140	21	0.00	64	15	24	3.4	254	0	40	12	0.0	2.9	--	308	.42	116	221	12	19	494	8.1
Sept. 21-30.....	97.7	20	0.00	63	15	26	3.4	230	12	42	12	0.0	1.8	--	209	.42	82	218	10	20	502	8.3
Oct. 1-10.....	83.8	20	0.00	64	15	27	3.6	257	0	42	13	2.2	2.2	--	314	.43	71	221	10	21	506	8.2
Oct. 11-20.....	68.2	19	0.00	60	16	27	3.2	249	0	44	14	3.1	1.1	--	308	.42	57	216	11	21	488	8.2
Oct. 21-31.....	68.1	18	0.00	62	16	28	2.8	261	0	42	14	5.1	1.1	--	313	.43	58	220	6	21	488	8.0
Nov. 1-10.....	74.5	18	0.00	65	15	27	2.6	260	0	43	15	5.1	1.1	--	315	.43	63	224	10	20	501	8.0
Nov. 11-20.....	83.5	17	0.00	71	17	19	2.7	264	0	44	16	7.7	2.3	--	317	.43	71	247	30	15	521	7.9
Nov. 21-30.....	84.0	14	0.00	67	17	28	2.7	270	0	44	15	3.3	3.3	--	324	.44	73	237	16	20	531	8.0
Dec. 1-10.....	76.5	--	--	70	17	21		274	0	46	16	--	4.4	--	333	.45	69	252	28	15	537	--
Dec. 11-20.....	99.5	15	0.00	68	13	25	2.5	253	0	43	14	3	4.5	--	308	.42	83	218	10	20	495	8.1
Dec. 21-31.....	75.3	--	--	66	18	26		269	0	44	16	--	4.0	--	321	.44	85	230	10	21	524	--
Jan. 1-10, 1951.....	87.9	15	0.00	65	15	27	2.4	265	0	43	15	3	5.1	--	318	.43	75	234	6	21	514	7.7
Jan. 11-20.....	85.5	--	--	66	16	20		264	0	40	14	--	5.8	--	309	.43	71	230	22	16	502	--
Jan. 21-31.....	64.5	17	0.00	74	17	30	3.2	264	0	49	18	3	5.1	--	359	.49	63	254	14	20	569	8.0
Feb. 1-5.....	51.0	--	--	76	21	36		318	0	60	18	--	6.1	--	491	.55	55	278	16	22	640	--
Feb. 6-10.....	97.0	--	--	57	13	19	3.2	219	0	35	12	--	5.5	--	272	.37	71	196	16	18	447	--
Feb. 11-20.....	94.4	17	0.00	66	15	27		231	15	43	15	3	3.0	--	330	.45	84	226	12	20	509	8.3
Feb. 21-28.....	166	--	--	59	13	22	3.2	229	0	38	14	--	3.6	--	289	.39	130	200	13	19	487	--
Mar. 1-10.....	109	--	--	69	17	14		257	0	38	14	--	3.9	--	320	.44	94	242	31	12	509	--
Mar. 11-20.....	96.3	15	0.00	65	14	27	2.6	261	0	40	15	3	4.0	--	312	.42	81	220	6	21	514	8.2
Mar. 21-27, 30-31.....	121	--	--	58	15	17		235	0	41	14	--	2.9	--	286	.39	83	208	14	24	475	7.5
Mar. 28-28.....	376	--	--	28	7.3	21		107	0	50	11	--	3.3	--	150	.20	233	100	12	27	236	7.5
Apr. 1-10.....	223	17	0.00	59	14	26	3.7	227	6	40	14	3	3.5	--	294	.40	177	202	6	21	485	8.5
Apr. 11-20.....	147	16	0.00	68	16	22		249	6	43	15	1	4.1	0.03	313	.43	124	236	22	17	508	8.5
Apr. 21-27.....	139	--	--	60	15	25		242	0	43	15	--	1.4	--	292	.40	102	211	13	21	493	8.1
Apr. 28-30.....	565	--	--	38	8.6	12		140	4	25	8.8	--	2.9	--	191	.26	281	134	13	17	311	8.4

May 1-2.....	2,380	--	24	7.2	9.7	96	0	20	6.2	--	2.9	--	158	.21	1,020	90	11	19	214	7.3
May 3, 10.....	421	--	40	11	20	157	0	42	9.8	--	3.0	--	221	.30	251	145	18	23	356	7.8
May 4-9.....	272	--	65	15	24	254	0	43	15	--	3.2	--	318	.43	234	208	16	19	514	8.0
May 11-15.....	161	--	62	13	24	248	0	42	14	--	2.8	--	305	.41	133	204	5	23	501	8.1
May 16-19.....	10,620	--	26	6.1	14	106	2	14	8.1	--	5.0	--	127	.17	3,640	90	0	25	323	8.3
May 20.....	1,720	--	41	9.4	17	157	6	24	6.0	--	7.0	--	210	.29	975	141	2	21	328	8.7
May 21, 24-25, 29-30.....	1,187	--	48	11	18	195	0	27	9.5	--	3.9	--	239	.33	772	165	5	19	399	8.1
May 22-28.....	4,685	--	58	16.3	25	106	5	12	7.0	--	3.3	--	180	.26	2,410	201	4	19	213	7.9
May 28-29, 31.....	356	--	58	14	25	229	5	35	14	--	5.9	--	293	.40	471	202	2	21	471	8.4
June 1-6.....	531	--	62	15	28	255	0	41	13	--	4.4	--	311	.43	446	216	7	21	505	7.5
June 7-8.....	6,850	--	17	5.7	7.4	73	0	9.1	7.0	--	3.3	--	86	.12	1,590	66	6	20	143	7.2
June 9-10.....	1,252	--	38	8.6	14	158	0	17	7.0	--	5.1	--	204	.28	690	130	1	19	309	7.6
June 11, 13, 15, 18-20.....	1,559	--	36	13	32	259	0	31	12	--	2.4	--	274	.37	414	274	0	27	435	--
June 12, 14, 16-17.....	998	--	36	9.7	24	178	0	21	8.2	--	3.7	--	193	.26	520	130	0	29	322	7.7
June 21, 23, 25.....	2,760	--	31	9.4	4.8	124	0	15	5.5	--	1.9	--	153	.21	1,140	116	14	8	239	--
June 22, 24.....	10,650	--	18	6.1	1.6	64	0	9.9	2.5	--	2.5	--	71	.10	2,040	65	12	5	127	7.3
June 26, 30.....	1,575	--	47	12	18	184	5	28	9.8	--	3.2	--	220	.30	938	166	7	19	373	8.5
June 27-29.....	727	--	60	14	24	243	6	32	10	--	3.9	--	286	.39	561	207	0	20	464	8.5
July 1-3, 10.....	1,378	--	34	11	9.9	146	0	20	6.5	--	2.2	--	164	.22	610	130	10	14	282	6.9
July 4-8.....	439	--	62	15	23	251	0	38	12	--	4.5	--	303	.41	359	216	10	19	386	7.8
July 11-12, 19-20.....	47	--	62	19	3.1	261	0	38	14	--	3.6	--	303	.41	358	232	18	16	503	7.6
July 13, 16.....	4,465	--	26	8.1	3.2	102	0	14	4.5	--	3.5	--	126	.17	1,550	56	13	3	188	7.2
July 14-18.....	10,990	--	52	13	11.7	187	7	28.0	2.0	--	4.2	--	236	.32	631	184	13	11	369	8.5
July 17-18.....	342	20	53	15	23	251	0	37	8.0	--	4.6	--	236	.32	631	184	13	11	369	8.5
July 21-31.....	342	20	53	15	23	251	0	37	12	--	3.7	--	299	.41	276	208	3	19	492	8.1
Aug. 1-10.....	192	--	58	16	23	240	0	42	13	--	2.0	--	299	.41	155	210	14	19	484	8.1
Aug. 11-20.....	195	--	59	16	26	242	0	42	15	--	1.3	--	308	.42	136	213	14	21	486	8.2
Aug. 21-31.....	141	20	56	15	25	224	4	42	13	--	3.0	--	296	.40	113	201	11	21	483	8.4
Sept. 1-5.....	158	--	61	16	25	248	0	46	14	--	2.7	--	307	.42	131	218	15	20	482	8.1
Sept. 6-10.....	1,167	--	29	8.1	7.1	116	0	15	5.5	--	3.7	--	180	.22	504	106	11	13	234	8.0
Sept. 11-14.....	1,088	--	29	7.0	10	117	0	14	6.8	--	4.6	--	186	.25	546	102	6	18	241	7.5
Sept. 15-18, 18.....	484	--	46	10	13	180	0	22	8.0	--	3.7	--	212	.29	277	156	8	16	349	8.1
Sept. 17, 19-20.....	414	--	58	12	15	219	0	28	10	--	4.1	--	280	.35	291	194	14	14	423	8.0
Sept. 21-30.....	508	20	63	14	23	244	3	40	13	--	4.4	--	308	.42	173	214	10	19	490	8.3
Weighted average.....	576	--	34	9.2	13	a141	--	20	7.8	--	3.4	--	173	.34	269	123	8	19	279	--

a Includes equivalents of individual carbonate values shown above.

ARKANSAS RIVER BASIN--Continued

CHIKASKIA RIVER NEAR CORBIN, KANS.--Continued

Temperature (°F) of water, September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1												69
2												70
3												71
4												--
5												--
6												65
7												65
8												65
9												65
10												66
11												62
12												60
13												62
14												63
15												68
16												66
17												68
18												70
19												72
20												72
21												67
22												64
23												62
24												62
25												60
26												62
27												63
28												67
29												67
30												70
31												--
Average												66

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	56	39	39	32	44	46	62	75	69	79	78
2	68	51	39	35	34	50	54	59	68	69	78	77
3	55	44	32	38	32	46	45	61	61	74	79	75
4	53	38	34	34	36	42	49	71	61	75	78	72
5	55	43	32	36	35	44	54	65	64	75	80	69
6	57	48	--	32	34	49	52	58	73	77	86	72
7	65	47	--	32	32	38	50	56	65	82	79	70
8	56	47	--	32	32	40	46	58	74	75	77	70
9	54	35	35	34	32	35	47	55	72	77	78	72
10	55	32	35	34	34	40	49	55	70	79	78	70
11	57	32	36	32	40	34	43	58	68	77	74	70
12	61	33	32	35	46	32	40	60	69	75	76	70
13	63	36	32	35	32	32	44	60	69	73	75	66
14	64	50	34	44	32	32	49	62	69	74	77	65
15	63	56	34	35	32	37	46	65	71	76	74	65
16	62	43	38	36	32	38	42	60	74	80	73	60
17	80	41	33	39	33	42	45	65	76	80	75	60
18	80	43	32	37	43	33	52	64	76	80	78	60
19	61	50	40	40	33	34	52	66	75	80	77	60
20	60	33	35	32	42	38	55	66	83	80	78	62
21	56	37	38	34	38	39	53	70	71	78	74	64
22	52	43	39	33	43	49	35	66	73	76	71	59
23	51	33	40	37	47	47	49	62	75	80	72	58
24	54	32	45	36	47	43	56	75	65	81	73	64
25	54	32	41	32	50	45	56	72	75	78	78	64
26	56	33	33	34	48	50	56	66	75	79	77	68
27	67	35	32	32	48	50	68	72	79	76	76	60
28	58	45	32	32	53	50	68	66	75	81	75	58
29	55	35	34	32	--	41	68	75	73	80	76	59
30	59	33	34	32	--	45	64	80	68	80	77	64
31	60	--	36	32	--	47	--	78	--	81	78	--
Average	59	41	36	35	38	41	51	65	71	77	77	66

ARKANSAS RIVER BASIN--Continued
ARKANSAS RIVER AT RALSTON, OKLA.

LOCATION.--At gaging station at bridge on State Highway 18 at Ralston, Pawnee County, 2 miles downstream from Salt Creek, and 2 miles upstream from Grayhorse Creek.

DRAINAGE AREA.--54,227 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1950 to September 1951.

EXTREMES 1950-51.--Chemical analyses: January 1950 to September 1951.

Hardness: Maximum, 582 ppm Jan. 5; minimum, 208 ppm July 15-17.

Specific conductance: Maximum daily, 4,070 micromhos Jan. 5; minimum daily, 319 micromhos July 16.

Water temperatures: Maximum, 93°F Sept. 12; minimum, freezing point on several days in December, January, and February.

EXTREMES, January 1950 to September 1951.--Dissolved solids: Maximum, 2,530 ppm Jan. 5, 1951; minimum, 208 ppm July 15-17, 1951.

Hardness: Maximum, 582 ppm Jan. 5, 1951; minimum, 90 ppm July 15-17, 1951.

Specific conductance: Maximum daily, 4,070 micromhos Jan. 5, 1951; minimum daily, 319 micromhos July 16, 1951.

Water temperatures: Maximum, 93°F Sept. 12, 1951; minimum, freezing point on several days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-rom (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum	Specific conduct-ance (micro-mhos at 25°C)	pH
															Parts per mil-lion	Tons per acre-foot	Tons per acre-foot	Calcium mag-nesium	Non-carbon-ate			
Oct. 1-3, 1950...	4,105	--	--	104	28	230	214	214	242	242	315	--	3.7	--	1,110	1.51	12,300	374	199	57	1,780	--
Oct. 4-6, 1950...	4,430	--	--	120	34	231	232	232	243	243	315	--	4.0	--	1,110	1.71	11,300	340	230	53	2,110	--
Oct. 9-10, 1950...	7,840	--	--	122	14	108	156	156	161	161	182	--	4.0	--	1,559	.78	9,830	240	108	55	1,028	--
Oct. 11-13, 1950...	5,573	--	--	68	17	132	161	161	130	130	182	--	4.0	--	943	.87	9,830	240	108	55	1,028	--
Oct. 14-16, 1950...	3,363	--	--	94	24	196	188	188	212	212	265	--	4.0	--	644	1.28	8,570	333	171	56	1,510	--
Oct. 17-20, 1950...	2,702	--	--	117	35	242	237	237	386	386	332	--	2.3	--	1,190	1.62	8,680	436	242	55	1,890	--
Oct. 21-31, 1950...	2,343	15	0.00	119	38	297	10	228	311	311	402	0.5	2.7	--	1,340	1.82	8,480	445	258	59	2,150	7.6
Nov. 1-10, 1950...	2,100	13	0.00	118	37	310	10	229	293	293	450	0.5	1.7	--	1,380	1.88	7,820	446	259	59	2,240	7.8
Nov. 11-20, 1950...	1,955	13	0.00	130	36	322	12	278	277	277	450	1	1.8	--	1,410	1.92	7,440	472	244	59	2,320	7.8
Nov. 21-30, 1950...	1,837	14	0.00	140	40	342	8.4	283	312	312	495	.3	2.3	--	1,540	2.09	7,640	510	278	59	2,480	8.0
Dec. 1-10, 1950...	1,775	17	0.00	146	41	382	11	291	348	348	530	.5	5.6	--	1,620	2.20	7,760	532	294	59	2,640	8.0
Dec. 11-20, 1950...	1,985	15	0.00	137	36	350	7.6	282	384	384	510	.7	7.0	--	1,520	2.07	8,150	490	259	60	2,550	7.8
Dec. 21-31, 1950...	1,810	15	0.00	127	38	370	7.2	274	328	328	530	.5	7.2	--	1,560	2.18	7,770	498	274	61	2,630	7.9
Jan. 1-4, 6-10, 1951	1,884	--	--	124	40	379	7.2	266	388	388	550	--	5.0	--	1,560	2.12	7,720	474	258	63	2,580	--
Jan. 5, 1951	1,920	--	--	154	48	687	6.87	260	381	381	1,080	--	5.1	--	2,530	3.44	13,320	582	388	71	4,070	--
Jan. 11-20, 1951	1,810	12	0.00	139	40	389	6.4	273	338	338	550	.3	7.0	--	1,850	2.24	8,060	512	288	62	2,720	7.8
Jan. 21-31, 1951	1,701	--	--	144	42	396	6.4	274	333	333	580	--	5.0	--	1,680	2.26	7,720	532	308	62	2,830	--
Feb. 1-10, 1951	1,807	13	0.00	154	46	438	8.0	295	346	346	655	.3	5.5	--	1,820	2.48	8,880	573	331	62	3,000	7.8
Feb. 11-20, 1951	1,839	--	--	134	39	364	7.6	259	276	276	555	--	5.1	--	1,550	2.11	7,700	495	282	62	2,580	--
Feb. 21, 26-28, 1951	3,238	--	--	146	43	413	4.13	223	314	314	655	--	6.1	--	1,750	2.38	15,300	541	358	82	2,900	--
Feb. 22-25, 1951	5,582	--	--	109	29	246	246	187	203	203	395	--	4.4	--	1,120	1.52	16,910	391	238	58	1,890	--

ARKANSAS RIVER BASIN--Continued
ARKANSAS RIVER AT RALSTON, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, nesium	Non-carbonate			
Mar. 1-2, 5-10, 1951	3,301	--	--	134	40	385		243		329	560	--	5.6	--	1,360	2.18	14,260	499	300	63	2,630	--
Mar. 3-4	3,600	--	--	121	35	319	8.8	216		277	475	0.3	4.6	--	1,600	1.88	14,160	446	289	61	2,280	--
Mar. 11-20	2,743	13	0.00	137	43	382		255		228	505		3.3	--	1,620	2.23	9,590	502	226	62	2,640	7.6
Mar. 21-31	2,193			130	42			224		333	580		1.4	--	1,640	2.23		467	314	63	2,700	
Apr. 1-3, 9	4,675	--	--	96	25	225		197		171	345	--	6.5	--	1,000	1.38	12,620	342	181	59	1,710	7.6
Apr. 4-5, 10	4,077	--	--	114	29	292		214		212	452	--	6.1	--	1,230	1.74	14,090	404	228	61	2,140	7.6
Apr. 6-8	3,340	--	--	132	34	401		231		229	645	--	5.5	--	1,660	2.26	14,930	470	280	65	2,770	7.8
Apr. 11-20	3,344	13	0.00	96	27	337	8.8	202		199	520	3	1.9	0.16	1,360	1.85	12,280	350	185	67	2,270	8.1
Apr. 21-30	2,553	6.0		96	31	348	7.2	164		228	555	3	1.1	1.13	1,460	1.99	10,060	367	216	87	2,430	7.8
May 1, 7	17,070			82	14	123		155		75	200	--	2.9	--	1,987	8.90	27,050	212	85	57	2,020	7.9
May 2, 6	27,450			48	10	78		134		49	118	--	3.0	--	408	.55	30,240	161	51	51	698	7.8
May 3-5	41,370	--	--	40	8.0		38	121		29	60	--	3.3	--	265	.36	29,600	133	34	38	449	7.8
May 8-10	7,180	--	--	80	18	177		198		107	270	--	3.9	--	810	1.10	15,700	274	112	58	1,370	7.8
May 11, 18	13,730	--	--	92	21	205		201		112	338	--	4.1	--	984	1.34	36,480	318	152	68	1,620	--
May 12-17	7,325	--	--	74	18	149		171		104	235	--	4.0	--	744	1.01	14,710	258	118	56	1,250	8.0
May 19-20	77,250	--	--	36	8.4	75		105		37	115	--	2.3	--	366	.80	76,340	124	39	57	636	8.2
May 21-24	81,100	--	--	40	9.8	98		108		76	130	--	2.8	--	409	.96	100,600	140	94	58	706	8.2
May 25-26	85,450	--	--	77	10	118		116		74	160	--	2.2	--	512	1.70	89,340	138	153	62	680	8.9
May 28-31	32,450	--	--	72	16	156		137		155	206	--	2.3	--	747	1.02	67,450	246	117	56	1,230	8.1
June 1, 8	21,800	--	--	94	22	174		a190		216	225	--	5.1	--	854	1.16	50,580	325	169	54	1,400	8.5
June 2-7	12,080	--	--	113	28	228		224		265	300	--	3.2	--	1,100	1.50	35,880	389	208	56	1,780	8.0
June 9-10	51,700	--	--	56	8.7	63		63		59	93	--	2.9	--	348	.47	46,300	151	87	48	604	8.1
June 11-12, 15-16, 19	23,860	--	--	56	13	103		138		105	136	--	2.9	--	506	.69	32,600	193	50	54	855	--
June 13-14, 17-18, 20	19,340	--	--	71	16	126		163		139	168	--	3.0	--	642	.87	33,520	243	110	63	1,090	7.6
June 21, 23, 25	40,870	--	--	60	13	115		140		113	154	--	3.6	--	544	.74	60,030	203	88	55	934	8.2
June 22, 28-30	34,400	--	--	53	11	90		129		95	118	--	3.3	--	461	.63	42,820	177	72	53	777	--
June 24, 28-28	65,500	--	--	40	8.3	74		109		62	99	--	2.3	--	359	.49	63,490	134	44	55	623	7.8
July 1, 5-8	62,560	--	--	47	11	66		121		78	88	--	2.3	--	382	.52	64,520	162	63	47	630	7.3
July 2-4	112,200	--	--	35	7.6	48		101		149	61	--	2.3	--	278	.38	94,220	118	38	46	462	7.6
July 5-10	25,690	--	--	78	19	112		165		146	156	--	3.3	--	658	.89	45,930	272	138	47	1,060	7.4
July 11-13	26,230	--	--	78	20	132		163		151	192	--	3.3	--	678	.82	46,000	276	143	51	1,120	8.1
July 14, 16	62,100	--	--	42	9.8	54		107		99	42	--	2.9	--	531	.45	55,900	146	55	45	565	7.5
July 17-20	38,100	--	--	54	13	94		121		104	104	--	3.3	--	406	.60	37,650	180	72	47	680	7.1
July 21-26	21,380	--	--	63	18	98		154		134	154	--	3.3	--	547	.74	31,580	223	97	40	913	8.0
July 21, 26-28	21,380	--	--	63	18	98		154		134	154	--	3.3	--	547	.74	31,580	223	97	40	913	8.1
July 22-25, 29-31	15,270	--	--	74	22	180		217		154	165	--	3.0	--	748	1.02	30,840	275	97	54	1,200	8.1

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

Aug. 1-10.....	7,457	18	.05	104	28	195	8.0	245	202	280	.3	2.0	.25	1,010	1.37	20,340	374	174	52	1,630	7.9
Aug. 11-12, 17, 20.	6,885	--	--	99	26	200	217	217	194	288	--	2.4	--	928	1.26	17,210	354	176	55	1,560	8.0
Aug. 13-16, 18-19.	8,097	--	--	76	22	155	180	180	139	228	--	3.2	--	736	1.00	16,090	280	132	55	1,270	7.9
Aug. 21-31.....	4,979	18	.00	99	27	208	226	208	198	305	.4	2.9	.25	1,010	1.37	13,310	358	173	55	1,650	7.1
Sept. 1-7.....	5,479	--	--	93	23	197	208	208	156	298	--	3.2	--	919	1.23	13,600	328	136	57	1,536	7.6
Sept. 8-10.....	28,600	--	--	37	8.3	56	113	113	38	81	--	3.2	--	321	.44	32,750	148	54	97	713	7.7
Sept. 11, 14-16...	28,220	--	--	43	10	60	121	121	70	287	--	2.8	--	397	.54	27,250	148	58	97	713	7.7
Sept. 12-13, 17-20.	16,890	--	--	43	10	60	121	121	110	185	--	2.8	--	590	.80	27,050	168	58	66	1,030	7.5
Sept. 14-15.....	6,890	--	--	92	24	171	195	195	174	235	--	3.2	--	828	1.13	20,000	303	143	55	1,390	8.2
Sept. 24, 29-30....	11,510	--	--	57	12	100	135	135	94	140	--	2.8	--	504	.69	15,390	192	81	53	1,885	7.7
Sept. 25-28.....	23,680	--	--	48	9.9	68	123	123	64	95	--	3.2	--	382	.52	24,420	160	60	47	641	7.6
Weighted average.	12,770	--	--	81	15	123	145	145	111	174	--	3.1	--	593	0.81	20,450	214	94	56	991	--

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT RALSTON, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	66	49	44	32	53	51	72	80	73	85	87
2	68	59	46	41	32	58	52	65	74	72	88	84
3	67	49	42	41	32	52	58	65	69	78	88	83
4	65	50	40	43	34	53	62	67	71	75	88	83
5	65	55	32	43	36	54	57	78	72	80	90	78
6	69	57	32	35	38	56	57	64	72	80	91	75
7	68	59	32	36	34	52	57	67	75	82	90	73
8	66	54	33	38	39	48	56	70	77	82	85	73
9	65	46	34	38	38	44	58	68	73	82	83	72
10	67	42	33	39	47	49	52	65	78	82	79	75
11	70	43	34	36	56	43	50	67	75	83	85	78
12	69	45	36	41	50	37	48	65	75	83	85	93
13	71	48	38	41	32	40	64	69	74	77	85	72
14	72	54	40	42	32	46	61	70	76	76	86	73
15	74	61	39	43	32	48	56	75	75	78	83	67
16	72	54	40	47	37	50	58	70	80	82	83	69
17	73	51	38	46	39	46	60	70	82	84	86	70
18	71	54	37	48	48	47	66	68	80	85	85	71
19	71	57	39	49	51	50	65	70	83	86	86	71
20	69	47	38	40	45	50	61	81	83	87	87	72
21	68	48	41	38	49	53	60	73	81	87	78	70
22	66	--	44	39	51	60	60	70	80	89	73	68
23	64	52	46	42	53	55	65	70	80	84	78	72
24	63	36	46	41	52	60	70	66	80	84	83	70
25	69	39	47	40	52	63	70	70	77	83	85	70
26	70	41	32	45	55	59	73	70	78	78	82	73
27	79	43	35	34	57	59	78	72	80	84	85	65
28	70	43	34	32	55	58	78	74	80	85	85	63
29	71	43	34	32	--	50	69	77	78	87	86	67
30	72	45	39	32	--	58	65	79	75	88	86	72
31	72	--	41	32	--	56	--	80	--	83	88	--
Average	69	50	38	40	43	52	61	71	77	82	85	74

ARKANSAS RIVER BASIN--Continued
SKELETON CREEK NEAR LOVELL, OKLA.

LOCATION.--At gaging station at bridge on State Highway 74, 2 miles upstream from Otter Creek, and 2½ miles east of Lovell, Logan County.
DRAINAGE AREA.--410 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.
Water temperatures: October 1950 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 2,100 ppm Dec. 7-8; minimum, 48 ppm July 21.
Hardness: Maximum, 670 ppm Dec. 7-8; minimum, 122 ppm Sept. 13.
Specific conductance: Maximum daily, 3,610 micromhos Dec. 7; minimum daily, 178 micromhos July 2.
Water temperatures: Maximum, 89°F Aug. 19; minimum, freezing point on several days in December and February.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	So- dium (Na)	Pot- asium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- lidum	Specific conductance (micro-mhos at 25° C)	pH	
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, mag- nesium	Non-carbon- ate				
Oct. 1-2, 4-10, 1950...	17.1	--	--	137	54	348		505	0	177	510	--	4.6		1,550	2.11	72	564	150	57	2,560	--
Oct. 3...	38	--	--	56	22	112		178	0	92	160	--	8.9		1,563	2.77	58	230	84	52	2,980	--
Oct. 11-20...	12.4	18	0.00	146	57	390	11	547	0	193	545	0.1	5.0		1,670	2.27	56	598	151	58	2,740	8.1
Oct. 21-31...	13.0	19	0.00	149	54	401	9.2	565	0	198	555	3	3.2		1,680	2.28	54	594	131	59	2,760	8.0
Nov. 1-10...	12.7	--	--	153	56	422	18	557	0	196	595	2	2.3		1,750	2.38	65	512	156	60	2,910	7.9
Nov. 11-12, 17-18...	12.5	--	--	156	62	435		543	0	201	660	--	6.0		1,860	2.53	63	644	199	59	3,060	--
Nov. 13-16, 19-20...	12.7	--	--	137	56	374		549	0	204	510	5.5	5.5		1,620	2.20	56	572	122	59	2,660	--
Nov. 17-21, 23-24, 27-30	13.4	--	--	134	52	385		585	0	197	495	--	3.7		1,800	2.18	58	548	69	60	2,700	--
Nov. 22, 25-26...	12.7	--	--	156	60	458		583	0	198	670	--	3.9		1,870	2.54	64	636	158	61	3,190	--
Dec. 1-6, 9-10...	11.8	--	--	137	52	403		579	0	212	520	--	5.6		1,640	2.23	52	556	82	61	2,750	--
Dec. 7-8...	8.60	--	--	173	58	525		606	0	221	765	--	6.6		2,100	2.66	49	670	174	63	3,530	--
Dec. 11-20...	13.0	16	0.00	140	57	379	13	570	0	220	595	5	10		1,860	2.26	38	584	117	58	2,750	7.5
Dec. 21-26, 30-31...	11.4	--	--	158	53	363		586	0	213	485	--	11		1,560	2.12	43	595	121	59	2,900	--
Dec. 1-7, 10-11, 13-14, 17-18, 20-22, 25-29	12.0	--	--	106	41	279		369	0	153	395	--	5.6		1,250	1.70	40	433	114	58	2,100	--
Dec. 28-29...	10.5	--	--	161	51	457		568	0	217	645	--	5.8		1,840	2.00	52	611	147	62	3,100	--
Jan. 1, 7-10, 1951...	16.2	--	--	136	53	341		512	0	214	460	--	10		1,470	2.00	40	558	138	57	2,510	--
Jan. 2-6...	18.1	--	--	159	61	423		523	0	205	650	--	9.1		1,800	2.45	79	648	219	59	3,070	--
Jan. 11-20...	11.3	12	0.00	136	54	367	10	515	0	224	485	1	9.8		1,580	2.15	48	562	140	58	2,600	8.0
Jan. 21-31...	8.31	--	--	137	51	367		510	0	220	495	--	4.1		1,570	2.14	35	552	133	59	2,620	--
Feb. 1-7...	8.49	--	--	143	52	398		570	0	250	500	--	3.9		1,690	2.30	39	571	104	60	2,770	--
Feb. 8-10...	15.0	--	--	159	58	453		561	0	225	655	--	4.0		1,930	2.62	78	635	175	61	3,180	--
Feb. 11-17...	10.3	--	--	140	57	374		499	0	222	530	--	11		1,650	2.24	46	584	175	58	2,720	--
Feb. 18-20...	50.7	--	--	124	50	304		412	0	202	440	--	8.9		1,360	1.88	189	515	178	56	2,300	--
Feb. 21-23...	84.7	--	--	50	19	126		186	0	197	148	--	6.5		584	1.79	134	203	50	57	1,010	--
Feb. 24-28...	27.2	--	--	85	32	209		312	0	140	275	--	8.5		956	1.30	70	344	88	57	1,800	--
Mar. 1-10...	13.6	16	0.00	106	43	283	7.6	438	0	193	388	4	12		1,240	1.69	46	442	82	58	2,070	7.8
Mar. 11-20...	16.1	--	--	117	45	313		451	0	237	360	--	7.6		1,320	1.80	37	477	106	59	2,200	--
Mar. 21-25, 27-28...	10.3	--	--	114	47	309		495	0	200	400	--	5.5		1,350	1.84	38	476	104	58	2,260	--

ARKANSAS RIVER BASIN--Continued
SKELETON CREEK NEAR LOVELL, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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-centage so-lidum	Specific conductance (micro-mhos at 25 C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Mar. 26, 29-31, 1951	12.8	--	--	129	52	381		496	0	213	520	--	3.7		1,810	2.19	56	536	130	61	2,470	--
Apr. 1-3, 5-6,	11.4	--	--	118	47	357		488	0	216	450	--	5.2		1,450	1.97	45	488	88	61	2,420	8.2
Apr. 4, 10,	11.5	--	--	84	33	216		336	0	154	265	--	7.2		961	1.31	30	345	70	58	1,630	8.1
Apr. 7-9,	41.3	--	--	68	26	171		261	0	138	205	--	4.1		772	1.05	86	276	622	57	1,320	7.4
Apr. 11-31,	11.5	--	--	80	33	201		314	0	188	290	--	5.6		886	1.34	31	335	78	60	1,660	7.8
Apr. 13-17,	10.7	--	--	86	37	261		355	0	151	342	--	10		1,080	1.47	31	372	80	60	2,070	7.9
Apr. 18-20,	8.97	--	--	133	53	364		484	0	193	430	--	6.5		1,510	2.05	41	550	135	53	2,800	8.2
Apr. 21-28,	33	--	--	133	53	364		484	0	193	430	--	6.5		1,510	2.05	41	550	135	53	2,800	8.2
Apr. 30,	33	--	--	90	34	220		290	30	146	282	--	6.3		950	1.29	85	364	77	57	1,640	8.8
May 1-2,	766	--	--	47	14	64		162	4	77	63	--	6.5		356	.48	736	174	35	44	608	8.4
May 3, 10,	33.9	--	--	94	34	214		287	30	143	285	--	5.6		954	1.30	87	374	90	55	1,650	8.9
May 11, 15,	16.4	--	--	104	40	275		394	8	170	362	--	7.1		1,170	1.59	52	424	966	58	2,010	8.4
May 12-14,	14.3	--	--	85	33	209		342	2	137	265	--	3.5		920	1.25	36	348	64	57	1,600	8.3
May 16-18,	851	--	--	49	18	106		205	0	78	124	--	2.8		596	.67	1,140	196	28	54	860	8.1
May 19,	1,630	--	--	64	28	136		219	16	108	175	--	5.6		647	.88	850	274	68	52	1,160	8.8
May 20,	848	--	--	32	11	63		127	3	45	38	--	3.9		236	.32	540	125	16	41	404	8.5
May 21, 23,	1,268	--	--	19	7.0	17		82	0	19	17	--	3.7		144	.20	493	76	10	33	220	7.3
May 22, 24-25, 29,	621	--	--	27	9.4	37		126	0	34	33	--	2.2		225	.31	377	106	3	43	375	8.0
May 26-28, 30,	388	--	--	76	28	144		290	0	111	185	--	3.7		710	.97	744	304	67	51	1,230	8.0
May 31,	74	--	--	92	46	248		334	12	187	330	--	6.1		1,100	1.50	220	418	125	58	1,960	8.5
June 1-2, 4, 6,	40.8	--	--	90	31	171		321	0	121	235	--	3.7		818	1.11	90	352	89	51	1,410	8.1
June 3, 5,	30.5	--	--	92	39	235		345	12	131	245	--	4.3		1,044	1.41	97	390	88	57	1,740	8.5
June 7-8, 10,	239	--	--	46	17	83		183	0	81	93	--	3.5		428	.58	276	190	40	48	749	7.4
June 9-11,	77	--	--	31	9.2	28		113	3	93	29	--	3.5		195	.27	41	118	18	34	349	8.5
June 11-14, 18-19,	60.2	--	--	80	29	157		309	0	128	192	--	4.1		756	1.03	123	318	68	52	1,300	7.6
June 15-17,	563	--	--	44	16	83		132	0	64	94	--	--		405	.55	616	176	18	51	718	7.7
June 20,	63	--	--	56	20	101		185	14	76	129	--	4.8		492	.67	84	222	46	50	746	8.9
June 21-22,	1,920	--	--	24	6.8	18		90	0	18	23	--	2.9		160	.22	829	88	14	31	256	7.7
June 23,	634	--	--	41	12	42		129	4	38	62	--	5.1		279	.38	478	152	40	47	491	8.6
June 24-25,	110	--	--	61	19	92		198	4	65	136	--	2.9		501	.68	149	230	61	47	883	8.4
June 26-29,	51.0	--	--	76	26	158		285	2	95	218	--	3.3		732	1.00	101	302	64	53	1,280	8.3
June 30,	82	--	--	80	34	213		263	15	122	305	--	6.5		908	1.23	201	340	99	58	1,960	8.7
July 1-2,	1,695	--	--	14	6.3	17		73	0	12	16	--	2.9		130	.18	595	61	1	37	189	7.3
July 3, 6-7, 9,	148	--	--	55	18	90		213	0	56	122	--	2.2		488	.66	192	211	36	48	811	7.6
July 4, 8,	282	--	--	74	30	139		394	0	107	180	--	4.1		728	.99	554	308	67	50	1,230	8.1
July 5,	1,000	--	--	18	9.6	31		84	0	25	32	--	4.5		856	1.24	486	268	8	62	466	8.6
July 10,	36	--	--	47	37	205		206	13	113	285	--	4.6		856	1.16	83	268	77	62	1,450	8.6

July 11, 15-17.....	34.8	--	--	60	35	237	318	0	132	290	--	3.0	940	1.28	88	294	33	64	1,540	8.2
July 12-14.....	65.3	--	--	60	23	157	255	11	98	180	--	2.3	970	1.91	118	244	18	58	1,560	8.4
July 18-20.....	21.0	--	--	90	42	311	411	0	174	375	--	1.7	1,220	1.66	99	397	36	63	2,110	8.2
July 21.....	18.0	--	--	10	5.5	161	184	10	174	107	--	8.2	1,491	1.67	24	48	0	88	2,609	8.7
July 22-31.....	13.8	--	--	104	44	318	476	0	175	395	--	3.5	1,310	1.78	49	440	50	61	2,190	8.0
Aug. 1-10.....	9.25	24	24	00	124	45	513	6	161	448	2	3.9	1,440	1.96	36	404	64	59	2,380	8.3
Aug. 11-20.....	7.29	24	24	05	117	43	336	11	156	445	3	2.9	1,420	1.93	28	469	46	60	2,330	8.5
Aug. 21-31.....	6.14	--	--	--	95	45	348	12	149	450	--	3.2	1,390	1.89	23	422	36	64	2,340	8.2
Sept. 1-9.....	9.56	--	--	--	114	42	366	495	0	175	470	--	1,410	1.92	36	457	52	64	2,380	8.2
Sept. 10-12, 17, 20.....	38.2	--	--	--	37	13	107	199	0	57	108	--	438	.60	451	146	0	62	748	7.8
Sept. 12.....	688	--	--	--	30	8.6	--	--	67	0	21	--	122	.17	227	110	56	--	246	7.6
Sept. 14-16.....	88.3	--	--	--	22	9.1	46	114	0	26	48	--	254	.35	59	92	0	52	401	7.4
Sept. 18-19.....	12.0	--	--	--	57	13	41	145	0	40	86	--	352	.48	11	196	76	31	578	7.9
Sept. 21-23.....	5.70	--	--	--	49	18	100	199	0	42	144	--	483	.66	7.4	196	33	52	868	7.7
Sept. 24-26.....	4.63	--	--	--	59	22	128	231	0	53	190	--	600	.82	7.5	238	48	54	1,080	7.6
Sept. 27-30.....	4.70	--	--	--	80	29	203	323	0	97	278	--	1,020	1.39	13	318	54	58	1,520	7.9
Weighted average...	88.9	--	--	--	48	18	95	a191	--	68	119	--	466	0.63	112	194	38	52	789	--

a Includes equivalent of individual carbonate values shown above.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

SKELETON CREEK NEAR LOVELL, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	62	42	46	--	48	50	63	67	67	84	82
2	40	58	46	41	--	54	48	--	72	73	85	82
3	58	50	50	38	32	41	48	--	67	81	82	82
4	60	50	40	38	35	47	54	--	68	77	85	81
5	60	50	37	40	34	49	57	--	70	75	84	80
6	60	53	32	36	35	52	57	--	71	81	88	75
7	64	53	32	33	32	46	54	--	70	81	88	75
8	62	50	32	33	37	50	51	--	71	84	88	75
9	65	41	35	36	34	42	55	--	69	82	84	75
10	65	41	34	38	38	47	54	65	76	80	84	73
11	65	40	34	35	49	46	51	69	74	81	84	73
12	65	39	34	36	41	44	46	68	71	81	82	74
13	66	40	34	37	34	43	50	67	70	81	80	72
14	66	53	34	36	32	36	57	64	69	79	80	68
15	69	56	34	40	32	39	50	70	--	78	82	68
16	66	48	34	42	35	--	52	66	72	82	80	62
17	67	46	36	42	38	48	55	70	77	82	84	63
18	68	48	34	41	41	39	65	66	73	88	86	65
19	66	--	35	--	42	48	66	66	78	88	89	68
20	65	47	36	41	41	50	64	67	73	88	85	68
21	63	44	46	41	47	42	62	70	75	88	--	63
22	60	50	35	39	48	48	56	67	78	86	78	61
23	55	42	38	39	50	52	68	66	80	86	78	78
24	63	38	32	38	49	52	65	65	80	85	81	74
25	64	39	40	37	52	51	67	70	77	82	79	75
26	67	41	42	39	49	56	76	68	82	83	80	72
27	66	41	35	39	50	53	--	67	82	86	82	70
28	63	41	32	--	49	57	--	75	82	84	85	70
29	65	40	32	--	--	48	65	68	82	81	85	68
30	67	41	40	--	--	46	65	73	76	85	85	68
31	66	--	38	--	--	52	--	69	--	82	84	--
Average	62	46	37	37	41	48	57	--	74	82	83	73

ARKANSAS RIVER BASIN--Continued
CIMARRON RIVER AT MANNFORD, OKLA.

LOCATION.--At county highway bridge, 1½ miles downstream from House Creek, 18 miles upstream from mouth, and half a mile north of Mannford, Creek County. DRAINAGE AREA 18,822 square miles. RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1951. Water temperatures: October 1949 to September 1951.

EXTREMES 1950-51.--Dissolved solids: Maximum, 13,000 ppm Apr. 8; minimum, 568 ppm Sept. 10. Hardness: Maximum, 1,800 ppm Feb. 1-5; minimum, 162 ppm Sept. 10.

Specific conductance: Maximum daily, 20,200 micromhos Feb. 1, Apr. 8; minimum daily, 964 micromhos Sept. 10. Water temperatures: Maximum, 86°F Aug. 5; minimum, freezing point on many days during November to February.

EXTREMES 1949-51.--Dissolved solids: Maximum, 13,000 ppm Apr. 8, 1951; minimum, 568 ppm Sept. 10, 1951. Hardness: Maximum, 1,800 ppm Feb. 1-5, 1951; minimum, 160 ppm July 12, 19, 1950.

Specific conductance: Maximum daily, 20,200 micromhos Feb. 1, Apr. 8, 1951; minimum daily, 964 micromhos Sept. 10, 1951. Water temperatures: Maximum, 86°F Aug. 5, 1951; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃	Per-cent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate, mg./l.		
Oct. 1-7, 1950.....	--	--	--	210	56	1,120	220	0	314	1,900	--	--	4.2	--	4,100	5.38	754	574	76	6,450	--
Oct. 8-10.....	--	--	--	252	71	1,530	248	0	386	2,900	--	--	8.5	--	5,700	7.73	940	730	81	9,180	--
Oct. 11-2, 19-20.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Oct. 13-17.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Oct. 18-21.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Oct. 21-31.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Nov. 1-10.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Nov. 11-20.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Nov. 21-30.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Dec. 1-10.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Dec. 11-20.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Dec. 21-31.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Jan. 1-10, 1951.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Jan. 11-20.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Jan. 21-31.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Feb. 1-5.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Feb. 6-10.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Feb. 11-19.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Feb. 20-23.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Feb. 24-28.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Feb. 29-Mar. 1.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Mar. 1-5.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Mar. 6-10.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--
Mar. 11-12, 18-20.....	--	--	--	215	60	1,290	230	0	283	2,200	--	--	5.0	--	4,480	6.09	783	594	78	7,140	--

ARKANSAS RIVER BASIN--Continued
CIMARRON RIVER AT MANFORD, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO 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 carbonate	Specific conduct-ance (micro- mhos at 25°C)	pH
															Parts per million	Tons per acre- foot	Tons per day	Calcium, mag- nesium	Non-carbon- ate			
Mar. 13-17, 1951.....	12	--	--	234	71	1,670	22	272	0	317	2,800	--	1.4	--	5,950	7.55	876	653	81	9,300	--	--
Mar. 21-31.....	--	--	0.00	307	97	2,540		240	0	413	4,280	0.0	2.3	--	8,150	11.08	1,160	968	82	13,100	7.7	7.7
Apr. 1-7, 10.....	--	--	--	291	91	2,550		240	0	318	4,260	--	5.6	--	8,050	10.95	1,100	904	83	13,000	8.1	8.1
Apr. 8.....	--	--	--	338	105	4,340		215	0	630	7,000	--	4.1	--	13,000	17.68	1,280	1,100	88	20,200	8.2	8.2
Apr. 9.....	--	--	--	286	82	3,110		232	3	491	5,000	--	2.9	--	9,370	12.74	1,000	808	87	15,100	8.3	8.3
Apr. 11-15.....	--	--	--	250	77	2,130		225	0	515	3,440	--	8.8	--	6,840	9.30	1,060	768	83	11,200	8.0	8.0
Apr. 16-20.....	--	--	--	290	83	2,620		222	0	566	4,250	--	6.6	--	8,390	11.41	1,060	883	84	13,400	8.0	8.0
Apr. 21-22.....	--	--	--	202	50	1,210		152	0	222	2,120	--	6.5	--	4,310	5.88	710	585	79	6,970	7.4	7.4
Apr. 23-30.....	--	--	--	227	80	1,970		208	0	344	3,290	--	5.1	--	6,540	8.89	896	725	83	10,500	7.8	7.8
May 1, 9-10.....	--	--	--	199	60	1,440		189	0	258	2,450	--	5.6	--	4,950	6.73	743	588	81	7,940	7.8	7.8
May 2, 7.....	--	--	--	90	25	1,418		156	0	87	715	--	5.6	--	1,530	2.08	328	200	73	2,620	8.1	8.1
May 3, 5.....	--	--	--	63	16	250		147	0	66	408	--	3.5	--	1,918	1.25	223	102	71	1,630	8.2	8.2
May 4, 6.....	--	--	--	74	19	309		146	0	86	510	--	7.2	--	1,170	1.59	262	143	72	2,010	7.6	7.6
May 8.....	--	--	--	150	39	726		153	7	145	1,290	--	7.8	--	2,720	3.70	534	398	75	4,360	8.5	8.5
May 11-12.....	--	--	--	251	75	2,080		235	3	349	3,470	--	7.1	--	6,870	9.34	934	737	83	11,000	8.3	8.3
May 13, 18.....	--	--	--	180	62	1,330		201	6	272	2,220	--	6.8	--	4,590	5.97	704	530	80	7,280	8.4	8.4
May 14-15.....	--	--	--	80	30	408		145	0	88	705	--	6.6	--	1,510	2.05	323	204	73	2,620	8.0	8.0
May 16, 19-20.....	--	--	--	100	27	579		135	0	158	980	--	5.7	--	1,980	2.69	360	250	78	3,370	7.9	7.9
May 17.....	--	--	--	164	82	771		159	5	151	1,500	--	13	--	3,240	4.41	746	607	69	5,120	8.4	8.4
May 21, 26-29.....	--	--	--	117	28	538		164	0	199	875	--	5.0	--	1,960	2.67	407	272	74	3,370	8.1	8.1
May 22-23, 30.....	--	--	--	91	22	432		164	0	188	670	--	3.9	--	1,580	2.15	318	183	75	2,690	7.8	7.8
May 24-25, 31.....	--	--	--	76	18	318		149	0	133	490	--	4.6	--	1,200	1.63	264	142	72	2,040	7.7	7.7
June 1-2, 10.....	--	--	--	91	27	407		169	0	165	645	--	4.5	--	1,490	2.03	338	200	72	2,580	7.9	7.9
June 3-7.....	--	--	--	147	43	618		207	0	263	1,020	--	6.1	--	2,340	3.18	544	374	71	3,940	7.8	7.8
June 8-9.....	--	--	--	80	24	295		150	0	138	475	--	3.9	--	1,170	1.59	288	175	68	2,020	7.8	7.8
June 11, 20.....	--	--	--	104	28	434		151	0	231	875	--	2.9	--	1,670	2.27	374	252	72	2,740	7.9	7.9
June 12-13.....	--	--	--	143	43	780		185	7	301	1,240	--	4.8	--	2,800	3.81	534	371	76	4,480	8.5	8.5
June 14-15, 19.....	--	--	--	73	20	299		136	0	144	460	--	3.9	--	1,200	1.63	284	152	71	1,970	8.2	8.2
June 16-17.....	--	--	--	58	15	179		138	0	86	278	--	3.9	--	765	1.04	206	94	65	1,280	--	--
June 21, 25-26, 29-30.....	--	--	--	110	25	351		128	0	228	590	--	4.4	--	1,410	1.92	373	268	67	2,420	8.1	8.1
June 22, 27-28.....	--	--	--	135	28	501		144	2	282	795	--	6.7	--	1,800	2.96	452	330	71	3,260	8.3	8.3
June 23-24.....	--	--	--	64	15	226		133	3	104	345	--	4.8	--	847	1.15	221	107	69	1,510	8.4	8.4
July 1, 3-4, 8.....	--	--	--	91	21	365		123	3	173	580	--	5.1	--	1,370	1.86	314	208	72	2,390	8.4	8.4
July 2.....	--	--	--	136	20	408		123	2	327	635	--	6.6	--	1,680	2.28	458	354	66	2,760	8.4	8.4
July 5-7, 9-10.....	--	--	--	78	16	232		123	2	137	365	--	3.6	--	931	1.27	280	166	66	1,650	8.3	8.3
July 11-12.....	--	--	--	83	22	268		139	3	174	460	--	7	--	1,170	1.59	322	204	66	2,000	8.3	8.3
July 13-14, 16-18.....	--	--	--	118	32	444		182	0	223	715	--	2.7	--	1,700	2.31	426	277	69	2,930	7.6	7.6

July 15, 19-20.....	182	45	657	202	0	311	1,080	--	5.3	2,490	3.39	598	424	71	4,170	8.0
July 21-22, 27-28.....	189	50	779	183	8	322	1,290	--	3.0	2,790	3.79	726	464	73	4,710	8.5
July 23-26, 29-31.....	187	55	988	207	0	387	1,580	--	4.2	3,490	4.75	692	523	75	5,840	8.1
Aug. 1, 3-7.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 2, 8-10.....	209	56	1,050	183	2	417	1,740	--	4.2	3,750	5.10	752	598	75	6,220	8.3
Aug. 11, 17-20.....	224	67	1,280	168	0	436	2,150	--	4.0	4,530	6.16	834	697	77	7,390	8.2
Aug. 12-13.....	207	64	1,460	174	0	346	2,450	--	5.3	4,700	6.39	780	637	80	7,810	8.1
Aug. 14-16.....	110	31	552	156	6	171	910	--	4.1	2,010	2.73	402	264	75	3,450	8.3
Aug. 17-20.....	157	51	899	159	12	248	1,520	--	4.2	3,150	4.28	601	450	76	5,190	8.5
Aug. 21-24.....	220	70	1,540	177	0	381	2,600	--	2.3	4,880	6.64	837	692	80	8,020	7.9
Aug. 25-31.....	283	83	2,190	145	0	379	3,780	--	2.9	6,770	9.21	1,060	928	82	11,000	8.0
Sept. 1-5.....	272	88	2,270	142	0	462	3,810	--	2.5	7,190	9.78	1,040	924	83	11,800	7.6
Sept. 6-7.....	280	85	1,590	152	0	430	2,750	--	7.2	5,350	7.28	1,998	874	78	8,830	7.6
Sept. 8-9.....	94	28	457	117	0	100	790	--	4.6	1,620	2.20	423	228	75	2,840	7.6
Sept. 10.....	47	11	225	64	0	22	240	--	2.5	598	1.71	162	83	53	1,864	7.8
Sept. 11.....	11	12	210	124	0	52	630	--	2.5	1,170	1.50	182	75	71	1,350	7.8
Sept. 13-14.....	188	21	363	132	0	62	830	--	2.5	1,416	1.94	308	205	72	2,320	7.1
Sept. 15-20.....	168	52	1,390	189	0	396	2,180	--	11.5	4,540	6.17	628	473	83	7,730	8.1
Sept. 16-20.....	100	28	1,768	143	0	153	1,240	--	6.5	2,640	3.59	364	248	82	4,430	7.9
Sept. 21-25, 27.....	137	42	910	166	0	202	1,520	--	5.2	2,930	3.98	514	378	79	5,040	8.0
Sept. 26, 28-30.....	234	66	1,660	204	0	287	2,850	--	4.8	5,440	7.40	866	688	81	8,670	8.1

ARKANSAS RIVER BASIN--Continued

CIMARRON RIVER AT MANNFORD, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	65	42	45	32	51	54	64	78	72	80	83
2	73	56	--	50	32	55	48	63	77	70	81	79
3	63	50	47	40	32	55	45	64	69	74	83	79
4	59	43	39	39	32	58	55	65	65	75	83	79
5	60	45	37	43	33	50	58	--	69	78	86	74
6	62	50	32	37	36	53	56	64	71	79	84	75
7	65	53	--	32	32	51	54	59	72	79	85	73
8	60	51	32	33	33	49	50	62	71	81	82	69
9	57	44	32	37	35	44	50	65	73	81	78	74
10	61	36	32	35	38	45	53	64	74	80	78	69
11	62	35	32	33	48	44	45	60	73	82	75	74
12	62	38	35	38	53	35	50	65	74	83	79	76
13	64	39	34	43	40	34	45	61	74	82	78	68
14	65	50	34	40	32	36	51	65	66	78	82	67
15	68	68	38	38	32	40	53	67	72	79	82	69
16	67	50	37	40	32	43	50	69	73	81	78	73
17	63	47	35	43	33	49	50	69	77	85	80	75
18	65	48	34	42	43	40	55	67	--	84	82	65
19	67	55	37	45	44	40	69	66	77	83	80	68
20	64	45	35	43	50	45	61	69	79	85	80	68
21	60	43	38	35	47	43	59	71	79	84	78	69
22	62	46	39	34	41	34	54	70	80	83	72	64
23	58	45	43	37	51	50	55	68	79	82	74	64
24	57	32	40	38	52	--	60	68	77	82	74	69
25	60	32	44	36	53	54	66	66	79	82	78	71
26	63	35	39	38	51	53	63	69	80	84	79	71
27	62	35	32	43	50	47	69	68	78	78	79	66
28	64	38	35	32	60	58	70	69	79	82	79	57
29	62	35	33	32	--	37	70	72	80	83	79	62
30	65	39	34	32	--	45	68	74	75	84	80	67
31	66	--	37	32	--	53	--	77	--	83	79	--
Average	63	45	36	38	41	46	56	67	75	81	80	71

ARKANSAS RIVER BASIN--Continued
ARKANSAS RIVER AT SAND SPRINGS BRIDGE NEAR TULSA, OKLA.

LOCATION.--At bridge on State Highway 33 in Sand Springs, Tulsa County, 7 miles downstream from Cimarron River, and 10 miles above gaging station at Tulsa.

DRAINAGE AREA.--74,350 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1949, January 1950 to September 1951.

Water temperatures: October 1946 to September 1949, January 1950 to September 1951.

EXTRUSSES, 1950-51.--Dissolved solids: Maximum, 3,530 ppm May 13; minimum, 379 ppm July 17-18.

Hardness: Maximum, 758 ppm Feb. 1-10; minimum, 138 ppm July 17-18.

Specific conductance: Maximum, 946 micromhos Feb. 2; minimum, 138 ppm July 17-18.

Water temperatures: Maximum, 94°F Aug. 6-7; minimum, 62°F Aug. 18-19.

EXTRUSSES, 1946-51.--Dissolved solids: Maximum, 3,530 ppm May 13; minimum, 379 ppm July 17-18.

Hardness: Maximum, 758 ppm Feb. 2; minimum, 138 ppm July 17-18.

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Specific conductance: Maximum, 946 micromhos Feb. 2; minimum, 138 ppm July 17-18.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Oct. 1-10, 1950	5,136	18	0.00	134	35	468	14	229	272	272	710	0.4	4.0	5.2	2,690	3.66	15,350	478	432	67	3,060	7.9
Oct. 11-18-20	5,228	38	--	126	38	424	14	212	230	690	680	--	6.8	7.1	2,690	3.66	15,350	478	432	67	2,850	--
Oct. 12-17	6,142	--	--	94	29	312	12	177	164	505	505	--	5.6	3.6	2,690	3.66	15,350	478	432	67	2,180	--
Oct. 21-31	3,132	15	.00	145	42	534	12	217	310	845	845	5.5	2.3	4.4	2,690	3.66	15,350	478	432	67	2,450	7.6
Nov. 1-10	2,736	12	.00	153	46	600	16	216	306	940	940	3.1	1.8	4.5	2,690	3.66	15,350	478	432	67	3,710	7.5
Nov. 11-20	2,366	14	.00	157	48	639	15	242	276	1,020	1,020	3.2	2.0	5.2	2,690	3.66	15,350	478	432	67	3,970	7.9
Nov. 21-30	2,189	14	.00	168	50	680	16	261	341	1,160	1,160	3.3	2.9	5.2	2,690	3.66	15,350	478	432	67	4,280	7.8
Dec. 1-10	2,113	--	--	188	51	742	18	277	341	1,210	1,210	--	5.2	5.2	2,690	3.66	15,350	478	432	67	4,510	--
Dec. 11-20	2,301	14	.00	181	52	696	18	284	346	1,150	1,150	3.3	7.1	7.1	2,690	3.66	15,350	478	432	67	4,390	7.7
Dec. 21-23, 26-31	2,294	--	--	170	46	719	18	272	315	1,150	1,150	--	3.6	3.6	2,690	3.66	15,350	478	432	67	4,390	--
Dec. 24-25	2,375	--	--	174	48	857	22	277	305	1,380	1,380	--	4.4	4.4	2,690	3.66	15,350	478	432	67	5,140	--
Jan. 1-10, 1951	2,258	13	.10	176	51	772	22	266	303	1,280	1,280	3.4	4.5	5.2	2,690	3.66	15,350	478	432	67	4,740	7.6
Jan. 11-20	2,258	--	--	154	51	817	22	255	312	1,300	1,300	--	5.2	5.2	2,690	3.66	15,350	478	432	67	4,870	--
Jan. 21-28	2,299	--	--	177	53	768	25	251	328	1,260	1,260	--	5.2	5.2	2,690	3.66	15,350	478	432	67	4,860	--
Jan. 29-31	1,973	--	--	195	59	963	28	306	365	1,550	1,550	--	7.1	7.1	3,360	4.57	17,900	729	478	74	5,630	--
Feb. 1-10	2,375	12	.00	210	57	941	28	286	365	1,590	1,590	3.3	7.8	7.8	3,400	4.62	21,800	758	524	72	5,600	7.6
Feb. 11-20	2,689	8.6	.00	170	48	787	22	243	286	1,320	1,320	3.7	7.0	7.0	3,400	4.62	21,800	758	524	72	4,710	8.0
Feb. 21-22, 26-27	6,235	--	--	131	38	668	22	243	219	1,110	1,110	--	2.7	2.7	2,960	3.21	39,730	483	343	75	4,120	--
Feb. 23-25, 28	6,682	--	--	133	35	506	22	179	192	835	835	--	3.2	3.2	1,870	2.54	33,740	426	280	72	3,220	--
Mar. 1-5	4,724	--	--	156	45	665	218	218	291	1,120	1,120	--	3.9	3.9	2,510	3.41	32,010	574	396	72	4,280	--
Mar. 6-10	3,634	--	--	167	48	1,000	235	235	349	1,580	1,580	--	2.8	2.8	3,320	4.52	34,370	614	421	78	5,630	--

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Discharge records for gaging station at Tulsa for water year October 1950 to September 1951 given in water-Supply Paper 1211. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

ARKANSAS RIVER BASIN--Continued
 ARKANSAS RIVER AT SAND SPRINGS BRIDGE NEAR TULSA, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued																						
Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO 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	Specific conduct-ance (micro- mhos at 25°C)	pH
															Parts per mil- lion	Tons per acre- foot	Tons per foot	Calcium	Non-carbon- ate			
Mar. 11-20, 1951.....	3,449	21	0.00	160	48	784	15	257		309	1,220	0.3	4.1	2,750	3.74	25,610	596	386	73	4,660	7.9	
Mar. 21-31.....	2,676	--	--	156	54	814	--	198		342	1,320	--	1.8	2,860	3.89	20,680	611	449	74	4,850	--	
Apr. 1-2, 6, 10.....	4,210	--	--	156	46	764	--	224		289	1,240	--	7.7	2,670	3.63	30,350	578	394	74	4,520	7.9	
Apr. 3-5.....	4,230	--	--	138	40	633	--	200		222	1,050	--	5.6	2,240	3.05	25,580	504	340	73	3,800	8.0	
Apr. 7-9.....	3,910	--	--	161	47	1,050	--	230		300	1,680	--	6.1	3,430	4.66	36,210	594	406	79	5,850	7.6	
Apr. 11.....	7,650	--	--	120	33	598	--	207		178	975	--	7.5	2,050	2.79	42,340	435	266	75	3,580	8.1	
Apr. 12-19.....	4,729	--	--	146	42	849	--	210		277	1,360	--	5.3	2,890	3.93	36,900	536	364	77	4,950	7.8	
Apr. 20.....	4,570	--	--	80	21	387	--	110		133	635	--	4.0	1,420	1.93	17,520	286	196	75	2,430	8.0	
Apr. 21-22, 28-30.....	3,890	--	--	127	40	628	--	176		225	1,040	--	2.8	2,200	2.99	23,110	482	338	74	3,790	8.0	
Apr. 23-27.....	3,512	--	--	130	42	712	--	191		240	1,160	--	2.4	2,480	3.37	23,520	497	340	76	4,220	8.0	
May 1-2, 9-10.....	15,060	--	--	84	20	352	--	158		99	550	--	7.1	1,200	1.63	46,790	292	162	71	2,170	8.0	
May 3, 6.....	32,300	--	--	67	14	172	--	150		62	280	--	2.8	738	1.00	64,360	224	102	63	1,290	8.1	
May 4.....	32,600	--	--	101	22	397	--	181		136	603	--	5.1	1,411	2.61	143,060	340	192	71	2,560	8.0	
May 5-8.....	17,750	--	--	175	43	1,030	--	209		105	1,740	--	6.3	3,130	4.90	143,000	609	439	79	5,860	8.0	
May 11-12, 14, 20.....	10,750	--	--	88	20	255	--	174		105	425	--	5.3	1,100	1.50	31,930	302	159	65	1,820	7.8	
May 15-18.....	69,800	--	--	112	21	299	--	138		212	890	--	11	1,970	2.68	371,300	366	253	77	3,320	8.0	
May 19.....	63,730	--	--	79	19	322	--	160		144	490	--	4.4	1,210	1.65	208,200	275	144	72	2,060	7.8	
May 21, 23, 27-30.....	68,170	--	--	71	17	322	--	141		138	355	--	3.5	968	1.32	178,200	247	132	67	1,630	7.7	
May 22, 26, 31.....	63,730	--	--	71	17	322	--	141		138	355	--	3.5	968	1.32	178,200	247	132	67	1,630	7.7	
May 24-25.....	102,400	--	--	57	13	171	--	136		94	252	--	2.0	724	.98	200,200	196	84	65	1,230	7.4	
June 1, 9.....	35,000	--	--	80	20	195	--	171		150	288	--	2.8	902	1.23	85,240	282	142	60	1,510	7.8	
June 2-4.....	19,370	--	--	98	25	288	--	193		210	422	--	3.2	1,260	1.71	65,900	348	190	64	2,040	8.2	
June 5-8.....	17,300	--	--	128	34	428	--	219		267	660	--	4.0	1,800	2.45	84,600	460	280	67	2,860	8.2	
June 10.....	56,600	--	--	54	13	118	--	125		94	178	--	5.2	598	.81	91,390	188	86	58	965	8.2	
June 11-12, 18.....	34,730	--	--	65	16	183	--	135		107	285	--	2.0	1,345	1.40	89,950	228	118	64	1,330	8.1	
June 13, 15, 19-20.....	27,280	--	--	85	21	261	--	156		157	405	--	5.0	1,030	1.40	75,870	298	170	66	1,840	8.2	
June 14.....	31,500	--	--	104	26	387	--	149		166	630	--	5.2	1,490	2.03	126,700	366	244	70	2,590	8.4	
June 15-17.....	3,360	--	--	64	15	180	--	143		92	235	--	1.9	653	.89	61,270	221	104	60	1,180	8.2	
June 18.....	48,150	--	--	84	15	185	--	133		126	278	--	2.6	1,176	1.96	102,100	231	122	64	1,360	8.1	
June 21, 23-24, 28-30.....	67,350	--	--	83	18	231	--	128		194	358	--	3.2	970	1.32	176,400	281	176	64	1,680	8.0	
July 1-10.....	87,670	14	.00	58	11	130	5.2	133		94	195	.1	2.4	594	.81	140,600	190	80	59	1,020	7.7	
July 11-14, 20.....	34,400	--	--	76	17	160	--	154		149	230	--	2.0	742	1.01	69,920	260	134	57	1,250	7.5	
July 15-16, 19.....	81,830	--	--	49	11	106	--	114		73	160	--	2.4	480	.65	106,100	167	74	58	837	8.0	
July 17-18.....	108,700	--	--	39	9	9.7	--	121		53	112	--	2.7	379	.52	111,200	138	58	56	654	7.4	
July 21-22, 26-29.....	26,380	--	--	70	19	172	--	159		121	262	--	.1	808	1.10	57,440	232	122	60	1,370	8.1	
July 23-25, 30-31.....	17,300	--	--	97	24	242	--	207		172	365	--	3.0	1,140	1.55	53,250	340	171	61	1,670	8.0	
Includes equivalent of 3 parts per million of carbonate (CO ₃).																						

a Includes equivalent of 3 parts per million of carbonate (CO₃).

Aug. 1-7.....	10,350	--	--	116	31	309	228	219	475	--	4.1	1,430	1.94	39,960	417	230	62	2,250	8.2
Aug. 8-12.....	7,964	--	--	119	38	412	180	194	700	--	4.2	1,740	2.37	37,410	453	298	66	2,690	7.5
Aug. 13-20.....	9,601	--	--	88	28	285	189	161	445	--	4.4	1,260	1.71	32,660	334	180	65	2,010	8.0
Aug. 21-31.....	5,792	19	--	00	110	31	213	203	545	.3	2.5	1,460	1.99	22,830	402	228	64	2,380	8.0
Sept. 1-8.....	5,969	--	--	109	30	431	210	184	685	--	3.7	1,600	2.18	25,790	396	224	70	2,770	7.6
Sept. 9-10.....	33,350	--	--	41	10	117	102	32	198	--	3.0	509	.69	45,830	144	60	64	856	7.5
Sept. 11, 16-18.....	27,980	--	--	58	15	224	123	90	350	--	5.0	824	1.12	62,250	206	105	70	1,540	7.6
Sept. 12-14.....	27,600	--	--	51	11	139	120	67	215	--	2.5	571	.78	42,550	172	74	64	1,000	7.4
Sept. 15, 19-20.....	22,330	--	--	83	19	294	156	146	455	--	4.2	1,140	1.55	98,730	285	157	69	1,960	8.0
Sept. 21-25.....	11,010	--	--	94	25	293	200	166	450	--	4.8	1,130	1.54	33,590	338	174	65	1,950	8.0
Sept. 26-30.....	22,260	--	--	60	15	190	123	85	305	--	4.1	772	1.05	46,400	211	110	66	1,360	7.5
Weighted average	15,620	--	--	81	20	270	156	139	422	--	3.5	1,070	1.46	45,130	284	156	67	1,830	--

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT SAND SPRINGS BRIDGE NEAR TULSA, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	68	55	46	32	58	54	70	82	74	87	89
2	73	59	51	47	33	59	51	70	76	75	88	89
3	--	--	46	46	34	57	59	66	71	75	89	88
4	60	50	42	49	35	57	64	66	73	76	89	88
5	62	54	33	48	37	59	57	71	74	81	90	84
6	62	57	32	40	41	59	58	67	74	82	91	77
7	66	59	33	39	35	57	54	70	76	81	91	77
8	65	59	34	40	40	52	52	70	--	82	88	75
9	60	49	33	40	37	44	61	71	78	84	87	75
10	78	44	40	38	50	46	54	67	75	85	86	75
11	70	38	45	39	60	44	50	68	75	85	87	76
12	67	--	40	40	59	38	49	69	74	87	87	74
13	70	48	39	43	35	40	56	74	76	84	88	74
14	72	58	43	43	32	46	55	74	78	79	88	77
15	72	64	41	45	32	49	59	73	79	81	85	74
16	70	56	38	57	34	48	59	73	80	82	86	72
17	67	52	40	49	38	51	60	71	83	82	88	73
18	67	54	40	50	42	44	65	73	80	84	--	71
19	67	61	39	52	54	50	67	71	84	87	83	72
20	70	51	41	44	49	49	58	73	85	88	81	71
21	66	50	44	41	53	51	60	74	83	89	80	71
22	68	54	50	42	56	62	62	72	83	87	78	70
23	60	45	49	45	56	58	66	73	83	85	79	72
24	61	39	47	43	54	60	66	70	83	84	82	72
25	63	42	42	42	54	64	71	62	82	84	85	73
26	64	43	41	42	58	60	74	72	82	83	83	73
27	63	45	36	38	60	70	78	74	81	84	84	70
28	71	45	36	32	59	64	78	75	81	86	88	67
29	70	45	34	32	--	51	70	82	80	87	88	69
30	73	49	39	32	--	59	69	79	76	88	89	75
31	67	--	43	32	--	60	--	83	--	86	89	--
Average	67	51	41	42	45	54	61	72	79	83	86	75

ARKANSAS RIVER BASIN--Continued

VERDIGRIS RIVER NEAR CLAREMORE, OKLA.

LOCATION.--At gaging station at bridge on State Highway 20, 2½ miles downstream from Caney River, 12 miles upstream from Bird Creek, and 4½ miles west of Claremore, Rogers County.

DRAINAGE AREA.--6,534 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: 10, maximum, 747 ppm Feb. 1-10; minimum, 141 ppm Sept. 15-17.

Hardness: Maximum, 406 ppm Feb. 1-10; minimum, 81 ppm July 1-6 Feb. 6; minimum daily, 153 microhms June 30.

Specific conductance: Maximum daily, 1,030 microhms Jan. 31-6 Feb. 6; minimum daily, 153 microhms June 30.

Water temperature: Maximum 83°F July 21-22; minimum freezing point several days in December, January, and February.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 747 ppm Feb. 1-10, 1951; minimum, 126 ppm June 22-30, 1948.

Hardness: Maximum, 406 ppm Feb. 1-10, 1951; minimum, 50 ppm June 22-30, 1948.

Specific conductance: Maximum daily, 1,310 microhms Jan. 31, 1951; minimum daily, 130 microhms June 24, 1948.

Water temperatures: Maximum, 95°F July 22, 1949; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium chloride	Specific conductance (microhms at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate			
Oct. 1-2, 7-10, 1950.	927	--	--	--	64	11	40	201	--	26	70	--	1.9	--	334	0.45	838	204	40	30	585	--
Oct. 3-6	3,368	--	--	33	5.8	17	17	100	17	17	26	--	8.5	--	178	.24	1,620	106	24	26	293	--
Oct. 11-20	402	6.7	0.0	82	15	54	3.5	233	33	33	100	0.1	.8	--	443	.61	486	266	58	30	737	7.6
Oct. 21-31	201	7.2	0.0	95	17	96	3.1	286	38	124	124	3	.9	--	579	.82	264	334	92	34	936	7.9
Nov. 1-10	159	6.2	0.0	108	20	87	5.3	277	39	155	155	.6	.8	--	600	.82	254	351	96	33	1,020	8.0
Nov. 11-20	158	6.2	0.0	108	21	82	5.3	277	39	155	155	.6	.8	--	600	.82	254	351	96	33	1,020	8.0
Nov. 21-30	152	6.9	0.0	103	20	93	6.0	305	39	175	175	.3	.7	--	623	.85	258	339	89	37	1,080	7.9
Dec. 1-10	176	--	--	110	22	85	5.8	325	39	172	172	--	.2	--	653	.89	310	365	98	34	1,090	--
Dec. 11-20	148	5.3	0.0	115	20	95	5.8	336	41	178	178	.3	.9	--	665	.90	266	393	93	35	1,110	8.2
Dec. 21-31	122	--	--	112	21	99	3.4	328	43	190	190	--	.2	--	668	.91	220	366	97	37	1,140	--
Jan. 1-10, 1951	200	4.9	0.0	112	20	95	3.4	328	46	175	175	.1	1.3	--	660	.90	356	362	92	36	1,110	7.9
Jan. 11-20	176	--	--	115	25	78	4.4	312	45	182	182	--	1.4	--	648	.88	308	390	134	30	1,130	--
Jan. 21-31	116	4.4	0.0	116	21	111	4.4	324	54	205	205	.2	1.4	--	737	1.00	231	376	110	39	1,230	7.9
Feb. 1-10	110	--	--	123	24	104	5.1	317	51	225	225	--	.2	--	747	1.02	222	406	146	36	1,270	--
Feb. 11-17	175	--	--	120	22	100	294	42	48	222	222	--	3.5	--	740	1.01	350	390	149	36	1,260	--
Feb. 18-28	5,765	--	--	59	11	56	5.1	143	42	106	106	--	3.7	--	740	1.01	350	390	149	36	1,260	--
Mar. 1-10	1,337	3.6	0.0	81	14	68	1	214	48	123	123	.3	2.2	--	488	.66	2,030	280	84	36	819	7.6
Mar. 11-14	3,395	--	--	60	11	46	4	145	43	92	92	--	2.0	--	385	.54	3,620	384	106	34	912	7.6
Mar. 15-20	1,318	--	--	88	16	71	3.7	219	53	145	145	--	1.7	--	538	.73	2,010	286	106	34	912	7.6
Mar. 21-31	709	5.1	0.0	81	17	81	3.7	235	53	145	145	--	1.7	--	538	.76	1,070	294	102	37	935	8.1

ARKANSAS RIVER BASIN--Continued
VERDIGRIS RIVER NEAR CLAREMORE, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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	Specific conduct-ance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mag-nesium	Non-carbonate			
Apr. 1-5, 1951	701	--	--	95	19	89		242		55	180	--	0.9	--	633	0.86	1,200	318	119	38	1,060	7.7
Apr. 7-8	5,155	--	--	80	15	73		195		49	147	--	1.5	--	524	.71	7,260	261	101	38	848	7.8
Apr. 9-10	6,365	--	--	66	13	49		184		40	93	--	2.0	--	411	.56	7,060	218	67	33	650	7.7
Apr. 11-20	2,285	--	--	76	16	47		189		47	107	--	3.9	--	447	.61	2,760	256	100	29	734	8.0
Apr. 21-30	1,108	7.5	0.00	77	17	65	4.2	210	51	51	121	0.1	1.4	0.06	476	.65	1,420	262	90	35	784	8.0
May 1-3	7,009	--	--	70	14	60		193		44	112	--	1.3	--	466	.63	8,820	232	74	36	741	8.0
May 4-7	16,080	--	--	40	6.4	22		120	22	36	--	--	2.9	--	223	.30	9,680	126	28	38	355	7.8
May 8-10	8,907	--	--	56	12	46		168	31	83	--	--	2.4	--	368	.50	8,850	189	52	34	582	7.9
May 11-20	4,223	9.7	.02	62	11	42	3.2	189	34	74	--	--	1.9	.00	355	.48	4,050	200	44	31	586	8.2
May 21-24, 27, 29-31	7,688	--	--	55	9.8	34		a 168	28	58	--	--	3.7	--	315	.43	6,540	178	40	30	505	8.6
May 25-26, 28	14,040	--	--	44	7.5	25		140	22	40	--	--	2.5	--	243	.33	9,210	141	26	28	396	8.2
June 1-10	3,334	14	.02	57	9.8	34	2.6	184		28	57	0	2.7	.36	312	.42	2,810	182	32	28	536	7.9
June 11-13	6,866	--	--	43	6.3	27	8.5	137		20	47	.1	2.7	.37	240	.33	4,470	134	22	30	408	7.9
June 14-23	19,690	--	--	41	7.2	16		110	13	15	18	--	2.2	--	163	.22	8,590	129	37	14	363	7.5
June 24-25	20,050	--	--	19	3.3	10		65	8.5	8	13	--	3.0	--	149	.20	20,150	61	8	27	235	7.9
July 1-6	5,643	--	--	30	4.3	14		106	9.5	16	--	--	3.2	--	164	.22	2,500	92	6	24	166	7.1
July 7-10	37,900	10	.16	32	4.6	11	3.1	113	10	16	--	--	2.0	.43	157	.21	15,810	99	6	19	254	7.6
July 11-20	14,210	--	--	45	7.3	17		b 156	15	24	--	--	1.8	--	212	.29	8,130	142	14	20	351	8.5
July 21-31		--	--																			
Aug. 1-10	5,219	10	.00	47	9.4	22	2.8	159	19	36	36	1	1.9	.58	244	.33	3,440	156	25	23	405	7.9
Aug. 11-20	1,684	10	.02	60	11	29	2.6	190	24	49	31	.1	3.0	.46	307	.42	1,400	194	39	24	497	8.2
Aug. 21-29	1,436	--	--	64	11	29		192	24	60	--	--	2.9	--	321	.44	1,240	204	47	24	535	8.2
Aug. 30-31	7,440	--	--	35	6.0	16		120	13	23	23	--	3.2	--	219	.30	4,400	112	14	24	290	7.9
Sept. 1, 9-10	10,230	--	--	24	5.9	27		113	11	26	--	--	2.8	--	208	.28	5,750	84	0	41	290	7.7
Sept. 2-8	3,864	--	--	56	10	29		180	21	50	--	--	3.5	--	282	.38	2,940	180	33	26	480	8.2
Sept. 11-14, 18-20	12,640	--	--	31	7.0	30		127	17	34	--	--	3.7	--	214	.29	7,300	106	2	38	349	7.7
Sept. 15-17	15,600	--	--	23	5.4	24		105	12	22	--	--	2.9	--	141	.19	5,940	80	0	40	267	7.8
Sept. 18-24	4,307	--	--	46	7.3	23		154	16	37	--	--	2.0	--	236	.32	2,740	146	20	26	393	7.4
Sept. 25-28	6,168	--	--	24	5.3	8.7		77	9.7	18	--	--	2.8	--	173	.24	2,860	82	19	19	208	7.4
Weighted average	5,919	--	--	39	6.8	23		125	18	36	--	--	2.7	--	223	0.30	3,560	126	23	28	349	--

a Includes equivalent of 6 parts per million of carbonate (CO₃).
b Includes equivalent of 4 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued

VERDIGRIS RIVER NEAR CLAREMORE, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	74	55	49	32	56	48	68	77	69	80	79
2	75	62	55	40	32	56	49	60	77	70	79	79
3	64	60	35	37	33	49	50	61	65	73	78	78
4	64	55	42	40	34	50	53	53	68	74	80	78
5	66	55	40	41	35	52	54	58	70	75	80	77
6	67	62	32	37	35	49	55	62	58	76	81	77
7	66	54	32	35	34	54	50	57	65	77	81	76
8	65	55	36	35	36	50	50	60	68	78	80	75
9	66	45	40	37	36	44	50	--	71	78	79	73
10	68	45	41	38	37	48	50	64	71	75	79	72
11	69	45	42	38	45	43	49	64	71	79	79	72
12	69	46	42	40	56	42	48	64	70	77	79	72
13	66	55	43	38	38	40	50	65	70	75	78	69
14	68	60	43	39	36	40	--	65	70	74	78	68
15	71	64	38	38	38	45	52	68	70	80	79	68
16	75	57	37	40	45	--	53	68	74	78	78	66
17	70	51	34	42	53	51	54	70	74	79	79	65
18	71	57	32	44	51	--	65	71	75	80	79	65
19	70	57	32	41	50	42	54	71	75	81	80	65
20	68	50	32	39	48	44	56	71	74	81	80	65
21	65	54	41	32	46	45	56	70	74	83	78	65
22	70	59	39	32	48	47	55	68	76	83	77	64
23	68	50	44	40	49	48	57	69	76	80	75	65
24	63	41	43	40	50	48	58	64	76	80	75	66
25	65	42	43	41	51	54	61	70	76	79	77	66
26	71	38	38	41	49	57	61	70	76	79	78	66
27	72	44	34	32	53	57	70	70	76	79	79	66
28	71	41	38	32	57	59	70	70	77	79	80	64
29	68	42	40	32	--	48	69	71	75	80	79	64
30	75	42	40	32	--	48	68	73	72	80	81	65
31	74	--	39	32	--	48	--	75	--	80	79	--
Aver- age	69	52	39	38	43	49	56	66	72	78	79	70

ARKANSAS RIVER BASIN--Continued
VERDIGRIS RIVER NEAR INOLA, OKLA.

LOCATION.--At gaging station at bridge on State Highway 33, 6 miles downstream from Dog Creek, and 6 miles west of Inola, Rogers County.
DRAINAGE AREA.--7,911 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,150 ppm Jan. 22-31; minimum, 151 ppm July 1-10.
Hardness: Maximum, 424 ppm Jan. 22-31; minimum, 76 ppm July 1-10.

Specific conductance: Maximum daily, 1,920 microhms Feb. 4-5, 7-8; minimum daily, 173 microhms July 1.
EXTREMES, 1947-51.--Dissolved solids: Maximum, 1,630 ppm Feb. 20-22, 1948; minimum, 91 ppm June 22-30, July 1-2, 1948.

Hardness: Maximum, 500 ppm Feb. 20-22, 1948; minimum, 60 ppm June 22-30, July 1-2, 1948.
Specific conductance: Maximum daily, 4,010 microhms Nov. 1, 1947; minimum daily, 143 microhms June 24, 1948.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Parts per million	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (microhms at 25°C)	pH
															Tons per acre-foot	Tons per day	Calcium, mg./nestum	Non-carbonate				
Oct. 1-2, 8-10, 1950	930	--	--	64	12	47	47	196	0	25	87	--	2.2	368	0.50	924	209	209	48	33	625	--
Oct. 3-7	3,252	5.2	0.00	43	7.3	23	23	127	0	20	42	--	2.8	228	0.31	2,000	138	34	26	384	8.0	
Oct. 11-20	483	5.2	0.00	76	14	72	72	229	0	31	138	0.5	1.1	471	0.64	614	247	60	38	826	7.6	
Oct. 21-31	232	5.3	0.00	91	17	98	98	264	0	34	184	0.3	0.5	588	0.80	368	297	80	41	1,030	7.9	
Nov. 1-10	200	2.0	0.00	104	22	114	114	298	0	36	212	0.5	1.7	695	0.95	375	350	106	41	1,190	7.9	
Nov. 11-20	175	7.4	0.00	104	20	139	139	294	0	37	252	0.3	2.9	774	1.05	366	342	100	46	1,330	7.9	
Nov. 21-30	174	--	--	112	22	141	141	304	0	36	275	--	2.9	822	1.12	386	370	121	45	1,390	--	
Dec. 1-10	197	6.9	0.00	117	23	164	164	315	0	37	305	0.3	4.4	890	1.21	473	386	128	47	1,510	7.6	
Dec. 11-20	171	--	--	116	23	200	200	310	0	37	370	--	5.1	1,010	1.37	466	394	130	53	1,660	--	
Dec. 21-31	142	8.1	0.00	120	23	191	191	306	0	38	360	0.1	6.6	995	1.35	381	394	142	50	1,670	8.1	
Jan. 1-10, 1951	247	7.3	0.00	116	24	189	189	283	0	39	360	0.2	8.7	1,000	1.36	367	388	148	51	1,650	7.9	
Jan. 11-12, 19-21	207	--	--	116	25	146	146	282	0	48	302	--	2.7	844	1.15	472	392	162	45	1,500	--	
Jan. 13-18	255	--	--	118	25	201	201	286	0	42	392	--	4.0	1,070	1.46	477	398	163	52	1,770	--	
Jan. 22-31	144	--	--	124	28	201	201	287	0	45	410	--	2.7	1,150	1.56	447	424	190	51	1,810	--	
Feb. 1-10	302	6.5	0.00	125	26	218	218	297	0	49	420	0.1	7.2	1,110	1.51	420	419	176	53	1,870	7.8	
Feb. 11-18	140	--	--	120	25	160	160	278	0	45	335	--	3.5	910	1.24	742	402	174	46	1,590	--	
Feb. 19-20	7,355	--	--	60	14	106	106	128	0	35	208	--	4.6	495	0.87	9,830	207	102	53	974	--	
Feb. 21-31	22,000	--	--	34	6.6	35	35	78	0	25	67	--	5.6	278	0.38	16,510	112	48	41	414	7.8	
Feb. 22-28	6,421	--	--	66	13	68	68	146	0	45	139	--	3.5	494	0.87	8,560	216	98	40	787	7.2	
Mar. 1-10	1,845	7.1	0.00	78	15	79	79	5.4	0	46	142	0.2	2.3	515	1.70	2,570	256	86	40	867	7.6	
Mar. 11, 16-20	2,483	--	--	86	16	74	74	205	0	52	155	--	1.7	542	0.74	3,630	280	112	37	908	8.2	
Mar. 12-15	3,975	--	--	66	12	58	58	154	0	43	118	--	3.0	438	0.60	4,700	214	88	37	672	7.5	
Mar. 21-31	832	4.9	0.00	94	18	95	95	236	0	58	175	0	0.8	594	0.81	1,330	308	115	40	1,030	7.7	
Apr. 1-8	1,711	--	--	95	19	117	117	235	0	56	225	--	1.5	725	0.99	3,350	315	122	45	1,180	8.1	
Apr. 9-10	2,675	--	--	68	13	63	63	164	5	39	125	--	1.9	468	0.64	9,700	223	80	38	749	8.4	
Apr. 11-20	2,661	7.2	0.00	71	14	71	71	167	0	47	130	0.1	2.7	482	0.66	3,460	234	82	39	795	8.1	

	7.7	.00	74	14	77	3.4	195	0	50	142	1.5	546	74	2,390	242	82	40	848	8.0
Apr. 21-29.....	1,616		87	21	172		182	0	49	330	1.5	877	1.19	2,040	304	146	55	1,430	---
May 1-3.....	4,632		86	22	152		192	0	40	308	---	860	1.17	10,760	305	147	52	1,360	7.7
May 3-7.....	18,140		80	26	121		121	0	22	41	---	236	1.37	11,560	128	28	31	367	8.0
May 8-10.....	10,070		58	12	45		169	0	30	86	---	375	.51	10,200	194	56	34	587	8.2
May 11-12, 16-20.....	4,311		62	12	51		184	0	33	90	---	395	.54	4,600	204	53	35	638	7.7
May 13-15.....	5,893		78	15	58		221	0	39	112	---	478	.57	7,610	256	75	33	781	7.8
May 21-24, 31.....	7,272		60	10	42		174	0	29	75	---	336	.46	6,800	190	48	32	566	7.7
May 25.....	19,200		42	7.2	203		123	0	20	32	---	203	.28	10,520	134	34	21	340	---
May 26-30.....	10,610		52	9.2	34		159	0	25	59	---	283	.38	8,110	168	38	30	484	7.9
June 1-4.....	3,638		60	11	42		165	10	29	73	---	337	.46	3,310	194	43	32	555	8.7
June 5-7.....	1,223		57	17	104		191	0	32	210	---	630	.86	2,080	262	106	46	1,000	7.7
June 8-10.....	7,103		57	12	37		163	3	29	72	---	321	.45	6,350	192	53	30	554	8.4
June 11, 16.....	9,130		50	8	40		133	2	24	81	---	322	.45	8,180	166	54	35	333	8.3
June 12-15, 17-20.....	7,495		48	8.0	27		139	0	22	47	---	252	.34	7,120	158	54	23	405	8.5
June 21-23.....	10,360		33	13	21		121	3	15	56	---	185	.25	12,650	102	22	24	274	7.6
June 23-30.....	24,120		30	6.4	15		97	0	10	14	---	151	.21	13,630	76	10	23	196	7.5
July 1-10.....	48,150		23	4.5	11		102	0	11	14	---	160	.22	17,780	92	9	25	248	7.7
July 11-20.....	41,160		29	4.9	14		102	15	14	27	---	211	.29	15,300	136	10	25	350	8.4
July 21-23, 30-31.....	26,860		42	7.6	21		124	5	17	33	---	242	.33	7,580	155	17	24	397	8.3
July 24-29.....	11,150		48	8.5	23		158	2	15	29	---	210	.29	5,420	145	13	23	358	8.3
Aug. 1-2.....	9,555		46	7.3	20		157	2	15	29	---	279	.38	6,160	178	22	25	468	8.0
Aug. 3-6.....	8,180		56	9.3	28		190	0	18	44	---	369	.50	1,220	210	34	32	622	7.8
Aug. 7-10.....	1,220		66	11	45		215	0	19	78	---	486	.67	3,150	258	73	36	818	8.3
Aug. 11-14.....	2,352		74	18	67		214	6	29	131	---	345	.47	1,720	194	36	32	579	7.9
Aug. 15-20.....	1,845		60	11	43		193	0	22	74	---	303	.41	2,910	162	25	36	537	7.7
Aug. 21-22, 25, 30-31.....	3,557		50	9.1	41		168	0	21	65	---	397	.54	1,440	214	26	36	678	7.8
Aug. 23-24, 26-29.....	1,345		66	12	56		229	0	25	86	---	256	.35	3,390	144	22	33	448	7.6
Sept. 1-8.....	4,904		43	8.3	33		149	0	17	52	---	172	.23	6,110	114	18	39	396	7.9
Sept. 9-11.....	13,150		33	5.9	22		118	0	11	36	---	181	.26	4,190	162	20	37	437	7.4
Sept. 12-14.....	16,180		33	6.4	18		196	0	13	34	---	260	.35	4,390	162	25	41	437	7.4
Sept. 15-18.....	6,090		50	9.0	27		182	0	18	44	---	220	.30	3,520	96	14	44	346	7.3
Sept. 19-25.....	5,928		26	5.9	33		92	0	15	48	---	244	.33	4,280	131	28	32	386	---
Sept. 26-30.....	6,493		40	7.5	28		126	--	18	47	---	244	.33	4,280	131	28	32	386	---
Weighted average.....	6,493										2.7								

a Includes equivalent of individual carbonate values shown above.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

VERDIGRIS RIVER NEAR INOLA, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	70	50	44	32	50	51	70	71	78	85	--
2	70	70	56	44	32	51	51	70	71	76	85	85
3	70	61	56	43	32	51	51	68	70	78	85	85
4	--	61	56	43	32	51	60	67	70	79	85	84
5	--	61	50	45	32	50	51	66	74	79	86	83
6	61	60	49	43	32	50	51	63	73	79	86	82
7	61	60	49	43	32	51	51	61	75	79	86	82
8	61	51	49	43	32	51	51	63	75	79	86	81
9	61	51	50	42	32	51	51	64	75	80	86	72
10	61	50	50	42	40	50	51	66	74	80	85	72
11	71	41	50	42	40	50	50	61	74	80	85	75
12	61	41	48	--	40	50	50	69	74	80	85	72
13	70	49	44	42	32	50	50	69	73	80	85	74
14	71	50	43	42	32	--	50	70	75	80	85	73
15	70	61	43	41	32	50	60	71	75	80	85	72
16	70	52	40	40	32	51	50	71	75	84	85	72
17	70	53	38	41	40	51	50	73	75	81	85	72
18	71	54	38	--	40	50	60	74	77	82	85	72
19	70	56	35	42	40	51	60	72	78	82	85	72
20	61	53	37	42	40	51	60	73	79	83	85	73
21	61	53	39	44	41	51	60	72	80	--	84	73
22	61	51	41	43	50	51	63	73	79	84	84	72
23	61	47	44	43	50	51	60	72	79	84	83	72
24	61	45	49	42	50	51	64	70	79	84	83	72
25	61	45	49	42	50	51	64	70	78	84	83	71
26	61	46	48	41	60	51	67	70	78	84	83	70
27	61	45	45	40	--	51	65	70	78	84	83	70
28	70	45	45	37	50	51	70	70	78	85	81	70
29	70	45	44	35	--	51	72	70	78	85	84	70
30	70	45	45	32	--	51	69	70	77	85	85	70
31	70	--	44	32	--	51	--	71	--	85	85	--
Average	66	52	46	41	39	51	57	69	76	81	85	75

ARKANSAS RIVER BASIN--Continued
NEOSHO RIVER NEAR COMMERCE, OKLA.

LOCATION.--At gaging station at county highway bridge, 1½ miles upstream from Mud Creek, 1½ miles downstream from Four Mile Creek, and 4½ miles west of Commerce, Ottawa County.

DRAINAGE AREA.--5,876 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: November 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 623 ppm Jan. 21-31; minimum, 74 ppm Jan. 1-6.

Hardness: Maximum, 462 ppm Jan. 21-31; minimum, 74 ppm Jan. 1-6.

Specific conductance: Maximum, 89 F May 17-20; minimum, freezing point on several days in December, January, and February.

Water temperatures: Maximum, 623 ppm Jan. 21-31, 1951; minimum, 83 ppm July 8-10, 1949.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 89 F May 17-20; minimum, freezing point on several days in December, January, and February.

Hardness: Maximum, 462 ppm Jan. 21-31, 1951; minimum, 74 ppm Jan. 1-6, 1949.

Specific conductance: Maximum, 89 F May 17-20; minimum, freezing point on several days in December, January, and February.

Water temperatures: Maximum, 623 ppm Jan. 21-31, 1951; minimum, 83 ppm July 8-10, 1949.

REMARKS.--Records specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25 C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Oct. 1-2, 5, 1950..	950	--	--	57	14	16	186	186		55	17	--	1.8		280	0.38	718	200	47	15	452	--
Oct. 3-4.....	2,165	--	--	27	27	5.6	7.4	74		31	8.2	--	2.4		157	.21	918	90	30	15	218	--
Oct. 6-10.....	1,206	--	--	70	16	23	220	74		70	25	--	1.9		347	.47	1,130	240	60	17	544	--
Oct. 11-20.....	454	10	0.00	70	18	19	3.8	239		60	18	0.3	1.5		325	.44	398	249	53	14	522	7.9
Oct. 21-31.....	293	8.6	--	72	23	24	4.0	243		66	25	.3	.8		341	.46	270	254	55	17	563	7.8
Nov. 1-10.....	281	--	--	92	23	34		274		107	44	--	.8		465	.63	315	324	100	19	734	--
Nov. 11-20.....	248	7.1	0.00	84	20	25	4.2	281		75	28	.5	7		393	.53	263	292	62	15	629	7.9
Nov. 21-30.....	230	9.9	0.00	93	21	30	4.6	313		75	36	.1	1.1		433	.59	269	318	62	17	695	7.8
Dec. 1-10.....	218	10	0.00	104	25	36	4.1	333		97	47	.1	1.8		509	.69	300	362	89	18	797	8.3
Dec. 11-20.....	209	--	--	112	29	39	350	350		118	52	--	.8		558	.76	315	399	112	18	867	--
Dec. 21-31.....	203	7.4	0.00	120	29	43	5.4	365		126	59	.1	1.1		589	.80	323	419	120	18	922	7.8
Jan. 1-10, 1951.....	233	--	--	125	34	29	347	347		144	56	--	.9		569	.81	377	452	167	12	936	--
Jan. 11-20.....	209	6.3	--	114	33	47	4.4	332		156	66	.1	1.1		623	.85	289	460	181	19	917	8.3
Jan. 21-31.....	172	--	--	126	36	31	354	354		156	66	--	1.3		623	.85	289	462	189	13	909	--
Feb. 1-10.....	170	3.5	0.00	111	33	49	4.2	320		156	64	.1	1.5		592	.81	272	413	150	20	924	8.0
Feb. 11-17.....	150	--	--	115	28	45	4.2	271		185	60	--	2.0		612	.83	413	402	180	20	943	--
Feb. 18-19.....	1,154	--	--	67	17	29	126	126		146	29	--	4.1		387	.53	1,210	237	134	21	595	--
Feb. 20-22.....	11,240	--	--	34	13	6.7	66	66		64	18	--	8.4		205	.28	6,220	138	84	10	308	7.9
Feb. 23-28.....	1,889	--	--	64	16	26	135	135		117	32	--	5.6		359	.48	1,830	226	115	20	555	7.1
Mar. 1-10.....	1,361	7.1	0.00	86	22	36	5.4	214		133	42	.3	4.1		459	.62	1,690	305	130	20	709	7.7
Mar. 11-20.....	1,118	--	--	78	19	26	184	184		132	28	--	1.5		414	.56	1,250	273	132	17	628	7.7
Mar. 21-31.....	546	5.4	0.00	78	20	33	5.0	207		114	37	.1	1.7		398	.54	587	277	107	20	635	8.0

a Includes equivalent of 13 parts per million of carbonate (CO₃).

b Includes equivalent of 14 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued
 NEOSHO RIVER NEAR COMMERCE, OKLA.--Continued
 Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-ium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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	Specific conduct-ance (micro-mhos at 25° C)	pH
															Parts per mil-lion	Tons per acre-foot	Tons per day	Calcium	Non-carbon-ate			
Apr. 1-7, 1951	2,587	--	--	98	20	32	242	107	42	107	42	--	1.8	--	243	0.30	3,000	302	104	19	708	8.0
Apr. 8-10	2,813	--	--	60	15	19	172	51	15	51	15	--	6.3	--	234	.32	2,940	151	51	18	376	7.2
Apr. 11-13	2,833	11	0.05	60	15	19	172	51	15	51	15	0.1	5.5	--	311	.32	2,940	211	71	17	483	7.6
Apr. 21-30	1,057	6.7	.00	71	16	24	204	75	21	75	21	--	3.0	--	397	.54	1,130	243	78	17	555	7.6
May 1-2	2,755	--	--	47	9.4	12	224	75	26	75	26	--	1.7	--	338	.46	2,510	259	75	14	554	7.9
May 3-4, 10	11,770	--	--	47	9.4	12	135	43	16	43	16	--	5.2	--	230	.31	7,310	156	45	14	363	8.2
May 5-9	18,240	--	--	37	7.0	3.3	119	19	5.2	19	5.2	--	4.4	--	171	.23	8,420	121	24	6	252	8.0
May 11-14, 17, 19-20	6,263	--	--	60	11	11	176	47	16	47	16	--	5.5	--	263	.36	4,450	195	51	11	423	7.5
May 15-16, 18	5,007	--	--	85	17	9.6	c241	71	19	71	19	--	5.6	--	364	.50	4,920	282	84	7	558	8.6
May 21-22, 27	10,110	--	--	65	13	13	198	52	17	52	17	--	4.2	--	286	.39	7,810	216	53	12	463	8.1
May 23-24	20,700	--	--	33	8.2	3.7	100	27	7.5	27	7.5	--	3.6	--	133	.18	7,430	116	34	6	247	7.9
May 25-26, 28-31	8,515	--	--	47	10	13	151	39	13	39	13	--	3.9	--	230	.31	5,290	158	35	15	360	8.1
June 1-6, 10	2,973	--	--	62	13	9.4	204	37	14	37	14	--	5.2	--	264	.36	2,120	208	41	9	435	8.0
June 7-9	3,857	--	--	90	18	13	d257	58	19	58	19	--	5.0	--	206	.28	3,590	274	62	10	545	8.8
June 11, 17, 20	10,010	--	--	46	8.7	8.4	142	34	9.2	34	9.2	--	4.1	--	206	.28	3,590	151	34	11	359	7.9
June 12-16	17,000	--	--	34	7.1	5.7	105	24	8.5	24	8.5	--	3.5	--	137	.21	6,210	114	21	13	455	7.9
June 18-19	50,680	--	--	82	14	13	221	29	12	29	12	--	4.2	--	168	.23	9,400	215	30	12	455	7.9
June 21, 24, 26-28	22,780	--	--	24	7.6	4.4	103	25	7.8	25	7.8	--	4.2	--	162	.22	9,980	116	30	12	297	7.8
June 22-23, 25, 30	33,400	--	--	24	5.3	4.8	71	18	4.0	18	4.0	--	2.4	--	145	.20	14,430	91	30	9	201	8.1
July 1-6	36,870	--	--	21	5.3	4.8	100	15	7.5	15	7.5	--	3.7	--	155	.21	13,980	98	16	12	170	7.4
July 7-10	33,400	--	--	29	6.3	5.9	100	15	7.5	15	7.5	--	3.7	--	155	.21	13,980	98	16	12	219	7.6
Sept. 11-13, 15-16	39,920	--	--	23	6.2	4.8	82	17	5.0	17	5.0	--	2.4	--	157	.21	16,920	83	16	11	188	7.5
Sept. 17-20	19,670	--	--	41	7.7	10	137	23	9.5	23	9.5	--	2.5	--	196	.27	10,360	134	22	14	302	7.6
Sept. 21-23, 26	3,240	--	--	66	13	17	213	53	15	53	15	--	4.6	--	284	.39	2,480	218	44	14	474	8.0
Sept. 24	5,580	--	--	32	6.1	6.6	86	34	6.5	34	6.5	--	5.3	--	158	.21	2,380	105	34	12	239	7.8
Sept. 25, 27	3,520	--	--	50	11	7.9	150	47	9.2	47	9.2	--	2.9	--	216	.29	2,050	170	47	9	355	7.6
Sept. 28-30	2,910	--	--	92	21	8.4	266	81	20	81	20	--	4.5	--	377	.51	2,960	316	98	5	607	8.0

c Includes equivalent of 10 parts per million of carbonate (CO₃).
 d Includes equivalent of 19 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR COMMERCE, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	69	44	40	32	--	51	77	88	70		--
2	73	65	50	41	32	55	51	79	81	71		--
3	61	58	47	40	32	53	53	78	71	73		--
4	60	54	42	42	34	53	56	66	71	76		--
5	60	56	40	44	36	54	58	64	71	74		--
6	64	55	34	37	34	56	55	63	76	76		--
7	64	55	32	36	32	55	55	67	71	79		--
8	62	56	35	38	34	52	48	65	67	80		--
9	63	67	35	37	32	49	48	74	74	82		--
10	64	46	32	40	41	49	50	63	72	78		--
11	66	45	34	38	46	45	49	64	70	--		74
12	67	45	36	40	49	40	46	64	70	--		71
13	66	45	36	41	37	40	50	66	70	--		72
14	69	47	40	42	33	38	53	67	70	--		--
15	68	54	39	42	33	42	53	79	71	--		69
16	69	52	39	44	32	44	52	80	74	--		79
17	69	50	37	46	33	46	63	89	75	--		69
18	69	51	36	47	42	46	66	89	77	--		70
19	68	54	37	50	44	45	76	89	76	--		69
20	68	44	37	42	40	46	64	89	76	--		71
21	67	49	37	--	44	53	58	75	74	--		75
22	67	49	40	42	45	55	57	68	74	--		69
23	63	48	40	42	49	53	63	69	75	--		79
24	--	40	42	40	45	58	65	68	76	--		69
25	64	39	46	40	47	56	64	70	74	--		70
26	66	39	38	44	51	55	70	65	75	--		72
27	69	43	37	38	53	56	75	79	78	--		68
28	68	44	38	34	54	59	75	71	77	--		67
29	69	42	34	38	--	--	69	70	75	--		68
30	70	43	38	32	--	51	69	76	71	--		70
31	71	--	40	32	--	53	--	78	--	--		--
Average	67	50	38	40	40	50	59	73	74	--		--

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR CHOTEAU, OKLA.

(Below Spring River, known locally as Grand River)

LOCATION.--At bridge on county road between Locust Grove and Pryor, 5 miles upstream from Pryor Creek, and 7½ miles northeast of Choteau, Mayes County.

DRAINAGE AREA.--11,546 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.

Water temperatures: October 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 215 ppm May 21-31; minimum, 68 ppm Feb. 21-23.

Hardness: Maximum, 137 ppm Apr. 1-10, May 21-31; minimum, 68 ppm Feb. 21-23.

Specific conductance: Maximum daily, 382 micromhos May 5; minimum daily, 145 micromhos Oct. 4.

Water temperatures: Maximum, 85°F July 31, Aug. 5-6, 14, 19-20, 31, Sept. 2-3; minimum, freezing point Dec. 6, Jan. 10, 30-31, Feb. 1.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent so-dium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium	Non-carbonate			
Oct. 1-10, 1950.....		8.5	0.06	31	4.7	4.6		91		23	4.2	--	2.7	--	136	0.18	97	22	9	210	7.4
Oct. 11-20.....		10	.02	33	5.3	6.3	2.8	86		25	3.0	0.1	2.8	--	149	.20	102	22	12	238	7.6
Oct. 21-31.....		--	--	31	5.2	6.3		102		25	6.6	--	2.5	--	154	.21	106	24	12	249	7.8
Nov. 1-10.....		10	.00	38	5.7	7.4	2.4	112		27	6.5	3	2.8	--	158	.22	117	21	14	252	7.6
Nov. 11-20.....		8.3	.02	38	5.5	6.3	2.6	118		28	7.8	.1	2.5	--	154	.21	114	23	12	253	7.8
Nov. 21-30.....					4.7	7.3	2.3	111													
Dec. 1-10.....		--	--	36	4.8	9.5		110		26	7.5		3.0	--	158	.21	110	19	16	259	--
Dec. 11-20.....		--	--	35	5.1	10		108		27	10	--	2.3	--	159	.22	108	21	17	258	--
Dec. 21-31.....		--	--	34	5.2	12		112		28	6.5	--	1.9	--	156	.21	106	14	19	253	--
Jan. 1-10, 1951.....		10	.00	38	5.5	7.4	2.3	117		27	7.5	.1	2.5	--	162	.22	117	22	12	264	7.8
Jan. 11-20.....		--	--	38	5.4	5.2		108		27	7.0	--	2.4	--	161	.22	117	28	9	259	--
Jan. 21-31.....		8.9	.00	39	5.4	6.7	2.4	115		26	7.0	.1	2.3	--	161	.22	120	25	11	255	7.5
Feb. 1-10.....		--	--	38	5.3		9.2	116		28	7.2	--	2.8	--	162	.22	117	22	15	262	--
Feb. 11-20.....		--	--	39	4.6	10		120		26	8.0	--	2.8	--	162	.22	116	18	16	253	--
Feb. 21-30.....		--	--	29	3.1	5.2		96		14	5.8	--	3.9	--	134	.18	85	15	12	184	--
Feb. 31-23.....		--	--	22	3.2	9.8		81		13	4.0	--	4.8	--	136	.18	68	22	24	172	--
Mar. 1-10.....		--	--	27	4.1	7.5		109		16	7.2	--	3.5	--	166	.23	134	27	12	266	7.6
Mar. 11-20.....		8.5	.02	41	4.5	7.5	2.2	114		26	6.8	.2	3.2	--	164	.22	126	31	9	269	8.1
Mar. 21-31.....		8.2	.00	40	5.9	8.1	2.1	116		33	7.2	.0	3.3	--	172	.23	124	29	12	266	7.9
Apr. 1-10.....		--	--	46	5.5	5.5		116		37	9.0	--	3.7	--	180	.24	137	42	8	292	7.6
Apr. 11-20.....		7.2	.02	42	5.2	6.2		109		35	7.5	.1	3.7	--	165	.22	126	37	10	271	7.6
Apr. 21-30.....		--	--	40	5.2	8.5		109		35	8.0	--	5.1	--	169	.23	127	38	10	279	7.9
May 1-10.....		8.5	.00	40	5.2	8.2	2.0	106		39	8.0	.1	4.4	--	182	.25	121	34	13	280	7.5
May 11-20.....		9.0	.08	42	5.4	9.3	1.8	112		44	8.8	--	4.6	0.06	191	.26	127	35	14	295	--
May 21-31.....		8.3	.00	45	6.1	11	2.5	120		48	10	.2	5.3	.04	215	.28	137	39	15	325	8.2

June 1-10.....	8.5	.00	44	5.7	11	13	2.0	120	43	12	.1	4.4	.43	182	.26	133	35	15	320	7.6
June 11-20.....	--	--	42	7.0	11	13	2.4	123	42	10	--	4.1	--	201	.27	134	28	15	321	7.6
June 21-30.....	9.7	.00	36	6.6	11	7.8	2.4	128	40	8.5	.0	3.3	.38	185	.26	137	31	13	317	7.5
July 1-10.....	--	--	36	5.6	11	7.8	3.1	128	38	6.0	--	3.3	--	185	.22	118	31	13	269	6.7
July 11-20.....	12	.60	29	5.0	7.7	2.3	3.1	92	25	6.0	--	3.7	.77	180	.22	90	15	15	238	7.6
July 21-31.....	--	--	27	5.5	7.7	2.3	3.1	88	13	5.0	--	2.9	--	186	.18	90	18	5	187	7.2
Aug. 1-10.....	--	--	28	5.7	4.6	4.6	4.6	95	14	6.0	--	3.0	--	146	.20	93	15	10	196	7.4
Aug. 11-20.....	--	--	29	5.2	7.5	7.5	7.5	100	15	7.5	--	2.4	--	149	.20	94	12	15	208	7.4
Aug. 21-31.....	--	--	26	5.3	8.7	8.7	8.7	98	16	4.8	--	2.4	--	136	.18	87	6	18	199	7.3
Sept. 1-10.....	--	--	27	5.6	9.4	9.4	9.4	103	17	5.0	--	2.2	--	144	.20	90	6	18	210	7.6
Sept. 11-20.....	--	--	38	7.0	6.4	6.4	6.4	120	28	7.2	--	2.8	--	170	.23	124	26	10	267	7.5
Sept. 21-30.....	--	--	33	5.2	10	10	10	103	28	7.5	--	3.2	--	166	.23	104	20	18	252	7.6
Average.....	--	--	37	5.4	8.4	8.4	8.4	109	29	7.3	--	3.2	---	164	0.22	114	25	14	257	--

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR CHOTEAU, OKLA.--Continued
(Below Spring River, known locally as Grand River)

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	61	53	45	32	56	50	57	73	73	80	79
2	71	60	53	50	36	50	49	63	68	72	78	85
3	61	59	--	42	36	49	45	58	63	72	84	85
4	63	55	44	44	43	47	54	58	62	75	79	80
5	62	56	42	48	42	--	49	58	67	77	85	79
6	70	55	32	40	44	58	53	60	65	72	85	79
7	77	61	37	40	39	50	52	60	68	83	80	79
8	65	60	45	45	40	47	50	59	67	74	79	78
9	64	53	45	40	40	46	50	61	66	75	78	73
10	65	49	41	32	41	47	44	60	68	75	78	72
11	66	47	48	42	50	50	47	60	70	76	77	72
12	66	51	48	45	38	41	46	69	70	75	78	78
13	67	48	48	41	43	42	48	60	69	78	80	75
14	65	50	47	45	34	41	48	66	70	75	85	73
15	67	61	46	43	35	43	53	65	70	76	78	63
16	69	55	45	50	44	49	53	62	70	81	78	--
17	70	53	42	45	43	56	49	61	68	77	80	78
18	64	53	39	49	46	50	61	--	--	78	80	70
19	65	58	42	50	49	52	54	61	70	78	85	--
20	65	50	47	42	47	59	53	64	77	80	85	65
21	64	53	45	34	45	52	53	65	75	75	80	75
22	70	54	45	40	47	--	53	65	74	77	78	65
23	61	54	42	45	47	53	54	65	75	82	80	70
24	62	--	49	41	45	51	61	66	73	77	80	72
25	65	49	47	40	50	53	57	65	75	79	81	72
26	70	41	--	42	53	58	53	67	78	79	78	72
27	62	43	39	41	53	53	50	66	73	80	80	70
28	67	48	42	34	55	61	65	68	75	80	--	67
29	69	45	40	33	--	38	59	73	73	82	83	68
30	70	48	43	32	--	45	57	76	75	83	83	72
31	68	--	44	32	--	67	--	79	--	85	85	--
Average	66	53	44	42	44	50	52	64	71	77	81	74

ARKANSAS RIVER BASIN--Continued

VERMEJO RIVER AT DAWSON, N. MEX.

LOCATION.--At bridge in Dawson, Colfax County, 2½ miles downstream from gaging station, near Dawson.

DRAINAGE AREA.--299 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1945 to October 1950 (intermittent sampling at gaging station).

Water temperatures: April 1949 to September 1951 (discontinued).

Sediment records: January 1949 to September 1951 (discontinued).

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 86°F July 3; minimum, freezing point Nov. 9, Dec. 5, Jan. 6, 14.

Sediment concentrations: Maximum daily, 13,900 ppm Aug. 2; minimum daily, 1 ppm Nov.

21, 23.

Sediment loads: Maximum daily, 1,060 tons Aug. 2; minimum daily, less than 0.05 tons on many days.

EXTREMES, 1949-51.--Water temperatures: Maximum observed, 86°F July 3, 1951; minimum, freezing point Jan. 31 to Feb. 3, Nov. 9, Dec. 5, 1950 Jan. 6, 14, 1951.

Sediment concentrations: Maximum daily, 39,800 ppm Sept. 10, 1949; minimum daily, 0 ppm on several days in September 1949, Nov. 1, 1949, June 26, Sept. 16, 1950.

Sediment loads: Maximum daily, 94,500 tons Sept. 9, 1949; minimum daily, 0 tons on several days in September 1949, Nov. 1, 1949, June 26, Sept. 16, 1950.

REMARKS.--Discharge records for gaging station near Dawson for water year October 1950 to September 1951 given in Water-Supply Paper 1211. No appreciable inflow between gaging station and sampling point except during rare periods of heavy local runoff.

Temperature (°F) of water, water year October 1950 to September 1951
/Once-daily temperature measurement generally in afternoon/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	56	47	34	33	44	44	54	--	72	--	85
2	66	48	40	35	37	44	60	54	--	84	--	83
3	66	45	35	34	42	46	50	67	--	86	68	79
4	58	47	42	35	42	49	a 44	60	--	72	70	80
5	65	50	a 32	38	42	44	48	76	--	85	70	65
6	59	55	a 35	31	42	42	45	28	--	a 59	72	79
7	60	49	35	35	--	48	59	74	--	80	80	75
8	59	40	43	37	47	48	58	65	--	--	82	71
9	57	32	45	37	44	46	58	60	76	78	79	79
10	56	35	43	34	47	40	45	--	78	79	73	80
11	58	46	34	34	--	39	47	--	75	a 61	81	82
12	68	45	47	40	49	--	50	--	65	75	81	70
13	68	35	50	--	37	49	56	--	69	82	a 59	78
14	59	54	44	32	36	--	56	--	70	85	81	75
15	62	53	44	37	44	48	50	--	66	80	70	71
16	70	47	52	36	45	47	53	--	a 54	83	80	65
17	67	47	41	37	44	40	54	--	75	78	75	80
18	66	50	46	35	42	40	55	--	a 60	64	78	75
19	57	54	40	37	42	42	54	--	79	79	82	72
20	a 46	50	45	37	47	45	57	--	74	--	71	a 51
21	a 43	--	--	36	--	47	a 50	--	a 69	a 62	74	75
22	75	48	40	35	49	45	58	--	75	79	a 59	73
23	57	46	45	38	48	a 43	60	--	79	80	70	65
24	58	a 34	41	37	50	45	a 56	--	78	69	58	68
25	57	41	40	38	40	a 40	58	--	85	70	78	a 46
26	60	52	35	38	42	a 42	61	--	74	80	78	72
27	57	46	38	39	42	47	60	--	75	73	77	68
28	60	39	36	35	47	a 43	68	--	79	69	82	68
29	57	42	36	34	--	48	65	--	82	80	81	70
30	60	47	36	34	--	48	59	--	63	65	82	72
31	55	--	42	34	--	60	--	--	--	72	82	--
Average	60	46	41	36	43	45	55	--	--	75	75	72

a Reading obtained in early forenoon.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

VERMEJO RIVER AT DAWSON, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.7	12	0.1	1.2	21	0.1	1.3	17	0.1
2-----	1.5	25	.1	1.2	20	.1	1.1	29	.1
3-----	1.5	16	.1	1.3	25	.1	.8	27	.1
4-----	1.3	261	.9	1.3	6	(t)	1.0	13	(t)
5-----	1.3	52	.2	1.3	20	.1	.6	190	.3
6-----	1.3	10	(t)	1.3	30	.1	.6	191	.3
7-----	1.5	167	.7	1.5	100	.4	.8	226	.5
8-----	1.5	11	(t)	1.3	90	.3	1.1	176	.5
9-----	1.5	15	.1	1.3	453	1.6	1.3	78	.3
10-----	1.5	9	(t)	1.0	36	.1	1.0	13	(t)
11-----	1.5	10	(t)	.9	106	.3	.9	10	(t)
12-----	1.5	10	(t)	.9	46	.1	1.2	24	.1
13-----	1.5	42	.2	.9	9	(t)	.8	20	(t)
14-----	1.7	9	(t)	.8	10	(t)	.7	33	.1
15-----	1.7	47	.2	.6	11	(t)	.8	19	(t)
16-----	1.9	24	.1	.7	12	(t)	1.2	39	.1
17-----	1.7	38	.2	.6	18	(t)	1.1	47	.1
18-----	1.3	36	.1	.8	24	(t)	1.0	39	.1
19-----	1.2	6	(t)	.6	32	.1	1.0	61	.2
20-----	1.1	16	(t)	.5	17	(t)	1.0	42	.1
21-----	1.0	42	.1	.5	1	(t)	1.0	65	.2
22-----	1.1	38	.1	.5	6	(t)	.9	25	.1
23-----	1.0	26	.1	.5	1	(t)	1.0		
24-----	1.1	33	.1	.4	6	(t)	1.0		
25-----	1.1	7	(t)	.4	7	(t)	1.0		
26-----	1.2	14	(t)	.4	16	(t)	1.2	19	.1
27-----	1.1	29	.1	.4	10	(t)	1.9		
28-----	1.2	30	.1	1.2	8	(t)	1.0		
29-----	1.2	14	(t)	1.3	34	.1	1.1		
30-----	1.2	18	.1	1.1	13	(t)	.8	19	.1
31-----	1.1	14	(t)	--	--	--	1.2		
Total-	42.0	--	4.0	26.5	--	3.7	31.4	--	4.2
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.9	27	0.1	0.6	75	0.3	0.9	18	(t)
2-----	1.2			.7			.9	15	(t)
3-----	1.1			.7			.9		
4-----	1.0			.8			.8		
5-----	1.0	33	.1	1.3	64	.4	.8	23	(t)
6-----	.9			2.6			.9		
7-----	.7			2.6			.9		
8-----	.9			2.4			.8		
9-----	1.0	103	.4	2.8	25	.1	.8	15	(t)
10-----	1.0			3.2			.8		
11-----	1.2			3.6			.7		
12-----	1.2			3.2			.7		
13-----	1.3	12	(t)	1.0	18	.1	.7	28	.1
14-----	1.2			1.2			.7		
15-----	1.2			1.1			.8		
16-----	1.3			1.1			.8		
17-----	1.3	106	.4	1.5	11	(t)	.8	11	(t)
18-----	1.3			1.7			.8		
19-----	2.1			1.3			.9		
20-----	1.9			1.2			.8		
21-----	1.3	106	.4	1.2	18	.1	.9	28	.1
22-----	1.7			1.2			.8		
23-----	1.9			1.2			.8		
24-----	1.7			2.2			.7		
25-----	1.3	11	(t)	1.7			.7	11	(t)
26-----	1.2			1.1			.7		
27-----	1.2			1.0			.7		
28-----	.9			.9			.9		
29-----	.9	11	(t)	--	--	--	.8	11	(t)
30-----	.9			--			.8		
31-----	.6			--			.8		
Total-	37.3	--	5.9	45.1	--	6.8	24.8	--	1.4

t Less than 0.05 tons.

ARKANSAS RIVER BASIN--Continued

VERMEJO RIVER AT DAWSON, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.5			2.8			4.6		
2-----	1.9			3.0			4.6		
3-----	2.1			3.0			5.7	168	2.4
4-----	2.1	17	0.1	2.8	64	0.5	6.4		
5-----	2.1			2.2			7.3		
6-----	1.9			2.4			6.1	164	2.7
7-----	1.7			2.1			5.4		
8-----	1.5			1.9	60	.3	5.4		
9-----	1.5			2.4			5.0	348	4.7
10-----	1.2	8	(t)	3.2			5.0	125	1.7
11-----	1.1			3.6			4.6	126	1.6
12-----	1.2			3.2	390	3.5	5.0	221	3.0
13-----	1.3			2.8			3.9	228	2.4
14-----	1.2			2.8			3.6	158	1.5
15-----	1.2			4.3			4.6	118	1.5
16-----	.9	8	(t)	4.6			3.9	320	3.4
17-----	.9			9.4			3.2	265	2.3
18-----	.9			9.4	128	2.3	5.6	913	s25
19-----	.9			5.7			4.3	224	2.6
20-----	1.0			5.4			3.2	149	1.3
21-----	1.0			4.6			2.6	165	1.2
22-----	1.0	66	.2	5.7			2.6	21	.1
23-----	1.0			5.0			2.8	30	a.2
24-----	.8			5.0	164	2.2	2.6	45	.3
25-----	.6			5.0			2.2	67	.4
26-----	.9			3.9			2.1	345	2.0
27-----	1.0			3.9			1.9	189	1.0
28-----	1.2	122	.4	4.3			1.7	228	1.0
29-----	1.9			3.9	63	.7	1.1	20	.1
30-----	2.2			4.3			1.0	33	.1
31-----	--	--	--	4.6			--	--	--
Total-	39.9	--	4.5	127.2	--	53.2	118.0	--	77.8
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.0	152	0.4	19	12,000	616	1.2	52	0.2
2-----	1.0	141	.4	25	13,900	s1,060	1.0		
3-----	.8	127	.3	6.4	4,000	69	.8	55	.1
4-----	.7	151	.3	5.0	2,980	40	.7		
5-----	.4	196	.2	3.9	3,480	37	.6	45	.1
6-----	.5	61	.1	3.6	341	3.3	.6		
7-----	.3	67	.1	3.6			.5	37	(t)
8-----	.3	34	(t)	3.2	108	1.0	.5		
9-----	.3	98	.1	2.8			.4	29	(t)
10-----	.3	40	(t)	2.2	73	.5	.4		
11-----	.2	37	(t)	1.7			.3	22	(t)
12-----	.2	63	(t)	1.2	110	.4	.3		
13-----	.7	1,000	1.9	1.2			.3	19	(t)
14-----	3.9	600	6.3	1.0			.3		
15-----	1.5	312	1.3	.9			.3	23	(t)
16-----	.8			.7	197	.5	.2		
17-----	.3	45	.1	.6			.2	66	(t)
18-----	24	7,300	s768	.5	44	.1	.2		
19-----	6.1	500	8.2	.4	418	.4	.2	84	(t)
20-----	2.6	128	.9	.4			.2		
21-----	2.1			.3	167	.5	.2	26	(t)
22-----	2.6	47	.3	1.9			.2		
23-----	4.6	1,120	14	2.1	49	.3	.2	31	(t)
24-----	5.0	700	9.4	22	5,950	s713	.2		
25-----	6.8	1,000	a18	13	5,500	193	.2	30	(t)
26-----	5.7	400	a6.2	5.0	7,500	101	.2		
27-----	3.2	303	2.3	3.0	131	1.0	.1	37	(t)
28-----	2.4			2.6			.2		
29-----	2.2	263	1.6	2.4	42	.3	.1	28	(t)
30-----	15	1,570	s152	2.1			.2		
31-----	8.4	500	11	1.7	30	.1	--	--	--
Total-	103.9	--	1,006.2	139.4	--	2,643.0	11.0	--	1.3
Total discharge for year (cfs-days)								746.5	
Total load for year (tons)								4,012.0	

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

ARKANSAS RIVER BASIN--Continued
VERMEJO RIVER AT DAWSON, N. MEX.--Continued

Particle-size analyses of suspended sediment, July to August 1951
(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	Instantaneous discharge (cfs)	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 18, 1951	6:45 p. m.	230	21,700	3,260	--	58	--	76	--	88	91	95	99	100		SPWCM
July 18	7:45 p. m.	135	18,600	2,950	57	70	79	81	85	91	96	99	100	--		SPWCM
July 18	7:45 p. m.	135	18,600	3,340	12	31	49	70	86	91	96	99	100	--		SPN
July 18	8:45 p. m.	92	15,600	3,100	--	50	--	70	--	80	86	93	99	100		SPWCM
July 18	9:30 p. m.	76	16,100	2,630	22	31	47	72	82	86	90	95	99	100		SPWCM
July 18	9:30 p. m.	76	16,100	2,410	17	40	58	73	83	86	90	95	99	100		SPN
July 18	9:30 p. m.	76	16,100	1,890	19	30	51	64	73	86	90	95	99	100		BSWCM
July 18	9:30 p. m.	76	16,000	2,570	12	33	59	76	85	86	90	95	99	100		RSN
July 19	1:30 a. m.	34	8,820	3,150	--	58	--	76	--	90	93	97	99	100		SPWCM
July 23	5:15 p. m.	11	5,880	2,930	--	51	--	78	--	90	95	98	99	99		SPWCM
July 23	6:00 p. m.	12	4,750	3,750	--	68	--	89	--	96	98	99	99	100		SPWCM
Aug. 1	7:30 p. m.	17	12,600	3,820	--	85	--	91	--	99	99	100	--	--		SPWCM
Aug. 24	7:00 p. m.	200	14,900	3,380	--	47	--	56	--	77	93	98	100	--		SPWCM
Aug. 24	8:15 p. m.	63	14,400	2,840	--	43	--	66	--	77	90	95	99	100		SPWCM

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDA, N. MEX.

LOCATION.--At bridge on county road at Loma Parda, Mora County, about 5 miles below Coyote Creek.

DRAINAGE AREA.--530 square miles (above gaging stations, see REMARKS).

RECORDS AVAILABLE.--Water temperatures: April 1949 to September 1951.

Sediment records: January 1949 to September 1951.

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 70°F May 4, 20, 29, July 11,

Aug. 2; minimum, freezing point on several days.

Sediment concentrations: Maximum daily, 8,880 ppm Aug. 1; minimum daily, 5 ppm Dec. 19-23.

Sediment loads: Maximum daily, 8,410 tons July 31; minimum daily, less than 0.5 tons on many days.

EXTREMES, 1949-51.--Water temperatures: Maximum observed, 88°F July 7, 1949; minimum freezing point on several days during winter months each year.

Sediment concentrations: Maximum daily, 10,700 ppm July 13, 1950; minimum daily 5 ppm May 7, 10, Dec. 19-23, 1950.

Sediment loads: Maximum daily, 11,900 tons July 22, 1949, July 13, 1950; minimum daily, less than 0.5 tons on many days (revised).

REMARKS.--Records of discharge for water year October 1950 to September 1951 are summations of records for Mora River near Golondrinas and Coyote Creek near Golondrinas, which are given in Water-Supply Paper 1211. No appreciable inflow between stations and sampling point except during periods of heavy local rains.

Temperature (°F) of water, water year October 1950 to September 1951

/Once-daily temperature measurement, generally prior to 11 a.m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	53	41	a33	32	34	44	52	57	65	68	57
2	55	49	38	35	35	38	46	50	59	63	b70	63
3	a66	46	35	a37	34	a37	a59	53	50	68	--	59
4	58	51	a33	36	35	a40	55	a70	52	68	67	62
5	60	44	a35	39	36	42	a48	57	55	62	60	56
6	59	a50	a37	35	a38	a51	44	50	61	63	61	60
7	53	45	39	37	37	44	50	63	62	65	66	56
8	58	51	47	37	39	42	a47	62	53	59	67	61
9	53	37	48	38	39	46	48	56	57	61	64	66
10	61	33	42	36	37	a59	a53	58	54	65	65	58
11	56	37	a44	a38	a51	a42	40	58	54	70	58	--
12	56	a45	44	33	a44	a40	41	56	58	63	65	55
13	66	41	39	a34	a34	42	a59	61	58	61	63	55
14	59	40	43	36	36	39	43	55	57	66	64	54
15	65	41	a47	a38	35	a52	a59	a65	56	67	62	53
16	64	32	a43	a41	34	46	51	a59	53	68	60	50
17	56	34	41	36	38	38	a56	49	59	65	60	49
18	54	35	38	37	36	40	52	49	60	67	61	47
19	49	52	a42	36	38	35	55	67	62	65	65	48
20	--	48	41	a36	36	40	54	a70	61	64	65	48
21	60	a55	36	35	33	41	50	62	61	65	61	50
22	59	44	34	a39	36	51	46	57	59	66	60	50
23	51	40	40	36	39	46	65	a62	59	63	63	59
24	51	33	a42	35	43	a55	a67	59	64	64	64	50
25	54	38	37	a39	39	a52	55	a69	64	64	63	49
26	59	a49	39	36	37	49	57	68	62	65	60	53
27	50	47	34	38	47	48	53	67	67	66	61	49
28	58	46	35	43	38	40	a69	68	65	68	63	46
29	55	39	36	32	--	40	a65	b70	67	68	60	51
30	48	a52	35	a33	--	43	51	63	60	67	63	49
31	56	--	36	a34	--	41	--	58	--	61	59	--
Average	57	44	39	36	38	44	53	60	59	65	63	54

a Reading obtained 11a.m. to 6 p.m.

b Reading obtained later than 6 p.m.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	7.7	113	2	4.2	47	1	3.5	21	(t)
2-----	8.3			4.4			2.9		
3-----	6.6			4.6			3.3		
4-----	7.0	110	2	4.4			3.2		
5-----	7.0			5.2			3.2		
6-----	6.8			5.3	56	1	3.7	18	(t)
7-----	6.3			5.0			4.2		
8-----	6.3			4.4			5.0		
9-----	5.2			3.8			5.1		
10-----	5.0			3.1			4.6		
11-----	5.6	62	1	3.2	41	(t)	4.3	14	(t)
12-----	6.5			3.9			3.3		
13-----	6.0			4.7			3.4		
14-----	4.9			4.5			3.3		
15-----	4.5			3.9			3.4		
16-----	4.9	53	1	3.8	85	1	3.7	5	(t)
17-----	5.6			4.0			3.8		
18-----	6.0			3.5			3.8		
19-----	5.6			3.6			3.7		
20-----	5.2			3.2	16	(t)	3.7		
21-----	4.9	46	1	3.1			3.7	36	(t)
22-----	4.1			3.1			3.6		
23-----	4.3			3.1			3.6		
24-----	4.7			2.9			4.1		
25-----	4.7			2.8	21	(t)	4.1	93	1
26-----	4.5	47	1	3.0			4.1		
27-----	4.3			3.2			3.9		
28-----	4.3			3.2			3.9		
29-----	4.3			3.2			4.1		
30-----	4.3	47	1	2.8	--	--	4.3	93	1
31-----	4.3			--			4.8		
Total-	169.7	--	39	113.1	--	15	119.3	--	9
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	4.9	93	1	2	30	(t)	3.5	20	(t)
2-----	5.4			2			2.9		
3-----	5.4			3			2.8		
4-----	5.3	15	(t)	4.0			2.8		
5-----	5.2			4.0			5.0		
6-----	4.7			5.0	14	(t)	5.0	12	(t)
7-----	4.7			5.0			5.0		
8-----	4.8			5.5			5.1		
9-----	5.5			4.8			5.1		
10-----	5.5	8	(t)	3.9			4.9		
11-----	5.4			3.7	18	(t)	4.9	13	(t)
12-----	5.3			3.5			6.0		
13-----	5.2			2.8			5.3		
14-----	5.1	7	(t)	2.9			5.5		
15-----	5.0			3.1	29	(t)	4.2	25	(t)
16-----	5.3			3.1			4.2		
17-----	5.5			3.5			3.9		
18-----	5.8	14	(t)	3.6			4.4		
19-----	5.5			4.0			4.4		
20-----	5.0			4.7			4.4		
21-----	5.0	13	(t)	4.2	18	(t)	4.1	13	(t)
22-----	5.5			4.2			4.1		
23-----	4.8			3.7			4.0		
24-----	5.1			2.7			4.0		
25-----	5.3	11	(t)	2.9	--	--	3.8	25	(t)
26-----	5.9			2.4			4.0		
27-----	5.6			2.9			4.0		
28-----	4.5			2.7			5.1		
29-----	4.0	22	(t)	--	--	--	6.0		
30-----	3.5			--			4.6		
31-----	2.0			--			3.8		
Total-	155.7	--	7	98.4	--	6	136.8	--	6

t Less than 0.5 ton.

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDA, N. MEX.--Continued

Suspende sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5.3			2.1			3.4	54	(t)
2-----	4.6			1.9			3.4	41	(t)
3-----	4.3			1.9			4.5	43	1
4-----	4.3	44	1	1.9	22	(t)	5.2	48	1
5-----	4.2			1.9			5.2	88	1
6-----	4.3			2.1			4.1	94	1
7-----	4.8			2.2			3.7	59	1
8-----	4.8			2.1			3.3	64	1
9-----	5.5			2.3			2.8	51	(t)
10-----	6.5	28	(t)	2.3	33	(t)	2.8	50	(t)
11-----	9.4			2.3			2.9	43	(t)
12-----	8.0			2.1			3.2	48	(t)
13-----	7.1			2.0			3.3	38	(t)
14-----	5.4			2.6			2.9	37	(t)
15-----	4.4			7.8	56	1	3.3	25	(at)
16-----	3.9	29	(t)	5.1			3.5	25	(at)
17-----	3.8			104	369	s 167	3.2	25	(at)
18-----	3.7			34.0	600	a 55	2.8	26	(t)
19-----	3.8			13.3	300	11	3.2	29	(t)
20-----	3.6			9.8	84	2	3.5	36	(t)
21-----	3.8	29	(t)	9.1	80	a 2	2.9	25	(t)
22-----	4.0			12.2	150	5	2.6	33	(t)
23-----	3.9			15.6	150	6	2.4	32	(t)
24-----	3.5			9.8	86	2	2.7	20	(t)
25-----	2.7			7.4	71	1	2.4	20	(t)
26-----	2.1			6.2	37	1	2.2	15	(at)
27-----	2.7	24	(t)	6.6			2.3	15	(t)
28-----	1.9			6.8	49	1	2.3	100	a 1
29-----	2.1			7.7	38	1	2.3	25	(t)
30-----	2.1			6.1	61	1	2.3	24	(t)
31-----	--	--	--	4.4	77	1	--	--	--
Total-	130.5	--	11	295.6	--	262	94.6	--	11
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.3	24	(at)	202	8,880	s 4,970	6.1		
2-----	2.0	24	(at)	66	5,050	s 850	5.3		
3-----	1.7	25	(t)	22.5	1,800	s 109	4.3	70	1
4-----	32.2	3,640	s 1,550	106	4,310	s 3,670	5.6		
5-----	5.2	1,000	14	162	6,560	s 3,860	6.6		
6-----	4.2	316	4	43.5	700	82	4.9		
7-----	3.5	139	1	18.0	243	12	3.8		
8-----	3.6	107	1	10.7	129	4	3.2		
9-----	3.6	34	(t)	9.0	81	2	3.5	59	1
10-----	3.2	12	(t)	8.7	56	1	3.3		
11-----	3.1	28	(t)	7.7	43	1	3.3		
12-----	3.7	45	(t)	7.1	26	(t)	3.3		
13-----	4.7	92	1	6.3			3.5		
14-----	11.9	442	s 38	5.6	18	(t)	3.3		
15-----	7.9	400	9	6.2			3.3	49	(t)
16-----	3.7	339	3	5.3			3.3		
17-----	2.6	103	1	4.4	17	(t)	3.9		
18-----	34.9	1,280	s 647	7.2			3.9		
19-----	12.9	3,250	s 145	7.3	35	1	4.3		
20-----	2.6	776	5	4.1			4.3		
21-----	2.4	365	2	4.5	35	(at)	6.3	59	1
22-----	2.2	153	1	19.6	888	sa 66	6.5		
23-----	27.2	1,180	s 387	7.4	304	6	6.6		
24-----	16.0	2,220	s 80	6.2	111	2	6.1		
25-----	7.3	300	6	79.0	6,900	s 1,820	5.4		
26-----	8.1	220	5	27.8	1,800	135	4.8		
27-----	4.0	158	2	14.3	450	17	5.0	68	1
28-----	3.1	109	1	11.2			6.2		
29-----	3.4	87	1	10.6	152	4	5.2		
30-----	61.2	1,800	s 520	8.8			5.0		
31-----	224	5,380	s 8,410	8.2			--	--	--
Total-	509.4	--	11,836*	907.2	--	15,627	140.1	--	24
Total discharge for year (cfs-days).....									2,870.4
Total load for year (tons).....									27,853

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, May to August 1951
 (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	Instantaneous discharge (cfs)	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 18, 1951	7:35 a. m.	60	2,040	3,540		87		90		--	--	--		--		PWCM
May 19	8:30 a. m.	13	416	680		15		63		--	--	--		--		PWCM
July 4	6:50 p. m.	75	2,860	3,320		96		86		99	100	--		--		PWCM
July 19	6:15 p. m.	10	2,460	1,070		35		57		62	62	63		78		SPWCM
July 24	7:35 a. m.	30	3,900	2,570		93		99		100	--	--		--		SPWCM
July 31	5:45 a. m.	180	6,800	4,280		79		86		99	99	99		99		SPWCM
Aug. 1	10:45 a. m.	200	9,550	3,320		65		90		98	99	99		100		SPWCM
Aug. 2	7:30 p. m.	55	5,780	3,560		74		--		100	--	--		--		SPWCM
Aug. 5	12:30 a. m.	250	10,400	7,230		78		88		95	97	99		99		SPWCM
Aug. 26	8:25 a. m.	35	1,720	2,000		82		94		99	100	--		--		SPWCM

ARKANSAS RIVER BASIN--Continued
UTE CREEK NEAR BUEYEROS, N. MEX.

LOCATION --At gaging station at ford on New Mexico State Highway 57, 3½ miles northwest of Bueyeros, Harding County, and 19½ miles northeast of Mosquero. DRAINAGE AREA --520 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses: February 1950 to September 1951.

Water temperatures: March 1949 to September 1951.

Sediment records: March 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 511 ppm Sept. 1-30; minimum, 228 ppm May 15-20, 27-28.

Hardness: Maximum, 239 ppm Jan. 1-31; minimum, 135 ppm Aug. 23.

Specific conductance: Maximum daily, 937 micromhos Apr. 29; minimum, freezing point Jan. 30, 31, Feb. 3.

Water temperatures: Maximum observed, 89°F Aug. 16; minimum, 40°F June 28, 1950, Aug. 29, 30, Sept. 11, 12, 1951.

Sediment loads: Maximum daily, 16,800 ppm May 15; minimum daily, 0 tons Aug. 29, 30, Sept. 11, 12.

EXTREMES, 1949-51.--Dissolved solids (1950-51): Maximum, 674 ppm June 20, 1950; minimum, 142 ppm July 31, 1950.

Hardness (1950-51): Maximum, 239 ppm Jan. 1-31, 1951; minimum, 89 ppm July 31, 1950.

Specific conductance (1950-51): Maximum daily, 1,400 micromhos June 20, 1950; minimum, freezing point Jan. 30, 31, Feb. 3, 1951.

Water temperatures: Maximum observed, 94°F Aug. 16, 1950; minimum, 40°F June 28, 1950, Aug. 29, 30, Sept. 11, 12, 1951.

Sediment loads: Maximum daily, 16,800 ppm May 15, 1951; minimum, 0 tons June 28, 1950, Aug. 29, 30, Sept. 11, 12, 1951.

REMARKS --Maximum sediment concentration observed October 1950 to September 1951, 75,500 ppm July 12. Flow affected by ice Nov. 10-12, 24-25, Dec. 3, 6-8, 27-31, Jan. 1-11, 17, 27-31, Feb. 1-7, 14-16. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex.

Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211. Values reported for dissolved solids are sums of determined constituents.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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 carbonate	Specific conductance (micro-mhos at 25° C)	pH	
														Parts per mil-lion	Tons per acre-foot	Tons per million	Calcium	Non-carbon-ate				
Oct. 1-31, 1950 . . .	6.75	17		42	27	66		238	11	107	23	1.2	0.2	411	0.56	7.5	216	3	40	657	--	--
Nov. 1-30	5.57	12		46	29	66		274	0	108	26	1.4	.3	424	.58	6.4	234	10	38	688	--	--
Dec. 1-31	4.33	15		46	30	63		262	9	105	23	1.2	.4	422	.57	4.5	238	5	36	687	--	--
Jan. 1-31, 1951 . . .	7.26	16		48	29	66		288	0	107	22	1.1	.6	432	.59	8.5	239	3	37	707	--	--
Feb. 1-28	4.77	15		47	29	70		282	0	115	25	1.1	.7	442	.60	5.7	236	6	39	722	--	--
Mar. 1-31	3.98	16		44	31	71		278	0	119	25	1.3	.8	445	.61	4.8	238	10	39	727	--	--
April 1-30	4.98	20		34	31	65		194	16	120	28	1.3	1.4	412	.56	5.5	212	28	40	672	8.4	8.4
May 1-14, 21-26, 29-31	18.1	17		44	29	70		265	0	118	26	1.3	.7	437	.59	21	229	12	40	704	7.9	7.9
May 15-20, 27-28	419.2	13		43	11	22		175	0	41	7.5	.5	.8	228	.31	258	152	9	24	374	7.9	7.9
June 1-17, 20-30	11.3	17		47	28	81		283	0	134	24	1.2	.7	472	.64	14	232	0	43	757	7.9	7.9
July 18-19	59.5	19		45	17	30		233	0	42	14	1.2	.6	266	.39	46	192	2	26	462	7.9	7.9
July 1, 8-10, 16-18, 21, 27-31	36.7	19		46	23	71		262	0	112	21	1.4	.5	423	.58	42	210	0	43	673	--	--

ARKANSAS RIVER BASIN--Continued
UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carb. bonate (CO ₃)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C.)	pH
													Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate			
July 2, 11-15, 19-20, 22-26, 1951,	200	19		40	12	26		195	0	8	0.6	1.4	233	0.32	126	150	0	27	361	--
Aug. 23,	87	18		36	11	30		184	0	37	.8	1.1	231	.31	54	135	0	33	382	--
Aug. 1-22, 24-31,	a 8.44	20		45	23	69		256	0	110	1.4	.5	415	.56	95	207	0	43	673	--
Sept. 1-30,	a .86	25		42	30	95		286	0	144	1.6	.5	511	.69	1.2	228	0	47	807	--
Weighted average, ..	24.6	16		43	16	38		211	0	61	0.8	2.0	294	0.40	20	174	0	32	478	--

a Flow less than 0.05 cfs Aug. 29-30, Sept. 11-12.

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement, generally between 11 a. m. and 6 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	58	52	42	33	55	55	60	68	68	80	74
2	65	46	43	39	33	54	62	64	72	74	79	76
3	69	49	41	40	31	49	--	70	69	77	85	71
4	a 50	60	54	44	35	51	56	71	64	75	82	83
5	66	65	34	47	37	55	50	71	69	75	80	85
6	65	55	34	42	43	58	46	48	76	80	79	69
7	63	--	--	38	46	56	54	b 52	73	70	72	71
8	58	36	38	37	52	51	54	64	76	80	81	71
9	60	--	48	39	53	57	--	64	76	74	60	69
10	70	37	50	38	59	67	35	61	82	78	74	73
11	63	36	50	40	54	--	46	59	68	74	81	69
12	69	49	50	41	55	54	50	63	64	73	b 70	b 71
13	66	46	50	35	--	49	58	59	b 63	--	82	79
14	69	49	48	41	35	55	b 52	65	64	--	82	77
15	64	50	46	45	45	58	51	55	62	b 78	80	58
16	68	45	52	48	51	62	55	52	81	74	89	a 60
17	66	--	46	48	57	41	55	42	78	82	80	72
18	72	50	47	55	56	46	64	b 60	73	--	69	69
19	63	49	47	47	41	51	72	75	78	87	76	--
20	62	50	47	43	55	55	61	61	85	82	74	72
21	68	56	47	44	47	61	70	57	73	b 84	a 65	58
22	67	52	41	49	54	53	54	64	78	72	73	a 53
23	64	43	49	42	50	65	75	60	73	--	74	--
24	67	42	50	42	51	64	65	64	76	b 73	78	68
25	65	53	51	49	52	55	62	57	b 74	78	71	66
26	59	55	43	56	61	54	60	62	72	--	77	71
27	61	55	40	49	55	49	70	b 52	80	83	77	63
28	60	53	41	34	53	39	65	56	80	80	80	68
29	a 60	52	43	34	--	52	60	76	79	80	79	68
30	52	51	40	32	--	56	56	b 69	75	84	80	77
31	59	--	47	32	--	62	--	71	--	78	78	--
Average	64	50	46	42	48	54	58	61	73	77	77	70

a Reading obtained prior to 11 a. m.

b Reading obtained later than 6 p. m.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	79	3,880	≈ 3,300	3.5	14	(t)	4.7	7	(t)
2-----	20	1,800	97	5.5	27	(t)	4.1	23	(t)
3-----	5.5	170	9	6.4	19	(t)	5	24	(t)
4-----	6.4	118	2	7.4	15	(t)	5.5	9	(t)
5-----	6.4	151	3	7.4	11	(t)	2.0	44	(t)
6-----	4.7	31	(t)	6.4	10	(at)	2	34	(t)
7-----	3.5	44	(t)	7.4	4	(t)	5	67	1
8-----	3.5	20	(t)	7.4	28	1	7	72	1
9-----	4.1	52	1	7.4	12	(t)	7.4		
10-----	2.4	15	(t)	6	11	(t)	6.4		
11-----	2.0	16	(t)	5	43	1	5.5	114	2
12-----	2.0	18	(t)	5	69	1	4.7		
13-----	2.0	20	(t)	7.4	25	1	4.1		
14-----	2.9	40	(t)	6.4	1,820	31	4.1		
15-----	4.1	52	1	4.7	207	3	3.5		
16-----	3.5	30	(t)	4.7	799	10	4.1	62	1
17-----	3.5	121	1	5.5	980	15	4.1		
18-----	3.5	31	(t)	5.5	500	a7	4.1		
19-----	2.9	18	(t)	5.5	210	3	4.1		
20-----	3.5	11	(t)	4.7	45	1	3.5		
21-----	4.1	18	(t)	5.5	50	a1	4.1	65	1
22-----	4.1	13	(t)	5.5	6	(t)	4.1		
23-----	4.1	28	(t)	4.7	5	(t)	4.1		
24-----	2.9	19	(t)	3	82	1	2.9		
25-----	3.5	5	(t)	4	15	(t)	2.9		
26-----	3.5	6	(t)	5.5	37	1	4.1	54	1
27-----	3.5	7	(t)	5.5	7	(t)	4		
28-----	4.7	15	(t)	4.7	4	(t)	4		
29-----	4.7	12	(t)	4.7	5	(t)	3		
30-----	4.7	6	(t)	4.7	20	(t)	4	188	2
31-----	4.1	2	(t)	--	--	--	6		
Total--	209.3	--	3,410	167.0	--	77	134.1	--	33
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	8			2			2.4		
2-----	6	188	4	4			2.0		
3-----	9			5			4.7		
4-----	10			6	183	3	5.5	50	(t)
5-----	8			7			3.5		
6-----	7			7			3.5		
7-----	6	108	2	7			3.5		
8-----	8			6.4			2.4		
9-----	9			4.7			2.9		
10-----	8			4.1			3.5		
11-----	10			2.9	54	(t)	2.9	68	1
12-----	12			2.0			4.1		
13-----	13	119	3	.2			4.1		
14-----	7			1			3.5		
15-----	8			5			3.5		
16-----	8			4			4.7		
17-----	10			4.1			4.7		
18-----	9.4			5.5	136	2	6.4		
19-----	8.4	110	3	6.4			6.4		
20-----	7.4			5.5			5.5	47	1
21-----	8.4			5.5			4.7		
22-----	5.5			4.7			4.1		
23-----	6.4			4.7			2.9		
24-----	5.5	92	1	9.4			2.9		
25-----	4.7			7.4	52	1	2.9		
26-----	6.4			5.5			3.5	43	(t)
27-----	5			4.1			2.9		
28-----	3			2.4			6.4		
29-----	3	16	(t)	--	--	--	4.7	80	1
30-----	3			--	--	--	4.7		
31-----	2			--	--	--	4.1		
Total--	225.1	--	67	133.5	--	42	123.5	--	19

s Computed by subdividing day.

t Less than 0.5 tons.

a Computed from estimated concentration graph.

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	Mean discharge (cfs)	April		Mean discharge (cfs)	May		Mean discharge (cfs)	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-----	5.5	73	1	2.4	46	(t)	7.4	177	4	
2-----	5.5			2.4			8.4			
3-----	4.1			2.4			9.4			
4-----	5.5			2.4			32			
5-----	6.4			2.9			48			
6-----	4.7	70	1	3.5	44	1	22	35	1	
7-----	4.7			4.7			13			
8-----	4.1			4.1			9.4			
9-----	4.1			4.1			6.4			
10-----	2.9			5.5			6.4			
11-----	4.1	70	1	8.4	35	(t)	7.4	26	(t)	
12-----	2.9			4.1			12			
13-----	2.9			2.0			26			
14-----	2.4			48			2,570			19
15-----	2.4			1,990			16,800			17
16-----	2.9	39	(t)	142	1,500	575	26	50	3	
17-----	4.1			313	6,200	24				
18-----	3.5			328	3,800	83				
19-----	3.5			118	700	36				
20-----	2.9			86		2.4				
21-----	31	1,200	a 100	60	226	36	2.9	31	(t)	
22-----	24	300	a 19	46			2.9	27	(t)	
23-----	8.4	100	a 2	43			2.9	59	(t)	
24-----	2.0	50	(at)	41			2.0	40	(t)	
25-----	1.2			66			77	10	2.4	67	(t)
26-----	1.2	39	(t)	43			2.4	98	1	
27-----	.6			327	5,850	25,000	1.2	50		(t)
28-----	.2			50	3,200	432	1.6	57		(t)
29-----	.6	63	(t)	8.4	182	4	1.2	20	(t)	
30-----	1.2			6.4	100	2	1.6	41	(t)	
31-----	--			--	--	6.4	--	--	--	--
Total--	149.5	--	137	3,771.1	--	244,810	436.3	--	4,353	
Day	Mean discharge (cfs)	July		Mean discharge (cfs)	August		Mean discharge (cfs)	September		
		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-----	4.6	908	s 196	10	100	a 3	0.1	46	(t)	
2-----	76	3,580	s 1,300	10			2.0			
3-----	26	100	7	17			1.2			
4-----	22	124	6	14	170	5	.6	36	(t)	
5-----	13			8.4			.6			
6-----	27			5.5			.6	43	(t)	
7-----	32	179	14	5.5	100	a 1	.2			
8-----	22			2.4			.9	30	(t)	
9-----	17			1.6			.6			
10-----	13	51	2	126	3,370	sa 2,180	.1	35	(t)	
11-----	297	3,300	s 24,200	10	500	a 14	0	--	0	
12-----	563	12,100	s 53,300	5.5			0	--	0	
13-----	577	12,200	s 20,400	3.5	100	a 1	.2	35	(t)	
14-----	222	6,000	3,600	2			.6			
15-----	168	3,800	1,720	1.2			.4	39	(t)	
16-----	129	1,200	418	.6	60	(t)	1.6			
17-----	118	235	75	.2			2.0	62	(t)	
18-----	156	4,650	s 3,940	.6			1.6			
19-----	105	2,020	s 968	.6			1.2	33	(t)	
20-----	26	500	a 35	.6	33	(t)	.9			
21-----	24	326	21	3.5			.6	42	(t)	
22-----	54	1,350	s 1,160	4.7	100	a 1	1.6			
23-----	391	16,300	s 25,800	87	4,460	s 1,680	1.6	51	(t)	
24-----	69	3,300	615	1.2	2,190	7	1.2			
25-----	31	382	32	8.4	1,800	41	1.2	50	(t)	
26-----	19	160	8	8.4	255	6	.2			
27-----	16		4	1.6			.4			
28-----	10	111		.1	70	(t)	.9	30	(t)	
29-----	10	53	.1	0	--	0	1.2			
30-----	8.4			0	--	0	1.6			
31-----	13			100	a 4	.1	67	(t)	--	--
Total--	3,259.0	--	137,857	340.2	--	3,966	25.9	--	3	

Total discharge for year (cfs-days) 8,974.5

Total load for year (tons) 394,774

s Computed by subdividing day.

t Less than 0.5 tons.

a Computed from estimated concentration graph.

ARKANSAS RIVER BASIN--Continued
UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Particle-size analyses of suspended sediment, May to August 1951
(Methods of analysis: B, Bottom withdrawal tube; D, decanted; F, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Instantaneous discharge (cfs)	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 15, 1951.....	11:30 a.m.	821	14,200	3,760	--	35	--	43	--	--	63	77	93	99	--	SPWCM
May 17.....	4:00 p.m.	580	15,400	3,700	--	24	--	41	--	--	62	81	95	100	--	SPWCM
May 20.....	6:50 p.m.	260	18,400	3,510	--	31	--	35	--	--	78	97	100	--	--	SPWCM
May 27.....	7:55 p.m.	3,120	49,800	3,680	--	30	--	40	--	--	60	76	91	99	--	SPWCM
June 4.....	6:55 p.m.	24	2,230	4,700	--	47	--	67	--	--	89	92	94	99	--	SPWCM
June 8.....	6:50 p.m.	307	11,000	3,160	--	43	--	61	--	--	77	95	99	100	--	SPWCM
June 12.....	7:40 p.m.	556	14,500	2,090	15	31	44	50	52	56	70	84	98	98	--	SPWCM
June 18.....	7:40 p.m.	556	14,500	2,060	0	22	31	42	52	56	70	84	98	98	--	SPN
June 18.....	7:40 p.m.	556	14,500	812	32	34	44	47	52	56	70	84	98	98	--	SPWCM
June 18.....	7:40 p.m.	556	14,500	974	17	22	34	40	53	56	70	84	98	98	--	SBN
July 1.....	12:55 a.m.	211	16,900	2,840	--	41	--	55	--	--	78	88	96	100	--	SPWCM
July 5.....	6:45 p.m.	4,600	75,500	3,300	--	31	--	41	--	--	62	84	99	100	--	SPWCM
July 12.....	8:00 p.m.	3,500	42,500	2,580	29	--	33	35	46	55	80	95	100	55	--	SPWCM
July 12.....	8:00 p.m.	3,500	42,500	2,880	1	12	27	35	41	55	80	95	100	55	--	SPN
July 12.....	8:00 p.m.	3,500	42,500	1,750	29	37	43	46	50	55	80	95	100	55	--	SPWCM
July 13.....	5:25 a.m.	810	12,900	3,530	--	32	--	39	--	--	60	82	97	99	--	SPWCM
July 18.....	8:40 p.m.	476	21,400	3,090	--	46	--	64	--	--	85	90	99	100	--	SPWCM
July 22.....	10:05 p.m.	560	20,900	4,230	--	33	--	49	--	--	67	84	96	100	--	SPWCM
July 23.....	12:30 a.m.	1,850	45,600	2,930	25	36	43	43	63	68	74	96	98	99	--	SPWCM
July 23.....	12:20 a.m.	1,850	45,600	6,910	17	20	20	62	63	69	79	96	98	99	--	SPN
July 23.....	12:20 a.m.	1,850	45,600	1,280	32	38	46	51	57	69	79	96	99	99	--	SPWCM
July 23.....	12:20 a.m.	1,850	45,600	1,900	12	18	30	40	50	59	79	96	99	99	--	SBN
July 23.....	12:35 a.m.	3,700	53,100	3,860	27	--	38	38	40	58	71	90	99	100	--	SPWCM
July 23.....	1:15 a.m.	1,170	41,400	2,810	--	30	--	45	--	--	59	72	91	99	--	SPWCM
Aug. 23.....	4:30 a.m.	364	9,910	2,070	10	19	40	73	89	95	99	100	100	--	--	SPN
Aug. 23.....	4:30 a.m.	364	9,910	1,860	55	63	66	71	78	95	99	100	100	--	--	SPWCM
Aug. 23.....	4:30 a.m.	364	9,910	2,010	10	11	32	39	49	95	99	100	100	--	--	SBN
Aug. 23.....	5:30 a.m.	1,120	6,880	2,560	--	67	--	76	--	90	97	99	100	--	--	SPWCM
Aug. 25.....	2:15 p.m.	31	1,950	4,220	--	54	--	68	--	--	87	97	100	--	--	SPWCM

LOCATION.--At Logan-Trigg Ranch road crossing, a quarter of a mile upstream from gaging station which is 5½ miles upstream from mouth and 6 miles northwest of Logan, Quay County.

DRAINAGE AREA.--2,073 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,210 ppm Apr. 24; minimum, 201 ppm May 15.

Specific conductance: Maximum, 244 micro-mhos/cm Apr. 24; minimum, 170 micro-mhos/cm May 15.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Oct. 3, 1950.....	61	--	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	217	14	45	969	--
Oct. 13-20.....	(a)	27	0.01	49	23	83	6.2	248	0	137	44	1.0	1.5	--	494	0.67	--	236	24	43	768	7.9
Oct. 21-31.....	(a)	24	--	55	24	84	5.6	259	0	138	45	1.0	1.8	--	506	.69	--	253	30	40	816	8.1
Nov. 1-10.....	(a)	24	--	62	24	80	4.0	272	0	135	49	1.1	2.6	0.1	516	.70	--	229	16	43	780	8.1
Nov. 11-20.....	(a)	24	--	54	23	83	5.0	260	0	134	48	1.0	2.0	--	502	.68	--	218	21	44	766	8.1
Nov. 21-30.....	(a)	23	--	46	24	81	4.0	241	0	129	47	1.0	1.9	--	478	.65	--	--	--	--	--	--
Dec. 1-10.....	(a)	21	--	56	25	80	4.8	255	0	137	50	1.0	2.5	1	503	.68	--	242	34	41	800	8.1
Dec. 11-20.....	(a)	24	--	53	24	82	4.4	259	0	131	48	1.0	1.8	1	497	.68	--	236	18	43	785	8.1
Dec. 21-30.....	(a)	20	--	55	23	79	4.6	251	0	126	48	9	2.0	--	488	.66	--	232	18	42	776	8.1
Jan. 1-10, 1951.....	1.5	(a)	24	--	56	25	79	4.6	251	5	126	46	9	2.2	493	.67	--	242	28	41	787	7.4
Jan. 11-20.....	1.0	(a)	22	--	50	24	88	3.6	257	0	134	46	9	2.3	498	.68	2.02	224	33	46	799	7.4
Jan. 21-28.....	(a)	24	--	63	24	76	4.4	262	0	125	50	1.0	4.5	4	501	.68	1.35	256	41	39	812	7.4
Feb. 2-8.....	(a)	21	--	52	25	70	3.6	241	0	119	45	9	3.3	2	459	.62	--	232	35	39	745	7.4
Feb. 9-10.....	(a)	21	--	58	41	228	7.2	371	0	369	80	4	1.8	5	989	1.35	--	313	9	61	1,500	7.3
Feb. 11-12.....	(a)	22	--	51	35	179	7.2	338	0	290	63	1.2	1.6	1	818	1.11	--	274	0	58	1,250	7.8
Feb. 13-22.....	(a)	24	--	62	26	86	2.4	283	0	142	53	1.0	2.8	--	538	.73	--	262	30	41	857	7.8
Feb. 23-28, Mar. 1.....	4.7	19	--	68	30	190	6.4	308	0	295	69	1.2	6	1	811	1.10	10.3	244	0	62	1,250	7.8
Mar. 2-10.....	(a)	27	--	76	29	84	3.8	288	0	157	61	1.1	6.1	--	587	.80	--	308	72	37	932	7.5
Mar. 11-19.....	(a)	25	--	74	28	75	4.4	272	0	143	67	1.1	6.3	1	558	.76	--	300	76	35	892	7.5
Mar. 20-31.....	(a)	27	--	74	28	71	4.0	278	0	135	64	1.1	6.1	--	547	.74	--	300	72	34	871	7.5
Apr. 1-10.....	(a)	24	0	55	25	95	6.4	252	0	152	58	1.1	1.8	1	542	.74	--	240	34	45	858	7.6
Apr. 11-20.....	(a)	27	0	57	25	92	6.6	258	0	147	55	1.1	1.4	1	539	.73	--	249	36	43	853	7.5
Apr. 21-30.....	(a)	38	--	90	49	258	--	388	0	460	118	--	1.5	2	1,210	1.65	--	426	100	57	1,770	7.5
Apr. 21-23, 25-30.....	(a)	31	0	68	26	89	6.8	291	0	145	57	1.2	2.6	--	570	.78	--	276	38	40	892	7.4
May 1-3.....	(a)	32	0	76	36	164	10	341	0	251	105	1.6	8	1	844	1.15	--	338	58	50	1,280	7.5
May 4-13.....	3.210	(a)	30	--	33	10	27	--	200	0	7.8	--	--	--	201	.27	--	124	0	32	b 531	7.9
May 14-20.....	4.48	(a)	27	24	46	62	5.9	246	0	81	22	1.0	1.7	1	384	.52	--	181	0	42	604	7.6
May 21-31.....	84.3	(a)	21	14	46	20	87	8.8	267	0	137	29	6	9	482	.66	--	197	0	48	758	7.9

a. Flow less than 0.5 cfs Oct. 10-31, November, December, Jan. 1-18, 21-22, 27-31, Feb. 1-22, Mar. 2-31, April, May 1-14, June 26-30, July 1-4, 7-11, 30, Aug. 4-9, 19-23, 31, and September.

b. Analysis made on a composite of two samples collected at different times.

ARKANSAS RIVER BASIN--Continued
 UTE CREEK NEAR LOGAN, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25 C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate			
June 1-10, 1951.....	9.4	28	0.03	68	26	67	3.6	272	0	119	54	1.2	4.6	0.1	505	0.69	12.8	276	54	34	813	7.9
June 11-20.....	56.5	29	.03	64	23	60	8.0	261	0	98	51	1.0	3.9	.1	467	.64	71.2	254	40	33	744	7.9
June 21-25.....	20.0	32	.06	66	29	71	7.8	286	0	140	42	1.2	3.9	.1	534	.73	28.8	284	49	34	877	7.6
July 5-7.....	4.0	31	.02	67	28	60	6.8	273	0	115	56	1.0	4.0	.1	503	.68	5.43	282	58	31	804	7.6
July 12-20.....	767	27	.13	46	20	79	6.4	262	0	126	19	1.2	1.7	.1	455	.62	942	197	0	46	731	7.8
July 21-29, 31.....	71.5	23	.09	54	20	82	7.0	269	0	129	28	1.0	2.1	.1	479	.65	92.5	216	0	44	767	7.8
Aug. 1-3.....	a 6.0	28	.03	60	25	87	7.0	265	0	159	50	1.2	3.4	.1	552	.75	8.94	252	36	42	856	7.8
Aug. 10-18, 24-31.....	a 10.3	24	.03	52	26	109	6.2	266	0	186	42	1.4	1.1	.1	579	.79	16.1	236	18	49	906	7.8
Weighted average...	c 41.1	25	0.11	45	18	66	6.6	247	0	95	19	1.1	1.4	--	398	0.54	44	186	0	42	639	--

a Flow less than 0.5 cfs Oct. 10-31, November, December, Jan. 1-18, 21-22, 27-31, Feb. 1-22, Mar. 2-31, April, May 1-14, June 26-30, July 1-4, 7-11, 30, Aug. 4-9, 19-23, 31, and September.

c Represents 99 percent of runoff for water year October 1950 to September 1951.

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR TASCOSA, TEX.

LOCATION --At Boy's Ranch near Tascosa, Oldham County, 20 miles upstream from gaging station near Amarillo, Potter County.
DRAINAGE AREA --19 287 square miles above gaging station near Amarillo.
RECORDS AVAILABLE --Chemical analyses: June 1948 to September 1951.

Water temperatures: February 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1980 ppm Mar. 2-3, 14-15; minimum, 297 ppm May 14, 15, 16.

Hardness: Maximum, 494 ppm Mar. 2-3, 14-15; minimum, 101 ppm May 14, 15, 16.

Specific conductance: Maximum daily, 3,600 microhos Mar. 2; minimum daily, 416 microhos May 14.

EXTREMES, June 1948 to September 1951.--Dissolved solids: Maximum, 1,980 ppm Mar. 2-3, 14-15, 1951; minimum, 245 ppm Nov. 21-30, 1948.

Hardness: Maximum, 494 ppm Mar. 2-3, 14-15, 1951; minimum, 72 ppm June 22, 1950.

REMARKS.--Values reported for dissolved solid concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents, unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station near Amarillo for water year October 1950 to September 1951 given in Water-Supply Paper 1211. Mean discharge values reported are adjusted to reflect small discharge of sewage effluent entering Canadian River between sampling point and gaging station. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Per cent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-3, 17, 1950	818	20	20		54	21	124	221	147	107	107	0.8	4.5		603	0.82	1,330	221	40	55	974	7.5
Oct. 4-10,	67.4	17	17		65	26	213	205	259	205	205	7	4.5		913	1.24	166	269	101	63	1,460	8.2
Oct. 11-16, 18-20,	25.9	17	17		66	35	269	229	309	270	270	7	1.5		1,080	1.47	76	308	121	65	1,770	7.4
Oct. 21-26, 30-31,	18.5	19	19		64	37	281	240	314	280	280	4	2.5		1,120	1.52	56	312	115	66	1,910	8.1
Oct. 27-29,	15.0	18	18		78	45	357	225	413	380	380	5	3.8		1,410	1.92	57	380	195	67	2,330	8.0
Nov. 1-10,	16.5	20	20		63	34	221	274	265	195	195	6	1.0		963	1.31	43	297	72	62	1,520	8.1
Nov. 11-15,	15.2	20	20		58	37	237	214	277	186	186	7	1.2		965	1.31	40	296	39	63	1,520	8.0
Nov. 16-20,	13.2	20	20		52	27	152	299	164	108	108	7	8		671	.91	24	240	0	58	1,080	7.9
Nov. 21-30,	12.9	21	21		53	29	183	281	209	140	140	7	1.2		760	1.06	27	251	20	61	1,250	8.1
Dec. 1-10,	10.4	19	19		59	30	187	254	245	150	150	7	1.0		824	1.12	23	270	62	60	1,310	7.9
Dec. 11-20,	16.9	17	17		72	40	252	285	288	252	252	7	1.0		1,060	1.44	48	344	110	61	1,750	7.8
Dec. 21-24, 29-31,	21.6	16	16		75	37	280	279	303	285	285	7	0		1,130	1.54	66	339	110	64	1,830	7.8
Dec. 25-28,	19.8	18	18		56	27	136	285	134	121	121	7	0		648	.88	35	230	17	54	1,100	7.2
Jan. 1-10, 1951,	23.5	16	16		70	44	261	268	271	296	296	1.0	1.5		1,090	1.48	69	356	136	61	1,810	7.7
Jan. 11-20,	32.1	17	17		73	43	282	296	277	311	311	.9	1.5		1,100	1.56	100	359	116	63	1,910	7.8
Jan. 21-31,	15.1	18	18		64	36	244	252	270	241	241	7	1.5		1,000	1.36	41	308	93	63	1,650	8.0
Feb. 1-10,	24.9	21	21		63	39	200	261	243	200	200	1.0	1.2		901	1.23	61	318	104	58	1,490	8.2
Feb. 11-19,	19.3	20	20		60	38	266	274	300	275	275	7	1.2		1,110	1.51	58	306	82	67	1,820	8.2
Feb. 20-21, 23,					60	39	244	290	272	300	300	1.2	8		1,000	1.36	149	310	72	63	1,640	8.1
Feb. 27-28,	55.0	20	20		60	39	244	290	272	300	300	1.2	8		1,000	1.36	149	310	72	63	1,640	8.1
Feb. 22, 24-26,	180	15	15		36	21	169	244	167	117	117	9	1.8		a 648	.88	280	176	0	67	1,090	8.0

a Sum of determined constituents.

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR TASCOSA, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Bo-ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Mar. 1, 16-20, 1951	31.2		18		80	47	288		232	429	270	0.8	1.2		1,250	1.70	105	393	203	1,990	8.0
Mar. 2-3, 14-15	16.8		16		96	62	321		230	604	560	1.0	1.2		1,960	2.69	90	484	230	3,100	7.9
Mar. 21-31	48.0		18		82	48	320		231	420	332	1.3	1.3		1,340	1.82	174	402	212	2,190	8.3
Apr. 1-4, 7-10	24.6		23		68	43	301		242	337	318	.7	.5		1,210	1.65	80	346	148	2,030	8.2
Apr. 5-6	18.0		16		72	50	433		223	405	510	1.0	2.0		1,600	2.18	78	385	202	2,720	8.3
Apr. 11-13, May 13, 14																					
Apr. 11-13, May 13, 14 (12 p.m. to 8 a.m.)	8.79		22		70	35	269		248	325	255	.7	.2		1,100	1.50	26	318	116	1,910	8.0
May 14 (8 a.m. to 12 p.m.), 15, 16 (12 p.m. to 12 m.)	5, 645		16		26	8.7	71		189	41	40	--	1.2		a 297	.40	4,530	101	0	515	7.8
May 16 (12 m. to 12 p.m.), 17-20	4, 793		17		46	18	155		213	158	130	.6	2.5		635	.86	8,220	189	14	1,060	7.9
May 21-26, 31	283		22		50	20	176		207	194	150	1.0	4.2		724	.98	553	207	38	1,200	8.1
May 27-30	124		27		68	33	264		223	306	266	.9	1.5		1,080	1.47	362	305	122	1,770	8.1
June 1-3	67.3		23		91	47	380		244	441	410	1.1	8.5		1,520	2.07	276	420	220	2,480	8.1
June 4, 5 (12 p.m. to 11 a.m.), 7-11	222		23		51	23	242		243	266	188	.9	4.5		936	1.27	561	222	22	1,500	8.1
June 5 (11 a.m. to 12 p.m.), 6, 12-15, 18-19, 30	587		20		33	13	112		174	108	83	.8	5.9		468	.64	716	136	0	785	8.1
July 1-2, 3 (12 p.m. to 12 m.), 5-7, 11-12, 13 (12 p.m. to 4 p.m.), 9 a.m. to 4 p.m.)	95.9		22		47	20	224		232	247	166	.9	4.5		848	1.15	220	200	10	1,390	8.1
July 3 (12 m. to 12 p.m.), 4, 8-10, 13 (6 a.m. to 9 a.m., 6 p.m. to 12 p.m.), 14, 21-25																					
July 13 (1 a.m. to 6 a.m., 4 p.m. to 6 p.m.), 15-20, 26-31	707		20		41	18	106		192	121	85	.9	.5		512	.70	977	176	19	830	8.2
Aug. 1-3																					
Aug. 1-3 (12 p.m. to 12 p.m.), 15-20, 26-31	853		22		51	22	166		233	176	141	1.0	1.0		725	.99	1,670	218	26	1,160	8.2
Aug. 1-3 (12 p.m. to 12 p.m.), 15-20, 26-31	296		18		48	21	145		136	202	111	.9	.5		690	.94	555	206	54	1,060	8.1

a Sum of determined constituents.

b Residue on evaporation.

Aug. 1-3, 5, 10,	231	15	47	19	145	172	186	122	0.8	1.8	664	0.90	414	196	54	62	1,030	7.8
Aug. 4, 6-9,	27.8	21	62	39	279	222	323	282	1.0	2.8	1,120	1.52	84	315	133	66	1,860	7.8
Aug. 11-12,	240	20	34	14	66	170	80	40	1.4	3.5	350	.48	227	142	3	50	586	7.9
Aug. 13-15,	51.3	20	46	19	122	186	155	98	1.1	3.0	575	.78	80	193	40	58	923	8.0
Aug. 25-31,	38.3	20	78	38	314	251	451	230	.9	3.0	1,280	1.74	132	350	145	66	2,070	8.1
Sept. 1-6,	232	15	28	11	101	146	109	70	--	4.5	413	.56	281	135	0	66	686	8.2
Sept. 9-12, 19,	36.2	15	52	40	229	182	402	210	.7	1.5	1,070	1.46	105	369	220	57	1,720	8.1
Weighted average	c 196	18	44	18	147	208	155	121	0.8	2.2	622	0.85	329	184	14	63	1,020	--

c Mean discharge at gaging station was 196.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR TASCOSA, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

[illegible]

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR AMARILLO, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 87 and 287, 2,000 feet downstream from Pitcher Creek, 2.0 miles downstream from Panhandle and Santa Fe Railway bridge, and 19 miles north of Amarillo, Potter County.

RECORDS AVAILABLE.--19 287 square miles.

Water temperatures: August 1949 to September 1951.

Sediment records: August 1949 to September 1951.

Hardness: Maximum, 696 ppm Jan. 21-31; minimum, 90 ppm Aug. 10-12.

Specific conductance: Maximum daily, 3,630 micromhos Jan. 30; minimum daily, 469 micromhos Oct. 1.

Water temperatures: Maximum observed, 95°F June 29; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 48,400 ppm July 14; maximum observed, 89,000 ppm July 13; minimum daily, 7 ppm Oct. 23.

Sediment loads: Maximum daily, 2,130,000 tons May 16; minimum daily, less than 0.5 ton on many days.

EXTREMES, 1948-51.--Water temperatures (1949-51): Maximum observed, 95°F June 29, 1951; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 48,600 ppm July 7, 1950 (figure of 142,000 ppm for Sept. 8, 1950, published in WSP 1188, should be 14,200 ppm); minimum daily, 0 ppm on many days in 1950.

EXTREMES, 1948-51.--Water temperatures (1949-51): Maximum observed, 95°F June 29, 1951; minimum, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents unless noted otherwise. Residue on evaporation of daily samples available in district office at Austin, Tex.

Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-magnesium		
Oct. 1-3, 1950	1,084		16		34		13		163	99	74	0.5	4.0		434	0.59	1,270	138		5	712
Oct. 4-10	67.4		23		87		33		223	297	240	1.1	7.3		1,010	1.37	164	332	170	36	1,600
Oct. 11-20	25.2		29		134		50		249	440	410	1.1	21		1,760	2.39	173	850	336	55	2,450
Oct. 21-31	17.5		42		186		58		324	429	440	1.2	30		1,630	2.31	87	850	365	55	2,550
Nov. 1-10	16.2		56		141		50		298	356	388	2.2	46		1,480	2.02	57	558	314	54	2,400
Nov. 11-20	12.9		52		142		56		306	376	395	2.2	68		1,550	2.11	54	585	334	54	2,440
Dec. 1-10	10.4		57		158		59		329	430	432	--	68		1,680	2.28	47	636	396	53	2,610
Dec. 11-20	16.9		48		165		57		345	474	455	--	46		1,720	2.34	78	646	422	54	2,660
Dec. 21-31	20.9		40		158		55		357	482	455	--	35		1,720	2.34	97	620	394	56	2,660
Jan. 1-10, 1951	23.5		32		148		53		370	482	435	--	34		1,670	2.27	106	588	366	57	2,580
Jan. 11-20	32.1		38		130		52		337	420	415	1.8	27		1,550	2.11	134	538	314	58	2,520
Jan. 21-31	15.1		36		177		62		400	523	520	4.4	66		1,920	2.61	78	696	474	56	3,040
Feb. 1-10	24.9		48		147		54		342	446	425	2.4	56		1,650	2.24	111	599	371	56	2,590
Feb. 11-19	19.3		46		162		58		369	474	475	2.0	45		1,780	2.42	93	642	418	56	2,810
Feb. 20-24	15.0		50		179		59		380	519	505	2.2	54		1,860	2.56	76	689	475	55	2,960
Feb. 25-28	210		23		273		237		287	259	220	1.2	10		1,943	1.32	563	296	275	53	2,640
Mar. 1-10	16.7		53		121		52		286	351	350	3.6	61		1,530	2.04	83	548	307	57	2,430
Mar. 11-20	19.4		46		124		56		311	516	483	3.2	53		1,700	2.31	220	553	339	60	2,660
Mar. 21-31	46.0		44		126		56		316	514	430	1.6	19		1,700	2.31	220	553	339	60	2,660

a. Residue on evaporation.

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, mg.	Non-carbonate			
Apr. 1-10, 1951...	23.3		57		137	62	370		281	484	455	2.0	24		1,730	2.35	109	597	366	57	8.3
Apr. 11-20.....	8.90		69		77	44	218		339	148	248	3.6	72		1,050	1.43	25	373	95	56	7.7
Apr. 21-30.....	12.1		70		78	44	235		351	138	278	3.2	68		1,090	1.48	36	376	88	58	7.7
May 1-10.....	8.20		66		74	42	204		346	140	225	3.2	57		a, 1,000	1.36	22	357	74	55	7.5
May 11-14.....	120		58		70	40	184		297	149	212	7.5	27		943	1.28	306	339	96	54	8.3
May 15, 22-24, 29	342		25		57	24	169		207	197	162	1.2	2.5		764	1.04	708	240	71	60	8.2
May 25-28, 30-31..	119.		29		73	33	231		212	277	250	1.2	4.0		1,000	1.36	321	318	144	61	8.2
June 1-4, 5 (12 p. m. to 12 m.), 9-10...	113		31		90	40	234		233	309	268	1.6	4.5		1,090	1.48	333	389	198	57	8.0
June 5 (12 m. to 12 p. m.), 6-8.....	585		28		43	18	147		193	148	130	1.6	2.0		643	.87	1,020	182	24	64	8.1
June 11, 14, 18-30,			23		56	27	199		208	231	190	1.2	1.2		854	1.16	215	250	80	63	8.1
July 12-13, 15-17...	93.2		20		35	15	105		183	107	79	1.2	1.0		463	.63	610	149	0	60	8.0
July 2, 5, 13 (12 m. to 5 p. m.), 14-15,	1,759		22		38	17	118		187	133	88	2.0	1.5		541	.74	2,570	165	12	61	7.8
July 3-4, 6-12, 13 (8 p. m. to 12 p. m.)	128		33		71	34	234		253	244	250	2.0	7.5		1,000	1.36	346	317	110	62	8.1
July 13 (12 p. m. to 9 a. m.), 5 p. m. to 8 p. m.).....	1,732		28		178	59	359		135	642	482	2.0	4.5		1,820	2.48	8,510	686	576	53	8.2
July 13 (8 a. m. to 12 m.), 16-20...	564		22		47	21	170		182	207	136	2.0	3.5		731	.99	1,110	204	46	64	7.9
July 21-22, 23 (12 p. m. to 6 a. m.), 26-31.....	235		19		44	19	170		172	210	136	1.2	2.5		694	.94	440	188	47	66	7.8
July 23 (8 a. m. to 12 p. m.), 24-25...	1,144		17		25	12	117		156	116	80	1.2	2.2		472	.64	1,460	112	0	69	8.0
Aug. 1-5, 10 (12 p. m. to 6 p. m.)...	52.1		37		76	35	180		238	254	180	2.4	6.0		980	1.33	138	334	138	54	7.9
Aug. 6 (5 p. m. to 8 p. m.).....	553		16		21	9.1	90		140	85	56	1.2	1.5		385	.52	575	90	0	69	7.7
Aug. 7 (5 p. m. to 8 p. m.), 11-12...	65.5		28		54	24	112		200	154	102	2.0	4.5		595	.81	1,105	233	69	51	8.0
Aug. 13-14.....	12.5		55		70	42	170		286	208	172	3.2	8.5		905	1.23	31	347	104	52	8.1

a Residue on evaporation.

Aug. 21, 25, 26 (12 p. m. to 9 a. m., 12 p. m. to 12 p. m.), 27-28, 22-24, 29	43.8	34	45	23	142	222	156	110	1.6	14	678	.92	80	207	25	60	1,060	8.0
Aug. 26 (9 a. m. to 12 m.), 30-31	11.4	57	98	48	193	272	288	225	2.8	17	1,060	1.44	33	442	219	49	1,890	8.0
Sept. 1-3, 7,	25.9	34	122	50	253	223	480	322	2.0	6.3	1,420	1.93	99	510	328	56	2,220	8.0
Sept. 4-6, 8-10	16.0	49	96	47	230	320	308	238	3.2	7.5	1,140	1.55	49	433	171	54	1,800	8.0
Sept. 11-20	104	32	42	22	146	243	155	102	2.0	4.0	671	.91	188	196	100	62	1,010	6.5
Sept. 21-30	14.0	66	80	43	180	343	196	178	3.6	27	976	1.33	37	376	95	51	1,490	6.8
Weighted average ..	9.11	70	50	41	150	374	129	120	3.6	.0	780	1.06	19	294	0	53	1,220	7.0
Weighted average ..	198	22	48	20	146	202	158	130	1.0	4.9	640	0.87	342	202	36	61	1,040	--

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement generally between 6 and 8 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	51	36	37	32	40	--	44	65	a 83	75	--
2	65	45	41	36	32	49	38	45	55	61	75	--
3	55	38	32	32	32	34	42	43	54	79	71	--
4	55	40	39	33	33	36	45	40	56	a 84	73	--
5	60	41	32	34	34	38	48	52	60	73	78	--
6	64	43	--	32	34	40	48	51	63	85	79	--
7	59	46	32	--	--	37	41	49	65	69	86	--
8	51	--	33	32	34	44	42	50	61	74	77	--
9	52	--	33	33	35	36	42	54	62	72	78	--
10	57	--	32	33	39	46	45	51	65	72	79	--
11	54	--	34	34	44	32	34	53	63	74	73	--
12	54	--	39	33	44	32	35	55	60	73	78	--
13	58	--	35	32	32	33	38	57	64	70	77	--
14	55	--	35	32	--	37	41	64	62	74	76	--
15	58	--	35	32	32	35	40	63	65	73	69	--
16	57	35	36	35	32	40	38	--	63	76	73	--
17	57	36	35	37	36	44	42	--	68	82	a 89	--
18	55	38	33	36	38	32	47	--	68	a 88	81	a 53
19	54	44	34	35	36	34	38	--	72	79	71	a 58
20	56	35	35	36	40	36	53	--	74	78	a 89	a 59
21	54	41	33	34	35	36	45	--	a 83	76	88	a 40
22	52	40	34	34	38	42	45	--	a 87	a 92	a 74	a 51
23	49	38	34	35	44	42	46	--	a 84	67	a 78	a 56
24	51	32	33	33	49	39	55	--	a 76	71	71	a 61
25	48	32	33	32	43	40	49	--	a 79	76	76	a 58
26	52	36	33	32	46	47	55	--	a 82	76	76	a 60
27	48	38	33	34	43	48	50	65	a 86	74	--	--
28	48	37	32	32	40	44	58	64	a 86	a 89	--	--
29	48	37	35	32	--	35	57	67	a 95	79	--	--
30	47	37	35	32	--	37	48	69	a 75	73	--	--
31	54	--	34	32	--	45	--	65	--	73	--	--
Average	54	--	34	34	38	39	45	--	70	76	77	--

a Reading obtained during afternoon.

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2,630	15,300	s 106,000	24	63	4	13	27	1
2-----	477	7,000	9,020	20	23	1	11	17	1
3-----	145	4,000	1,970	18	28	1	11	13	(t)
4-----	98	1,900	503	16	15	1	11	14	(t)
5-----	110	1,170	347	16	25	1	10	62	2
6-----	90	1,270	309	15	20	1	9	43	1
7-----	52	920	129	16	11	(t)	8	69	1
8-----	36	494	48	15	20	a 1	9	43	1
9-----	43	470	55	13	26	1	10	33	1
10-----	43	615	71	12	20	a 1	12	60	2
11-----	40	316	34	14	20	a 1	15	21	1
12-----	38	370	38	17	20	a 1	15	62	3
13-----	32	200	17	15	15	a 1	14	48	2
14-----	26	187	13	16	15	a 1	15	27	1
15-----	22	205	12	14	15	a 1	15	42	2
16-----	19	96	5	13	65	2	16	55	2
17-----	19	74	4	14	8	(t)	18	29	1
18-----	18	54	3	14	15	1	19	12	1
19-----	19	94	5	14	10	(t)	20	22	1
20-----	19	26	1	11	10	(t)	22	32	2
21-----	19	30	a 2	12	12	(t)	22	28	2
22-----	22	30	2	13	37	1	24	14	1
23-----	20	7	(t)	13	27	1	24	25	2
24-----	19	24	1	11	29	1	24	32	2
25-----	18	13	1	13	12	(t)	22	30	2
26-----	16	25	1	14	8	(t)	20	41	2
27-----	15	22	1	13	11	(t)	19	24	1
28-----	15	25	a 1	14	14	1	18	55	3
29-----	15	30	1	13	27	1	20	41	2
30-----	14	8	(t)	13	11	(t)	19	45	2
31-----	20	30	2	--	--	--	18	21	1
Total-	4,169	--	116,196	436	--	25	503	--	46
Day	January			February			March		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1-----	16	10	(t)	4			38		
2-----	14	40	2	5	42	1	28		
3-----	16	40	2	10			19		
4-----	22	104	6	20			16	82	5
5-----	30	86	7	30			14		
6-----	25	106	7	30			9.0		
7-----	20	20	1	34	42	4	10		
8-----	24	46	3	40			11		
9-----	38			40			11		
10-----	30			36			11	73	2
11-----	30	59	5	38			9.0		
12-----	28			32			6.0		
13-----	28			20			10		
14-----	26			10	70	4	10		
15-----	28			10			10		
16-----	34			15			8.0	44	1
17-----	34			17			7.0		
18-----	43	42	4	17			24		
19-----	38			15			46		
20-----	32			16			64		
21-----	28			13	18	1	55	126	14
22-----	22	21	1	12			40		
23-----	19			12			26		
24-----	18			22	300	18	18		
25-----	17			284	5,200	3,990	17		
26-----	16	17	1	320	4,800	4,150	26		
27-----	15			160	2,200	950	36		
28-----	12			74	1,100	a 220	61	148	22
29-----	8			--	--	--	98		
30-----	6	42	1	--	--	--	90		
31-----	5			--	--	--	61		
Total-	722	--	93	1,336	--	9,393	889	--	286

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Suspended sediment, water year October 1900 to September 1901—Continued											
Day	Mean discharge (cfs)	April		Mean discharge (cfs)	May		Mean discharge (cfs)	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-----	38	57	5	10	17	(t)	86	2,300	534		
2-----	24			8.9			59	7,200	1,150		
3-----	18			8.3			57	5,300	816		
4-----	17			8.3			45	800	97		
5-----	17			8.3			576	9,020	s 25,000		
6-----	19	43	3	8.9	10	(t)	732	14,200	s 31,100		
7-----	38			8.3			331	6,280	s 6,300		
8-----	32			7.0			557	8,050	s 12,600		
9-----	17			7.0			213	7,800	4,490		
10-----	13			7.0			128	7,700	2,660		
11-----	8.0	44	1	7.6	29	1	115	9,890	s 3,800		
12-----	8.0			12			433	16,400	s 19,500		
13-----	8.0			9.6			228	13,400	8,250		
14-----	8.0			450			10,900	s 57,800	98	8,500	2,250
15-----	9.0			1,370			23,200	s 124,000	339	10,100	s 10,500
16-----	7.0	10	(t)	13,800	46,500	s 2,130,000	1,030	21,800	s 68,500		
17-----	8.0			8,330	44,200	s 1,080,000	410	13,000	s 15,300		
18-----	10			3,070	25,000	a 207,000	369	15,200	s 17,500		
19-----	11			3,740	23,000	a 232,000	270	15,500	s 11,400		
20-----	12			3,030	20,500	a 168,000	141	17,000	6,470		
21-----	12	10	(t)	642	15,300	a 26,500	84	12,500	2,840		
22-----	12			556	14,000	a 21,000	62	10,600	1,770		
23-----	11			326	8,000	a 7,040	48	8,200	1,060		
24-----	10			155	4,500	a 1,880	57	10,200	1,760		
25-----	11			134	3,000	a 1,080	49	6,500	860		
26-----	14	10	(at)	114	2,000	616	47	5,500	698		
27-----	14			79	2,000	427	40	4,500	486		
28-----	13			271	16,000	s 16,400	29	500	39		
29-----	13			88	4,000	950	25	350	a 24		
30-----	11			60	400	65	24	240	16		
31-----	--	--	--	54	1,000	146	--	--	--		
Total--	4,430	--	38	36,380.2	--	4,074,909	6,682	--	257,770		
September											
1-----	34	1,800	s 505	97	3,500	917	14	17,000	643		
2-----	675	28,800	s 64,200	69	1,700	317	9.6	7,000	181		
3-----	188	8,500	s 4,700	106	3,300	944	7.6	672	13		
4-----	74	1,700	340	81	2,500	547	7.6				
5-----	36	500	49	48	500	65	5.8				
6-----	23	212	13	21	304	17	9.6	1,000	a 26		
7-----	24	178	12	14	211	8	33	1,440	128		
8-----	18	156	8	12	164	5	470	20,500	s 33,700		
9-----	13	75	3	11	171	5	97	5,000	1,310		
10-----	10	126	3	835	15,000	s 131,000	34	1,000	92		
11-----	10	93	3	313	15,600	s 14,300	23	181	11		
12-----	10	116	3	166	7,800	3,500	18				
13-----	2,340	44,100	s 481,000	91	2,700	663	16				
14-----	3,870	48,400	s 560,000	40	1,200	130	15				
15-----	2,410	31,800	s 203,000	23	277	17	14	168	7		
16-----	1,740	29,400	s 128,000	18	170	8	14	45	1		
17-----	408	18,700	20,600	12	173	5	11				
18-----	274	15,700	11,600	8.3		10	10				
19-----	131	11,800	4,170	8.3		8.9	9.6				
20-----	77	8,500	1,770	5.2		9.6					
21-----	52	6,700	941	9.6	124	2	10	66	2		
22-----	34	3,700	340	20		3	10				
23-----	885	23,100	s 71,500	9.6		110	8.9				
24-----	1,380	23,900	s 91,000	7.0		3	9.6	45	1		
25-----	945	19,500	49,800	8.9	9,900	s 5,850	8.9	30	a 1		
26-----	818	16,500	36,400	152		s 913	8.9				
27-----	400	13,000	14,000	46		611	8.9	21	1		
28-----	245	10,300	6,810	15		24	8.3	23	1		
29-----	166	6,700	3,000	8.9	20,100	977	7.6	19	(t)		
30-----	95	3,800	975	19		--	--	--	--		
31-----	63	1,800	306	18		--	--	--	--		
Total--	17,448	--	1,755,051	2,292.8	--	160,286	918.8	--	36,179		
Total discharge for year (cfs-days)									72,219.8		
Total load for year (tons)									6,412,272		

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Particle-size analyses of suspended sediment, May to September 1951
(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	Instantaneous discharge (cfs)	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 14, 1951.....	6:45 & 7:40 p. m.	1,940	36,600	3,490	--	57	--	74	--	--	86	92	99			PSWCM
May 14.....	10:05 p. m.	596	28,200	4,270	--	57	--	71	--	--	82	89	98			PSWCM
May 15.....	4:20 p. m.	7,000	45,200	2,640	--	39	--	55	--	--	71	88	99			PSWCM
May 16.....	10:30 p. m.	20,400	49,100	3,290	--	30	--	41	--	--	66	81	95			PSWCM
June 6.....	6:45 a. m.	516	19,800	5,000	--	38	--	--	42	--	48	64	80	99		PSWCM
June 6.....	9:30 a. m.	870	17,700	3,060	44	47	57	58	70	77	87	98				PSWCM
June 6.....	9:30 a. m.	870	17,700	3,320	2	2	13	63	67	77	87	98				PSN
June 6.....	9:30 a. m.	870	17,700	3,640	43	52	58	65	72	77	87	98				BSWCM
June 6.....	9:30 a. m.	870	17,700	3,350	0	2	10	--	74	77	87	98				ESN
June 6.....	5:25 p. m.	975	13,900	3,480	--	61	--	--	79	--	85	91	97			PSWCM
June 10.....	7:25 a. m.	134	17,250	7,290	--	87	--	--	91	--	97	99	100			PSWCM
June 12.....	10:30 a. m.	347	14,500	4,375	--	61	--	--	75	--	84	93	99			PSWCM
June 15.....	7:50 a. m.	400	10,300	3,700	--	54	--	--	58	--	77	90	99			PSWCM
June 16.....	6:10 a. m.	1,160	34,000	3,320	42	45	53	58	59	81	92	99				PSWCM
June 16.....	6:10 a. m.	1,160	34,000	3,220	--	0	11	61	71	81	92	99				PSN
June 16.....	6:10 a. m.	1,160	34,000	2,440	40	49	58	64	72	81	92	99				BSWCM
June 16.....	6:10 a. m.	1,160	34,000	2,270	--	0	4	--	76	81	92	99				ESN
June 16.....	9:20 a. m.	1,450	27,100	3,220	--	41	--	59	--	--	84	94	99			PSWCM
June 18.....	6:00 a. m.	152	9,740	3,570	--	72	--	81	--	--	91	95	99			PSWCM
June 22.....	2:30 p. m.	58	10,600	4,740	--	91	--	--	94	--	100	--	--			PSWCM
June 26.....	6:40 p. m.	58	8,670	3,520	--	88	--	--	92	--	99	99	100			PSWCM
July 1.....	11:05 p. m.	93	10,400	3,100	--	44	--	--	61	--	86	96	100			PSWCM
July 1.....	11:30 p. m.	106	12,200	3,660	--	42	--	--	64	--	84	97	100			PSWCM
July 2.....	6:30 a. m.	788	23,000	3,600	--	31	--	--	45	--	74	88	98			PSWCM
July 2.....	10:55 a. m.	1,410	46,900	3,480	--	44	--	--	46	--	81	93	99			PSWCM
July 2.....	2:15 p. m.	855	33,700	4,580	--	63	--	--	84	--	91	97	99			PSWCM
July 4.....	6:05 p. m.	60	1,500	2,080	--	58	--	--	71	--	93	97	99			PSWCM

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Particle-size analyses of suspended sediment, May to September 1951--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	Instantaneous discharge (cfs)	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 13, 1951.....	8:55 a. m.	1,840	51,000	4,100	--	38	--	56	--	78	87	98		100		PSWCM
July 13.....	8:30 p. m.	6,260	68,700	3,760	--	47	--	72	--	87	92	98		99		PSWCM
July 14.....	9:20 a. m.	4,200	62,300	3,560	--	32	--	41	--	54	72	86		99		PSWCM
July 14.....	6:50 p. m.	2,570	39,000	3,840	38	53	54	62	71	76	78	89		100		PSWCM
July 14.....	6:50 p. m.	2,570	39,000	4,220	0	1	5	60	65	76	78	89		100		PSN
July 14.....	6:50 p. m.	2,570	39,000	2,440	45	52	61	64	69	76	78	89		100		BSWCM
July 14.....	6:50 p. m.	2,570	39,000	2,570	0	1	8	--	72	76	78	89		100		BSN
July 16.....	9:45 a. m.	2,260	30,400	3,700	--	70	--	85	--	92	97	99		100		PSWCM
July 20.....	5:50 a. m.	70	9,650	3,720	--	64	--	67	--	74	79	86		97		PSWCM
July 23.....	5:50 a. m.	840	50,700	3,150	45	50	61	73	77	82	92	98		100		PSWCM
July 23.....	5:50 a. m.	840	50,700	6,540	2	50	61	76	80	82	92	98		100		PSN
July 23.....	5:50 a. m.	840	50,700	2,480	48	61	67	74	82	92	98	98		100		BSWCM
July 23.....	5:50 a. m.	840	50,700	1,120	5	11	64	73	78	82	92	98		100		BSN
July 23.....	7:05 p. m.	1,480	31,700	3,430	--	55	--	75	--	86	95	99		100		PSWCM
July 23.....	9:45 p. m.	2,030	30,000	3,330	--	53	--	74	--	89	95	100		--		PSWCM
July 24.....	10:15 a. m.	687	14,100	3,460	51	56	77	81	88	93	97	100		--		PSWCM
July 24.....	10:15 a. m.	687	14,100	3,200	0	3	24	85	90	93	97	100		--		PSN
July 24.....	10:15 a. m.	687	14,100	3,400	59	70	82	86	89	93	97	100		--		BSWCM
July 24.....	10:15 a. m.	687	14,100	2,910	--	45	24	81	87	93	96	99		100		BSN
July 24.....	2:10 p. m.	2,260	26,400	3,730	--	45	--	68	--	90	96	99		100		PSWCM
July 25.....	5:00 p. m.	1,160	18,200	4,040	--	74	--	82	--	92	98	99		100		PSWCM
July 27.....	9:15 a. m.	385	11,200	2,930	--	90	--	93	--	97	99	100		100		PSWCM
July 31.....	6:25 p. m.	60	2,040	2,840	--	55	--	63	--	95	98	99		100		PSWCM
Aug. 10.....	7:45 p. m.	2,230	51,700	3,260	--	47	--	55	--	78	88	96		100		PSWCM
Aug. 11.....	1:40 a. m.	546	28,400	6,230	69	76	79	83	83	85	93	99		100		PSWCM
Aug. 11.....	1:40 a. m.	546	28,400	6,380	47	52	66	79	84	85	93	99		100		PSN
Aug. 11.....	1:40 a. m.	546	28,400	1,760	54	61	70	75	79	85	93	99		100		BSWCM

Aug. 11.....	1:40 a.m.	546	29,400	2,580	53	56	71	81	83	85	93	99	100	ESN
Aug. 11.....	8:20 a.m.	347	18,800	3,300	--	72	--	80	--	83	91	98	100	PSWCM
Aug. 11.....	6:10 p.m.	213	10,400	4,210	--	73	--	83	--	86	94	99	100	PSWCM
Sept. 8.....	10:45 a.m.	516	21,100	4,360	--	76	--	88	--	--	96	99	100	PSWCM

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR BORGES, TEX.

LOCATION --At bridge on State Highway 117, 4½ miles north of Borges, Hutchinson County.

RECORDS AVAILABLE --Chemical analyses: September 1950 to September, 1951.

REMARKS --Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex.

No discharge records available for this station.

Chemical analyses, in parts per million, September 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (sum)	Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos/cm at 25°C)	pH
														Calcium, mg./l.	Non-carbonate			
Sept. 12, 1950	--	--	--	--	--	92	171	97	70	--	2.0	--	142	2	58	696	8.2
Sept. 14-20	19	19	47	19	138	138	185	170	116	0.6	3.5	620	196	44	61	1,010	8.1
Sept. 22-30	17	48	19	19	149	149	157	144	170	.4	3.5	640	198	70	62	1,100	7.9
Oct. 1, 4-8	19	15	54	21	132	132	182	156	136	.5	3.0	627	221	72	56	1,030	7.8
Oct. 2-3, 7-10	15	15	32	12	94	94	150	95	60	.5	5.0	392	130	6	58	641	7.8
Oct. 11-14	15	32	13	13	85	85	158	95	62	.4	1.5	402	134	4	58	650	7.9
Oct. 15-16, 18	29	100	39	39	368	368	208	315	550	.7	3.0	1,530	410	243	68	2,600	7.8
Oct. 17-19-20	11	116	39	62	446	446	316	446	940	.4	2.5	2,420	656	386	68	4,060	7.9
Oct. 21-31	22	122	89	122	650	650	354	456	960	.5	2.0	2,450	670	397	68	4,100	8.0
Nov. 1-10	22	100	47	47	325	325	215	268	490	.8	2.0	1,360	443	267	61	2,290	7.8
Nov. 11-20	29	107	49	49	403	403	210	310	600	.5	4.5	1,610	468	296	65	2,760	7.8
Nov. 21-30	28	108	49	49	446	446	207	332	655	.4	5.0	1,730	471	302	67	2,900	7.8
Dec. 1-10	29	110	49	49	446	446	207	335	655	.5	5.0	1,730	476	306	67	2,910	7.8
Dec. 11-20	29	110	49	49	440	440	210	340	640	--	4.0	1,720	476	304	67	2,900	7.8
Dec. 21-31	26	107	49	49	313	313	240	329	432	--	2.5	1,380	468	272	59	2,260	8.0
Jan. 1-10, 1951	25	106	49	49	310	310	236	332	425	--	2.0	1,360	466	272	59	2,240	7.9
Jan. 11-20	28	110	46	46	298	298	231	323	410	1.1	6.0	1,340	464	274	58	2,160	8.3
Jan. 21, 23-26, 30-31	28	112	46	46	277	277	a226 b224	323 322	382 380	1.1 1.2	9.0	1,290	468	284	56	2,080	8.3
Feb. 1-10	29	113	45	45	275	275	b224	322	380	1.2	8.0	1,280	467	284	56	2,090	8.3
Feb. 11-13, 16-19	27	111	45	45	277	277	224	321	380	1.1	10	1,280	462	278	57	2,080	8.2
Feb. 20-28	30	86	42	42	315	315	224	308	395	1.2	9.2	1,300	397	204	64	2,180	8.1
Mar. 1-2, 4-10	30	88	38	38	332	332	230	321	400	1.2	8.5	1,330	376	187	66	2,190	8.0
Mar. 11-14, 16-20	32	85	42	42	324	324	226	321	395	1.2	7.2	1,310	387	197	64	2,180	8.1
Mar. 21-31	32	86	42	42	324	324	226	321	395	1.2	5.0	1,310	382	194	65	2,180	7.9
Apr. 1-10	43	115	54	54	917	917	110	468	1,380	2.0	2.0	3,010	509	419	80	5,200	7.3
Apr. 11-20	43	966	124	124	966	966	86	522	1,440	2.0	1.5	3,200	552	482	79	5,460	7.0
Apr. 21-25	41	130	62	62	988	988	68	540	1,460	2.0	1.5	3,240	580	524	78	5,570	6.9
Apr. 26-31	67	140	58	58	987	987	96	537	1,480	2.2	4.0	3,320	588	510	73	5,760	8.0

a Includes equivalent of 4 parts per million of carbonate (CO₃).

b Includes equivalent of 3 parts per million of carbonate (CO₃).

May 13-20.....	112	44	445	188	358	635	1.2	4.5	1,710	460	306	68	2,920	8.3
May 21-31.....	120	45	463	201	374	660	1.9	4.5	1,790	484	320	67	3,060	8.3
June 1-10.....	122	45	469	203	379	668	1.9	4.0	1,820	490	323	68	3,110	8.2
June 11-20.....	126	50	683	188	417	900	2.2	3.0	2,320	524	384	73	4,000	8.2
June 21-30.....	128	50	702	177	410	1,040	3.2	3.5	2,460	525	380	74	4,260	8.1
July 1-10.....	128	49	706	178	415	1,040	3.0	3.0	2,470	521	375	75	4,260	8.1
July 11-13.....	133	51	691	183	400	1,040	3.0	3.0	2,450	542	392	74	4,270	8.0
July 14-20.....	80	33	215	164	279	263	1.2	2.8	c1,050	335	200	58	1,680	7.6
July 21-31.....	40	17	188	197	189	154	.8	2.0	758	170	8	71	1,210	7.8
Aug. 1-10.....	40	17	188	198	187	155	1.0	2.0	764	170	8	71	1,210	7.8
Aug. 15-20.....	684	477	594	220	418	3,080	.4	--	5,390	3,670	3,490	26	9,280	7.8
Aug. 21-31.....	685	483	593	226	436	3,080	.4	--	5,410	3,700	3,510	26	9,380	7.7
Sept. 1-10.....	695	489	578	222	430	3,100	.4	--	5,430	3,740	3,560	25	9,430	7.8
Sept. 11-20.....	680	489	611	187	423	3,150	.2	--	5,470	3,710	3,550	26	9,460	7.8
Sept. 21-30.....	698	504	591	200	431	3,180	.4	--	5,530	3,810	3,650	25	9,580	7.8

c Residue on evaporation.

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER AT BRIDGEPORT, OKLA.

LOCATION.--At gaging station at Chicago, Rock Island & Pacific Railway bridge, 2½ miles upstream from Lumpmouth Creek, and 1 mile north of Bridgeport, Caddo County.

DRAINAGE AREA.--25,071 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1951.

Water temperatures: October 1948 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,600 ppm Jan. 30; minimum, 288 ppm Sept. 11-13.

Hardness: Maximum, 778 ppm Jan. 30; minimum, 160 ppm June 10.

Specific conductance: Maximum daily, 428 micromhos Sept. 11.

Water temperatures: Maximum, 96° F Aug. 19; minimum, freezing point on many days during November to March.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 1,880 ppm June 20, 1950; minimum, 278 ppm May 9-10, 1950.

Hardness: Maximum, 778 ppm Jan. 30, 1951; minimum, 160 ppm June 10, 1951.

Specific conductance: Maximum, 96° F, 3,000 micromhos June 27, 1951; minimum daily, 353 micromhos May 9, 1950.

Water temperatures: Maximum, 96° F, 19, 1951; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonyl (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Calcium, nesum	Non-carbonate			
Oct. 1-10, 1950.....	352	13	0.00	666	22135	5.6	183	0	165	150	1.2	1.8	1.8	--	667 0.91	634	255	105	53	1,090	7.6
Oct. 11-20.....	51.6	20	.00	94	25 97	5.2	229	0	220	98	.7	1.4	1.4	--	700 .95	98	338	150	38	1,050	8.0
Oct. 21-31.....	17.6	--	--	128	28 30	3.8	268	0	237	22	--	2.4	2.4	--	643 .87	31	434	215	13	874	--
Nov. 1-10.....	19.1	23	.00	138	28 33	3.8	292	0	247	16	.5	2.3	2.3	--	658 .89	34	460	220	13	908	7.9
Nov. 11-20.....	20.0	--	--	144	28 28	2.8	298	0	258	15	--	2.2	2.2	--	669 .91	36	474	230	11	913	--
Nov. 21-30.....	21.4	19	.00	148	32 32	3.8	303	0	279	16	.5	2.0	2.0	--	708 .96	41	500	252	12	971	8.2
Dec. 1-5, 10.....	23.3	--	--	124	31 56	3.06	306	0	274	15	--	2.9	2.9	--	689 .94	43	437	186	22	847	--
Dec. 6-10.....	23.2	--	--	122	41 42	3.0	326	0	280	17	.5	3.2	3.2	--	692 .93	55	479	238	12	1,263	--
Dec. 11-20.....	32.3	19	.00	146	28 32	4.4	294	0	328	172	9	1.9	1.9	--	1,010 1.37	176	510	282	38	1,500	8.0
Dec. 21-31.....	64.7	--	--	135	42143	--	277	0	328	172	9	1.9	1.9	--	916 1.25	159	466	274	37	1,410	--
Jan. 1-4, 1951.....	64.2	--	--	124	38 127	3.8	234	0	320	165	--	5.0	5.0	--	1,050 1.43	194	512	297	39	1,600	--
Jan. 5-10.....	68.3	--	--	134	43 153	262	262	0	330	202	--	1.9	1.9	--	1,030 1.40	656	489	282	41	1,570	--
Jan. 11-20.....	236	--	--	130	40 153	253	253	0	305	210	--	1.7	1.7	--	1,070 1.46	370	460	248	46	1,660	--
Jan. 21-27.....	128	--	--	120	39 180	259	259	0	281	245	--	4.8	4.8	--	1,600 2.18	285	778	472	37	2,300	--
Jan. 28-31.....	66.0	--	--	211	61 213	373	373	0	528	270	--	4.5	4.5	--	1,300 1.77	232	736	428	27	1,790	--
Feb. 1-3.....	66.0	--	--	206	54 128	376	376	0	458	160	--	4	4	--	866 1.18	176	490	286	28	1,250	--
Feb. 4-10.....	75.3	--	--	134	38 87	249	249	0	316	104	--	2.3	2.3	--	1,090 1.48	892	544	324	38	1,660	--
Feb. 11-16.....	303	--	--	142	46 155	268	268	0	352	208	--	7.7	7.7	--	928 1.26	568	458	284	38	1,430	--
Feb. 17-20.....	226	--	--	116	41 130	212	212	0	269	188	--	2.2	2.2	--	1,010 1.37	1,640	472	301	41	1,540	--
Feb. 21-28.....	309	--	--	118	43 152	208	208	0	335	200	--	1.0	1.0	--	1,080 1.46	1,050	440	243	49	1,730	7.9
Mar. 1-10.....	632	15	.00	114	38201	8.0	241	0	299	275	--	2.2	2.2	--	1,000 1.36	218	547	352	34	1,510	--
Mar. 11-20.....	80.6	--	--	145	45 132	236	236	0	326	165	--	1.7	1.7	--	766 1.04	55	490	280	19	1,050	7.9
Mar. 21-31.....	26.7	14	.00	142	33 54	2.8	256	0	326	40	.3	1.7	1.7	--							

Apr. 1-7.....	22.3	--	--	31	29	252	0	309	21	--	2.3	--	732	1.00	44	496	290	11	978	7.8
Apr. 8-10.....	30.7	--	--	148	45	224	0	428	134	--	1.1	--	1,100	1.50	91	592	408	28	1,490	7.8
Apr. 11-17.....	29.3	--	--	163	105	221	0	416	131	--	1.4	--	1,060	1.44	84	576	387	29	1,460	8.2
Apr. 18-20.....	20.3	--	--	150	34	107	0	337	42	--	.9	--	809	1.10	44	514	316	16	1,070	8.4
Apr. 21-30.....	20.2	--	--	150	34	107	0	337	42	--	.9	--	809	1.10	44	514	316	16	1,070	8.4
May 1-10.....	21.1	--	--	148	30	239	7	307	25	--	3.0	--	720	.98	39	473	266	16	967	8.4
May 11-13, 15, 16, 20	114.30	--	--	148	30	239	7	307	25	--	3.0	--	720	.98	39	473	266	16	967	8.4
May 14, 19.....	127.10	--	--	130	27	216	0	273	43	--	2.5	--	762	1.04	43	492	281	15	997	8.1
May 15-17.....	87.30	--	--	122	73	213	4	270	93	--	1.7	--	710	.87	21,910	436	258	17	942	8.1
May 18-27.....	2,743.2	--	--	80	12	112	0	270	93	--	1.7	--	710	.87	21,910	436	258	17	942	8.1
May 28-31.....	437	--	--	134	25	182	0	262	142	--	2.3	--	806	1.10	5,690	392	215	41	1,210	8.0
June 1-2.....	314	--	--	140	33	227	0	309	185	--	2.2	--	1,030	1.40	4,860	488	269	37	1,460	7.9
June 3-7.....	1,910	--	--	134	38	229	8	368	182	--	2.5	--	1,150	1.56	975	490	290	42	1,590	8.6
June 8-9.....	6,480	--	--	90	25	128	6	228	149	--	1.9	--	793	1.08	4,090	328	172	46	1,190	8.6
June 10.....	7,500	--	--	64	19	111	146	8	146	127	2.0	--	636	.86	11,130	238	91	50	959	8.6
June 11, 15, 17.....	2,283	--	--	44	12	50	131	0	79	54	4.2	--	351	.48	7,110	160	52	41	530	--
June 12-14, 16, 18-20	1,153	--	--	78	18	56	133	0	188	60	1.9	--	504	.69	3,110	268	160	31	748	7.6
June 21-30.....	731	--	--	84	22	101	151	0	218	117	3.3	--	666	.91	2,070	300	176	42	1,020	8.0
July 1-2.....	232	--	--	92	23	104	156	0	235	123	4.0	--	706	.96	1,390	324	186	41	1,100	7.9
July 3-10.....	48.2	--	--	74	18	75	154	0	165	86	2.5	--	560	.76	351	268	132	39	838	7.9
July 11-13, 16-18.....	86.7	--	--	134	34	58	182	0	355	58	1.4	--	804	1.09	105	474	326	21	1,100	7.5
July 14-15.....	45.5	--	--	129	36	43	194	0	361	19	2.7	--	718	.98	168	470	311	17	955	8.1
July 19-20.....	2,015	--	--	60	14	20	141	0	111	10	5.6	--	299	.41	37	207	92	17	476	7.4
July 21-24, 30-31.....	197	--	--	102	34	259	213	0	320	318	2.2	--	1,210	1.63	6,560	394	220	59	1,660	7.5
July 25, 28, 29.....	3.7	--	--	98	31	227	204	0	287	215	5.7	--	1,065	1.30	368	471	328	27	1,350	7.1
July 26, 29.....	47.0	--	--	136	32	113	174	0	353	122	2.9	--	767	1.04	97	417	268	27	1,080	7.8

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER AT BRIDGEPORT, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesium	Non-carbonate			
Aug. 1-5, 1951.....	32.4	--	--	82	34	204		196	4	281	230	--	3.5	--	1,030	1.40	90	344	178	56	1,560	8.3
Aug. 6-10.....	12.1	--	--	100	33	47		194	0	269	34	--	1.5	--	655	.89	21	365	226	21	905	7.5
Aug. 11-20.....	11.1	20	0.00	95	26	39	3.4	197	0	235	21	0.3	3.7	0.42	558	.76	17	344	182	20	781	7.6
Aug. 21-31.....	4.51	24	.00	91	26	34	2.7	202	0	220	116	--	2.5	.53	941	.44	6	334	198	16	782	8.1
Sept. 1-6.....	238.53	--	--	166	23	34		184	0	184	140	--	1.0	--	1,030	.68	7	334	198	16	770	8.0
Sept. 7.....	238.3	--	--	122	14	139		182	0	394	140	--	1.0	--	1,322	1.40	692	444	310	40	1,460	8.0
Sept. 8-10.....	265.3	--	--	50	12	25		139	0	98	15	--	3.6	--	1,322	1.40	33	199	85	17	441	8.1
Sept. 11-15.....	253.0	--	--	52	12	25		128	0	104	12	--	3.6	--	288	.39	159	180	74	23	441	7.7
Sept. 16-20.....	25.6	--	--	125	29	83		108	0	408	75	--	3.2	--	836	1.14	120	431	342	31	1,450	7.9
Sept. 21-30.....	8.01	20	.00	98	23	60	2.7	168	0	248	33	--	2.9	--	578	.79	40	339	177	28	1,537	7.7
Weighted average...	655	--	--	106	26	76		191	--	243	90	--	2.0	--	714	0.97	1,260	372	215	31	1,020	--

a Includes equivalent of carbonate values shown above.

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER AT BRIDGEPORT, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	61	38	48	--	43	55	64	77	64	77	78
2	72	50	43	39	32	56	46	62	65	73	83	86
3	57	42	--	35	32	46	56	66	62	79	81	78
4	55	34	38	39	35	44	56	66	64	78	82	82
5	61	45	--	39	35	48	59	69	66	84	87	71
6	64	48	32	32	38	50	63	56	72	79	83	76
7	--	47	32	32	32	40	55	57	68	80	94	72
8	58	48	32	32	34	43	51	66	79	79	77	72
9	58	36	33	35	33	32	58	68	72	83	75	72
10	59	32	33	34	46	40	52	62	67	80	84	70
11	60	35	36	33	47	42	--	66	68	80	75	73
12	60	39	35	35	53	39	54	63	72	79	80	72
13	65	36	33	37	32	36	49	78	75	79	81	63
14	65	53	33	34	--	36	53	66	74	74	79	63
15	66	62	35	37	32	42	59	70	72	86	82	67
16	66	45	34	41	32	43	52	67	79	82	76	63
17	65	46	32	41	37	43	51	61	78	82	83	61
18	64	47	32	38	--	34	61	61	74	82	75	64
19	62	54	33	--	45	35	59	78	79	83	96	64
20	62	36	33	--	43	47	65	71	81	82	80	64
21	58	39	36	32	38	46	59	73	79	79	71	66
22	57	45	38	--	51	53	53	70	82	82	70	54
23	62	35	41	36	49	53	58	70	79	78	73	59
24	61	32	36	--	49	46	66	69	72	77	80	72
25	58	34	41	34	55	42	61	78	76	82	92	65
26	70	34	33	38	49	51	59	68	78	83	92	74
27	62	37	32	--	47	51	72	68	75	82	80	65
28	61	38	38	--	54	49	74	72	78	80	79	54
29	60	37	32	--	--	48	69	78	76	80	80	76
30	69	40	33	32	--	62	63	79	71	87	78	67
31	63	--	35	--	--	52	--	79	--	80	78	--
Average	62	42	35	--	40	45	58	68	74	80	81	69

ARKANSAS RIVER BASIN--Continued

DEEP FORK RIVER NEAR DEWAR, OKLA.

LOCATION.--At bridge on U. S. Highway 266, 3½ miles upstream from Wolf Creek, and 3½ miles east of Dewar, Okmulgee County. DRAINAGE AREA.--2,307 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1951.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 84 ppm May 4; minimum, 206 ppm June 21-25.

Specific conductance: Maximum daily, 3,040 micromhos June 11; minimum daily, 309 micromhos June 19.

Water temperature: Maximum, 86°F July 21, Aug. 7; minimum, 40°F Jan. 30-31, Feb. 1-3.

Hardness: Maximum, 624 ppm Dec. 1-3, 1948; minimum, 40 ppm May 11-12, 14-17, 1950.

Specific conductance: Maximum daily, 4,290 micromhos Dec. 1, 1948; minimum daily, 144 micromhos May 12, 1950.

Water temperatures: Maximum, 86°F July 21, Aug. 7, 1951; minimum, freezing point Jan. 30-31, Feb. 1-3, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Chemical analyses, in parts per million, water year October 1950 to September, 1951																				
Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-magnesium		
Oct. 1-5, 8-10, 1950		--	--	46	21	113		140	0	28	215	--	1.4	569	0.77	202	87	55	1,010	--
Oct. 6-7		--	--	63	23	195		120	0	22	332	--	1.4	884	1.20	252	153	63	1,480	--
Oct. 11-15		--	--	44	20	102		148	0	23	188	--	1.5	664	.68	190	68	54	898	--
Oct. 16-20		--	--	57	31	136		233	0	32	240	--	2.2	902	1.20	270	78	52	1,180	--
Oct. 21-31		9.0	0.00	73	31	177	5.6	228	0	30	332	0.3	3.6	825	1.12	315	128	54	1,450	7.6
Nov. 1-10		7.5	.00	90	38	231	8.4	249	0	33	460	--	1.3	1,020	1.39	380	176	56	1,820	7.8
Nov. 11-20		6.8	.00	96	44	276	9.6	276	0	37	525	.3	.9	1,200	1.63	420	194	58	2,100	7.7
Nov. 21-30		7.4	.10	91	47	266	9.6	311	0	40	485	--	1.1	1,180	1.60	420	165	57	2,070	7.8
Dec. 1-10		7.5	.00	92	45	272	6.0	289	0	39	505	.5	2.5	1,220	1.66	414	178	58	2,130	8.0
Dec. 11-13		--	--	100	50	309		290	0	39	600	--	2.8	1,340	1.82	455	218	60	2,360	--
Dec. 14-20		--	--	90	48	280		303	0	37	495	--	1.9	1,180	1.60	422	174	57	2,070	--
Dec. 21-31, 1951		6.7	.00	98	49	293	6.4	310	0	42	555	.3	5.0	1,280	1.74	448	192	59	2,240	8.1
Jan. 1-10, 1951		--	--	112	48	255		298	0	41	485	--	3.2	1,170	1.59	418	174	57	2,070	--
Jan. 11-14, 20		--	--	80	39	227		252	0	42	485	--	5.6	1,570	2.14	477	270	62	2,680	--
Jan. 15-19		--	--	110	48	291		282	0	52	430	--	6.6	1,020	1.39	360	170	58	1,760	--
Jan. 20-25		--	--	110	45	308		231	0	37	645	--	5.7	1,400	1.90	462	284	59	2,380	--
Jan. 21-26		--	--	111	45	308		218	0	37	645	--	5.7	1,400	1.90	462	284	59	2,380	--
Jan. 27-31		--	--	84	40	216		251	0	33	425	--	4.4	1,030	1.40	374	168	56	1,780	--
Feb. 1-10		6.2	.05	82	45	227	6.8	288	0	41	410	.1	4.2	1,050	1.43	390	154	55	1,840	7.9
Feb. 11-14, 18-19		--	--	80	40	233		245	0	43	440	--	5.2	1,065	1.41	391	154	55	1,770	--
Feb. 15-17		--	--	104	45	311		273	0	38	605	--	5.8	1,300	1.77	444	221	60	2,280	--
Feb. 20		--	--	28	19	94		102	0	41	158	--	4.5	1,394	.54	148	64	58	2,751	--
Feb. 21-28		--	--	27	12	62		81	0	23	113	--	3.0	341	.46	117	50	54	537	--
Mar. 1-5		--	--	48	20	98		140	0	29	190	--	2.5	510	.69	202	88	51	902	--
Mar. 6-10		--	--	61	27	131		198	0	32	248	--	2.9	657	.88	263	101	52	1,160	--
Mar. 11, 18-20		--	--	41	19	82		124	0	28	160	--	2.7	448	.61	180	79	50	1,790	--

Mar. 12-17.....	26	13	43	74	0	19	92	--	2.3	323	.44	118	58	44	478	--
Mar. 21-26.....	55	25	110	170	0	31	218	--	.9	588	.81	240	100	50	1,040	--
Mar. 27-31.....	27	32	143	290	0	34	290	--	.4	768	1.04	311	135	50	1,330	--
Apr. 1-10.....	6.3	00	86	37	205	4.4	245	1	3.3	931	1.27	366	166	57	1,650	7.4
Apr. 11-12.....	--	08	43	258	3	40	392	--	3.3	423	1.63	422	218	54	2,090	8.7
Apr. 13-20.....	--	85	40	217	0	41	430	--	5.0	1,200	1.63	376	166	57	1,770	7.9
Apr. 21-22.....	--	86	38	220	203	0	445	--	2.5	1,040	1.41	370	204	56	1,820	7.8
Apr. 23, 27-30.....	--	53	30	117	207	0	35	215	--	1.8	.65	256	86	50	1,080	7.9
Apr. 24.....	--	119	44	357	145	7	40	765	--	4.4	2.30	478	348	62	2,690	8.5
Apr. 25-26.....	--	69	32	164	182	0	38	332	--	2.9	1.11	304	154	54	1,420	8.1
May 1-3, 5.....	--	55	30	126	216	0	33	228	--	2.2	.91	260	84	51	1,130	7.8
May 4.....	--	119	41	419	122	5	33	870	--	1,930	2.62	466	357	66	2,930	8.6
May 6-10.....	--	38	20	51	165	0	22	90	--	336	.46	177	42	38	605	7.5
May 11-13, 16-18..	--	44	22	74	178	0	23	134	--	436	.59	200	54	44	755	7.9
May 14-15, 19-20..	--	53	25	99	195	5	24	180	--	541	.74	235	666	48	911	8.5
May 21, 23.....	--	46	31	85	164	0	22	188	--	508	.69	242	108	43	889	8.0
May 22.....	--	82	35	198	190	14	31	400	--	983	1.35	348	170	35	1,640	8.7
May 24, 26-30.....	--	31	14	36	131	0	14	67	--	266	.36	135	28	38	464	0
May 25, 31.....	--	38	17	60	146	0	16	112	--	373	.51	165	46	44	622	7.5
June 1-9.....	11	41	19	78	175	0	23	135	1	2.2	.60	180	37	48	742	8.2
June 10.....	--	26	8.1	42	47	0	28	84	--	216	.29	98	60	48	384	7.4
June 11-20.....	7.6	80	19	35	3.0	0	11	57	--	212	.29	84	20	46	342	7.5
June 21-25.....	--	24	12	26	103	0	8.9	50	--	206	.28	110	25	34	351	8.0
June 26-28.....	--	30	14	36	129	0	12	64	--	254	.35	132	27	37	452	8.2
June 29-30.....	--	40	18	52	149	3	15	101	--	348	.47	174	47	39	604	8.4
July 1-2, 7-8, 10...	--	30	14	54	99	0	25	100	--	315	.43	132	52	47	551	7.5
July 3, 5, 9.....	--	39	18	86	116	0	34	160	--	466	.63	172	76	52	786	7.0
July 4, 6.....	--	44	16	124	100	0	20	242	--	594	.81	176	94	61	997	7.3
July 11-17.....	--	38	19	54	165	4	17	91	--	334	.45	173	31	40	599	8.4
July 18.....	--	46	23	71	183	8	21	125	--	437	.59	210	46	42	748	8.6
July 21-22, 28-29, 31	--	34	20	90	170	0	25	139	--	433	.59	167	28	54	797	7.9
July 23-27, 30.....	--	52	23	137	177	0	23	250	--	615	.84	224	80	57	1,140	8.2
Aug. 1-10.....	10	38	21	94	3.5	0	22	154	3	2.8	.64	182	42	52	833	7.7
Aug. 11-16, 19.....	--	42	23	97	183	0	23	165	--	474	.66	200	50	51	839	7.6
Aug. 17.....	--	70	36	198	206	8	31	380	--	923	1.26	322	140	57	1,620	8.5

ARKANSAS RIVER BASIN--Continued
DEEP FORK RIVER NEAR DEWAR, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO 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	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mag- nestum	Non-carbon- ate			
Aug. 18, 1951	--	--	56	35	124		237	10	43	208	--	3.6	650	0.88		284	73	49	1,140	8.6
Aug. 20	--	--	44	20	51		146	3	23	90	--	3.5	322	.44		167	43	40	591	8.4
Aug. 21-31	10	0.02	32	18	61	3.2	158	0	16	99	0.1	3.2	338	.46		154	24	46	602	7.9
Sept. 1-9	--	--	32	20	82		165	0	20	131	--	3.3	409	.56		164	30	52	729	8.2
Sept. 10	--	--	36	14	155		36	0	15	310	--	3.2	697	.95		148	118	70	1,200	7.6
Sept. 11	--	--	31	11	101		70	0	41	161	--	18	397	.54		122	65	64	730	7.5
Sept. 12-20	--	--	20	9.5	38		76	0	12	67	--	2.5	252	.34		89	26	48	392	7.7
Sept. 21-30	8.0	.02	30	14	57	3.3	123	0	17	98	.1	2.8	320	.44		132	32	48	552	7.9

ARKANSAS RIVER BASIN--Continued

DEEP FORK RIVER NEAR DEWAR, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	67	47	42	32	52	50	66	74	74	81	84
2	71	67	51	48	32	55	53	68	74	74	82	83
3	67	57	46	44	32	54	52	68	74	73	83	83
4	60	55	45	42	34	53	55	72	66	72	84	83
5	60	52	45	42	35	54	57	67	65	77	85	79
6	62	54	37	42	36	56	58	64	70	78	84	80
7	62	55	33	39	35	55	56	63	64	78	86	78
8	60	53	35	38	35	54	55	62	73	79	85	70
9	59	50	33	38	34	51	55	65	68	80	83	74
10	60	46	38	39	37	51	55	63	69	82	82	71
11	61	46	38	42	45	49	55	64	70	82	79	73
12	62	45	43	38	51	44	53	63	69	82	78	73
13	62	47	38	42	45	43	51	65	70	82	80	68
14	64	48	37	44	--	40	55	64	69	82	83	69
15	64	54	40	42	38	41	56	69	71	81	84	69
16	64	50	39	42	36	43	55	68	73	82	81	66
17	64	49	36	46	38	49	54	67	74	84	82	65
18	63	51	36	47	43	44	57	68	74	84	81	65
19	65	55	37	48	42	43	48	69	74	84	81	67
20	63	49	36	44	50	45	62	71	74	85	82	68
21	62	49	39	40	50	45	62	73	77	86	80	70
22	62	49	39	40	49	48	58	72	77	85	80	60
23	60	47	41	41	50	53	57	69	72	84	77	61
24	60	40	41	42	49	50	60	68	76	84	76	70
25	61	40	42	40	52	52	59	68	78	82	77	72
26	63	41	40	40	52	54	61	66	79	83	80	72
27	64	42	40	41	52	54	65	65	79	80	81	71
28	65	43	36	39	56	57	68	66	79	83	82	68
29	65	42	38	35	--	53	69	69	80	81	82	67
30	65	43	40	32	--	51	68	70	76	82	83	66
31	67	--	41	32	--	49	--	74	--	81	83	--
Average	63	50	40	41	42	50	57	67	73	81	82	72

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR WHITEFIELD, OKLA.

LOCATION --At gaging station at bridge on State Highway 2, 5 1/2 miles upstream from Snake Creek, and three-quarters of a mile north of Whitefield, Haskell County.
DRAINAGE AREA --47,576 square miles.

RECORDS AVAILABLE --Chemical analyses: September 1944 to February 1945, September 1946 to September 1951.

Water temperatures: September 1944 to February 1945, September 1946 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 6,570 ppm Jan. 8-10; minimum, 392 ppm June 14-15, 17-18.

Hardness: Maximum, 1,310 ppm Jan. 8-10, 18; minimum, 140 ppm Feb. 23-26.

Specific conductance: Maximum, 1,800 micromhos Dec. 31; minimum daily, 579 micromhos June 15.

Water temperatures: Maximum, 85°F July 28, Aug. 4, 6-7; minimum, freezing point Dec. 6, 18, Jan. 29, Feb. 15, 17.

EXTREMES, 1944-45, 1946-51.--Dissolved solids: Maximum, 8,570 ppm Jan. 21-24, 1949; minimum, 89 ppm Jan. 2, 5-7, 1948.

Hardness: Maximum, 1,810 ppm Jan. 21-24, 1949; minimum, 18 ppm Feb. 17, 1948.

Specific conductance: Maximum daily, 14,500 micromhos Jan. 22, 1949; minimum daily, 71.7 micromhos Jan. 2, 1948.

Water temperatures: Maximum, 88°F Sept. 4, 1944; minimum, freezing point on many days during winter months.

REMARKS --Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bi-car-bonate (HCO ₃)	Car-bonate (CO 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	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate		
Oct. 1-7, 1950	5,273	--	--	81	25	202	188	75	362	2.7	1,29	13,470	305	151	59	1,590	--	--	--	--	--
Oct. 8-10	3,583	--	97	28	251	288	110	63	500	6.1	1,190	11,510	357	229	60	1,970	--	--	--	--	--
Oct. 11-20	2,602	14	0.00	100	27	305	188	191	585	4.2	1,270	8,920	360	204	63	2,070	8.0	--	--	--	--
Oct. 21-22	2,160	--	--	104	33	370	199	58	585	4.6	1,410	8,220	395	241	63	2,230	--	--	--	--	--
Oct. 23-25	1,550	--	--	123	37	454	218	58	735	4.6	1,710	2,333	7,160	459	296	64	2,710	--	--	--	--
Oct. 26-28	1,160	--	--	145	43	580	197	56	912	2.5	2,140	2,911	6,960	584	422	68	3,390	--	--	--	--
Oct. 29-31	890	11	--	153	49	821	23	169	55	1,600	2.7	3,140	4,277	7,550	724	568	70	5,120	7.4	--	--
Nov. 1-10	843	8.6	0.00	196	57	1,040	18	225	56	2,060	3.1	4,060	5,532	8,140	857	672	72	6,400	7.5	--	--
Nov. 11-20	618	6.6	--	228	70	1,190	31	201	51	2,360	1.1	3.3	4,420	6.01	7,390	7.4	--	--	--	--	--
Nov. 21-30	555	--	--	232	80	1,350	240	51	2,650	8.2	5,070	6.90	1,060	861	74	7,940	--	--	--	--	--
Dec. 1-10	832	13	0.00	223	90	1,430	32	53	2,830	6.0	5,230	7.25	1,180	953	72	8,690	7.5	--	--	--	--
Dec. 11-20	751	11	0.00	204	82	1,440	32	53	2,830	6.0	5,230	7.25	1,180	953	72	8,690	7.5	--	--	--	--
Jan. 1-3, 1951	848	--	--	304	82	1,950	226	70	3,700	6.5	5,240	7.13	1,030	886	73	8,380	--	--	--	--	--
Jan. 4-7	848	--	--	216	68	1,950	226	70	3,700	6.5	5,240	7.13	1,030	886	73	8,380	--	--	--	--	--
Jan. 8-10	980	--	--	363	98	1,280	246	85	3,370	11.3	6,570	8.94	17,310	1,110	74	10,300	--	--	--	--	--
Jan. 11-13, 19-20	1,288	--	--	288	82	1,280	224	85	2,520	--	4,970	6,772	1,060	872	72	7,900	--	--	--	--	--
Jan. 14-17	2,098	--	--	208	83	811	248	81	3,370	8.4	3,320	4.52	16,810	778	69	5,350	--	--	--	--	--
Jan. 18	2,240	--	--	367	97	1,690	165	71	3,370	--	6,500	8.84	39,310	1,310	74	10,400	--	--	--	--	--
Jan. 21-24	1,212	--	--	258	69	1,080	218	89	2,120	--	4,430	6.02	14,500	928	72	6,990	--	--	--	--	--
Jan. 25-31	945	--	--	193	56	742	252	107	1,420	--	3,100	4.22	7,910	712	69	5,030	--	--	--	--	--

ARKANSAS RIVER BASIN

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	845	67	885	250	95	1,750	--	7.0	3,700	5.03	8,440	854	650	69	2,820	--
Feb. 1-10.....	845	232	67	885	250	95	1,750	--	7.0	3,700	5.03	8,440	854	650	69	2,820
Feb. 11-15.....	903	--	79	1,170	226	88	2,320	--	5.7	4,590	6.24	11,190	1,010	72	7,550	--
Feb. 16.....	878	--	62	1,170	226	91	1,540	--	3.7	3,120	4.24	7,400	502	67	5,170	--
Feb. 17-18.....	4,095	--	42	478	148	58	962	--	3.0	2,030	2.76	22,440	502	67	3,420	--
Feb. 19-20.....	25,000	--	18	220	99	36	435	--	2.2	670	.91	37,370	194	106	65	1,200
Feb. 21-22, 27-28.....	20,660	--	15	164	107	28	305	--	5.8	479	.65	15,820	140	63	843	--
Feb. 23-26.....	13,230	--	38	111	94	25	200	--	2.5	479	.65	15,820	140	63	843	--
Mar. 1-2.....	4,680	--	72	207	119	46	410	--	1.9	923	1.26	11,690	274	176	62	1,600
Mar. 3-4, 6-10.....	2,860	--	118	37	158	93	720	--	1.5	1,580	2.15	12,330	446	317	64	2,660
Mar. 5.....	14,860	--	49	544	196	84	1,060	--	2.2	2,220	3.02	27,330	590	430	67	3,740
Mar. 11-13, 19-20.....	14,860	--	49	544	196	84	1,060	--	2.2	2,220	3.02	27,330	590	430	67	3,740
Mar. 14-18.....	9,390	--	15	258	128	40	560	--	1.9	1,200	1.63	45,360	356	250	62	2,080
Mar. 19.....	3,310	--	16	148	128	40	560	--	1.9	1,200	1.63	45,360	356	250	62	2,080
Mar. 21-23.....	9,310	--	35	363	178	58	755	--	2.8	1,866	2.21	14,920	482	300	60	2,010
Mar. 24-28.....	2,410	--	43	508	178	58	755	--	2.8	1,866	2.21	14,920	482	300	60	2,010
Mar. 29-31.....	1,900	--	154	49	173	77	1,160	--	1.8	2,120	2.88	13,790	526	380	68	3,480
Apr. 1-4, 9.....	1,652	--	180	54	162	68	1,450	--	5.3	2,990	4.07	14,950	671	538	70	4,780
Apr. 5, 8.....	2,745	--	101	56	131	53	1,680	--	5.0	3,490	4.75	25,670	706	599	72	5,340
Apr. 6-7.....	5,645	--	77	20	104	48	510	--	5.0	1,130	1.54	17,220	274	189	68	1,880
Apr. 10.....	2,000	--	237	70	130	86	2,220	--	5.0	4,470	6.08	24,140	880	773	74	6,900
Apr. 11-12, 15-16.....	1,705	--	184	58	143	55	1,650	--	5.0	3,380	4.60	15,560	688	580	72	5,310
Apr. 13-14, 17-20.....	1,355	--	151	50	635	72	1,250	--	5.8	2,600	3.54	9,510	582	462	70	4,230
Apr. 21, 28-30.....	2,240	--	120	38	145	97	870	--	3.9	1,820	2.48	11,010	456	336	68	3,020
Apr. 22-23.....	6,450	--	69	20	102	36	455	--	4.0	1,000	1.36	17,420	254	170	67	1,680
Apr. 24, 27.....	3,120	--	153	44	116	48	1,320	--	7.5	2,640	3.59	27,230	563	469	72	4,290
Apr. 25-26.....	3,440	--	191	56	117	77	1,680	--	6.5	3,400	4.62	31,580	706	610	72	5,410
May 1, 6-7.....	3,643	--	99	30	333	40	655	--	6.6	1,380	1.88	13,370	370	246	66	2,370
May 2, 9-10.....	3,243	--	79	20	218	37	480	--	5.9	1,940	1.28	6,230	268	193	63	1,860
May 3, 8.....	6,055	--	78	25	262	47	480	--	5.9	1,940	1.28	6,230	268	193	63	1,860
May 4.....	8,970	--	145	45	600	43	200	--	7.2	2,820	3.43	53,310	547	440	70	3,930
May 5.....	6,670	--	124	34	390	43	780	--	11	1,668	2.49	32,960	450	312	65	2,950
May 11-12.....	2,085	--	80	27	232	46	440	--	5.7	1,030	1.40	5,800	310	168	62	1,700
May 13-14.....	1,293	--	102	32	313	46	625	--	5.0	1,420	1.93	4,950	386	254	64	2,290
May 15-17.....	1,217	--	132	43	985	44	445	--	3.6	2,200	2.99	7,230	508	384	68	3,360
May 18.....	1,100	--	169	56	686	43	1,400	--	5.1	3,070	4.18	9,120	632	510	70	4,650
May 19-20.....	49,600	--	82	26	185	137	215	--	1.5	758	1.03	101,500	306	155	49	1,220
May 21-25, 28, 31.....	18,140	--	90	26	134	101	375	--	6.1	963	1.31	47,170	336	196	57	1,590
May 26-27, 29-30.....	10,730	--	70	21	149	90	232	--	3.7	702	.95	20,340	261	139	52	1,160

b Includes equivalent of 5 parts per million of carbonate (CO₃).

a Includes equivalent of 2 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued
CANADIAN RIVER NEAR WHITEFIELD, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
June 1-4, 8-9, 1951	8,245	--	--	73	19	163		159		76	285	--	2.9		796	1.08	17,720	260	130	58	1,320	8.2
June 5	5,300	--	--	119	31	382		c159		82	735	--	3.3		1,770	2.41	25,330	424	294	66	2,700	8.7
June 6-7, 10	9,833	--	--	84	23	205		162		88	370	--	3.2		986	1.34	26,180	304	171	59	1,620	7.9
June 11-12	39,000	--	--	71	17	179		138		54	330	--	2.5		838	1.14	86,240	247	134	61	1,420	8.1
June 13, 16, 19-20	26,880	--	--	52	13	100		125		51	172	--	2.4		510	.69	37,010	184	81	54	876	7.5
June 14-15, 17-18	28,400	--	--	42	9.6	76		114		38	124	--	2.2		392	.53	30,060	144	51	53	677	7.9
June 21, 23-26, 28-29	10,040	--	--	53	16	109		136		62	183	--	2.0		557	.76	15,100	198	86	55	940	--
June 22-24, 27, 30	10,340	--	--	66	17	134		136		69	232	--	1.5		664	.90	18,540	220	108	57	1,110	7.6
July 1-2, 5	6,913	--	--	76	25	178		144		91	330	--	2.5		855	1.16	15,960	292	174	57	1,450	7.2
July 3	5,563	--	--	52	17	113		119		73	432	--	3.2		599	.77	14,730	292	104	55	963	8.1
July 6-10	5,702	--	--	94	31	281		144		80	545	--	3.0		1,260	1.71	19,400	382	244	63	2,080	7.5
July 11-19	3,960	16	0.00	77	23	190	8.8	169		90	332	0.7	2.5		1,888	1.21	9,490	289	150	58	1,480	7.9
July 20	3,330	--	--	96	28	314		d166		105	560	--	3.0		1,390	1.69	12,900	354	218	66	2,190	8.4
July 21-26, 28, 31	3,118	--	--	94	28	239		169		93	448	--	2.4		1,090	1.48	9,180	350	211	60	1,880	7.8
July 27, 29-30	3,840	--	--	132	39	457		160		82	895	--	6.7		1,980	2.69	20,330	490	359	67	1,980	8.1
Aug. 1-10	2,109	15	.05	86	24	241	9.6	172		87	425	.7	2.0		1,080	1.47	6,150	313	172	62	1,780	8.1
Aug. 11-13	2,347	--	--	66	23	212		138		62	382	--	3.5		912	1.24	5,780	259	146	64	1,580	7.7
Aug. 14-17, 19	907	--	--	111	31	399		158		72	755	--	4.1		1,710	2.33	4,190	404	275	68	2,810	7.3
Aug. 18, 20	884	--	--	131	44	545		149		68	1,060	--	6.6		2,280	3.10	5,440	508	386	70	3,810	7.5
Aug. 21-22, 25	593	--	--	117	42	438		167		65	855	--	3.7		1,820	2.48	2,910	464	328	67	3,020	7.8
Aug. 23-24	530	--	--	139	44	553		170		63	1,080	--	3.9		2,160	2.94	3,090	528	388	69	3,560	8.1
Aug. 26-29	396	--	--	158	49	640		168		67	1,260	--	3.6		2,670	3.63	2,850	596	458	70	4,260	8.2
Aug. 30-31	300	--	--	186	58	848		163		65	1,660	--	5.0		3,450	4.69	2,790	702	569	72	5,400	7.4
Sept. 1-5, 9	805	--	--	209	66	953		137		54	1,910	--	2.8		3,760	5.11	8,170	783	681	72	5,910	7.3
Sept. 6-10	1,855	--	--	107	32	473		109		36	920	--	2.4		1,900	2.56	9,520	398	309	72	3,140	7.3
Sept. 11-13	1,390	--	--	76	29	344		108		37	675	--	2.6		1,410	1.82	5,440	354	245	69	2,370	7.7
Sept. 14-15	4,390	--	--	104	20	342		83		36	605	--	4.5		1,540	1.64	22,990	378	304	73	1,840	7.6
Sept. 17-20	2,075	--	--	62	20	270		80		20	515	--	4.0		1,190	1.60	6,610	236	162	71	2,190	7.5
Sept. 21-23, 27, 30	712	--	--	82	22	310		101		22	610	--	2.9		1,220	1.66	2,340	295	212	70	2,190	7.7
Sept. 24-25, 28-29	485	--	--	121	31	475		101		28	955	--	5.2		1,880	2.56	3,610	430	346	71	3,260	7.9
Sept. 26	--	--	--	146	39	622		110		34	1,240	--	4.0		2,370	3.22	3,100	524	434	72	4,120	7.9
Weighted average	4,595	--	--	89	26	269		146		65	510	--	3.4		1,170	1.59	14,520	329	210	64	1,940	--

c Includes equivalent of 10 parts per million of carbonate (CO₃).

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

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR WHITEFIELD, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	69	53	47	--	51	57	67	77	72	81	81
2	72	60	60	54	--	57	49	62	75	70	84	80
3	68	55	43	45	--	57	48	--	70	74	84	78
4	61	45	40	41	34	51	53	66	66	75	85	80
5	60	46	48	44	34	50	58	65	67	77	80	74
6	60	53	32	44	42	57	55	65	65	77	85	80
7	66	57	--	35	34	56	55	67	68	80	85	72
8	60	58	--	35	34	52	52	63	71	81	82	70
9	60	50	34	39	36	50	51	67	70	81	82	71
10	59	41	35	40	37	50	53	67	71	82	79	74
11	62	37	34	37	51	52	49	64	69	81	73	75
12	64	40	39	43	56	41	45	63	69	--	76	76
13	62	40	38	47	47	38	47	63	70	81	79	70
14	64	50	38	50	38	39	54	64	71	81	84	69
15	64	59	40	42	32	42	55	69	70	79	84	69
16	65	55	40	46	33	43	50	71	73	80	82	65
17	65	50	40	48	32	55	50	67	73	82	79	65
18	65	52	32	41	51	45	57	69	75	83	82	65
19	67	59	37	46	52	43	57	70	76	84	80	66
20	66	48	37	46	50	48	60	70	76	83	80	68
21	61	43	41	39	49	46	61	71	78	83	81	72
22	64	48	43	36	48	46	56	71	78	83	77	64
23	60	49	42	39	48	58	54	67	78	83	74	65
24	57	35	46	40	50	50	60	67	78	81	72	71
25	63	38	44	38	53	--	67	67	79	79	75	75
26	67	37	45	38	53	53	61	69	79	80	77	73
27	67	40	36	54	51	54	70	67	79	79	81	70
28	67	40	35	37	61	57	70	69	79	85	82	64
29	69	40	36	32	--	52	69	76	80	82	80	60
30	69	47	40	--	--	46	67	76	75	84	82	64
31	70	--	38	--	--	55	--	78	--	84	80	--
Average	64	48	40	42	44	50	56	68	74	80	80	71

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT VAN BUREN, ARK.

LOCATION --At gaging station at Van Buren, Crawford County, 1.3 miles downstream from Lee Creek, and 8.6 miles downstream from Poteau River.

DRAINAGE AREA --150-218 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1945 to September 1951.

WATER TEMPERATURES: October 1945 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,740 ppm Jan. 11-13; minimum, 216 ppm July 18-27.

Hardness: Maximum, 476 ppm Jan. 11-13; minimum, 105 ppm Feb. 17, 19.

Specific conductance: Maximum daily, 3,830 microhos Jan. 12; minimum daily, 327 microhos July 22.

Water temperatures: Maximum, 88°F Aug. 23; minimum, 33°F Jan. 31, Feb. 3, 5.

EXTREMES, 1945-51.--Dissolved solids: Maximum, 1,740 ppm Jan. 11-13, 1951; minimum, 216 ppm July 18-27, 1951.

Hardness: Maximum, 476 ppm Jan. 11-13, 1951; minimum, 70 ppm Jan. 29-31, 1949.

Specific conductance: Maximum daily, 3,830 microhos Jan. 12, 1951; minimum daily, 132 microhos May 11, 1948.

Water temperatures: Maximum, 88°F Aug. 23, 1951; minimum, freezing point Jan. 30, 1947.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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	Specific conductance (microhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium				
Oct. 1-3, 1950	26,230	--	--	54	10	102	--	125	60	155	--	2.4	--	462	0.63	32,720	74	816	8.1	10
Oct. 4-10	25,300	--	--	62	14	132	--	a140	64	208	--	4.2	--	595	.81	40,640	212	1,050	8.3	15
Oct. 11, 16-20	20,500	18	0.04	52	12	124	10	127	55	195	0.5	4.5	--	531	.72	28,960	180	1,950	8.1	7
Oct. 12-26	13,489	--	--	50	13	149	--	b158	92	232	--	3.3	--	672	.91	29,150	253	1,140	8.2	12
Oct. 27-31	13,870	--	--	60	13	136	--	b158	92	232	--	3.3	--	672	.91	29,150	253	1,140	8.2	12
Nov. 1-10	9,072	--	--	96	25	243	--	b192	21	415	--	2.6	0.08	998	1.36	24,160	342	1,810	8.4	7
Nov. 11-15, 18-20	8,658	16	--	91	23	264	15	b170	110	445	3	2.6	0.08	1,050	1.43	24,550	322	1,880	8.4	4
Nov. 16-17	7,608	--	--	98	24	288	--	b174	106	490	--	2.4	--	1,090	1.48	22,390	343	2,000	8.5	7
Nov. 18-21	7,880	--	--	113	28	263	336	a188	114	605	--	2.4	--	1,290	1.75	27,450	397	2,460	8.4	4
Nov. 21-22, 25-27	7,084	--	--	90	22	263	--	c172	91	455	--	2.3	--	1,010	1.37	19,320	315	1,840	8.5	5
Nov. 23-24, 28-30	6,980	--	--	108	27	307	--	c182	111	535	--	2.4	--	1,180	1.60	22,240	380	2,260	8.5	7
Dec. 1-2, 7-10	6,550	--	--	112	29	337	--	d200	128	615	--	2.4	0.0	1,320	1.80	23,340	398	2,410	8.5	7
Dec. 3-6	6,820	--	--	98	24	302	--	180	114	522	--	2.4	0.0	1,150	1.56	21,180	343	2,160	7.8	7
Dec. 11, 14	6,180	--	--	106	25	290	--	190	109	515	--	2.4	0.0	1,140	1.55	19,020	368	2,120	8.2	5
Dec. 12-13	5,820	--	--	96	23	241	--	178	81	452	--	4.1	0.0	985	1.34	15,480	334	1,880	7.7	7
Dec. 15-20	6,343	12	--	112	29	366	12	199	126	635	1	3.4	--	1,420	1.93	24,320	398	2,500	8.3	5
Dec. 21-23, 30-31	6,668	--	--	123	30	387	--	211	117	720	--	2.7	0.0	1,480	2.01	26,730	430	2,740	7.9	5
Dec. 24-25	6,603	--	--	106	25	322	--	190	105	582	--	2.3	0.0	1,240	1.69	22,110	368	2,190	8.1	5

a Includes equivalent of 2 parts per million of carbonate (CO₃).

b Includes equivalent of 4 parts per million of carbonate (CO₃).

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

d Includes equivalent of 10 parts per million of carbonate (CO₃).

Jan. 1-3, 10	6,825	--	--	124	33	461	--	206	145	782	--	2.8	.00	1,690	2.24	30,410	445	276	69	2,970	8.0	8	
Jan. 4-9	6,520	10	--	18	107	29	363	188	121	622	.3	2.1	--	1,970	1.86	24,120	386	232	66	2,400	8.0	5	
Jan. 11-13	7,253	--	--	21	133	35	494	203	133	852	--	2.8	--	1,740	2.37	34,070	476	310	69	3,190	8.4	10	
Jan. 14-15, 20	9,673	--	--	--	161	114	805	--	114	805	--	2.1	--	1,270	3.73	33,170	363	231	67	2,300	7.8	6	
Jan. 16-19	10,960	--	--	--	182	31	271	--	152	93	465	--	2.5	.00	1,910	1.37	29,940	308	183	66	1,900	8.1	15
Jan. 20-21	7,689	--	--	--	118	51	429	--	169	121	760	--	3.1	.00	1,560	2.11	32,180	422	284	69	2,870	8.0	7
Jan. 28-31	5,678	--	--	--	98	28	324	--	179	116	545	--	3.3	.00	1,200	1.63	18,400	360	213	66	2,320	8.2	8
Feb. 1-4, 10	4,738	--	--	--	100	28	332	--	192	123	552	--	2.4	.00	1,230	1.67	15,730	364	207	66	2,250	8.1	8
Feb. 5, 7, 9	8,507	--	--	--	80	23	239	--	157	102	408	--	3.1	.00	977	1.33	22,440	294	166	64	1,750	7.8	12
Feb. 6, 8	8,700	--	--	--	71	19	192	--	145	90	328	--	2.5	--	817	1.11	19,190	255	136	62	1,390	7.8	15
Feb. 11-14	9,040	--	--	--	89	24	282	--	156	100	468	--	1.4	.00	1,060	1.44	25,870	320	192	66	1,980	8.1	11
Feb. 15-16	29,000	--	--	--	55	16	162	--	96	62	290	--	2.0	--	649	.88	50,820	203	124	63	1,220	7.7	36
Feb. 17, 19	51,500	--	--	--	28	8	70	--	68	53	110	--	2.1	--	328	.45	45,610	105	59	59	581	7.7	20
Feb. 18, 20-28	96,130	--	--	--	40	11	102	--	80	73	172	--	1.9	--	440	.60	114,200	145	80	60	773	7.7	19
Mar. 1-6	44,550	--	--	--	46	9	82	--	98	44	143	--	2.7	.00	427	.58	51,250	154	74	54	694	7.5	20
Mar. 7-10	35,880	--	--	--	54	14	114	--	108	66	200	--	2.8	.00	562	.76	54,440	192	104	56	901	7.7	15
Mar. 11, 15-20	41,770	--	--	--	42	9	77	--	93	48	129	--	2.1	.00	400	.54	45,110	146	70	54	656	8.0	33
Mar. 12-14	71,730	--	--	--	56	12	125	--	103	48	218	--	2.9	.00	586	.80	113,500	189	104	59	952	7.9	20
Mar. 21-29	19,510	9.9	--	.03	61	14	135	8.2	136	67	225	.2	3.5	.00	617	.64	32,500	210	98	57	1,050	7.3	10
Mar. 30-31	11,900	--	--	--	80	21	207	--	144	92	365	--	2.3	.00	893	1.21	28,690	286	168	61	1,520	8.0	10
Apr. 1-4, 8-10	11,750	--	--	--	74	20	210	--	136	78	365	--	1.8	.00	906	1.23	28,740	266	155	63	1,520	7.8	13
Apr. 5-7	10,900	--	--	--	165	21	349	--	122	121	908	--	6.6	--	1,303	1.77	38,570	387	254	66	2,370	7.8	7
Apr. 11, 14	23,800	--	--	--	65	21	234	--	152	85	998	--	3.6	--	769	1.24	70,680	302	173	63	1,690	7.5	--
Apr. 12-13, 15-20	23,800	--	--	--	61	14	174	--	139	71	288	--	3.6	--	764	1.04	49,260	210	96	64	1,300	8.0	7
Apr. 21-30	52,350	7.3	--	10	59	16	172	4.8	112	62	292	.3	2.8	.00	699	.95	43,770	213	121	63	1,220	7.7	20
May 1-6	56,450	--	--	--	55	14	137	--	122	53	225	--	3.9	.00	608	.83	85,940	134	94	61	1,040	7.9	18
May 7-12	37,530	--	--	--	40	8	7	--	117	31	81	--	3.5	--	342	.47	52,130	136	40	46	521	7.7	22
May 13-15	37,530	--	--	--	55	12	77	--	132	46	128	--	9.1	--	433	.59	43,880	186	78	47	728	7.9	22
May 16, 18-19	32,200	--	--	--	58	14	117	--	142	60	191	--	8.9	--	574	.78	49,900	202	86	56	960	8.0	13
May 17, 20	55,100	--	--	--	80	20	166	--	167	85	278	--	10	--	825	1.12	122,700	282	144	56	1,300	8.0	16
May 21-23	148,000	--	--	--	68	16	--	201	147	91	319	--	8.0	--	862	1.17	344,500	236	115	65	1,440	7.9	--
May 24-26, 29-31	102,600	14	--	.13	63	14	129	5.6	137	81	218	.5	3.2	--	638	.87	176,700	214	102	56	1,070	7.6	12
May 27-28	126,000	--	--	--	44	11	92	--	123	65	137	--	2.2	--	457	.62	155,500	155	54	56	758	7.6	23
June 1-6, 9, 11-12	55,760	13	--	.02	67	16	121	6.0	147	103	188	.3	3.9	--	622	.85	110,400	233	112	52	1,010	7.8	10
June 7-8	29,960	--	--	--	86	19	168	--	163	133	250	--	3.9	--	749	1.02	60,570	292	159	56	1,320	7.8	22
June 10, 13-16, 20	57,460	--	--	--	59	12	63	--	120	57	125	--	2.5	.10	411	.56	108,200	147	48	55	692	7.8	15
June 15, 21-30	56,170	--	--	--	57	12	63	--	134	68	127	--	2.5	.06	426	.58	110,600	192	82	49	759	7.7	18

c includes equivalent of 6 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued
ARKANSAS RIVER AT VAN BUREN, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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	Specific conductance (micro-mhos at 25 C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, nesium	Non-carbonate				
July 1, 4-5, 9, 1951	199,000	--	--	49	8.3	64	--	122	53	95	--	2.6	0.28	359	0.49	192,900	156	56	47	594	7.7	21
July 2-3, 6-8, 10	205,200	--	--	43	7.5	44	--	119	45	65	--	2.9	1.10	294	.40	162,900	138	41	40	486	7.4	18
July 11-17	186,400	14	0.10	47	9.1	38	4.4	126	45	57	0.3	2.4	--	286	.39	130,000	154	52	34	470	7.2	11
July 18-27	188,700	--	--	38	6.5	26	--	112	31	39	--	2.7	1.10	216	.29	110,000	122	30	32	381	7.5	33
July 28-31	90,600	--	--	48	8.2	55	--	126	45	88	--	2.2	0.05	318	.43	77,790	148	46	45	571	7.7	18
Aug. 1-10	39,120	13	.04	56	13	82	4.8	147	54	134	.3	2.6	--	468	.64	49,430	193	72	47	761	7.8	15
Aug. 11-15	26,240	--	--	50	13	69	--	137	68	160	--	4.7	.27	502	.68	38,280	203	91	49	841	7.6	7
Aug. 16-18	24,600	--	--	73	16	111	--	169	67	236	--	3.2	1.12	562	.93	39,520	256	118	54	1,160	7.3	8
Aug. 21-29	15,640	--	--	64	15	111	--	175	81	242	--	3.5	.27	712	.76	24,150	221	94	53	997	7.7	9
Aug. 30-31	10,800	--	--	76	17	140	--	175	81	242	--	3.8	.24	658	.66	41,520	204	113	54	1,210	7.6	6
Sept. 1-5, 8, 11	23,370	15	.22	70	17	142	5.6	154	66	246	.5	3.8	.24	658	.66	41,520	204	113	54	1,210	7.6	6
Sept. 6-7, 9-10, 12	35,800	--	--	52	11	96	--	133	49	160	--	4.1	.30	477	.65	46,110	175	66	54	821	7.8	12
Sept. 13-20	96,480	--	--	44	7.2	54	--	119	29	90	--	4.0	1.10	316	.43	82,320	140	42	46	568	8.0	12
Sept. 21-23, 29-30	49,560	--	--	45	7.9	56	--	126	40	89	--	3.8	.08	332	.45	44,430	145	42	48	568	7.6	10
Sept. 24-28	35,100	--	--	53	10	75	--	144	52	120	--	3.5	.13	428	.58	40,560	173	55	49	717	7.8	8
Weighted average...	45,960	--	--	53	12	96	--	126	59	157	--	3.2	--	474	0.64	58,820	182	78	53	811	--	13

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ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT VAN BUREN, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	70	58	41	--	53	55	70	78	78	83	84
2	74	66	58	45	--	54	55	68	79	75	84	85
3	73	63	50	44	33	58	53	67	78	74	85	83
4	68	54	49	43	35	53	54	68	73	74	85	83
5	65	54	43	45	33	53	57	70	73	78	84	81
6	65	53	--	47	40	54	57	78	73	77	83	80
7	67	57	34	38	35	57	58	68	72	78	85	80
8	64	59	34	39	34	58	48	67	71	77	85	75
9	64	53	35	--	38	54	54	67	71	80	85	75
10	63	47	35	43	38	57	55	67	72	81	83	73
11	64	47	38	40	44	57	55	67	73	82	83	84
12	64	45	40	40	47	48	54	65	73	82	80	74
13	65	47	42	40	48	44	51	67	73	82	80	75
14	68	47	45	47	44	44	53	67	74	83	80	73
15	77	54	44	45	43	44	57	68	74	80	83	73
16	68	56	43	43	38	45	53	70	74	80	84	72
17	68	54	42	45	44	63	53	76	75	80	84	72
18	68	54	39	47	44	47	55	70	77	80	83	70
19	70	53	43	47	48	46	59	71	78	81	84	70
20	69	53	43	50	50	46	61	74	78	82	84	72
21	67	49	43	43	50	47	60	71	80	82	84	72
22	70	50	43	43	53	47	60	73	80	82	83	70
23	67	51	44	39	48	54	60	73	80	83	88	70
24	66	45	45	43	49	52	60	71	80	84	79	70
25	65	40	47	43	50	59	63	72	81	84	79	73
26	68	43	47	40	53	55	65	70	81	83	79	75
27	68	44	41	40	53	54	67	70	81	81	81	75
28	68	45	41	42	55	54	67	72	80	83	83	70
29	69	43	40	--	--	55	70	72	80	83	83	68
30	69	47	43	37	--	55	69	75	79	83	83	70
31	69	--	40	33	--	54	--	78	--	84	--	--
Average	68	51	43	42	44	52	58	70	76	81	83	75

ARKANSAS RIVER BASIN--Continued
ARKANSAS RIVER AT DARDANELLE, ARK.

LOCATION --At gaging station at bridge on State Highway 7 at Dardanelle, Yell County, 4.7 miles downstream from Illinois Bayou.
DRAINAGE AREA --43,442 square miles.
RECORDS AVAILABLE--Chemical analyses: October 1948 to September 1951.

Water temperatures: October 1948 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,450 ppm Dec. 20-21, 24-26; minimum, 223 ppm Feb. 16-20.

Hardness: Maximum, 418 ppm Dec. 20-21, 24-26; minimum, 64 ppm Feb. 16-20.

Specific conductance: Maximum daily, 3,030 microhmhos Dec. 25; minimum daily, 209 microhmhos Feb. 20.

Water temperatures: Maximum, 90°F Aug. 31, Sept. 1; minimum, freezing point Feb. 1-3.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 1,450 ppm Dec. 20-21, 24-26, 1950; minimum, 160 ppm Feb. 12-13, 1950.

Hardness: Maximum, 418 ppm Dec. 20-21, 24-26, 1950; minimum, 54 ppm Feb. 12-13, 1950.

Specific conductance: Maximum daily, 3,030 microhmhos Dec. 25, 1950; minimum daily, 171 microhmhos Jan. 25, 1949.

Water temperatures: Maximum, 90°F Aug. 31, Sept. 1, 1951; minimum, freezing point Jan. 30, 1949, Feb. 1-3, 1951.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge sum for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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		Per-centage non-carbonate	Specific conductance (microhmhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesum	Non-carbonate				
Oct. 1-10, 1950	29,660 13	0.02	55	12	104	11	136	57	178	0.1	2.5	2.5	534	0.73	42,760	186	74	53	895	8.1	8	
Oct. 11-20	23,820 14	0.05	59	14	138	9.4	140	70	222	1.1	2.9	2.9	637	0.73	40,970	204	90	58	1,070	8.1	9	
Oct. 21-24	20,100 13	0.06	56	12	109	12	139	54	182	1.1	3.4	3.4	539	0.73	29,250	169	75	54	919	8.1	10	
Oct. 25-31	11,140 16	0.10	71	17	138	5.4	166	71	225	1.5	3.9	3.9	610	0.73	19,460	247	119	54	1,110	8.4	6	
Nov. 1-10	8,952 17	0.06	90	23	242	21	187	112	405	3.1	1.9	1.9	1,017	1.37	24,410	319	166	60	1,750	8.4	6	
Nov. 11-19	8,153 14	0.04	90	25	258	11	176	101	438	2.1	2.1	2.1	1,030	1.40	22,670	328	184	62	1,840	8.2	6	
Nov. 20-21, 26-28	8,368 14	0.06	92	27	301	10	177	100	510	2.2	2.3	2.3	1,150	1.56	26,040	340	196	65	2,070	8.0	4	
Nov. 22-25, 29-30	7,100 13	0.06	70	23	236	19	169	85	395	2.2	2.3	2.3	938	1.28	17,980	269	130	64	1,560	8.1	7	
Dec. 1-2	6,800	--	84	20	222	--	168	83	402	--	2.6	2.6	954	1.30	17,520	292	154	62	1,630	8.2	7	
Dec. 3-10	6,881 13	0.06	98	26	306	8.0	187	101	522	2.1	2.9	2.9	1,170	1.59	21,740	352	198	65	2,090	8.2	6	
Dec. 11-14, 18-19	6,853 13	0.06	108	20	327	14	201	127	562	2.2	2.5	2.5	1,270	1.73	23,500	382	187	66	2,270	8.1	5	
Dec. 15-17	6,557	--	93	21	233	--	193	83	428	--	1.6	1.6	954	1.40	16,910	318	160	61	1,760	8.3	5	
Dec. 20-21, 24-26	7,452 12	0.06	118	30	378	7.6	204	155	648	3.2	2.7	2.7	1,450	1.97	29,170	418	251	66	2,530	7.9	7	
Dec. 22-23, 27-31	6,743 12	0.06	104	28	314	11	191	135	545	1.1	2.7	2.7	1,250	1.70	22,760	374	218	64	2,180	7.9	6	
Jan. 1-2, 4-7, 9-10, 1951	8,948 9.4	0.16	92	24	280	21	163	96	510	2.2	2.8	2.8	1,130	1.54	27,300	328	194	64	2,020	8.0	7	
Jan. 3, 8	10,480	--	--	70	18	206	--	133	70	362	--	2.4	919	1.25	26,000	248	140	64	1,550	8.0	8	
Jan. 11-15	10,120 6.6	0.15	94	27	312	22	166	106	540	2.2	2.5	2.5	1,190	1.62	32,520	346	210	65	2,160	8.1	8	
Jan. 16-20	17,600 7.2	0.19	57	16	181	12	107	66	318	2.2	2.7	2.7	756	1.03	35,930	208	120	64	1,310	8.0	18	
Jan. 21-22	14,100	--	60	21	215	--	120	73	380	--	2.8	2.8	835	1.14	31,790	236	138	66	1,530	7.5	15	
Jan. 23-31	9,400 5.4	0.16	92	25	318	25	147	91	568	1.1	2.4	2.4	1,200	1.63	30,460	332	212	65	2,170	7.9	10	

a Includes equivalent of 5 parts per million of carbonate (CO₃).
b Includes equivalent of 2 parts per million of carbonate (CO₃).

	Feb. 1-6	Feb. 7-10	Feb. 11-15	Feb. 16-20	Feb. 21-28	Mar. 1-6	Mar. 7-10	Mar. 11-15	Mar. 16-20	Mar. 21-28	Mar. 29-31	Apr. 1-7	Apr. 8-10	Apr. 11-20	Apr. 21, 25-27	Apr. 22-24	Apr. 28-30	May 1, 4-7	May 2-3, 8-10	May 11-14	May 15-17	May 18-20	May 21, 25-27, 31	May 22-24	May 26-30	June 1-10	June 11, 14-20	June 12-13	June 14-20	June 21-30	July 1-2, 5-6, 10	July 3-4, 7-9	July 11-20	July 21-31	July 30-31, Aug. 1-2	Aug. 3-10	Aug. 11-17	Aug. 18-20	Aug. 21-22, 30-31	Aug. 23-29
6,887	17,500	18,140	94,600	120,400	120,400	51,120	37,100	41,970	42,970	23,160	10	15,000	19,370	31,970	36,150	42,800	28,970	51,620	51,820	43,400	37,900	32,030	105,400	135,700	117,700	50,470	101,600	113,300	92,050	174,800	201,000	178,100	167,800	76,900	41,180	32,000	22,900	18,250	18,190	
4.8	.05	.08	.08	.10	.10	.08	.08	.08	.08	.04	.03	.03	.03	.02	.03	.03	.03	.03	.03	.03	.03	.02	.02	.02	.02	.04	.02	.02	.03	.04	.05	.04	.04	.04	.05	.05	.05	.08	.18	.17
80	34	16	39	33	33	10	47	47	57	53	12	58	20	56	48	12	60	47	42	37	46	61	60	50	50	64	50	68	51	42	40	77	38	48	38	55	54	66	73	59
21	96	195	43	43	43	6	70	101	101	112	151	151	221	140	130	89	130	119	119	43	43	131	146	208	208	128	128	118	77	64	92	42	42	28	71	11	13	15	123	107
18	--	18	--	--	--	6.1	6.2	9.9	9.9	6.4	10	10	13	13	9.1	15	--	--	--	--	--	--	4.0	--	--	--	4.4	2.4	4.0	4.2	4.1	4.0	4.0	4.0	4.4	4.4	4.4	4.9	4.5	5.0
104	84	110	48	24	24	87	58	46	46	57	125	68	83	116	58	79	41	45	204	126	31	45	63	84	65	97	50	88	164	117	52	41	42	29	44	58	141	150	71	
415	162	162	72	113	113	37	38	161	161	130	255	255	380	240	228	153	285	204	126	172	123	205	223	328	143	124	123	123	180	117	92	82	54	44	89	124	137	208	151	168
.3	2.1	2.2	1.5	2.5	2.5	3	3	3	3	3	2.8	2.8	2.2	2.5	2.5	3.5	1.2	2.0	4.9	5.3	11	7.6	5.2	7.4	2.3	3	3	4	2.8	2.8	2.8	2.2	2.2	2.2	2.7	2.7	3.6	2.2	2.2	
976	1,331	1,068	223	304	347	458	458	458	458	531	664	664	898	898	604	412	724	534	378	287	419	598	879	473	609	409	542	424	343	273	266	226	350	438	465	622	573	543		
1,750	8.0	7.8	360	371	504	593	593	593	593	903	1,140	1,140	1,550	1,010	669	82	1,140	920	644	474	899	1,040	1,440	812	1,030	971	704	704	453	453	367	357	553	717	761	1,000	1,080	695		
3	32	32	17	17	60	45	35	35	35	10	7	7	9	13	8	13	12	15	22	22	--	--	--	--	8	9	12	12	11	11	22	18	21	17	15	11	8	10	10	

ARKANSAS RIVER BASIN--Continued
 ARKANSAS RIVER AT DARDANELLE, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	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) (B)	Dissolved solids			Hardness as CaCO ₃	Percent sodium	Specific conductance (micro-mhos at 25°C)	pH	Color
													Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Carbonate			
Sept. 1-2, 5-10, 1951	17,120	12	0.14	67	16	126	4.5	156	71	210	0.2	3.5	617	0.84	26,520	233	105	1,020	8.1	7
Sept. 3-4	16,750	--	--	83	19	166	--	188	106	282	--	4.4	779	1.06	35,230	285	131	1,310	8.1	12
Sept. 11, 14-20	86,690	12	.14	45	9.1	60	4.0	124	31	102	.2	2.9	340	.46	79,580	150	48	591	7.8	12
Sept. 12-13	62,600	--	--	64	13	137	--	136	57	240	--	6.1	612	.83	103,400	213	102	1,090	7.6	12
Sept. 21-24	59,200	--	--	46	7.4	45	--	119	33	72	--	3.4	292	.40	46,670	144	46	483	8.0	22
Sept. 25-30	43,630	12	.04	54	11	76	4.7	137	54	121	.2	3.8	416	.57	49,010	180	68	714	7.6	12
Weighted average...	48,670	--	--	49	10	88	--	119	52	143	--	3.0	441	0.60	57,950	163	66	744	--	14

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT DARDANELLE, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	72	50	43	32	56	58	70	80	76	86	90
2	75	68	54	45	32	58	55	70	81	75	86	89
3	73	62	50	45	32	56	56	71	79	75	88	87
4	72	57	46	46	35	55	59	70	75	77	88	86
5	70	58	45	46	35	54	58	71	75	78	86	84
6	69	59	40	43	39	57	59	69	73	78	87	84
7	66	58	37	43	35	58	58	68	74	80	88	80
8	66	61	38	42	40	57	57	68	75	81	88	79
9	66	57	39	41	42	54	57	68	75	82	86	77
10	66	52	38	43	42	53	57	68	73	83	87	77
11	68	50	38	43	46	52	55	69	72	83	84	77
12	68	50	40	43	50	49	52	70	--	84	85	78
13	69	49	40	43	48	45	53	69	75	84	85	77
14	69	48	41	44	45	44	56	69	74	83	87	76
15	70	51	43	46	43	45	55	71	74	83	87	77
16	71	54	42	46	43	43	55	72	76	84	86	74
17	71	52	42	48	43	45	56	73	78	83	86	75
18	71	51	42	48	46	47	58	73	79	83	86	75
19	70	53	40	50	49	49	62	74	80	84	88	74
20	70	53	42	48	50	50	61	76	82	84	88	74
21	68	52	44	46	52	51	63	75	82	85	87	74
22	69	54	43	45	51	53	62	75	82	84	85	74
23	69	52	44	46	51	56	62	74	83	85	83	72
24	68	46	45	45	51	55	63	74	84	84	83	74
25	67	45	45	44	52	57	64	74	83	85	84	75
26	69	44	45	44	54	56	66	74	83	84	84	75
27	69	44	43	45	55	56	69	73	83	84	86	75
28	70	45	42	43	57	58	71	74	83	85	87	74
29	71	45	41	38	--	55	70	75	81	85	88	72
30	72	47	41	35	--	55	72	78	80	86	89	73
31	72	--	42	33	--	58	--	79	--	86	90	--
Average	70	53	43	44	45	53	60	72	78	82	86	78

ARKANSAS RIVER BASIN--Continued

PETIT JEAN CREEK AT DANVILLE, ARK.

LOCATION.--At bridge on State highway 10 at Danville, Yell County, 1,800 feet upstream from Chicago, Rock Island & Pacific Railway bridge, 0.5 mile upstream from Spring Creek, and 0.6 mile (revised) downstream from Dutch Creek.

DRAINAGE AREA.--741 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1951.

Water temperatures: October 1948 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 69 ppm Nov. 21-30; minimum, 28 ppm Feb. 13, 15-17, 19-22.

Hardness: Maximum, 29 ppm Dec. 21-31, Aug. 1-10; minimum, 18 ppm Feb. 13, 15-17, 19-22, 23-28.

Specific conductance: Maximum daily, 137 micromhos Sept. 13; minimum daily, 31.6 micromhos Feb. 21.

Water temperatures: Maximum, 96°F Sept. 8, 10; minimum, freezing point Feb. 2-3.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 69 ppm Nov. 21-30, 1950; minimum, 13 ppm Feb. 1-3, 1950.

Hardness: Maximum, 33 ppm Nov. 1-10, 1948; minimum, 9 ppm Feb. 1-10, 1949, Feb. 1-3, 1950.

Specific conductance: Maximum daily, 204 micromhos July 25, 1950; minimum daily, 22.2 micromhos Jan. 25, 1949.

Water temperatures: Maximum, 96°F Sept. 8, 10, 1951; minimum, freezing point Feb. 2-3, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg./ml.	Non-carbonate			
Oct. 1-9, 1950	729	--	--	4.0	3.5	4.0	--	22	8.2	3.0	--	1.9	53	24	6	65.2	7.4	60
Oct. 10-21	46	--	--	4.9	3.8	5.1	--	35	5.9	4.2	--	1.3	55	28	0	74.2	7.5	50
Oct. 22-31	314	5.6	0.41	3.6	3.1	4.6	1.1	23	5.6	4.5	0.1	1.2	42	22	3	61.7	7.3	12
Nov. 1-10	73	--	--	4.6	2.8	4.1	--	24	4.1	3.8	--	1.8	54	23	3	65.0	7.5	80
Nov. 11-20	97	--	--	4.8	3.3	4.6	--	26	5.4	5.5	--	1.4	63	26	4	72.5	7.5	60
Nov. 21-30	100	--	41	4.2	3.3	6.1	2.0	27	8.7	6.2	1.1	1.2	69	24	2	73.4	7.6	40
Dec. 1-10	67	8.9	24	5.6	3.4	3.9	--	25	7.2	5.0	1.1	1.3	54	28	7	73.1	7.2	21
Dec. 11-20	40	--	--	5.2	3.5	4.9	--	24	6.3	5.8	--	3.6	55	27	6	72.3	7.2	30
Dec. 21-31	30	10	25	3.1	3.9	6.3	--	28	13	5.0	--	1.7	69	25	9	67.7	7.2	16
Jan. 1-10, 1951	843	--	--	3.4	3.4	4.2	--	15	18.2	5.0	--	1.3	47	22	10	58.6	7.0	75
Jan. 11-20	848	7.1	26	3.6	3.3	5.5	--	19	7.7	4.8	--	1.4	51	23	7	65.5	7.1	40
Jan. 21-31	292	--	--	3.6	3.3	5.5	--	19	7.7	4.8	--	1.4	51	23	7	65.5	7.1	40
Feb. 1-10	484	--	28	3.7	3.2	7.1	1.0	22	11	6.2	1.1	7	62	22	4	73.2	7.2	50
Feb. 11-12, 14, 18	1,480	4.8	--	5.6	3.3	3.4	--	18	11	5.5	--	1.3	41	28	13	71.4	7.2	60
Feb. 13, 15-17, 19-22	3,448	--	--	2.8	2.8	3.0	--	11	10	3.0	--	1.1	28	18	10	40.3	7.0	70
Feb. 23-28	2,713	--	--	--	2.6	5.0	--	16	10	4.5	--	1.2	34	18	5	52.6	7.1	60
Mar. 1-10	2,545	--	--	3.7	3.4	5.0	--	17	11	4.0	--	1.0	36	23	9	60.0	7.1	70
Mar. 11-20	2,550	--	--	4.2	3.1	4.7	--	16	11	4.0	--	1.2	36	23	10	62.2	7.3	70
Mar. 21-31	530	9.0	1.2	3.2	2.8	4.7	2.1	21	9.1	4.5	1.1	1.2	49	20	2	66.7	7.6	40
Apr. 1-10	237	7.5	74	3.6	3.1	5.7	1.8	19	11	5.2	1.1	1.0	57	22	6	71.8	7.0	45
Apr. 11-22	647	--	--	3.4	3.5	5.7	--	17	10	5.5	--	1.3	38	23	9	69.6	7.5	45
Apr. 23-30	1,281	--	--	3.9	3.8	6.1	--	20	12	5.5	--	1.7	60	25	9	77.5	7.5	40

May 1-10.....	725	--	--	4.0	3.2	6.6	--	18	12	4.5	--	1.9	58	23	8	74.9	7.0	37
May 11-20.....	233	--	--	3.8	2.7	6.8	--	21	8.4	5.5	--	1.5	61	21	3	74.2	6.7	45
May 21-31.....	60	5.6	.06	4.1	2.9	6.9	2.0	23	10	5.5	.1	1.7	54	22	3	87.3	7.2	17
June 1-10.....	207	6.6	.04	4.4	3.2	6.5	1.9	24	8.4	5.2	.1	1.4	57	24	4	75.7	6.3	20
June 11-20.....	1,000	--	--	4.6	3.2	6.6	--	21	13	5.0	--	1.7	53	25	7	88.4	7.5	22
June 21-30.....	130	--	--	4.8	2.9	6.8	--	23	8.8	4.8	--	1.9	55	24	5	81.3	7.2	27
July 1-10.....	839	--	--	4.5	3.5	5.6	--	22	6.9	5.0	--	2.2	39	26	8	69.4	6.7	40
July 11-20.....	210	7.7	.03	3.6	3.4	6.5	2.0	26	10	5.0	.1	2.1	60	23	2	91.3	6.6	22
July 21-31.....	292	--	--	4.0	3.5	5.7	--	23	7.0	4.8	--	2.3	61	24	6	75.3	6.9	22
Aug. 1-10.....	75	8.3	.21	4.8	3.3	5.2	2.0	27	8.1	4.5	.2	2.1	65	29	6	78.7	6.8	23
Aug. 11-20.....	398	--	--	3.9	3.5	5.6	--	24	7.6	4.5	--	2.0	45	24	4	72.9	6.8	23
Aug. 21-31.....	80	--	--	4.2	3.6	5.4	--	26	7.2	4.8	--	1.9	56	25	4	74.3	7.4	23
Sept. 1-10.....	39	8.3	.17	4.8	3.8	5.6	2.4	28	9.3	4.2	.1	2.8	63	28	5	85.2	7.1	10
Sept. 11-20.....	82	--	--	4.8	3.1	6.0	--	25	7.7	4.5	--	1.8	55	25	4	88.8	7.3	23
Sept. 21-30.....	89	--	--	4.8	3.2	6.5	--	30	8.8	4.8	--	1.8	56	25	1	81.5	7.5	15
Average.....	558	--	--	4.2	3.3	5.4	--	22	9.0	4.9	--	1.6	53	24	6	72.0	--	40

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

PETIT JEAN CREEK AT DANVILLE, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	71	49	39	33	51	58	63	83	73	83	86
2	76	70	49	50	32	60	54	69	83	74	83	85
3	72	62	48	47	32	54	56	70	78	74	86	85
4	70	60	50	45	34	53	58	71	68	77	86	86
5	65	57	45	49	35	54	56	70	74	78	85	84
6	67	59	37	44	40	55	61	69	76	77	86	83
7	65	61	37	38	42	58	62	70	74	80	86	80
8	63	68	37	38	41	57	60	70	75	81	86	96
9	62	55	40	39	41	55	57	69	72	83	85	78
10	62	53	40	41	43	54	58	68	75	85	83	96
11	61	47	41	43	46	52	51	69	76	85	81	79
12	63	47	40	47	48	49	52	69	76	84	83	77
13	65	47	38	45	45	44	53	69	77	84	85	73
14	68	48	40	50	42	47	54	70	76	84	84	72
15	68	56	42	46	45	49	56	72	74	84	84	73
16	65	52	41	46	48	46	58	72	74	84	81	74
17	65	52	41	50	49	49	57	72	79	85	83	73
18	68	51	40	49	52	48	59	73	78	88	83	72
19	68	54	37	48	56	50	64	73	80	85	84	70
20	65	52	37	49	53	51	59	73	79	86	84	71
21	66	51	45	47	55	54	59	75	79	84	80	72
22	66	51	47	46	55	57	62	79	80	84	78	70
23	66	51	54	46	54	57	61	78	81	84	79	69
24	66	45	49	47	55	55	64	72	82	81	--	76
25	68	44	48	42	53	56	63	74	84	83	80	76
26	69	44	42	43	53	57	65	76	83	85	81	74
27	70	45	42	46	53	57	67	77	84	85	83	72
28	70	44	37	46	53	56	68	78	84	84	81	71
29	70	47	37	43	--	54	67	79	81	83	--	71
30	70	46	38	40	--	52	64	81	80	83	83	71
31	71	--	38	37	--	55	--	82	--	83	86	--
Aver- age	67	53	42	45	46	53	59	73	78	82	83	77

ARKANSAS RIVER BASIN--Continued
ARKANSAS RIVER AT LITTLE ROCK, Pulaski County.

LOCATION --At gaging station at Missouri Pacific Railway bridge at Little Rock, Pulaski County.
DRAINAGE AREA --157,900 square miles.
RECORDS AVAILABLE --Chemical analyses: October 1945 to September 1951.
Water temperatures: October 1945 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,430 ppm Dec. 28-29; minimum, 220 ppm Feb. 17-21.
Hardness: Maximum, 420 ppm Dec. 28-29; minimum, 96 ppm Feb. 17-21.
Specific conductance: Maximum daily, 2,700 microhmhos Dec. 29; minimum daily, 284 microhmhos Feb. 21.
Water temperatures: Maximum, 90° F Aug. 31, Sept. 2; minimum, 33° F Feb. 2.
EXTREMES, 1945-51.--Dissolved solids: Maximum, 1,730 ppm Oct. 24-29, 1946; minimum, 187 ppm Dec. 11-20, 1946.
Hardness: Maximum, 420 ppm Dec. 28-29, 1950; minimum, 48 ppm Jan. 11-14, 1948.
Specific conductance: Maximum daily, 3,390 microhmhos Oct. 29, 1946; minimum daily, 229 microhmhos Jan. 10, 1948.
Water temperatures: Maximum, 94° F Aug. 31, Sept. 2; minimum, 34° F Feb. 2, 1948.
REMARKS --Analyses of dissolved solids, carbonate, and bicarbonate were made on samples obtained for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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	Specific conductance (microhmhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
Oct. 1-7, 1950	32,640	--	--	53	11	83	--	125	61	138	--	4.4	--	435	0.59	38,340	177	74	50	752	7.8	10
Oct. 8-10	34,200	--	--	63	14	115	--	149	64	188	--	6.3	--	550	.75	50,780	214	92	54	962	8.2	10
Oct. 11-20	25,140	11	0.05	64	15	127	17	155	71	212	0.1	3.9	--	619	.84	42,020	221	94	53	1,060	8.1	8
Oct. 21-31	18,910	--	--	57	13	118	--	144	57	185	--	3.0	--	536	.73	27,370	196	78	57	1,050	8.0	15
Nov. 1-2	11,500	--	--	71	14	128	--	172	75	202	--	3.7	--	642	.87	19,930	234	94	54	1,050	8.1	7
Nov. 3-8	10,460	18	.22	88	22	206	19	196	101	345	.3	2.7	--	933	1.27	26,350	310	150	57	1,550	7.9	10
Nov. 9-10	10,900	--	--	92	23	245	--	a 184	123	410	--	1.9	--	986	1.34	29,020	324	173	62	1,780	8.4	8
Nov. 11-20	10,580	15	.19	78	21	199	19	166	90	340	.2	3.3	--	850	1.16	24,280	281	145	59	1,450	8.1	7
Nov. 21-24, 25-26	10,860	--	--	74	17	192	--	155	73	328	--	2.0	--	856	1.18	25,150	254	128	62	1,410	7.8	5
Nov. 23-24, 29-30	9,905	--	--	84	21	246	--	162	86	422	--	3.0	--	944	1.28	25,250	286	163	64	1,740	7.5	7
Dec. 1-2, 7-10	8,803	8.8	.15	83	23	247	6.2	159	90	418	.2	2.4	--	958	1.30	22,770	302	171	63	1,710	7.8	5
Dec. 3-6	9,612	--	--	72	18	192	--	154	71	332	--	2.6	--	860	1.17	22,320	254	128	62	1,450	7.9	20
Dec. 11-13, 19-21	8,330	--	--	83	20	216	--	170	77	380	--	2.3	--	982	1.31	21,840	299	150	62	1,620	7.8	10
Dec. 14-18	8,274	--	--	94	23	244	--	184	101	448	--	2.4	--	1,000	1.36	22,340	329	178	62	1,960	7.9	7
Dec. 22-27, 30-31	7,611	--	--	101	24	294	--	195	94	520	--	2.6	--	1,130	1.54	23,220	350	190	65	2,120	8.1	6
Dec. 28-29	8,520	--	--	119	30	379	--	216	126	668	--	2.5	--	1,430	1.94	32,900	420	244	66	2,590	7.9	7
Jan. 1-10, 1951	12,320	--	--	78	18	227	--	151	77	405	--	2.7	--	927	1.26	30,940	268	144	65	1,660	8.2	5
Jan. 11-14	12,000	--	--	68	16	191	--	129	66	342	--	2.5	--	841	1.14	27,250	238	130	64	1,440	7.9	5
Jan. 15-20	40,150	--	--	38	9.3	96	--	69	32	168	--	2.4	--	450	.61	48,760	126	72	62	754	7.8	7
Jan. 21-23	29,400	--	--	39	10	100	--	77	44	182	--	2.1	--	485	.67	39,360	138	76	61	864	7.7	15
Jan. 24-25	20,430	--	--	35	13	143	--	88	49	270	--	3.3	--	674	.92	36,580	178	106	64	1,140	7.7	10
Jan. 26-31	13,900	7.2	.18	73	18	244	7.0	161	63	435	.1	2.4	--	990	1.35	37,150	256	124	67	1,680	7.9	8

^a Includes equivalent of 4 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued
 ARKANSAS RIVER AT LITTLE ROCK, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Feb. 1-5, 1951.....	8,716	6.1	0.05	72	19	214	11	141	74	382	0.1	2.0		954	1.30	32,450	258	142	63	1,580	8.0	10
Feb. 6-9.....	18,100			55	14	133		119	53	245		1.4		624	0.97	30,540	194	97	69	1,080	8.1	7
Feb. 10-12.....	24,260			52	16	180		80	37	150		1.1		640	0.55	26,530	137	68	58	1,080	8.0	8
Feb. 15-16.....	34,450			56	14	125		98	51	248		4.2		640	0.77	59,530	129	116	58	1,080	8.0	10
Feb. 17-21.....	107,800			37	6.8	39		62	19	69		2.3		220	30	64,030	96	44	47	379	7.7	37
Feb. 22, 24, 26-28.....	137,800			33	6.6	47		77	19	84		2.5		272	37	101,200	110	46	48	447	7.8	30
Feb. 23, 25.....	165,000			38	8.1	57		90	23	129		1.7		372	51	165,700	154	80	45	613	7.8	22
Mar. 1-8.....	65,680			44	6.5	83		90	25	96		2.6		303	41	53,740	112	38	51	516	7.2	30
Mar. 9-14.....	52,030			45	9.3	83		94	48	142		5.3		423	58	59,420	150	74	55	712	7.8	12
Mar. 15-17.....	77,830			37	8.7	59		100	40	192		2.8		510	69	107,200	168	86	56	855	8.1	15
Mar. 18-24.....	50,060			37	8.7	59		86	34	105		2.3		318	43	42,980	128	58	50	560	7.9	22
Mar. 25-31.....	27,740	12	.04	49	11	98	10	114	53	165		1.1	3.3	490	87	36,700	167	74	54	835	7.7	12
Apr. 1-6.....	19,120			58	13	115		118	59	215		2.3		592	81	30,580	198	102	56	979	8.1	8
Apr. 7-9.....	23,400			44	8.4	81		83	37	145		1.5		400	54	25,890	144	172	55	689	8.0	12
Apr. 10-12, 14.....	35,670			52	16	180		109	63	312		2.1		770	1.05	65,480	220	131	64	1,330	8.1	7
Apr. 13, 15-20.....	36,600			52	12	120		135	40	218		3.7		990	80	56,420	180	84	59	1,010	7.9	10
Apr. 21-22, 27-30.....	35,470	9.4	.03	49	12	124	9.2	135	41	218		1.1		484	59	54,960	132	84	58	736	7.9	14
Apr. 23-26.....	46,900			38	8.7	84		84	41	150		2.7		484	59	54,960	132	84	58	736	7.9	14
May 1, 7.....	63,900			55	17	164		167	44	291		8.0		771	1.05	133,000	207	70	63	1,270	7.5	22
May 2, 6, 8-9.....	55,970	12	.03	44	9.3	98	4.0	103	36	170		3.9		457	62	69,080	148	64	58	785	7.3	9
May 10-16.....	50,670			47	7.8	48		116	31	77		4.1		315	43	43,980	137	42	43	512	7.7	24
May 17-20.....	36,250			52	12	90		140	53	151		12		480	65	46,980	192	77	51	816	7.4	18
May 21, 23-28.....	119,100			62	14	183		152	76	275		4.3		748	1.02	240,500	212	88	65	1,270	7.8	13
May 22, 29-31.....	102,200			48	11	102		128	63	156		2.8		490	87	135,200	165	60	59	839	7.4	21
June 1-10.....	54,940	20	.14	68	14	121	5.5	152	85	185		3	5.2	631	86	93,600	227	102	53	1,000	7.9	18
June 11, 13-14.....	98,670			69	16	127		156	95	180		9.0		629	86	187,600	238	110	54	1,000	8.2	38
June 12, 15-20.....	102,600			68	11	72		124	53	120		3.8		410	56	113,600	165	64	49	671	7.9	15
June 21-30.....	67,640			52	11	81		129	67	121		4.2		410	56	113,600	165	64	49	671	7.9	15
July 1-3, 6-7.....	177,000			48	9.4	67		121	96	98		3.0		388	50	175,900	154	54	49	605	7.7	17
July 4-5, 8-10.....	213,800			40	7.6	44		114	42	64		3.1		284	39	133,900	131	38	42	461	7.8	18
July 11-13.....	168,500			47	8.0	46		130	46	66		5.6		315	43	132,100	130	44	40	507	7.5	22
July 14-16, 20.....	168,500			47	8.0	46		130	46	66		5.6		315	43	132,100	130	44	40	507	7.5	22
July 21-31.....	165,700	12	.12	39	7.6	33	4.3	120	41	91		3.5		234	32	104,700	126	31	31	376	7.3	13
Aug. 1-4.....	66,880			46	8.8	54		126	45	85		2.6		336	40	60,670	151	48	44	549	8.0	18
Aug. 5-10.....	42,900			51	13	76		140	52	120		4.0		426	58	49,340	180	66	48	701	7.9	17
Aug. 11-20.....	31,040	13	.06	53	12	87	4.9	139	61	168		2.3		456	62	38,230	182	68	50	754	7.6	8
Aug. 21, 25-31.....	18,760			57	15	103		148	60	137		5.4		520	71	26,340	204	82	52	867	7.9	11
Aug. 22-24.....	23,970			66	18	137		166	81	218		5.0		614	84	39,740	238	102	56	1,090	7.9	28

Sept. 1-4	14,300	--	--	65	15	109	--	169	71	180	--	5.1	577	78	22,280	224	85	51	972	8.0	12
Sept. 5-7	19,400	--	--	80	18	148	--	185	96	248	--	6.0	734	1.00	38,450	274	122	54	1,250	8.0	9
Sept. 8-12	25,560	--	--	64	15	117	--	157	71	195	--	5.2	597	.81	41,200	221	92	54	1,000	7.8	9
Sept. 13-20	84,610	18	.07	43	8.0	60	4.1	119	32	102	.3	3.9	358	.49	81,780	140	43	47	607	7.7	10
Sept. 21-26	62,950	--	--	44	9.0	46	--	129	36	75	--	2.8	308	.42	52,350	147	42	40	521	7.7	15
Sept. 27-30	38,780	--	--	54	10	69	--	142	57	112	--	4.0	408	.55	42,720	178	60	46	680	7.7	18
Weighted average...	52,490	--	--	48	10	82	--	121	49	135	--	3.6	430	0.58	60,940	161	62	53	718	--	14

LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT LITTLE ROCK, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	72	52	44	--	--	56	70	80	--	86	89
2	75	68	56	49	33	59	54	73	81	76	86	90
3	73	66	52	48	34	57	57	72	80	78	88	88
4	72	58	50	48	37	56	58	72	78	78	87	88
5	70	58	46	50	36	57	57	72	78	78	86	84
6	70	60	39	45	40	59	61	69	78	79	86	84
7	71	61	39	44	40	61	58	66	78	80	88	82
8	70	62	39	44	40	59	58	70	78	81	88	81
9	67	57	--	43	41	55	58	71	79	82	86	82
10	67	53	40	45	38	56	59	71	79	84	86	80
11	68	53	42	44	46	54	56	67	77	84	84	80
12	69	--	41	45	50	47	53	71	76	85	86	79
13	68	51	41	46	40	45	55	71	79	84	85	77
14	70	52	42	47	41	46	58	72	78	84	86	78
15	70	55	43	47	42	47	55	72	77	84	86	78
16	71	54	45	47	47	46	56	73	76	86	84	74
17	71	53	42	49	46	50	58	--	80	86	85	76
18	71	53	42	48	46	45	60	75	80	84	85	76
19	71	54	41	48	50	49	60	76	82	85	86	75
20	70	53	42	49	51	52	62	75	83	85	87	75
21	69	51	41	46	52	51	62	78	84	86	86	74
22	69	52	43	47	53	55	63	--	85	87	88	72
23	68	52	42	48	53	55	64	74	86	85	83	72
24	66	45	44	46	53	56	66	74	86	85	84	74
25	--	42	49	46	54	56	68	74	87	86	83	76
26	--	46	--	46	54	58	67	75	87	86	84	76
27	70	46	45	48	55	56	69	--	82	84	86	74
28	70	46	42	43	57	58	71	76	82	85	86	72
29	72	46	42	38	--	54	71	77	82	86	88	72
30	73	49	41	36	--	57	73	78	82	86	89	72
31	73	--	43	35	--	57	--	80	--	--	90	--
Average	70	54	44	45	46	54	61	73	81	83	86	78

ARKANSAS RIVER BASIN--Continued
BAYOU METO NEAR STUTTGART, ARK.

LOCATION --At gaging station at bridge on U. S. Highway 79, 5½ miles southwest of Stuttgart, Arkansas County, and 8 miles upstream from Crooked Creek.
DRAINAGE AREA --560 square miles.
RECORDS AVAILABLE --Chemical analyses: November 1949 to September 1951.

Water temperatures: November 1949 to September 1951.

EXTREMES, 1950-51. --Dissolved solids: Maximum, 151 ppm Sept. 1-10; minimum, 20 ppm Jan. 14-20.
Hardness: Maximum, 84 ppm Sept. 1-10; minimum, 14 ppm Jan. 14-20.

Specific conductance: Maximum daily, 305 micromhos Sept. 8; minimum daily, 32.1 micromhos Jan. 15.
Water temperatures: Maximum, 90°F Aug. 31; minimum, freezing point Feb. 1-3.

EXTREMES, 1949-51. --Dissolved solids: Maximum, 151 ppm Sept. 1-10, 1951; minimum, 20 ppm Jan. 14-20, 1951.
Hardness: Maximum, 84 ppm Sept. 1-10, 1951; minimum, 12 ppm Jan. 11-20, 1950.

Specific conductance: Maximum daily, 305 micromhos Sept. 8, 1951; minimum daily, 30.8 micromhos Mar. 2, 1950.
Water temperatures: Maximum, 90°F Aug. 31, 1951; minimum, freezing point Feb. 1-3, 1951.

REMARKS --Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950.....	989	8.6	0.22	6.2	2.2	4.5	1.0	31	3.5	4.5	0.2	1.8	59	24	0	69.9	7.3	45
Oct. 11-20.....	270	--	--	7.7	3.1	5.1	--	36	2.9	4.5	--	1.7	72	32	2	80.4	7.7	60
Oct. 21-24.....	11.3	--	--	8.7	3.7	--	5.9	41	5.0	5.0	--	4.9	90	37	3	95.2	7.3	70
Oct. 25-31.....	30	--	--	12	8.2	9.1	--	65	7.0	11	--	2.0	81	64	10	143	7.5	60
Nov. 1-10.....	40	--	--	10	5.7	9.0	--	62	3.7	9.8	--	2.3	70	49	0	134	8.1	80
Nov. 11-15, 17.....	13.6	--	--	8.5	3.9	--	6.4	44	4.0	6.5	--	2.1	53	37	1	100	7.7	70
Nov. 16, 18-30.....	651	--	--	4.8	4.0	5.0	--	23	6.8	6.8	--	1.4	40	28	10	89.6	7.4	80
Dec. 1-10.....	669	--	--	4.4	3.5	4.5	--	18	8.0	6.5	--	1.4	37	25	11	72.3	7.5	100
Dec. 11-20.....	766	--	--	3.9	3.5	4.4	--	16	6.6	6.8	--	1.2	34	24	11	64.0	7.0	90
Dec. 21-31.....	325	--	--	5.0	3.4	4.0	--	20	7.6	4.5	--	1.3	36	26	10	70.4	7.1	50
Jan. 1-10, 1951.....	1,509	5.6	.99	4.6	4.4	2.3	8.0	21	6.2	4.5	.3	1.9	49	13	5	71.3	7.4	25
Jan. 11-20.....	1,559	--	--	3.8	2.2	4.2	--	13	5.4	5.8	--	1.9	29	18	7	36.7	7.0	80
Jan. 21-31.....	1,686	--	--	3.6	2.2	4.2	--	13	5.4	5.8	--	1.9	29	18	7	51.3	6.9	90
Feb. 1-10.....	1,276	--	--	3.6	1.7	3.6	--	15	5.1	4.5	--	1.5	27	16	4	49.9	7.1	90
Feb. 11-20.....	1,180	--	--	2.6	2.3	4.0	--	12	6.2	5.2	--	1.5	28	16	6	49.9	6.9	80
Feb. 21-28.....	1,350	--	--	4.9	2.3	3.6	--	16	6.7	4.5	--	1.2	31	22	9	57.6	7.3	80
Mar. 1-10.....	1,394	--	--	4.7	3.1	3.1	--	19	5.6	4.0	--	1.1	31	24	9	50.4	7.4	60
Mar. 11-20.....	965	--	--	6.0	2.1	3.9	--	21	5.3	4.2	--	1.1	33	24	6	59.3	7.2	50
Mar. 21-31.....	563	--	--	4.7	1.6	4.9	--	20	4.9	5.8	--	1.4	33	18	2	65.2	6.9	60
Apr. 1-10.....	783	4.4	1.4	5.0	2.5	4.5	1.6	19	7.3	5.0	.2	1.7	48	23	7	61.8	6.7	70
Apr. 11-20.....	1,006	--	--	6.4	4.6	4.6	--	22	4.7	5.0	--	1.4	34	19	1	62.7	7.3	80
Apr. 21-30.....	934	--	--	5.2	2.2	3.9	--	23	4.2	4.0	--	1.9	32	22	3	53.8	7.3	70

ARKANSAS RIVER BASIN--Continued
BAYOU METO NEAR STUTTGART, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
May 1-10, 1951.....	610	--	--	5.2	1.1	4.6	--	22	3.7	4.2	--	1.4	31	18	0	67.7	7.0	100
May 11-23	148	--	--	5.6	3.1	5.3	--	28	2.6	6.5	--	1.7	39	27	4	74.1	7.6	120
May 24-31	12.4	--	--	10	5.6	12	--	56	5.2	18	--	3.5	80	48	2	132	6.9	100
June 1-2, 7-10	59.8	--	--	8.6	4.8	9.2	--	46	6.7	9.5	--	2.7	64	41	4	123	7.2	120
June 3-6	2.85	--	--	13	8.3	11	--	69	8.0	12	--	3.8	90	67	10	170	7.2	90
June 11-20	222	--	--	10	4.2	12	--	50	7.6	9.2	--	1.7	70	42	1	137	7.0	45
June 21-30	83.5	--	--	11	4.6	12	--	59	4.9	10	--	1.4	73	46	0	140	6.6	45
July 1-7	470	--	--	--	5.0	9.3	--	50	4.1	8.0	--	2.8	63	42	1	115	7.7	22
July 8-20	555	12	0.34	7.9	3.4	7.5	2.0	44	4.4	5.5	0.2	2.2	69	34	0	98.9	7.4	45
July 21-31	74.5	--	--	10	5.2	8.6	--	58	2.6	7.2	--	1.8	64	46	0	119	7.1	32
Aug. 1-10	275	--	--	7.3	4.1	5.7	--	46	4.0	4.0	--	2.0	50	35	0	98.2	7.4	45
Aug. 11-20	47.5	--	--	10	5.5	8.3	--	59	3.3	5.5	--	1.0	63	49	0	118	7.4	45
Aug. 21-31	43.7	14	38	14	5.8	11	2.6	86	4.8	5.0	3	2.2	104	59	0	174	7.7	45
Sept. 1-10	17.4	--	--	20	8.3	18	--	123	4.5	11	--	1.7	151	84	0	242	7.8	27
Sept. 11-20	98.9	--	--	20	7.8	19	--	127	4.5	12	--	1.2	150	82	0	239	7.7	28
Sept. 21-30	98.1	--	--	20	7.6	19	--	117	3.1	16	--	1.2	142	81	0	231	7.5	23
Average	537	--	--	8.0	4.0	7.4	--	42	5.1	7.0	--	1.9	60	36	4	102	--	65

ARKANSAS RIVER BASIN--Continued

BAYOU METO NEAR STUTTGART, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	66	--	40	32	57	59	72	80	76	82	82
2	69	65	--	45	32	58	55	72	80	76	82	82
3	69	58	49	49	32	63	54	73	76	77	83	82
4	65	47	--	46	33	59	56	70	72	77	83	78
5	65	64	--	46	35	57	58	70	70	79	83	77
6	64	48	43	47	38	59	59	70	69	78	82	78
7	65	57	38	42	36	64	60	72	72	80	82	76
8	65	61	39	42	37	59	55	66	72	82	83	73
9	62	55	39	40	38	57	57	70	74	81	83	73
10	63	47	--	43	39	56	57	68	75	82	82	74
11	--	42	38	42	42	58	57	67	76	82	80	74
12	63	40	38	42	46	52	53	66	74	82	78	76
13	64	42	38	45	48	47	60	72	75	83	80	75
14	63	44	40	52	45	45	59	73	75	82	82	72
15	64	52	42	48	45	47	56	76	75	82	82	70
16	64	58	40	48	44	47	54	70	73	82	79	69
17	65	52	42	48	45	51	55	72	74	82	77	72
18	66	52	39	49	50	52	58	72	77	83	76	67
19	67	58	38	--	--	48	65	74	80	83	80	68
20	66	--	38	55	55	50	63	73	76	73	81	68
21	64	--	37	47	53	52	63	82	80	84	82	72
22	65	51	40	47	52	51	60	75	80	83	78	72
23	65	--	42	48	52	56	63	72	81	84	76	68
24	61	47	47	46	53	52	64	70	82	82	75	72
25	60	43	43	45	55	53	67	71	82	83	77	71
26	65	42	48	43	57	55	67	72	82	82	77	72
27	65	46	39	45	57	56	67	71	82	82	79	73
28	64	43	39	47	60	58	70	71	82	80	82	68
29	69	43	39	40	--	55	71	73	83	81	83	65
30	67	43	40	36	--	54	72	77	81	81	85	65
31	68	--	38	35	--	57	--	80	--	82	90	--
Average	65	51	40	45	45	54	60	72	77	81	81	73

ARKANSAS RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN IN NEW MEXICO

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Tem- per- ature (° F)	Silica (SiO ₂) (° F)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent sodium carbonate	Specific conductance (micro-mhos at 25° C)
														Parts per million	Tons per acre- foot	Tons per day	Total	Non-carbonate		
UTE CREEK AT GALLEGOS																				
Oct. 19-20, 1950.....			18		30	27		259	a 320	373	66	1.7	0.4	933	1.27	186	0	75	1,410	
Oct. 21-22, 24, 26-30			18		40	29		245	b 357	353	62	1.7	.1	925	1.26	219	0	71	1,410	
May 15, 1951.....			21		28	17		18	290	21	11	1.2	2.0	262	.36	140	0	14	496	
May 28, 29.....			27		44	20		51	269	65	9	1.0	.5	350	.48	192	0	37	566	
July 5, 6.....			23		43	19		81	258	110	22	2.0	--	427	.58	186	0	49	703	
July 11-14, 16.....			28		37	19		86	221	134	24	1.4	.2	439	.60	170	0	52	681	

a Includes equivalent of 16 parts per million of carbonate (CO₃).b Includes equivalent of 18 parts per million of carbonate (CO₃).

ARKANSAS RIVER BASIN--Continued
 MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature ("F)	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) (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium carbonate	Specific conductance (micro-mhos at 25 °C)	pH	
														Parts per million	Tons per acre-foot					
CANADIAN RIVER ONE-FOURTH OF A MILE ABOVE CONFLUENCE AMARILLO CREEK																				
Feb. 10, 1951.....			12		130	47	339		240	484	392	1.0	0.0	1,520	2.07	518	322	59	2,370	8.0
EAST AMARILLO CREEK APPROXIMATELY 400 FEET ABOVE MOUTH																				
Feb. 10, 1951.....			52		65	41	239		577	87	193	5.2	0.2	946	1.31	330	0	61	1,620	7.8
HILL CREEK ABOVE CONFLUENCE OF CANADIAN RIVER																				
Oct. 17, 1950.....			34		140	74	1,030		162	349	1,700	2.0		3,410	4.64	654	522	77	5,900	7.9
ROCK CREEK ABOVE CONFLUENCE OF CANADIAN RIVER																				
Oct. 17, 1950.....			54		272	121	804		240	601	1,480	18		3,470	4.72	1,180	980	80	5,670	8.1
CANADIAN RIVER NEAR CANADIAN																				
Oct. 4, 1950.....	450								166	111	134					172			904	7.9
Oct. 10.....	83.0								241	165	250					322			1,470	8.1
Oct. 17.....	20.1								242	139	260					311			1,450	8.1
(Chemical analyses made by Stillwater, Oklahoma, Quality of Water Laboratory)																				
PALO DURO CREEK NEAR SPEARMAN																				
Oct. 6, 1950.....					52	15	35		173	54	44		8.8	360	0.49	191	50	28	536	--
Oct. 10.....					42	9.0	11		187	2.0	6.5		4	208	.28	142	0	14	308	--
May 19, 1951.....	630				36	5.3	13.8		236	7.8	1.8		7.7	172	.23	112	0	9	233	7.6
May 25.....					52	28	13		236	61	15		7.7	378	.51	245	52	11	534	8.4
a Includes equivalent of 6 parts per million of carbonate (CO ₃).																				

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

ARKANSAS RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN IN ARKANSAS

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
POTEAU RIVER AT CAUTHRON																		
Feb. 5, 1951.....	14							27	16	9.0		1.2		29	7	113	7.9	
Sept. 18.....	4.1							33	6.0	4.5		1.0		27	0	82.2	7.5	
COVE CREEK NEAR LEE CREEK																		
Feb. 1, 1951.....	4.0							101	8.0	2.8		0.3		88	5	175	8.4	
Sept. 11.....	9							122	8.0	3.5		1.2		110	10	208	8.3	
LEE CREEK NEAR VAN BUREN																		
Feb. 1, 1951.....	46							44	5.0	6.8		1.0		41	5	105	8.1	
Sept. 20.....	22							46	5.0	4.0		2.8		45	7	98.3	7.8	
FROG BAYOU NEAR RUDY																		
Feb. 1, 1951.....	30							15	2.0	2.5		0.5		15	3	41.3	7.9	
Sept. 19.....	4.4							23	5.0	3.2		.5		20	1	51.3	7.5	
MULBERRY RIVER NEAR MULBERRY																		
Jan. 23, 1951.....	500							22	3.0	1.2		0.3		19	1	44.3	6.4	
Sept. 14.....	725							18	3.0	2.5		.7		17	2	37.0	7.4	
PINEY CREEK NEAR DOVER																		
Jan. 23, 1951.....	327							14	3.0	1.2		0.4		13	2	31.1	6.2	
Sept. 13.....	81							11	4.0	1.4		1.1		36	27	92.9	7.1	
ILLINOIS BAYOU NEAR SCOTTSVILLE																		
Feb. 5, 1951.....	116							16	4.0	1.2		1.2		12	0	31.2	7.7	
Sept. 13.....	30							19	5.0	3.5		1.1		18	2	46.7	7.4	
DUTCH CREEK AT WALTRECK																		
Mar. 7, 1951.....	44							17	6.0	3.2		0.5		12	0	44.4	7.7	
Sept. 11.....	.5							29	3.0	3.0		.7		23	0	64.1	7.6	

PETIT JEAN CREEK NEAR BOONEVILLE

[illegible]

PETIT JEAN CREEK NEAR WAVELAND

[illegible]

SOUTH FOURCHE LA FAVE RIVER NEAR HOLLIS

[illegible]

FOURCHE LA FAVE RIVER NEAR GRAVELLY

[illegible]

FOURCHE LA FAVE RIVER NEAR NIMROD

Jan. 22, 1951.....	381					21	6.0	2.8	1.0	19	2	54.0	6.6
Sept. 12	53					16	4.0	3.5	1.9	17	4	47.2	7.4

RED RIVER BASIN

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.

LOCATION:--At gaging station at county road bridge in Briscoe County, 1 mile upstream from Byrnes (Battle) Creek, 3.4 miles upstream from Mulberry Creek, 7.5 miles southwest of Brice, Hall County, and at mile 1.110.

DRAINAGE AREA:--5,972 square miles of which 4,479 square miles is probably noncontributing.

RECORDS AVAILABLE:--Chemical analyses: August 1949 to July 1951 (discontinued).

Water temperatures: August 1949 to July 1951 (discontinued).

Sediment records: August 1949 to July 1951 (discontinued).

EXTREMES: October 1950 to July 1951:--Dissolved solids: Maximum, 14,900 ppm Jan. 15-16; minimum, 1,650 ppm May 17-20.

Hardness: Maximum, 2,920 ppm Jan. 15-16; minimum, 652 ppm May 17-20.

Specific conductance: Maximum, 21,400 micromhos/cm Jan. 15-16; minimum, 2,290 micromhos/cm May 25.

Sediment loads: Maximum, 840,000 tons May 16.

Sediment loads: Maximum, 840,000 tons May 16.

EXTREMES: 1949-51:--Dissolved solids: Maximum, 14,900 ppm Jan. 15-16, 1951; minimum, 1,650 ppm May 17-20, 1951.

Hardness: Maximum, 2,920 ppm Jan. 15-16, 1951; minimum, 652 ppm May 17-20, 1951.

Water temperatures: (1949-50): Maximum, 92°F July 1, 27, 28, 1950; minimum, 55°F May 14, 1950.

Sediment concentrations: Maximum observed, 75,200 ppm May 16, 1951.

Sediment loads: Maximum daily, 1,840,000 tons May 16, 1951; minimum daily, 0 tons on many days.

REMARKS:--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for period October 1950 to July 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, October 1950 to July 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (°F)	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 (sum)		Hardness as CaCO ₃		Percent non-dissolved	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, mg./l.	Non-carbonate, mg./l.			
Oct. 1-2, 5-6, 1950...	9.32																				
Oct. 3-4	13.5		30	532	316	133	1,920	126	1,520	3,100							1,870	1,770	69	10,800	7.8
Jan. 15-16, 1951	10.1		25	813	217	217	1,130	130	961	1,750							1,110	1,010	69	6,490	7.8
Feb. 25 (12 p. m. to 10 a. m.)	4.8		13	566	99	99	1,330	98	1,580	2,120							2,920	2,800	77	21,400	7.8
Feb. 25 (10 a. m. to 12 p. m.), 26-28	36.8		30	634	160	160	3,090	141	1,900	4,870							2,240	2,120	75	16,300	7.6
Mar. 1-2	7.00		21	732	191	191	3,530	144	2,220	5,570							2,610	2,490	75	18,300	7.7
Apr. 28	a 0		20	755	144	144	2,510	87	2,290	3,880							2,480	2,400	69	14,100	7.8
May 16 (12 p. m. to 3 p. m.)	12,100		32	232	48	48	649	173	690	940							776	634	65	4,400	8.2
May 16 (3 p. m. to 12 p. m.)	17,440		24	196	41	41	509	155	622	700							658	530	63	3,480	8.4
May 17-20	6,082		20	202	36	36	308	110	583	440							1,650	2,24	51	2,540	8.0
May 21	721		25	210	83	83	283	123	564	560							1,790	2,43	42	2,950	8.3
May 22-24, 25 (12 p. m. to 1 p. m.)	348		22	322	54	54	480	138	900	720							2,570	3,50	50	3,760	7.8
May 25 (1 p. m. to 4 p. m.)	432		36	292	70	70	138	120	856	230							1,680	2,28	23	2,290	8.0

a Includes days of less than 0.05 second-foot flow.

RED RIVER BASIN

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May 25 (4 p. m. to 12 p. m.), 26	278	23	314	59	492	136	887	750	2.5	2,590	3.52	1,940	1,030	914	51	3,920	8.1
May 27-31, June 1	121	26	396	82	1,070	127	1,140	1,670	1.0	4,450	6.05	1,450	1,330	1,230	64	6,980	8.0
June 1 (11 a. m. to 4 p. m.)	979	24	253	55	440	141	804	610	1.0	2,260	3.07	5,970	857	742	53	3,570	8.4
June 1 (4 p. m. to 12 p. m.), 2, 3 (12 p. m. to 4 p. m.), 4 (11 a. m. to 1 p. m.), 5 (11 a. m. to 12 p. m.), 6 (12 p. m. to 4 p. m.)	319	24	206	40	362	137	608	510	2.5	1,820	2.48	1,570	678	566	54	2,880	7.7
June 3 (11 a. m. to 12 p. m.), 4 (12 p. m. to 12 m.)	115	33	239	49	439	153	653	670	3.0	2,160	2.94	671	798	672	54	3,400	8.2
June 4 (12 m. to 12 p. m.), 5-6	68.0	25	360	88	893	136	1,070	1,400	1.0	3,900	5.30	716	1,260	1,150	61	6,060	7.9
June 7-10, 11 (12 p. m. to 12 m.), 12 p. m. to 12 m.), 12 p. m. to 4 a. m.)	178	30	478	118	1,310	122	1,430	2,080	--	5,510	7.49	2,650	1,680	1,580	63	8,350	7.7
June 11 (12 m. to 12 p. m.), 29-30	12.5	32	548	113	1,520	115	1,610	2,380	--	6,260	8.51	211	1,830	1,740	64	9,480	8.0
June 12 (4 a. m. to 3 p. m.), 6 p. m. to 12 p. m.), 13																	
June 12 (4 a. m. to 1 p. m. to 5 p. m.), 14	608	24	260	44	401	123	721	600	4.0	2,110	2.87	3,460	830	728	51	3,260	8.0
June 12 (5 p. m. to 6 p. m.), 13 (9 a. m. to 4 p. m.), 5 p. m. to 4 p. m.), 5 p. m. to 12 p. m.)	517	20	216	40	341	155	614	480	2.5	1,790	2.43	2,500	704	576	51	2,800	7.9
June 19, 21-26	151	23	280	52	514	117	825	760	3.2	2,520	3.43	1,030	912	816	55	3,870	7.8
June 20, 27-28	34.0	28	364	72	859	118	1,040	1,340	3.0	3,760	5.11	345	1,200	1,110	61	5,980	8.1
July 1-6, 24-26	47.9	27	468	87	1,020	106	1,350	1,600	4.5	4,610	6.27	596	1,520	1,440	59	6,960	7.9
Weighted average	162	23	229	44	454	129	669	663	--	2,150	2.92	940	752	647	57	3,370	--

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Temperature (°F) of water, October 1950 to July 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--				--			--	--	76		
2	--				--			--	--	80		
3	70				--			--	72	--		
4	64				--			--	--	--		
5	71				--			--	73	93		
6	79				--			--	76	92		
7	--				--			--	79	--		
8	--				--			--	78	--		
9	--				--			--	79	--		
10	--				--			--	77	--		
11	--				--			--	67	--		
12	--				--			--	59	--		
13	--				--			--	70	--		
14	--				--			--	70	--		
15	--				--			--	71	--		
16	--				--			65	73	--		
17	--				--			--	87	--		
18	--				--			--	78	--		
19	--				--			--	88	--		
20	--				--			70	94	--		
21	--				--			66	80	--		
22	--				--			--	84	--		
23	--				--			--	86	--		
24	--				--			--	76	--		
25	--				55			65	81	--		
26	--				57			65	81	--		
27	--				64			--	91	--		
28	--				59			70	84	--		
29	--				--			--	97	--		
30	--				--			--	--	--		
31	--				--			--	--	--		
Average	--				--			--	79	--		

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Suspended sediment, October 1950 to July 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	12	--	a 16						
2-----	9.5	--	a 8						
3-----	17	4,810	s 750						
4-----	14	4,620	s 219						
5-----	9.0	1,700	41						
6-----	6.8	--	a 12						
7-----	0								
8-----	0								
9-----	0								
10-----	0								
11-----	0								
12-----	0								
13-----	0								
14-----	0								
15-----	0								
16-----	0								
17-----	0								
18-----	0								
19-----	0	--	0						
20-----	0								
21-----	0								
22-----	0								
23-----	0								
24-----	0								
25-----	0								
26-----	0								
27-----	0								
28-----	0								
29-----	0								
30-----	0								
31-----	0								
Total-	68.3	--	1,046						
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0			0			7.8	--	e 7
2-----	0			0			6.2	--	e 3
3-----	0			0			0		
4-----	0			0			0		
5-----	0			0			0		
6-----	0			0			0		
7-----	0			0			0		
8-----	0	--	0	0			0		
9-----	0			0			0		
10-----	0			0			0		
11-----	0			0			0		
12-----	0			0			0		
13-----	0			0	--	0	0		
14-----	0			0			0		
15-----	14	--	b 40	0			0		
16-----	6.2	--	b 10	0			0		
17-----	0			0			0	--	0
18-----	0			0			0		
19-----	0			0			0		
20-----	0			0			0		
21-----	0			0			0		
22-----	0			0			0		
23-----	0			0			0		
24-----	0	--	0	0			0		
25-----	0			55	--	e 800	0		
26-----	0			35	--	e 130	0		
27-----	0			22	--	e 45	0		
28-----	0			11	--	e 13	0		
29-----	0			--	--	--	0		
30-----	0			--	--	--	0		
31-----	0			--	--	--	0		
Total-	20.2	--	50	123	--	988	14.0	--	10

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Suspended sediment, October 1950 to July 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				0			491	11,400	s 25,500
2-----				0			291	7,880	s 6,480
3-----				0			156	3,800	1,600
4-----				0			72	2,420	470
5-----				0			72	1,360	264
6-----				0			62	980	164
7-----				0			62	1,200	201
8-----				0		0	35	1,200	113
9-----				0			17	--	a 45
10-----				0			22	--	a 50
11-----				0			23	--	a 50
12-----				0			1,990	18,800	s 125,000
13-----				0			507	9,120	s 13,700
14-----				0			315	7,400	6,290
15-----				0			909	12,500	s 39,500
16-----				14,100	36,000	s 1,840,000	492	--	a 18,100
17-----				14,300	--	a 800,000	380	7,550	s 7,930
18-----				7,690	30,100	a 831,000	179	3,700	1,790
19-----				1,480	--	a 24,000	116	3,000	940
20-----				658	--	a 5,800	58	1,400	219
21-----				721	4,940	s 10,700	40	--	a 140
22-----				358	--	a 3,420	265	10,600	s 8,710
23-----				344	3,200	2,970	80	6,800	1,470
24-----				288	2,600	2,020	30	2,400	194
25-----				440	6,350	s 8,920	416	15,100	s 27,100
26-----				229	4,300	2,660	110	9,700	s 3,070
27-----				168	2,400	1,090	30	7,900	640
28-----				165	2,600	s 1,200	14	--	a 174
29-----				102	1,700	468	4.2	--	a 9
30-----				75	--	a 220	17	--	a 104
31-----				72	867	169	--	--	--
Total-				41,190	--	3,534,727	7,255.2	--	288,017
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	32	800	a 69						
2-----	221	10,200	s 10,300						
3-----	47	--	a 763						
4-----	18	--	a 97						
5-----	9.8	--	a 26						
6-----	8.0	--	a 11						
7-----	0								
8-----	0								
9-----	0								
10-----	0								
11-----	0								
12-----	0								
13-----	0								
14-----	0								
15-----	0	--	0						
16-----	0								
17-----	0								
18-----	0								
19-----	0								
20-----	0								
21-----	0								
22-----	0								
23-----	0								
24-----	34	--	b 250						
25-----	50	--	b 400						
26-----	11	--	b 25						
27-----	0								
28-----	0								
29-----	0	--	0						
30-----	0								
31-----	0								
Total-	430.8	--	11,941						

Total discharge for period Oct. 1 to July 31 (cfs-days)..... 49,101.5

Total load for period Oct. 1 to July 31 (tons)..... 3,836,779

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

RED RIVER BASIN--Continued
PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to July 1951
(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	Instantaneous discharge (cfs)	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, 1950	1:30 p.m.	57	18,600	3,370	73	88	97	100	--	--	--	--	--	--	PCW
May 16, 1951	3:00 p.m.	6,340	43,300	3,550	--	34	42	50	62	68	82	99	--	100	SPCW
May 18	3:20 p.m.	4,620	22,800	3,940	--	0	5	47	63	77	92	97	--	100	SPN
May 18	3:20 p.m.	4,620	22,800	4,040	29	33	42	54	67	79	92	97	--	100	SPCW
May 26	11:50 a.m.	222	4,240	2,020	46	64	72	80	85	90	99	100	--	--	SPCW
June 3	11:45 a.m.	174	3,760	2,000	44	56	63	70	76	80	92	99	--	100	SPCW
June 13	4:40 p.m.	340	6,500	5,230	53	63	73	76	83	96	100	--	--	--	SPCW
June 15	4:50 p.m.	450	9,020	5,480	--	47	58	71	80	86	98	100	--	--	SPCW
June 22	7:30 a.m.	313	14,300	4,980	0	2	3	82	91	94	98	100	--	--	SPN
June 22	7:30 a.m.	313	14,300	4,680	--	67	79	86	89	92	97	99	--	100	SPCW
June 22	11:00 a.m.	236	9,560	3,500	--	61	75	83	87	91	98	100	--	--	SPCW
June 25	12:45 p.m.	486	30,700	4,690	--	57	70	83	89	97	100	--	--	--	SPCW
July 2	11:00 a.m.	730	22,400	3,720	--	46	60	75	86	90	97	100	--	--	SPCW

RED RIVER BASIN--Continued
MULBERRY CREEK NEAR BRICE, TEX.

LOCATION.--At gaging station at bridge on State Highways 70 and 256, 1.5 miles upstream from Bitter Creek, 2.3 miles southwest of Brice, Hall County, and 3.3 miles upstream from mouth.

DRAINAGE AREA.--534 square miles, of which 238 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to July 1951 (discontinued).

Water temperatures: August 1949 to July 1951 (discontinued).

Sediment records: August 1949 to July 1951 (discontinued).

EXTREMES, October 1950 to July 1951.--Dissolved solids: Maximum, 2,870 ppm Mar. 2; minimum, 554 ppm June 1, 2-3, 4.

Specific hardness: Maximum, 1,800 ppm June 13; minimum, 350 ppm June 1, 2-3, 4.

Sediment concentrations: Maximum daily observed, 17,800 ppm June 17; minimum daily, 669 micromhos June 2.

Sediment loads: Maximum daily, 94,500 tons May 17; minimum daily, 0 tons on many days.

Hardness, 1949-51.--Dissolved solids: Maximum, 2,920 ppm June 24, 1950; minimum, 554 ppm June 1, 2-3, 4, 1951.

Water temperatures: Maximum, 1,800 ppm June 13, 1951; minimum, 330 ppm June 1, 2-3, 4, 1951.

Sediment concentrations (1949-50): Maximum, 94°F Aug. 4, 1950; minimum, 55°F Oct. 27, 1949.

Sediment loads: Maximum daily, 195,000 tons July 4, 1950; minimum daily, 0 tons on many days.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for period October 1950 to July 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, October 1950 to July 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Bohrium (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot				
Oct. 3, 6, 17, 1950.	1.80		25		416	135		158	103	1,480	220		1.8	2,480	3.39	1,590	1,510	2,960	7.6
Feb. 26, Mar. 12-13, 17, 1951.....	9.98		33		448	120	185		108	1,470	280		1.0	2,590	3.52	1,610	1,520	3,160	7.7
Mar. 2.....	.40		30		500	113	229		124	1,680	255		.0	2,870	3.90	1,710	1,610	3,390	7.4
May 16 (12 p.m. to 3 p.m.), 17 (9 a.m. to 3 p.m.), 21 (10 a.m. to 12 p.m.), 22-30, June 1 (12 p.m. to 12 m.), 17 (12 p.m. to 12 m.), 17 (12 p.m. to 9 a.m.), 3 p.m. to 12 p.m.), 18-20, 21 (12 p.m. to 10 a.m.), 22.....	173		37		294	59		127	117	856	186		3.0	1,620	2.20	976	880	2,130	7.8
June 1 (12 m. to 12 p.m.), 2-3, 4 (12 p.m. to 12 m.)....	344		29		167	31	70		106	466	86		2.5	947	1.29	544	457	1,250	7.8
	597		28		101	19	36		113	235	49		2.5	554	.75	330	238	789	8.0

June 4 (12 M. to 12 p.m.), 8-12	26.3	36	223	40	101	124	605	148	1.0	1,220	1.66	87	721	620	23	1,680	7.9
June 13	a 0	45	434	175	156	94	1,770	161	.8	2,790	3.79	.0	1,600	1,730	16	3,190	7.6
June 15-21, July 1 (12 p.m. to 6 p.m.)	25.5	30	274	57	121	106	821	168	2.0	1,520	2.07	105	918	831	22	2,030	8.0
July 1 (6 p.m. to 12 p.m.), 2-4	77.4	34	222	45	94	116	655	116	4.0	1,230	1.67	257	739	644	22	1,630	8.1
Weighted average.	20.7	31	200	40	83	112	566	115	2.6	1,120	1.52	63	664	572	21	1,480	--

a Less than 0.05 second-foot flow.

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Temperature (°F) of water, October 1950 to July 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	- Aug.	Sept.
1	--				--	--		--	--	73		
2	--				--	59		--	--	86		
3	74				--	--		--	70	--		
4	--				--	--		--	--	--		
5	--				--	--		--	73	--		
6	76				--	--		--	74	--		
7	--				--	--		--	80	--		
8	--				--	--		--	82	--		
9	--				--	--		--	--	--		
10	--				--	--		--	--	--		
11	--				--	--		--	76	--		
12	--				--	32		--	--	--		
13	--				--	33		--	--	--		
14	--				--	--		--	--	--		
15	--				--	--		--	89	--		
16	--				--	--		60	--	--		
17	--				--	--		--	89	--		
18	--				--	--		--	--	--		
19	--				--	--		--	98	--		
20	--				--	--		--	--	--		
21	--				--	--		68	--	--		
22	--				--	--		68	--	--		
23	--				--	--		--	--	--		
24	--				--	--		--	--	--		
25	--				--	--		--	--	--		
26	--				47	--		--	--	--		
27	--				--	--		--	--	--		
28	--				--	--		--	--	--		
29	--				--	--		--	--	--		
30	--				--	--		--	--	--		
31	--				--	--		--	--	--		
Average	--				--	--		--	--	--		

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Suspended sediment, October 1950 to July 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	8.8	--	a 20	0			0.1		
2-----	8.8	--	a 15	0			.1	--	(t)
3-----	2.8	--	a 4	0			.1		
4-----	2.4	--	a 3	0	--	0	0	--	0
5-----	2.1	--	a 2	0			0	--	0
6-----	2.4	--	a 3	0			.1		
7-----	1.8	--	a 1	.1	--	e (t)	.7		
8-----	.4			0			.7		
9-----	.2			0			.1		
10-----	.1			0			1.4		
11-----	.7			0	--	0	.1		
12-----	.1			0			.2		
13-----	1.0			0			.7		
14-----	.2	--	e (t)	.1	--	e (t)	.8		
15-----	.1			0			.8		
16-----	.2			0	--	0	.8		
17-----	.2			0			.8		
18-----	.2			.1	--	e (t)	.7		
19-----	.2			0	--	0	.7	--	e .1
20-----	.1			0	--	0	.7		
21-----	0	--	0	.1			.8		
22-----	.3			.1			1.8		
23-----	.1			.1			1.6		
24-----	.3			.2			1.4		
25-----	.1			.1	--	e (t)	1.4		
26-----	.2			.1			1.2		
27-----	.2	--	e (t)	.1			.3		
28-----	.1			.1			.4		
29-----	.1			.2			1.2		
30-----	.1			.1			1.4		
31-----	.1			--	--	--	1.6		
Total-	34.4	--	51	1.5	--	0.1	22.7	--	2.6
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.6			0			0.4		
2-----	1.6			0			.4	--	(t)
3-----	2.8			0			0	--	0
4-----	1.6			0			.1		
5-----	1.6			0	--	0	.1		
6-----	1.6			0			.1		
7-----	1.6	--	e (t)	0			.1		
8-----	1.6			.7			.1		
9-----	1.2			.2			.1		
10-----	1.2			.2	--	e (t)	.5	--	e (t)
11-----	1.2			.2			.2		
12-----	1.2			.2			.3		
13-----	72	--	b 1,500	0			.4		
14-----	1.2	--	b 2	0	--	0	.4		
15-----	.6	--	b 1	0			.2		
16-----	.3			.2			0	--	0
17-----	.6	--	e .2	.2			.2		
18-----	.7			.2			.6	--	e (t)
19-----	0	--	0	.4			.6		
20-----	.2			.3	--	e (t)	.4		
21-----	.2			.4			0		
22-----	.2			.3			0		
23-----	.1			.6			0		
24-----	.1	--	e (t)	1.0			0	--	0
25-----	.1			1.4			0		
26-----	.1			39	--	b 500	0		
27-----	.1			3.2	--	b 5	0		
28-----	0			1.0	--	b 1	0		
29-----	0			--	--	--	.3		
30-----	0	--	0	--	--	--	.3	--	e (t)
31-----	0			--	--	--	.3		
Total-	95.3	--	1,506.2	49.7	--	506.9	6.1	--	1

e Estimated.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Suspended sediment, October 1950 to July 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.2			0			1,340	9,460	s 93,700
2-----	.2			0			569	8,600	s 13,800
3-----	.3			0			276	5,120	s 4,280
4-----	.6			0			61	--	a 400
5-----	1.2			0			53	2,150	308
6-----	.6	--	e (t)	0			75	2,260	s 487
7-----	.6			0			37	1,500	150
8-----	.7			0	--	0	14	1,200	45
9-----	.6			0			4.8	--	a 10
10-----	.6			0			3.2	--	a 5
11-----	0			0			4.2	798	9
12-----	0			0			1.4	--	a 1
13-----	0			0			0	--	0
14-----	0			0			0	--	0
15-----	0			0			105	5,610	s 2,130
16-----	0			562	9,180	s 20,600	51	--	a 190
17-----	0			1,530	15,800	s 94,500	11	--	a 15
18-----	0			662	7,930	s 16,700	.8	--	a 1
19-----	0	--	0	103	3,500	973	13	--	b 110
20-----	0			97	--	a 700	.3	--	e (t)
21-----	0			80	4,920	s 952	.4	--	e (t)
22-----	0			37	6,300	629	0		
23-----	0			40	2,650	s 259	0		
24-----	0			16	--	a 40	0		
25-----	0			22	--	a 160	0		
26-----	0			2.1	--	a 2	0	--	0
27-----	.3	--	e (t)	.6	--	a .3	0		
28-----	0			32	3,350	s 380	0		
29-----	0	--	0	1.8	--	a 3	0		
30-----	0			.1	--	a (t)	0		
31-----	--	--	--	0	--	0	--	--	--
Total-	5.9	--	1	3,185.6	--	135,898.3	2,620.1	--	115,641.0
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	81	5,450	s 4,060						
2-----	162	7,330	s 3,520						
3-----	24	--	a 97						
4-----	.6	--	a 1						
5-----	0								
6-----	0								
7-----	0								
8-----	0								
9-----	0								
10-----	0								
11-----	0								
12-----	0								
13-----	0								
14-----	0								
15-----	0								
16-----	0								
17-----	0								
18-----	0	--	0						
19-----	0								
20-----	0								
21-----	0								
22-----	0								
23-----	0								
24-----	0								
25-----	0								
26-----	0								
27-----	0								
28-----	0								
29-----	0								
30-----	0								
31-----	0								
Total-	267.6	--	7,678						

Total discharge for period Oct. 1 to July 31 (cfs-days) 6,258.9

Total load for period Oct. 1 to July 31 (tons) 261,286.1

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Particle-size analyses of suspended sediment, May to July 1951
 (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	Instantaneous discharge (cfs)	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 17, 1951	10:00 a. m.	1,260	12,700	3,270	--	37	51	59	67	85	94	99		100	SPCW
May 19	4:00 p. m.	109	3,180	1,330	46	57	63	70	78	83	91	95		100	SPCW
June 2	2:00 p. m.	414	11,500	2,900	--	45	53	59	66	74	88	100		--	SPCW
June 6	7:35 p. m.	84	2,890	1,440	35	47	53	60	66	74	88	98		100	SPCW
June 15	2:45 p. m.	269	5,620	3,040	35	41	52	64	76	83	90	96		100	SPCW
June 15	6:15 p. m.	93	5,580	3,320	--	64	73	80	81	84	91	98		100	SPCW
July 1	7:40 p. m.	290	23,000	5,140	--	--	5	90	96	97	98	100		--	SPN
July 1	7:40 p. m.	290	23,000	4,840	43	62	78	92	94	96	99	100		--	SPCW
July 2	2:10 p. m.	213	11,600	3,950	--	52	72	77	83	88	96	99		100	SPCW
July 2	5:10 p. m.	75	12,300	5,140	--	80	89	97	98	99	100	--		--	SPCW

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.

LOCATION.--At gaging station at bridge on State Highway 34, 10.8 miles downstream from Timber Creek, and 3 miles south of Carter, Beckham County.

DRAINAGE AREA.--2,337 square miles (revised), of which 399 square miles is probably non-contributing.

RECORDS AVAILABLE.--Sediment records: March 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum, 18,800 ppm June 8; minimum, no flow Aug. 2-31, Sept. 1-8, 18-30.

Sediment loads: Maximum daily, 633,000 tons May 18; minimum daily, no flow Aug. 2-31, Sept. 1-8, 18-30.

EXTREMES, 1948-51.--Sediment concentrations: Maximum, 19,600 ppm Sept. 26, 1950; minimum, no flow at times each year.

Sediment loads: Maximum daily, 633,000 tons May 18, 1951; minimum daily, no flow at times each year.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	135	1,760	s 2,130	34	486	45	75	400	81
2-----	461	4,670	s 8,180	30	307	25	73	329	65
3-----	134	1,500	542	32	223	19	68	218	40
4-----	91	1,020	250	32	268	23	68	332	61
5-----	81	725	159	34	264	24	40	481	52
6-----	78	580	122	36	360	35	30	832	67
7-----	70	480	91	36	216	21	25	460	31
8-----	52	377	53	38	400	41	30	144	12
9-----	48	370	48	38	325	33	44	104	12
10-----	48	336	44	30	250	20	100	183	49
11-----	48	195	25	32	331	29	122	401	132
12-----	46	246	31	42	510	58	170	989	454
13-----	42	243	28	44	360	43	150	758	307
14-----	40	250	27	50	326	44	118	882	281
15-----	36	246	24	58	308	48	114	322	99
16-----	36	268	26	63	344	59	114	310	95
17-----	40	300	32	65	196	34	100	418	113
18-----	38	190	19	70	505	95	97	383	100
19-----	38	280	29	70	576	109	94	393	100
20-----	38	264	27	63	630	107	91	466	114
21-----	42	285	a 32	58	446	70	88	404	96
22-----	46	305	a 38	65	304	53	91	365	90
23-----	46	442	55	63	750	128	94	350	89
24-----	52	145	20	60	428	69	97	704	185
25-----	58	196	31	50	364	49	100	744	201
26-----	58	400	63	58	315	49	104	276	78
27-----	50	322	43	58	343	54	94	219	56
28-----	46	281	35	63	160	27	70	104	20
29-----	42	536	61	81	200	44	104	115	32
30-----	34	388	36	78	664	140	146	329	130
31-----	36	872	85	--	--	--	118	330	105
Total--	--	--	12,386	--	--	1,595	--	--	3,347

s Computed by subdividing day.

a Computed from estimated concentration graph.

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	142	510	196	20	894	48	114	452	139
2-----	142	708	271	20	776	42	114	351	108
3-----	118	489	156	30	212	17	107	392	113
4-----	126	550	a 187	35	176	17	107	192	55
5-----	175	610	288	45	146	18	94	184	47
6-----	160	523	226	143	630	s 330	70	236	45
7-----	114	554	171	242	1,910	1,250	60	134	22
8-----	75	480	97	130	880	309	34	141	13
9-----	75	286	58	84	743	168	36	120	12
10-----	73	294	58	75	606	123	70	228	43
11-----	63	179	30	94	1,250	317	126	400	136
12-----	68	243	45	81	683	149	195	680	358
13-----	68	384	71	48	504	65	84	1,580	358
14-----	115	632	s 244	50	210	28	68	2,150	a 395
15-----	212	1,680	961	52	256	36	68	2,650	a 486
16-----	200	1,720	929	58	212	33	78	2,980	628
17-----	126	780	265	97	1,210	s 414	58	2,300	360
18-----	107	398	115	175	3,180	1,500	50	925	125
19-----	94	408	104	248	2,280	1,530	58	910	143
20-----	94	304	77	212	1,280	732	68	540	99
21-----	70	276	52	155	1,020	427	42	1,240	141
22-----	63	463	79	126	646	220	58	2,870	449
23-----	63	228	39	110	332	99	42	1,630	185
24-----	58	214	34	126	272	93	25	2,360	159
25-----	52	224	31	155	630	264	30	2,250	182
26-----	60	410	66	288	2,930	s 2,410	34	1,700	~156
27-----	65	248	44	338	2,090	1,910	50	4,500	607
28-----	40	554	60	165	640	285	65	1,670	293
29-----	20	408	22	--	--	--	55	3,470	515
30-----	20	224	12	--	--	--	60	950	154
31-----	20	638	34	--	--	--	52	360	51
Total-	--	--	5,022	--	--	12,834	--	--	6,577
Day	April			May			June		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	40	400	43	147	2,160	s 919	2,070	7,580	s 128,000
2-----	36	200	19	97	1,640	430	5,510	16,000	s 256,000
3-----	36	350	34	65	1,070	188	2,350	7,600	s 49,300
4-----	34	660	61	48	879	114	1,460	7,100	28,000
5-----	38	360	37	32	474	41	1,430	7,280	s 28,400
6-----	50	610	82	24	234	15	8,480	13,900	s 329,000
7-----	118	3,200	1,020	20	76	4.1	4,190	12,400	s 142,000
8-----	94	5,040	1,280	19	144	7.4	1,680	18,800	s 83,400
9-----	78	5,160	1,090	18	209	10	990	11,500	30,700
10-----	65	3,050	535	12	197	6.4	554	5,850	8,750
11-----	58	1,060	166	12	180	5.8	835	12,100	s 44,300
12-----	48	582	75	12	380	12	539	7,400	10,800
13-----	46	249	31	11	340	10	528	6,900	s 9,910
14-----	42	537	61	7.4	540	11	576	5,700	8,860
15-----	38	218	22	7.4	260	5.2	554	2,370	3,540
16-----	34	350	32	2,110	3,420	s 76,200	606	2,780	4,550
17-----	31	103	8.6	11,600	14,400	s 466,000	539	3,700	5,380
18-----	30	72	5.8	14,700	15,900	s 633,000	634	4,200	7,190
19-----	30	160	13	7,260	17,000	s 336,000	581	3,910	s 6,200
20-----	30	358	29	4,500	14,000	s 190,000	583	4,300	6,770
21-----	31	975	82	3,000	10,100	s 95,200	459	4,100	5,080
22-----	32	382	33	2,240	10,900	s 70,800	296	2,650	2,120
23-----	31	882	74	1,560	7,700	32,400	296	1,940	1,560
24-----	30	134	11	1,020	5,950	16,400	253	1,720	1,170
25-----	32	149	13	728	4,550	8,940	253	1,380	943
26-----	44	280	33	450	4,040	4,910	613	9,490	s 16,500
27-----	42	372	42	242	4,220	2,760	236	5,850	3,730
28-----	144	3,270	s 1,910	209	1,840	1,040	129	4,350	1,520
29-----	134	3,550	1,280	193	2,720	1,420	87	1,500	352
30-----	104	2,800	786	231	1,440	898	72	700	136
31-----	--	--	--	231	1,530	954	--	--	--
Total-	--	--	8,908.4	--	--	1,938,700.9	--	--	1,224,151

s Computed by subdividing day.

a Computed from estimated concentration graph.

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	90	3,370	s 856	2.5	24	0.2	}	0	0
2-----	260	3,830	s 4,510	1.0	--	--			
3-----	799	7,610	s 16,600						
4-----	316	5,020	s 4,440						
5-----	157	2,820	s 1,230						
6-----	90	1,930	469				}	190	1.3
7-----	59	706	112						
8-----	42	472	54						
9-----	30	388	31						
10-----	21	480	27						
11-----	18	410	20				2.6	9,500	241
12-----	16	67	2.9				9.4	3,100	s 82
13-----	14	72	2.7				8.9	8,800	s 17,600
14-----	16	60	2.6				669	2,220	s 211
15-----	17	90	4.1				12	1,500	s 56
16-----	18	136	6.6				5.4	600	8.7
17-----	14	49	1.9	0	0	0	3.9	404	4.3
18-----	12	133	4.3				1.0	114	.3
19-----	9.6	48	1.2				}	0	0
20-----	8.6	46	1.1						
21-----	7.1	56	1.1						
22-----	5.8	42	.7						
23-----	8.4	338	s 14						
24-----	17	950	44				}	0	0
25-----	27	479	s 46						
26-----	32	500	43						
27-----	16	201	8.7						
28-----	8.1	32	.7						
29-----	3.9	74	.8						
30-----	3.0	30	.2						
31-----	2.2	33	.2						
Total-	--	--	28,585.8	--	--	0.2	--	--	18,204.6
Total discharge for year (cfs-days)									107,586.2
Total load for year (tons)									3,260,311.9

s Computed by subdividing day.

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951

(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	Instantaneous discharge (cfs)	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, 1951	7:30 p.m.	6,860	18,600	4,650		15	25	44	63	78	92	97		98		BWC
June 1	8:00 p.m.	6,520	29,300	7,320		10	13	24	58	68	77	94		100		BWC
June 2	11:30 a.m.	4,820	16,100	4,020		14	24	57	72	79	88	94		97		BWC
June 3	8:15 a.m.	2,500	11,400	5,700		11	15	32	77	86	92	95		97		BWC
June 4	7:00 a.m.	1,450	7,360	3,680		15	30	63	74	84	91	97		98		BWC
June 6	7:30 a.m.	8,420	18,400	4,600		16	35	53	61	75	85	92		95		BWC
June 6	5:00 p.m.	11,300	10,800	2,700		24	50	65	72	83	92	97		98		BWC
June 7	7:00 a.m.	4,180	14,200	3,550		17	30	58	71	82	92	97		99		BWC
June 7	7:30 p.m.	3,680	11,400	5,700		10	19	48	77	86	94	98		99		BWC
June 8	8:00 a.m.	1,570	9,340	2,340		28	56	66	75	83	94	98		99		BWC
June 9	8:00 a.m.	1,060	15,400	7,700		8	17	29	38	49	63	94		100		BWC
June 11	2:15 p.m.	1,600	10,600	2,650		26	34	40	49	58	70	90		100		BWC

RED RIVER BASIN--Continued
ELK CREEK NEAR HOBART, OKLA.

LOCATION.--At gaging station at county bridge 7 miles downstream from Little Elk Creek, 7½ miles south of Hobart, Kiowa County, and 10.9 miles upstream from mouth.

DRAINAGE AREA.--549 square miles (revised).

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1951

Water temperatures: October 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,710 ppm May 11-16; minimum, 193 ppm May 21-23.

Hardness: Maximum, 1,020 ppm Nov. 11-20; minimum, 106 ppm June 6-7.

Specific conductance: Maximum daily, 2,330 microhmhos Feb. 2; minimum daily, 228 microhmhos May 18.

Water temperatures: Maximum, 95°F July 8; minimum, freezing point on several days in December, January, and February.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 1,710 ppm May 11-16, 1951; minimum, 173 ppm July 17-20, 1950.

Hardness: Maximum, 1,020 ppm Nov. 11-20, 1950; minimum, 106 ppm June 6-7, 1951.

Specific conductance: Maximum daily, 2,330 microhmhos Feb. 2, 1951; minimum daily, 185 microhmhos July 17, 1950.

Water temperatures: Maximum, 95°F July 8, 1951; minimum, freezing point on several days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1551.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nes-ium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum	Specific conduct-ance (micro-mhos at 25°C)	pH
														Parts per mil-lion	Tons per acre-foot	Tons per day	Calcium	Non-carbon-ate			
Oct. 1-10, 1950....	9.11	19	0.00	186	106	146	11	434	20	619	114	0.4	4.2	--	1,540	2.09	900	511	26	1,940	8.3
Oct. 11-20.....	7.92	21	0.00	192	108	150	8.4	497	0	637	120	.5	4.7	--	1,580	2.15	923	515	26	2,020	8.1
Oct. 21-31.....	7.49	22	0.00	206	110	154	8.4	509	0	667	125	.5	4.4	--	1,630	2.22	966	549	26	2,050	8.1
Nov. 1-10.....	6.69	--	--	197	112	156	14	505	0	666	129	--	3.5	--	1,660	2.26	952	538	26	2,090	--
Nov. 11-20.....	8.11	16	0.00	217	117	156	14	522	0	702	122	.3	3.0	--	1,650	2.24	1,020	594	25	2,120	8.1
Nov. 21-30.....	8.65	--	--	175	109	166	16	519	0	626	118	--	3.3	--	1,590	2.16	884	459	29	2,060	--
Dec. 1-10.....	8.69	--	--	191	111	133	13	487	0	626	118	--	6.5	--	1,570	2.14	933	534	24	2,020	--
Dec. 11-20.....	9.65	4.6	0.00	181	107	139	4.8	467	0	613	108	.5	7.7	--	1,460	1.99	892	509	25	1,940	8.0
Dec. 21-31.....	8.03	--	--	163	103	160	14	455	0	614	114	--	5.6	--	1,470	2.00	830	457	30	1,970	--
Jan. 1-10, 1951.....	9.16	6.6	0.00	186	110	140	4.8	468	0	615	108	.1	7.7	--	1,500	2.04	916	533	25	1,980	7.8
Jan. 11-20.....	9.75	--	--	164	106	150	15	474	0	602	108	--	5.0	--	1,460	1.99	844	456	28	1,930	--
Jan. 21-31.....	8.12	3.5	0.00	176	113	144	5.6	414	23	626	118	.3	6.7	--	1,500	2.04	904	526	26	1,950	8.3
Feb. 1-10.....	8.50	--	--	191	109	143	13	457	0	658	122	--	5.7	--	1,600	2.18	924	550	25	2,070	--
Feb. 11-20.....	10.1	3.9	0.00	171	99	133	9.2	429	0	569	106	.3	7.0	--	1,370	1.86	824	474	25	1,830	7.9
Feb. 21-28.....	10.9	--	--	190	101	111	11	474	0	575	98	--	7.3	--	1,400	1.90	841	500	21	1,860	--
Mar. 1-10.....	9.61	8.2	0.00	197	104	133	7.6	531	0	615	104	.4	5.7	--	1,500	2.04	919	483	24	1,960	8.2
Mar. 11, 13, 15-20.....	13.4	--	--	194	101	107	11	416	0	631	90	--	7.7	--	1,440	1.96	899	589	21	1,860	--
Mar. 12, 14.....	16.5	--	--	130	71	97	97	338	0	400	106	--	7.8	--	1,020	1.39	616	340	25	1,450	--
Mar. 21-31.....	8.16	7.9	0.00	199	106	137	6.4	504	0	624	108	.4	7.3	--	1,540	2.09	932	519	24	1,960	8.2
Apr. 1-10.....	7.83	--	--	196	108	136	13	475	11	630	114	--	4.8	--	1,530	2.08	932	526	24	1,980	8.4
Apr. 11-20.....	5.87	3.8	0.00	185	108	152	6.0	437	20	637	119	.5	4.1	0.33	1,640	2.23	906	514	27	1,990	8.5
Apr. 21-30.....	8.93	4.5	0.00	192	108	155	7.2	440	23	660	122	.3	3.7	--	1,700	2.31	923	524	27	2,060	8.4

May 1-10.....	9.34	4.0	-.00	177	97	144	7.6	444	16	595	116	-.5	1.7	.06	1,570	2.13	40	840	450	27	1,920	8.4
May 11-16.....	7.18	---	---	207	109	141	---	481	0	668	127	---	1.9	---	1,710	2.33	33	964	570	24	2,120	7.9
May 17-20.....	3.75	---	---	36	11	14	---	108	0	53	14	---	3.3	---	209	2.28	33	135	46	19	336	7.4
May 21-23.....	2.47	---	---	59	10	17	---	141	2	43	10	---	3.2	---	393	2.26	40	280	40	14	310	8.4
May 24.....	683	---	---	71	25	32	---	164	9	147	27	---	11	---	431	.59	806	280	130	20	647	8.6
May 25-26.....	276	---	---	125	56	51	---	266	15	314	54	---	9.5	---	818	1.11	610	542	299	17	1,140	8.6
May 27-31.....	130	---	---	158	90	80	---	397	0	475	78	---	10	---	1,180	1.60	414	764	438	19	1,600	8.1
June 1-3, 5.....	108	---	---	167	98	108	---	436	0	528	99	---	11	---	1,360	1.85	397	820	462	22	1,780	8.1
June 4.....	164	---	---	82	28	24	---	193	0	153	34	---	8.2	---	484	.66	214	320	162	14	714	8.2
June 6.....	1,900	---	---	26	10	25	---	113	0	47	12	---	2.9	---	211	.29	1,080	106	14	34	308	---
June 9-10.....	2,255	---	---	137	59	76	---	320	0	375	64	---	8.5	---	1,010	1.37	6,150	584	322	22	1,320	---
June 11-12, 15, 16-20	468	---	---	50	17	25	---	148	0	90	22	---	3.9	---	310	.42	392	195	74	22	496	8.0
June 13, 16.....	299	---	---	71	28	36	---	178	5	154	35	---	6.7	---	485	.66	392	292	138	21	710	8.4
June 14, 17.....	299	---	---	116	51	63	---	266	13	288	57	---	8.0	---	876	1.19	707	499	260	22	1,130	8.5
June 21.....	150	---	---	92	40	53	---	216	14	224	49	---	7.5	---	647	.88	262	394	194	23	944	8.6
June 22-24, 26-27.....	70.8	---	---	136	69	98	---	340	10	402	81	---	9.3	---	1,140	1.55	218	623	328	25	1,440	8.4
June 25, 28-30.....	37.0	---	---	161	100	118	---	407	0	551	109	---	11	---	1,390	1.89	139	812	479	24	1,800	8.2
July 1-2, 6-10.....	26.1	---	---	182	111	139	---	485	0	614	119	---	11	---	1,520	2.07	107	910	513	25	2,010	8.1
July 3-5.....	33.7	---	---	158	90	109	---	424	0	497	91	---	10	---	1,240	1.69	113	764	416	24	1,700	8.0
July 11-15.....	11.2	---	---	176	113	150	---	422	0	662	133	---	8.7	---	1,900	2.16	48	904	538	27	2,070	7.7
July 16-19-20.....	11.4	---	---	132	69	108	---	359	0	393	97	---	8.8	---	1,060	1.44	33	613	319	26	1,500	7.6
July 20-21.....	11.2	---	---	84	45	68	---	235	12	219	68	---	7.0	---	1,060	1.44	33	613	319	26	1,500	7.6
July 21-23, 31.....	8.12	---	---	163	82	117	---	369	0	512	110	---	8.1	---	1,290	1.75	28	744	411	25	1,710	7.8
July 24-25.....	268	---	---	48	14	20	---	122	0	84	21	---	3.9	---	282	.38	204	178	78	19	435	7.3
July 26-30.....	21.6	---	---	115	56	83	---	310	0	311	80	---	7.3	---	868	1.18	51	517	263	26	1,230	8.2
Aug. 1-10.....	8.67	13	.00	136	94	146	---	294	0	572	130	.3	4.4	.61	1,410	1.92	33	726	485	30	1,800	7.4
Aug. 11-20.....	4.18	8.5	.00	160	111	187	---	321	0	722	165	.5	2.8	.68	1,680	2.28	19	856	592	32	2,130	8.0
Aug. 21-31.....	4.32	7.2	.00	163	106	183	---	307	0	700	173	.3	2.4	.71	1,650	2.24	19	842	591	32	2,120	8.0
Sept. 1-9.....	2.58	---	---	167	108	184	---	301	0	719	186	---	2.3	---	1,700	2.31	12	860	614	32	2,220	7.9
Sept. 10.....	262	---	---	54	20	21	---	150	0	113	15	---	2.4	---	366	.50	259	217	94	18	497	7.7
Sept. 11.....	50.8	---	---	48	19	21	---	142	0	86	25	---	3.9	---	296	.40	41	198	82	19	481	7.4
Sept. 11-17.....	3.03	---	---	68	27	32	---	189	0	152	83	---	7.2	---	487	.66	43	280	126	29	762	7.7
Sept. 18-20.....	2.54	---	---	114	47	89	---	260	0	323	82	---	6.6	---	828	1.13	5.7	478	264	29	1,210	8.0
Sept. 21-25.....	1.80	---	---	139	67	116	---	287	12	453	103	---	3.6	---	1,150	1.36	5.6	622	368	29	1,320	8.4
Sept. 26-30.....	108	---	---	67	28	37	---	a 183	---	156	31	---	4.7	---	468	0.64	136	282	132	22	657	---
Weighted average.....	108	---	---	67	28	37	---	a 183	---	156	31	---	4.7	---	468	0.64	136	282	132	22	657	---

a Includes equivalent of individual carbonate values shown above.

RED RIVER BASIN--Continued

ELK CREEK NEAR HOBART, OKLA.--Continued

Temperature ($^{\circ}$ F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	66	51	48	32	56	53	73	78	75	86	68
2	70	58	51	44	33	62	60	74	68	75	88	60
3	69	50	46	42	35	59	64	75	68	83	84	66
4	74	48	52	45	39	56	64	76	68	83	80	60
5	69	54	32	49	38	59	59	76	70	81	86	60
6	75	56	32	40	44	64	63	60	82	80	89	60
7	71	60	32	41	39	61	56	68	75	83	79	53
8	68	54	38	40	45	49	64	75	79	95	74	60
9	68	45	42	40	44	41	67	77	84	87	85	60
10	72	42	41	40	51	52	59	72	72	80	80	55
11	70	43	48	35	56	45	57	72	72	83	68	53
12	72	45	41	36	52	43	59	72	75	85	--	55
13	73	46	46	39	35	45	65	--	77	90	85	50
14	74	56	45	39	--	49	69	74	78	80	--	50
15	73	61	44	50	32	56	65	72	--	90	66	46
16	73	54	46	48	40	60	65	72	85	80	--	46
17	71	52	44	47	47	58	69	61	89	80	78	50
18	70	55	42	48	54	54	72	65	80	80	65	50
19	68	58	41	55	44	40	73	70	76	79	69	40
20	68	49	40	48	52	66	65	71	85	88	66	55
21	68	51	57	42	52	60	60	74	76	90	55	40
22	67	52	45	44	56	64	67	68	85	80	50	41
23	62	41	49	45	51	60	69	70	82	76	58	60
24	69	41	47	45	56	58	75	69	80	80	65	55
25	76	48	49	44	55	61	72	70	80	75	66	58
26	69	--	39	49	59	48	72	72	85	75	68	55
27	87	48	37	40	59	66	78	75	85	74	68	48
28	68	48	38	32	58	52	80	74	77	90	67	37
29	78	48	37	32	--	51	76	78	85	74	67	46
30	66	47	39	32	--	60	76	81	75	70	68	--
31	70	--	48	32	--	53	--	80	--	75	66	--
Average	71	51	43	42	47	55	66	72	78	81	70	53

RED RIVER BASIN--Continued

DEEP RED RUN NEAR RANDLETT, OKLA.

LOCATION.--At gaging station at bridge on U. S. Highway 277, 2½ miles north of Randlett, Cotton County, and 4½ miles upstream from mouth.
 DRAINAGE AREA--617 square miles (revised).
 RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950, February 1951 to September 1951.
 TEMPERATURE.--Chemical analyses: October 1949 to September 1950, February 1951 to September 1951.
 EXTREMES.--Maximum, 1951 to September 1951.--Dissolved solids: Maximum, 2,370 ppm Apr. 11-20; minimum, 113 ppm June 5-6.
 Hardness: Maximum, 760 ppm Apr. 11-20; minimum, 48 ppm June 5-6.
 Specific conductance: Maximum daily, 4,100 microhos Apr. 11; minimum daily, 145 microhos May 19-20.
 Water temperatures: Maximum, 95°F Aug. 5-6, 16; minimum, 45°F Mar. 13, 20.
 EXTREMES, 1949-50, February 1951 to September 1951.--Dissolved solids: Maximum, 2,490 ppm Dec. 21-31, 1949; minimum, 113 ppm June 5-6, 1951.
 Hardness: Maximum, 842 ppm Dec. 21-31, 1949; minimum, 48 ppm June 5-6, 1951.
 Specific conductance: Maximum daily, 4,270 microhos Apr. 13, 1950; minimum daily, 107 microhos May 11, 1950.
 Water temperatures: Maximum, 95°F Aug. 5-6, 16, 1951; minimum, freezing point Dec. 18, 22, 1949.
 REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, February to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃) (B)	Dissolved solids		Hardness as CaCO ₃		Per-centage	pH
														Parts per million	Tons per foot	Calcium, mag-nesium	Non-carbon-ate		
Feb. 1-10, 1951...	3.43	--	--	143	95	550		507	0	281	875	--	0.7	2,290	3.11	748	332	62	3,890
Feb. 11-19	4.52	--	--	104	95	528		271	0	233	875	--	.9	2,270	3.09	723	183	63	3,960
Feb. 20-22	381	--	--	100	100	223		112	0	54	110	--	3.0	1,403	1.55	160	162	50	1,696
Feb. 22-23	220	--	--	41	14	73		196	0	102	245	--	5.7	776	1.06	288	125	54	1,290
Feb. 24-27	17.5	--	--	70	27	152		305	0	155	442	--	1.9	1,230	1.87	495	245	52	2,090
Mar. 1-5	6.50	--	--	116	50	249		390	0	189	590	--	1.9	1,620	2.20	619	300	54	2,600
Mar. 6-10	4.02	--	--	141	65	336		390	0	174	570	--	1.8	1,590	2.16	588	258	55	2,600
Mar. 11, 16-17	53.7	--	--	135	61	335		402	0	50	180	--	3.2	1,564	.77	225	82	50	942
Mar. 12-13	37.5	--	--	59	19	104		175	0	131	388	--	1.8	1,330	1.54	19	420	177	55
Mar. 14-15	6.35	--	--	89	42	234		296	0	217	670	--	1.0	1,870	2.54	17	652	280	58
Mar. 16-17	3.30	6.7	0.00	146	70	407	8.0	485	0	237	790	0.1	1.5	2,040	2.77	706	308	60	3,420
Mar. 21-31	3.32	6.3	0.00	151	80	489													
Apr. 1-10	3.34	6.3	0.00	150	89	558	11	509	0	264	865	.1	1.9	2,200	2.99	740	323	62	3,720
Apr. 11-20	3.79	--	--	148	95	562		489	0	264	955	--	3.5	2,370	3.22	760	359	62	3,980
Apr. 21-22	122	--	--	38	9	53		28	0	29	82	--	4.4	1,302	.41	132	34	46	518
Apr. 23-24	6.55	--	--	110	52	349		287	29	177	530	--	5.0	1,450	1.97	33	488	205	61
Apr. 25-30	2.32	--	--	123	58	402		426	0	209	730	--	3.5	1,850	2.52	122	375	55	3,180
Apr. 31	115	--	--	58	3	125		115	0	48	185	--	3.3	1,613	.29	106	106	52	361
May 3-4	11.6	--	--	62	21	132		242	0	37	225	--	2.4	663	.90	29	40	39	1,000
May 5-6	3.90	--	--	58	22	153		242	0	37	225	--	2.4	663	.90	29	40	39	1,000
May 7-8	1.75	--	--	131	56	366		392	0	168	605	--	4.8	1,580	2.15	557	236	59	2,700

RED RIVER BASIN--Continued
DEEP RED RUN NEAR RANDLETT, OKLA.--Continued

Chemical analyses, in parts per million, February to September 1951.--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂) (Fe)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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-dium	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-mag-nesium			
May 9-10, 1951....	1.20	--	--	132	63	434	428	4	190	690	--	--	4.1	1,830	2.49	5.9	568	232	62	3,030	8.3
May 11-12, 1951....	27.5	--	--	127	19	306	363	0	222	650	--	--	3.5	2,070	2.82	154	630	332	64	3,460	8.2
May 13-14, 1951....	5.42	--	--	136	38	283	316	0	33	109	--	--	2.8	1,016	1.30	30	102	0	37	340	7.6
May 17-19, 1951....	8,922	--	--	34	16	29	112	0	53	109	--	--	2.5	216	0.30	1	102	0	2	340	7.6
May 19-20, 1951....	11,150	--	--	24	3.7	11	72	0	5.3	7.2	--	--	2.8	134	18.4	0,300	75	16	2	148	8.2
May 21-22, 1951....	5,775	--	--	29	6.6	17	111	4	9.8	18	--	--	2.3	170	23	2,650	100	2	27	254	8.6
May 23-24, 1951....	802	--	--	51	14	58	151	6	37	97	--	--	2.4	392	53	849	184	50	41	634	8.6
May 25-26, 1951....	130	--	--	82	26	133	200	13	82	232	--	--	4.0	743	1.01	261	312	126	48	1,220	8.7
May 27-31, 1951....	54.8	--	--	97	44	242	273	7	135	405	--	--	4.0	1,180	1.60	175	423	188	55	1,940	8.4
June 1-4, 1951....	16.0	--	--	127	52	314	417	0	165	495	--	--	3.0	1,560	2.12	67	531	190	56	2,460	7.8
June 5-6, 1951....	1,080	--	--	13	3.8	22	68	0	7.1	22	--	--	2.8	113	1.15	330	48	0	50	174	8.1
June 7-10, 1951....	1,828	--	--	29	6.6	39	109	0	19	51	--	--	2.5	211	2.29	1,040	100	10	46	375	7.2
June 11-15, 1951....	228	--	--	42	11	53	166	0	24	72	--	--	3.2	308	.42	190	150	14	43	546	7.4
June 16-19, 1951....	79.8	--	--	55	16	91	208	0	44	129	--	--	2.9	488	.66	105	203	32	49	843	7.9
June 20-21, 1951....	210	--	--	25	7.9	36	146	0	13	26	--	--	5.1	229	.31	130	95	0	45	320	8.2
June 22-23, 30, 1951....	30.6	--	--	40	11	66	167	0	27	85	--	--	3.5	344	.47	28	145	8	50	580	7.4
June 24-25, 1951....	20.0	--	--	58	19	109	207	13	52	151	--	--	3.0	547	.74	30	222	32	82	918	8.7
June 26-27, 1951....	14.0	--	--	74	28	181	255	13	71	225	--	--	3.9	769	1.07	30	292	50	58	1,260	8.6
June 28-29, 1951....	10.0	--	--	92	35	223	316	13	108	370	--	--	3.2	1,040	1.40	30	292	50	58	1,260	8.6
July 1-6, 1951....	340	--	--	34	9.4	55	117	0	32	79	--	--	3.2	794	.40	270	124	26	49	1,398	8.1
July 7-10, 1951....	15.4	--	--	76	28	161	249	0	90	252	--	--	7	788	1.07	33	304	100	53	1,360	7.8
July 11-13, 1951....	6.77	--	--	60	33	204	196	7	108	312	--	--	5.0	883	1.20	16	285	113	61	1,530	8.5
July 14-20, 1951....	3.97	--	--	50	41	276	181	0	142	420	--	--	4.8	1,090	1.48	12	294	145	67	1,910	8.2
July 21-31, 1951....	4.36	--	--	75	50	348	219	3	190	540	--	--	5.1	1,400	1.90	16	392	208	66	2,340	8.4
Aug. 1-4, 1951....	1.78	--	--	74	50	370	256	3	179	560	--	--	3.5	1,400	1.90	6.7	390	176	67	2,460	8.3
Aug. 5-10, 1951....	1.33	--	--	66	35	271	274	6	107	390	--	--	3.2	1,030	1.40	3.7	308	74	66	1,860	8.4
Aug. 11-20, 1951....	1.52	13	0.05	70	38	301	275	0	129	442	0.3	1.4	3.4	1,190	1.62	4.9	330	105	66	2,030	--
Aug. 21-27, 1951....	35.1	--	--	29	12	70	118	0	42	93	--	--	3.6	336	.46	32	122	26	55	560	7.8
Aug. 28-31, 1951....	4.42	--	--	40	16	94	170	0	49	126	--	--	3.2	452	.61	5.4	166	26	55	773	7.9
Sept. 1-9, 1951....	5.66	--	--	52	21	151	222	0	67	206	--	--	4.0	646	.88	9.9	216	34	60	1,150	8.2
Sept. 10, 1951....	28.0	--	--	26	8.1	66	140	1	26	68	--	--	2.0	313	.43	21	98	0	59	511	8.3
Sept. 11-20, 1951....	6.78	--	--	27	9.6	70	193	0	23	54	--	--	2.4	281	.55	5.1	107	0	59	492	7.9
Sept. 21-30, 1951....	.24	9.9	.00	31	14	95	208	6	33	100	.1	1.1	1.1	406	.35	.3	150	0	57	707	8.4
Weighted average	293	--	--	31	7.5	30	a 106	--	16	48	--	--	2.6	228	0.31	180	108	22	37	350	--

a Includes equivalent of individual carbonate values shown above.

RED RIVER BASIN--Continued

DEEP RED RUN NEAR RANDLETT, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77					--	60	65	85	80	85	85
2	73					--	55	60	75	80	80	85
3	--					--	55	75	80	80	85	82
4	--					60	55	75	75	80	87	85
5	--					70	50	65	80	80	95	85
6	--					--	85	65	82	73	95	85
7	--					60	55	68	75	80	85	85
8	--					50	--	65	80	80	80	75
9	--					50	50	87	75	75	--	75
10	--					50	60	65	76	80	80	80
11	--					50	50	65	70	80	82	88
12	--					50	55	70	75	83	85	80
13	73					45	55	--	--	85	85	75
14	72					60	60	70	80	83	85	77
15	--					55	55	70	75	80	90	80
16	--					55	50	--	75	86	95	83
17	--					50	65	65	75	85	90	76
18	--					60	50	65	80	85	90	80
19	--					50	--	--	75	86	80	70
20	--					45	60	70	80	83	88	65
21	--					50	60	65	82	85	85	75
22	--					62	62	70	70	80	75	70
23	--					60	60	70	82	85	80	77
24	--					55	65	75	80	85	75	83
25	--					60	55	75	80	80	85	85
26	--					60	65	76	80	82	90	80
27	--					65	70	75	85	85	86	73
28	--					70	65	80	80	85	90	80
29	--					55	65	80	84	85	85	73
30	--					56	70	87	75	85	80	70
31	--					65	--	75	--	87	90	--
Average	--					56	59	70	78	82	85	79

RED RIVER BASIN--Continued
LITTLE BEAVER CREEK NEAR DUNCAN, OKLA.

LOCATION --At gaging station at county highway bridge, just downstream from Hell Creek, 8½ miles west of Duncan, Stephens County, and 11.9 miles above mouth. DRAINAGE AREA --158 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1948 to September 1949, October 1950 to September 1951.

Water temperatures: October 1948 to September 1949, October 1950 to September 1951.

EXTREMES, 1950-51. --Dissolved solids: Maximum, 2,850 ppm Aug. 10; minimum, 194 ppm July 2.

Hardness: Maximum, 926 ppm Aug. 10; minimum, 108 ppm June 18.

Specific conductance: Maximum daily, 4,250 microhmhos Aug. 10; minimum daily, 296 microhmhos June 18.

Water temperatures: Maximum, 86°F Aug. 4; minimum, 33°F Dec. 6, Feb. 16.

EXTREMES, 1948-49, 1950-51. --Dissolved solids: Maximum, 4,020 ppm June 29, 1949; minimum, 194 ppm July 2, 1951.

Hardness: Maximum, 1,400 ppm June 29, 1949; minimum, 108 ppm June 18, 1951.

Specific conductance: Maximum daily, 6,740 microhmhos June 29, 1949; minimum daily, 269 microhmhos Feb. 8, 1949.

Water temperatures: Maximum, 86°F Aug. 4, 1951; minimum, freezing point Jan. 11, 1948.

REMARKS --Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1241.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO 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	Specific conductance (micro-mhos at 25°C)	pH	
														Parts per mil-lion	Tons per acre-foot	Calcium, mg./ne-stum	Non-carbon-ate				
Oct. 2, 6-7, 9-10, 1950	15.0	--	--	163	66	176	176	365	0	277	335	--	1.3	1,350	1.84	678	379	36	2,010	--	
Oct. 3-5.....	24.7	--	--	153	64	110	110	348	0	261	232	--	1.9	1,120	1.52	75	645	360	27	1,640	--
Oct. 11-20.....	11.1	22	0.00	156	81	178	6.4	346	0	275	360	0.5	3.5	1,380	1.88	41	722	438	35	2,030	7.8
Oct. 21-31.....	8.99	--	--	148	81	129	129	318	0	269	312	--	1.4	1,230	1.67	30	702	442	28	1,910	--
Nov. 1-10.....	8.87	20	0.00	160	75	134	7.2	382	0	277	260	.3	1.4	1,180	1.60	27	708	394	29	1,810	7.7
Nov. 11-20.....	11.0	--	--	167	76	114	114	407	0	286	245	--	1.0	1,200	1.63	36	729	396	25	1,760	--
Nov. 21-30.....	11.1	--	--	153	73	109	109	387	0	286	215	--	.8	1,120	1.52	34	682	365	26	1,680	--
Dec. 1-10.....	11.1	--	--	142	78	145	145	370	0	295	268	--	1.7	1,260	1.71	38	675	372	32	1,840	--
Dec. 11-20.....	12.7	18	0.00	152	65	109	3.2	383	0	280	198	.5	2.2	1,040	1.41	36	340	340	27	1,590	7.5
Dec. 21-31.....	11.3	--	--	133	68	122	352	352	0	274	215	--	1.4	1,060	1.48	33	612	323	30	1,820	--
Jan. 1-10, 1951.....	12.4	--	--	147	65	98	58	341	0	286	175	--	2.2	1,020	1.39	34	634	354	23	1,560	--
Jan. 11-20.....	13.8	13	0.00	150	63	101	8.8	363	0	309	175	.3	1.8	1,060	1.41	44	633	386	25	1,530	7.4
Jan. 21-31.....	11.7	--	--	141	66	97	97	321	0	300	182	--	1.8	1,090	1.48	34	624	360	25	1,510	--
Feb. 1-10.....	19.3	--	--	133	53	59	59	322	0	240	114	--	3.0	820	1.12	43	550	286	19	1,230	--
Feb. 11-20.....	14.5	--	--	190	84	178	363	363	0	273	440	--	4.6	1,470	2.00	83	820	522	32	2,350	--
Feb. 21-31.....	14.0	--	--	153	64	77	349	349	0	289	158	--	2.7	1,000	1.36	39	645	359	21	1,470	--
Feb. 9-10.....	21.5	--	--	138	65	91	322	322	0	286	175	--	1.5	1,030	1.40	50	612	348	24	1,440	--
Feb. 12-13.....	18.0	--	--	190	79	171	322	322	0	303	380	--	2.4	1,410	1.92	103	799	482	32	2,220	--
Feb. 16-17.....	27.0	--	--	190	79	171	322	322	0	303	380	--	2.4	1,410	1.92	103	799	482	32	2,220	--
Feb. 20-21.....	23.4	--	--	77	29	46	165	165	0	157	78	--	2.4	527	.72	333	311	176	24	808	--
Feb. 23-24, 26-28.....	24.8	--	--	167	68	77	357	357	0	323	165	--	2.0	1,040	1.41	70	696	403	19	1,530	--
Mar. 1-10.....	19.0	25	0.00	156	70	121	4.4	348	0	320	225	.4	1.3	1,190	1.62	61	677	392	28	1,720	7.9
Mar. 11-20.....	18.0	--	--	135	56	81	319	319	0	250	156	--	1.8	883	1.20	87	567	206	24	1,310	--
Mar. 12-13.....	28.0	--	--	140	71	79	322	322	0	309	178	--	1.4	1,170	1.59	59	666	402	20	1,700	--
Mar. 14-17, 19-20.....	18.7	--	--	140	71	79	322	322	0	309	178	--	1.4	1,170	1.59	59	666	402	20	1,700	--
Mar. 21-31.....	14.5	14	0.00	147	73	139	3.6	320	0	307	265	.3	1.0	1,170	1.59	46	667	405	31	1,770	7.9

Apr. 1-10.....	12.1	--	--	134	305	0	301	288	--	--	1.210	1.65	40	678	438	30	1,820	8.1
Apr. 11-20.....	23.6	--	--	134	296	0	303	290	--	--	1,220	1.66	78	678	434	30	1,810	8.2
Apr. 21.....	20.4	--	--	34	149	6	194	55	--	4.0	1,350	1.78	314	340	208	18	1,780	8.5
Apr. 22-23.....	20.0	--	--	51	211	0	289	170	--	1.7	984	1.31	52	517	344	28	1,490	8.2
Apr. 24-26, 28, 30..	21.4	--	--	126	311	0	304	290	--	5.9	1,350	1.84	78	706	451	28	1,840	8.0
May 1.....	99.3	--	--	51	115	0	147	36	--	5.5	364	1.50	976	192	88	37	1,483	--
May 2.....	70.0	--	--	56	208	16	90	165	--	2.0	817	1.11	154	403	206	23	1,150	8.7
May 3, 10.....	43.5	--	--	181	260	0	231	355	--	2.0	1,260	1.71	146	564	372	40	1,320	8.2
May 4-5, 7-9.....	28.4	--	--	166	215	0	234	354	--	2.7	1,360	1.70	170	564	372	40	1,320	8.2
May 11.....	14.0	--	--	169	215	0	234	354	--	2.7	1,360	1.70	170	564	372	40	1,320	8.2
May 11-23, 26.....	157.0	--	--	8	322	8	163	192	--	2.7	1,357	1.55	70	518	430	34	1,340	8.4
May 23, 25.....	337	--	--	28	185	6	144	73	--	2.7	569	1.77	518	355	194	15	1,380	8.4
May 24, 28-29, 31..	79.2	--	--	135	374	0	231	318	--	5.6	1,330	1.81	284	706	400	29	1,890	8.2
June 1-2, 4-5.....	104	--	--	134	74	120	335	308	--	4.4	1,270	1.73	357	639	364	29	1,850	8.0
June 6.....	1,990	--	--	19	118	0	41	15	--	2.0	216	1.29	1,160	120	23	26	306	--
June 7, 9.....	912	--	--	13	142	0	90	25	--	1.8	332	1.45	818	217	100	12	497	--
June 8.....	285	--	--	26	185	11	81	113	--	2.5	576	1.78	443	286	126	29	835	8.6
June 11-12.....	1,739	--	--	39	134	0	40	179	--	4.2	352	1.48	1,650	181	71	32	549	--
June 13, 20.....	118	--	--	116	362	0	141	225	--	5.6	985	1.34	314	514	217	33	1,460	8.0
June 14-16.....	88.7	--	--	150	345	0	190	322	--	3.3	1,300	1.77	311	610	328	35	1,860	7.8
June 18.....	885	--	--	22	93	0	23	38	--	2.8	201	1.27	480	108	32	31	286	8.2
June 19.....	266	--	--	69	187	11	88	194	--	2.8	653	1.89	469	304	132	33	901	8.6
June 21-30.....	39.4	--	--	179	312	0	191	378	--	2.8	1,370	1.86	146	601	346	39	1,970	7.5
July 2.....	1,790	--	--	11	115	5	90	20	--	6.3	194	1.26	938	142	40	15	319	8.4
July 3.....	250	--	--	63	278	13	70	120	--	4.5	534	1.53	326	272	118	24	832	8.6
July 5.....	1,936	--	--	146	278	0	166	335	--	4.5	1,450	1.55	160	541	313	37	1,780	7.9
July 9, 10.....	22.3	--	--	196	553	0	183	438	--	4.1	1,450	1.97	87	676	388	39	2,240	7.9
July 11-12, 15-20..	12.4	--	--	204	372	0	199	458	--	4.1	1,500	2.04	50	718	412	38	2,290	8.0
July 13.....	13	--	--	69	186	6	309	155	--	3.3	995	1.35	35	554	392	21	1,440	8.3
July 21-23, 27-31..	8.88	--	--	189	327	0	202	415	--	3.3	1,420	1.93	34	654	386	39	2,060	7.8
July 24.....	121	--	--	47	142	6	99	106	--	6.1	503	1.68	164	282	155	27	774	8.5
July 25-26.....	15.5	--	--	136	274	0	128	312	--	3.6	966	1.31	40	504	280	37	1,610	8.1

RED RIVER BASIN--Continued
LITTLE BEAVER CREEK NEAR DUNCAN, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-magnesium	Carbonate		
Aug. 1-9, 1951.....	4.42	--	--	123	78	190		279	0	210	420	--	1.4		1,300	1.77	16	628	389	40	2,090	8.0
Aug. 10.....	13.5	--	--	177	118	506		195	0	211	1,240	--	2.9		2,850	3.89	100	926	766	54	4,230	8.1
Aug. 11.....	2.00	--	--	132	77	183		174	10	212	350	--	2.0		1,253	1.70	18	594	338	30	1,380	8.5
Aug. 13-18, 20.....	12.1	--	--	123	74	197		252	0	213	420	--	3.2		1,340	1.82	44	612	405	41	2,090	8.0
Aug. 21-23.....	1.49	--	--	100	60	143		303	0	186	258	--	1.5		1,050	1.43	4	496	248	39	1,580	7.9
Aug. 24-25, 27-31...	1.17	--	--	74	54	156		446	0	101	195	--	1.1		844	1.15	4	406	41	46	1,460	8.1
Sept. 1, 4-8.....	.20	--	--	78	34	32		168	0	190	46	--	4.1		541	.74	.3	334	197	17	1,782	8.1
Sept. 9.....	.82	--	--	76	32	40		194	6	170	42	--	2.8		486	.66	1.1	321	152	21	754	8.4
Sept. 11-14.....	.1	--	--	60	38	68		270	0	147	55	--	1.4		506	.69	.1	306	84	32	917	8.2

RED RIVER BASIN--Continued

LITTLE BEAVER CREEK NEAR DUNCAN, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	69	48	--	--	52	--	60	74	--	80	81
2	74	59	52	51	--	59	48	63	70	70	80	--
3	65	50	--	41	--	55	48	66	--	70	82	--
4	64	42	42	42	38	--	56	67	65	--	86	82
5	63	--	39	44	37	--	60	66	68	80	--	79
6	67	52	33	38	38	55	61	--	68		85	84
7	68	53	34	--	36	52	56	58	66	78	82	78
8	--	54	34	35	--	51	--	61	75	--	83	74
9	62	43	36	35	40	42	56	67	72	79	83	72
10	64	39	--	40	43	42	57	65	--	78	77	--
11	65	37	38	37	--	--	49	65	68	80	76	75
12	66	--	37	42	57	38	47	64	70	79	--	78
13	65	44	40	48	37	36	48	68	74	79	82	69
14	66	53	37	--	--	40	55	68	74	--	81	69
15	--	62	44	41	--	46	--	--	74	81	82	68
16	78	54	42	41	33	48	53	--	--	80	80	--
17	66	48	--	45	36	52	52	--	--	78	80	--
18	66	52	41	44	--	--	60	--	68	79	81	--
19	65	--	39	44	49	42	62	--	76	80	--	87
20	64	47	39	42	47	45	68	--	79	81	79	69
21	62	44	45	--	49	45	58	--	78	80	79	71
22	59	49	42	--	--	53	57	--	79	--	73	63
23	--	45	--	42	51	56	63	--	77	80	76	--
24	60	36	--	40	52	51	64	65	--	77	79	75
25	63	35	--	39	--	53	63	64	76	77	80	73
26	64	--	42	42	59	54	70	68	76	80	--	76
27	62	42	37	43	56	56	--	--	76	81	80	69
28	--	37	35	--	57	46	71	74	78	83	78	63
29	63	--	35	--	--	48	--	72	79	--	79	64
30	65	46	36	--	--	--	66	--	77	82	79	--
31	67	--	--	--	--	55	--	76	--	80	78	--
Average	65	48	--	--	--	49	58	--	73	--	80	--

RED RIVER BASIN--Continued

WASHITA RIVER NEAR TABLER, OKLA.

LOCATION --At gaging station at bridge on county highway, 1 mile downstream from Little Washita River, 7½ miles upstream from Winter Creek, and 5 miles south of Tabler, Grady County, Oklahoma.

DRAINAGE AREA --4,706 square miles (revised).

RECORDS AVAILABLE --Chemical analyses: September 1946 to September 1951.

Water temperatures: September 1946 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,390 ppm Apr. 11-20, May 11-16; minimum, 329 ppm May 21-23.

Hardness: Maximum, 847 ppm Mar. 1-10; minimum, 217 ppm May 21-23.

Specific conductance: Maximum daily, 2,160 microhms July 30; minimum daily, 383 microhms May 21.

Water temperatures: Maximum, 88°F July 11, 20; minimum, freezing point on several days during November to February.

EXTREMES, 1946-51.--Dissolved solids: Maximum, 1,390 ppm Nov. 5-10, 1947, Apr. 11-20, May 11-16, 1951; minimum, 184 ppm July 20-21, 1950.

Hardness: Maximum, 851 ppm Jan. 1-10, 1948; minimum, 127 ppm May 22-24, 1949.

Specific conductance: Maximum daily, 2,560 microhms Feb. 26-27, 1951; minimum daily, 238 microhms July 20, 1950.

Water temperatures: Maximum, 88°F Aug. 18, 1948, July 11, 20, 1951; minimum, freezing point on many days during winter months.

REMARKS --Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids				Hardness as CaCO ₃		Percent sodium	Specific conductance (microhms at 25°C)	pH
														Boiron (B)	Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Oct. 1-10, 1950	302	24	0.00	163	52	74	4.8	225	0	450	87	0.5	2.3	1,020	1.39	832	620	436	20	1,350	8.1	
Oct. 11-20	223	23	0.00	155	56	84	3.8	218	0	477	96	--	1.9	1,080	1.48	656	630	450	23	1,420	--	
Oct. 21-31	185	21	0.00	200	59	87	6.8	297	0	514	102	5.2	2.3	1,190	1.62	927	742	498	20	1,560	8.2	
Nov. 1-10	181	20	0.00	197	63	88	6.8	291	0	522	104	3.3	1.9	1,200	1.63	586	750	512	20	1,560	7.9	
Nov. 11-20	195	21	0.00	207	62	82	6.0	314	0	517	105	--	1.8	1,220	1.66	642	772	514	19	1,600	--	
Nov. 21-30	215	21	0.00	231	62	87	6.0	386	0	528	105	3.3	3.2	1,270	1.73	737	832	515	19	1,670	7.8	
Dec. 1-10	214	--	--	220	59	92	3.2	369	0	528	97	--	2.9	1,270	1.73	734	792	489	20	1,680	--	
Dec. 11-20	243	20	0.00	231	59	83	3.2	372	0	525	97	5.3	2.9	1,240	1.69	814	819	514	18	1,630	7.7	
Dec. 21-31	232	--	--	229	59	79	7.2	359	0	531	96	--	2.6	1,260	1.71	789	814	520	17	1,650	--	
Jan. 1-10, 1951	296	19	0.00	215	53	77	6.0	338	0	502	83	3.3	3.9	1,180	1.58	927	754	478	18	1,520	8.0	
Jan. 11-20	257	--	--	227	59	67	6.0	356	0	521	84	--	3.3	1,260	1.71	874	809	518	15	1,960	--	
Jan. 21-31	203	18	0.00	232	59	87	6.0	364	0	554	93	3.3	3.2	1,280	1.74	702	822	524	19	1,630	8.0	
Feb. 1-10	228	--	--	226	60	68	6.0	313	0	536	100	--	4.2	1,230	1.67	757	810	554	15	1,640	--	
Feb. 11-20	294	18	0.00	220	55	81	6.4	338	0	532	90	3.3	3.6	1,210	1.65	960	773	498	18	1,570	8.0	
Feb. 21-31	282	--	--	212	54	58	6.0	302	0	543	98	--	3.5	1,230	1.72	1,010	847	609	14	1,640	--	
Mar. 1-10	316	21	0.00	212	56	77	6.4	312	0	526	75	4.2	2.9	1,190	1.62	1,020	759	504	18	1,620	8.1	
Mar. 11-20	230	--	--	230	66	63	6.0	305	0	576	92	--	2.4	1,280	1.75	801	846	596	14	1,650	--	
Mar. 21-31	215	--	--	201	61	73	6.8	231	0	564	94	--	2.3	1,180	1.60	685	732	563	17	1,540	8.1	
Apr. 1-10	198	19	0.00	204	59	94	6.8	251	0	580	105	3.3	2.0	1,390	1.89	743	752	546	21	1,630	8.1	
Apr. 11-20	370	--	--	230	47	58	6.0	232	0	584	66	--	1.7	1,250	1.70	1,250	767	577	14	1,510	8.2	
Apr. 21-23, 30	190	--	--	238	61	88	6.0	275	17	615	100	--	2.4	1,380	1.88	1,708	845	591	19	1,710	8.7	

May 1-2	1,050	--	126	28	14	129	7	291	24	--	7.5	591	80	1,880	430	312	7	843	8.6
May 3-10	306	--	209	52	87	172	0	595	84	--	3.2	1,160	1.58	958	736	594	17	1,530	8.2
May 11-16	242	--	231	59	65	208	7	612	98	--	4.2	1,390	1.59	908	819	637	15	1,640	8.5
May 17-20	14,830	--	84	15	1.6	105	4	156	11	--	5.0	378	.51	15,140	271	178	1	1,525	8.4
May 21-23	14,470	--	64	14	3.4	105	0	118	9	5	3.0	329	.45	12,850	217	131	3	444	8.2
May 24-25	6,875	--	105	24	1.6	114	3	233	14	--	3.5	546	.74	9,940	360	262	1	874	8.4
May 26-27	2,820	--	135	32	5.1	163	5	288	24	--	4.4	710	.97	5,410	468	326	2	867	8.4
May 28-31	1,802	--	159	38	20	204	7	350	36	--	4.0	846	1.15	4,120	552	374	7	1,040	8.5
June 1-5, 7-8	1,515	--	154	42	40	188	0	407	45	--	4.6	866	1.18	3,540	556	402	14	1,160	8.2
June 6, 9-10	3,550	--	129	29	23	149	3	295	37	--	5.0	628	.85	6,020	441	314	10	897	8.4
June 11-12, 14-15	2,532	--	180	14	14	119	0	161	14	--	4.6	368	.50	5,500	237	160	11	554	8.1
June 16-17, 19-20	1,512	--	117	52	10	137	2	249	18	--	3.7	534	.73	4,460	362	267	12	854	8.3
June 21, 24-26	2,052	--	117	22	17	178	4	183	15	--	3.7	436	.86	2,460	292	167	11	824	8.6
June 27-30	1,050	--	166	19	17	183	5	193	22	--	5.2	914	.86	2,920	595	396	15	1,230	8.2
June 1-10	1,828	--	134	50	67	183	0	445	64	--	3.0	962	1.31	2,150	540	406	21	1,270	7.7
July 1-10	414	26	100	159	84	85	0	538	87	3	3.0	1,160	1.58	1,300	660	506	22	1,450	7.9
July 11-20	398	--	187	70	86	197	0	575	107	--	3.3	1,250	1.70	1,340	754	566	20	1,600	8.0
July 21-24, 26-30	422	--	138	48	52	206	0	368	70	--	4.5	848	1.15	1,966	542	373	17	1,130	8.2
July 25, 31	204	--	116	49	71	156	0	383	82	--	3.3	888	1.21	489	491	363	24	1,180	7.9
Aug. 1-10	197	24	180	58	85	195	0	549	95	3	2.9	1,190	1.82	633	688	528	21	1,500	7.8
Aug. 11-20	172	--	184	62	84	246	0	531	99	--	2.9	1,210	1.65	562	714	512	20	1,550	7.9
Aug. 21-31	112	--	144	68	79	192	0	491	99	--	2.4	1,030	1.40	311	639	482	21	1,430	8.0
Sept. 1-7, 9	246	--	90	42	49	202	0	264	40	--	8.4	598	.81	397	397	232	21	888	8.2
Sept. 8	546	--	90	28	33	146	0	221	42	--	3.9	529	.72	780	340	220	17	789	8.0
Sept. 10-20	174	--	112	31	43	188	0	277	39	--	3.3	598	.81	281	407	253	19	855	8.2
Sept. 21-30	809	--	123	31	29	a.169	--	289	38	--	3.9	665	0.90	1,450	434	296	13	888	--
Weighted average																			

a Includes equivalent of individual carbonate values shown above.

RED RIVER BASIN--Continued

WASHITA RIVER NEAR TABLER, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	65	42	41	32	50	52	61	76	75	81	79
2	71	58	47	44	32	56	--	60	75	76	80	79
3	66	53	41	40	32	53	50	63	57	73	81	79
4	62	48	40	39	32	40	54	64	58	75	82	79
5	62	49	38	40	33	49	55	66	61	--	83	78
6	63	51	33	39	36	52	--	65	71	84	--	78
7	66	49	32	34	33	50	--	60	69	80	--	77
8	--	48	32	34	33	50	46	63	72	80	87	73
9	61	45	32	35	36	44	49	62	70	80	81	75
10	61	48	33	56	39	44	46	64	84	80	79	72
11	61	32	37	35	44	44	49	62	61	88	76	73
12	62	38	36	43	54	38	44	66	66	81	77	--
13	63	39	34	44	48	37	34	64	66	81	78	71
14	65	46	42	39	34	39	59	65	79	80	80	70
15	65	57	36	39	34	40	53	66	69	81	78	69
16	64	48	41	40	32	42	51	67	74	80	79	68
17	63	46	36	43	34	48	52	63	74	80	82	62
18	63	52	37	40	42	44	59	62	73	80	71	67
19	65	55	36	42	44	45	58	64	72	82	79	60
20	64	45	32	42	47	45	62	69	80	88	79	68
21	60	45	39	39	46	45	58	72	77	81	79	67
22	59	46	38	37	39	49	58	71	80	82	75	63
23	58	46	39	39	48	53	56	71	76	78	75	65
24	57	37	39	37	50	50	59	71	82	78	77	69
25	59	35	40	36	53	51	65	69	78	78	77	70
26	59	39	40	38	51	52	--	69	76	80	77	71
27	64	38	35	41	51	52	67	69	77	79	78	73
28	60	39	34	34	57	56	68	72	79	81	77	45
29	64	39	34	32	--	47	68	72	79	84	84	65
30	63	48	34	32	--	47	65	75	79	83	78	66
31	65	--	35	32	--	56	--	75	--	82	78	--
Average	63	46	37	39	41	47	55	67	73	80	79	70

RED RIVER BASIN--Continued

WASHITA RIVER NEAR DURWOOD, OKLA.

LOCATION.--At gaging station at Mulkey Bridge on State Highway 18, 1½ miles downstream from Caddo Creek, and 4 miles north of Durwood, Carter County. DRAINAGE AREA.--7,202 square miles (revised) 1944 to September 1951.

RECORDS AVAILABLE.--Chemical analyses: May 1944 to September 1951.

TEMPERATURES.--Maximum, 93.1°; minimum, 33.1°; range, 60°; average, 67.1°; maximum, 93.1°; minimum, 33.1°; range, 60°; average, 67.1°; maximum, 93.1°; minimum, 33.1°; range, 60°; average, 67.1°.

SOLIDS.--Dissolved solids: Maximum, 1,220 ppm; minimum, 122 ppm; range, 1,098 ppm; average, 1,171 ppm; maximum, 1,220 ppm; minimum, 122 ppm; range, 1,098 ppm; average, 1,171 ppm.

Specific conductance: Maximum, 857 µmhos/cm; minimum, 385 µmhos/cm; range, 472 µmhos/cm; average, 621 µmhos/cm; maximum, 857 µmhos/cm; minimum, 385 µmhos/cm; range, 472 µmhos/cm; average, 621 µmhos/cm.

Water temperatures: Maximum, 85°F; minimum, 57°F; range, 28°F; average, 67°F; maximum, 85°F; minimum, 57°F; range, 28°F; average, 67°F.

Hardness: Maximum, 628 ppm; minimum, 114 ppm; range, 514 ppm; average, 371 ppm; maximum, 628 ppm; minimum, 114 ppm; range, 514 ppm; average, 371 ppm.

Specific conductance, 1946-51: Maximum daily, 1,520 micromhos/cm; minimum daily, 237 micromhos/cm; range, 1,283 micromhos/cm; average, 928 micromhos/cm; maximum daily, 1,520 micromhos/cm; minimum daily, 237 micromhos/cm; range, 1,283 micromhos/cm; average, 928 micromhos/cm.

Water temperatures: Maximum, 87°F; minimum, 57°F; range, 30°F; average, 67°F; maximum, 87°F; minimum, 57°F; range, 30°F; average, 67°F.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, November 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos/cm at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./mesium	Non-carbonate			
Nov. 1-10, 1950.....	407			110	62	58	58	314	0	269	84		0.8		800	1.09	879	530	272	19	1,160	--
Nov. 21-30.....	391			124	66	63	63	352	0	298	85		1.2		876	1.19	925	581	282	19	1,240	--
Dec. 1-10.....	409			123	64	69	69	357	0	300	81		1.7		895	1.22	968	570	278	21	1,260	--
Dec. 11-20.....	437			133	61	66	66	375	0	294	79		2.4		902	1.32	1,060	563	276	20	1,280	--
Dec. 21-31.....	392			144	59	62	62	362	0	309	76		1.9		921		975	602	289	19	1,290	--
Jan. 1-10, 1951.....	491			137	61	51	51	348	0	300	74		2.4		873	1.19	1,160	593	308	16	1,240	--
Jan. 11-20.....	572			132	53	68	68	356	0	283	76		2.9		830	1.13	1,280	548	256	21	1,210	--
Jan. 21-31.....	436			153	60	63	63	368	0	337	79		1.4		936	1.28	1,100	628	327	18	1,330	--
Feb. 1-10.....	452			138	64	54	54	311	0	337	83		2.9		912	1.24	1,110	608	352	16	1,300	--
Feb. 11-20.....	790			133	54	58	58	322	0	294	76		2.4		814	1.11	1,740	554	290	18	1,190	--
Feb. 21-24.....	2,615			76	27	33	33	216	0	119	49		2.8		455	.62	3,210	300	124	19	713	--
Feb. 25-28.....	1,019			125	42	50	50	298	0	254	58		2.4		747	1.02	2,060	484	240	18	1,050	--
Mar. 1-10.....	646			114	51	64	64	269	0	300	70		2.5		806	1.10	1,410	494	274	22	1,130	--
Mar. 11-15.....	2,786			66	22	38	38	192	0	93	57		2.8		394	.54	2,960	255	88	24	606	--
Mar. 16-20.....	879			121	45	55	55	305	0	255	62		2.8		760	1.03	1,800	487	237	20	1,090	--
Mar. 21-31.....	572			117	57	50	50	294	0	277	75		.9		802	1.09	1,240	526	286	17	1,150	--
Apr. 1-10.....	485			103	59	48	48	228	8	286	76		2.2		816	1.11	1,070	500	299	18	1,100	8.5
Apr. 11-20.....	487			114	60	58	58	235	0	322	80		.4		813	1.11	939	521	322	19	1,170	8.1
Apr. 21-30.....	753			121	52	51	51	262	4	283	78		2.7		795	1.08	1,620	516	295	18	1,150	8.3
May 1, 5-8.....	1,598			91	36	44	44	200	3	219	51		2.9		596	.81	2,570	375	206	20	878	8.3
May 2-3.....	7,860			50	17	17	17	153	8	56	21		5.1		282	.39	5,980	195	56	16	440	8.6
May 4.....	2,480			60	22	24	24	143	4	103	40		5.1		381	.52	2,550	240	116	18	542	8.5

RED RIVER BASIN--Continued
 WASHITA RIVER NEAR DURWOOD, OKLA.--Continued

Chemical analyses, in parts per million, November 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25 C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate			
May 9-10, 1951.....	752			101	50	54	185		0	319	64		2.4	753	1.02	1,530	458	306	21	1,070	7.8	
May 11-18.....	993			101	52	55	233		0	275	76		1.9	750	1.02	2,010	466	275	20	1,090	8.2	
May 19-20.....	16,100			53	17	18	140	7	74	25	74		4.1	334	.45	16,320	202	76	16	470	8.6	
May 21, 23-25.....	22,120			60	17	10	127	3	106	14	18		2.8	209	.41	17,800	220	110	9	464	8.5	
May 22, 27-28.....	14,320			83	22	18	134	3	187	18	18		3.2	489	.67	18,910	298	183	12	638	8.3	
May 26, 31.....	7,300			85	31	36	179	9	194	37	18		3.0	518	.70	10,210	340	178	19	812	8.6	
May 29-30.....	4,745			72	18	17	145	9	123	18	18		4.5	383	.52	4,910	254	120	13	550	8.6	
June 1-2.....	3,355			108	36	56	234	23	218	56	56		4.2	713	.97	6,460	418	187	23	960	8.8	
June 3, 6-8.....	8,675			58	16	20	153	0	87	26	26		3.3	338	.46	8,620	306	153	17	503	--	
June 4-5, 9-10.....	9,446			40	26	36	137	5	165	40	40		3.5	521	.71	8,650	306	153	20	727	8.4	
June 11-13.....	9,530			49	12	15	164	4	155	18	25		2.5	262	.36	15,230	172	52	16	391	8.5	
June 14-20.....	7,791			86	22	20	202	0	154	26	26		2.5	433	.59	9,110	290	156	13	634	8.0	
June 21-30.....	2,539			96	28	32	202	5	184	40	40		3.0	547	.74	3,750	354	180	16	779	8.5	
July 1, 8-10.....	1,248			84	36	98	251	9	263	54	54		1.3	668	.91	2,250	358	137	37	906	8.5	
July 2-7.....	4,190			66	20	11	95	0	134	35	35		2.8	404	.55	4,570	246	168	9	637	7.7	
July 11-20.....	775			90	47	64	195	0	289	68	68		2	754	1.03	1,560	418	256	25	1,030	8.1	
July 21-31.....	660			116	52	70	282	0	305	70	70		1.4	800	1.09	1,430	504	264	23	1,130	7.8	
Aug. 1, 6-10.....	406			67	45	65	165	0	253	66	66		1.5	621	.84	681	352	217	29	919	8.1	
Aug. 2-3.....	485			104	59	76	230	0	421	86	86		1.7	892	1.21	1,170	502	396	25	1,240	8.0	
Aug. 11-16.....	377			67	52	60	200	0	238	70	70		1.3	630	.86	641	381	217	26	926	7.8	
Aug. 17-20.....	285			99	59	70	208	0	344	80	80		1.4	831	1.13	639	490	319	24	1,170	8.0	
Aug. 21-31.....	295			103	55	71	221	0	333	77	77		1.5	904	1.13	663	483	302	24	1,160	7.9	
Sept. 1-10.....	205			100	57	80	206	0	357	82	82		1.4	904	1.23	500	464	315	26	1,180	8.1	
Sept. 11-14, 16-17.....	598			101	45	69	220	0	298	70	70		2.5	732	1.00	1,180	441	261	25	1,050	7.8	
Sept. 15, 18-20.....	665			75	28	43	171	0	186	40	40		3.3	480	.65	862	302	162	23	732	7.9	
Sept. 21-30.....	361			86	32	40	195	0	212	36	36		3.2	570	.78	596	346	186	20	775	7.9	
Weighted average ..	1,916			78	27	29	a185	--	159	37	37		2.8	478	0.65	2,470	306	154	17	693	--	

a Includes equivalent of carbonate values shown above.

RED RIVER BASIN--Continued

WASHITA RIVER NEAR DURWOOD, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	65	50	42	32	55	--	65	73	76	83	81
2	75	60	--	51	32	58	--	64	75	75	83	81
3	65	54	45	--	32	58	52	65	69	75	83	81
4	58	45	45	--	32	55	51	64	66	79	--	82
5	56	40	40	--	34	53	59	66	75	79	85	80
6	60	51	32	--	44	55	50	65	75	80	84	79
7	68	61	32	--	38	52	59	62	70	81	85	80
8	60	54	32	--	38	50	52	64	73	81	82	75
9	50	42	32	--	41	52	47	70	75	75	--	76
10	60	38	34	--	42	45	51	65	75	82	82	74
11	62	34	32	37	49	49	53	67	72	81	79	76
12	62	38	40	43	55	41	46	59	69	80	77	76
13	65	40	40	45	47	38	50	81	72	81	80	69
14	65	50	38	39	32	40	54	62	72	82	82	69
15	68	60	42	41	32	42	56	70	75	82	82	66
16	67	51	42	41	32	47	--	69	76	80	81	68
17	65	52	42	46	--	66	52	69	--	79	83	56
18	62	62	34	44	42	58	58	69	77	83	80	55
19	64	55	36	45	49	45	63	62	69	78	79	67
20	64	40	41	46	51	42	65	68	80	83	80	69
21	55	38	42	39	48	47	61	71	69	82	80	69
22	62	49	42	39	48	51	62	72	78	82	79	66
23	60	48	43	--	50	58	58	--	79	83	78	67
24	60	40	43	39	51	53	60	70	78	82	77	73
25	62	35	42	40	52	54	66	70	79	81	79	75
26	62	40	43	40	55	55	65	71	78	82	81	75
27	65	39	37	46	55	54	69	70	79	82	80	70
28	65	39	37	37	59	57	72	71	80	75	75	64
29	65	40	35	32	--	52	71	69	81	82	81	65
30	68	41	37	32	--	49	69	72	82	84	81	66
31	70	--	38	32	--	55	--	81	--	83	80	--
Average	63	47	39	--	43	51	58	68	75	80	81	72

RED RIVER BASIN--Continued

RED RIVER AT DENISON DAM NEAR DENISON, TEX.

LOCATION.--Immediately below dam on Red River, 14 miles upstream from Shawnee Creek, 14 miles northwest of Denison, Tarrant County, 38,200 square miles above dam, 37,700 square miles (revised) above gaging station, of which 6,697 square miles is probably noncontributing. DRAINAGE AREA.--38,200 square miles above dam, 37,700 square miles (revised) above gaging station, of which 6,697 square miles is probably noncontributing. RECORDS AVAILABLE.--Chemical analyses, in parts per million, water year October 1950 to September 1951.

Water temperatures: October 1945 to September 1951.

EXTREMES 1950-51.--Dissolved solids: Maximum, 1,010 ppm June 1-30; minimum, 725 ppm Sept. 1-30.

HARDNESS: Maximum, 366 ppm June 1-30; minimum 278 ppm Sept. 1-30.

SPECIFIC CONDUCTANCE: Maximum daily, 1,740 micromhos May 31; minimum daily, 1,210 micromhos Sept. 21, 24, 26-28.

EXTREMES, 1944-51.--Dissolved solids: Maximum, 1,430 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 464 ppm Oct. 21-31, 1945.

HARDNESS: Maximum, 522 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 233 ppm Dec. 21-31, 1945, Jan. 11-20, 1946.

Water temperatures: (1945-50) Maximum, 82°F Sept. 5, 1947; minimum, 40°F Jan. 30, 1949.

REMARKS.--Values reported for dissolved solids concentrations are residue on evaporation. Records of specific conductance of daily samples available in District office at Austin, Tex. Discharge records for gaging station near Colbert, Okla., for water year October 1950 to September 1951 given in Water-Supply Paper 1211. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium			
Oct. 1-31, 1950.....	8,029		12		82	20	170		123	171	265		3.2		837	1.14	18,100	186	1,350	7.8
Nov. 1-30.....	2,931		11		84	24	162		128	177	262		2.5		820	1.12	6,490	203	1,370	7.6
Dec. 1-31.....	2,966		11		90	23	170		128	184	278		.5		850	1.16	6,880	214	1,430	7.5
Jan. 1-31, 1951.....	2,890		8.8		90	25	188		134	195	300		1.2		920	1.25	7,180	218	1,500	8.0
Feb. 1-28.....	3,304		10		91	23	176		134	189	265		1.2		873	1.19	7,790	212	1,470	7.7
Mar. 1-31.....	2,335		10		92	23	180		136	193	265		1.0		893	1.21	5,650	212	1,460	7.5
Apr. 1-30.....	2,090		13		90	26	180		146	192	285		1.0		911	1.24	5,140	212	1,500	7.7
May 1-31.....	13,690		11		92	23	189		152	177	302		1.0		959	1.30	36,000	200	1,560	7.8
June 1-30.....	25,960		11		99	29	198		149	207	325		.8		1,010	1.37	70,800	366	1,670	8.0
July 1-31.....	13,620		12		86	26	158		136	178	260		1.0		840	1.14	30,900	210	1,390	7.9
Aug. 1-31.....	3,120		14		82	22	147		132	163	238		1.8		788	1.07	6,640	295	1,280	7.7
Sept. 1-30.....	2,563		14		77	21	143		132	157	235		1.0		765	.99	5,020	170	1,220	7.6
Weighted average...	6,992		11		91	25	179		141	187	290		1.2		913	1.24	17,200	214	1,500	--

RED RIVER BASIN--Continued

RED RIVER AT DENISON DAM NEAR DENISON, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

[illegible]

RED RIVER BASIN--Continued

KIAMIHI RIVER NEAR BELZONI, OKLA.

LOCATION.--At gaging station at bridge on State Highway 7, 6.5 miles downstream from Cedar Creek, and 1½ miles northwest of Belzoni, Pushmataha County.
DRAINAGE AREA.--1,423 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES: 1950-51.--Dissolved solids: Maximum, 81 ppm Aug. 1-31.

Hardness: Maximum, 30 ppm Dec. 1-31; minimum, 15 ppm Aug. 1-31.

Specific conductance: Maximum daily, 127 micromhos Dec. 19; minimum daily, 26.1 micromhos June 12.

TEMPERATURES: 1947-51.--Water temperature: Maximum daily, 26.1 micromhos June 12.

EXTREMES: 1947-51.--Water temperature: Maximum daily, 26.1 micromhos June 12.

Hardness: Maximum, 46 ppm May 21-22, 27-28, 31, 1948; minimum, 11 ppm Feb. 11-20, 1949; Jan. 1-10, 1950.

Specific conductance: Maximum daily, 223 micromhos Dec. 5, 1948; minimum daily, 22.5 micromhos Jan. 25, 1948.

Water temperatures: Maximum, 98°F Aug. 17, 1951; minimum, freezing point on several days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate			
Oct. 1-31, 1950	188	12	0.75	5.5	2.5	7.6	1.6	32		5.7	5.8	--	1.0	--	64	0.09	32	24	0	39	76.6	7.1
Nov. 1-30	81.3	12	.15	6.6	2.8	11		39		5.7	8.8	0.1	1.0	--	67	.09	15	28	0	46	96.0	6.9
Dec. 1-31	61.9	11	.10	7.4	2.9	12		40		6.3	12	.1	.8	--	73	.10	112	30	0	47	108	6.8
Jan. 1-31, 1951	597	10	.90	5.4	2.5	10		31		7.9	8.0	--	.8	--	80	.11	129	24	0	46	98.7	6.9
Feb. 1-28	6,717	8.1	.75	3.5	1.9	6.0	1.7	14		7.7	6.0	--	6.8	--	81	.11	1,470	17	5	41	82.0	6.0
Mar. 1-31	1,768	9.3	1.1	3.8	1.6	5.5	1.4	18		6.3	5.2	--	1.4	--	72	.10	344	17	2	39	82.0	6.6
Apr. 1-30	2,113	8.6	.80	4.5	2.1	8.0	1.5	22		7.2	6.8	--	1.4	--	65	.09	371	20	2	44	70.5	7.1
May 1-31	949	9.2	.90	4.2	2.0	6.4	1.4	22		5.8	7.2	.0	1.2	0.10	67	.09	172	19	1	40	75.3	7.0
June 1-30	6,679	8.9	.80	3.6	1.6	5.2	1.4	19		4.3	4.8	--	2.7	.48	64	.09	1,150	16	0	39	64.0	6.5
July 1-31	2,277	11	.90	3.4	1.7	5.4	1.4	21		4.0	4.0	--	2.7	.57	64	.09	393	16	0	40	58.9	7.1
Aug. 1-31	96.7	8.4	.45	3.3	1.6	4.9	1.8	20		5.6	3.2	.0	2.3	.47	59	.08	15	15	0	38	55.8	6.9
Sept. 1-30	147	7.1	.06	3.6	2.3	5.7	1.8	24		5.9	4.8	.0	1.9	.42	61	.08	24	18	0	37	66.7	7.2
Weighted average	1,761	9.0	0.82	3.8	1.8	6.9		19		5.9	5.5	--	3.5	--	70	0.10	333	17	1	47	70.7	--

RED RIVER BASIN--Continued

KIAMICHI RIVER NEAR BELZONI, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	73	50	46	32	60	61	61	85	73	84	90
2	76	45	60	51	32	66	45	75	85	85	84	90
3	71	61	50	45	36	57	60	70	68	84	89	91
4	72	57	49	48	37	--	67	70	72	79	86	85
5	71	69	--	55	32	--	59	74	70	73	85	85
6	78	60	40	44	40	--	63	69	71	80	87	86
7	70	64	32	43	47	--	65	69	75	80	89	78
8	70	65	39	44	46	--	64	70	70	82	87	85
9	71	56	43	44	43	--	64	70	--	78	83	83
10	70	49	41	40	40	--	65	65	73	79	89	84
11	71	53	45	51	43	--	60	70	77	84	83	79
12	70	54	43	49	43	--	59	56	71	85	81	79
13	70	53	45	52	53	--	61	72	74	91	89	79
14	70	56	45	42	47	--	63	71	74	89	86	83
15	73	60	37	50	47	--	59	74	75	85	95	--
16	72	55	45	47	40	--	58	75	74	85	93	74
17	73	53	47	50	45	--	63	--	79	88	98	78
18	70	52	44	51	47	--	65	79	85	87	87	74
19	75	60	43	53	50	--	68	79	81	90	82	77
20	70	53	43	50	52	--	58	80	83	90	84	74
21	66	55	41	46	55	--	65	78	82	90	85	78
22	67	53	50	47	53	--	53	--	94	90	82	80
23	65	50	50	40	40	62	64	82	77	90	80	80
24	70	45	49	43	53	62	67	76	--	84	80	76
25	70	45	49	47	55	61	66	72	86	--	82	63
26	72	50	45	50	58	60	70	80	87	87	79	80
27	71	49	43	47	59	55	71	76	86	89	88	77
28	73	50	43	45	59	61	68	77	90	95	90	75
29	70	49	40	32	--	57	60	74	84	84	90	75
30	74	56	45	36	--	61	71	80	78	82	90	78
31	73	--	45	36	--	60	--	83	--	85	90	--
Average	71	55	45	46	46	--	63	73	79	85	86	81

RED RIVER BASIN--Continued

LITTLE RIVER BELOW LUKEATA CREEK, NEAR IDABEL, OKLA.

LOCATION.--At gaging station at bridge on U. S. Highway 70, just downstream from Lukfata Creek, and 5 miles northeast of Idabel, McCurtain County.
DRAINAGE AREA.--1,226 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

WATER TEMPERATURES: October 1947 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 198 ppm June 1-30.

Hardness: Maximum, 47 ppm Sept. 10-13; minimum, 17 ppm June 1-30.
Specific conductance: Maximum daily, 380 micromhos July 1.

Water temperatures: Maximum, 88°F July 22-23, Aug. 7; minimum, freezing point Feb. 2-3.
EXTREMES, 1947-51.--Dissolved solids: Maximum, 369 ppm Oct. 11-19, 1948; minimum, 40 ppm July 21-31, 1950.

Hardness: Maximum, 72 ppm Oct. 11-19, 1948; minimum, 9 ppm Apr. 21-30, 1948.
Specific conductance: Maximum daily, 701 micromhos Oct. 7-6, 1948; minimum daily, 21.5 micromhos Feb. 14, 1950.

Water temperatures: Maximum, 94°F Aug. 16, 1950; minimum, freezing point Feb. 26, 1948, Feb. 14, 1950, Feb. 2-3, 1951.
REMARKS:--For specific conductance on daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis- charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO 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- dium	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per mil- lion	Tons per acre- foot	Tons per acre- foot	Calcium	Non- mag- nesium			
Oct. 1-31, 1950	364	10	0.75	7.9	2.2	10	1.3	35		4.3	14	0.1	0.8		77	0.10	76	29	0	42	116	7.0
Nov. 1-30	213	11	.30	9.1	2.4	16		41		4.6	20	.1	.9		85	.12	49	33	0	52	135	7.2
Dec. 1-31	132	9.9	.50	9.2	2.4	19		43		4.9	24	.1	.8		92	.13	33	33	0	56	150	7.0
Jan. 1-31, 1951	866	7.7	.90	6.0	1.7	11		27		5.7	12	--	1.0		77	.10	180	22	0	52	86.7	6.9
Feb. 1-28	5,742	8.5	.55	5.8	1.7	5.5	1.4	24		5.8	6.2	--	1.3		87	.09	1,040	21	2	34	87.5	6.6
Mar. 1-31	1,242	8.4	.55	4.6	1.7	5.5	1.0	23		3.7	6.5	--	1.1		80	.08	201	18	0	38	61.7	6.6
Apr. 1-30	1,540	8.3	.60	7.2	1.9	8.9	1.0	29		4.9	9.8	--	.8		66	.09	274	26	2	42	83.3	7.3
May 1-31	1,081	9.4	.60	6.4	1.8	8.6	1.3	30		4.5	7.0	--	.9		73	.10	213	23	0	43	93.0	7.1
June 1-30	5,714	9.6	.85	4.7	1.4	6.7	1.2	21		3.0	9.2	--	2.3		61	.08	941	17	0	43	72.4	6.7
July 1-31	3,654	12	.95	6.0	1.6	8.8	1.0	28		3.4	12	--	2.3		71	.10	739	22	0	43	94.0	7.1
Aug. 1-31	86.3	12	.15	8.5	2.6	24	1.8	36		6.7	35	.0	1.9		113	.13	27	33	3	60	188	7.0
Sept. 1-9	22.0	--	--	12	3.8	39		50		6.1	59	--	.8		164	.22	9.7	46	5	65	310	7.4
Sept. 10-13	158	--	--	12	4.2	50		48		7.2	77	--	1.8		198	.27	84	47	8	70	358	7.5
Sept. 14-20	224	--	--	10	2.9	19		43		5.4	26	--	1.7		104	.14	63	37	2	53	165	7.2
Sept. 21-30	74.4	--	--	11	3.2	35		42		5.0	54	--	1.0		130	.18	26	41	6	65	192	7.3
Weighted average	1,711	--	--	5.7	1.7	8.3		25		4.3	9.4	--	1.7		67	0.09	310	21	0	46	79.7	--

RED RIVER BASIN--Continued

LITTLE RIVER BELOW LUKFATA CREEK, NEAR IDABEL, OKLA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	69	48	44	33	55	56	69	80	77	85	85
2	--	68	53	48	32	58	46	64	80	71	86	85
3	71	63	47	40	32	58	55	68	78	73	86	85
4	69	58	46	42	34	55	57	68	77	73	87	85
5	67	56	48	45	35	55	58	68	75	75	82	84
6	66	56	35	46	40	57	68	67	73	76	87	83
7	67	59	36	41	40	60	60	65	76	79	88	82
8	67	61	39	36	39	59	59	66	85	82	87	80
9	65	52	39	40	41	57	60	68	72	83	87	74
10	65	50	39	42	42	56	48	67	82	83	87	78
11	--	49	46	39	46	57	57	68	71	84	84	77
12	66	47	39	43	50	46	55	68	69	81	85	80
13	65	47	40	45	55	48	47	67	75	82	86	75
14	64	50	43	50	46	47	57	69	67	82	86	74
15	65	55	44	44	37	46	61	71	70	85	86	75
16	66	53	43	44	42	48	59	72	--	84	85	72
17	66	52	42	45	42	53	55	71	72	83	86	73
18	67	50	40	45	46	51	60	72	75	85	86	71
19	68	58	40	44	48	50	61	74	75	86	86	71
20	68	52	40	50	52	51	63	74	77	86	84	72
21	65	51	41	43	53	52	64	75	--	86	85	74
22	66	52	44	42	52	58	60	75	76	88	82	72
23	66	51	44	45	53	55	60	75	78	88	80	71
24	62	44	43	43	53	54	62	74	80	86	80	74
25	64	45	46	40	52	55	68	74	81	86	82	76
26	66	--	43	41	54	--	65	74	--	86	84	76
27	65	45	41	45	55	58	65	74	81	82	84	75
28	67	43	--	43	55	58	61	74	83	83	84	73
29	66	45	41	39	--	--	69	78	82	85	84	71
30	67	45	42	38	--	--	67	78	83	85	85	70
31	68	--	40	--	--	56	--	80	--	86	86	--
Average	66	53	42	43	50	54	59	71	77	82	85	76

RED RIVER BASIN--Continued

OUCHITA RIVER NEAR MOUNT IDA, ARK.

LOCATION --At gaging station at bridge on U. S. Highway 270, 4½ miles upstream from Fiddler's Creek, and 5½ miles northwest of Mount Ida, Montgomery County.
 WATERGAGE, REEF, 10 square miles. Chemical analyses: October 1949 to September 1951.
 REMARKS AVAILABLE--Chemical analyses: October 1949 to September 1951.

WATER TEMPERATURES--October 1949 to September 1951.
 EXTREMES 1950-51--Dissolved solids: Maximum, 65 ppm Jan. 1-3, 11; minimum, 22 ppm July 3-6.

Hardness: Maximum, 36 ppm Dec. 11-20, 21-31; minimum, 12 ppm Jan. 1-3, 11; minimum, 22 ppm July 3-6.

Specific conductance: Maximum, 11-20, 21-31; minimum, 12 ppm Jan. 1-3, 11; minimum, 22 ppm July 3-6.

Water temperatures: Maximum, 94.7 microhos Aug. 31; minimum, 25.4 microhos Feb. 16.

Hardness: 1949-51.--Dissolved solids: Maximum, 65 ppm Jan. 1-3, 11, 1951; minimum, 19 ppm Jan. 11-20, 1950.

Specific conductance: Maximum, 36 ppm Dec. 11-20, 21-31, 1950; minimum, 10 ppm Jan. 11-20, 1950.

Water temperatures: Maximum, 94.7 microhos Aug. 31, 1951; minimum, 23.8 microhos Jan. 13, 1950.

Hardness: Maximum, 86°F Aug. 29-31, 1951; minimum, freezing point Jan. 31, Feb. 1-2, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (microhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950	186	8.5	0.04	6.2	1.4	2.6	0.2	26	3.2	2.8	0.1	1.0	40	31	0	56.7	7.2	5
Oct. 11-20	101	8.0	0.03	7.2	1.5	4.4	0.2	21	3.5	3.0	0.1	1.0	44	24	0	62.5	7.4	4
Oct. 21-31	369	8.0	0.03	6.6	1.8	2.6	0.2	25	3.0	3.2	0.1	1.0	44	24	0	60.5	7.4	17
Nov. 1-10	137	8.4	0.02	8.4	2.0	3.6	0.6	33	3.8	4.0	0.2	0.5	51	29	2	72.9	7.5	7
Nov. 11-20	150	8.8	0.02	9.4	2.1	3.5	0.6	35	4.0	3.8	0.2	0.5	51	32	3	73.7	7.1	9
Nov. 21-30	146	9.0	0.04	8.4	2.0	2.8	0.7	32	4.0	2.8	0.2	0.4	47	29	3	66.5	7.3	9
Dec. 1-10	107	--	--	10	1.8	4.2	--	41	4.1	2.5	--	0.9	60	32	0	84.9	7.7	10
Dec. 11-20	86.2	--	--	11	2.1	4.1	--	46	4.7	2.8	--	0.9	59	36	0	88.8	7.8	12
Dec. 21-31	77.2	--	--	11	2.0	3.9	--	47	4.3	2.8	--	0.9	56	36	0	89.7	7.8	10
Jan. 1-3, 11, 1951	387	--	--	10	1.9	4.5	--	41	4.0	2.8	--	1.1	65	33	0	84.3	7.4	15
Jan. 4-10	492	9.0	0.04	4.2	2.3	3.6	1.7	22	6.0	3.5	0.0	1.1	45	20	2	52.6	6.6	45
Jan. 11-20	1,790	8.3	0.11	2.8	1.1	3.0	2.7	17	2.2	2.8	0.0	1.3	35	12	0	41.9	6.4	45
Jan. 21-31	299	8.6	0.16	5.4	1.7	3.1	3.1	22	8.6	3.0	0.0	0.5	44	20	1	49.2	6.9	22
Feb. 1-7	608	7.7	0.07	7.8	2.4	1.9	1.9	27	4.6	3.8	0.1	1.2	44	29	7	58.0	7.4	11
Feb. 8-15	1,304	5.0	0.02	5.2	1.7	1.9	1.5	17	3.6	2.8	0.1	1.2	32	20	6	39.8	7.3	40
Feb. 16-28	2,481	7.2	0.11	3.8	1.6	1.8	--	14	3.0	2.5	0.1	1.0	32	16	10	37.7	7.0	30
Feb. 29	2,481	7.2	0.11	3.8	1.6	1.8	--	14	3.0	2.5	0.1	1.0	32	16	10	37.7	7.0	30
Mar. 1-10	619	8.0	0.16	4.6	1.4	3.3	0.8	20	4.0	2.2	0.1	1.1	40	17	3	45.8	7.3	22
Mar. 11-20	1,088	7.8	0.21	4.0	1.7	3.7	1.0	17	3.7	2.5	0.1	1.0	34	17	3	39.6	7.4	35
Mar. 21-31	375	8.3	0.09	5.8	1.4	3.1	1.0	24	4.2	2.8	0.1	0.8	41	20	1	51.2	7.4	17
Apr. 1-10	240	7.7	0.02	7.3	1.7	2.5	1.7	30	4.0	2.8	0.1	1.0	45	25	1	63.9	7.5	12
Apr. 11-20	371	--	--	6.6	1.7	2.7	--	24	4.0	2.5	--	1.4	39	39	23	69.4	7.2	17
Apr. 21-30	867	6.6	0.28	4.4	1.9	2.5	1.7	20	3.2	3.0	0.0	1.4	40	19	2	49.1	7.1	27

RED RIVER BASIN--Continued

OUACHITA RIVER NEAR MOUNT IDA, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	68	54	42	32	54	61	62	84	70	76	85
2	74	--	56	49	32	60	52	66	86	--	78	77
3	68	57	48	46	33	58	56	56	79	68	78	78
4	66	54	52	44	36	58	54	64	72	70	79	78
5	68	52	43	44	34	55	56	68	72	69	76	78
6	68	60	38	46	42	58	61	62	72	68	78	75
7	70	--	34	42	38	58	59	60	74	71	79	78
8	61	62	36	39	45	52	58	64	74	72	81	73
9	64	52	34	38	46	52	60	64	68	75	80	70
10	62	48	--	42	48	48	60	64	69	76	80	72
11	65	46	42	44	52	52	54	66	66	76	77	78
12	66	46	40	40	49	44	54	66	64	74	77	76
13	63	48	42	44	48	42	56	62	64	73	78	70
14	68	48	38	46	46	41	50	70	66	74	80	73
15	59	56	36	46	40	45	55	70	66	78	78	68
16	66	54	38	41	45	54	56	70	66	78	80	68
17	66	50	40	49	46	52	58	62	67	75	76	65
18	62	48	40	50	50	49	60	60	68	78	80	62
19	64	52	36	50	48	50	62	62	70	76	78	70
20	65	52	36	46	51	59	59	74	68	72	78	62
21	64	50	40	44	54	47	62	76	72	76	78	69
22	62	52	44	43	50	58	59	70	73	79	76	68
23	64	52	48	41	50	56	62	74	73	80	73	64
24	63	42	49	43	52	57	64	70	74	78	71	68
25	58	46	47	44	52	59	64	76	75	81	70	68
26	66	47	45	44	54	56	68	78	76	80	82	70
27	66	48	36	46	54	53	72	80	74	78	80	68
28	68	46	38	40	56	56	70	78	76	76	82	64
29	61	46	38	36	--	58	70	80	77	75	86	61
30	63	52	40	34	--	58	72	80	74	76	86	--
31	65	--	34	32	--	64	--	78	--	76	86	--
Average	65	51	41	43	46	54	60	69	72	75	79	71

RED RIVER BASIN--Continued

CADDO RIVER NEAR ARKADAPLPHIA, ARK.

LOCATION --At bridge on U. S. Highway 67, 6 miles north of Arkadelphia, Clark County.

DRAINAGE AREA.--312 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1951.

Water temperatures: October 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 91 ppm Nov. 16-20; minimum, 19 ppm July 1-7.

Hardness: Maximum, 44 ppm Nov. 11-15; minimum, 17 ppm July 1-7.

Specific conductance: Maximum, 91, Sept. 1-10; minimum, 47, Aug. 7-9.

Hardness: Maximum, 44 ppm Nov. 11-15; minimum, 17 ppm July 1-7.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 104 ppm Nov. 12, 14-16, 21, 1949; minimum, 17 ppm Feb. 17-20, 1950.

Hardness: Maximum, 45 ppm July 11-20, 1950; minimum, 12 ppm Feb. 17-20, 1950.

Specific conductance: Maximum daily, 439 micromhos Apr. 2, 1950; minimum daily, 16.8 micromhos, Mar. 12, 1950.

Water temperatures: Maximum, 96°F Aug. 7-9, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 based on records for Caddo River at Runyan Bridge near Alpine, Ark., obtained from Corps of Engineers, Vicksburg District. No appreciable inflow between sampling site and gaging station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on filtration at 180°C)	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	Color
														Calcium, mg./nesium	Non-carbonate			
Oct. 1-10, 1950	125	10	0.01	9.3	1.8	3.7	1.0	39	3.4	5.0	0.0	0.3	58	31	0	80.2	6.6	6
Oct. 11-20	80.4		.03	12	1.8	3.2	.7	42	2.5	3.2	.0	.7	57	37	3	83.6	7.2	8
Oct. 21-31	205	9.6	.02	12	1.8	3.4	.7	47	2.5	3.2	.0	.7	64	41	2	88.9	7.7	9
Nov. 1-10	95.1	11	.02	12	2.9	2.6	1.3	50	4.4	3.0	.0	1.2	61	44	3	104	7.7	7
Nov. 11-20	215		.02	11	2.6	3.5		40	4.8	3.5		1.9	91	38	5	138	7.7	7
Nov. 21-30	208		.02	12	2.4	3.3		40	10	2.1		1.3	85	40	7	139	7.5	10
Nov. 27-30	132		.02	12	2.2	4.1		41	5.3	4.5		.9	61	39	5	88.3	7.6	7
Dec. 1-10	115		.02	11	2.1	4.0		42	4.3	3.2		.5	55	36	2	85.4	7.7	10
Dec. 11-20	85.5	9.9	.08	12	2.3	3.6	1.2	45	5.0	3.0	.0	5.1	65	39	3	86.0	7.6	8
Dec. 21-31	64.5		.11	13	2.0	3.0		46	9.1	3.0		.5	57	41	3	91.0	7.4	5
Jan. 1-11, 1951	166	8.2	.11	9.3	2.1	3.9	2.4	39	8.6	4.5	.0	.5	64	32	0	84.9	7.6	17
Jan. 12-31	1,171			5.8	1.9	3.3		20	4.8	2.8		2.8	31	22	6	56.9	6.8	35
Feb. 1-5	153		.02	10	1.8	3.9		31	8.9	4.2		1.8	56	32	7	75.3	7.3	20
Feb. 6-10	975		.02	5.4	2.4	3.0		20	5.8	3.0		1.9	31	23	7	50.6	7.1	35
Feb. 11-14	372		.02	6.9	1.7	2.7		26	6.9	3.0		1.6	36	24	3	55.2	7.3	33
Feb. 15-20	4,087		.02	4.4	1.7	2.6		13	6.0	2.0		.9	26	20	3	49.1	7.1	30
Feb. 21-23	1,373	7.9	.32	5.6	1.5	3.1	1.8	21	4.6	3.0	.0	.9	47	23	8	59.1	7.1	23
Mar. 1-10	386		.02	7.6	1.6	2.5		28	4.1	2.8		1.5	52	26	3	65.1	7.3	35
Mar. 11-20	308	5.4	.15	6.8	2.1	3.0		32	3.9	2.5		1.2	50	26	0	65.2	7.7	15
Mar. 21-31	308		.02	6.8	2.1	3.0		32	3.9	2.5		1.2	50	26	0	65.2	7.7	15

RED RIVER BASIN--Continued
CADD O RIVER NEAR ARKAD E L P H I A , A R K . --Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Apr. 1-10, 1951.....	536	7.7	0.34	6.2	1.7	2.8	1.3	25	4.0	3.0	0.1	0.5	48	22	2	56.8	6.7	32
Apr. 11-20.....	534	--	--	6.8	1.4	3.1	--	26	3.6	3.2	--	--	46	23	1	58.7	7.4	22
Apr. 21-30.....	1,038	--	--	5.0	1.8	2.9	--	23	3.2	2.5	--	--	43	20	1	52.1	7.2	40
May 1-10.....	774	8.3	.26	5.8	1.8	2.4	1.4	24	3.8	3.0	.1	.6	45	22	2	50.5	7.2	25
May 11-20.....	185	--	--	8.2	1.8	3.5	--	36	3.0	3.2	--	--	47	28	0	73.3	7.8	7
May 21-31.....	81.9	--	--	11	2.2	3.3	--	43	3.4	2.8	--	2.1	52	36	1	87.5	7.2	8
June 1-10.....	158	--	--	13	2.1	2.8	--	48	3.5	2.8	--	1.4	61	41	2	95.0	7.5	7
June 11-20.....	500	--	--	7.4	2.3	3.0	--	31	2.7	1.8	--	1.3	34	28	2	61.2	7.6	35
June 21-30.....	107	--	7.6	9.2	1.9	3.3	.9	36	3.2	4.5	.1	.8	50	31	1	75.5	6.8	7
July 1-7.....	3,013	--	--	3.7	1.0	--	--	12	4.0	2.0	--	1.3	19	17	7	39.3	6.3	45
July 8-20.....	200	10	.01	8.5	1.7	3.5	.6	34	3.7	3.5	.1	1.4	50	28	0	11.5	7.8	10
July 21-27.....	139	--	--	10	2.3	3.7	--	41	4.1	3.2	--	1.9	53	34	1	82.7	7.6	10
July 28-31.....	206	--	--	7.6	1.7	3.0	--	31	4.0	3.5	--	--	51	26	1	64.2	6.8	22
Aug. 1-6.....	91.3	--	--	9.6	1.7	4.3	--	36	3.0	5.2	--	.8	44	31	1	78.7	7.0	20
Aug. 7-20.....	52.4	12	.02	11	2.2	4.9	.6	45	3.4	6.0	.0	--	63	36	0	94.2	7.5	8
Aug. 21-31.....	51.6	8.3	--	12	2.4	2.9	.8	50	3.6	3.8	.2	1.1	64	40	0	100	6.8	7
Sept. 1-10.....	50.6	--	--	13	2.7	3.5	--	54	3.0	2.5	--	.7	60	44	0	102	7.4	8
Sept. 11-20.....	170	--	--	12	2.1	3.2	--	47	2.9	3.0	--	1.0	57	39	0	94.0	7.4	6
Sept. 21-28.....	139	--	--	13	2.0	4.0	--	46	4.9	5.2	--	.9	58	41	3	97.8	7.1	8
Sept. 27-30.....	1,540	--	--	8.0	1.1	2.3	--	28	4.0	2.8	--	1.5	34	24	0	66.4	7.2	35
Average.....	459	--	--	9.3	2.0	3.7	--	35	4.6	4.2	--	1.1	52	31	3	77.3	--	18

RED RIVER BASIN--Continued

CADDO RIVER NEAR ARKADDELPHIA, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	72	53	44	--	55	60	68	86	74	85	93
2	75	68	52	51	35	61	59	68	83	74	88	--
3	77	64	54	49	36	60	60	70	80	74	--	93
4	--	60	48	53	36	55	60	70	78	75	92	92
5	72	57	47	47	37	59	56	70	78	74	91	90
6	71	59	42	47	42	61	58	67	78	75	95	91
7	72	61	36	44	43	51	61	69	76	78	96	86
8	70	63	41	43	43	61	58	69	77	83	96	86
9	69	57	38	44	41	56	61	68	81	85	96	83
10	67	54	43	43	46	57	61	71	77	88	--	84
11	69	56	40	44	53	56	54	70	78	87	92	87
12	70	48	43	--	50	52	53	72	76	89	89	85
13	69	54	41	48	54	44	57	73	72	85	94	84
14	70	50	44	41	50	43	53	74	75	84	95	83
15	65	56	46	41	44	51	57	75	76	85	95	84
16	71	59	43	44	44	47	58	74	75	85	93	80
17	72	54	46	--	45	52	61	78	--	88	95	81
18	69	55	43	51	50	52	62	77	80	88	93	81
19	70	57	43	42	53	50	63	78	82	88	93	82
20	71	55	44	50	56	56	64	79	78	90	91	78
21	69	57	42	48	53	57	--	80	78	89	92	80
22	65	53	45	49	51	54	62	82	82	86	88	81
23	65	52	47	48	54	59	65	82	83	88	92	77
24	67	52	46	--	54	55	65	78	86	86	91	80
25	70	53	48	--	55	60	63	76	89	86	90	81
26	71	50	49	--	55	55	70	78	90	--	91	84
27	70	47	42	--	55	59	66	80	90	82	93	80
28	69	49	42	--	55	60	71	82	86	82	91	75
29	68	52	43	--	--	56	68	84	88	83	89	75
30	72	48	44	--	--	55	70	80	82	84	93	74
31	72	--	44	--	--	53	--	86	--	86	94	--
Average	70	56	44	--	48	55	61	75	81	83	92	83

RED RIVER BASIN--Continued
OJACHITA RIVER AT ARKADDELPHIA, ARK.

LOCATION --At bridge on State Highway 8, 800 feet upstream from Missouri Pacific Railway bridge in Arkadelphia, Clark County.

DRAINAGE AREA --2,311 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1948 to September 1951.

Water temperatures: October 1948 to September 1951.

EXTREMES, 1950-51. --Dissolved solids: Maximum, 68 ppm Aug. 21-31; minimum, 33 ppm Sept. 28-30.

Hardness: Maximum, 38 ppm Nov. 21-30; minimum, 18 ppm Sept. 28-30.

Specific conductance: Maximum daily, 118 micromhos Aug. 27; minimum daily, 35.6 micromhos July 3.

Water temperatures: Maximum, 91°F Aug. 9, 31; minimum, 36°F Jan. 30-31 and Feb. 1-2.

EXTREMES, 1948-51. --Dissolved solids: Maximum, 77 ppm Sept. 1-10, 1949; minimum, 33 ppm Jan. 11-20, 1950, Sept. 28-30, 1951.

Hardness: Minimum, 39 ppm Dec. 11-12, 16, 1949; minimum, 11 ppm Jan. 25-31, 1949.

Specific conductance: Maximum daily, 129 micromhos Aug. 1, 1949; minimum daily, 26.7 micromhos Jan. 27, 1949.

Water temperatures: Maximum, 91°F Aug. 9, 31, 1951; minimum, 36°F Jan. 30-31, Feb. 1-2, 1951.

REMARKS --Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 obtained from Corp of Engineers, Vicksburg District.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-9, 1950	1,700	6.5	0.21	6.1	1.7	2.9	3.5	24	4.9	3.8	0.2	1.6	53	22	3	59.0	7.0	12
Oct. 10-20	725	6.6	0.20	7.4	1.8	4.7	1.3	26	6.3	7.0	.1	1.2	59	26	5	76.4	7.2	35
Oct. 21-31	1,062	6.1	.06	8.5	2.1	4.3	1.9	28	8.0	6.5	.1	1.2	58	30	7	79.9	7.3	32
Nov. 1-10	801	6.6	.02	9.2	2.3	5.3	4.4	35	6.4	6.8	.1	1.4	57	32	4	83.2	7.5	8
Nov. 11-20	714	5.4	.07	10	2.4			36	7.0	4.8	.1	.7	59	35	5	86.7	7.5	9
Nov. 21-30	1,103	5.4	.06	10	3.1	3.0		37	6.0	4.5	.1	.9	57	38	7	85.5	7.3	8
Dec. 1-10	952	6.4	.07	10	2.3	5.3	2.4	38	6.4	7.0	.1	1.1	61	34	3	91.1	7.0	7
Dec. 11-20	764	5.0	.04	9.5	2.1	5.0	2.7	36	8.3	5.2	.1	1.1	58	32	4	87.7	7.5	6
Dec. 21-31	630	3.2	.05	10	2.2	5.5	2.6	37	10.1	3.5	.2	1.2	60	34	4	89.5	7.2	22
Jan. 1-10, 1951	1,422	3.4	.01	10	2.6	3.8	1.2	32	9.2	2.8	.2	.8	56	31	5	70.3	7.4	32
Jan. 11-20	1,579	5.2	.07	8.3	2.6	3.2	1.1	29	7.1	4.5	.2	.8	48	28	5	69.9	7.3	15
Jan. 21-30	2,769	5.2	.07	7.4	2.4	3.2												
Feb. 1-10	3,597	5.4	.27	6.0	2.0	4.2	3.8	27	7.0	4.5	.1	1.3	56	23	1	69.0	7.1	40
Feb. 11-14	3,215	--	--	7.4	2.0			25	4.0	5.2	--	1.2	60	27	6	88.0	7.6	40
Feb. 15-20	19,900	--	--	5.5	2.0	1.1		20	4.0	2.2	--	.9	47	22	6	49.6	7.2	45
Feb. 21-28	16,020	8.5	.28	5.9	1.6	2.9		18	5.4	4.2	.1	1.3	41	21	7	53.7	7.1	50
Mar. 1-10	2,943	8.2	.27	5.4	1.6	3.7	1.0	20	5.8	3.2	.2	1.4	42	20	4	55.8	7.0	45
Mar. 11-20	2,858	7.7	.18	5.0	1.7	3.4		20	5.7	3.5	.2	1.7	42	20	3	54.1	7.2	45
Mar. 21-31	2,689	6.9	.25	5.2	1.9	4.0	1.4	21	6.7	3.8	.1	.8	52	21	4	80.5	6.6	40
Apr. 1-10	3,774	6.1	.34	6.7	1.9	2.9	1.8	22	6.3	3.5	.1	1.0	50	24	6	80.2	6.7	22
Apr. 11-20	3,451	4.6	.25	7.0	1.7	3.0	1.7	23	5.6	3.2	.1	1.0	44	24	6	80.4	6.7	17
Apr. 21-30	4,303	4.6	.34	7.1	1.7	3.2	1.3	25	5.1	3.8	.1	1.0	46	25	4	64.6	6.6	10

May 1-10.....	4,534	5.7	.11	8.01	1.9	3.0	1.8	28	5.8	3.5	0	1.4	50	28	5	69.7	6.9	12
May 11-20.....	1,277	4.5	.04	9.8	2.3	3.4	1.4	34	6.7	4.5	0	1.2	52	34	6	80.2	7.0	7
May 21-31.....	523	4.4	.02	11	2.4	4.6	2.4	38	8.5	6.0	0	.5	60	37	6	95.3	7.3	10
June 1-10.....	1,042	8.7	.01	9.6	2.5	7.4	1.5	37	6.3	7.0	2	1.3	63	34	4	94.6	7.3	7
June 11-20.....	2,672	8.6	.03	8.9	2.2	4.6	1.6	29	8.5	4.0	2	1.5	58	31	8	81.8	7.0	10
June 21-30.....	1,379	8.3	.01	9.0	2.3	4.4	1.5	35	4.9	4.5	2	1.4	57	32	3	82.6	7.0	8
July 1-10.....	16,880	7.6	.18	8.4	1.5	3.1	1.9	29	5.8	3.2	1	2.8	61	27	3	72.0	7.3	20
July 11-20.....	1,554	7.2	.02	5.9	2.1	3.7	1.5	24	7.0	4.5	2	2.7	54	23	4	73.5	6.7	15
July 21-31.....	1,061	7.7	.01	8.6	1.7	4.1	.8	23	9.5	5.5	1	2.0	57	28	10	76.1	7.2	22
Aug. 1-10.....	682	7.5	.08	9.6	2.0	5.9	.9	25	15	7.2	2	1.3	65	32	12	93.8	7.0	15
Aug. 11-20.....	495	9.9	.01	8.9	2.3	4.7	1.4	25	9.2	6.5	3	2.0	61	32	11	89.6	6.9	15
Aug. 21-31.....	471	7.7	.07	10	2.4	5.6	1.8	26	14	6.8	2	2.1	68	35	14	94.6	6.9	17
Sept. 1-10.....	278	7.7	.10	9.3	2.7	7.6	1.4	31	8.6	9.2	2	1.2	64	34	8	103.0	7.1	10
Sept. 11-20.....	386	7.7	.13	9.4	2.4	7.0	1.6	31	9.5	7.5	2	1.5	65	33	8	99.0	7.1	15
Sept. 21-30.....	211	7.2	.21	5.3	2.0	4.6	1.3	28	17.0	4.8	2	2.3	59	32	11	97.7	7.1	10
Sept. 28-30.....	2,105	--	--	5.1	1.4	4.6	4.6	16	7.0	3.0	--	2.8	33	18	4	50.5	7.3	--
Average.....	3,060	6.4	0.12	8.1	2.1	4.2	1.7	28	7.4	4.9	0.1	1.4	55	29	6	76.7	--	20

RED RIVER BASIN--Continued

OUACHITA RIVER AT ARKADELPHIA, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	71	60	55	36	57	55	74	83	77	87	90
2	75	70	58	56	36	58	54	73	84	78	88	88
3	74	67	52	55	38	60	56	72	84	88	87	86
4	--	67	50	53	38	54	63	73	83	80	88	87
5	70	60	38	--	42	53	64	72	76	80	89	86
6	68	64	40	50	48	56	65	74	78	--	87	84
7	68	63	48	44	51	65	60	68	80	80	88	83
8	68	65	39	42	52	67	61	70	82	81	90	80
9	68	65	42	45	48	66	62	71	82	81	91	83
10	66	63	46	46	47	60	63	70	75	85	84	84
11	69	56	48	48	47	60	65	70	76	84	86	84
12	68	55	47	47	56	61	65	71	79	86	89	81
13	70	55	47	48	58	62	57	72	80	85	90	82
14	70	54	48	48	58	53	60	70	81	86	88	78
15	70	54	50	50	42	55	60	68	77	83	88	76
16	72	53	50	54	40	57	60	70	78	85	86	75
17	72	56	45	55	40	58	58	73	78	84	86	75
18	68	60	46	56	48	54	59	75	82	84	89	75
19	67	62	43	55	46	55	65	76	83	85	89	76
20	66	64	43	56	45	52	67	77	84	85	89	77
21	67	64	45	48	52	54	66	78	82	86	88	78
22	67	63	48	48	50	55	67	79	83	86	84	76
23	68	64	45	50	52	57	68	78	83	84	85	78
24	66	48	--	50	55	58	68	77	84	84	83	79
25	68	47	46	50	55	60	70	78	83	85	84	79
26	66	50	47	50	54	60	70	78	85	83	84	78
27	68	51	45	48	56	59	--	76	80	81	88	78
28	70	50	42	38	59	58	--	87	85	85	89	67
29	72	50	43	37	--	53	71	88	86	87	89	66
30	72	54	44	36	--	52	73	89	86	88	89	65
31	74	--	45	36	--	58	--	88	--	88	91	--
Average	69	59	46	48	48	58	63	75	81	84	86	79

RED RIVER BASIN--Continued
LITTLE MISSOURI RIVER NEAR BOUGHTON, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 67, 2 miles northeast of Boughton, Nevada County, and 8.7 miles downstream from Antioine Creek DRAINAGE AREA --1,070 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 112 ppm June 6-8; minimum, 29 ppm Aug. 11-20.

Hardness: Maximum, 96 ppm June 6-8; minimum, 19 ppm Aug. 1-10, 21-31.

Specific conductance: Maximum daily 206 micromhos June 8; minimum daily 42.9 micromhos Aug. 23.

Water temperatures: Maximum, 84°F May 31.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 112 ppm June 6-8, 1951; minimum, 25 ppm Feb. 2-3, 5, 9-11, 1950.

Hardness: Maximum, 96 ppm June 6-8, 1951; minimum, 16 ppm Dec. 1-3, 9-10, 1947.

Specific conductance: Maximum daily, 229 micromhos Jan. 19, 1948; minimum daily, 35.9 micromhos Mar. 10, 1949.

Water temperatures: Maximum, 84°F July 28, 1948.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 obtained from Corps of Engineers, Vicksburg, District.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs) a	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950	1,262	7.0	0.20	7.1	1.7	3.0	1.5	27	4.0	3.5	0.0	0.8	47	25	3	60.5	7.5	28
Oct. 11-20	424	--	.32	8.2	1.6	3.0	--	30	5.2	3.0	--	1.3	49	27	2	65.8	7.4	30
Oct. 21-22, 26-29, 31	498	--	.38	9.4	2.3	4.4	--	36	5.5	4.5	--	1.4	55	33	3	79.0	7.3	25
Oct. 23-25, 30	534	--	--	16	1.7	--	3.8	44	6.0	8.5	--	1.1	85	47	11	131	7.4	30
Nov. 1-10	368	7.6	.38	6.7	2.9	3.5	.1	28	6.5	3.5	.0	.4	47	29	6	58.2	7.3	25
Nov. 11-14, 18	462	--	.60	9.8	1.6	3.8	3.8	32	7.4	3.5	--	.7	31	47	5	71.4	7.4	35
Nov. 15-17, 19-20	635	--	.36	16	2.0	4.4	--	54	11	4.8	--	.3	76	53	9	118	7.5	60
Nov. 21-30	432	--	.37	11	1.4	4.0	--	36	6.7	3.8	--	.1	53	33	4	82.9	7.4	30
Dec. 1-6	491	--	--	13	1.4	3.2	--	34	8.0	4.2	--	1.1	59	38	10	87.8	7.2	22
Dec. 7-10	578	--	--	10	1.1	2.1	--	26	6.0	3.5	--	1.9	49	28	9	86.0	7.3	20
Dec. 11-12, 18-20	259	--	--	12	1.5	2.9	--	35	9.0	4.2	--	1.1	60	36	7	86.1	7.3	20
Dec. 13-17	538	--	--	7.8	1.0	2.9	--	29	4.0	2.5	--	.9	45	24	0	68.1	7.1	17
Dec. 21-31	269	8.7	.17	9.1	1.9	5.0	2.3	34	6.7	4.5	.1	.7	63	30	3	79.9	7.5	8
Jan. 23-31, 1951	758	--	--	8.7	2.0	3.6	--	29	6.0	4.5	--	1.7	61	30	6	79.7	7.2	20
Feb. 1-3, 7-10	2,967	--	.54	10	1.7	4.0	--	30	9.4	4.8	--	1.2	68	32	7	77.8	7.4	30
Feb. 4-6	854	--	--	21	2.9	3.5	--	58	16	4.8	--	1.2	93	64	17	131	7.7	25
Feb. 11-20	5,433	4.2	.25	8.2	1.3	3.6	2.8	29	5.5	3.2	--	1.9	48	26	2	65.1	7.1	50
Feb. 21-28	5,621	--	.45	7.5	2.0	2.3	--	24	7.2	2.5	--	.9	37	27	7	57.6	7.2	35
Mar. 1-10	2,244	6.6	.32	8.7	1.8	3.0	--	27	4.2	4.5	.0	.0	52	29	7	68.0	7.0	22
Mar. 11-20	790	--	--	9.3	1.9	3.7	--	34	5.8	4.5	--	1.0	58	31	3	85.4	7.6	20
Mar. 21-23, 30-31	840	--	--	13	2.2	3.7	--	41	9.4	3.5	--	.9	65	42	8	96.8	7.7	22
Mar. 24-27, 28, 30	661	--	--	19	2.1	3.8	--	54	10	8.5	--	.8	94	56	12	134	7.6	27

a Mean discharge for water year October 1950 to September 1951 was 1,370 second-feet.

RSD RIVER BASIN--Continued
LITTLE MISSISSIPPI RIVER NEAR BOUGHTON, ARK.--Continued

Date of collection	Mean discharge (cfs) a	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Apr. 1-10, 1951	1,180	--	--	11	2.9	4.3	--	37	6.3	4.8	--	0.8	66	39	9	87.7	7.6	20
Apr. 11-22	1,599	8.6	0.66	10	1.6	3.9	1.1	34	7.6	3.5	0.1	--	67	32	4	81.5	6.9	40
Apr. 23-30	3,044	--	--	9.2	2.4	3.2	--	32	5.2	2.8	--	--	7	33	7	68.8	7.4	33
May 1-8	2,600	--	--	7.7	1.8	3.6	--	26	4.4	3.5	--	1.4	51	27	5	70.2	6.9	37
May 9-18	764	--	--	9.6	1.7	4.1	--	33	5.4	4.0	--	--	55	31	4	80.8	7.1	28
May 19-31	233	5.0	.21	11	1.6	4.2	1.4	41	4.8	4.0	.0	1.4	59	34	0	93.9	7.4	18
June 1-5, 9-10	204	--	--	9.6	1.5	4.1	--	32	5.4	3.2	--	1.3	46	30	4	80.7	6.8	20
June 6-8	116	--	--	34	2.7	4.7	--	98	12	3.2	--	2.9	112	96	16	199	7.4	16
June 11-20	1,866	8.3	.43	15	1.1	3.1	2.2	44	7.5	3.0	.1	1.7	80	42	6	98.4	7.3	45
June 21-30	696	--	--	6.8	1.2	3.3	--	26	3.8	2.8	--	1.3	32	22	1	65.2	6.7	15
July 1-10	3,772	--	--	7.1	1.7	3.5	--	30	5.1	2.5	--	--	53	25	0	68.6	7.1	23
July 11-20	1,820	--	--	9.7	1.6	4.3	--	34	8.6	3.2	--	2.5	56	31	3	77.6	7.1	37
July 21-25, 27-28	685	7.6	.41	6.3	1.0	2.6	--	24	2.8	2.5	.1	1.9	39	20	0	50.9	7.2	25
July 26, 29-31	695	--	--	10	2.7	1.7	--	36	6.0	2.5	--	--	61	36	7	76.2	7.1	--
Aug. 1-10	649	--	--	5.8	1.0	3.2	--	24	1.9	2.2	--	--	31	19	0	59.8	6.8	9
Aug. 11-20	458	--	--	6.4	1.0	2.4	--	22	2.1	3.0	--	--	29	20	2	54.9	6.8	10
Aug. 21-31	418	8.3	.00	5.2	1.4	2.8	1.1	22	2.7	2.8	--	1.4	43	19	1	51.6	6.9	13
Sept. 1-10	356	--	--	5.6	1.7	2.7	--	25	1.8	2.5	--	--	36	21	0	53.7	7.2	8
Sept. 11-20	315	9.2	.24	6.9	1.9	2.9	1.1	29	3.7	2.8	.1	2.1	46	25	1	60.1	7.3	12
Sept. 21-30	704	--	--	5.6	1.5	2.8	--	22	1.6	2.0	--	--	39	20	2	51.1	7.0	35

a Mean discharge for water year October 1950 to September 1951 was 1,370 second-feet.

RED RIVER BASIN--Continued

LITTLE MISSOURI RIVER NEAR BOUGHTON, ARK.--Continued

Temperature (°F) of water, water October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	74	53	--	37	52	64	67	81	--	81	74
2	63	72	53	--	38	52	60	64	80	73	80	74
3	62	70	51	--	38	54	--	64	80	72	79	78
4	62	69	51	--	39	--	67	66	79	75	78	78
5	63	67	49	42	40	49	57	64	79	74	77	76
6	62	65	47	--	40	55	58	65	77	79	76	74
7	61	64	--	45	40	51	58	67	77	79	77	74
8	60	60	--	--	41	51	58	67	75	75	78	78
9	60	58	43	--	41	49	58	69	76	75	76	75
10	62	58	42	--	40	48	59	69	74	75	76	74
11	60	57	42	--	50	58	59	70	74	73	75	72
12	61	57	41	--	50	51	56	71	76	73	77	71
13	60	57	41	--	40	51	64	71	74	74	78	75
14	62	58	40	--	44	49	57	73	74	75	79	71
15	62	58	40	--	43	50	58	69	72	73	80	74
16	61	59	41	--	40	51	54	69	69	73	79	74
17	60	58	41	--	40	52	52	67	73	74	77	74
18	62	59	42	--	49	51	57	69	74	75	78	75
19	64	57	42	--	50	51	62	69	74	76	79	68
20	64	57	45	--	49	51	60	67	75	76	81	69
21	62	--	46	--	50	58	59	67	74	76	81	68
22	63	56	47	--	51	50	59	69	74	67	79	72
23	62	56	48	--	52	50	56	72	76	77	80	71
24	62	54	52	--	52	49	59	72	75	75	81	69
25	63	54	54	--	53	49	60	73	75	75	80	69
26	65	54	56	--	51	62	62	72	75	76	79	74
27	68	52	--	--	49	63	62	73	75	76	79	72
28	70	52	50	--	48	54	64	75	74	74	78	69
29	71	50	49	37	--	57	65	77	74	74	81	69
30	71	50	46	37	--	57	69	80	74	75	81	77
31	69	--	46	36	--	55	--	84	--	77	80	--
Average	63	59	46	--	45	53	60	70	75	75	79	73

RED RIVER BASIN--Continued
OUACHITA RIVER AT CAMDEN, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 79, half a mile northeast of Camden, Ouachita County, and 26 miles downstream from Little Missouri River.

DRAINAGE AREA.--5,391 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1951.

EXTREMES 1950.--Temperature: Maximum, 92° F.; minimum, 22° F.; range, 70° F. Dissolved solids: Maximum, 122 ppm Jan. 11-20; minimum, 49 ppm Aug. 11-17.

Hardness: Maximum, 40 ppm Dec. 18-31; minimum, 22 ppm Sept. 5-12.

Specific conductance: Maximum daily 209 micromhos Sept. 16; minimum daily, 66.3 micromhos Feb. 12.

Water temperatures: Maximum, 87° F. July 23.

EXTREMES 1946-51.--Dissolved solids: Maximum, 193 ppm Nov. 22-24, 1948; minimum, 30 ppm Feb. 11-13, 16, 1950.

Hardness: Maximum, 45 ppm Sept. 19-21, 26, 1946; minimum, 15 ppm Jan. 11-20, Feb. 21-28, 1949, and Jan. 11-20, Feb. 14-15, 17-20, 1950.

Specific conductance: Maximum daily, 462 micromhos Sept. 26, 1947; minimum daily, 40.8 micromhos Mar. 23, 1948, Feb. 15, 1950.

Water temperatures: Maximum, 92° F. July 22, 1949, June 18, 1950.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 obtained from Corps of Engineers, Vicksburg District.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs) a	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950	5,055	11	0.20	9.6	1.5	11	2.1	27	6.3	20	0.0	2.1	87	30	8	131	7.0	17
Oct. 11-20	2,115	6.9	.11	.11	1.8	14	2.6	28	7.3	22	.1	3.5	86	32	9	136	7.1	14
Oct. 21-30	2,185	6.1	.12	9.5	1.7	13	1.5	29	8.1	24	.2	2.0	91	31	6	146	7.4	17
Nov. 24-30	1,977	6.9	.17	9.3	2.3	13	1.5	29	9.4	21	.1	1.9	80	33	9	131	7.2	8
Dec. 1-10	2,524	5.9	.06	9.3	2.3	13	1.4	30	13	17	.1	1.7	79	33	8	133	7.1	7
Dec. 11-17	1,960	--	--	9.2	1.9	13	--	30	7.0	20	--	2.8	85	31	6	141	7.5	15
Dec. 18-31	1,635	5.5	.10	11	3.0	21	2.8	27	9.1	34	.1	3.0	109	40	18	178	7.3	10
Jan. 1-10, 1951	3,012	8.5	.11	11	3.0	17	2.7	28	14	28	.1	1.8	102	40	17	157	7.1	16
Jan. 11-20	27,090	7.5	.10	10	2.8	23	3.0	22	9.1	40	.2	1.4	122	36	18	178	7.0	31
Jan. 21-31	13,360	8.0	.18	7.9	2.1	10	1.6	25	10	14	.2	1.4	74	28	8	102	7.1	33
Feb. 1-9	7,557	6.4	.33	8.9	1.7	10	2.6	23	8.1	15	.1	2.0	75	29	10	111	7.2	30
Feb. 10-20	19,030	4.4	.20	6.7	1.5	5.5	1.0	20	5.6	7.0	.2	1.9	60	23	6	73.4	7.0	40
Feb. 21-28	41,390	4.4	.14	6.4	1.6	6.3	1.0	17	5.8	7.8	.1	5.8	63	23	9	82.7	6.5	30
Mar. 1-10	9,550	7.2	.27	6.9	1.8	8.4	1.7	23	7.2	10	.2	2.8	69	25	6	90.6	6.6	22
Mar. 11-20	4,993	7.8	.35	6.5	1.8	8.3	1.4	21	7.5	11	.2	2.8	69	24	6	92.0	6.7	27
Mar. 21-25	4,532	--	--	--	2.0	7.9	--	21	8.0	11	--	2.8	74	31	14	105	7.4	27
Apr. 26-30	13,720	--	--	7.8	1.8	5.3	--	28	5.5	8.2	--	1.5	62	27	6	83.6	7.2	30
May 1-10	9,639	4.7	.03	10	2.1	8.6	1.6	32	7.8	16	.0	1.1	71	34	7	116	7.0	10
May 11-20	2,827	7.7	.02	10	2.0	9.4	1.8	32	9.8	16	.1	1.9	78	31	7	121	6.8	10
May 21-31	1,232	6.9	.14	11	2.4	9.3	2.5	30	9.8	16	.1	1.7	84	37	13	121	7.6	22

a Mean discharge for water year October 1950 to September 1951 was 6,668 second-feet.

June 1-10.....	1,134	9.4	.10	10	2.3	31	9.6	15	.2	1.4	88	35	9	125	7.2	38
June 11-20.....	6,947	8.3	.49	1.4	9.9	1.9	30	10	.2	1.3	72	33	9	120	7.1	35
June 21-30.....	3,233	7.8	.33	2.3	6.9	2.4	27	6.5	.2	2.0	70	31	9	120	7.1	35
July 1-10.....	2,700	7.6	.33	1.4	5.1	2.6	27	5.1	.1	1.7	60	26	4	75.6	7.2	30
July 11-20.....	7,703	9.9	.46	1.4	5.3	1.6	29	5.1	.1	1.7	65	25	4	78.5	7.3	27
July 21-30.....	2,952	12	.46	1.7	17	1.1	21	6.7	.1	1.7	107	29	12	145	7.2	25
Aug. 1-10.....	1,835	8.9	.25	7.0	5.1	.6	26	4.9	.1	.9	53	24	2	74.7	6.9	17
Aug. 11-20.....	1,452	8.0	.24	1.9	4.8	1.1	31	2.8	.2	.6	49	26	0	74.8	6.0	32
Aug. 21-30.....	1,098	8.0	.13	1.9	8.8	1.3	22	8.4	.1	1.7	72	26	8	111	6.9	11
Sept. 1-4.....	1,098	--	--	8.0	10	--	23	6.0	--	1.8	78	26	7	116	7.3	8
Sept. 5-12.....	682	--	--	6.6	5.3	--	23	4.1	--	3.4	51	22	3	74.0	6.9	5
Sept. 13-20.....	962	8.3	.25	9.7	18	1.7	29	7.3	.2	2.3	96	37	13	157	7.0	19
Sept. 21-30.....	1,630	7.2	.31	7.4	11	1.8	28	6.2	.2	2.7	77	28	5	120	6.6	27

a Mean discharge for water year October 1950 to September 1951 was 6,668 second-feet.

LOWER MISSISSIPPI RIVER BASIN

RED RIVER BASIN--Continued

OUACHITA RIVER AT CAMDEN, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70				--	62	--	70	74	83	85	86
2	70				--	62	--	70	74	81	85	86
3	71				--	62	--	71	74	81	85	86
4	71				--	62	--	74	74	83	86	86
5	69				--	62	--	74	74	84	86	84
6	70				--	61	--	74	74	84	86	84
7	70				--	62	--	71	74	84	86	82
8	69				--	61	--	72	74	85	86	82
9	69				--	60	--	73	74	85	86	82
10	69				--	60	--	74	74	84	86	82
11	70				--	60	--	74	74	84	86	80
12	70				--	60	--	74	74	84	--	80
13	70				--	60	--	74	74	84	--	80
14	70				--	59	--	74	74	85	--	79
15	70				--	59	--	75	74	85	--	79
16	69				--	60	--	74	74	85	--	79
17	69				--	60	--	74	75	85	--	69
18	69				--	60	--	74	76	85	85	69
19	69				--	59	--	74	75	86	85	69
20	69					62	59	--	74	75	86	69
21	70					61	59	--	75	75	86	69
22	--					61	59	--	75	74	86	68
23	69					61	59	--	75	74	87	68
24	70					61	59	--	74	74	86	68
25	69					62	59	--	74	76	86	68
26	70					62	--	70	74	81	86	68
27	70					62	--	70	74	84	86	68
28	71					62	--	70	74	84	85	68
29	70					--	--	70	74	83	85	66
30	69					--	--	70	74	83	85	66
31	69					--	--	--	74	--	--	--
Average	70				--	60	--	74	76	85	85	76

RED RIVER BASIN--Continued
SMACKOVER CREEK NEAR SMACKOVER, ARK.

LOCATION.--At bridge on county road, half a mile northeast of Smackover, Union County.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1951.
Water temperatures: October 1949 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 4,010 ppm Sept. 17-25; minimum, 250 ppm Jan. 26-31.
Hardness: Maximum, 864 ppm Sept. 17-25; minimum, 48 ppm Feb. 8-11.
Specific conductance: Maximum daily, 7,700 micromhos Sept. 23; minimum, freezing point Feb. 1, 5.
Water temperatures: Maximum, 89° F Aug. 13, 17, Sept. 3; minimum, freezing point Feb. 1, 5.
EXTREMES, 1949-51.--Dissolved solids: Maximum, 4,010 ppm Sept. 17-25, 1951; minimum, 76 ppm Jan. 14-16, 1950.
Hardness: Maximum, 864 ppm Sept. 17-25, 1951; minimum, 13 ppm Jan. 14-16, 1950.
Specific conductance: Maximum daily, 7,700 micromhos Sept. 23, 1951; minimum, freezing point Feb. 1, 1951.
Water temperatures: Maximum, 89° F Aug. 13, Sept. 3, 1951; minimum, freezing point Feb. 1, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180° C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	Color
														Calcium, mg/l.	Non-carbonate, mg/l.			
Oct. 1-4, 6-7, 1950	17	0.06	55	15	276	20	4	5.6	560	0.0	1.6	1.6	954	198	195	1,820	6.2	7
Oct. 5, 8-10	17	0.17	66	23	363	20	3	9.5	738	0.0	2.3	2.3	1,240	259	256	2,350	5.3	9
Oct. 11-14	15	0.10	70	17	343	36	3	7.4	695	0.0	1.6	1.6	1,190	244	242	2,270	5.6	6
Oct. 15-20	23	0.08	63	22	432	23	2	9.9	858	0.1	2.4	2.4	1,460	298	296	2,690	4.9	2
Oct. 21-31	21	0.08	96	25	409	12	2	8.2	974	0.2	1.6	1.6	1,390	342	341	2,980	5.0	3
Nov. 1-20	26	0.10	104	27	515	44	4	9.9	1,040	0.1	1.6	1.6	1,770	350	347	3,260	5.5	4
Nov. 21-22, 24-26, 29	28	0.10	104	29	544	29	4	8.2	1,080	0.2	1.2	1.2	1,830	378	374	3,390	6.3	3
Nov. 23, 27-28, 30	28	0.13	90	23	457	28	6	12	912	0.1	0.8	0.8	1,560	319	314	2,900	6.2	4
Dec. 1-7	25	0.09	86	23	479	33	4	12	945	0.1	1.0	1.0	1,610	309	306	3,000	6.0	6
Dec. 8-10	23	0.14	66	16	310	23	6	12	630	0.2	1.2	1.2	1,090	230	226	2,030	6.0	8
Dec. 11-13	22	0.11	66	17	317	12	6	9.1	645	0.1	0.6	0.6	1,100	234	230	2,100	6.4	6
Dec. 14-20	25	0.12	85	23	424	36	6	21	855	0.1	0.7	0.7	1,480	306	302	2,710	6.4	6
Dec. 21-25	25	0.07	80	20	382	40	5	13	780	0.0	0.7	0.7	1,350	282	278	2,420	6.2	4
Dec. 26-31	16	0.06	91	23	438	42	4	19	895	0.0	0.8	0.8	1,530	322	318	2,790	6.3	4
Jan. 1-2, 1951	--	--	63	24	440	--	--	4	5.0	892	--	1.0	1,450	306	302	2,860	5.4	10
Jan. 3-10	17	0.10	40	11	179	17	6	15	365	0.1	1.7	1.7	678	145	140	1,240	6.1	24
Jan. 11-13	15	0.10	52	14	237	24	3	26	482	0.3	2.0	2.0	894	188	185	1,590	5.3	8
Jan. 14-22	--	--	55	11	162	--	--	2	12	320	--	1.5	624	132	131	1,060	5.2	33
Jan. 23-25	--	--	42	14	205	--	--	5	14	402	--	1.0	766	162	158	1,330	6.2	11
Jan. 26-31	--	--	15	4.9	59	--	--	4	8.7	118	--	0.8	250	56	54	422	6.0	40
Feb. 1-7	--	--	40	11	175	--	--	5	9.3	365	--	0.7	718	145	141	1,210	6.1	10
Feb. 8-11	12	0.08	13	3.9	54	--	--	5	8.8	109	--	1.0	253	58	44	381	6.1	10
Feb. 12-15	12	0.08	27	7.5	120	6.1	1.0	7.2	258	0.4	1.3	1.3	492	98	95	887	5.9	15
Feb. 16-23	8.9	0.14	17	5.1	73	10	6	15	147	0.3	1.5	1.5	316	63	58	517	6.2	35
Feb. 24-28	9.4	0.12	32	9.4	153	7.2	6	17	305	0.2	1.9	1.9	579	118	114	1,050	6.3	16

RED RIVER BASIN--Continued
SMACKOVER CREEK NEAR SMACKOVER, ARK.--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, 'mag-nesium	Non-carbonate			
Mar. 1-8, 1951.....	8.4	0.16	39	11	193	16	6	10	388	0.2	1.1	732	142	138	1260	6.3	20	
Mar. 9-18.....	11	.24	24	50	225	18	6	9.4	480	.2	.7	891	182	178	1,570	6.2	25	
Mar. 19-24.....	13	.04	26	9.5	126	1.6	2	8.2	258	.4	2.3	524	104	102	1,882	6.1	25	
Mar. 25-28.....	17	.06	33	12	186	2.6	5	6.6	382	.3	2.6	749	132	128	1,260	7.0	16	
Mar. 29-31.....	--	--	--	24	8.4	94	--	11	10	194	--	1.1	431	86	874	6.5	27	
Apr. 1-8.....	18	.14	33	9.1	161	18	6	8.4	328	.3	2.9	656	120	115	1,090	6.1	21	
Apr. 9-10.....	--	--	35	11	152	35	7	6.2	315	--	1.3	641	132	125	1,792	6.3	20	
Apr. 11-14.....	18	.03	34	11	159	2.4	9	8.0	330	.3	2.0	661	130	124	1,090	6.3	20	
Apr. 19-21, 28, 29.....	15	.03	41	10	187	16	7	8.4	382	.0	1.2	779	144	138	1,240	5.6	10	
Apr. 22-25.....	--	--	22	7.2	95	50	8	5.4	198	--	1.8	485	94	78	874	6.7	35	
Apr. 27-28, 30.....	--	--	13	4.5	50	63	6	4.6	104	--	1.4	267	51	45	378	6.4	40	
May 1-5.....	16	.25	14	4.8	141	8	7	12.9	129	--	1.1	281	155	150	455	5.9	43	
May 6-10.....	21	.03	32	16.8	241	9.0	7	16.8	435	.1	1.7	877	152	140	1,476	5.7	20	
May 11-15.....	21	.03	42	11	276	19	0	7.8	568	.1	2.3	972	210	210	1,850	5.3	15	
May 16-23.....	21	.04	58	16	278	19	0	7.8	568	.1	4.4	972	210	210	1,850	5.3	15	
May 24-31.....	21	.03	73	18	358	24	2	7.2	730	.1	1.4	1,230	256	254	2,320	5.2	7	
June 1-3, 10-11.....	20	.03	78	19	408	5.2	2	3.3	815	.1	2.1	1,350	272	271	2,590	5.0	6	
June 4-9.....	22	.03	90	22	461	4.8	3	4.7	920	.0	1.5	1,530	315	312	2,920	5.0	5	
June 12-15.....	10	.03	49	12	248	5.4	3	7.2	502	.1	1.7	959	172	169	1,650	5.3	7	
June 16-20.....	--	--	15	3.8	65	--	6	4.1	134	--	.9	277	53	48	462	6.1	45	
June 21-30.....	19	.04	48	14	250	4.4	3	4.9	500	.3	2.1	958	187	175	1,620	5.0	7	
July 1-2, 7-10.....	13	.08	26	7.8	123	5.2	3	4.9	252	.3	1.5	528	97	94	848	5.5	19	
July 3-6.....	--	--	18	5.2	79	--	6	4.0	160	--	1.4	305	66	61	544	6.0	33	
July 11-19.....	17	.03	42	12	202	2.8	3	4.5	412	.1	2.0	857	154	152	1,350	5.2	9	
July 20-28.....	17	.08	51	16	283	5.0	4	7.0	555	.1	2.0	940	183	190	1,760	5.7	7	
July 29-30.....	18	.06	73	21	377	6.5	2	8.2	762	.1	2.7	1,260	288	287	2,390	5.1	6	
July 31, Aug. 1.....	13	.18	168	43	574	11	5	15	1,740	.0	1.5	2,870	598	592	5,210	4.5	10	
Aug. 2-4.....	13	.08	99	24	462	7.1	0	15	940	.0	1.7	1,560	346	346	2,950	4.5	10	
Aug. 5-10.....	13	.03	74	14	363	5.3	4	7.2	765	.0	1.3	1,220	285	283	2,210	5.2	7	
Aug. 11-20.....	13	.03	71	19	363	8.3	0	8.6	735	.0	1.3	1,220	285	283	2,210	5.2	7	
Aug. 21-31.....	14	.11	83	21	385	7.5	0	20.0	768	.0	1.0	1,300	271	271	2,500	3.90	8	
Sept. 1-5.....	11	.05	82	22	441	8.9	3	3.9	865	.1	1.0	1,440	295	292	2,730	5.5	4	
Sept. 6-16.....	10	.20	107	31	630	11	4	3.3	940	.1	1.1	2,070	394	391	3,820	5.7	5	
Sept. 17-25.....	13	.40	254	56	1,210	17	3	9.5	2,450	.1	1.2	4,010	864	862	7,190	5.3	5	
Sept. 26-27.....	12	.06	176	39	622	12	2	8.2	1,720	.1	1.9	2,630	600	598	5,240	5.1	5	
Sept. 28-29.....	12	.23	133	32	696	11	2	5.4	1,380	.1	1.9	2,270	464	462	4,260	5.1	6	
Sept. 30.....	--	--	48	11	263	--	5	4.1	518	--	3.3	932	165	161	1,670	5.6	9	
Average.....	--	--	63	17	314	--	4	9.1	634	--	1.5	1,110	226	222	2,010	--	14	

RED RIVER BASIN--Continued

SMACKOVER CREEK NEAR SMACKOVER, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	69	55	50	--	60	--	70	75	74	80	87
2	71	65	58	55	31	59	58	68	78	75	80	85
3	69	--	50	45	--	60	60	70	79	80	80	89
4	69	65	45	50	--	60	61	68	76	81	82	84
5	69	60	50	56	32	60	58	72	76	--	82	85
6	69	58	47	55	40	60	58	70	77	--	84	84
7	71	60	36	43	--	65	60	69	78	79	82	86
8	64	62	50	46	40	63	60	68	78	81	85	83
9	61	60	45	45	43	60	58	68	78	80	83	81
10	65	59	47	45	50	62	58	65	76	80	80	80
11	66	59	47	45	52	62	60	65	76	81	81	81
12	66	60	42	45	49	51	62	67	74	81	87	77
13	66	56	42	51	50	52	62	67	73	80	88	75
14	77	55	47	52	52	50	60	64	73	80	87	74
15	80	55	47	42	50	53	60	65	64	82	87	72
16	76	51	46	--	49	58	52	62	73	80	87	70
17	69	52	45	--	--	58	60	67	75	80	89	70
18	69	59	43	--	52	56	63	67	74	80	86	--
19	79	54	43	--	50	54	69	73	76	81	87	72
20	62	55	43	55	52	58	67	77	76	82	84	70
21	64	56	44	--	49	55	68	74	--	80	87	71
22	65	57	45	--	54	57	51	72	80	79	84	70
23	66	45	45	49	60	58	60	71	81	82	78	72
24	64	50	48	49	59	55	--	70	82	84	77	75
25	67	45	49	--	59	58	67	76	82	82	83	77
26	--	55	47	39	60	51	68	77	80	82	83	74
27	66	50	47	40	62	56	70	75	80	82	80	75
28	68	50	46	42	61	59	73	74	81	81	84	70
29	66	45	43	--	--	--	69	74	80	82	85	70
30	66	58	43	--	--	56	69	70	75	80	84	70
31	68	--	43	--	--	58	--	80	--	80	85	--
Average	68	56	46	--	50	57	63	71	77	80	84	77

RED RIVER BASIN--Continued
OUACHITA RIVER AT CALION, ARK.

LOCATION.--At Rock Island and Pacific Railway bridge in Calion, Union County.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1951.

Water temperatures: October 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,060 ppm Sept. 28-30; minimum, 129 ppm July 3-6.

Hardness: Maximum, 227 ppm June 11, 14-15, Sept. 28-30; minimum, 29 ppm July 3-6.

Specific conductance: Maximum, 3,130 micromhos June 13; minimum daily, 115 micromhos July 5.

Water temperatures: Maximum, 86-87° Aug. 16-17; minimum, 61° Aug. 16-17.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 1,220 ppm Oct. 22-23, 1949; minimum, 128 ppm Oct. 28-31, 1949.

Hardness: Maximum, 350 ppm July 16, 1950; minimum, 20 ppm May 3, 1950.

Specific conductance: Maximum, 3,400 micromhos July 16, 1950; minimum daily, 74.5 micromhos Sept. 20, 1950.

Water temperatures: Maximum, 91° Aug. 16-17, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-4, 1950.....																		
Oct. 5-10.....	16	--	--	22	6.2	79	--	24	6.7	152	--	2.0	338	80	61	553	7.3	50
Oct. 11-14, 20.....	7.3	--	0.47	30	7.4	123	5.8	19	8.8	238	0.3	8.4	474	106	90	532	7.0	33
Oct. 15-19.....	11	9.0	1.42	28	6.4	115	8.7	23	12	223	--	1.1	460	196	78	794	7.3	34
Oct. 20-24.....	11	9.0	1.42	35	7.2	247	11	24	9.7	283	0.0	11.2	568	186	126	990	6.2	33
Oct. 25-31.....	9.4	--	1.0	32	7.8	142	16	21	8.3	282	--	1.1	568	186	126	990	6.2	33
Nov. 1-4, 8-10.....	7.9	--	1.0	36	9.2	159	16	22	11	305	--	1.1	600	128	95	1,074	7.2	25
Nov. 5-7.....	7.4	--	1.0	26	47	13	7.6	16	12	422	--	1.2	9.0	170	158	1,060	7.1	18
Nov. 11-16, 19-20.....	6.4	--	1.0	35	9.2	168	7.6	22	12	320	--	1.3	598	126	108	1,430	6.9	12
Nov. 17-18.....	--	--	--	48	15	234	--	16	9.3	450	--	7.0	822	182	168	1,510	6.7	25
Nov. 21-30.....	8.7	--	1.5	32	8.7	149	11	23	14	285	--	8.2	529	116	97	1,010	7.1	16
Dec. 1-2.....	--	--	--	39	9.2	166	--	24	16	325	--	8.4	632	136	116	1,130	7.5	12
Dec. 3-5.....	--	--	--	48	12	215	--	21	13	440	--	9.0	828	170	152	1,460	7.5	10
Dec. 6-10.....	6.4	--	1.3	28	8.2	127	7.7	20	9.4	245	--	5.8	470	104	87	877	7.1	15
Dec. 11-14.....	--	--	--	32	7.2	132	--	18	11	268	--	6.0	510	110	94	933	7.0	22
Dec. 15-20.....	9.7	--	1.6	40	11	190	16	19	12	370	--	1.0	686	145	130	1,260	6.7	10
Dec. 21-22, 28-31.....	7.2	--	1.9	26	10	148	15	21	9.5	285	--	1.0	532	106	89	1,000	6.9	13
Dec. 23-27.....	9.4	--	2.5	34	10	186	15	19	13	365	--	8.5	655	126	110	1,240	6.8	17
Jan. 1-2, 5, 1951.....	--	--	--	30	8.0	135	--	2	15	271	--	15	524	108	106	956	5.1	20
Jan. 3-4.....	--	--	--	46	12	233	--	2	12	465	--	12	863	164	163	2,240	5.4	20
Jan. 6-10.....	--	--	--	26	6.6	120	--	7	12	229	--	6.9	426	92	86	810	6.7	35
Feb. 1-4.....	--	--	--	24	7.0	99	--	7	15	188	--	6.0	379	89	83	868	7.0	40
Feb. 5-6.....	--	--	--	30	6.3	137	--	6	36	255	--	8.6	582	109	104	889	6.6	38
Feb. 7-12.....	--	--	--	11	3.3	30	--	12	10	54	--	3.0	146	41	31	223	7.0	45
Feb. 13-15.....	8.5	--	2.3	20	6.4	100	7.2	3	10	202	--	1.1	425	76	74	733	5.7	35
Feb. 16-19, 21.....	7.9	--	2.5	14	5.0	73	5.8	12	22	135	--	5.2	286	56	46	510	6.5	40

RED RIVER BASIN

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	3.8	3.4	3.0	9.2	151	7.5	3	19	290	0	8.7	566	113	110	1,000	5.3	40
Feb. 3-22-25.....	7.8	23	22	6.4	93	6.4	12	7.9	188	0	2.6	402	82	72	686	6.4	45
Feb. 23-28.....	6.8	23	23	6.4	103	8.7	14	11	200	-2	3.5	398	80	69	707	6.9	45
Mar. 1-11.....	6.1	30	23	7.3	214	18	6	17	405	-2	8.2	768	141	136	1,400	6.5	40
Mar. 12-20.....	5.4	50	23	7.3	97	4.3	18	13	139	-2	3.8	400	98	83	702	7.1	45
Mar. 21-31.....	7.3	21	23	7.3	70	9.3	13	8.7	165	.2	4.8	347	82	72	602	7.1	40
Apr. 1-8.....			19	4.7	63	--	16	9.3	128	--	2.9	301	64	51	470	6.5	35
Apr. 9-15.....	--	--	15	3.2	43	--	18	7.5	85	--	1.4	198	51	36	333	6.7	37
Apr. 16-19.....	--	--	17	4.2	56	--	17	7.2	116	--	1.8	278	60	46	428	6.7	34
Apr. 20-22, 25, 27-28	--	--	22	5.5	88	--	12	7.7	16	--	6.6	372	78	68	605	6.5	24
Apr. 23-24, 26.....	--	--	17	3.6	47	--	16	5.4	2	--	3.5	228	97	44	366	6.8	40
Apr. 29-30.....	--	--	31	9.2	138	--	6	11	24	--	1.1	644	116	118	1,506	6.40	32
May 1, 6-8, 10.....	7.5	06	28	6.4	118	2.4	7	8.2	252	.3	9.6	753	152	152	1,250	3.95	32
May 2, 4.....	--	--	48	16.0	163	--	0	23	430	--	12	924	160	160	1,450	4.00	37
May 3, 5, 9.....	7.0	34	48	16.2	230	15--	31	11	430	.1	1.1	402	98	70	722	6.9	27
May 11, 16-20.....	7.7	09	28	5.6	80	8.2	28	6.0	151	.1	1.4	341	78	55	558	6.8	22
May 21.....	4.9	35	27	7.9	132	12--	31	9.5	268	.1	1.6	535	125	100	931	6.8	8
May 27-29.....	--	--	25	5.9	95	--	34	6.1	182	--	1.4	396	87	59	676	6.9	24
May 30-31.....	--	--	18	3.5	57	--	32	7.8	102	--	1.0	242	59	33	407	7.0	23
June 1-2, 8.....	--	--	21	3.8	57	--	34	9.2	103	--	.9	232	68	40	444	6.8	12
June 3, 6-7, 10.....	7.2	.02	21	5.9	83	2.5	35	9.2	162	.1	1.4	366	77	48	587	6.7	8
June 4-5, 9.....	5.8	.04	40	11	187	3.2	35	7.6	362	.0	1.3	776	145	116	1,230	6.7	7
June 11, 14-15.....	--	--	73	11	199	--	19	19	442	--	7.2	902	227	212	1,600	6.4	15
June 12-13, 16, 20.....	9.9	.07	18	5.1	94	--	20	11	184	--	5.3	388	78	62	677	6.4	30
June 21-30.....	--	--	20	5.7	82	2.8	28	9.4	158	.2	2.5	388	68	46	608	6.9	32
July 1-2, 7-8.....	--	--	20	5.1	89	--	11	5.9	178	--	8.0	362	71	62	621	6.0	23
July 3-6.....	--	--	75	2.4	29	--	8	7.0	57	--	2.6	129	29	22	223	5.9	42
July 9-11.....	--	--	29	7.3	135	--	15	7.6	270	--	3.9	518	104	91	529	7.1	32
July 12-16.....	--	--	21	5.3	82	--	20	7.2	163	--	3.8	330	152	152	1,420	5.1	37
July 17-20.....	8.3	--	14	1.4	21	6.5	22	13	132	.5	15.8	396	182	182	1,630	6.8	20
July 21-22, 25-26.....	7.6	.22	25	11.4	101	2.6	22	10	192	--	3.5	391	152	152	1,630	6.8	20
July 23-29-30.....	7.8	.22	25	6.6	102	2.4	22	9.2	109	--	4.5	391	90	72	694	6.9	13
July 27-28, 31.....	--	--	24	8.0	145	--	15	10	278	--	9.9	537	93	80	975	6.8	12
Aug. 1-2, 6-9.....	8.6	.28	27	7.3	117	2.5	18	9.4	228	.3	4.4	487	98	82	775	6.9	32
Aug. 3-5, 10.....	7.5	--	21	5.6	85	2.5	18	9.5	187	--	2.7	365	76	60	592	6.6	25
Aug. 11-13, 19-20.....	10	.13	28	7.8	118	2.6	22	9.9	235	.3	6.1	463	102	84	830	7.0	10
Aug. 14-18.....	--	--	19	4.0	70	--	24	7.7	134	--	2.6	282	64	44	497	7.3	12
Aug. 21-31.....	6.3	.14	19	6.1	82	2.8	24	11	150	.0	3.2	344	72	53	563	7.0	12

RED RIVER BASIN--Continued
OUCHITA RIVER AT CALION, ARK.--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Sept. 1, 7-10, 1951.....		9.2	0.30	15	4.2	48	1.9	23	10	90	0.3	2.4	227	55	36	400	7.2	15
Sept. 2-6		8.3	.22	19	4.8	70	2.1	23	9.5	135	.2	2.8	291	67	48	509	7.1	10
Sept. 11-15, 19		8.3	.17	34	9.2	152	3.1	17	12	308	.2	9.0	591	123	109	1,020	6.7	7
Sept. 16, 20-21		--	--	22	4.9	93	--	25	7.0	178	--	5.4	348	75	54	644	6.7	7
Sept. 17-18		--	--	47	11	231	--	9	14	442	--	--	822	162	154	1,490	6.2	11
Sept. 22-24		--	--	15	2.9	50	--	23	7.0	92	--	2.6	206	49	30	385	6.6	12
Sept. 25-27		--	--	22	4.8	93	--	21	6.0	178	--	--	358	75	58	645	6.8	12
Sept. 28-30		7.9	.25	63	17	320	5.7	9	13	628	.1	8.8	1,060	227	220	2,080	6.1	8
Average		--	--	29	7.5	125	--	17	11	245	--	6.1	494	103	89	874	--	24

RED RIVER BASIN--Continued

OUACHITA RIVER AT CALION, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	72	53	46	--	58	62	74	83	80	86	90
2	74	70	55	50	--	60	58	74	84	80	86	90
3	75	67	54	49	36	60	58	75	84	77	87	90
4	72	68	51	53	39	58	62	75	82	77	87	90
5	72	68	55	53	40	59	67	75	82	80	87	90
6	72	67	50	50	41	61	62	74	83	80	88	90
7	74	67	47	48	41	62	62	70	84	83	88	87
8	73	66	47	48	44	63	60	70	85	83	88	88
9	70	61	47	46	45	60	62	75	85	84	89	88
10	71	61	47	48	45	62	63	71	85	84	89	85
11	70	58	48	--	46	63	61	71	83	84	89	88
12	70	58	46	--	52	55	60	--	83	84	89	86
13	70	60	45	--	55	54	62	74	84	84	90	83
14	71	58	45	--	52	54	63	75	80	84	90	83
15	71	60	46	--	50	54	62	74	79	84	90	83
16	73	60	45	--	50	54	60	75	78	85	91	80
17	72	57	45	--	51	55	63	75	78	85	91	82
18	71	57	45	--	49	54	64	76	79	85	88	80
19	71	--	45	--	50	56	64	77	79	86	88	80
20	75	58	45	--	54	56	65	76	81	86	88	80
21	70	57	47	--	53	57	65	78	84	87	88	78
22	70	57	45	--	55	60	65	80	84	87	88	78
23	71	58	--	--	56	60	67	79	84	87	88	78
24	70	54	50	--	57	59	67	79	85	87	88	80
25	71	56	47	--	57	59	68	78	84	87	89	80
26	71	--	49	--	57	61	69	80	85	88	88	79
27	70	54	45	--	48	64	70	78	85	86	89	79
28	71	53	45	--	58	60	71	80	86	88	--	79
29	72	52	45	--	--	59	--	80	87	86	89	78
30	73	53	46	--	--	58	73	80	86	86	90	77
31	72	--	48	--	--	60	--	83	--	85	90	--
Average	72	60	48	--	49	59	64	76	83	84	89	83

RED RIVER BASIN--Continued

SALINE RIVER NEAR BENTON, ARK.

LOCATION --At gaging station at bridge on U. S. Highway 67, 2 miles west of Benton, Saline County.

DRAINAGE AREA --569 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1949 to September 1951.

Water temperatures: October 1949 to September 1951.

EXTRMS: 1950-51. --Dissolved solids: Maximum, 96 ppm Nov. 1-10; minimum, 50 ppm Jan. 14-18.

Hardness: Maximum, 74 ppm Oct. 21-31; minimum, 29 ppm Jan. 14-18.

Specific conductance: Maximum daily, 160 micromhos Nov. 1; minimum daily, 35.3 micromhos Feb. 21.

Water temperatures: Maximum, 86°F Sept. 1; minimum, freezing point Jan. 30-31, Feb. 4.

EXTRMS: 1949-51. --Dissolved solids: Maximum, 96 ppm Nov. 1-10, 1950; minimum, 29 ppm Mar. 12-14, 1950.

Hardness: Maximum, 74 ppm Oct. 21-31, 1950; minimum, 22 ppm Mar. 12-14, 1950.

Specific conductance: Maximum daily, 160 micromhos Nov. 1, 1950; minimum daily, 31.9 micromhos Feb. 13, 1950.

Water temperatures: Maximum, 86°F Sept. 1, 1951; minimum, freezing point Dec. 16, 1949, Jan. 5, 1950, Jan. 30-31, Feb. 4, 1951.

REMARKS --Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg./nestum	Non-carbonate			
Oct. 1-10, 1950.....	186	--	--	19	5.3	2.5	--	72	6.6	2.8	--	1.0	77	69	10	130	7.7	10
Oct. 11-20.....	117	--	--	19	4.9	2.0	--	76	5.8	3.0	--	2.5	86	68	5	139	8.0	5
Oct. 21-31.....	227	--	--	20	5.9	2.3	--	76	5.8	3.2	--	1.1	87	74	12	141	7.7	7
Nov. 1-10.....	125	14	0.01	20	5.6	2.6	1.7	82	6.3	4.2	0.1	1.4	96	73	6	142	8.0	8
Nov. 11-20.....	358	--	--	19	4.8	2.3	--	77	4.7	2.8	--	.9	87	67	4	134	8.0	17
Nov. 21-30.....	339	9.2	.11	17	4.6	2.5	2.0	70	8.2	3.0	.1	1.5	83	61	4	129	7.8	15
Dec. 1-10.....	506	--	--	17	4.3	1.8	--	63	8.1	1.8	--	1.1	77	60	8	118	7.7	15
Dec. 11-20.....	215	--	--	19	4.5	1.8	--	69	8.4	3.0	--	.7	81	96	8	128	7.8	10
Dec. 21-31.....	439	--	--	20	4.8	2.3	--	73	8.1	3.0	--	.7	83	90	8	128	7.8	10
Jan. 1-10, 1951.....	1,090	--	--	17	4.6	2.2	--	64	7.8	2.5	--	1.2	57	54	12	120	7.6	20
Jan. 11-20.....	1,090	--	--	18	2.2	2.1	--	55	7.8	2.5	--	1.2	57	54	12	107	7.5	15
Jan. 21-30.....	6,184	--	--	8.0	2.2	8.7	--	28	4.0	1.8	--	1.4	50	29	6	61.9	7.3	17
Jan. 31-21-31.....	416	9.6	.04	15	3.9	8.7	3.3	57	--	2.5	.1	1.1	71	54	7	110	7.6	4
Feb. 1-10.....	952	--	--	13	3.7	2.2	--	43	9.0	2.0	--	1.1	73	48	12	99.4	7.7	20
Feb. 11-15.....	758	--	--	13	3.3	2.2	--	33	7.7	2.2	--	1.1	71	46	5	98.8	7.8	25
Feb. 16-20.....	4,652	--	--	12	2.2	1.1	--	50	5.3	2.8	--	1.1	60	39	12	74.0	7.6	30
Feb. 21-28.....	3,224	--	--	13	2.9	1.6	--	43	6.8	2.8	--	.9	58	44	9	86.6	7.6	20
Mar. 1-10.....	452	--	--	16	3.9	2.4	--	56	5.8	2.8	--	2.3	75	56	10	113	7.6	7
Mar. 11-20.....	497	--	--	16	4.5	2.8	--	65	6.8	3.0	--	1.0	76	58	5	124	7.9	5
Mar. 21-31.....	483	--	--	16	4.0	1.6	--	61	5.8	3.8	--	1.0	75	56	6	122	7.5	5
Apr. 1-10.....	1,791	--	--	16	4.4	2.1	--	59	5.8	2.5	--	1.1	68	58	10	114	8.0	18
Apr. 11-20.....	876	--	--	14	4.1	2.2	--	53	5.2	3.0	--	2.0	77	60	8	112	7.9	12
Apr. 21-30.....	809	7.6	.08	16	4.9	2.2	2.2	65	7.7	3.5	.0	.8	76	60	7	120	7.7	10

May 1-10.....	1, 538	--	--	12	4.0	2.5	--	51	4.6	2.2	--	1.2	68	46	5	96.2	7.2	22
May 11-20.....	234	--	--	17	4.0	2.5	--	65	5.0	4.0	--	2.1	81	59	6	128	7.6	6
May 21-31.....	103	--	--	19	4.1	3.1	--	77	4.5	3.8	--	1.6	86	64	1	142	7.7	9
June 1-10.....	283	--	--	17	4.5	2.3	--	68	4.4	2.8	--	1.7	75	61	5	124	7.7	8
June 11-20.....	526	--	--	15	3.3	2.9	--	53	4.1	2.2	--	3.1	74	51	8	107	7.3	22
June 21-30.....	145	--	--	18	4.0	2.3	--	70	4.5	2.0	--	3.2	75	61	4	131	7.3	7
July 1-10.....	2, 379	--	--	13	3.5	2.5	--	50	3.1	3.8	--	2.6	87	47	6	123	7.0	13
July 11-20.....	188	--	--	17	4.2	2.4	--	67	3.1	3.0	--	1.2	71	60	5	120	7.3	5
July 21-31.....	169	8.8	.04	19	3.9	2.6	.5	70	4.3	2.5	.1	1.7	78	63	6	120	7.7	7
Aug. 1-10.....	96	--	--	19	4.3	2.0	--	72	2.9	2.8	--	1.4	75	65	6	133	7.5	7
Aug. 11-20.....	113	--	--	14	3.0	2.7	--	61	3.5	2.2	--	1.4	67	47	0	113	7.2	6
Aug. 21-31.....	48	--	--	20	4.0	2.2	--	73	3.7	3.0	--	1.5	80	66	7	131	7.6	5
Sept. 1-10.....	23	--	--	20	4.2	2.4	--	76	3.5	3.0	--	1.7	81	67	5	136	7.2	5
Sept. 11-20.....	154	--	--	16	4.5	2.6	--	63	3.7	1.8	--	1.9	68	58	7	117	7.3	15
Sept. 21-30.....	67	--	--	18	3.6	2.7	--	67	3.4	2.0	--	2.0	70	60	5	123	7.8	7
Average.....	658	--	--	16	4.1	2.4	--	62	5.6	2.8	--	1.5	74	57	6	119	--	12

RED RIVER BASIN--Continued

SALINE RIVER NEAR BENTON, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	67	50	43	--	55	58	65	78	76	82	86
2	70	66	51	44	--	57	57	--	82	73	81	84
3	71	64	51	42	--	57	53	65	75	71	82	83
4	69	64	48	40	32	57	54	66	75	75	83	82
5	63	53	42	44	35	57	57	65	75	74	84	82
6	64	55	40	44	38	56	56	64	72	78	82	80
7	67	57	37	40	41	--	57	63	72	79	--	80
8	64	60	38	39	40	58	55	62	73	79	--	71
9	63	58	39	41	40	58	54	65	73	79	82	81
10	63	50	39	42	44	56	55	65	72	80	82	76
11	75	48	38	42	48	53	56	66	72	79	82	76
12	64	48	40	43	48	51	54	70	70	80	81	73
13	63	48	40	45	51	47	54	69	72	81	80	77
14	64	49	41	48	44	45	53	65	72	81	80	73
15	63	50	42	48	46	46	56	67	72	80	81	71
16	64	54	44	45	43	48	55	68	72	79	81	70
17	64	51	43	45	45	50	55	71	73	80	78	69
18	65	50	42	47	49	52	57	70	75	81	84	69
19	66	56	40	48	49	51	60	74	71	81	83	69
20	65	54	41	50	50	50	62	74	74	82	82	69
21	64	51	42	49	53	52	64	72	75	82	83	70
22	63	51	45	46	50	51	61	76	77	84	81	72
23	64	51	44	45	49	51	60	73	78	85	78	70
24	63	40	45	--	50	55	60	74	80	83	78	70
25	63	40	45	46	51	55	63	72	81	82	83	73
26	63	43	45	--	52	55	65	71	82	81	81	73
27	64	43	42	46	54	52	67	73	82	79	80	73
28	64	43	40	40	55	51	67	73	83	79	82	72
29	67	43	40	36	--	54	68	73	82	82	83	68
30	68	48	41	32	--	53	68	75	81	81	84	68
31	67	--	42	32	--	58	--	76	--	82	85	--
Average	65	52	42	43	46	53	59	69	76	80	82	74

RED RIVER BASIN--Continued
HURRICANE CREEK NEAR SHERIDAN, ARK.--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, non-magnesium	Non-carbonate			
Mar. 28-31, 1951.....				8.2	3.0	8.4	--	19	27	4.8	--	1.7	97	33	17	112	6.7	30
Apr. 1-10.....	9.0	--	0.25	11	1.8	7.0	6.7	24	25	4.0	0.3	1.0	93	35	15	116	7.5	30
Apr. 11-12.....	--	--	--	12	2.8	--	--	32	23	3.5	--	1.2	91	41	15	123	7.7	27
Apr. 12-14, 17.....	--	--	--	11	2.7	7.5	--	27	25	4.5	--	--	84	39	16	110	7.3	25
Apr. 15-16, 18-20.....	--	--	--	10	2.9	12	--	52	27	5.2	--	1.3	88	37	11	133	7.3	20
Apr. 21-30.....	12	--	--	10	2.2	11	4.0	30	27	4.2	--	1.3	105	34	9	128	7.2	22
May 1, 6-10.....	12	--	0.36	10	2.0	13	2.3	40	30	4.2	1.3	2.2	120	37	16	165	6.9	22
May 2, 11-12.....	--	--	--	13	2.7	4.0	--	26	37	4.2	--	2.2	78	34	0	269	7.3	15
May 3, 13-17.....	--	--	--	13	2.7	4.0	--	75	53	7.2	--	2.1	164	44	0	467	7.7	15
May 13-17.....	--	--	--	7.3	2.2	9.1	--	128	91	8.0	--	1.1	275	27	0	487	7.7	15
May 21-31.....	8.3	--	0.02	21	3.4	4.5	4.2	84	73	12	1.8	.8	211	66	0	348	7.5	12
June 1-12.....	--	8.3	0.04	36	4.9	61	4.5	78	150	14	1.3	.8	337	110	46	502	7.1	10
June 13-20.....	--	--	--	33	4.5	28	--	20	131	7.2	--	1.4	238	101	84	351	6.7	11
June 21, 26-30.....	--	--	--	42	4.5	39	--	45	153	7.0	--	1.0	293	123	86	431	7.2	7
June 22-25.....	--	--	--	36	4.3	22	--	37	111	5.0	--	1.2	217	108	77	327	7.4	8
July 1-2.....	--	--	--	13	7.0	84	--	84	145	15	--	4.4	320	61	0	500	7.2	8
July 3-10.....	5.5	--	0.02	17	3.1	15	1.6	34	49	4.0	.5	4.0	125	55	27	189	6.7	15
July 11-20.....	8.9	--	0.02	22	4.1	27	2.2	52	72	7.0	.8	.9	177	122	29	266	7.5	12
July 21-22, 25, 28.....	--	--	--	39	4.6	27	--	24	138	7.0	--	6.2	259	116	97	380	6.6	8
July 23-24, 26-27.....	13	--	0.02	72	7.1	57	3.4	41	270	7.0	1.0	1.2	478	208	175	642	7.2	8
July 29-31, Aug. 1-4.....	8.8	--	0.02	27	4.8	18	2.2	36	82	4.5	.7	4.0	171	87	58	263	6.5	11
Aug. 5-10.....	8.5	--	0.02	33	5.3	38	2.8	38	141	7.8	.7	2.1	278	104	73	389	7.3	10
Aug. 11-20.....	7.8	--	0.03	43	8.6	46	3.9	60	154	12	1.0	.8	315	134	95	468	7.6	9
Aug. 21-29, 29-31.....	6.0	--	0.03	57	7.3	67	4.9	53	238	18	1.1	.7	446	172	128	646	7.2	8
Aug. 25-27.....	--	--	--	104	6.7	88	74	397	397	8.2	--	.3	658	287	226	904	7.8	8
Sept. 1-10.....	7.4	--	0.11	51	6.6	69	4.9	49	217	25	1.0	1.5	417	154	114	621	7.0	5
Sept. 11-16.....	5.8	--	0.08	30	4.8	83	6.3	92	154	24	2.8	.6	365	95	20	565	7.2	5
Sept. 17-20.....	7.1	--	0.02	50	5.7	46	7.6	119	322	20	3.6	.3	631	148	51	929	7.2	5
Sept. 21-25.....	8.3	--	0.03	73	9.6	104	6.7	50	362	20	1.4	.9	618	222	180	860	7.4	4
Sept. 26-30.....	7.8	--	0.12	50	6.0	63	5.8	40	209	21	1.4	.6	386	150	116	587	7.3	3
Average.....			--	23	3.6	34	--	46	92	8.3	--	1.3	205	72	37	304	--	15

RED RIVER BASIN--Continued

HURRICANE CREEK NEAR SHERIDAN, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	84	46	45	40	62	60	70	80	78	80	85
2	75	83	46	53	40	--	60	70	80	78	80	84
3	73	76	48	52	40	60	60	70	81	75	83	84
4	73	55	50	45	40	60	60	70	75	78	84	84
5	66	54	50	48	40	60	59	70	70	79	80	80
6	73	56	43	48	40	60	60	65	70	79	84	80
7	68	70	40	50	50	65	62	65	75	79	84	80
8	70	59	40	51	45	60	60	65	78	80	85	79
9	68	55	45	49	45	58	60	72	75	80	84	79
10	73	55	53	45	45	55	62	70	75	82	84	79
11	78	50	42	45	50	55	59	70	74	82	84	79
12	80	54	43	45	50	50	58	70	74	80	80	79
13	83	45	48	50	50	50	59	60	75	83	80	79
14	84	55	48	52	55	50	60	70	75	79	84	76
15	85	45	45	54	48	49	60	70	75	80	83	74
16	85	60	48	55	50	49	60	70	74	80	80	70
17	84	50	45	58	48	55	60	70	75	84	80	74
18	84	54	45	58	54	55	60	73	75	83	80	73
19	84	68	40	57	56	58	65	75	78	84	80	72
20	85	56	40	56	59	55	60	74	79	85	83	70
21	80	56	45	55	64	55	70	74	79	--	83	70
22	80	55	43	--	59	55	65	70	78	84	80	70
23	83	55	50	55	55	60	63	70	80	84	80	72
24	83	48	50	--	50	59	65	70	80	84	80	70
25	84	46	50	55	60	60	65	70	84	84	80	73
26	85	46	50	50	58	60	68	72	82	80	80	74
27	85	45	48	48	59	60	70	73	84	79	83	73
28	83	44	48	48	64	60	72	74	84	79	83	70
29	84	43	46	45	--	59	70	74	82	80	84	69
30	85	46	43	45	--	58	70	80	83	80	85	69
31	85	--	50	45	--	60	--	79	--	84	86	--
Average	79	56	46	50	50	57	63	71	78	81	82	76

RED RIVER BASIN--Continued
SALINE RIVER NEAR RYE, ARK.

LOCATION.--At gaging station at bridge on State Highway 15, 4 miles southwest of Rye, Cleveland County, and 5 miles upstream from Hudgin Creek.
DRAINAGE AREA.--2,082 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1947, October 1948 to September 1951.
Water temperatures: October 1946 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 91 ppm Aug. 1-10; minimum, 31 ppm Jan. 11-22.
Hardness: Maximum, 49 ppm Nov. 11-20; minimum, 13 ppm Jan. 11-22.
Specific conductance: Maximum daily, 204 microhos Feb. 5; minimum daily, 37.9 microhos Jan. 18.
Water temperatures: Maximum, 91 F Sept. 2; minimum, 36 F Feb. 1.
EXTREMES, 1946-47, 1948-51.--Dissolved solids: Maximum, 132 ppm Jan. 24, 30, 1949; minimum, 18 ppm Jan. 11-14, 1950.
Hardness: Maximum, 77 ppm Jan. 30, 1949; minimum, 17-9-10, 1947.
Specific conductance: Maximum daily, 30, 1949; minimum, 8 ppm Jan. 1-7, 9-10, 1947.
Water temperatures: Maximum, 91 F Jan. 24, 30, 1949; minimum, 36 F Feb. 1, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1211.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180 C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25 C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1950	1,516	8.5	0.27	9.3	2.3	5.1	2.8	28	13	4.0	0.1	1.4	62	33	10	85.6	7.2	32
Oct. 11-20	428	15	.21	11	3.0	6.0	.6	33	15	4.2	.3	2.5	77	40	13	109	7.4	22
Oct. 21-31	362	13	.17	12	2.7	6.6	.6	41	15	5.5	.2	1.8	79	43	7	130	7.6	16
Nov. 1-10	292	12	.55	13	4.0	7.4	2.6	51	19	4.8	.1	1.3	88	48	7	126	7.5	26
Nov. 11-20	935	10	.25	10	3.9	7.0	2.6	44	19	4.8	.1	.8	81	41	5	123	7.6	28
Dec. 1-10	825	10	.29	11	2.6	6.4	1.0	38	17	4.5	.1	1.1	83	38	7	113	7.3	24
Dec. 11-20	782	12	.36	11	2.9	6.6	1.1	38	15	5.0	.1	.7	77	39	8	103	7.3	22
Dec. 21-31	432	8.0	.09	12	3.8	7.7	1.4	41	24	4.5	.2	.8	86	46	12	122	7.5	11
Jan. 1-10, 1951	1,463	5.7	.08	9.6	4.3	7.4	1.4	29	21	5.5	.2	1.9	89	42	18	111	7.1	40
Jan. 11-22	9,218	4.8	.12	3.4	1.0	3.5	.9	8	7.0	4.0	.1	1.7	31	13	6	45.5	6.6	45
Jan. 23, 25-27	11,250	--	--	5.2	2.4	3.2	--	13	12	3.5	--	2.0	33	23	12	53.9	6.8	30
Jan. 24, 28-31	6,974	--	--	6.6	3.0	5.0	--	15	14	7.0	--	1.6	54	29	16	77.0	6.7	20
Feb. 1-5, 6	2,498	--	--	7.0	2.5	4.0	--	16	15	4.8	--	.9	66	28	15	90.5	6.9	15
Feb. 4-5, 7-10	4,287	--	--	5.5	3.0	4.4	--	11	13	6.5	--	2.4	64	26	17	71.7	6.5	40
Feb. 11-20	5,788	7.2	.01	5.6	2.3	4.2	.8	16	11	3.5	.3	1.4	46	23	10	62.9	7.0	45
Feb. 21-28	6,920	6.1	.29	5.0	1.6	3.1	.7	13	9.4	3.5	.4	1.9	40	19	8	55.7	7.3	33
Mar. 1-5	9,182	--	--	7.3	2.3	2.8	--	13	12	3.5	--	2.1	42	33	11	80.2	7.9	30
Mar. 6-10	10,000	--	--	7.2	3.0	3.5	--	24	12	4.2	--	1.1	67	20	9	80.2	7.5	35
Mar. 11-20	2,136	10	.55	7.2	2.6	3.0	5	24	12	4.2	.1	1.4	69	30	10	88.6	6.7	40
Mar. 21-31	2,056	8.0	.43	8.4	2.2	4.2	1.6	24	14	4.8	--	1.1	69	30	10	88.6	6.8	35
Apr. 1-10	3,714	7.8	.24	7.2	1.4	3.5	1.6	20	12	3.8	.1	1.4	64	24	7	73.0	6.8	22
Apr. 11-20	4,376	6.9	.26	6.6	2.3	3.3	.7	22	10	3.5	.2	1.4	59	26	8	72.2	7.0	35
Apr. 21-30	3,795	8.3	.36	7.3	2.6	4.2	1.2	25	9.9	4.2	.1	2.5	67	29	8	82.4	7.4	40

May 1-10.....	3,621	7.9	.4	6.9	2.6	3.0	1.3	24	8.7	2.8	.2	1.9	64	28	8	71.7	7.3	38
May 11-17.....	2,625	9.3	.35	9.5	1.4	5.6	1.8	32	10	3.5	.1	2.3	61	28	3	87.7	7.5	22
May 18-31.....	369	8.7	.48	11	3.2	8.3	3.0	46	12	5.0	.3	2.0	80	41	3	118	7.1	17
June 1-10.....	203	6.6	.36	11	2.9	6.1	2.0	43	9.4	4.8	.1	2.4	76	39	4	106	7.5	25
June 11-20.....	855	8.3	.04	10	3.3	6.0	1.9	34	15	4.0	.1	3.8	83	38	11	111	6.8	25
June 21-30.....	907	7.8	.27	12	2.5	4.5	2.0	37	16	2.5	.1	1.0	75	40	10	103	7.4	23
July 1-5.....	592	--	--	12	3.7	5.3	--	38	14	3.5	--	2.1	78	45	14	107	7.2	15
July 6-12.....	3,610	--	--	7.0	2.2	2.8	--	22	6.3	2.5	--	2.4	54	26	8	64.9	6.6	35
July 13-20.....	2,334	11	.37	10	2.6	4.4	1.0	37	10	2.8	.2	1.6	63	36	5	89.5	7.3	30
July 21-31.....	539	13	.37	11	2.7	4.9	.8	40	11	3.5	.1	2.2	78	39	6	99.1	7.6	32
Aug. 1-10.....	530	7.7	.23	13	2.6	6.0	1.3	27	97	2.2	.2	.9	91	43	21	117	7.4	22
Aug. 11-20.....	179	11	.16	12	2.7	5.6	1.3	43	16	2.5	.2	1.2	70	41	7	110	7.4	22
Aug. 21-31.....	172	8.0	.07	13	3.3	5.6	1.1	48	14	4.5	.2	1.2	80	46	7	123	7.6	10
Sept. 1-10.....	83	9.6	.05	12	3.4	6.5	1.1	40	16	4.8	.1	1.9	80	44	11	125	7.0	11
Sept. 11-20.....	162	10	.06	12	3.8	6.5	1.8	40	18	5.0	.1	1.5	80	46	13	118	7.1	11
Sept. 21-30.....	175	9.9	.13	12	3.6	7.2	2.0	43	18	5.0	.2	2.1	82	45	10	128	7.1	15
Average.....	2,152	9.2	.026	9.4	2.8	5.2	1.4	31	14	4.2	0.2	1.7	69	35	10	94.9	--	27

RED RIVER BASIN--Continued

SALINE RIVER NEAR RYE, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	71	53	46	36	60	62	69	81	80	84	90
2	72	67	55	50	37	61	57	71	80	77	85	91
3	73	63	53	50	38	61	58	72	81	80	85	90
4	69	61	50	48	39	60	57	71	80	82	80	89
5	--	60	47	50	40	59	60	71	80	83	87	88
6	68	61	43	49	40	63	59	70	82	83	85	87
7	69	63	38	47	41	62	59	67	80	82	88	86
8	68	63	40	44	41	62	60	66	76	81	87	86
9	67	57	43	45	40	59	60	67	79	81	88	85
10	68	54	44	47	42	60	61	68	78	80	89	80
11	69	52	45	45	44	57	55	64	78	81	87	81
12	68	51	44	--	48	54	57	68	79	82	88	83
13	66	52	45	50	45	50	59	67	76	82	--	77
14	68	53	45	49	46	53	60	68	75	81	89	73
15	--	56	44	50	45	56	59	68	76	82	88	76
16	69	60	43	51	44	57	57	71	77	82	86	74
17	69	54	43	51	47	60	59	72	79	83	86	76
18	70	--	42	52	50	55	60	73	80	83	84	75
19	70	67	43	53	52	48	62	73	78	84	85	76
20	70	--	43	54	54	50	63	74	81	86	87	78
21	69	53	45	51	55	49	63	75	82	85	83	78
22	69	54	48	49	56	52	63	76	83	84	84	78
23	70	56	49	51	56	55	62	73	84	83	85	77
24	68	46	48	51	57	55	63	74	85	82	85	77
25	67	48	50	48	57	60	65	75	84	84	86	78
26	--	49	48	47	58	58	67	76	84	85	85	78
27	69	47	43	53	56	59	69	76	85	85	88	77
28	70	--	43	50	60	61	69	77	87	84	87	74
29	70	46	45	45	--	57	67	79	86	85	76	73
30	70	--	44	44	--	59	70	80	85	84	88	74
31	70	--	45	40	--	60	--	80	--	85	89	--
Average	69	56	46	49	47	57	61	72	81	83	86	80

RED RIVER BASIN--Continued
OUACHITA RIVER NEAR FELSENTHAL, ARK.

LOCATION--At U. S. Engineers Lock No. 6, 3 miles south of Felseenthal, Union County.
RECORDS AVAILABLE--Chemical analyses: October 1949 to September 1951.

Water temperatures: October 1949 to September 1951.
EXTREMES: 1950-51 --Dissolved solids: Maximum, 1,290 ppm Sept. 24-30; minimum, 66 ppm Jan. 22-31.

Hardness: Maximum, 282 ppm June 13-14, 16; minimum, 24 ppm Jan. 22-31.
Specific conductance: Maximum daily, 3,160 microhos Sept. 30; minimum daily, 98.9 microhos Jan. 28.

Water temperatures: Maximum, 90°F on several days in August; minimum, 35°F Feb. 3.
EXTREMES: 1949-51 --Dissolved solids: Maximum, 1,290 ppm Sept. 24-30, 1951; minimum, 44 ppm Jan. 23-31, Mar. 1-9, 1950.

Hardness: Maximum, 282 ppm June 13-14, 16, 1951; minimum, 15 ppm Jan. 23-31, Mar. 1-9, 1950.
Specific conductance: Maximum daily, 2,160 microhos Sept. 30, 1951; minimum daily, 55.7 microhos Mar. 4, 1950.

Water temperatures: Maximum, 90°F on several days in August, 1951; minimum, 35°F Feb. 3, 1951.
REMARKS--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Oct. 1-4, 1950	12	7.6	4.2	14	19	4.9	50	--	1.4	125	61	46	211	7.1	60
Oct. 5-10	14	4.3	42	..	18	5.8	84	--	2.0	195	53	38	316	7.1	60
Oct. 11-13	16	5.3	..	53	20	5.6	109	--	1.9	234	62	45	438	6.7	45
Oct. 14-21	12	0.26	21	5.5	87	10	20	8.1	168	0.1	3.4	339	75	56	609	7.2	37
Oct. 22-25	30	6.9	113	..	24	7.1	225	--	4.5	469	104	84	815	7.7	25
Oct. 26-27, 31	12	..	38	9.6	168	..	25	11	322	--	6.0	620	134	114	1,120	7.3	13
Oct. 28-30	14	..	52	13	255	8.4	16	12	490	..	12	914	184	170	1,640	7.1	7
Nov. 1-10	13	..	33	9.2	143	6.9	26	9.9	275	..	1.1	600	135	114	1,070	7.3	22
Nov. 11-15, 19-20	8.6	..	38	9.7	161	6.0	25	15	308	..	7.1	780	166	152	1,410	6.9	15
Nov. 16-18	7.6	..	22	12	216	8.8	17	14	418	..	12	1,020	220	208	1,890	7.0	9
Nov. 21-28	10	..	60	14	285	14	11	11	585	..	1.6	418	106	80	689	7.2	25
Nov. 29-30	31	6.8	99	..	32	12	193	--	3.7	412	97	71	695	7.2	22
Dec. 1-3	28	6.6	102	..	32	13	198	--	3.7	412	97	71	695	7.2	22
Dec. 4-5, 8	26	7.2	147	..	22	13	275	--	5.2	558	120	94	885	7.1	25
Dec. 6-7, 9-10	43	10.3	169	..	20	12	360	--	5.2	706	149	132	1,250	7.2	30
Dec. 11-13, 17-20	10	..	29	7.1	112	9.3	20	14	215	..	4.5	410	94	78	1,779	7.0	23
Dec. 14-16, 17-20	24	8.0	86	..	27	12	165	--	2.5	364	84	62	626	7.1	30
Dec. 21, 26-27, 30-31	12	..	35	8.5	137	9.5	19	14	272	..	6.6	516	122	107	834	6.8	11
Dec. 22-25, 28-29	10	..	14	38	9.4	154	17	11	305	..	7.1	564	134	120	1,060	6.6	8
Jan. 1-3, 6, 1951	8.4	..	16	40	9.6	159	8.0	16	320	..	7.4	612	140	126	1,090	6.1	12
Jan. 4-5	24	6.3	103	..	10	12	193	--	4.5	410	86	76	624	6.9	30
Jan. 7-10	14	3.8	52	..	10	10	100	--	2.2	226	51	42	408	6.7	35
Jan. 11-16	7.6	..	23	16	5.7	66	12	13	128	..	2.6	296	63	54	465	7.2	40
Jan. 17-21	6.4	3.0	15	..	12	6.9	28	--	1.8	67	28	18	134	6.8	20
Jan. 22-31	4.7	..	6.3	2.0	13	1.0	12	7.9	22	..	1.2	66	24	14	112	7.2	28

RED RIVER BASIN--Continued
OUACHITA RIVER NEAR FELSETHAL, ARK.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Feb. 1-2, 10-12, 1951.		2.0	0.14	10	2.9	30	2.0	15	7.9	55	0.2	1.8	143	37	25	221	7.1	40
Feb. 9-10, 11	5.2	5.2	0.13	11	3.0	38	4.3	11	8.1	73	0.3	1.8	177	40	31	283	7.2	40
Feb. 13-20	3.1	3.1	0.08	10	2.5	23	1.1	14	8.6	39	0.2	1.4	115	30	18	162	6.8	45
Feb. 21-28	4.8	4.8	0.03	8.4	2.9	21	1.9	16	8.5	39	0.3	1.0	120	33	20	170	7.2	25
Mar. 1-12	6.3	6.3	0.19	8.3	3.1	26	2.5	18	7.1	29	0.1	1.3	103	29	15	139	7.2	25
Mar. 13-15	--	--	--	11	3.1	18	--	18	6.0	58	--	1.4	151	40	25	250	7.0	45
Mar. 16-20	--	--	--	13	3.5	43	--	20	8.6	85	--	1.1	208	47	30	342	7.0	30
Mar. 21-31	7.4	7.4	0.53	15	4.3	53	4.0	17	8.6	102	0.3	2.0	232	55	41	381	6.9	45
Apr. 1-10	6.9	6.9	0.40	12	3.7	42	5.8	17	9.3	80	0.4	1.8	198	45	31	311	6.8	50
Apr. 11-20	5.8	5.8	0.42	10	3.6	31	1.3	17	10	59	0.3	1.4	162	40	26	245	7.1	40
Apr. 21-30	5.0	5.0	0.30	12	3.5	35	3.5	19	6.8	69	0.0	1.4	176	44	29	272	6.6	33
May 1-10	6.1	6.1	0.61	12	3.0	28	4.6	24	6.5	58	0.1	1.9	155	42	27	243	6.6	40
May 11-16	--	--	--	13	3.1	36	--	24	6.5	71	--	1.9	180	45	26	287	7.1	42
May 17-20	--	--	--	13	4.0	44	--	30	7.3	82	--	2.1	203	49	24	351	6.7	45
May 21-25	--	--	--	18	5.9	64	--	32	12.7	126	--	1.9	264	69	53	489	6.5	33
May 26-31	5.3	5.3	0.04	24	5.9	88	11	31	12	112	0.1	2.1	358	84	59	613	7.6	8
June 1-10	8.6	8.6	0.02	30	7.7	125	2.9	30	7.6	248	0	1.7	501	106	82	856	6.6	10
June 11-12, 18-19	8.3	8.3	0.04	28	7.7	116	3.1	34	8.4	232	0.1	1.7	487	102	74	795	7.0	12
June 15-17	--	--	--	58	14	241	--	29	8.2	472	--	3.2	883	197	173	1,590	7.1	8
June 13-14, 16	10	--	0.05	82	19	379	4.9	27	8.2	738	0.1	2.0	1,260	282	260	2,330	6.9	45
June 20-23	--	--	--	15	3.0	40	--	22	5.8	77	--	1.4	191	50	32	322	6.5	8
June 24-30	9.4	9.4	0.12	18	4.4	52	2.8	26	10	100	0.2	1.4	260	63	42	330	7.2	40
July 1-3	--	--	--	19	6.2	73	--	24	9.2	145	--	2.2	334	73	53	541	6.4	23
July 4-10	--	--	--	8.0	3.0	27	--	14	5.5	52	--	1.9	136	32	21	204	6.3	38
July 11-18	6.7	6.7	0.09	8.4	2.7	21	1.8	23	7.2	35	--	1.4	108	32	13	160	6.4	38
July 19-27	9.4	9.4	0.37	14	5.2	55	2.3	23	7.6	106	0.1	1.3	249	56	38	389	6.9	28
July 28-31	--	--	--	20	6.1	73	--	25	6.3	141	--	2.4	304	75	54	517	6.7	22
Aug. 1, 8-10	7.6	7.6	0.12	32	8.1	129	2.6	16	13	286	0.2	5.9	554	114	100	856	6.7	15
Aug. 2-7	7.9	7.9	0.09	22	6.1	79	2.3	21	9.1	136	0.1	3.4	358	80	63	566	6.8	27
Aug. 11-12, 18-20	7.8	7.8	0.06	29	6.8	114	2.3	18	12	280	0.1	4.8	492	100	86	850	6.6	17
Aug. 13-17	12	12	0.14	25	7.5	171	2.6	18	10	298	0.1	3.9	572	94	74	974	7.2	10
Aug. 21-22, 27-31	13	13	0.07	20	7.1	168	3.5	13	13	348	0.2	3.6	722	143	132	1,160	7.1	5
Aug. 23-27, 8-10	13	13	0.07	11	7.6	115	3.0	20	9.9	240	0.2	4.6	514	108	92	855	6.7	5
Sept. 3-7	8.7	8.7	0.13	31	9.4	152	3.4	19	9.4	315	0.1	6.3	652	134	118	1,070	7.8	5
Sept. 8-10	7.4	7.4	0.05	38	9.4	184	3.3	20	10	335	0.1	4.8	687	140	124	1,120	7.1	6
Sept. 11-23	11	11	0.05	38	11	171	5.4	9	15	640	0.1	12	1,080	234	227	1,980	5.9	5
Sept. 20-29	6.6	6.6	0.16	65	17	317	5.4	9	15	640	0.1	12	1,080	234	227	1,980	5.9	5
Sept. 24-30	7.0	7.0	0.14	74	21	386	5.9	8	14	765	0.1	14	1,280	271	264	2,410	6.1	7
Average	--	--	--	26	7.0	105	--	20	9.8	207	--	3.9	418	94	77	721	--	26

RED RIVER BASIN--Continued

OUACHITA RIVER NEAR FELSETHAL, ARK.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	70	55	45	37	58	60	75	85	85	85	85
2	74	70	54	46	36	58	59	75	85	83	85	85
3	74	70	54	45	35	45	59	85	85	83	85	85
4	72	65	53	52	36	--	59	74	80	80	90	86
5	70	65	53	52	36	--	60	74	80	80	85	85
6	--	65	45	--	36	59	59	70	85	80	90	86
7	73	65	45	46	38	60	59	70	80	80	--	86
8	70	67	46	46	37	61	60	71	85	85	90	86
9	70	63	46	46	40	52	60	72	86	83	90	85
10	63	59	46	47	42	62	60	72	85	84	88	84
11	70	63	45	45	43	62	58	71	85	83	89	88
12	70	63	45	46	43	59	61	72	80	84	89	70
13	70	58	45	50	46	56	59	71	85	84	90	70
14	70	63	50	45	45	56	59	71	85	83	85	70
15	70	63	48	45	48	56	60	71	80	83	89	72
16	70	63	45	50	48	56	60	73	80	83	86	74
17	70	63	45	52	48	56	62	72	83	85	85	72
18	70	57	44	53	48	58	62	71	85	83	85	75
19	70	61	45	54	--	--	62	76	80	83	86	82
20	69	60	43	54	54	56	62	--	85	83	90	79
21	72	56	45	46	54	55	64	81	80	83	87	86
22	70	54	45	50	53	56	65	80	80	83	85	81
23	70	52	45	56	55	57	65	78	85	87	85	82
24	70	--	45	58	55	64	66	76	85	85	90	82
25	70	--	47	48	50	58	65	80	85	85	85	80
26	70	--	48	48	54	59	71	80	85	82	85	79
27	70	--	44	48	58	59	70	81	85	83	85	80
28	70	--	45	48	60	--	71	85	85	85	85	76
29	70	50	44	44	--	59	75	85	85	85	85	85
30	70	55	45	40	--	59	75	--	85	85	87	76
31	70	--	45	41	--	59	--	85	--	85	85	--
Average	70	62	47	48	46	58	63	76	83	83	87	80

RED RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25° C)	pH	
															Parts per million	Tons per acre-foot	Calcium, magnesium	Sodium carbonate				
BUFFALO LAKE NEAR UMBARGER																						
May 2, 1951			4.6		44	31	81	14	372	73	37		2.0		472	0.64		238	0	41	804	8.2
PRAIRIE DOG TOWN FORK RED RIVER AT PALO DURO PARK																						
Oct. 18, 1950			38		314	60	89		108	1,040	36		0.5		1,630	2.22		854	765	16	1,950	7.8
PRAIRIE DOG TOWN FORK RED RIVER NEAR CLAUDE																						
Jan. 11, 1951					444	94	370		153	1,510	425		2.0		2,920	3.97		1,490	1,370	35	3,730	
SALT FORK CREEK AT COUNTRY ROAD CROSSING SOUTH OF CLAUDE																						
Jan. 11, 1951					811	175	5,740		174	2,530	8,830		4.0		18,200	24.75		2,740	2,600	82	26,900	
TULE CREEK RESERVOIR NEAR TULIA																						
May 2, 1951		4.8			48	12	17	8.8	233	17	8.0		1.5		234	0.32		169	0	17	414	8.2
TULE CREEK NEAR MOUTH																						
Jan. 11, 1951					343	79	310		181	1,290	258		0.0		2,370	3.22		1,180	1,030	36	3,090	
PRAIRIE DOG TOWN FORK RED RIVER AT DINNER CREEK CAMP CROSSING																						
Jan. 12, 1951					620	175	3,670		162	1,860	5,800		2.7		12,200	16.59		2,270	2,130	78	18,300	
HACKBERRY CREEK AT CROSSING ON ROAD BETWEEN HACKBERRY CREEK CAMP AND HICKMAN CAMP																						
Jan. 14, 1951					501	136	81		120	1,720	68		0.9		2,570	3.50		1,810	1,710	9	2,770	
HACKBERRY CREEK NEAR MOUTH																						
Jan. 14, 1951					532	142	87		135	1,760	112		0.4		2,700	3.67		1,910	1,800	9	3,060	
MEXICAN CREEK NORTH OF QUITAQUE																						
Jan. 10, 1951					604	132	50		231	1,860	23		0.5		2,780	3.78		2,050	1,860	5	3,020	

MULBERRY CREEK NEAR CLARENDON

Jan. 15, 1951				397	75	278	152	1,110	440	3.0	2,380	3.24	1,300	1,170	32	3,250
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BUCK CREEK 10½ MILES SOUTH OF WELLINGTON

															</	

NORTH GROESBECK CREEK ABOUT 3 MILES SOUTHEAST OF NORTH GROESBECK

July 16, 1951	5.23	21	624	127	382	176	1,900	555	5.9	3,700	5.03	2,080	1,940	29	4,760	7.6
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SOUTH GROESBECK CREEK 3 MILES NORTHEAST OF ACME

July 16, 1951	6.05	22	614	99	197	157	1,750	282	6.5	3,060	4.16	1,940	1,810	18	3,630	7.8
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GROESBECK CREEK NEAR QUANAH

Jan. 15, 1951	11.0	14	582	122	271	150	1,780	400	4.5	3,250	4.42	1,950	1,830	23	3,810	7.8
Mar. 15	10.0	15	564	117	292	102	1,770	420	5.0	3,230	4.39	1,890	1,800	25	3,990	7.9
July 16	14.3	18	590	108	277	125	1,780	398	2.8	3,230	4.39	1,920	1,810	24	3,950	7.9
Aug. 15,	8.85	25	598	117	330	78	1,940	428	3.5	3,480	4.73	1,970	1,910	27	4,030	7.6

CARROLL CREEK 8½ MILES NORTH OF CLARENDON

Feb. 13, 1951.....	2.0	24	44	21	20	230	31	13		2.0	288	0.36	166	8	18	504	8.0
July 20.....	.14	44	36	19	32	207	43	15		1.5	294	.40	168	0	29	450	8.4

KELLY CREEK 4 MILES NORTH OF CLARENDON

Feb. 13, 1951	2.0	19	71	15	43	268	46	45	1.0	377	0.51	238	19	28	621	8.1
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SALT FORK RED RIVER ON STATE HIGHWAY 70 ABOUT 4 MILES NORTH OF CLARENDON

WIND SPEED AND DIRECTION BY HOUR FOR WINDS 4 TO 10 M.P.H. AT WINDY POINT, CALIF.															
DATE		WIND SPEED		WIND DIRECTION		WIND SPEED		WIND DIRECTION		WIND SPEED		WIND DIRECTION		WIND SPEED	
TIME		DIRECTION		DIRECTION		DIRECTION		DIRECTION		DIRECTION		DIRECTION		DIRECTION	
Nov. 4, 1950	12.4	23	40	22	52	148	106	48	4.5	400	0.54	190	69	37	589
Jan. 15, 1951	17.0	19	53	21	35	190	78	40	1.0	388	.53	218	63	26	609
Feb. 13, 1951	9.3	23	67	22	34	212	92	43	1.5	386	.52	258	84	22	659

RED RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃	Per-cent so-dium carbonate	Specific conductance (micro-mhos at 25°C)		
															Parts per million	Tons per acre-foot					
SALT FORK RED RIVER ON STATE HIGHWAY 70 ABOUT 4 MILES NORTH OF CLARENDON--Continued																					
Mar. 2, 1951	10.6		26		61	24	36	202	106	37			1.5	402	0.55		250	85	24	628	7.5
Mar. 21	--		22		53	21	32	164	79	50			1.0	342	.47		218	84	24	626	8.2
Apr. 12	6.66		32		44	21	46	182	88	38			2.5	360	.49		196	48	34	673	8.3
July 20	1.16		40		56	21	72	144	137	85			1.0	498	.68		226	108	41	774	8.2
SALT FORK RED RIVER 8½ MILES NORTHEAST OF CLARENDON																					
Feb. 13, 1951	11.7		24		74	28	118	207	156	158			1.5	719	0.98		300	130	46	1,110	7.7
Mar. 21			24		81	32	184	202	221	240			.5	871	1.18		334	168	55	1,490	8.0
SADDLERS CREEK 8½ MILES NORTHEAST OF CLARENDON																					
Feb. 13, 1951	5.0		28		82	36	145	240	216	174			1.0	858	1.17		352	156	47	1,300	7.7
Mar. 21			28		93	43	189	218	232	246			.5	995	1.35		409	230	50	1,650	8.0
LELIA LAKE CREEK ABOUT 8 MILES NORTH OF HEDLEY																					
Jan. 9, 1951			--		110	26	52	273	181	52			10	565	0.77		382	158	23	894	--
Feb. 13	7.0		31		103	28	56	250	197	52			12	698	.95		372	167	25	921	7.6
Mar. 21			26		101	29	49	206	217	54			7.8	628	.85		371	202	22	933	8.0
SALT FORK RED RIVER ABOVE MOUTH OF WHITEFISH CREEK, 9½ MILES NORTHEAST OF HEDLEY																					
Feb. 8, 1951	18.9		18		93	38	133	194	288	152			4.0	898	1.22		388	229	43	1,320	8.2
WHITEFISH CREEK ABOUT 9½ MILES NORTHEAST OF HEDLEY																					
Feb. 8, 1951	0.03		15		354	114	200	196	1,210	260			0.0	2,250	3.06		1,350	1,190	24	2,820	8.1
Mar. 21			26		269	83	178	182	869	245			.8	1,760	2.39		1,010	864	28	2,430	7.8
SALT FORK RED RIVER BELOW CONFLUENCE OF WHITEFISH CREEK																					
Mar. 21, 1951			25		108	41	136	194	332	160			4.0	909	1.24		438	279	40	1,400	7.9
GYP CREEK APPROXIMATELY ONE-HALF OF A MILE ABOVE MOUTH																					
Jan. 1, 1951					817	301	3,090	198	98	4,910			2.3	12,000	16.32		3,280	3,110	67	16,500	

SALT FORK RED RIVER ABOUT 16 MILES NORTHWEST OF WELLINGTON

Feb. 8, 1951.....	17.0	17	144	55	149	211	463	178	3.0	1,110	1.51	586	412	36	1,650	8.1
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SALT FORK RED TRIBUTARY ABOUT 16 MILES NORTHWEST OF WELLINGTON

Feb. 8, 1951.....		9.5	555	82	315	148	1,530	490	2.5	3,060	4.16	1,720	1,600	28	3,950	8.0
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DOZIER CREEK 14 MILES NORTHWEST OF WELLINGTON

Feb. 8, 1951.....		14	585	84	94	186	1,660	70	12	2,600	3.54	1,800	1,650	9	2,780	8.0
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SALT FORK RED TRIBUTARY AT MOUTH, JUST UPSTREAM FROM HIGHWAY 83 BRIDGE ACROSS SALT FORK RED RIVER

Jan. 16, 1951.....			156	33	62	291	331	48	11	852	1.16	524	286	20	1,270	
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SALT FORK RED RIVER 6½ MILES NORTH OF WELLINGTON

Feb. 8, 1951.....	30	15	343	72	193	184	1,020	252	4.0	1,990	2.71	1,150	1,000	27	2,580	8.1
Feb. 26.....	184	24	196	56	150	186	593	195	2.0	1,310	1.78	720	567	31	1,870	7.5
July 19.....	4.16	29	538	86	131	118	1,580	168	3.8	2,590	3.52	1,700	1,600	14	3,010	7.9

SALT FORK RED RIVER ON STATE HIGHWAY 52, ABOUT 9 MILES EAST OF WELLINGTON

Feb. 7, 1951.....	24.6	15	255	62	152	174	764	200	2.5	1,540	2.09	891	748	27	2,090	8.1
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SAND CREEK NEAR WELLINGTON

Jan. 16, 1951.....			367	114	221	253	1,440	110	3.6	2,380	3.24	1,380	1,180	26	2,870	
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NORTH FORK RED RIVER ON U. S. HIGHWAY 83, 2½ MILES NORTH OF SHAMROCK

Feb. 26, 1951.....	162	22	148	35	172	200	268	315	1.5	1,060	1.44	514	350	42	1,750	7.5
Apr. 9.....	12.0	32	194	47	207	216	489	340	1.5	1,390	1.89	678	540	40	2,130	8.4
July 25.....	2.19	28	248	22	28	113	593	41	2.5	1,020	1.39	710	617	8	1,310	7.8

SWEETWATER CREEK AT STATE HIGHWAY 152 CROSSING ABOUT 1½ MILES WEST OF MORETIE

Feb. 13, 1951.....		17	74	13	17	288	14	10	2.0	294	0.40	238	0	-13	499	7.7
Feb. 27.....	2.73	23	64	11	13	246	17	8.0	2.0	259	.35	205	3	12	410	8.1

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

RED RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS--Continued

Chemical analyses: in parts per million, water year October 1950 to September 1951--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951																					
Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
SWEETWATER CREEK AT STATE HIGHWAY 152 CROSSING ABOUT 2 MILES SOUTHEAST OF MORETTE																					
Feb. 13, 1951.....	8.84		18		68	14	41	308	26	24			3.0		368	0.50	227	0	28	593	8.1
Feb. 27.....			27		68	14	20	280	17	16			2.0		302	.41	227	0	16	462	8.2
SWEETWATER CREEK AT BRIDGE ON U. S. HIGHWAY 83 ABOUT 4 MILES NORTH OF WHEELER																					
Feb. 12, 1951.....	--		18		88	22	43	312	104	26			2.5		488	0.66	310	54	23	718	8.1
Feb. 13.....	--		19		79	19	34	348	27	24			2.0		402	.55	275	0	21	619	8.2
Feb. 27.....	18.5		31		70	18	39	334	25	23			1.5		372	.51	248	0	25	589	8.3
July 25.....	8.48		50		39	14	37	222	25	18			3.0		295	.40	155	0	34	448	8.1
SWEETWATER CREEK ABOUT 8 MILES NORTHEAST OF WHEELER																					
Feb. 27, 1951.....	29.3		27		81	22	50	336	79	29			3.8		458	0.62	292	17	27	718	7.7
SWEETWATER CREEK ABOUT 12½ MILES EAST OF WHEELER																					
Feb. 27, 1951.....	39.2		27		77	21	55	340	75	28			2.0		457	0.62	278	0	30	717	7.7
ELM CREEK NEAR SHAMROCK																					
Oct. 17, 1950.....	2.39		38		124	33	62	96	354	92			4.2		801	1.09	445	366	23	1,100	7.3
Mar. 15, 1951.....	2.17		40		139	34	41	111	337	91			6.1		787	1.07	487	396	15	1,170	8.1
June 28.....	1.71		53		138	30	78	153	360	94			5.0		833	1.13	468	342	26	1,240	7.7
QUITAQUE CREEK NEAR QUITAQUE																					
Mar. 17, 1951.....	6.08		58		35	38	51	b292	42	50			1.5		420	0.57	244	4	31	761	8.6
PEASE RIVER NEAR VERNON																					
Apr. 10, 1951.....					500	139	1,610	165	1,540	2,540			0.5		6,410	8.72	1,820	1,680	66	10,100	
NORTH FORK WICHITA RIVER 10 MILES SOUTHEAST OF PADUCAH																					
July 25, 1951.....	5.4		23		599	145	1,870	112	1,860	2,920					7,470	10.16	2,090	2,000	66	11,400	7.8
Includes equivalent of 15 parts per million of carbonate (CO ₃).																					

b Includes equivalent of 15 parts per million of carbonate (CO₃).

SALT CREEK 10 MILES SOUTHEAST OF PADUCAH

July 25, 1951.....	2.7	9.0	994	267	8,100	50	2,980	12,800		25,200	34.27	3,580	3,540	83	36,700	8.2
WHITEOAK CREEK NEAR TALCO																
Feb. 16, 1951.....	1,870	6.8	4.8	7.9	9.1	12	24	20	1.5	115	0.16	44	35	31	148	6.3
LITTLE CYPRESS BAYOU AT BALDWIN																
Sept. 16, 1951.....						10		9.8				19			95.2	6.3

RED RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN ARKANSAS

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃ Calcium, magnesium	Non-carbonate	Specific conductance (micro-mhos at 25°C)	pH	Color
ROLLING FORK NEAR DE QUEEN																		
Jan. 24, 1951.....	110							14	5.0	2.2			0.3	11	0	36.3	7.7	
Sept. 5.....	3.0							15	3.0	2.2			9.2	17	5	57.1	7.3	
LITTLE RIVER NEAR HORATIO																		
Jan. 22, 1951.....	2,070							20	6.0	6.0			0.8	16	0	58.8	7.7	
Sept. 5.....	62							35	5.0	45			.3	37	8	212	7.5	
COSSATOT RIVER NEAR DE QUEEN																		
Jan. 24, 1951.....	239							16	4.0	2.2			0.8	10	0	37.4	7.6	
Sept. 5.....	9.6							26	3.0	3.2			1.0	23	2	57.3	7.5	
SALINE RIVER NEAR DIERKS																		
Jan. 22, 1951.....	106							15	5.0	2.8			0.5	9	0	38.0	7.7	
Sept. 6.....	.4							29	2.0	8.2			1.0	17	0	87.3	7.6	
RED RIVER AT INDEX																		
Jan. 25, 1951.....	4,240							a,159	118	178			1.2	254	124	1,000	8.7	
Sept. 6.....	4,240							160	170	221			.8	320	169	1,220	7.7	
RED RIVER AT FULTON																		
Jan. 25, 1951.....	8,38C							b,112	90	126			1.5	180	88	735	8.5	
Sept. 4.....	4,18C							140	148	207			3.0			1,110	8.3	
SOUTH FORK OF OUACHITA RIVER AT MOUNT IDA																		
Feb. 5, 1951.....	29							b,116	5.0	3.0			0.8	99	4	195	8.5	
Sept. 18.....	16							99	8.0	3.0			.2	90	9	172	8.2	
LITTLE MISSOURI RIVER AT NARROWS DAMSITE NEAR MURFREESBORO																		
Jan. 24, 1951.....	136							23	2.0	1.8			1.1	17	0	45.8	8.2	
Sept. 5.....	592							23	3.0	2.2			.8	18	0	48.6	7.5	

a Includes equivalent of 12 parts per million of carbonate (CO₃).b Includes equivalent of 3 parts per million of carbonate (CO₃).

LITTLE MISSOURI RIVER NEAR MURFREESBORO

[illegible]

Specific conductance (micromhos) at 25°C and chloride, in parts per million, water year October 1936 to September 1951

Day	October				November				December				January				February				March			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride		Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1....	307	308	--	--	443	449	--	--	677	633	147	--	185	173	--	--	--	--	--	--	321	310	62	61
2....	302	302	--	--	444	451	--	--	741	724	--	--	381	384	--	--	--	--	--	--	312	313	--	--
3....	348	271	72	58	447	444	--	--	751	729	--	--	248	270	--	--	--	--	--	--	327	328	--	--
4....	244	254	50	--	512	511	--	--	723	714	--	--	307	310	--	--	234	233	--	--	312	313	--	--
5....	327	324	--	--	--	--	--	--	--	--	--	--	210	212	--	--	237	237	--	--	309	314	--	--
6....	331	324	--	--	552	531	--	--	--	134	--	--	295	296	--	--	239	252	--	--	305	306	--	--
7....	332	325	--	--	878	894	205	--	114	132	--	--	195	192	--	--	233	239	--	--	309	306	--	--
8....	345	348	--	--	734	675	--	--	125	132	--	--	163	161	--	--	220	230	--	--	231	229	--	--
9....	347	345	--	--	743	739	--	--	324	320	82	--	160	167	30	--	222	249	--	--	269	261	--	--
10....	342	349	--	--	740	740	166	--	954	957	273	--	255	262	--	--	202	184	42	--	279	280	49	49
11....	342	353	--	--	--	--	--	--	922	888	--	--	278	261	62	--	180	180	--	--	331	324	--	--
12....	356	354	--	--	762	760	--	--	--	--	--	--	--	--	--	--	222	220	--	--	343	324	--	--
13....	346	376	--	--	1,960	498	--	--	522	510	136	--	262	265	--	--	218	216	--	--	323	334	--	--
14....	345	372	--	--	1,700	1,510	--	--	316	508	--	--	291	300	--	--	217	216	--	--	326	336	--	--
15....	420	418	--	--	1,360	1,320	--	--	--	--	--	--	238	328	--	--	122	121	--	--	319	319	--	--
16....	362	362	--	--	1,210	1,220	309	--	287	286	--	--	237	240	--	--	117	119	--	--	263	263	--	--
17....	362	362	--	--	1,210	1,250	--	--	312	320	--	--	237	243	--	--	105	106	17	--	261	298	--	--
18....	601	853	142	525	971	983	--	--	218	220	--	--	--	--	--	--	270	289	--	--	--	--	--	--
19....	413	409	--	--	538	536	106	--	215	225	--	--	--	--	--	--	274	270	65	--	250	253	--	--
20....	392	393	--	--	538	561	--	--	--	--	--	--	--	--	--	--	383	383	100	--	188	195	25	28
21....	419	393	79	--	534	525	--	--	--	--	--	--	--	--	--	--	727	727	206	--	483	476	118	117
22....	465	465	--	--	522	528	--	--	259	248	--	--	--	--	--	--	524	524	--	--	503	471	124	117
23....	460	451	--	--	484	466	--	--	250	246	--	--	--	--	--	--	520	520	138	--	370	364	--	--
24....	468	448	--	--	484	486	--	--	--	--	--	--	--	--	--	--	391	384	98	--	339	339	--	--
25....	453	448	--	--	477	475	94	--	216	215	--	--	--	--	--	--	328	328	--	--	312	315	--	--
26....	456	535	--	--	690	595	136	--	221	216	43	--	--	--	--	--	330	344	--	--	312	315	--	--
27....	468	480	--	--	513	516	--	--	--	--	--	--	--	--	--	--	326	338	--	--	303	286	--	--
28....	465	483	--	--	513	514	--	--	--	--	--	--	260	260	63	--	350	326	--	--	329	290	--	--
29....	447	448	--	--	573	577	--	--	--	--	--	--	--	--	--	--	--	--	--	--	331	330	--	--
30....	444	444	--	--	--	--	--	--	--	--	--	--	260	260	--	--	--	--	--	--	131	110	21	18
31....	457	448	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	649	631	179	174

LOWER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER DELTA --Continued
VERMILION RIVER AT BANCER'S FERRY NEAR ABBEVILLE, LA. --Continued

Day	April				May				June				July				August				September			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride		Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1....	624	665	169	182	263	274	--	--	6,700	6,880	--	--	3,950	4,180	--	--	536	538	3,250	3,090	--	--	--	--
2....	444	444	114	118	285	292	--	--	7,140	7,200	2,180	2,200	4,060	4,130	1,180	--	403	414	2,830	2,830	790	--	--	--
3....	381	368	--	--	323	321	--	--	7,180	7,360	--	--	3,880	4,040	--	--	400	412	2,630	2,830	--	--	--	--
4....	332	338	--	--	846	851	--	--	6,780	7,260	--	--	3,710	4,050	--	--	407	412	3,090	3,090	--	--	--	--
5....	284	285	--	--	764	755	--	--	6,130	6,700	2,000	2,000	3,820	3,280	800	920	442	440	2,630	2,630	--	--	--	--
6....	252	254	--	--	1,080	1,070	--	--	6,180	6,260	--	--	3,190	3,350	--	--	439	444	2,710	2,710	--	--	--	--
7....	225	217	--	--	1,040	1,040	--	--	5,800	5,880	1,720	1,720	2,900	3,070	--	--	438	437	--	--	--	--	--	--
8....	201	199	--	--	576	556	--	--	6,160	6,240	--	--	3,410	3,510	--	--	440	470	2,620	2,620	--	--	--	--
9....	207	206	--	--	648	700	--	--	5,800	5,930	--	--	4,150	4,200	--	--	454	464	985	985	240	--	--	--
10....	207	210	--	--	806	804	--	--	3,370	3,490	960	1,000	5,710	5,790	1,700	--	497	471	1,030	1,020	--	--	--	--
11....	217	210	--	--	692	780	190	190	4,330	4,570	1,270	1,320	5,880	5,950	--	--	1,500	1,520	965	943	--	--	--	--
12....	196	195	--	--	376	369	61	61	5,130	5,280	1,540	1,540	6,070	6,090	1,800	--	--	--	994	985	--	--	--	--
13....	280	293	--	--	371	369	--	--	6,210	6,260	1,880	1,880	6,090	6,110	--	--	1,560	1,560	1,020	982	--	--	--	--
14....	299	299	--	--	589	589	--	--	6,450	6,500	--	--	6,250	6,260	--	--	2,700	2,610	--	--	--	--	--	--
15....	280	257	--	--	550	548	--	--	6,640	6,720	--	--	6,250	6,260	--	--	--	--	--	--	--	--	--	--
16....	281	244	54	44	444	453	--	--	6,410	6,500	--	--	--	--	--	--	3,000	3,030	659	675	--	--	--	--
17....	405	--	88	380	377	377	61	60	6,480	6,540	--	--	6,260	6,310	--	--	--	--	692	692	--	--	--	--
18....	255	235	46	46	373	377	--	--	6,480	6,590	1,920	1,960	6,290	6,390	--	--	3,090	3,120	968	968	--	--	--	--
19....	162	163	32	32	563	562	--	--	6,430	6,520	--	--	6,310	6,390	--	--	3,180	3,210	639	644	--	--	--	--
20....	186	197	--	--	513	523	102	101	6,810	6,620	--	--	5,850	5,890	--	--	3,360	3,360	950	950	--	--	468	570
21....	193	194	--	--	2,040	2,080	560	570	6,340	6,430	--	--	5,690	5,750	1,660	--	--	--	979	1,040	--	--	--	--
22....	237	233	--	--	1,180	1,210	298	300	6,340	6,430	--	--	5,640	5,720	--	--	--	--	--	--	--	--	--	--
23....	220	215	36	35	3,260	3,340	940	950	6,310	6,310	1,900	1,900	5,630	5,720	--	--	3,330	3,350	334	359	--	--	--	--
24....	220	215	--	--	3,810	3,810	1,120	1,100	5,960	6,030	--	--	5,630	5,720	--	--	3,330	3,370	332	346	71	--	--	--
25....	219	218	--	--	5,830	6,060	--	--	6,120	6,200	1,830	1,840	4,910	4,960	--	--	3,350	3,360	353	351	--	--	--	--
26....	222	224	--	--	6,020	6,200	1,840	1,860	6,370	6,430	--	--	4,960	4,950	1,420	--	3,360	3,380	357	360	--	--	--	--
27....	257	232	44	63	6,360	6,440	--	--	6,120	6,160	--	--	2,700	2,610	950	--	3,380	3,380	248	258	45	--	--	--
28....	258	--	--	--	6,020	6,120	--	--	6,020	6,120	--	--	2,870	2,930	820	--	3,380	3,370	300	320	--	--	--	--
29....	263	269	--	--	6,430	6,510	--	--	6,030	6,200	--	--	747	718	178	--	3,360	3,370	300	342	--	--	--	--
30....	262	263	--	--	6,240	6,710	--	--	6,090	6,210	1,810	1,820	435	452	96	--	3,360	3,370	315	311	--	--	--	--
31....	--	--	--	--	6,760	6,860	2,030	2,040	--	--	--	--	426	435	--	--	3,360	3,360	--	--	--	--	--	--

MISSISSIPPI RIVER DELTA--Continued

VERMILION RIVER AT BANCKER'S FERRY NEAR ABBEVILLE, LA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
(Once-daily temperature measurement at approximately 11 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	80	70	--	--	60	65	80	--	88	88	88
2	80	80	88	--	--	62	60	80	85	88	88	92
3	80	78	70	--	--	65	62	80	88	88	85	98
4	80	65	70	--	48	65	65	80	88	83	85	88
5	75	--	--	--	52	60	58	75	85	90	90	88
6	74	70	--	--	52	68	60	75	85	88	92	88
7	85	82	--	--	52	66	60	75	85	88	85	--
8	88	82	--	--	54	62	68	74	85	--	88	86
9	80	82	--	--	55	65	68	68	85	90	98	90
10	80	60	--	--	60	--	65	75	88	88	89	85
11	82	--	--	--	58	68	65	80	88	90	88	85
12	80	60	--	--	60	60	62	75	88	88	--	--
13	80	70	--	--	58	42	60	80	88	90	95	85
14	80	76	--	--	60	48	60	78	85	88	--	80
15	80	85	--	--	55	60	60	85	85	88	90	--
16	82	82	55	--	54	68	60	80	85	--	90	80
17	82	78	--	--	65	66	65	85	85	88	--	85
18	85	78	48	--	58	--	65	85	85	88	85	85
19	85	85	44	--	58	54	60	80	86	88	86	80
20	85	70	44	--	--	60	60	84	88	88	90	80
21	88	65	--	--	54	56	60	80	85	88	--	80
22	84	70	48	--	58	60	68	80	85	88	--	--
23	88	70	70	--	56	60	65	80	85	88	86	80
24	88	60	--	--	--	60	60	84	85	82	90	80
25	85	50	58	--	58	65	70	85	88	85	90	80
26	88	54	55	--	58	62	75	80	88	85	86	80
27	80	70	--	--	58	68	75	80	88	85	90	85
28	80	72	--	54	65	60	78	--	85	84	88	--
29	84	78	--	--	--	65	70	85	85	85	88	80
30	80	--	--	38	--	--	75	85	85	88	88	80
31	80	--	--	--	--	64	--	85	--	85	88	--
Average	82	72	--	--	57	61	65	80	86	87	89	84

PART 8. WESTERN GULF OF MEXICO BASINS

MERMENTAU RIVER BASIN

MERMENTAU RIVER AT LAKE ARTHUR, LA.

LOCATION --At bridge on State Highway 25, about half a mile east of Lake Arthur, Jefferson Davis Parish.

RECORDS AVAILABLE --Chemical analyses: January 1949 to September 1951.

EXTREMES, 1950-51. --Specific conductance: Top samples-Maximum daily, 4,030 micromhos July 24-25; minimum daily 35.3 micromhos Aug. 10. Bottom samples-Maximum daily, 4,060 micromhos July 23-24; minimum daily, 30.8 micromhos Aug. 10.

Water temperatures: Maximum, 92°F June 12; minimum, 35°F Jan. 11-31.

EXTREMES, 1949-51. --Water temperatures: Minimum, freezing point Dec. 15, 18, 25, 1949.

REMARKS. --Top and bottom samples were collected at this station. Partial analyses were determined on composite of top and bottom samples. The sum of the mineral constituents, rather than residue on evaporation, is reported due to the large amount of organic matter present. Specific conductance of daily samples, numerous spot chlorides, and occasional partial analyses determined at this station for period October 1950 to September 1951 are available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃	Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium			
Oct. 21-27, 1950....		13	6.4	16	3.7	19	151	69	28	254	1.5	3.0	517	0.70	72	.10	118	62	74	988	7.2
Apr. 1-10, 1951.....							18	18	4.7	25							19	4	67	125	6.9

MERMENTAU RIVER BASIN--Continued

MERMENTAU RIVER AT LAKE ARTHUR, LA.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, water year October 1950 to September 1951

Day	October				November				December			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	531	532	--		1,280	1,250	346	--	1,400	1,370	--	
2	492	561	--		1,280	1,280	--	--	1,370	1,370	--	
3	494	492	--		1,280	1,290	--	--	1,370	1,470	--	
4	504	492	--		1,280	1,280	--	--	1,370	1,370	--	
5	490	492	--		1,250	1,250	--	--	1,370	1,370	--	
6	510	494	--		1,260	1,250	--	--	1,370	1,370	382	
7	497	523	--		1,250	1,250	--	--	350	380	88	97
8	494	496	--		1,290	1,250	--	--	346	346	--	
9	786	790	--		1,240	1,250	--	--	346	346	--	
10	786	786	202	200	1,230	1,260	--	--	350	--	--	
11	805	792	--		66	99	6.5	--	348	386	88	
12	781	--	--		58	70	6.8	--	345	349	--	
13	786	792	--		1,340	1,250	361	--	341	--	--	
14	786	792	--		1,290	1,310	--	--	469	351	--	
15	786	786	--		1,430	1,420	--	--	--	--	--	
16	793	792	--		--	--	--	--	455	456	--	
17	--	--	--		1,430	1,430	--	--	455	456	--	
18	--	--	--		1,420	1,430	--	--	--	--	--	
19	--	--	--		1,420	1,430	--	--	--	--	--	
20	977	977	258		1,420	1,430	--	--	455	455	--	
21	985	1,000	--		1,430	1,430	402	392	456	451	118	
22	985	994	--		1,400	1,380	--	--	456	459	--	
23	1,000	983	--		1,380	1,380	--	--	455	457	--	
24	985	974	--		1,380	1,380	--	--	569	573	--	
25	985	985	--		1,320	1,310	--	--	456	460	--	
26	974	991	--		1,320	1,310	--	--	570	575	--	
27	974	985	--		1,320	1,300	--	--	570	576	--	
28	1,300	1,360	--		1,260	1,220	337	336	570	576	--	
29	1,310	1,350	--		1,270	1,230	--	--	568	571	--	
30	1,290	1,350	--		1,230	1,230	--	--	566	571	--	
31	--	--	--		--	--	--	--	568	576	152	
	January				February				March			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	573	573	--		279	279	--		158	165	--	--
2	570	560	--		285	277	70	--	162	156	--	--
3	439	481	--		109	104	22	--	162	157	--	--
4	439	443	--		108	114	--	--	166	208	34	42
5	439	441	--		107	103	--	--	168	173	--	--
6	441	441	111		104	103	--	--	171	166	--	--
7	183	189	41		104	104	--	--	168	167	--	--
8	172	172	--		105	104	--	--	167	173	--	--
9	173	173	--		105	103	--	--	168	171	--	--
10	175	174	--		130	144	--	--	169	172	--	--
11	141	167	--		147	145	--	--	171	173	--	--
12	146	145	--		184	174	--	--	187	173	--	--
13	215	214	--		--	--	--	--	154	165	--	--
14	216	212	--		--	--	--	--	161	161	--	--
15	240	213	--		--	--	--	--	194	172	--	--
16	218	228	--		--	--	--	--	175	172	--	--
17	215	216	--		--	--	--	--	171	170	--	--
18	242	234	--		--	--	--	--	177	171	--	--
19	236	224	--		--	--	--	--	181	232	--	--
20	224	217	45		--	--	--	--	182	171	35	32
21	174	171	--		--	--	--	--	201	172	--	--
22	201	170	--		--	--	--	--	180	172	--	--
23	184	170	--		--	--	--	--	193	179	--	--
24	191	189	--		--	--	--	--	190	179	--	--
25	174	169	--		--	--	--	--	176	173	--	--
26	191	184	--		--	--	--	--	177	179	33	34
27	182	203	41		--	--	--	--	279	280	64	64
28	248	272	67		--	--	--	--	287	282	--	--
29	273	279	--		--	--	--	--	282	284	--	--
30	277	274	--		--	--	--	--	288	282	--	--
31	260	285	--		--	--	--	--	--	--	--	--

MERMENTAU RIVER BASIN--Continued

MERMENTAU RIVER AT LAKE ARTHUR, LA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	68	64	62	--	63	44	83	82	--	78	74
2	86	72	63	61	--	61	46	87	88	--	72	67
3	86	76	67	59	37	51	52	83	90	--	74	71
4	88	81	68	61	38	43	52	87	--	86	77	68
5	88	87	54	62	42	44	57	85	85	89	78	68
6	62	88	68	63	43	47	62	87	87	89	78	67
7	60	76	64	44	44	49	64	88	--	88	80	69
8	59	79	66	46	54	42	59	84	--	87	--	72
9	73	84	68	39	60	60	65	87	--	88	77	73
10	77	86	69	--	62	62	62	--	--	88	67	71
11	79	87	72	35	62	62	59	--	90	85	78	63
12	82	--	77	36	64	42	42	88	92	85	--	67
13	85	68	73	42	--	39	44	79	88	88	--	63
14	87	64	74	44	--	41	60	82	73	84	--	61
15	--	73	--	39	--	52	62	83	77	88	77	68
16	--	--	--	42	--	54	63	87	80	81	79	59
17	--	71	--	42	--	57	--	83	78	83	71	61
18	--	65	--	46	--	59	--	85	81	85	69	58
19	--	68	--	43	--	42	--	88	84	82	68	56
20	66	78	--	43	--	44	--	88	87	81	71	68
21	69	81	68	42	--	46	--	89	81	86	75	56
22	72	68	73	43	--	61	59	78	84	85	79	--
23	76	76	69	45	--	63	60	81	87	84	70	60
24	78	78	54	47	--	66	63	82	84	87	69	63
25	81	68	69	48	--	67	65	83	81	86	70	62
26	84	66	58	43	--	67	62	83	--	81	73	68
27	87	64	58	44	--	46	61	86	81	82	75	66
28	69	66	61	44	--	41	62	81	85	81	74	--
29	72	67	62	45	--	42	64	84	91	79	79	--
30	75	67	68	38	--	45	65	81	--	77	79	--
31	--	--	59	35	--	--	--	85	--	81	--	--
Average	--	74	66	46	--	52	58	84	--	84	74	65

CALCASIEU RIVER BASIN--Continued
CALCASIEU RIVER AT HECKER, LA.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, March to September 1951

Day	March				April				May			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	56	56	--	--	44	45	6.8	6.8	58	62	--	--
2	56	57	--	--	41	42	--	--	68	66	--	--
3	58	57	--	--	--	--	--	--	66	68	--	--
4	60	85	8	15	42	39	--	--	--	--	--	--
5	62	64	--	7.5	37	37	--	--	105	72	20	7.5
6	62	63	--	--	36	36	--	--	--	72	--	--
7	--	--	--	--	41	39	--	--	76	99	7.5	15
8	67	68	--	--	39	42	--	--	76	73	--	--
9	66	68	--	--	39	40	--	--	70	--	--	--
10	--	--	--	--	43	42	--	--	65	68	--	--
11	96	69	15	7	44	46	--	--	39	83	5	17
12	--	--	--	--	47	46	--	--	40	44	--	--
13	73	77	--	--	49	49	--	--	39	42	--	--
14	74	72	--	--	52	52	--	--	35	49	--	--
15	--	--	--	--	53	52	--	--	36	36	--	--
16	--	--	--	--	52	53	--	--	41	41	--	--
17	90	78	10	7.5	--	--	--	--	42	43	--	--
18	78	78	8.5	--	48	48	--	--	47	49	--	--
19	89	68	--	--	48	47	--	--	52	50	--	--
20	67	84	--	--	52	65	--	--	58	58	--	--
21	72	65	--	--	51	51	6	6.5	67	78	--	--
22	--	--	--	--	62	58	--	--	66	67	--	--
23	74	63	--	--	59	57	--	--	66	66	--	--
24	81	65	--	--	60	70	--	--	76	81	--	--
25	63	63	--	--	61	64	--	--	71	69	--	--
26	64	65	--	--	65	67	--	--	81	80	--	--
27	71	80	--	--	76	71	7.5	7.5	83	75	--	--
28	--	--	--	--	73	73	--	--	74	102	11	11
29	44	55	--	--	57	88	6	6.5	78	78	--	--
30	49	99	--	--	62	56	--	--	83	79	--	--
31	--	--	--	--	--	--	--	--	81	82	--	--
	June				July				August			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	85	144	--	--	3,720	7,740	1,070	2,380	611	3,340	147	970
2	149	128	--	--	4,230	7,820	1,230	2,180	266	1,910	65	555
3	112	210	18	51	--	--	--	--	129	488	--	--
4	102	120	--	--	--	--	--	--	120	1,050	--	282
5	89	--	--	--	318	7,300	76	2,250	215	438	41	103
6	95	189	13	42	145	7,590	32	2,320	146	2,040	--	--
7	321	447	75	110	124	7,700	20	2,280	117	2,460	19	700
8	552	1,020	141	270	406	7,370	68	2,280	148	5,840	--	1,750
9	445	1,760	114	500	494	1,550	116	450	218	6,080	--	--
10	399	1,540	80	420	398	7,490	88	2,300	244	6,770	--	--
11	640	1,640	160	460	210	7,570	68	2,350	674	7,020	--	--
12	110	3,460	32	870	459	7,320	85	2,300	152	6,320	24	1,920
13	209	3,000	44	1,100	660	7,570	165	2,320	286	5,800	--	--
14	584	3,700	144	900	888	2,480	230	725	755	7,410	199	2,270
15	297	3,000	66	1,120	716	8,240	178	2,520	1,340	2,440	365	688
16	851	3,800	218	825	1,180	8,150	315	2,480	1,670	4,880	462	--
17	452	2,920	108	825	951	8,650	240	2,680	2,250	10,200	635	3,220
18	181	2,490	38	725	1,490	8,880	400	2,700	2,440	13,200	--	--
19	858	3,000	220	850	1,120	9,690	290	2,980	1,620	14,000	--	--
20	1,010	2,380	320	675	2,460	8,370	688	2,520	1,320	15,500	--	5,150
21	792	1,810	201	490	2,050	9,620	560	--	1,090	16,400	--	--
22	939	2,710	250	735	1,880	10,500	--	--	906	15,600	--	--
23	224	1,190	47	310	1,880	10,800	--	--	1,070	15,400	290	5,080
24	1,540	3,430	415	942	1,650	11,400	480	3,600	804	18,800	204	6,400
25	632	4,800	197	1,420	1,690	10,900	--	--	1,350	19,400	--	--
26	494	6,070	120	1,840	1,720	11,400	--	--	1,480	19,600	408	6,680
27	475	5,640	114	1,680	1,460	7,940	400	2,440	2,000	19,600	568	--
28	2,340	6,940	635	2,050	1,810	11,400	--	--	2,710	19,600	770	--
29	3,290	7,610	925	2,230	1,370	10,900	--	--	3,570	19,600	1,040	--
30	3,210	7,010	905	2,100	484	8,260	116	--	2,760	19,300	--	--
31	--	--	--	--	591	6,120	--	--	2,930	19,600	--	--

WESTERN GULF OF MEXICO BASINS

CALCASIEU RIVER BASIN--Continued

CALCASIEU RIVER AT HECKER, LA.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, March to September 1951--Continued

Day	September											
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	3,710	16,300	--	--								
2	2,050	18,900	--	--								
3	1,610	18,900	--	--								
4	1,250	18,500	--	--								
5	1,320	18,700	--	--								
6	1,260	17,000	--	--								
7	1,280	6,460	348	1,840								
8	671	17,700	162	6,000								
9	1,280	17,000	--	--								
10	1,170	9,940	--	--								
11	1,610	17,200	410	5,750								
12	1,460	16,600	--	--								
13	772	1,150	202	--								
14	123	113	18	18								
15	95	128	--	--								
16	90	122	--	--								
17	77	79	--	11								
18	74	78	10	--								
19	74	82	--	--								
20	130	118	--	--								
21	85	82	13	--								
22	85	82	--	--								
23	110	122	--	--								
24	146	304	22	68								
25	94	109	--	--								
26	70	67	--	--								
27	61	60	8	--								
28	70	70	--	--								
29	--	--	--	--								
30	67	51	--	6								
31	--	--	--	--								

Temperature (°F) of water, March to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						--	74	78	82	88	90	86
2						--	65	78	84	87	88	90
3						70	--	76	84	--	88	--
4						70	65	--	83	--	92	90
5						74	65	78	84	90	90	88
6						72	64	78	84	90	92	88
7						--	64	78	82	90	90	88
8						72	64	76	82	90	90	88
9						72	64	82	82	84	90	88
10						--	65	82	88	88	88	83
11						72	62	76	86	88	84	82
12						--	61	74	83	88	90	82
13						67	64	76	86	88	90	79
14						65	64	72	86	88	90	78
15						--	65	76	88	88	86	77
16						--	68	76	88	98	88	78
17						72	--	70	88	94	92	74
18						62	68	80	88	90	88	76
19						60	70	76	88	90	88	78
20						58	65	78	88	92	90	80
21						62	74	84	89	88	90	78
22						--	72	76	88	88	88	81
23						62	74	80	87	90	88	86
24						60	74	76	86	90	90	78
25						65	78	78	88	90	88	82
26						62	78	78	--	86	88	82
27						67	76	82	90	90	88	82
28						--	72	82	86	86	90	79
29						65	76	82	86	88	88	--
30						64	78	82	84	88	92	79
31						--	--	82	--	88	94	--
Average						--	69	78	86	89	89	82

CALCASIEU RIVER BASIN--Continued

CALCASIEU RIVER AT LAKE CHARLES, LA.

LOCATION. --At U. S. Naval Reserve Training Station at foot of Nichols Street, Lake Charles, Calcasieu Parish.

RECORDS AVAILABLE. --Chemical analyses: January to June, September 1949 to September 1951.

Water temperatures: January to June, September 1949 to September 1951.

EXTREMES, 1950-51. --Specific conductance: Top samples-Maximum daily, 16,900 micromhos July 1; minimum daily, 73.1 micromhos Feb. 12-13. Bottom samples-Maximum daily, 27,100 micromhos Dec. 3; minimum daily, 71.0 micromhos Feb. 12-13.

Water temperatures: Maximum, 93°F Aug. 6, 17.

EXTREMES, 1949-51. --Water temperatures: Maximum, 97°F Aug. 1, 1950.

REMARKS. --Top and bottom samples collected at this station. Partial analyses were determined on composite of top and bottom samples. The sum of the mineral constituents, rather than residue on evaporation, is reported due to the large amount of organic matter present. Specific conductance of daily samples, including those on top, was determined at this station for period October 1950 to September 1951 are available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (Fe)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate		
Apr. 12, 14, 17, 1951. May 11-12, 17-18, 19 (top), 20 (bottom) ...		15			12	23		193	14	55	335		3.0	643	0.87	124	113	77	6.5
		12			50	134	1,150	31	313	2,010				3,680	5.00	676	690	79	6.8

CALCASIEU RIVER BASIN--Continued

CALCASIEU RIVER AT LAKE CHARLES, LA.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, water year October 1950 to September 1951

Day	October				November				December ^a			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	--	--	--	--	4,670	18,900	--	--	5,060	22,300	--	--
2	--	--	--	--	5,570	11,600	--	--	3,010	20,300	--	--
3	7,210	17,800	--	--	5,520	17,600	--	--	3,740	27,100	--	--
4	4,340	14,100	--	--	3,950	14,400	1,200	--	3,870	19,700	--	--
5	4,180	23,400	1,260	8,800	5,680	10,700	--	--	3,010	21,600	--	--
6	6,160	14,600	--	--	5,600	20,700	--	--	5,960	6,740	--	--
7	4,340	4,350	1,290	1,320	4,260	23,200	--	--	1,850	2,030	522	570
8	5,220	11,600	--	--	5,370	18,100	--	--	4,300	23,200	--	--
9	5,220	11,800	--	--	5,780	20,200	--	--	1,850	--	--	--
10	4,230	12,000	--	--	5,530	--	--	--	1,850	22,000	520	2,120
11	4,290	11,800	--	--	5,370	--	--	--	4,470	24,300	--	--
12	9,180	4,500	--	--	5,170	19,400	1,620	--	--	22,500	--	--
13	5,120	14,300	--	--	4,930	22,800	--	--	2,980	20,500	870	--
14	6,460	15,500	2,000	5,460	5,750	15,300	--	--	1,850	2,290	522	--
15	6,500	14,000	2,020	4,780	5,370	23,200	--	--	3,800	25,900	--	--
16	6,470	15,100	--	--	4,670	17,800	--	--	3,800	25,900	--	--
17	6,550	18,800	--	--	4,610	19,000	--	--	--	25,900	--	--
18	--	17,900	--	--	4,870	23,400	--	--	3,740	24,700	--	--
19	6,130	16,500	--	--	8,250	22,800	--	--	3,010	19,400	--	--
20	4,930	16,200	--	--	8,250	13,500	--	--	1,790	2,110	515	580
21	5,140	16,100	--	--	4,780	20,800	--	--	--	--	--	--
22	5,120	14,300	--	--	4,820	21,900	--	--	--	--	--	--
23	5,380	14,800	--	--	3,010	23,700	880	--	--	--	--	--
24	4,190	15,200	--	--	6,100	19,600	1,930	--	--	--	--	--
25	4,260	17,300	--	--	3,010	25,400	--	--	--	--	--	--
26	4,650	18,500	--	--	4,440	22,800	--	--	--	--	--	--
27	4,630	18,300	1,450	6,580	4,540	20,400	--	--	--	--	--	--
28	4,100	16,500	--	--	4,360	21,000	--	--	--	--	--	--
29	4,070	15,900	--	--	3,990	23,700	--	--	--	--	--	--
30	4,070	23,000	--	--	3,980	21,000	--	--	--	--	--	--
31	4,240	24,200	--	9,050	--	--	--	--	--	--	--	--
January				February				March				
1	--	--	--	--	--	--	--	291	285	--	--	--
2	--	--	--	--	--	--	--	451	427	--	--	--
3	--	--	--	--	--	--	--	455	433	--	--	--
4	--	--	--	--	--	--	--	455	435	--	--	--
5	--	--	--	--	--	--	--	453	436	--	--	--
6	--	--	--	--	--	--	--	295	290	--	--	--
7	--	--	--	--	--	--	--	288	288	--	--	--
8	--	--	--	--	--	--	--	452	436	--	--	--
9	--	--	--	--	--	--	--	288	325	72	82	--
10	--	--	--	--	--	--	--	453	437	112	110	--
11	--	--	--	--	98	88	18	--	455	439	--	--
12	--	--	--	--	73	71	--	--	448	380	114	98
13	--	--	--	--	73	71	--	--	456	437	--	--
14	--	--	--	--	105	90	16	17	432	407	105	--
15	--	--	--	--	97	91	--	--	926	935	246	250
16	--	--	--	--	143	139	28	--	761	829	202	--
17	--	--	--	--	--	--	--	--	926	1,000	--	--
18	--	--	--	--	73	75	--	--	167	167	38	--
19	--	--	--	--	75	72	--	--	473	452	119	--
20	--	--	--	--	74	89	--	--	168	169	--	--
21	--	--	--	--	133	132	--	--	825	845	--	--
22	--	--	--	--	130	135	--	--	946	951	250	253
23	--	--	--	--	130	131	--	--	172	169	40	40
24	--	--	--	--	--	--	--	--	180	174	--	--
25	--	--	--	--	--	--	--	--	172	173	--	--
26	--	--	--	--	132	135	--	--	1,650	2,230	450	630
27	--	--	--	--	132	331	30	84	172	185	40	42
28	--	--	--	--	359	148	90	32	1,250	1,230	--	--
29	--	--	--	--	--	--	--	--	1,240	1,230	350	340
30	--	--	--	--	--	--	--	--	171	178	39	40
31	--	--	--	--	--	--	--	--	170	175	--	--

^a No samples collected December 21 to February 10.

CALCASIEU RIVER BASIN--Continued

CALCASIEU RIVER AT LAKE CHARLES, LA.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million,
water year October 1950 to September 1951--Continued

Day	April				May				June			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	177	192	--	--	6,870	3,940	2,000	1,150	6,820	7,210	2,100	2,200
2	167	155	37	34	1,860	1,980	--	--	13,900	14,300	--	--
3	77	83	18	18	1,830	1,660	--	--	14,000	14,500	--	--
4	75	1,230	17	330	1,650	1,860	--	--	14,000	14,500	--	--
5	75	78	--	--	6,240	7,140	1,900	2,200	14,000	14,400	--	--
6	1,210	1,190	--	--	979	967	252	250	14,300	14,200	--	--
7	77	79	--	--	955	950	--	--	14,400	14,200	4,720	--
8	74	74	--	--	6,250	7,190	1,900	2,200	14,400	14,200	--	--
9	75	78	17	16	2,110	3,270	--	--	14,400	14,200	--	--
10	1,240	1,200	332	325	6,250	7,110	--	--	14,400	14,200	--	--
11	91	86	--	--	6,250	7,140	--	--	14,200	14,600	--	--
12	1,360	1,230	--	--	6,250	7,140	--	--	9,320	14,600	2,950	4,720
13	104	100	--	--	1,840	1,880	--	--	14,400	14,600	--	--
14	1,250	1,290	--	--	1,840	1,870	--	--	--	--	--	--
15	1,390	543	372	139	1,850	1,940	--	--	14,400	14,600	--	--
16	132	135	28	28	1,660	1,840	460	510	14,200	14,600	--	--
17	1,240	1,230	--	--	6,240	7,160	--	--	14,500	14,600	--	--
18	148	185	--	--	6,240	7,160	--	--	14,500	14,700	--	--
19	216	166	--	--	6,240	--	--	--	14,500	14,800	--	--
20	539	2,050	144	580	3,600	7,100	1,080	--	12,900	14,800	4,120	--
21	1,250	1,240	--	--	3,670	14,700	1,060	4,780	14,600	14,500	4,700	4,780
22	1,250	1,230	--	--	3,920	14,400	--	--	14,500	14,500	--	--
23	810	836	212	224	3,900	4,140	--	--	5,910	7,230	1,760	2,190
24	991	1,090	264	292	14,000	3,740	4,520	1,090	13,900	14,500	--	--
25	1,250	1,240	--	--	14,000	14,300	--	--	11,700	13,000	--	--
26	1,640	1,570	--	--	14,000	14,300	--	--	5,860	7,570	--	--
27	1,320	1,520	--	--	14,000	14,400	--	--	5,860	6,780	--	--
28	997	1,240	--	--	14,000	14,200	--	--	11,400	13,800	3,650	--
29	1,640	1,830	455	520	14,000	14,200	--	--	15,000	15,300	--	--
30	6,690	3,710	2,000	1,100	14,000	13,800	--	--	5,900	7,150	--	--
31	--	--	--	--	6,750	14,000	2,040	--	--	--	--	--
	July				August				September			
	Conductance		Chloride		Conductance		Chloride		Conductance		Chloride	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	16,900	16,800	5,650	5,700	9,600	9,870	3,080	--	--	--	--	--
2	16,600	16,500	--	--	8,590	9,480	--	--	11,900	12,000	--	--
3	5,910	6,990	1,770	2,120	5,900	7,360	1,740	2,250	12,800	13,900	--	--
4	--	--	--	--	5,850	6,750	--	--	--	--	--	--
5	12,900	13,800	4,280	4,580	11,500	13,900	--	4,550	11,400	13,100	--	--
6	5,860	6,800	--	--	6,030	6,680	--	--	13,400	15,500	--	--
7	5,860	6,470	--	--	6,300	6,350	--	--	11,900	13,800	--	--
8	9,160	7,150	2,950	--	8,310	8,990	--	--	4,910	5,020	1,390	1,410
9	11,100	13,100	--	--	8,960	10,100	--	3,150	4,730	5,000	--	--
10	11,300	13,600	--	--	9,010	9,600	--	--	11,000	17,200	--	6,200
11	9,870	7,320	3,120	2,260	11,600	15,700	--	--	13,000	20,600	4,200	7,050
12	9,160	7,320	--	--	7,440	8,380	--	2,600	4,650	4,980	--	--
13	8,140	10,100	--	3,250	7,110	15,500	2,190	--	13,300	13,600	--	--
14	5,830	6,040	1,760	--	11,500	15,900	--	--	5,940	5,940	--	--
15	5,800	6,310	--	--	9,380	16,300	--	5,480	5,940	5,940	--	--
16	5,780	7,860	--	--	9,330	15,500	2,950	--	4,690	5,040	--	--
17	11,300	12,300	--	--	11,600	16,100	--	--	2,700	2,720	750	--
18	11,300	14,900	3,680	5,000	11,800	15,100	--	--	2,350	2,630	--	--
19	11,300	15,800	--	--	11,800	15,700	--	--	2,570	3,130	--	--
20	11,300	15,500	--	--	12,700	19,600	4,180	6,700	3,290	6,780	950	2,070
21	11,200	15,700	3,650	--	13,000	20,500	--	7,030	4,710	5,210	--	--
22	11,200	15,500	--	--	12,900	20,800	--	--	4,710	5,210	--	--
23	14,600	18,800	4,920	5,600	10,700	19,300	--	--	4,710	5,200	--	--
24	11,490	16,400	--	--	10,600	18,100	--	--	3,070	3,600	--	--
25	13,900	14,600	--	--	10,600	18,100	--	--	3,550	3,600	--	--
26	11,600	15,700	--	--	13,100	18,600	--	--	3,390	3,620	--	--
27	13,000	14,200	--	--	13,100	18,400	--	--	3,290	3,580	--	--
28	11,700	16,700	--	--	15,000	18,100	4,900	--	--	--	--	--
29	11,600	16,000	--	--	14,500	22,500	--	7,750	--	--	--	--
30	10,800	11,000	--	--	14,300	15,400	--	4,980	--	--	--	--
31	10,100	10,500	--	3,300	11,900	16,300	3,800	--	--	--	--	--

CALCASIEU RIVER BASIN--Continued

CALCASIEU RIVER AT LAKE CHARLES, LA.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	79	65			--	67	71	87	88	89	--
2	--	70	61			79	65	72	89	85	90	90
3	86	70	61			76	67	71	80	89	90	89
4	78	89	61			74	66	69	78	--	89	--
5	77	72	52			76	67	80	80	92	90	88
6	79	71	55			78	65	79	80	89	93	88
7	79	72	56			77	66	75	78	90	91	86
8	77	69	58			77	65	81	87	91	92	87
9	78	70	60			76	66	79	85	90	90	88
10	80	65	59			59	69	82	80	91	88	85
11	79	67	59			58	66	81	78	89	88	89
12	78	67	62			63	70	82	85	90	91	88
13	78	65	60			63	70	75	86	89	92	84
14	80	63	65			65	68	76	--	90	89	87
15	81	65	68			64	70	78	88	88	91	78
16	79	68	56			66	67	75	88	88	90	77
17	80	67	64			66	72	83	88	90	93	80
18	76	69	57			64	67	85	85	91	90	79
19	75	65	58			65	68	85	84	88	89	82
20	70	68	51			66	67	80	88	90	89	81
21	75	68	--			67	78	86	88	90	90	81
22	75	64	--			67	72	86	88	90	89	82
23	76	62	--			67	73	82	87	89	90	82
24	80	63	--			63	75	81	85	91	89	83
25	79	60	--			63	72	80	88	90	90	80
26	81	67	--			62	74	78	88	91	89	81
27	79	65	--			63	79	82	88	86	89	80
28	90	63	--			64	72	82	87	89	91	--
29	88	61	--			66	69	89	88	90	91	--
30	80	64	--			65	71	86	89	90	92	--
31	76	--	--			66	--	85	--	90	90	--
Average	79	68	--			68	69	80	85	89	90	84

SABINE RIVER BASIN

SABINE RIVER NEAR RULIFF, TEX.

LOCATION.--At gaging station at bridge on State Highway 235, 2.4 miles north of Ruliff, Newton County, 4.2 miles upstream from Kansas City-Southern Railway bridge, 4.5 miles downstream from Cypress Creek, and at mile 40.

RECORDS AVAILABLE.--9,440 square miles.

Water temperatures: October 1947 to September 1951.

Hardness: Maximum, 58 ppm May 21-31; minimum, 15 ppm Jan. 4-10.

Specific conductance: Maximum daily, 665 micromhos June 22; minimum daily, 67.2 micromhos Jan. 6.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 900 ppm May 21-31; minimum, 15 ppm Jan. 4-10.

EXTREMES, 1945-46.--Dissolved solids: Maximum, 900 ppm May 21-31; minimum, 15 ppm Jan. 4-10.

Hardness: Maximum, 64 ppm Aug. 1-11.

Water temperatures: Maximum, 30°F on several days in July and August 1951; minimum, 34°F Jan. 24, 1948.

REMARKS.--Values reported for dissolved solids are residue on evaporation unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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)	(residue on evaporation)		Hardness as CaCO ₃		Permeability	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate		
Oct. 1-10, 1950.....	2,719		13		9.1	4.0	37		29	16	55		1.2		160	0.22	1,170	39	15	67	6.7
Oct. 11-20.....	1,366		16		10	3.3	24		48	9.8	28		1.5		131	.18	483	38	0	57	7.3
Oct. 21-31.....	1,384		16		9.0	2.5	19		41	7.7	23		1.2		123	.17	460	33	0	56	178
Nov. 1-8.....	1,646		15		10	4.5	29		42	8.9	45		.5		160	.22	711	43	9	60	7.4
Nov. 9-13, 26.....	1,715		14		5.7	1.7	27		23	13	33		1.0		124	.17	574	21	2	70	165
Nov. 14-20.....	1,781		15		8.9	3.0	43		30	13	63		.5		174	.24	841	35	10	73	278
Nov. 21-25, 27-30..	1,789		16		7.5	2.7	38		29	9.4	55		.5		157	.21	758	30	6	73	248
Dec. 1-10.....	1,950		17		9.3	4.0	44		30	16	66		1.2		172	.23	906	40	15	71	298
Dec. 11-20.....	1,823		16		7.9	3.9	36		27	10	60		1.5		160	.22	796	36	14	70	270
Dec. 21-31.....	1,627		22		8.2	4.4	36		26	7	56		1.5		137	.21	690	36	13	69	263
Jan. 1-3, 20-31, 1951	4,477		14		2.5	2.2	10		10	9.0	17		.2		556	.66	1,970	17	21	88	7.1
Jan. 4-10.....	13,030		7.5		2.5	2.2	10		10	9.0	17		.2		556	.66	1,970	17	21	88	7.1
Jan. 11-19.....	7,964		12		4.5	2.9	18		14	14	25		1.0		484	.11	1,610	23	12	63	6.8
Feb. 1-10.....	4,464		15		7.8	4.0	29		16	20	46		1.5		131	.18	1,580	36	23	64	239
Feb. 11-19.....	7,660		11		7.6	3.8	28		16	21	42		.5		123	.17	2,540	35	21	63	215
Feb. 20-28.....	10,570		11		8.2	4.5	29		14	27	44		.5		131	.18	3,730	39	28	62	234
Mar. 1-10.....	10,580		13		9.3	4.3	29		24	27	40		.5		154	.21	4,400	41	21	61	233
Mar. 11-20.....	8,800		12		12	5.1	34		38	27	46		.5		164	.22	3,900	51	20	59	260
Mar. 21-28.....	5,071		17		12	4.9	37		34	26	53		1.5		179	.24	2,450	50	22	62	285
Mar. 29-30, Apr. 1-3	17,700		10		4.0	2.6	20		10	20	24		1.5		a 87	.12	4,160	21	12	68	123
Mar. 31, Apr. 4-10	20,140		12		5.4	3.3	21		14	22	26		1.5		98	.13	5,330	27	16	63	157
Apr. 11-20.....	8,141		16		7.6	4.0	28		22	25	34		1.0		a 125	.17	2,750	35	17	62	203
Apr. 21-30.....	3,367		18		9.8	4.5	36		34	25	47		.5		a 158	.21	1,440	43	15	64	267

a Sum of determined constituents.

SABINE RIVER BASIN--Continued
SABINE RIVER NEAR RULIFF, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue on evaporation)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
May 1-5, 9, 15-20, 1951.....	5,514		18		11	4.5	4.2		33	23	60				180	0.24	2,680	46	19	66	318	7.4
May 6-8, 10-14.....	9,694		14		7.2	3.4	28		22	16	40		0.8		a 120	.16	3,140	32	14	65	186	6.8
May 21-31.....	2,924		18		14	5.5	48		41	29	68		1.5		a 204	.28	1,610	58	24	64	360	7.4
June 1-10.....	1,717		22		13	5.5	33		46	20	48		1.5		170	.23	788	55	17	57	280	7.6
June 11-20.....	1,631		21		14	4.9	38		50	18	55		1.0		162	.25	900	55	14	60	307	7.3
June 21-30, July 1-6.....	4,383		18		14	4.5	30		55	19	37		2.0		173	.24	2,050	53	8	55	237	7.1
July 7-31.....	1,882		19		16	4.2	31		61	12	42		3.8		165	.22	838	57	7	54	271	7.4
Aug. 1-31.....	759		22		12	4.1	29		55	8.5	38		1.8		a 143	.19	293	47	2	54	230	7.5
Sept. 1-10.....	476		23		9.7	3.3	30		50	7.7	38		1.5		a 138	.19	177	38	0	64	224	7.1
Sept. 11-19, 24-27.....	1,663		16		7.7	2.9	33		33	8.1	45		2.0		135	.18	606	31	2	70	222	7.0
Sept. 20-23, 28-30.....	2,339		11		4.9	1.8	17		19	5.9	24		2.0		93	.13	587	20	4	66	127	6.7
Weighted average.....	4,374		14		8.4	3.8	29		26	19	40		1.1		133	0.18	1,370	37	15	64	216	--

a Sum of determined constituents.

SABINE RIVER BASIN--Continued

SABINE RIVER NEAR RULIFF, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement at approximately 5 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	75	60	52	43	63	62	75	--	--	--	88
2	89	74	59	53	43	65	62	74	81	--	86	88
3	78	72	60	54	43	64	61	76	80	--	--	88
4	76	70	60	54	43	64	63	--	81	--	88	87
5	75	68	61	55	44	65	64	--	--	--	88	85
6	75	66	52	55	44	65	64	--	81	--	--	85
7	75	66	--	53	45	66	64	74	--	--	88	84
8	74	65	58	52	46	67	64	74	81	--	88	84
9	--	65	--	52	47	66	65	74	81	--	88	84
10	74	62	54	52	--	64	--	74	82	--	--	82
11	74	60	53	53	52	63	64	74	82	--	88	82
12	--	59	54	54	52	59	64	74	83	--	88	--
13	74	58	55	54	54	59	63	75	83	88	90	80
14	73	--	56	55	55	58	64	75	83	88	90	80
15	73	62	56	55	55	59	65	76	84	88	90	78
16	72	63	56	55	--	--	--	76	85	88	--	77
17	73	62	55	56	--	--	65	76	85	88	90	88
18	73	--	55	--	56	--	60	--	76	88	89	77
19	73	63	--	58	57	60	67	75	85	89	--	78
20	73	63	--	59	58	60	66	76	86	90	86	78
21	72	63	55	57	58	60	69	--	85	90	86	76
22	72	62	55	57	58	61	69	--	86	90	86	--
23	71	61	55	58	57	62	70	76	86	--	85	78
24	71	--	56	--	58	62	70	76	87	90	87	78
25	71	58	56	58	59	61	--	77	88	89	--	78
26	72	58	58	57	59	61	--	77	87	--	88	--
27	73	57	55	56	61	61	--	--	--	88	88	77
28	73	58	--	56	61	--	72	--	87	87	88	77
29	74	59	--	53	--	60	73	78	--	87	88	77
30	74	59	50	51	--	61	74	79	85	87	88	--
31	75	--	52	48	--	60	--	80	--	86	--	--
Average	75	63	56	55	52	62	--	--	84	--	--	81

NECHES RIVER BASIN

NECHES RIVER AT EVADALE, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 96, 200 feet upstream from Gulf, Colorado & Santa Fe Railway bridge at Evadale, Jasper County, 600 feet downstream from Mill Creek, 15 miles upstream from Village Creek, and at mile 55.

DRAINAGE AREA.--7,908 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

WATER TEMPERATURES: October 1947 to September 1951.

EXTREMES, 1951.--Dissolved solids: 206 ppm July 21-31; minimum, 56 ppm Sept. 22-25, 27.

WATER TEMPERATURES: 66 ppm July 20-27; minimum, 16 ppm Sept. 22-25, 27.

SPECIFIC CONDUCTANCE: 370 micromhos daily, 53.7 micromhos Sept. 23.

WATER TEMPERATURES: Maximum, 92°F Aug. 4; minimum, 39°F Feb. 23, 1948; minimum, 46 ppm June 4-18, 1950.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 218 ppm Dec 11-20, 1948; minimum, 46 ppm June 4-18, 1950.

HARDNESS: Maximum, 70 ppm Nov. 4-10, 1947; minimum, 16 ppm Sept. 22-25, 27, 1950.

WATER TEMPERATURES: Maximum, 92°F Aug. 4, 1951; minimum, 37°F Jan. 30-31, 1948; Jan. 31, 1949.

REMARKS.--Values reported for dissolved solids are residue on evaporation unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue on evaporation)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesium	Non-carbonate			
Oct. 1-3, 8-10, 1950.	1,156	16	16	17	9.1	3.5	29	30	18	39	0.2	1.5	1.5	1.5	131	0.18	409	37	12	63	208	7.1
Oct. 4-7	1,338	17	17	17	11	4.1	41	31	17	82	2	1.2	1.2	1.2	182	.25	657	44	19	97	301	6.9
Oct. 11-20	804	17	17	17	9.0	5.0	32	32	17	48	1	1.2	1.2	1.2	155	.21	336	43	17	62	251	6.7
Oct. 21-31	773	17	17	17	8.6	4.9	35	35	12	53	1	1.2	1.2	1.2	156	.21	326	42	13	64	259	7.0
Nov. 1-10	847	17	17	17	9.2	3.8	32	32	11	46	2	1.2	1.2	1.2	149	.20	341	39	8	64	236	7.0
Nov. 11-20	957	16	16	16	7.4	4.4	31	35	10	45	1	1.0	1.0	1.0	136	.18	351	37	8	65	226	7.0
Nov. 21-30	1,232	14	14	14	6.7	3.8	31	27	11	46	1	1.8	1.8	1.8	134	.18	446	32	10	67	217	6.9
Dec. 1-10	1,293	17	17	17	8.1	3.9	35	34	11	52	2	2	2	2	151	.21	527	36	8	68	252	6.9
Dec. 11-20	1,387	15	15	15	7.3	4.5	28	29	16	40	1	1	1	1	136	.18	509	37	13	62	213	7.0
Dec. 21-31	1,203	18	18	18	8.0	3.8	30	32	13	43	1	1	1	1	136	.18	442	36	9	65	218	7.0
Jan. 1-10, 1951	2,667	14	14	14	5.9	3.3	28	23	17	36	3	3	3	3	118	.16	913	28	9	68	179	7.4
Jan. 11-20	2,491	14	14	14	6.9	3.7	27	21	22	35	3	3	3	3	125	.17	837	32	15	64	200	7.3
Jan. 21-31	2,043	15	15	15	7.9	3.1	31	23	24	42	3	2	2	2	142	.19	783	37	18	64	228	7.3
Feb. 1-10	2,256	16	16	16	8.5	4.4	36	22	23	53	3	3	3	3	153	.21	933	39	21	67	260	7.3
Feb. 11-19	2,556	15	15	15	8.1	4.5	34	20	27	59	3	3	3	3	153	.21	1,070	41	23	69	236	6.5
Feb. 20-28	4,702	14	14	14	8.5	4.5	34	11	31	59	3	3	3	3	153	.21	1,070	41	23	69	236	6.5
Mar. 1-10	4,175	15	15	15	9.6	5.0	31	12	33	47	0	1	1	1	162	.23	1,870	44	26	60	256	6.4
Mar. 11-20	3,347	17	17	17	10	5.2	36	22	35	50	0	1	1	1	170	.23	1,540	46	28	63	281	7.1
Mar. 21-29	3,120	19	19	19	11	5.7	33	29	33	46	0	1	1	1	166	.23	1,400	51	27	59	266	7.2
Mar. 29-31, Apr. 1-10	8,744	15	15	15	7.2	3.5	19	21	21	24	2	2	2	2	100	.14	2,360	32	15	56	158	7.2

a Sum of determined constituents.

Apr. 1-6.....	14,280	12	4.9	2.5	16	18	16	18	--	1.5	a80	11	3,080	23	8	61	109	7.1
Apr. 11-20.....	4,561	18	9.8	4.9	32	20	36	42	3	.5	a154	21	1,900	45	28	61	284	6.9
Apr. 21-30.....	2,049	18	12	5.3	34	28	37	45	3	.2	a166	23	918	52	29	59	280	7.1
May 1-10.....	2,178	18	11	5.6	31	32	33	40	3	.5	157	21	923	50	24	57	281	7.0
May 11-20.....	1,525	15	9.9	3.9	20	30	20	26	2	2.5	a112	15	461	41	16	52	185	6.9
May 21-31.....	1,651	12	11	4.5	24	37	21	32	2	2.0	132	18	588	46	16	54	232	7.0
June 1-10.....	1,313	14	13	4.9	30	47	19	41	2	1.2	146	20	518	53	14	55	260	7.2
June 11-20.....	1,506	18	--	--	--	56	18	48	2	1.0	170	23	691	--	--	--	284	7.1
June 21-30.....	1,548	18	12	5.4	40	53	18	53	2	1.0	182	25	760	52	9	62	300	7.1
July 1-10.....	1,774	20	11	5.4	34	51	14	46	2	1.5	164	22	788	50	8	60	270	7.5
July 11-20.....	1,236	19	12	8.8	29	52	13	51	2	1.0	183	25	611	66	24	48	289	7.1
July 21-31.....	635	26	14	5.2	38	58	14	54	--	1.5	206	28	464	56	9	60	310	7.7
Aug. 1-10.....	312	23	13	5.3	40	64	11	55	--	1.0	194	28	289	54	2	62	309	7.7
Aug. 11-20.....	312	23	13	5.3	44	76	10	54	--	.8	199	27	188	54	0	64	334	7.8
Aug. 21-31.....	258	30	13	5.3	38	76	11	43	3	1.0	184	25	128	54	0	60	296	7.2
Sept. 1-20.....	270	27	12	4.6	39	66	8.8	50	3	.8	a175	24	128	49	0	63	295	7.0
Sept. 21-30.....	1,090	20	--	--	--	47	--	33	--	2.0	--	--	--	38	0	--	271	7.2
Sept. 22-25, 27.....	1,770	6,0	2.8	2.1	7.5	11	11	7.5	--	1.0	56	.08	268	18	7	51	75.1	6.6
Sept. 26, 28-29.....	1,230	11	--	--	--	16	--	18	--	1.5	--	--	--	20	7	--	126	--
Weighted average .	2,042	16	8.8	4.3	29	27	23	39	0.2	0.9	139	0.19	766	40	18	62	222	--

a Sum of determined constituents.

NECHES RIVER BASIN--Continued

NECHES RIVER AT EVADALE, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 (Once-daily temperature measurement at approximately 8 a.m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	73	58	51	--	66	62	76	82	85	85	86
2	78	73	60	54	39	67	63	74	82	84	85	86
3	78	72	59	55	39	68	61	74	82	85	86	84
4	78	67	52	55	40	67	66	75	81	84	92	84
5	75	62	60	54	42	66	63	70	78	85	83	84
6	71	62	59	56	45	--	64	72	79	85	88	83
7	72	65	50	51	46	69	63	75	81	86	88	84
8	75	66	50	49	47	69	63	73	82	87	88	82
9	72	67	51	--	50	70	64	73	83	87	86	81
10	71	60	50	50	--	70	63	74	83	86	87	82
11	71	57	49	--	53	70	65	76	82	86	85	81
12	71	55	--	52	54	64	61	76	83	86	85	83
13	70	55	53	51	58	60	60	73	81	85	86	80
14	70	57	50	51	54	57	62	75	83	85	85	--
15	71	61	50	--	53	57	64	76	83	85	--	76
16	80	64	54	--	50	59	63	75	83	85	85	73
17	71	60	53	56	53	62	62	76	84	86	86	74
18	71	60	51	58	54	62	64	75	84	88	85	--
19	71	64	51	--	57	59	65	77	86	87	85	75
20	70	67	55	58	58	58	67	77	85	--	83	75
21	72	62	55	55	58	57	68	77	85	88	--	78
22	71	--	55	55	57	59	69	77	85	88	84	74
23	70	61	55	--	58	62	69	77	85	87	84	85
24	69	61	54	51	58	62	71	78	85	82	84	75
25	69	55	55	48	60	62	72	76	84	85	85	77
26	70	50	58	51	67	63	73	75	83	85	85	75
27	71	56	56	--	64	63	74	78	85	87	85	76
28	72	55	52	48	64	63	74	78	85	--	85	75
29	74	55	52	--	--	61	75	80	85	86	85	75
30	74	56	51	49	--	58	75	80	84	86	86	74
31	73	--	40	--	--	60	--	81	--	86	86	--
Average	73	61	53	--	53	63	66	76	83	86	84	79

TRINITY RIVER BASIN

CLEAR FORK TRINITY RIVER AT FORT WORTH, TEX.

LOCATION:--At Texas & Pacific water plant, one-eighth of a mile downstream from gaging station which is at bridge on Vickery Boulevard, Fort Worth, Tarrant County, 100 feet upstream from East-West Expressway bridge, 310 feet (revised) downstream from Texas & Pacific Railway bridge, 3 miles upstream from mouth, and 5 miles downstream from Marys Creek.

DRAINAGE AREA:--326 square miles.

RECORDS AVAILABLE:--Chemical analyses: October 1948 to September 1951.

EXTREMES: 1950-51--Dissolved solids: Maximum 458 ppm Dec. 1-10; minimum 163 ppm June 14-15, 17-18.

Hardness: Maximum 322 ppm Dec. 1-10; minimum 112 ppm June 14-15, 17-18, July 4-8.

Specific conductance: Maximum daily, 842 micromhos Mar. 31; minimum daily, 237 micromhos June 4.

Water temperatures: Maximum 93°F Aug. 16-17; minimum, 35°F Dec. 9-10, Feb. 2-3; micromhos June 4.

EXTREMES: 1948-51--Dissolved solids: Maximum, 621 ppm Jan. 11-31, 1949; minimum, 124 ppm May 17, 1949.

Hardness: Maximum, 322 ppm Dec. 1-10, 1950; minimum, 68 ppm May 17, 1949.

Water temperatures: Maximum, 93°F Aug. 16-17, 1951; minimum, freezing point on several days in January 1949.

REMARKS:--Values reported for dissolved solids are residue on evaporation unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212. No appreciable in-flow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids (residue on evaporation)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate, mg./l.			
Oct. 1-10, 1950.....	62.2		15		60	14		37	220	42	44	0.2	1.0	325	0.44	55	207	26	28	553	8.1
Oct. 11-20.....	31.5		13		66	15	38	38	241	45	45	.3	.8	350	.48	30	226	28	27	583	8.1
Oct. 21-31.....	25.9		16		64	16	41	37	239	49	47	.2	.0	354	.46	25	226	30	28	600	8.1
Nov. 1-10.....	23.6		15		72	19	35	35	258	51	47	.3	1.0	376	.51	24	258	46	23	628	8.0
Nov. 11-20.....	25.3		16		68	19	37	37	308	52	47	.4	.0	422	.57	29	282	40	22	693	7.9
Nov. 21-30.....	26.3		17		96	17	36	36	326	54	46	--	.5	452	.61	32	309	42	20	719	8.3
Dec. 1-10.....	25.2		17		98	19	28	28	310	56	50	--	.5	458	.62	31	322	68	15	747	8.3
Dec. 11-20.....	29.4		17		94	19	34	34	312	58	50	--	.5	449	.61	36	312	57	19	734	8.2
Dec. 21-31.....	33.2		8.2		94	21	37	37	301	53	49	.2	.5	410	.56	37	296	50	21	696	7.8
Jan. 1-10, 1951.....	24.9		8.6		80	19	41	41	284	59	51	.2	1.5	404	.55	27	208	0	24	683	8.0
Jan. 11-20.....	25.7		8.8		80	17	49	49	294	58	51	.3	.5	a410	.56	28	270	28	28	701	7.8
Jan. 21-31.....	24.4		6.0		84	18	47	47	304	60	52	.2	.0	422	.57	28	284	34	26	711	7.9
Feb. 1-10.....	24.9		6.8		78	19	50	50	290	66	52	.3	.0	a415	.56	28	272	35	28	694	8.1
Feb. 11-19.....	37.1		9.9		80	17	45	45	288	58	50	.3	.2	a402	.55	40	270	34	27	687	8.1
Feb. 20-28.....	44.3		8.2		81	18	44	44	277	61	56	.3	.5	420	.57	50	276	49	26	703	7.9
Mar. 1-10.....	26.0		7.8		85	19	49	49	297	63	62	.2	.0	446	.61	31	280	46	27	751	7.8
Mar. 11-20.....	27.0		7.2		82	20	47	47	301	56	59	.3	.5	446	.61	33	286	40	26	717	8.1
Mar. 21-31.....	23.5		7.4		75	21	48	48	284	55	60	.3	.0	412	.56	26	274	41	27	705	8.1

a Sum of determined constituents.

TRINITY RIVER BASIN--Continued

CLEAR FORK TRINITY RIVER AT FORT WORTH, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue on evaporation)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Apr. 1-10, 1951	17.6		8.0		71	21			275	54	60	0.3	1.5		400	0.54	19	284	38	28	700	8.2
Apr. 11-20	17.1		9.0		75	21	49		285	54	53	.3	1.2		418	.57	19	274	40	28	732	8.2
Apr. 21-30	21.2		12		66	21	46		286	51	50	.2	1.5		418	.54	23	291	33	27	678	8.2
May 1-10	53.8		12		67	18	42		290	47	50	.2	1.5		396	.46	30	284	33	27	678	8.2
May 11-20	53.8		14		67	18	39		231	43	46	.3	2.0		335	.46	49	218	28	28	590	7.7
May 21-31	59.9		15		49	8.4	25		169	31	27	.3	2.5		249	.34	40	187	18	26	421	7.9
June 1-2, 7-10	44.1				55	7.5	24		193	28	22	.3	1.2		357	.35	31	168	10	24	425	7.9
June 3-6	669		16		40	4.6	14		136	17	12	.3	2.5		177	.24	320	119	7	20	293	7.8
June 11-13, 16, 19-20	390		17		48	6.9	17		168	22	16	.3	1.5		a112	.29	223	148	10	20	353	8.2
June 14-15, 17-18...	235		11		36	5.5	15		130	15	14	.4	1.8		a163	.22	103	112	6	22	282	8.0
June 21-30	34.7				57	8.2	25		202	27	25	.4	1.2		a260	.35	24	176	10	24	438	8.3
July 1-3, 9-10	156		14		51	8.3	26		181	26	28	.4	1.2		a244	.33	103	161	13	26	416	8.1
July 4-8	44.6		12		35	6.0	17		131	16	16	.4	1.2		a168	.23	20	112	5	25	296	8.0
July 11-20	5.39		13		45	6.2	22		156	24	22	.3	1.5		216	.29	3.1	138	10	26	374	7.4
July 21-31	1.72		16		44	7.2	27		159	27	26	.3	1.5		233	.32	1.1	139	9	29	395	7.6
Aug. 1-10	b.04		15		48	7.5	23		158	27	30	.3	1.2		234	.32	.0	151	21	25	405	7.7
Aug. 11-20	b.0		12		38	7.6	38		156	28	33	.3	1.5		242	.33	.0	126	0	30	439	7.7
Aug. 21, 23-31	b.0		17		41	8.7	34		175	23	34	.4	2.0		270	.36	.0	160	0	31	458	7.8
Sept. 1-5	b.0		16		46	7.9	37		183	27	36	.4	1.5		280	.38	.0	147	0	36	458	7.6
Sept. 11-20	b.0		18		44	8.1	37		172	29	38	.4	2.0		278	.38	.0	143	2	37	460	7.9
Sept. 21-30	b.0		10		44		39		172	29	38	.4	2.0		278	.38	.0	143	2	37	460	7.9
Weighted average ..	41.4		14		59	12	29		210	36	32	0.3	1.4		290	0.39	32	196	24	25	489	--

a Sum of determined constituents.

b Includes days of less than 0.05 second-foot flow.

TRINITY RIVER BASIN--Continued

CLEAR FORK TRINITY RIVER AT FORT WORTH, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	70	a 58	41	a 37	62	63	74	82	85	a 84	a 84
2	76	a 67	a 56	44	a 35	65	61	73	79	83	a 85	a 87
3	75	a 63	a 51	45	a 35	65	61	75	68	78	a 86	a 85
4	72	a 60	52	44	--	64	63	75	64	79	89	a 88
5	70	a 60	47	46	37	62	65	75	67	82	a 89	a 86
6	70	a 59	43	45	38	65	66	74	69	84	a 91	a 86
7	70	a 60	38	43	41	67	66	71	74	85	a 92	a 86
8	70	a 62	36	42	45	67	65	72	78	86	a 92	a 84
9	69	a 56	35	42	45	64	66	72	80	87	a 92	84
10	68	a 54	35	41	46	62	66	72	82	87	a 90	83
11	67	--	37	41	52	60	63	73	80	86	a 85	a 80
12	67	a 48	38	42	56	57	62	74	75	87	a 90	a 80
13	68	a 49	39	a 50	54	53	62	74	70	87	a 89	a 78
14	69	a 53	39	a 52	47	51	63	74	71	87	a 92	a 76
15	70	a 60	40	a 53	43	52	64	74	75	87	a 92	a 78
16	69	a 56	41	a 56	40	56	62	74	73	87	a 93	a 76
17	69	a 58	42	a 49	40	60	63	75	73	87	a 93	a 75
18	68	a 58	41	a 50	45	58	67	74	78	88	a 89	a 77
19	68	a 60	41	--	49	57	67	75	81	88	a 90	a 78
20	67	a 59	42	a 51	53	56	69	74	82	88	a 88	a 72
21	67	a 56	42	a 51	54	58	70	78	83	89	a 86	a 78
22	67	a 56	43	a 50	55	61	68	77	84	88	--	a 73
23	67	a 55	44	a 51	55	63	68	77	84	88	a 86	a 74
24	66	a 49	44	a 49	56	61	70	75	84	88	a 85	a 79
25	67	a 49	45	a 49	58	61	71	72	84	87	a 90	a 81
26	67	a 49	45	a 50	60	60	72	73	85	88	a 89	a 80
27	67	a 49	42	a 51	61	60	74	77	85	89	a 85	a 77
28	68	a 49	41	a 43	64	60	75	78	85	89	a 85	a 75
29	68	a 48	40	a 41	--	59	75	78	86	89	a 85	a 75
30	68	a 57	39	a 40	--	60	75	80	86	88	--	a 75
31	68	--	40	--	--	62	--	82	--	88	--	--
Average	69	56	42	47	48	60	67	75	78	86	89	80

a No thermograph record; once-daily temperature measurements taken from control dam pool.

TRINITY RIVER BASIN--Continued

TRINITY RIVER NEAR OAKWOOD, TEX.

LOCATION --At gaging station at bridge on U.S. Highways 79 and 84, 1½ miles upstream from International-Great Northern Railroad bridge, 6 miles northeast of Oakwood, Logan County, and at mile 313.

DRAINAGE AREA --12,912 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES, 1950-51. --Dissolved solids: Maximum, 1,410 ppm Sept. 7-11; minimum, 247 ppm June 11-20.

Hardness: Maximum, 249 ppm Sept. 7-11; minimum, 116 ppm Feb. 9, 14-15.

Specific conductance: Maximum daily, 2,960 microhos Sept. 8; minimum daily, 328 microhos June 23.

Water temperatures: Maximum, 87°F Aug. 4, 7; minimum, 34°F Feb. 1.

EXTREMES, 1947-51. --Dissolved solids: Maximum, 1,410 ppm Sept. 7-11, 1951; minimum, 165 ppm Feb. 11-19, 1950.

Hardness: Maximum, 271 ppm Oct. 28, 30-31, 1947; minimum, 93 ppm May 13-20, 1948.

Water temperatures: Maximum, 89°F July 31, 1948, July 19, Sept. 9, 12, 1949; minimum, freezing point Feb. 5, 1949.

REMARKS. --Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents, unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue on evaporation)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.				Non-carbonate
Oct. 1-10, 1950.....	2,965		13		49	4.7		39	156	33	42		5.5		272	0.37	2,180	142	14	37	456	8.2
Oct. 11-20.....	1,108		14		57	7.9	63	79	179	55	70		12		378	.51	1,130	174	28	44	645	8.1
Oct. 21-31.....	1,056		13		53	8.1	79	166	166	53	98		11		412	.56	1,170	166	30	51	714	8.1
Nov. 1-10.....	1,100		12		52	7.3	84	156	156	61	98		15		416	.57	1,240	160	32	53	725	7.9
Nov. 11-20.....	1,303		13		50	7.3	90	156	156	52	96		12		411	.56	1,450	155	27	53	687	7.9
Nov. 21-30.....	1,119		12		52	7.4	90	148	148	56	118		11		450	.61	1,360	160	38	55	749	8.0
Dec. 1-10.....	684		11		58	7.6	106	162	162	63	142		9.0		504	.69	931	176	43	57	864	7.9
Dec. 11-20.....	492		11		63	11	148	181	181	78	198		19		649	.88	862	202	54	61	1,130	7.5
Dec. 21-31, 1951.....	634		11		64	11	156	154	154	106	190		48		681	.93	1,170	204	78	62	1,170	7.0
Jan. 1-10, 1952.....	966		12		56	9.2	142	156	156	94	174		24		615	.84	940	182	54	63	1,050	7.8
Jan. 11-20.....	1,354		11		53	9.0	166	191	191	96	179		33		643	.87	2,350	174	18	66	1,120	7.6
Jan. 21-31.....	520		12		53	9.8	176	191	191	97	191		34		677	.92	1,951	172	16	69	1,160	7.7
Feb. 1-2, 6-7, 17, 19.....	897		12		58	9.0	197	144	144	120	240		36		743	1.01	1,800	182	64	70	1,300	7.0
Feb. 3-5, 10-13, 16.....	741		11		42	6.8	129	105	105	78	165		18		523	.71	1,050	133	47	68	897	7.3
Feb. 8, 18.....	982		13		62	7.0	316	127	103	445			39		1,050	1.43	2,780	184	80	79	1,850	7.3
Feb. 9, 14-15.....	909	9.9			39	4.5	50	113	46	56			7.5		270	.37	663	116	23	49	460	7.5
Feb. 20-21.....	6,290	9.5			52	6.1	144	144	144	56	200		11		586	.80	9,950	154	36	67	1,000	7.4
Feb. 22-28.....	5,301		12		43	5.2	43	110	110	56	48		8.2		289	.39	4,140	129	39	42	467	7.3

a Sum of determined constituents.

Mar. 1-10.....	1,180	73	9.4	151	180	105	191	17	874	.82	2,150	220	65	60	1,170	7.9
Mar. 11-20.....	586	74	9.4	126	182	106	181	22	921	.84	1,380	223	82	55	1,190	8.0
Mar. 21-31.....	869	55	9.4	178	182	94	229	21	878	.92	1,170	176	51	69	1,210	7.8
Apr. 1-10.....	926	52	10	162	134	85	221	16	630	.86	1,580	170	60	67	1,140	7.9
Apr. 11-20.....	521	57	7.0	121	140	86	149	14	544	.74	765	171	49	61	957	7.6
Apr. 21-30.....	521	56	5.2	103	143	80	124	12	466	.63	1,410	161	44	58	830	7.3
May 1-10.....	2,007	52	7.0	87	142	68	106	13	417	.57	2,260	158	42	54	745	7.6
May 11-20.....	1,829	52	5.5	85	142	68	97	15	430	.58	2,120	152	36	55	723	7.8
May 21-31.....	1,745	55	6.0	78	144	72	91	11	424	.58	2,000	162	44	51	709	7.6
June 1-10.....	5,716	50	4.5	51	142	47	60	5.1	309	.42	4,770	144	27	44	523	7.5
June 11-20.....	12,880	44	3.8	35	134	35	38	3.0	247	.34	8,590	125	16	38	416	7.4
June 21-30.....	11,420	44	5.2	36	162	33	28	3.0	248	.34	7,650	131	0	37	407	7.8
July 1-10.....	1,987	53	6.8	51	184	50	63	4.5	352	.48	1,890	168	33	40	584	7.8
July 11-20.....	1,182	53	7.0	55	154	52	69	5.0	354	.48	1,130	161	33	43	591	8.0
July 21-25, 29.....	536	58	7.0	91	175	64	108	11	450	.61	651	174	30	53	765	8.1
July 26-28, 30-31....	444	65	7.1	156	187	70	210	11	646	.68	774	191	38	64	1,130	8.2
Aug. 1-10.....	405	84	7.9	159	178	108	190	18	688	.91	730	192	46	84	1,160	8.0
Aug. 11-20.....	366	72	8.2	233	176	129	305	23	970	1.24	899	214	70	70	1,570	8.1
Aug. 21-31.....	446	60	6.7	154	165	113	172	22	669	.90	806	177	42	65	1,130	8.0
Sept. 1-6.....	378	58	7.8	160	146	106	195	21	658	.91	673	176	55	66	1,140	7.7
Sept. 7-11.....	347	80	12	432	181	98	660	30	1,410	1.92	1,320	249	117	79	2,550	7.6
Sept. 12-15, 19.....	945	62	10	273	151	94	392	19	950	1.29	2,420	196	72	75	1,720	7.5
Sept. 16-18, 20.....	1,687	41	5.1	111	127	52	140	11	452	.61	2,060	124	20	66	801	7.7
Sept. 21-30.....	1,389	58	7.4	168	139	90	225	20	670	.91	704	175	61	68	1,160	7.9
Weighted average....	1,863	50	6.0	75	149	55	89	9.6	384	0.52	1,930	150	28	52	855	--

a Sum of determined constituents.

TRINITY RIVER BASIN--Continued

TRINITY RIVER NEAR OAKWOOD, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 [Once-daily temperature measurement at approximately 7:30 a. m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	70	57	--	34	57	56	62	78	82	85	85
2	74	58	--	53	42	57	61	62	79	83	85	84
3	73	59	47	50	45	58	62	62	73	80	84	85
4	70	59	42	41	43	54	57	61	75	80	87	85
5	69	58	42	42	44	60	62	68	79	81	85	83
6	69	52	42	53	41	60	64	68	73	82	85	85
7	72	60	40	54	42	57	63	69	70	81	87	84
8	70	62	42	54	42	57	63	62	72	82	83	84
9	69	64	41	55	43	58	61	69	75	80	84	85
10	70	--	52	52	43	58	57	70	75	80	84	80
11	68	--	41	53	52	57	58	69	73	80	84	81
12	70	57	43	--	54	56	57	68	75	80	83	80
13	69	54	44	54	56	50	--	70	74	81	85	74
14	69	55	44	40	58	52	--	68	75	80	85	75
15	69	58	42	53	56	52	60	70	74	81	85	71
16	67	58	41	41	55	56	60	70	74	--	85	72
17	69	55	43	57	--	60	60	70	75	82	85	69
18	70	57	42	57	52	58	57	69	76	85	84	71
19	70	63	45	--	55	55	58	73	75	84	85	71
20	69	60	42	58	49	54	57	73	77	84	83	71
21	69	54	42	56	55	56	60	70	--	85	84	76
22	68	58	44	57	57	57	62	70	78	85	85	72
23	68	57	45	51	57	60	59	72	79	85	84	72
24	67	57	41	50	56	57	59	72	80	84	85	76
25	68	45	42	48	58	60	67	70	79	85	84	76
26	62	47	42	45	59	58	56	72	75	85	84	82
27	70	49	43	46	59	59	57	73	78	84	84	77
28	70	45	40	--	60	55	56	70	79	82	86	76
29	71	50	41	--	--	57	56	71	79	85	85	74
30	78	54	43	57	--	57	57	72	78	82	84	73
31	79	--	44	43	--	57	--	77	--	85	--	--
Average	70	56	43	51	51	57	59	69	76	82	85	78

TRINITY RIVER BASIN--Continued
TRINITY RIVER NEAR MOSS BLUFF, TEX.

LOCATION --At Devers Pumping Plant Number One, one mile west of Moss Bluff, Liberty County.
RECORDS AVAILABLE --Chemical analyses: Short periods during the summers of 1946 to 1949, daily records October 1949 to September 1951.
EXTREMES: 1950-51 --Dissolved solids: Maximum, 915 ppm Sept. 25-27; minimum, 253 ppm June 11-20, June 21-30.

Sardness: Maximum, 228 ppm Mar. 11-20; minimum, 110 ppm Apr. 1-10.
Sardness: Maximum daily, 900 microhos Sept. 25-27, 1951; minimum, 266 microhos June 27, 1949.

EXTREMES: 1949-51 --Dissolved solids: Maximum, 915 ppm Sept. 25-27, 1951; minimum, 253 ppm June 11-20, June 21-30.
Total hardness: 228 ppm Mar. 11-20, 1951.

REMARKS --Values reported for dissolved solids are residual, unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Tem- pera- ture (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180° C) Parts per mil- lion	Tons per acre- foot	Calcium, mg. per nestum day	Hardness as CaCO ₃ Non- mag- nesium ate	Per- cent so- lids	Specific conduct- ance (micro- hos at 25° C)	pH
Oct. 1, 3-10, 1950..		22																		
Oct. 11-20.....		20		52	5.7	31	159	30	40	3.5				262	0.36	153	22	30	435	7.5
Oct. 21-31.....		15		55	6.4	38	167	31	52	4.0				302	.41	164	26	34	488	7.6
Nov. 1-10.....		6.0		50	7.4	51	160	37	66	4.0				326	.44	156	24	41	548	7.4
Nov. 11-20.....		6.2		35	7.6	85	116	43	114	3.0				366	.50	113	24	61	651	7.8
Nov. 21-30.....		3.2		54	8.1	86	158	48	121	6.5				434	.59	168	38	53	759	7.9
Dec. 1-10.....		2.8		44	7.6	84	130	46	117	6.0				396	.54	141	34	51	698	7.7
Dec. 11-20.....		2.6		43	11	76	133	47	110	6.3				366	.50	152	44	52	680	7.2
Dec. 21-31.....		1.6		41	13	76	132	50	112	4.5				373	.51	156	48	51	689	7.2
Jan. 1-10.....		4.2		42	9.6	92	114	48	140	4.0				398	.54	144	51	58	747	7.0
Jan. 11, 14, 18-23..		6.8		59	9.2	121	122	53	171	2.2				476	.68	136	36	66	870	7.3
Feb. 4-7.....		11		41	5.9	52	119	29	76	8.7				536	.86	185	56	65	1,130	7.4
Feb. 11-19.....		6.8		48	6.9	106	126	62	146	4.8				294	.40	137	29	47	506	7.3
Feb. 20-23, 26-28..		12		43	6.9	83	108	62	173	8.0				408	.53	145	43	61	806	7.5
Mar. 1-10.....		13		58	7.5	58	141	67	173	6.5				387	.50	148	56	54	694	7.7
Mar. 11-20.....		23		62	18	38	154	65	81	4.0				378	.51	170	55	42	806	7.6
Mar. 21-27.....		6.6		35	7.9	93	77	73	128	2.8				392	.53	228	102	26	659	7.7
Mar. 28-31.....		13		34	9.0	29	81	39	53	4.0				272	.37	120	57	63	727	7.1
Apr. 1-10.....		12		32	7.2	50	84	41	74	4.0				299	.41	110	40	50	489	7.5
Apr. 11-20.....		8.4		37	6.3	106	98	59	145	3.5				418	.57	118	38	66	791	6.9
Apr. 21-30.....		5.6		38	6.9	127	109	60	174	4.5				a 469	.64	124	34	69	895	6.9
May 1-3, 9-10.....		12		45	6.2	107	122	64	142	5.4				a 441	.60	138	38	63	820	7.2
May 4-8.....		12		60	8.2	175	161	95	228	13				870	.91	183	51	67	1,230	7.1
May 11-14.....		15		57	9.2	164	148	77	231	12				644	.68	180	58	66	1,190	7.7
May 15-20.....		16		49	5.8	80	134	59	100	11				a 387	.53	146	36	54	685	7.6
May 21-22, 24-31...		16		51	6.3	74	149	52	93	8.8				a 374	.51	153	31	51	665	7.6

a Sum of determined constituents.

TRINITY RIVER BASIN--Continued
TRINITY RIVER NEAR MOSS BLUFF, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (Fe)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
June 1-5, 1951			14		65	8.0	121		175	130	114		22		565	0.77		195	52	57	923	7.5
June 6-10			14		46	5.2	58		140	52	62		9.5		2316	.43		136	22	46	532	7.6
June 11-20			16		44	4.4	33		135	34	35		5.0		253	.34		128	16	36	430	7.5
June 21-30			18		47	4.3	30		140	36	32		3.5		253	.34		135	20	32	411	7.4
July 1-10			16		53	4.8	37		168	32	41		4.0		289	.39		152	14	35	481	7.3
July 11-20			17		58	5.5	61		173	48	73		5.0		382	.52		167	25	44	632	8.0
July 21-31			15		54	5.5	48		163	40	59		3.5		322	.44		157	24	40	544	7.5
Aug. 1-2, 4-10			6.2		46	5.5	65		143	38	85		2.0		334	.45		138	20	51	596	7.6
Aug. 11-19			11		42	7.0	80		123	51	108		2.2		369	.50		134	33	57	678	7.7
Aug. 21-31			15		58	6.4	125		164	48	182		1.2		538	.73		171	36	61	950	7.9
Sept. 1-10			5.0		39	5.6	153		118	93	198		2.5		561	.76		120	24	73	1,090	7.4
Sept. 12-19			11		53	6.0	157		147	72	214		1.5		616	.84		136	36	69	1,000	7.3
Sept. 21-24, 28-29			15		45	5.9	151		122	46	219		8.8		553	.75		137	37	71	1,010	7.3
Sept. 25-27			15		59	7.0	274		128	65	418		13		913	1.24		176	71	77	1,650	7.4

a Sum of determined constituents.

TRINITY RIVER BASIN--Continued
OLD RIVER NEAR COVE, TEX.

LOCATION.--At Barber Hill Pumping Plant, 5 miles northwest of Cove, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during the summers of 1946 to 1949, daily records October 1949 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 2,320 ppm Aug. 21, 23-31; minimum, 242 ppm Feb. 1-10.
Hardness: Maximum, 534 ppm Aug. 21, 23-31; minimum, 114 ppm Feb. 1-10.
Specific conductance: Maximum daily, 5,150 micromhos Aug. 30; minimum daily, 401 micromhos Feb. 13.
EXTREMES, 1949-51.--Dissolved solids: Maximum, 2,320 ppm Aug. 21, 23-31, 1951; minimum, 179 ppm Mar. 11-20, 1950.
Hardness: Maximum, 534 ppm Aug. 21, 23-31, 1951; minimum, 89 ppm Feb. 1-7, 9-10, 12-15, 18-23, 26-28, 1950.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation unless noted otherwise and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. This station was previously identified as Trinity River near Cove, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temp-erature (° F)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (residue at 180 °C)			Hardness as CaCO ₃		Per-cent sodium carbonate	Specific conductance (micro-mhos at 25 °C)	pH	
															Parts per mil-lion	Tons per acre-foot	Tons per day	Calcium, mag-nesium	Non-carbonate				
Oct. 1-2, 4-10, 1950			13			49	5.1	38	162	26	45		2.0			270	0.37		143	10	36	440	8.3
Oct. 12, 14-20.....			14			52	6.9	46	173	32	57		1.8			304	.41		156	16	39	524	7.6
Oct. 21-31.....			13			50	6.7	53	163	32	58		2.0			a 305	.41		152	2	43	520	7.9
Nov. 1-10.....			9.4			49	6.4	45	156	33	58		1.5			302	.41		149	19	40	521	7.9
Nov. 11-12, 14-20 ..			9.9			53	7.5	58	175	32	77		3.2			346	.47		163	20	43	581	7.8
Nov. 21-30.....			14			54	7.8	57	180	31	77		1.2			336	.46		166	19	42	576	7.8
Dec. 1-10.....			15			54	8.1	58	179	32	80		1.5			352	.48		168	22	43	590	7.9
Dec. 12-20.....			8.2			53	7.6	65	175	35	88		1.2			347	.47		163	20	47	605	7.7
Dec. 21-31.....			14			50	7.4	53	164	30	74		1.5			312	.42		155	21	43	542	7.6
Jan. 1-10, 1951.....			13			47	6.1	52	145	37	69		1.5			302	.41		142	24	44	512	7.4
Jan. 11-20.....			14			43	6.4	41	110	50	57		1.2			278	.38		134	43	40	458	7.3
Jan. 21-31.....			9.2			40	5.9	40	104	49	52		2.2			264	.36		124	39	41	440	7.8
Feb. 1-10.....			1.4			36	5.8	39	98	48	48		1.8			242	.33		114	33	43	420	7.7
Feb. 11-19.....			2.8			38	6.0	41	104	50	50		1.8			250	.34		119	34	43	429	7.7
Feb. 20-26.....			8.6			43	5.5	40	112	51	50		1.2			237	.35		130	38	40	457	7.9
Mar. 1-10.....			13			55	6.8	62	149	42	95		1.5			358	.49		165	43	45	641	7.9
Mar. 11-19.....			14			57	7.1	66	160	42	98		1.2			370	.50		171	40	45	662	7.9
Mar. 21, 23-31.....			12			50	5.9	70	138	46	96		3.5			a 353	.46		150	36	50	640	7.6
Apr. 1-12.....			6.8			45	4.8	61	118	46	84		3.0			340	.46		132	36	50	564	7.3
Apr. 13-20.....			9.2			82	31	356	134	126	615		3.5			1,290	1.75		322	222	70	2,370	7.6
Apr. 21, 23-24.....			11			74	34	351	130	133	595		5.0			1,270	1.73		324	218	70	2,350	7.8
Apr. 25, 27-28, 30 ..			9.6			56	15	173	133	80	270		6.1			677	.92		201	92	65	1,280	7.7
May 1-14.....			14			47	8.5	125	140	69	162		12			512	.70		152	38	64	925	7.5
May 15-20.....			10			49	6.4	71	151	56	80		11			366	.50		149	26	51	638	7.6
May 21-30.....			16			50	6.8	68	151	58	77		10			362	.49		153	30	49	635	7.4

a Sum of determined constituents.

TRINITY RIVER BASIN--Continued
OLD RIVER NEAR COVE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Tem- perature (° F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nes- ium (Mg)	Sodium (Na)		Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Per- cent sodium	Specific conduct- ance (micro- mhos at 25° C)	pH
							(Na)	(Mg)								Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, mag- nesium	Non-carbon- ate			
June 1-6, 1951.....			18		75	33	326		166	132	530		13		1,210	1.65		322	186	69	2,220	8.0	
June 7-20.....			22		48	5.9	46		142	42	58		4.2		308	.42		144	28	41	512	7.7	
June 21-30.....			20		50	5.5	35		160	34	40		1.5		269	.37		147	16	34	446	7.8	
July 1-2, 5-8, 10-15.....			23		56	6.0	36		177	30	46		3.0		306	.42		164	19	33	497	8.0	
July 16-23, 26-31.....			19		50	14	129		161	50	196		3.0		567	.77		182	50	61	997	7.7	
Aug. 1-2.....			17		54	21	209		155	70	334		4.5		850	1.16		221	94	67	1,470	8.0	
Aug. 3-10.....			11		68	49	439		147	127	760		2.5		1,530	2.08		371	250	72	2,830	7.5	
Aug. 11-20, 22.....			12		74	47	448		169	135	760		1.0		1,560	2.12		378	240	72	2,910	7.6	
Aug. 21, 23-31.....			12		102	68	676		135	218	1,180		1.0		2,320	3.16		534	424	73	4,260	7.4	
Sept. 1-10.....			12		93	62	609		144	186	1,060		1.0		2,090	2.84		487	369	73	3,640	7.6	
Sept. 11-17.....			13		87	55	534		130	164	940		2.5		1,860	2.53		443	336	72	3,490	7.5	
Sept. 18-30.....			14		58	16	181		125	55	314		.0		770	1.05		210	108	65	1,530	7.5	

TRINITY RIVER BASIN--Continued
TRINITY RIVER AT ANAHUAC, TEX.

LOCATION.--At Lone Star Pumping Plant in Anahuac, Chambers County.

RECORDS AVAILABLE.--Chemical analyses: Short periods during the summers of 1946 to 1949, daily records December 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 9,900 ppm May 1; minimum, 247 ppm June 21-30.

Hardness: Maximum, 2,040 ppm May 1; minimum, 88 ppm Sept. 28-30.

Specific conductance: Maximum daily, 16,500 micromhos May 1; minimum daily, 356 micromhos June 28.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 9,900 ppm May 1, 1951; minimum, 184 ppm Mar. 1-10, 1950.

Hardness: Maximum, 2,040 ppm May 1, 1951; minimum, 52 ppm Dec. 25-31, 1949.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation unless noted otherwise and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples for period of record available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (Fe)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Boiling point (°F)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-7, 1950.....			14		48	4.8		32	147	25	44		2.0		250	0.34		140	19	34	416	8.3
Oct. 8-20.....			11		42	5.6	74	74	135	28	104		2.2		346	.47		128	18	56	598	8.3
Oct. 21-31.....			13		50	7.0	64	64	152	32	94		3.5		357	.49		154	30	48	624	7.6
Nov. 1-2, 4-10.....			5.6		42	6.7	95	118	118	48	141		3.0		422	.57		141	44	59	762	7.4
Nov. 3, 11-12.....			2.9		36	6.4	75	100	100	42	107		2.5		336	.46		116	34	58	611	7.3
Nov. 13, 16, 18-19.....			2.6		38	12	133	113	113	61	185		4.0		516	.70		144	52	67	950	7.3
Nov. 14-15.....			11		120	182	1,570	136	414	2,780			--		5,140	6.99		1,050	936	77	8,730	7.5
Nov. 17-20.....			7.0		59	41		132	115	570			6.1		1,200	1.53		316	208	70	2,280	7.5
Nov. 21-23, 25, 27-28, 30.....			5.1		50	19	176	132	74	281			4.5		696	.95		203	95	65	1,280	7.6
Dec. 1-3, 5-6, 13, 15.....			3.3		46	12	118	143	56	171			4.5		496	.68		164	48	61	908	7.3
Dec. 7-12, 14, 16-20.....			5.6		50	19	169	148	58	273			3.0		679	.92		203	82	64	1,220	7.4
Dec. 21-22, 25, 31.....			6.1		44	13	147	136	46	228			3.5		580	.79		184	52	66	1,030	7.9
Dec. 23, 26-30.....			6.8		52	22	220	148	86	359			2.5		841	1.14		220	98	68	1,480	7.9
Jan. 2-4, 1951.....			3.4		56	38	352	136	113	588			4.5		1,220	1.66		206	184	72	2,210	7.8
Jan. 5-10.....			4.2		45	13	167	129	60	253			4.0		633	.86		166	60	69	1,120	7.8
Jan. 11-20.....			6.8		46	17	173	135	49	283			1.0		682	.93		185	74	67	1,200	7.8
Jan. 21-29.....			9.2		53	17	160	141	58	262			6.0		682	.93		202	86	63	1,190	7.9
Feb. 2-10.....			8.8		49	19	172	122	46	301			1.2		718	.98		200	100	65	1,260	7.9
Feb. 11-19.....			7.5		47	19	170	122	46	285			1.5		674	.92		196	96	65	1,250	7.8
Feb. 20-24.....			11		48	18	177	116	46	307			3.5		733	1.00		194	99	66	1,290	7.6
Feb. 25-26, 28.....			11		45	11	120	111	49	192			7.2		526	.72		158	62	62	932	7.5

TRINITY RIVER BASIN--Continued
TRINITY RIVER AT ANAHUAC, TEX.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Calcium, mg-nestum	Non-carbonate			
Mar. 1-2, 5-7, 9-10, 1951.....			12		48	11	138		122	46	221		6.0	587	0.80	185	65	64	1,040	7.3
Mar. 3, 17-18, 25.....			10		58	7.9	96		116	63	96		6.8	376	51	152	58	50	857	7.3
Mar. 11-14, 19-20.....			11		58	16	166		132	57	281		3.0	724	98	206	98	64	1,250	7.3
Mar. 21-24.....			12		62	14	128		144	73	209		3.0	631	86	212	94	57	1,080	7.5
Mar. 26, 29-30.....			8.8		49	22	208		110	72	353		3.0	865	1.18	213	123	68	1,490	7.5
Apr. 1-4, 9-10.....			10		45	15	160		110	52	266		3.0	657	.89	174	84	67	1,160	7.1
Apr. 5-8, 12-13.....			8.6		36	6.7	73		91	47	106		4.5	368	.50	118	43	58	614	7.1
Apr. 11, 14-20.....			8.0		51	17	172		119	55	283		3.5	738	1.00	187	100	65	1,270	7.4
Apr. 21-22, 24, 26-27.....			9.2		52	18	191		124	44	334		1.0	786	1.07	204	102	67	1,380	7.3
Apr. 23, 28.....			13		59	48	425		121	105	750		2.0	1,460	1.99	344	246	73	2,860	7.4
Apr. 25, 29-30.....			6.2		124	266	2,090		108	559	3,740		--	6,840	9.30	1,400	1,310	76	12,000	7.2
May 1.....			14		191	381	3,020		129	803	5,430		5.0	9,900	13.48	2,040	1,940	76	16,500	7.9
May 2-3, 13.....			12		76	86	795		127	236	1,360		5.0	2,630	3.58	543	439	76	4,740	7.8
May 6, 12, 17-21.....			13		150	9.2	116		144	64	160		7.5	512	.70	163	45	61	896	7.9
May 4-7, 9-11, 23-24.....			12		90	21	247		141	65	398		5.0	1,068	1.18	346	36	42	1,210	7.8
May 14-16, 25.....			14		61	42	400		126	122	860		15	1,468	2.00	324	222	73	2,100	7.8
May 22, 28-31.....			19		64	54	490		142	163	820		5.0	1,690	2.30	382	266	74	3,110	7.8
June 1-3, 12.....			21		52	8.8	102		144	58	144		6.9	480	.65	166	48	57	838	7.8
June 4-6.....			17		50	15	178		135	76	268		6.6	719	.98	186	76	67	1,260	7.7
June 7-8.....			19		94	110	981		141	289	1,670		5.0	3,220	4.38	687	572	75	5,860	7.9
June 9-10.....			18		69	36	349		164	180	535		4.0	1,270	1.73	320	186	70	2,340	7.9
June 11, 13-20.....			17		44	5.2	40		132	38	47		5.5	1,263	.36	131	23	40	454	7.4
June 21-30.....			16		44	5.9	30		130	39	34		4.0	247	.34	134	28	32	407	7.4
July 1-10.....			22		48	5.6	36		160	31	39		2.8	292	.40	143	12	35	455	8.0
July 11-12, 14-20.....			19		62	6.4	60		180	44	80		6.9	398	.54	181	34	42	641	7.6
July 21-26.....			20		58	8.6	79		165	53	111		7.5	442	.60	180	45	49	703	8.0
July 27, 29-30.....			22		64	2.5	245		151	97	400		8.2	973	1.32	262	139	67	1,730	7.8
July 31.....			14		82	88	718		127	198	1,280		15	2,460	3.35	566	462	73	4,440	8.1
Aug. 1, 3-5.....			20		63	20	189		157	182	308		5.0	779	1.08	239	110	63	1,820	7.8
Aug. 7-8, 12.....			14		61	38	357		126	103	618		2.5	1,260	1.71	308	265	72	2,350	7.6
Aug. 9, 13.....			19		64	88	772		130	213	1,360		5.0	2,660	3.54	572	405	73	4,750	8.1
Aug. 16-20.....			16		118	210	1,770		107	430	3,150		--	3,770	7.63	1,181	1,070	77	10,700	7.2
Aug. 21-31.....			132		132	247	2,050		103	321	3,640		--	6,640	9.03	1,340	1,260	77	11,600	7.4

a Sum of determined constituents.

Sept. 1-5, 7-13.....	11	159	308	2,320	105	629	4,540	--	8,220	11.18	1,680	1,580	77	14,000	7.6
Sept. 14.....	22	132	147	1,340	116	373	2,360	--	4,430	6.08	934	839	76	7,860	6.6
Sept. 15.....	1	54	35	403	114	131	712	3.0	1,530	1.58	364	250	14	2,580	7.5
Sept. 22-27.....	12	24	18	145	117	13	235	1.5	272	.58	147	56	53	1,020	7.5
Sept. 28-30.....	12	24	6.8	51	77	13	85	1.5	268	.36	88	25	56	447	7.5

	Oct. 14, 1950	Oct. 27, 1950	Nov. 10, 1950	Nov. 24, 1950	Dec. 6, 1950	
2 Bottom	7,260	5,150	1,600	4,030	9,660	3,150
3 Top	7,010	5,070	1,370	378	1,140	1,690
3 Bottom	7,030	--	15,900	1,130	8,160	2,620
4 Shallow	2,100	--	1,610	1,480	1,160	2,428
5 Shallow	--	--	1,540	385	240	1,450
6 Top	2,860	658	4,600	4,810	4,910	1,150
6 Bottom	7,030	13,300	701	1,390	6,880	2,130
7 Top	7,130	13,200	15,900	4,250	21,200	7,720
7 Bottom	8,280	4,720	1,500	16,400	--	--
	--	2,270	15,800	4,920	19,000	6,820
		11,800	5,620	7,750		
	Oct. 18, 1950	Oct. 30, 1950	Nov. 14, 1950	Nov. 27, 1950	Dec. 9, 1950	
1 Top	14,100	12,600	20,200	20,900	20,800	7,300
1 Bottom	14,100	4,320	20,200	7,420	21,080	7,390
2 Top	902	4,500	1,540	7,450	1,080	232
2 Bottom	4,150	1,490	16,200	2,170	1,320	356
3 Top	540	4,860	1,460	13,600	1,700	760
3 Bottom	3,700	1,510	1,500	14,900	1,400	6,690
4 Shallow	2,550	1,580	1,500	19,900	21,500	7,690
5 Shallow	8,480	1,560	16,100	14,600	18,900	2,300
6 Top	598	5,240	1,500	4,550	7,500	6,660
6 Bottom	2,360	368	20,900	1,410	18,900	7,300
7 Top	2,390	134	16,100	15,200	20,600	2,060
7 Bottom	2,630	708	21,716	15,400	6,960	6,580
	2,630	4,650	14,200	7,750	18,900	
		4,020		7,750		
	Dec. 12, 1950	Dec. 30, 1950	Jan. 16, 1951	Feb. 1, 1951	Feb. 20, 1951	
1 Top	21,100	19,200	14,900	17,100	16,300	5,380
1 Bottom	21,100	6,800	17,800	5,820	16,500	5,380
2 Top	1,350	7,560	17,819	17,200	2,790	740
2 Bottom	19,500	300	155	1,190	10,500	3,300
3 Top	3,200	1,130	--	16,200	5,480	1,640
3 Bottom	850	250	577	1,680	5,660	6,765
4 Shallow	19,500	1,120	--	17,100	20,300	6,850
5 Shallow	16,700	210	--	18,100	2,660	8,970
6 Top	20,800	966	2,200	6,710	10,300	3,200
6 Bottom	19,500	1,120	17,500	5,970	18,500	6,140
7 Top	20,800	248	2,030	510	26,800	9,280
7 Bottom	11,100	245	14,600	4,860	26,800	9,280
	7,330	230	12,000	6,740	26,800	
			21,900	7,720		

	Dec. 22, 1950	Jan. 8, 1951	Jan. 26, 1951	Feb. 13, 1951	Mar. 2, 1951	
6 Bottom	18,800	17,500	22,300	22,900	26,400	9,460
7 Top	948	18,200	16,400	23,200	16,300	5,680
7 Bottom	20,600	18,700	19,400	25,100	24,300	8,580
	Dec. 27, 1950	Jan. 12, 1951	Jan. 29, 1951	Feb. 17, 1951	Mar. 6, 1951	
1 Top	19,400	14,700	17,100	16,400	16,300	5,400
1 Bottom	19,300	16,000	17,100	16,600	17,900	6,070
2 Top	3,410	2,110	2,880	2,880	2,651	111
2 Bottom	6,900	2,750	9,220	8,250	1,220	262
3 Top	19,100	6,659	11,900	8,250	1,220	190
3 Bottom	1,120	245	17,800	2,830	1,020	180
4 Top	1,140	255	18,000	6,120	755	2,580
4 Bottom	1,110	245	18,000	6,180	8,330	3,520
5 Shallow	1,130	245	1,500	355	10,500	3,320
5 Bottom	1,130	245	19,300	6,660	11,100	3,520
6 Top	1,120	245	19,300	3,560	10,900	3,480
6 Bottom	1,120	245	19,400	2,680	15,700	5,210
7 Top	1,120	245	16,600	25,000	3,950	3,770
7 Bottom	1,120	248	19,300	25,200	26,700	5,510
	Mar. 9, 1951	Mar. 30, 1951	Apr. 17, 1951	May 4, 1951	May 22, 1951	
1 Top	17,900	19,800	19,700	19,900	20,800	7,110
1 Bottom	18,000	5,980	20,700	6,710	20,900	7,110
2 Top	662	588	18,500	6,710	19,000	6,610
2 Bottom	985	184	18,500	2,355	19,800	6,610
3 Top	624	587	18,500	6,270	12,100	3,870
3 Bottom	624	539	18,700	1,630	19,600	6,520
4 Shallow	3,160	539	18,800	900	19,500	6,240
4 Bottom	3,160	72	18,800	3,330	2,950	780
5 Shallow	627	72	18,100	13,600	6,570	780
5 Bottom	23,000	6,020	18,700	3,410	17,300	5,750
6 Top	24,200	6,070	18,300	19,400	15,100	4,940
6 Bottom	8,430	5,280	18,300	19,400	15,100	4,940
7 Top	24,500	5,800	17,100	19,500	15,700	5,110
7 Bottom						
	Mar. 13, 1951	Apr. 3, 1951	Apr. 20, 1951	May 8, 1951	May 25, 1951	
1 Top	16,400	19,900	20,000	20,100	20,800	7,010
1 Bottom	17,700	19,900	21,100	21,300	20,900	7,060
2 Top	628	532	514	1,810	6,230	1,790
2 Bottom	648	594	505	1,810	18,700	6,290

	Mar. 27, 1951	Apr. 13, 1951	Apr. 30, 1951	May 18, 1951	June 5, 1951	
1 Top	18,200	6,000	19,800	20,500	6,930	7,030
1 Bottom	18,100	6,020	19,800	20,500	6,980	7,100
2 Top	17,300	5,780	19,000	20,100	6,860	7,000
2 Bottom	17,200	5,780	19,000	20,100	6,860	7,000
3 Top	19,100	6,370	19,443	2,550	510	17,000
3 Bottom	19,200	6,420	19,443	2,550	510	17,000
4 Top	19,200	6,420	19,443	2,550	510	17,000
4 Bottom	19,200	6,420	19,443	2,550	510	17,000
5 Shallow	4,320	1,190	4,989	15,200	4,940	708
5 Bottom	4,320	1,190	4,989	15,200	4,940	708
6 Top	19,300	6,470	19,200	16,000	5,260	686
6 Bottom	19,300	6,470	19,200	16,000	5,260	686
7 Top	18,200	6,090	12,700	15,000	4,860	671
7 Bottom	18,200	6,090	12,700	15,000	4,860	671
8 Top	13,400	1,280	9,680	14,900	669	700
8 Bottom	13,400	1,280	9,680	14,900	669	700
9 Top	14,900	4,940	--	19,600	6,520	696
9 Bottom	14,900	4,940	--	19,600	6,520	696
			July 14, 1951	July 31, 1951		Aug. 17, 1951
1 Top	7,190	2,130	14,300	16,000	5,230	22,400
1 Bottom	7,240	2,140	15,300	16,000	5,280	23,300
2 Top	686	108	495	580	88	4,410
2 Bottom	686	108	495	580	88	4,410
3 Top	747	702	333	52	86	4,510
3 Bottom	747	702	333	52	86	4,510
4 Top	20,800	7,000	493	58	168	4,660
4 Bottom	20,800	7,000	493	58	168	4,660
5 Shallow	694	102	483	684	88	6,480
5 Bottom	694	102	483	684	88	6,480
6 Top	413	31	523	688	87	10,100
6 Bottom	413	31	523	688	87	10,100
7 Top	745	106	1,200	3,260	89	6,410
7 Bottom	745	106	1,200	3,260	89	6,410
8 Top	688	102	2,860	709	90	10,200
8 Bottom	688	102	2,860	709	90	10,200
9 Top	--	--	8,250	3,310	890	10,400
9 Bottom	--	--	8,250	3,310	890	10,400
			July 17, 1951	Aug. 3, 1951		Aug. 20, 1951
1 Top	7,220	2,140	13,200	13,000	4,110	24,400
1 Bottom	7,220	2,140	13,200	13,000	4,110	24,400
2 Top	416	32	371	710	82	2,800
2 Bottom	416	32	371	710	82	2,800
3 Top	452	54	616	746	100	2,860
3 Bottom	452	54	616	746	100	2,860
4 Top	454	43	335	788	120	2,900
4 Bottom	454	43	335	788	120	2,900
5 Shallow	439	44	6,980	687	90	6,430
5 Bottom	439	44	6,980	687	90	6,430
6 Top	491	33	1,216	710	94	10,100
6 Bottom	491	33	1,216	710	94	10,100
7 Top	398	28	6,910	675	92	2,820
7 Bottom	398	28	6,910	675	92	2,820
8 Top	476	42	9,940	713	90	12,400
8 Bottom	476	42	9,940	713	90	12,400
9 Top	398	28	2,850	697	90	3,540
9 Bottom	398	28	2,850	697	90	3,540
			6,480	703	91	12,800
						4,040

SAN JACINTO RIVER BASIN

SAN JACINTO RIVER NEAR HUFFMAN, TEX.

LOCATION.--At Sheldon Pumping Plant of City of Houston, 5½ miles downstream from Huffman gaging station which is at Beaumont, Sour Lake & Western Railway bridge, 0.4 mile downstream from confluence of East and West Forks, and 3.4 miles southwest of Huffman, Harris County.

DRAINAGE AREA.--2,791 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1945 to July 1951.

Water temperatures: January 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 394 ppm Nov. 21-30; minimum, 174 ppm June 12, 15-16.

Hardness: Maximum, 91 ppm June 1-10; minimum, 26 ppm Sept. 23-24.

Specific conductance: Maximum daily, 890 micromhos Feb. 17; minimum daily, 160 micromhos Sept. 24.

Water temperatures: Maximum, 88°F July 19, Aug. 7; minimum, freezing point Feb. 2.

EXTREMES, 1945-51.--Dissolved solids: Maximum, 2,210 ppm Oct. 12, 1947; minimum, 62 ppm Oct. 4-10, 1949.

Hardness: Maximum, 488 ppm Oct. 12, 1947; minimum, 16 ppm Oct. 4-10, 1949.

Water temperatures: Maximum, 88°F on several days during summer months; minimum, freezing point Feb. 2, 1951.

REMARKS.--Water reported for dissolved solids are residue on evaporation unless otherwise noted. Records of specific conductance of daily samples available from 1945 to 1951. No appreciable difference between gaging station and sampling points. Accepting periods of heavy local rains. Discharge records for gaging station near Huffman for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per acre-day	Calcium, mg./nestum	Non-carbonate				
Oct. 1-10, 1950.....	223	18	18			19	4.5	45	61	7.4	74		2.2		228	0.31	137	66	16	60	367	7.3	
Oct. 11-20.....	134	20	19			18	3.8	59	73	6.2	86		1.5		260	35	94	60	1	68	422	7.3	
Oct. 21-31.....	128	19	17			22	4.7	66	69	5.6	109		1.2		280	39	100	74	18	66	492	7.3	
Nov. 1-10.....	132	17	17			26	4.1	67	66	4.9	119		1.0		308	42	110	82	28	64	515	7.5	
Nov. 11-20.....	132	16	16			17	4.5	74	64	4.4	117		.8		290	39	103	61	8	73	504	7.4	
Nov. 21-30.....	135	15	15			23	5.7	97	66	7.6	162		.5		394	.54	144	81	27	72	658	7.3	
Dec. 1-10.....	148	18	18			22	5.8	89	65	6.0	151		.5		334	.45	133	79	26	71	621	7.1	
Dec. 11-20.....	146	19	19			20	5.1	72	63	5.6	120		.0		283	.38	112	71	19	69	516	7.1	
Dec. 21-31.....	158	18	18			22	6.6	65	64	4.9	118		.0		278	.38	119	82	30	63	508	7.1	
Jan. 1-10, 1951.....	276	16	16			21	4.2	81	59	6.7	135		1.0		326	.44	243	70	21	72	560	7.8	
Jan. 11-20.....	210	16	16			23	4.3	99	61	6.6	165		.5		378	.51	214	75	25	74	657	7.8	
Jan. 21-31.....	186	16	16			23	4.4	69	66	5.5	119		.5		297	.40	149	76	21	67	511	7.7	
Feb. 1-9.....	212	16	16			22	4.5	96	62	5.8	159		.8		348	.47	199	73	23	74	607	7.8	
Feb. 10-19.....	247	17	17			24	4.8	105	64	6.2	176		.5		a 364	.50	243	80	27	74	705	7.6	
Feb. 20-28.....	435	17	17			27	4.3	63	70	8.7	110		1.5		a 266	.36	152	85	28	62	500	7.6	
Mar. 1-10.....	218	16	16			26	4.4	62	75	7.5	104		1.5		a 258	.35	152	83	22	62	494	7.6	
Mar. 11-20.....	188	16	16			28	3.6	79	88	5.7	127		.8		310	.42	157	85	13	67	565	7.8	
Mar. 21-27.....	340	15	15			27	2.9	82	84	5.0	130		1.5		a 304	.41	279	79	10	69	570	7.8	
Mar. 28-31.....	3,458	7.8	7.8			16	4.5	--	49	--	56		2.0		--	--	--	58	18	--	--	281	7.7
Apr. 1-10.....	842	20	20			25	3.5	46	73	8.8	76		1.5		a 217	.30	493	77	17	57	383	7.9	
Apr. 11-20.....	252	22	22			26	3.9	67	76	7.5	109		2.5		306	.42	208	81	19	64	513	7.7	
Apr. 21-30.....	177	19	19			28	3.6	60	82	5.8	100		2.0		a 258	.35	123	85	17	61	493	7.7	

a sum of determined constituents.

	173	163	20	21	26	3.7	68	81	5.0	110	1.0	a	272	37	128	90	14	65	517	7.8
May 1-10.....	173	163	20	21	26	4.8	73	81	5.9	123	2.5	a	322	44	142	90	23	63	558	7.7
May 11-20.....	153	153	21	21	26	5.0	72	82	5.1	120	-.8	a	310	42	138	85	18	65	540	7.8
June 1-10.....	203	203	19	19	21	9.5	59	61	6.3	114	3.0	a	262	36	144	91	41	58	500	7.5
June 11, 13-14.....	186	17	20	63	20	6.4	--	63	--	96	2.2	a	270	37	136	76	25	--	436	7.5
June 15-16.....	216	11	11	33	--	--	--	33	--	34	2.2	a	274	24	101	33	6	--	185	7.5
June 17-20.....	156	21	22	5.5	22	5.5	--	67	--	140	2.2	a	364	50	153	78	23	--	599	7.4
June 21-30.....	112	23	22	5.2	22	5.2	--	67	7.9	145	2.0	a	375	51	113	78	21	72	613	6.9
July 1-10.....	92.4	20	24	4.5	24	4.5	88	70	5.1	145	2.0	a	358	50	92	76	21	71	524	7.1
July 11-20.....	87.2	20	24	4.5	24	4.5	88	70	5.1	145	2.0	a	358	50	92	76	21	71	524	7.1
July 21-30.....	84.0	23	23	5.0	23	5.0	86	71	6.6	140	2.0	a	346	47	78	78	20	76	603	7.5
Aug. 1-10.....	74.7	22	22	5.0	22	5.0	86	72	4.0	136	Aug. 1-10	333	45	67	75	16	70	581	7.5	
Aug. 11-20.....	58.8	22	22	4.5	22	4.5	86	76	4.0	138	1.0	a	339	46	54	73	11	72	604	7.5
Aug. 21-31.....	64.8	22	22	4.5	22	4.5	85	73	4.5	138	1.0	a	336	46	59	75	15	71	595	7.4
Sept. 1-10.....	73.9	22	24	4.6	24	4.6	79	76	3.8	130	1.5	a	318	43	63	79	16	68	567	7.5
Sept. 11-20.....	947	18	19	6.1	19	6.1	60	59	5.9	105	2.0	a	258	35	172	72	24	64	461	7.3
Sept. 21-22, 25-30.....	216	18	18	5.2	18	5.2	68	58	5.2	99	2.0	a	271	37	451	46	0	76	422	7.8
Sept. 23-24.....	746	8.6	23	--	--	--	--	65	--	33	1.2	a	--	--	--	28	6	--	182	7.5
Weighted average	237	17	21	4.5	21	4.5	63	65	6.3	105	1.4	a	265	0.36	170	71	18	66	468	--

a sum of determined constituents.

SAN JACINTO RIVER BASIN--Continued

SAN JACINTO RIVER NEAR HUFFMAN, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement at approximately 9 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	70	60	55	33	71	65	76	83	84	84	86
2	78	72	61	63	32	72	62	72	83	84	86	86
3	80	64	60	--	34	73	61	74	80	83	86	85
4	76	62	60	57	38	--	61	74	78	84	85	83
5	73	58	67	54	52	68	67	76	78	85	87	84
6	71	60	45	58	54	--	67	75	80	85	87	85
7	73	64	42	49	53	64	69	75	81	85	88	84
8	75	67	46	43	50	72	67	70	81	85	87	84
9	71	64	48	44	55	72	68	73	82	86	85	85
10	67	58	50	55	--	70	69	75	82	87	84	84
11	68	54	47	48	60	68	63	76	83	86	86	84
12	73	52	50	58	62	55	58	74	79	86	86	85
13	76	54	58	60	64	50	59	74	79	80	84	79
14	75	65	60	56	54	43	63	75	82	87	87	77
15	73	67	63	53	47	51	65	76	80	85	85	78
16	71	67	64	50	43	63	--	75	83	85	86	74
17	71	62	58	54	48	67	63	75	84	85	86	73
18	73	64	55	60	54	64	67	73	82	86	85	72
19	75	65	53	64	51	57	70	75	85	88	84	74
20	74	64	57	66	65	58	72	77	84	--	83	75
21	72	64	59	50	60	57	73	79	85	87	87	77
22	73	60	57	48	61	62	74	79	83	87	86	78
23	73	62	55	58	63	65	67	80	82	85	86	77
24	70	58	56	51	62	57	--	77	84	85	86	78
25	73	52	57	49	66	63	73	73	85	85	85	76
26	72	54	63	50	--	65	75	74	85	84	86	77
27	71	56	52	53	70	65	76	77	83	84	86	78
28	72	52	45	52	70	66	78	79	84	85	86	78
29	--	55	47	50	--	63	76	81	84	84	86	76
30	75	60	50	42	--	59	75	82	83	85	86	76
31	72	--	47	--	--	62	--	82	--	85	85	--
Average	73	61	55	53	54	63	68	76	82	85	86	80

BRAZOS RIVER BASIN

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ROTAN, TEX.

LOCATION --At gaging station at bridge on State Highway 70, 3.1 miles downstream from Red Creek, and 5 miles north of Rotan, Fisher County.
DRAINAGE AREA --739 square miles, of which 647 square miles are probably noncontributing.

RECORDS AVAILABLE --Chemical analyses: December 1949 to September 1951.

Water temperatures: December 1949 to September 1951.
EXTREMES, 1950-51.--Dissolved solids: Maximum, 10,200 ppm Oct. 22-24, June 27-28; minimum, 731 ppm Aug. 21, 22 (6 p.m. to 12 p.m.), 23 (10 a.m. to 12 p.m.), 24-25.

Hardness: Maximum, 2,010 ppm June 27-28; minimum, 183 ppm May 19-20.

Specific conductance: Maximum daily, 16,300 micromhos Oct. 24; minimum daily, 1,000 micromhos Aug. 25.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 19,100 ppm Jan. 21-31, 1950; minimum, 531 ppm Sept. 5-9, 1950.

Hardness: Maximum, 2,640 ppm Jan. 21-31, 1950; minimum, 144 ppm July 20, 22-23, 28, 1950.

REMARKS --Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex.

Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Tem- per- ature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per- cent- age of non-carbon- ate	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg. per liter	Non-carbon- ate			
Oct. 1-4, 6, 8-9, 1950	23.3		15		161	33	432		138	539	598		2.8		1,870	2.54	118	537	424	65	3,090	7.7
Oct. 5, 7, 10,	19.8		19		312	68	988		116	981	1,480		4.0		3,910	5.32	209	1,060	963	67	6,180	7.6
Oct. 11-15,	3.46		17		390	78	1,380		123	1,180	2,100		--		5,200	7.07	49	1,190	1,190	70	8,160	7.6
Oct. 16-21, .....	.53		18		504	98	2,420		111	1,460	3,760		--		8,320	11.32	12	1,660	1,570	76	12,800	7.7
Oct. 22-24,	a 0		18		559	110	3,070		117	1,590	4,800		--		10,200	13.87	0	1,850	1,750	78	15,800	7.7
May 18 (12 p.m.-8 p.m.), 1951	1,900		23		442	66	713		178	1,370	958		1.0		3,660	4.98	10,800	1,370	1,230	53	5,190	7.9
May 18 (6 p.m.-12 p.m.), 19-20,	363		14		57	10	189		128	233	174		1.0		6,741	1.01	726	183	78	69	1,250	7.7
May 21 (12 p.m.-3 p.m.), 22,	41.0		21		133	26	172		131	404	201		3.0		1,020	1.39	113	439	332	46	1,630	7.9
May 21 (5 p.m.-12 p.m.), 26-27,	14.2		26		240	70	586		147	820	840		2.5		2,660	3.62	102	887	766	59	4,200	8.0
May 23-25, 28,	16.5		21		177	40	316		126	572	420		3.0		1,610	2.19	72	606	503	53	2,540	7.9
May 29-30,	a 0		27		268	87	1,150		131	982	1,700		.5		4,280	5.82	0	1,030	918	71	6,910	7.9
June 3, 7,	10.2		17		212	45	389		97	607	600		3.5		1,920	2.61	53	714	634	54	3,080	7.8
June 4-6,	49.7		19		137	31	219		137	449	260		.2		1,180	1.60	158	470	357	50	1,850	7.9
June 8-10,	8.77		20		258	65	1,000		111	809	1,530		1.0		3,740	5.09	89	911	820	71	6,210	7.8
June 11-18,	371		19		181	28	86		105	513	94		2.5		6,976	1.33	978	566	480	25	1,360	7.9
June 19,	108		21		309	40	180		87	837	270		3.0		1,700	2.31	466	936	864	29	2,330	7.8
June 20-22,	34.0		21		390	51	428		100	1,070	650		1.2		2,660	3.62	244	1,180	1,100	44	3,810	7.8
June 23-25,	9.73		22		480	83	1,650		121	1,270	2,630		--		6,200	8.43	163	1,940	1,440	70	9,660	7.8
June 26-28, .....	.50		27		622	111	2,940		110	1,670	4,720		--		10,200	13.87	14	2,010	1,920	76	15,800	7.7

a Includes days of less than 0.05 second-foot flow.

b Sum of determined constituents.

BRAZOS RIVER BASIN--Continued
DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ROTAN, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
July 2-5, 1951.....	213		18		196	28	130		91	539	178		1.5		1,140	1.55	656	604	530	32	1,690	7.5
July 6-9, 15-16, 24.....	6.46		16		394	71	1,440		103	1,080	2,260		--		5,310	7.22	93	1,280	1,190	71	8,480	7.8
July 25-26.....	10.1		19		464	27	201		57	1,170	312		2.0		2,220	3.02	61	1,270	1,220	26	2,880	7.7
Aug. 12-13.....	23.8		15		150	23	110		80	477	103		2.2		885	1.34	63	469	404	34	1,360	7.9
Aug. 14-16.....	1.80		12		176	37	483		77	578	692		.8		2,020	2.75	9.8	581	528	64	3,290	7.8
Aug. 21, 22 (9 p.m.-12 p.m.), 23 (10 a.m.-12 p.m.), 24-25.....	910		18		98	16	115		127	300	101		1.2		731	.99	1,800	310	206	45	1,100	7.8
Aug. 22 (12 p.m.-6 p.m.), 23 (12 p.m.-10 a.m.), 26-28.....	426		21		173	27	212		125	519	255		2.0		1,270	1.73	1,460	542	440	46	1,950	7.9
Aug. 29-31.....	2.77		23		214	49	496		118	680	715		1.0		2,240	3.05	17	756	639	59	3,600	7.9
Sept. 1-2.....	.25		22		358	74	1,100		124	1,080	1,880		.5		4,360	5.96	3.0	1,200	1,100	67	6,950	7.7
Sept. 3-8.....	16.1		20		434	88	1,720		110	1,260	2,680		--		6,260	8.51	272	1,440	1,360	72	10,000	7.7
Sept. 9-12.....	7.65		15		361	33	273		72	935	422		1.5		2,080	2.83	43	1,040	977	26	2,980	7.8
Weighted average....	32.6		19		176	28	218		121	525	270		--		1,300	1.77	114	554	455	46	1,940	--

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ROTAN, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80							--	--	--	--	88
2	88							--	--	86	--	92
3	87								76	87	--	91
4	--								74	--	--	92
5	--							--	--	90	--	76
6	87							--	74	90	--	--
7	85							--	85	90	--	--
8	85							--	93	88	--	77
9	--							--	86	90	--	90
10	--							--	--	--	--	87
11	--							--	89	--	--	--
12	88							--	83	--	90	--
13	85							--	--	--	96	--
14	85							--	--	--	--	--
15	--							--	73	--	--	--
16	84							--	77	--	--	--
17	87							--	--	--	--	--
18	86							90	87	--	--	--
19	90							89	92	--	--	--
20	87							92	93	--	--	--
21	86							80	93	--	87	--
22	82							78	89	--	88	--
23	79							--	90	--	85	--
24	--							74	--	--	88	--
25	--							71	90	88	--	--
26	--							78	--	--	--	--
27	--							79	90	--	--	--
28	--							76	90	--	81	--
29	--							89	--	--	90	--
30	--							87	--	--	90	--
31	--							--	--	--	--	--
Average	--							--	--	--	--	--

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.

LOCATION --At gaging station at bridge on U.S. Highway 83, 8 miles downstream from Mountain Creek, and 10 miles south of Aspermont, Stonewall County.
 DRAINAGE AREA --980 square miles (approximately) of which 6,470 square miles is probably noncontributing.
 RECORDS AVAILABLE --Chemical analyses: October 1948 to September 1951.

Water temperatures: November 1949 to September 1951.

Sediment records: November 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 4,740 ppm Aug. 5, 8; minimum, 842 ppm Aug. 23 (3 a.m.-12 p.m.), 24-29.

Hardness: Maximum, 2,510 ppm Aug. 5, 8; minimum, 332 ppm Aug. 23 (3 a.m.-12 p.m.), 24-29.

Specific conductance: Maximum daily, 5,970 micromhos Aug. 5; minimum daily, 1,050 micromhos Aug. 24.

Sediment concentrations: Maximum daily, 77,700 ppm May 19.

Sediment loads: Maximum daily, 477,000 tons Aug. 23; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 4,740 ppm Aug. 5, 8, 1951; minimum, 646 ppm May 11, 12-13, 1950.

Hardness: Maximum, 2,510 ppm Aug. 5, 8, 1951; minimum, 220 ppm Sept. 9-10, 1948.

Water temperatures (November 1949-September 1951): Minimum, freezing point Jan. 4, 1950, Jan. 29, 1951.

Sediment concentrations (November 1949-September 1951): Maximum daily, 77,700 ppm May 19, 1951.

Sediment loads (November 1949-September 1951): Maximum daily, 565,000 tons May 11, 1950; minimum daily, 0 tons on many days.

REMARKS:--Values reported for dissolved solids are centrifuged solids, 1,000 ppm residue, after evaporation and for concentrations more than 1,000 ppm are sum of filtered and centrifuged solids. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium	Non-carbonate			
Oct. 1-3, 1950.....	50.3		18		176	23	254		128	533	300		2.5		1,370	1.86	534	428	51	2,010	8.1
Oct. 8-12.....	31.8		13		246	48	392		117	701	550		5		2,070	178	812	716	51	3,120	7.6
Oct. 13.....	13.3		16		262	50	443		102	863	585		2.2		2,280	3.10	94	1,858	53	3,440	7.8
Oct. 13-31.....	3.36		18		246	48	414		128	760	675		5		3,460	4.98	31	1,890	33	4,420	7.6
Nov. 1-10.....	3.97		17		610	92	411		132	1,760	605		0		3,550	5.87	5	1,790	32	4,560	7.5
Nov. 11-20.....	54		14		624	89	408		142	1,790	588		0		3,580	4.87	5.2	1,920	31	4,480	7.5
Nov. 21-30.....	45		15		632	90	396		153	1,790	580		2		3,580	4.87	4.3	1,950	31	4,550	7.5
Dec. 1-10.....	44		14		626	92	397		155	1,770	592		0		3,570	4.88	4.2	1,940	31	4,460	7.5
Dec. 11-20.....	41		13		610	87	411		150	1,750	588		5		3,530	4.80	3.9	1,880	32	4,350	7.8
Dec. 21-31.....	38		12		610	88	413		154	1,740	598		2		3,540	4.81	3.6	1,890	32	4,430	7.8
Jan. 1-10, 1951.....	22		9.8		620	91	429		130	1,810	612		8		3,640	4.95	2.2	1,820	33	4,470	8.0
Jan. 11-20.....	20		8.4		618	100	420		131	1,820	635		0		3,660	5.00	2.0	1,950	32	4,570	8.0
Jan. 21-31.....	18		9.0		668	107	460		152	1,980	690		0		3,940	5.36	1.9	2,110	32	4,810	8.0
Feb. 1-10.....	a. 13		7.5		602	91	403		148	1,720	595		5		3,490	4.75	1.2	1,880	32	4,320	8.0
Feb. 11-19.....	a. 17		11		604	84	421		122	1,710	630		0		3,520	4.79	1.6	1,850	32	4,570	7.6
Feb. 20-28.....	. 11		11		656	92	442		128	1,870	655		.5		3,790	5.13	1.1	2,020	31	4,800	7.8

a Includes days of less than 0.05 second-foot flow.

a. 07	19	676	105	491	--	90	1,980	710	.5	4,030	5.48	.8	2,120	2,040	34	5,080	7.6
a. 16	18	670	107	513	--	114	1,980	745	1.0	4,090	5.56	1.8	2,110	2,020	35	5,190	7.7
. 11	15	720	177	549	--	116	2,140	800	.2	4,400	5.98	1.3	2,280	2,180	34	5,550	7.6
a. 15	17	662	97	471	--	98	1,970	668	1.0	3,930	5.34	1.6	2,080	1,900	33	5,290	7.9
7.60	15	488	54	181	--	88	1,360	282	2.0	2,420	5.38	50	1,900	1,700	20	3,010	7.8
a. 04	14	718	107	511	--	103	2,100	760	1.0	4,260	5.78	.5	2,230	2,150	33	5,380	7.8
167	13	384	40	239	--	80	1,090	312	1.0	2,120	2.88	956	1,120	1,060	32	2,810	7.8
233	14	504	70	387	--	110	1,460	550	1.0	3,040	4.13	1,910	1,550	1,460	35	3,980	7.8
381	14	174	24	204	--	118	519	240	.8	1,230	1.67	1,270	532	436	45	1,880	7.8
559	18	219	19	101	--	106	574	112	3.0	1,100	1.50	1,660	624	538	26	1,520	7.9
300	18	357	34	146	--	80	988	178	3.5	1,760	2.39	1,430	1,030	965	24	2,260	7.8
25.0	15	340	39	340	--	96	983	458	1.2	2,220	3.02	150	1,010	930	42	3,160	7.8
6.90	22	404	69	630	--	125	1,330	832	2.0	3,350	4.56	62	1,290	1,190	51	4,780	7.9
474	16	428	65	578	--	107	1,280	830	2.0	3,250	4.42	4,160	1,340	1,250	48	4,710	7.8
202	16	296	25	109	--	88	774	142	2.0	1,410	1.92	769	842	770	22	1,870	7.7
17.5	20	260	44	319	--	102	810	422	1.5	1,930	2.62	91	830	746	46	2,900	7.9

Includes days of less than 0.05 second-foot flow.

a Includes days of less than 0.05 second-foot flow.

BRAZOS RIVER BASIN--Continued
DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Tem- perature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per- cent so- dium	Specific conduct- ance (micro- mhos at 25°C)	pH		
															Parts per mil- lion	Tons per acre- foot	Calcium, mag- nesium	Non- carbon- ate					
June 11 (4 a. m.-12 p. m.), 12-20, 1951....	922		20		266	28	98		98	718	115		2.0			1,300	1.77	3,240	778	698	21	1,740	7.8
June 21-23.....	37.0		18		370	35	174		84	993	242		1.5			1,870	2.54	187	1,070	998	26	2,510	7.7
June 24-30, July 1, 2 (12 p. m.-5 a. m.),.....	3.30		22		556	59	467		90	1,510	708		1.0			3,370	4.58	30	1,630	1,560	38	4,540	7.7
July 2 (5 a. m.-12 p. m.), 8-9.....	38.9		15		388	42	281		89	1,070	400		.8			2,240	3.05	235	1,140	1,070	35	3,080	7.7
July 3-7.....	182		15		269	24	159		77	793	160		2.0			1,460	1.99	717	770	706	31	1,950	7.6
July 8.....	a.0		20		612	87	429		110	1,820	590		.2			3,610	4.91	.0	1,860	1,790	33	4,520	7.9
July 10.....	a.48		22		634	98	419		94	1,840	640		1.2			3,700	5.03	4.9	1,980	1,910	31	4,750	7.9
July 11-24.....	a.51		15		578	36	101		60	1,460	170		2.5			2,390	3.25	36	1,590	1,540	12	2,860	7.7
July 25-31.....																							
Aug. 5, 8.....	a.0		23		816	115	553		76	2,340	860		.0			4,740	6.45	.0	2,510	2,450	32	5,920	7.8
Aug. 11-19.....	a.4.28		16		620	61	217		91	1,620	360		1.2			2,940	4.00	34	1,800	1,720	21	3,720	7.7
Aug. 20-21, 22 (12 p. m.-9 a. m.).....	a.2.9		20		664	83	445		118	1,890	638		1.5			3,800	5.17	30	2,000	1,900	33	4,770	7.8
Aug. 22 (9 a. m.-12 p. m.), 23 (12 p. m.-3 a. m.), 30-31.....	456		18		318	37	231		105	902	298		3.0			1,860	2.53	2,290	946	860	35	2,580	7.7
Aug. 24 (3 a. m.-12 p. m.), 24-29.....	743		18		105	17	142		133	330	132		3.5			842	1.15	1,690	332	223	48	1,280	7.9
Sept. 1-8.....	a.66		19		400	59	349		117	1,220	448		1.5			2,550	3.47	4.5	1,240	1,140	38	3,460	7.8
Sept. 9-10.....	88.5		12		175	22	103		83	478	130		1.5			1,000	1.36	266	527	459	30	1,420	7.7
Sept. 11-13.....	11.0		21		254	30	178		77	705	245		2.0			1,470	2.00	44	757	694	34	2,090	7.5
Sept. 14-17.....	.78		21		362	48	237	--	100	1,030	325		4.2			2,070	2.82	4.4	1,100	1,020	32	2,780	7.5
Sept. 18, 19, 27.....	a.0		21		520	79	305		81	1,480	480		.5			2,930	3.98	.0	1,620	1,560	29	3,820	7.6
Weighted average....	63.0		18		249	29	167		106	700	203		2.4			1,430	1.94	243	740	654	33	1,980	--

Includes days of less than 0.05 second-foot flow.

a. Includes days of less than 0.05 second-foot flow.

WESTERN GULF OF MEXICO BASINS

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	65	--	a 240	0.6	72	0.1	0.4	84	0.1
2-----	50	1,000	135	.6	48	.1	.4	84	.1
3-----	36	--	a 50	.6	--	a.1	.4	--	a.1
4-----	29	280	22	.6			.4		
5-----	34	400	37	.6			.4		
6-----	36	580	56	.6	67	.1	.5	52	.1
7-----	28	500	38	.6			.5		
8-----	21	--	a 25	.6			.6		
9-----	17	410	19	.4	81	.1	.4	77	.1
10-----	15	218	8.8	.5			.4		
11-----	12	140	4.5	.6			.4	46	(t)
12-----	11	--	a 4	.6	61	.1	.5		
13-----	9.5	138	3.5	.6			.4		
14-----	8.5	--	a 2	.6	79	.1	.4	22	(t)
15-----	7.5			.6			.4		
16-----	5.5			.5			.4		
17-----	4.5	76	.9	.5	80	.1	.4	77	.1
18-----	3.7	51	.5	.6			.4		
19-----	3.7	51	.5	.4			.4		
20-----	3.7	62	.6	.4	--	--	.4	--	(t)
21-----	3.4	--	a.5	.5			.4		
22-----	3.1	--	a.5	.5			.4	22	(t)
23-----	2.5	50	.3	.4	79	.1	.4		
24-----	1.9	--	a.3	.4			.4		
25-----	1.3	62	.2	.5	80	.1	.4	77	.1
26-----	1.0	72	.2	.5			.2		
27-----	.9	51	.1	.5			.4	--	(t)
28-----	.8	62	.1	.4	80	.1	.4		
29-----	.8	80	.2	.4			.4		
30-----	.8	--	a.2	.4	--	--	.4	77	.1
31-----	.7	--	a.1	--			.4		
Total-	417.8	--	654	15.6	--	3.0	12.7	--	2.4
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	0.3	50	(t)	0.2	42	(t)	0	--	0
2-----	.3			.2			.1	64	(t)
3-----	.2			.2			0	--	0
4-----	.2	66	(t)	.2	60	(t)	0		
5-----	.2			.2			0		
6-----	.2			.2	60	(t)	0	--	(t)
7-----	.2	50	(t)	.1			.1		
8-----	.2			0			.2		
9-----	.2			0	--	0	.2	--	0
10-----	.2	50	(t)	0			.1		
11-----	.2			0			.1	--	0
12-----	.2			0	86	(t)	.1		
13-----	.2	77	(t)	.3			.1	84	(t)
14-----	.2			.5			.1		
15-----	.2			.3	86	(t)	.1		
16-----	.2	46	(t)	.2			.1	93	(t)
17-----	.2			.1			.1		
18-----	.2			.1	--	0	.1	93	.1
19-----	.2	--	(at)	.1			.1		
20-----	.2			.1			.1	--	0
21-----	.2	--	(at)	.1	--	0	.1		
22-----	.2			.1			.1		
23-----	.1			.2	--	0	.1	93	.1
24-----	.2	--	(at)	.2			.1		
25-----	.2			.2			.1	--	0
26-----	.2	--	(at)	.1	--	0	1.2		
27-----	.1			0			.4		
28-----	.2			0	--	0	.1	93	.1
29-----	.2	--	(at)	--			.1		
30-----	.2			--			.1		
31-----	.2			--	--	0	0	--	0
Total-	6.2	--	0.9	3.8	--	0.7	3.6	--	0.8

t Less than 0.05 ton.

a Computed from estimated concentration graph.

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	Mean discharge (cfs)	April		Mean discharge (cfs)	May		Mean discharge (cfs)	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-----	0			0			0.8	72	0.2
2-----	0			0			124	4,750	s4,560
3-----	0			0			216	6,230	s4,830
4-----	0			0			42	600	68
5-----	0	--	0	0	--	0	36	300	29
6-----	0			0			43	450	52
7-----	0			0			24	--	a13
8-----	.1	80	(t)	.1			10	--	a3
9-----	.1	98	(t)	.1	--	(et)	2.5	74	.5
10-----	0	--	0	.1			297	6,600	s20,300
11-----	.2			0			3,710	24,500	s265,000
12-----	.3			0	--	0	389	9,860	s11,100
13-----	.3			0			129	4,700	1,640
14-----	.3			.1			38	1,600	164
15-----	.3	--	.1	.1	--	(et)	2,110	21,900	s222,000
16-----	.4			.1			2,730	21,800	s164,000
17-----	.4			10	733	s104	754	11,300	s27,200
18-----	.4			32	1,680	s248	256	5,000	3,460
19-----	.3	128	.1	1,050	34,500	s118,000	115	2,200	683
20-----	5.9	1,640	s55	239	20,500	13,200	138	3,130	s1,300
21-----	16	1,030	s74	191	18,700	s9,780	60	--	a130
22-----	.9	200	.5	480	12,300	s19,100	33	--	a35
23-----	.2	188	.1	116	5,000	1,570	18	150	7.3
24-----	.1	171	(t)	290	--	a23,900	8.0	74	1.6
25-----	.1	198	.1	892	10,500	s43,500	8.0	84	1.8
26-----	0			111	1,130	s419	5.5	82	1.2
27-----	0			37	--	e30	2.2		
28-----	0	--	0	21	--	e10	.9	--	.3
29-----	0			17	--	e6	.6		
30-----	0			11	74	2.2	.5	77	.1
31-----	--	--	--	2.8	98	.7	--	--	--
Total--	26.3	--	130.7	3,500.4	--	229,870.1	11,301.0	--	726,580.6
Day	Mean discharge (cfs)	July		Mean discharge (cfs)	August		Mean discharge (cfs)	September	
		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-----	0.4	--	a0.1	0			3.5	--	a0.6
2-----	100	3,270	s3,760	0			1.0	28	.1
3-----	562	12,300	s20,200	0			.4	35	(t)
4-----	188	5,300	2,690	0			.4	35	(t)
5-----	94	2,400	609	0			0		
6-----	45	--	a135	0	--	0	0		
7-----	20	400	22	0			0	--	0
8-----	8.5	74	1.7	0			0		
9-----	1.0	54	.1	0			140	12,700	s6,340
10-----	0			0			57	3,440	s601
11-----	0			29	--	a290	20	600	32
12-----	0			8.8	--	a6	8.5	50	1.1
13-----	0	--	0	.7	101	.2	4.5	35	.4
14-----	0			0			1.9	49	.3
15-----	0			0			.6	74	.1
16-----	3.0	--	a.6	0			.4	58	.1
17-----	3.8	35	.4	0	--	0	.2	68	(t)
18-----	0			0			0		
19-----	0			0			0		
20-----	0			0			0		
21-----	0			0			0		
22-----	0	--	0	310	8,580	s25,400	0		
23-----	0			4,490	35,300	s477,000	0		
24-----	0			1,010	23,900	s66,000	0	--	0
25-----	32	--	a320	241	20,400	13,300	0		
26-----	5.7	180	2.8	123	19,100	6,340	0		
27-----	.4			79	16,600	3,540	0		
28-----	.2			52	9,900	1,390	0		
29-----	.2	50	(t)	31	2,400	201	0		
30-----	.1			19	300	15	0		
31-----	0	--	0	12	90	2.9	--	--	--
Total--	1,064.3	--	27,741.8	6,405.5	--	593,485.1	238.4	--	6,975.8
Total discharge for year (cfs-days)									22,995.6
Total load for year (tons)									1,585,445.9

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

BRAZOS RIVER BASIN--Continued
DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Particle-size analyses of suspended sediment, May to September 1951
(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	Instantaneous discharge (cfs)	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 19, 1951	12:45 a.m.	2,220	77,700	5,150	30	43	53	66	71	83	92	98		100	SB/CW
May 19	12:45 a.m.	2,220	77,700	4,730	0	1	21	79	83	92	98	100		100	SB/CW
May 21	6:30 p.m.	280	18,600	1,800	20	23	26	69	95	96	99	100			SB/CW
May 21	6:30 p.m.	280	18,600	1,580	51	66	76	83	92	95	99	100			SB/CW
June 2	5:15 p.m.	545	16,800	2,940	--	50	63	73	83	94	98	100			SP/CW
June 15	10:10 a.m.	4,260	53,000	2,100	--	36	46	58	77	90	98	99		100	SP/CW
June 17	6:49 p.m.	435	7,720	5,440	--	71	85	94	98	100	--	--			SP/CW
June 18	9:40 a.m.	276	5,080	2,600	51	71	88	94	96	100	--	--			BW
June 18	6:55 p.m.	198	3,740	2,880	--	80	92	96	97	99	100	--			SP/CW
July 3	7:40 p.m.	320	8,820	1,570	60	76	87	95	99	99	100	--			SB/CW
July 3	7:40 p.m.	320	8,820	1,370	--	10	14	84	99	99	100	--			SB/N
July 5	7:30 p.m.	72	1,600	867	33	49	70	74	79	86	98	100			SB/CW
July 25	4:30 p.m.	33	2,390	1,850	47	58	71	74	77	82	96	100			SB/CW
July 25	5:40 p.m.	29	2,250	1,560	55	73	90	98	99	99	100	--			SB/CW
Aug. 22	7:50 a.m.	96	23,200	4,580	--	76	86	93	93	96	99	100			SP/CW
Aug. 22	8:55 a.m.	100	21,400	4,570	--	74	85	91	91	94	98	100			SP/CW
Aug. 22	9:20 a.m.	100	19,600	4,460	--	74	87	94	94	95	98	100			SP/CW
Aug. 23	8:20 a.m.	4,830	36,300	2,950	--	5	20	91	93	93	99	100			SB/N
Aug. 23	8:20 a.m.	4,830	36,300	2,810	41	49	61	74	87	94	99	100			SB/CW
Aug. 24	3:50 p.m.	718	23,800	4,710	--	69	80	89	90	96	99	100			SP/CW
Aug. 27	6:15 p.m.	74	15,400	3,000	--	84	96	96	98	98	99	100			SP/CW
Sept. 9	6:20 p.m.	118	10,200	3,680	--	77	91	95	96	96	98	100			SP/CW

SALT FORK BRAZOS RIVER NEAR PEACOCK, TEX.

LOCATION.--At gaging station at bridge on county road from Peacock to Oriana, 1,000 feet upstream from Wichita Valley Railway (Burlington) bridge, 2.4 miles west of Peacock, Stonewall County, 2.9 miles upstream from bridge on U.S. Highway 380, and 9.1 miles downstream from Croton Creek.

DRAINAGE AREA.--4,260 square miles, of which 2,770 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1951.

Water temperatures: December 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 25,100 ppm Apr. 20-24, 30; minimum, 728 ppm May 19 (8 a.m.-12 p.m.), 20-27.

Hardness: Maximum, 3,820 ppm July 16-14, 31; minimum, 226 ppm Aug. 23-25. 1,010 microhms May 20, 22.

Solids: Maximum, 3,820 ppm July 16-14, 31; minimum, 226 ppm Aug. 23-25. 1,010 microhms May 20, 22.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 33,700 ppm Apr. 20-24, 30; minimum, 728 ppm May 19 (8 a.m.-12 p.m.), 20-27, 1951.

Hardness: Maximum, 4,160 ppm Apr. 14-15, 1950; minimum, 214 Sept. 26-28, 1950.

Water temperatures (1949-50): Maximum daily, 83°F June 13, 18, 26, 1950; minimum daily, freezing point Jan. 4, 26-27, 30, Mar. 13, 1950.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Per cent sodium	Specific conductance (microhms at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-3, 1950	91.7		28		164	52	979	--	174	457	1,480		1.0		3,250	4.42	805	623	480	77	5,610	8.0
Oct. 4-9	43.0		26		279	103		2,150	149	847	3,390		--		6,870	9.34	798	1,120	998	81	11,400	7.9
Oct. 10-14	21.2		32		398	144		3,520	130	1,250	5,550		--		11,000	14.96	630	1,580	1,480	83	17,300	7.7
Oct. 15-20	11.4		31		493	172		4,940	140	1,480	7,200		--		14,000	19.04	431	1,940	1,820	84	21,500	7.7
Oct. 21-31	7.25		24		559	187		5,860	152	1,660	6,520		--		16,400	22.30	321	2,200	2,080	84	24,800	7.7
Nov. 1-10	3.82		27		632	189		5,850	147	1,770	9,320		--		17,800	24.21	179	2,400	2,280	84	26,500	7.6
Nov. 11-20	3.22		20		650	202		5,860	162	1,810	9,260		--		17,800	24.21	180	2,430	2,280	84	26,700	7.8
Nov. 21-30	3.53		20		651	195		5,990	180	1,890	9,560		--		18,300	24.89	174	2,430	2,260	84	26,900	7.7
Dec. 1-10	3.92		18		659	211		5,760	190	1,890	9,160		--		17,800	24.21	188	2,510	2,360	83	26,000	7.8
Dec. 11-20	5.00		12		605	202		5,800	189	1,800	8,850		--		17,200	23.39	232	2,340	2,180	84	25,100	7.7
Dec. 21-31	3.77		14		635	213		5,800	202	1,890	9,170		--		17,800	24.21	181	2,460	2,300	84	25,900	7.7
Jan. 1-31, 1951	3.01		15		637	211		5,780	171	1,910	9,150		--		17,800	24.21	145	2,460	2,320	84	26,100	7.7
Feb. 1-28	2.94		12		641	212		5,800	140	1,890	9,220		--		17,800	24.21	141	2,470	2,360	84	27,300	7.3
Mar. 1-12, 1951	2.61		13		673	220		6,040	142	2,080	9,550		--		18,600	25.30	131	2,580	2,470	84	28,000	7.8
Mar. 13	10.0		17		334	109		1,160	114	1,160	2,450		--		5,730	7.79	155	1,280	1,190	73	9,320	8.0
Mar. 14-15	4.05		20		446	151		3,250	133	1,510	5,050		--		10,500	14.28	115	1,730	1,620	80	16,600	8.0
Apr. 1-19, 25-29	.68		23		760	245		5,750	152	2,350	9,100		--		18,300	24.89	34	2,900	2,780	81	27,500	7.7
Apr. 20-24, 30	.75		24		796	303		8,280	145	2,410	13,200		--		25,100	34.14	51	3,230	3,110	85	35,900	7.7
May 1-16, 17 (19 p.m.)	a1.91		42		791	243		6,070	106	2,480	9,580		--		19,300	26.25	100	2,970	2,890	82	29,100	7.9
May 17 (6 a.m.-12 p.m.), 18 (12 p.m.-8 a.m.), 31	74.4		42		512	134		3,160	120	1,390	5,080		--		10,400	14.14	2,090	1,830		79	16,500	8.1

a Includes days of less than 0.05 second-foot flow.

BRAZOS RIVER BASIN--Continued
SALT FORK BRAZOS RIVER NEAR PEACOCK, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
May 18 (8 a. m.-12 p. m.), 19 (12 p. m.-8 a. m.), 1951.....	1,565		30		180	47		847	171	517	1,280		1.0		2,990	4.07	642	502	74	5,060	8.1
May 19 (8 a. m.-12 p. m.), 20-27.....	313		22		64	17	163		133	159	218		2.5		728	9.93	230	120	61	1,280	7.8
May 28-30.....	15.0		44		316	106		2,250	111	957	3,370		--		7,300	9.93	1,220	1,130	80	12,000	8.1
June 1-2, 22-23.....	a 2.98		34		425	133		3,290	127	1,170	5,270		--		10,400	14.14	1,610	1,500	82	16,900	7.7
June 3-9, 10 (12 p. m.-4 p. m.), 24-30, July 1, 2 (12 p. m.-12 m.),.....	2.88		29		609	180		5,020	120	1,640	8,060		--		15,600	21.22	2,260	2,160	83	24,300	7.7
June 10 (4 p. m.-12 p. m.), 11, 15 (6 p. m.-12 p. m.), 12 (12 p. m.-12 m.),.....	447		38		276	60		1,130	151	708	1,800		3.5		4,090	5.56	935	812	73	6,840	8.1
June 12, 14, 15 (12 p. m.-6 a. m.), 16-19 (6 a. m.-12 p. m.),.....	137		21		196	35		654	108	532	1,000		3.5		2,450	3.39	633	544	69	4,200	7.5
June 20-21, 22 (12 p. m.-12 m.),.....	18.8		38		330	99		1,960	130	910	3,150		--		6,550	8.91	1,230	1,120	78	10,700	8.0
July 2 (12 m.-12 p. m.), 3, 6-7.....	17.7		20		404	120		3,280	98	1,140	5,220		--		10,200	13.87	1,500	1,420	83	16,600	7.7
July 4-5, 28.....	20.1		26		226	72		1,350	134	693	2,100		--		4,530	6.16	860	750	77	7,740	7.9
July 6-15, 29-30.....	a 0.1		26		772	213		4,800	109	1,100	8,510		--		15,500	21.08	2,800	2,710	79	25,800	7.6
July 16-24, 31.....	a 0		28		1,010	316		7,440	132	2,580	12,200		--		23,600	32.10	3,820	3,710	81	35,200	7.5
July 25-27.....	12.5		14		284	38		489	73	713	762		2.0		2,320	3.16	814	754	57	3,770	7.4
Aug. 1-9, 10 (12 p. m.-8 p. m.),.....	a .92		24		990	276		6,920	144	2,770	11,100		--		22,200	30.19	3,600	3,490	81	32,800	7.5
Aug. 10 (8 p. m.-12 p. m.), 11-12, 22 (4 p. m.-12 p. m.), 26-28, 13-21, 22 (12 p. m.-4 p. m.),.....	233		19		164	44		1,000	124	468	1,550		.5		3,310	4.50	590	488	79	5,890	7.8
Aug. 23-25.....	a 56.8		20		367	119		2,580	144	1,040	4,130		--		8,330	11.33	1,400	1,290	80	13,700	7.7
Aug. 29-30.....	505		16		64	16		298	132	202	388		3.5		1,050	1.43	226	118	74	1,910	7.9
Aug. 30-31.....	3.40		24		271	87		2,240	138	776	3,540		--		7,010	9.53	1,030	920	83	11,900	7.8
Sept. 1-30.....	2.15		27		397	129		4,080	156	1,060	6,500		--		12,300	16.73	1,520	1,390	85	20,200	7.9
Weighted average..	31.2		19		756	206		5,120	148	2,000	8,270		--		16,400	22.30	2,730	2,610	80	25,200	7.7
			24		195	54		1,150	139	550	1,790		--		3,840	5.22	708	594	78	6,280	--

a Includes days of less than 0.05 second-foot flow.

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR PEACOCK, TEX.--Continued

Temperature (°F) of water, water October 1950 to September 1951^a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	76	56	60	--	60	65	80	90	--	90	90
2	82	58	67	45	--	50	60	70	90	90	85	--
3	66	54	52	50	--	53	65	70	63	89	--	80
4	70	49	56	53	--	--	--	65	68	85	92	85
5	60	53	45	60	--	70	--	70	70	--	--	--
6	70	55	44	45	--	--	65	80	90	95	--	80
7	68	53	45	--	--	75	70	70	95	90	90	85
8	61	55	46	55	--	50	--	80	--	80	90	80
9	62	44	50	50	--	45	65	--	--	85	--	80
10	62	59	51	53	--	45	65	70	--	80	--	--
11	64	43	53	50	62	--	70	70	90	80	--	80
12	66	55	55	--	70	--	60	65	85	80	--	80
13	68	50	53	62	40	65	65	--	90	90	80	80
14	66	65	52	50	45	75	65	70	--	85	90	80
15	70	64	60	57	40	70	--	70	73	85	85	80
16	78	54	55	55	45	60	70	70	90	--	80	--
17	67	55	53	55	50	55	70	70	--	--	85	85
18	67	60	52	65	50	--	75	70	--	--	80	80
19	78	60	45	55	52	60	75	70	85	85	--	80
20	65	55	53	--	60	75	70	70	95	80	--	85
21	65	50	56	62	65	75	75	70	95	85	--	80
22	73	53	51	60	60	80	85	70	95	--	80	85
23	58	53	52	55	55	60	--	76	90	--	80	80
24	67	60	--	--	60	65	--	85	--	80	80	80
25	61	44	--	60	63	63	75	85	80	80	80	80
26	64	46	52	65	65	--	80	--	85	--	80	80
27	61	53	49	40	60	60	70	--	85	80	--	80
28	62	60	51	--	--	65	70	--	80	85	85	--
29	63	56	50	--	--	60	--	85	85	--	80	--
30	70	55	43	--	--	65	80	97	80	90	80	--
31	67	--	59	--	--	65	--	90	--	90	85	--
Average	67	55	52	--	--	63	--	75	--	--	--	--

^a A wide variation is shown from day to day due to small discharge and variable times of temperature observation.

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR ASPERMONT, TEX.

LOCATION --at gaging station at bridge on U. S. Highway 83, 51 miles downstream from Dove Creek, and 13.2 miles northwest of Aspermont, Stonewall County. DRAINAGE AREA --4,830 square miles, approximately, of which 2,770 square miles is probably noncontributing. RECORDS AVAILABLE --Chemical analyses: October 1948 to September 1951.

EXTREMES 1950-51 --Discharge: 3,473 to September 1951; minimum, 1,580 ppm May 19-23, 24 (12 p.m.-10 p.m.). Hardness: Maximum 5,080 ppm June 10, 11 (12 p.m.-10 p.m.); minimum 1,580 ppm May 19-23, 24 (12 p.m.-10 p.m.).

Specific conductance: Maximum daily, 110,000 microhm-cm May 19-23, 24 (12 p.m.-10 p.m.); minimum daily, 2,230 microhm-cm May 23. Water temperatures: Maximum daily, 81°F Aug. 18; minimum daily, freezing point on several days during November, December, January, and March.

EXTREMES, 1948-51 --Dissolved solids: Maximum, 78,500 ppm Mar. 21, 24-28, 1949; minimum, 1,580 ppm May 19-23, 24 (12 p.m.-10 p.m.), 1951. Hardness: Maximum, 5,330 ppm Mar. 21, 24-28, 1949; minimum, 372 ppm May 19-23, 24 (12 p.m.-10 p.m.), 1951.

Water temperatures: Maximum daily, 90°F June 17, 1949, June 26, 1950; minimum daily, freezing point on many days during winter months. REMARKS --Values reported for dissolved solids are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Specific conductance (microhm-cm at 25°C)	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-2, 1950	158		33		250	54		1,040	158	673	1,610		2.5	3,740	5.09	1,600	846	716	73	6,140	8.1
Oct. 3-5	84.7		25		318	70	1,630		151	868	2,550		--	5,540	7.53	1,270	1,080	958	76	8,180	7.5
Oct. 6-10, 14-16, 18-19	37.4		30		588	169	3,920		110	1,640	6,310		--	12,700	17.27	1,280	2,160	2,070	80	19,500	7.5
Oct. 11-13	35.3		32		424	169	2,920		122	1,220	4,130		--	8,000	11.27	918	1,310	1,140	67	13,000	8.0
Oct. 14-20-31	17.4		24		978	275	8,410		134	2,450	10,300		--	20,000	27.20	918	2,530	2,830	79	33,300	7.5
Nov. 1-9, 11	11.4		24		976	275	8,410		134	2,450	13,600		--	25,800	35.09	794	3,570	3,460	84	35,600	7.6
Nov. 10, 12-30	7.55		18		978	301	11,200		147	2,380	18,000		--	32,900	44.74	671	3,680	3,560	87	44,800	7.5
Dec. 1-31	6.58		16		975	317	13,400		174	2,770	21,200		--	38,800	52.77	689	3,740	3,590	89	49,000	7.8
Jan. 1-31, 1951	5.63		4.7		965	334	14,000		159	2,540	22,300		--	40,200	54.67	611	3,780	3,650	89	52,300	7.6
Feb. 1-5, 11-19, 23-26	7.94		14		912	377	16,300		134	2,560	25,900		--	46,100	62.70	988	3,830	3,720	90	63,600	7.2
Feb. 6-10, 20-22, 27-28	8.80		20		908	295	11,000		111	2,410	17,600		--	32,300	43.93	767	3,480	3,390	87	46,500	7.2
Mar. 1-10, 14, 17-26, 28-31	6.60		13		1,030	306	12,400		135	2,600	19,800		--	36,200	49.23	645	3,830	3,720	88	50,800	7.6
Mar. 11-13, 27	9.60		17		1,220	445	27,500		114	2,760	43,800		--	75,800	103.09	1,960	4,870	4,780	92	95,500	7.3
Mar. 15-16	11.5		14		673	183	5,780		124	1,900	9,160		--	17,800	24.21	553	2,430	2,330	84	27,400	7.9
Apr. 1-21, 30	4.79		20		1,130	337	11,200		106	3,030	18,000		--	33,800	45.97	437	4,200	4,120	85	47,700	7.4
Apr. 22-27, 29	3.46		20		1,180	431	18,800		106	3,140	30,000		--	53,600	72.90	501	4,720	4,630	90	69,100	7.4
Apr. 28	6.50		12		566	92	3,000		78	1,360	4,840		--	9,910	13.48	174	1,790	1,730	78	16,100	7.5
May 1-16, 17 (12 p.m.), 18-21, 24-31	26.3		65		1,270	417	13,700		89	3,480	21,900		--	40,900	55.62	2,900	4,880	4,810	86	56,300	7.8
May 17 (11 a.m.), 18-21, 24-31	643		29		435	91	2,150		112	1,180	3,410		4.5	7,350	10.00	12,800	1,460	1,370	76	11,900	7.8
May 18, 27-29	542		23		412	59	930		109	1,110	1,450		--	4,040	5.49	5,910	1,270	1,180	61	6,260	7.9

May 19-23, 24 (12 p.m. -10 p.m.).....	713	26	118	19	423	153	320	588	6.3	1,580	2.15	3,040	372	247	71	2,760	7.9
May 24 (10 p.m.-12 p.m.).....	451	27	298	52	521	97	800	832	4.5	2,580	3.51	3,140	558	878	54	4,070	8.1
May 24 (10 p.m.-12 p.m.).....	17.0	38	563	123	2,660	84	1,500	4,300	4.5	9,220	12.54	423	1,910	1,840	75	14,600	7.9
June 1, 23.....	10.2	31	723	156	3,630	80	1,970	5,910	--	12,400	16.86	341	2,450	2,380	76	19,300	7.7
June 2-5, 24-25.....	4.90	22	846	195	5,500	98	2,160	8,890	--	17,700	24.07	234	2,910	2,830	80	26,700	7.7
June 6-9, 26-28.....																	
June 10, 11 (12 p.m.-12 m.).....	33.8	47	1,320	435	23,500	107	2,770	37,800	--	85,900	89.62	6,010	5,080	5,000	91	85,400	8.0
June 11 (12 m.-12 p.m.).....																	
June 11 (12 m.-12 p.m.).....	126.0	24	462	49	1,850	102	1,220	2,850	--	6,500	8.84	2,210	1,350	1,270	75	10,400	7.8
June 12-13, 20-22.....	8.0	28	344	77	1,420	93	838	1,820	8.0	6,370	5.94	1,090	1,360	1,360	68	7,300	7.7
June 14-18.....	1,093	24	289	36	1,420	98	800	1,925	4.5	2,740	3.73	8,090	1,889	1,733	61	4,590	7.7
June 19-20.....																	
June 29-30.....	151.60	42	1,140	285	9,320	100	2,790	15,100	--	28,700	39.03	46	4,020	3,930	83	41,800	7.9
July 1-2, 5, 7, 28-29.....		23	572	81	2,330	90	1,460	3,710	--	8,220	11.18	3,350	1,760	1,690	74	13,100	7.8
July 3-4, 6.....	135	26	564	61	1,200	85	1,460	1,900	2.5	5,250	7.14	1,910	1,660	1,560	61	8,060	7.6
July 8-9, 17.....	8.53	31	775	145	4,470	82	1,900	7,230	--	14,600	19.86	336	2,530	2,460	79	22,600	7.7
July 10-11, 15-16, 18, 26-27, 30.....	4.08	22	945	181	7,190	88	2,220	11,600	--	22,200	30.12	245	3,100	3,030	83	33,300	7.6
July 12-14, 19-25, 31.....	5.80	35	1,270	354	11,400	107	3,100	18,500	--	34,700	47.19	543	4,620	4,540	84	48,900	7.7
Aug. 1-10, 11 (12 p.m.-8 a.m.).....	11.6	19	1,420	353	14,300	124	3,460	22,900	--	42,500	57.80	1,330	4,990	4,890	86	58,000	7.7
Aug. 11 (8 a.m.-12 p.m.).....																	
Aug. 12 (12 p.m.-12 m.).....	43.9	25	859	181	6,340	118	2,110	10,200	--	19,800	26.93	2,350	2,890	2,790	83	30,100	7.7
Aug. 12 (12 p.m.-12 m.).....																	
Aug. 12 (12 p.m.-12 p.m.).....	511	18	197	33	609	113	561	900	4.5	2,380	3.24	3,280	624	532	68	4,100	7.8
Aug. 13-14, 23, 27.....	50.0	19	220	45	962	129	605	1,480	4.0	3,400	4.62	459	734	628	74	5,780	7.9
Aug. 15, 26, 28.....																	
Aug. 16, 22 (7 a.m.-12 p.m.).....	687	18	342	62	1,460	124	872	2,320	--	5,140	6.99	9,530	1,110	1,010	74	8,550	7.8
Aug. 17, 29.....	9.20	18	476	106	2,940	120	1,732	4,550	--	9,280	12.62	231	1,430	1,306	75	13,100	7.8
Aug. 21, 30-31.....	437	20	124	24	1,430	125	372	802	4.5	1,640	2.22	1,890	408	306	70	2,730	7.8
Sept. 1, 11-12.....	4.50	14	825	166	5,870	109	1,940	9,500	--	18,400	25.02	224	2,740	2,650	82	26,200	7.7
Sept. 2-8, 9 (12 p.m.-12 m.).....	6.82	17	1,300	313	12,700	122	3,060	20,500	--	38,000	51.68	700	4,530	4,430	86	52,300	7.6
Sept. 9 (12 p.m.-12 m.).....	14.8	16	575	91	3,010	77	1,420	4,830	--	9,980	13.57	399	1,810	1,750	78	15,900	7.7
Sept. 10.....																	
Weighted average ..	64.5	24	384	79	2,250	118	1,020	3,560	--	7,380	10.04	1,290	1,280	1,190	79	11,000	---

WESTERN GULF OF MEXICO BASINS

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951 a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	59	48	40	--	50	51	59	70	--	75	76
2	63	58	55	33	--	50	48	56	72	68	75	78
3	58	45	38	--	35	50	52	60	60	75	78	77
4	58	39	50	--	50	50	52	62	55	75	78	77
5	--	50	--	34	38	50	58	58	70	76	76	78
6	--	45	--	35	45	56	54	62	78	72	77	78
7	65	50	32	--	35	55	58	64	71	73	77	78
8	65	48	38	40	--	56	54	60	74	75	77	74
9	80	50	36	39	39	38	55	62	70	73	77	73
10	63	--	40	35	39	43	56	59	70	73	79	74
11	62	--	38	32	--	43	48	54	70	73	72	77
12	65	50	40	34	45	33	53	62	73	74	--	77
13	66	51	33	35	--	36	51	65	65	74	77	68
14	65	48	32	31	--	56	54	63	69	73	78	68
15	76	55	50	34	--	40	40	65	69	73	78	73
16	60	56	--	37	50	44	45	68	76	71	74	58
17	60	54	33	--	60	50	49	50	70	72	77	68
18	58	55	35	33	60	32	50	66	65	75	81	--
19	62	49	34	34	--	35	55	69	73	74	73	79
20	58	36	38	52	63	40	58	68	80	76	--	78
21	60	43	40	38	--	42	--	71	73	73	--	67
22	75	46	37	38	62	52	--	70	76	73	68	58
23	50	48	40	38	60	48	--	66	74	74	73	58
24	58	31	39	35	55	48	--	80	--	75	73	73
25	58	45	40	--	50	50	--	70	--	78	74	76
26	65	40	39	39	50	49	--	68	76	74	75	76
27	61	42	--	38	50	53	--	71	75	73	78	69
28	62	42	--	--	50	49	--	71	74	75	79	59
29	75	47	40	--	--	38	--	71	76	76	77	63
30	63	50	36	--	--	56	--	77	75	76	78	73
31	60	--	--	--	--	56	--	70	--	72	74	--
Average	64	48	39	--	--	47	--	65	71	74	76	72

a A wide variation is shown from day to day due to the variable discharge and times of making temperature measurement.

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.

LOCATION.--At gaging station at county road bridge in Nugent, Jones County, 4 miles upstream from Deadman Creek.

DRAINAGE AREA.--2,220 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1948 to September 1951.

Water temperatures: August 1948 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 3,540 ppm Feb. 11-19; minimum, 234 ppm July 2 (8 a.m. to 12 p.m.), 3 (12 p.m. to 8 a.m.), 4, 27-31.

Hardness: Maximum, 1,520 ppm Feb. 11-19; minimum, 135 ppm July 2 (8 a.m. to 12 p.m.), 3 (12 p.m. to 8 a.m.), 4, 27-31.

Specific conductance: Maximum, 1,740 microhos Feb. 11, 14-15; minimum daily, 278 microhos June 11.

Water temperatures: Maximum, 92° F June 2, 24, 1949 Sept. 2, 1951; minimum, 59° F June 2, 24, 1949 Sept. 2, 1951.

EXTREMES, 1948-51.--Dissolved solids: Maximum, 3,910 ppm Mar. 21-31, 1949; minimum, 158 ppm Sept. 15-16, 1949.

Hardness: Maximum, 1,520 ppm Feb. 11-19, 1951; minimum, 89 ppm Sept. 15-16, 1949.

Water temperatures: Maximum, 92° F June 2, 24, 1949 Sept. 2, 1951; minimum, freezing point Jan. 29, 1949.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Tem- perature (F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids (tsum)			Hardness as CaCO ₃		Per- cent so- dium	Specific conduct- ance (micro- mhos at 25° C)	pH
														Parts per mil- lion	Tons per acre- day	Tons per day	Calcium, mag- nesium	Non-carbon- ate			
Oct. 1-10, 1950	5.86	12	12	7.7	90	35	98	180	231	136	136	0.5	0.5	730	0.99	12	368	221	37	1,150	7.8
Oct. 11-20	2.66	7.7	7.7	122	52	122	157	206	365	220	220	5	5	1,030	1.40	7.4	518	350	40	1,660	7.7
Oct. 21-31	4.97	7.5	7.5	153	70	153	193	222	515	262	262	8	8	1,310	1.78	18	670	488	38	2,030	7.8
Nov. 1-20	5.46	8.6	8.6	185	102	185	198	204	679	310	310	1.2	1.2	1,580	2.15	23	881	714	33	2,320	7.8
Nov. 21-30, Dec. 1-10	5.37	5.4	5.4	280	128	341	290	1,040	475	475	475	1.5	1.5	2,420	3.29	35	1,250	1,010	37	3,350	7.7
Dec. 11-20	4.58	5.5	5.5	283	124	350	256	1,080	455	455	455	2.2	2.2	2,430	3.30	39	1,220	1,010	39	3,300	7.8
Dec. 21-31	5.47	6.0	6.0	300	129	372	246	1,180	465	465	465	2.2	2.2	2,580	3.51	38	1,280	1,080	39	3,460	7.8
Jan. 1-10, 1951	6.47	7.5	7.5	298	138	460	186	1,270	590	590	590	4.5	4.5	2,860	3.89	50	1,310	1,160	43	3,890	7.8
Jan. 11-31	5.33	5.8	5.8	304	145	504	219	1,340	618	618	618	5.0	5.0	3,030	4.12	44	1,350	1,180	45	4,110	7.9
Feb. 1-10	3.39	6.4	6.4	329	151	596	238	1,380	780	780	780	4.8	4.8	3,360	4.57	49	1,440	1,240	47	4,630	8.0
Feb. 11-19	3.94	6.1	6.1	352	157	619	194	1,470	835	835	835	4.2	4.2	3,540	4.81	38	1,520	1,360	47	5,060	7.9
Feb. 20-28	3.94	6.1	6.1	352	159	596	188	1,420	782	782	782	3.0	3.0	3,360	4.60	31	1,440	1,290	47	4,830	8.0
Mar. 1-10	2.76	5.0	5.0	332	155	615	158	1,470	810	810	810	2.0	2.0	3,470	4.72	26	1,470	1,340	48	4,920	7.8
Mar. 11-18	7.55	6.6	6.6	328	152	621	126	1,460	830	830	830	1.5	1.5	3,460	4.71	71	1,440	1,340	48	4,960	7.8
Mar. 19, 20 (12 p. m.-6 p. m.)	291	11	11	36	24	77	200	74	81	81	81	8	8	414	56	325	188	24	47	775	8.4
Mar. 20 (6 p. m.-12 p. m.), 21-28	23.0	6.0	6.0	69	35	124	232	188	142	142	142	1.0	1.0	690	94	43	316	126	46	1,140	8.2
Mar. 29-31	3.20	8.4	8.4	131	532	140	1,220	685	4.0	2,910	3,96	4.0	4.0	2,910	3.96	25	1,200	1,080	49	4,150	8.2
Apr. 1-8	15.3	6.0	6.0	264	131	600	111	1,380	765	765	765	3.0	3.0	3,240	4.41	134	1,300	1,210	50	4,600	7.6
Apr. 9-10	12.0	12	12	114	43	213	102	438	272	272	272	3.0	3.0	1,140	1.55	37	462	378	50	1,750	8.1
Apr. 11-20	2.45	10	10	91	38	222	154	306	298	298	298	1.5	1.5	1,040	1.41	6.9	363	257	56	1,740	7.8
Apr. 21-30	3.65	8.4	8.4	132	68	246	172	491	348	348	348	1.0	1.0	1,380	1.88	14	609	468	47	2,220	7.9

BRAZOS RIVER BASIN--Continued
CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (Fe)	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 (sum)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesium	Non-carbonate			
May 1-10, 1951.....	7.22		10		145	64	283		150	564	375		1.5		1,520	2.07	30	625	502	50	2,380	7.8
May 11-18, 19 (12 p. m.-12 m.).....					113	57	252		186	374	370		1.0		1,270	1.73	300	516	364	52	2,100	7.8
May 21-22, 23 (12 p. m.-6 a. m.), 24-25, 28 ..	333		18		61	14	27		124	115	30		5.0		340	.46	306	210	108	22	547	8.0
May 23 (6 a. m.-12 p. m.), 26-27, 29-31 ..	201		19		86	17	53		98	211	64		12		524	.71	284	284	204	29	802	8.0
June 1-3, 4, 11 (12 p. m.-6 a. m.), 10, 11 (12 p. m.-12 m.).....	85.9		18		70	19	54		122	163	66		4.5		464	.63	108	248	148	32	726	8.1
June 8-10, 11 (12 p. m.-12 m.).....	262		18		136	31	108		128	389	134		3.5		918	1.25	649	467	362	33	1,330	8.1
June 11 (12 m.-12 p. m.), 12-13, 16-20 ..	621		20		46	9.1	18		130	54	18		4.5		241	.33	404	152	46	21	383	8.0
June 21-25 ..	16.6		22		61	17	40		153	104	51		5.0		382	.52	17	222	96	28	610	8.1
June 26-30 ..	7.62		22		77	26	71		177	174	89		2.5		567	.77	12	299	154	34	893	8.2
July 1, 2 (12 p. m.-8 a. m.), 3 (8 a. m.-12 p. m.), 5-10 ..	104		18		78	21	66		138	187	81		3.5		542	.74	152	281	168	34	848	8.1
July 2 (8 a. m.-12 p. m.), 3 (12 p. m.-8 a. m.), 4, 27-31 ..	140		16		96	11	25		117	47	29		4.0		234	.32	88	135	39	29	390	7.9
July 11-16 ..	18.2		16		77	24	81		147	191	104		2.0		561	.79	29	280	170	38	958	8.1
July 17-26 ..	13.18		15		51	17	43		116	114	53		2.5		364	.30	15	171	102	32	425	7.9
Aug. 6-14 ..	13.5		14		52	27	39		130	91	49		2.0		433	.59	12.7	265	93	34	739	8.1
Aug. 15-20 ..	4.02		10		172	75	185		158	547	312		1.2		1,380	1.89	15	738	608	35	2,180	7.8
Aug. 21-22 ..	38.2		12		160	63	158		162	548	210		1.8		1,230	1.67	127	658	526	34	1,840	7.9
Aug. 23-31 ..	12.8		13		42	12	43		105	81	50		8.8		334	.45	12	154	68	38	523	7.8
Sept. 1-10 ..	.31		13		44	23	71		155	91	97		0		456	.62	.4	204	78	43	728	7.2
Sept. 11-20 ..	.83		21		60	33	99		203	121	145		3.5		597	.81	1.3	285	118	43	1,020	8.0
Sept. 21-30 ..	.15		19		62	40	118		211	136	185		1.0		684	.93	.3	319	146	45	1,170	7.9
Weighted average ...	43.8		17		77	24	76		136	197	96		4.4		569	0.77	67	290	179	36	871	--

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	66	--	48	--	61	62	--	84	87	88	91
2	80	63	--	48	--	64	57	69	74	79	89	92
3	72	59	--	48	--	60	64	70	84	84	89	88
4	76	55	--	--	35	58	63	71	70	81	88	86
5	74	58	58	34	--	57	67	70	72	85	89	90
6	76	--	34	--	41	60	65	73	79	86	90	85
7	75	--	--	44	37	64	64	71	82	86	89	86
8	72	--	--	--	42	61	66	74	82	86	91	84
9	73	--	40	--	42	51	63	76	89	86	91	84
10	76	--	44	--	44	55	63	75	84	88	84	86
11	76	--	45	--	48	52	61	77	70	87	82	85
12	75	--	--	--	58	45	62	74	71	88	84	80
13	77	--	45	--	42	47	56	74	75	89	83	79
14	76	--	47	48	--	52	64	72	78	--	84	78
15	77	--	45	--	34	56	65	75	81	87	88	80
16	--	--	44	--	39	54	63	74	75	86	89	73
17	--	--	47	49	45	60	66	71	82	84	87	72
18	73	--	48	51	50	--	72	72	80	87	89	80
19	68	--	46	--	53	54	--	--	85	89	87	77
20	67	--	--	--	53	55	71	--	86	90	87	79
21	78	--	45	--	53	56	66	75	86	89	87	84
22	70	--	48	--	55	60	65	73	90	89	85	74
23	69	--	46	--	55	60	68	70	84	87	83	84
24	69	--	47	--	56	55	72	72	84	83	86	83
25	69	--	47	--	57	--	69	66	84	85	86	83
26	70	--	43	--	60	57	75	75	85	86	88	84
27	68	--	36	--	60	62	76	76	88	83	86	71
28	72	--	39	--	60	57	77	79	87	85	--	68
29	70	--	40	--	--	--	77	--	90	83	88	79
30	69	--	42	--	--	64	78	84	89	--	87	79
31	69	--	42	--	--	63	--	82	--	84	88	--
Average	73	--	--	--	49	57	67	74	81	86	87	81

BRAZOS RIVER BASIN--Continued
PAINT CREEK NEAR HASKELL, TEX.

LOCATION --At gaging station just above Scotts Crossing, 450 feet downstream from California Creek, and 12 miles southeast of Haskell, Haskell County.

DRAINAGE AREA, 879 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1949 to September 1950, May, June, and August 1951.

Water temperatures: April 1950 to September 1950, May, June, and August 1951.

REMARKS --Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, May to August 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (Parts per million)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH	
															Tons per acre-foot	Tons per day	Calcium, mg-nessum	Non-carbonate				
May 18-19, 1951.....	911		17		26	7.9	12		116	12		8.0	5.0		157	0.21	386	97	2	21	249	8.1
May 20, 27,	270		23		40	13	31		124	46		48	4.5		293	.40	214	53	52	31	456	8.1
May 21-23, 24, 26.....	118		16		84	12	209	--	114	168	410		1.9		1,000	1.36	319	407	314	93	1,790	6.9
May 23, 26, 30-31.....	82.3		16		94	21	85	--	92	160	182		3.5		680	.92	151	321	246	37	1,070	7.7
June 4-5, 8-9, 16.....	266		21		33	8.9	15		113	33	15		3.0		197	.27	157	119	26	21	310	7.8
June 10-12, 14-15.....	361		20		41	9.4	29		110	45	45		3.5		272	.37	265	141	51	31	434	7.7
June 13, 18-20.....	593		19		74	18	45	--	111	125	91		4.0		496	.67	794	258	168	27	743	7.9
Aug. 13-14.....	52.5		12		35	15	36	--	125	52	48		2.5		300	.41	43	149	47	34	475	7.7

^a Residue on evaporation at 180°C.

BRAZOS RIVER BASIN--Continued

PAINT CREEK NEAR HASKELL, TEX.--Continued

Temperature (°F) of water, May to August 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								--	--		--	
2								--	--		--	
3								--	--		--	
4								--	63		--	
5								--	65		--	
6								--	--		--	
7								--	--		--	
8								--	76		--	
9								--	77		--	
10								--	78		--	
11								--	74		--	
12								--	71		--	
13								--	78		79	
14								--	74		82	
15								--	75		--	
16								--	69		--	
17								--	--		--	
18								64	79		--	
19								70	80		--	
20								72	81		--	
21								74	--		--	
22								70	--		--	
23								68	--		--	
24								72	--		--	
25								--	--		--	
26								74	--		--	
27								75	--		--	
28								74	--		--	
29								--	--		--	
30								74	--		--	
31								81	--		--	
Average								--	--		--	

BRAZOS RIVER BASIN--Continued
CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.

LOCATION.--At gaging station at bridge on old Fort Griffin-Throckmorton road, half a mile northeast of Fort Griffin, Shackelford County, 5,100 feet upstream from bridge on U.S. Highway 183, and 1.3 miles upstream from Mill Creek.

RECORDS AVAILABLE.--Chemical analyses: November 1949 to September 1951.

Water temperatures: November 1949 to September 1951.

Sediment records: November 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,180 ppm May 20 (11 a.m.-12 p.m.), 21 (12 p.m.-6 a.m.); minimum, 183 ppm May 19, 20 (12 p.m.-3 a.m.). Hardness: Maximum, 539 ppm May 20 (11 a.m.-12 p.m.), 21 (12 p.m.-6 a.m.); minimum, 109 ppm May 19, 20 (12 p.m.-3 a.m.).

Specific conductance: Maximum daily, 1,900 micromhos May 20 (11 a.m.-12 p.m.), 21 (12 p.m.-6 a.m.); minimum daily, 300 micromhos June 18.

Sediment concentrations: Maximum observed, 5,480 ppm June 12.

Sediment loads: Maximum daily, 41,000 tons June 13; minimum daily, 0 tons on many days.

EXTREMES, 1949-51.--Dissolved solids: Maximum, 1,680 ppm Apr. 17, 1950; minimum, 160 ppm Nov. 9-20, 1949.

Hardness: Maximum, 539 ppm May 20 (11 a.m.-12 p.m.), 21 (12 p.m.-6 a.m.); minimum, 94 ppm Apr. 18-19, 1950.

Sediment concentrations: Maximum observed, 7,390 ppm May 28, 1950.

Sediment loads: Maximum daily, 41,000 tons June 13, 1951; minimum daily, 0 tons on many days.

REMARKS.--Values reported on dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of dissolved constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue) a			Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Magnesium			
Oct. 1-16, 1950, Feb. 3-5, 1951.	3.19		11		41	10		31	116	62	37		1.2		267	0.36	2.3	144	48	33	443	7.6
Mar. 21-31	26.6		5.8		61	16	40		168	92	50		2.0		374	.51	27	218	80	29	603	8.3
Apr. 1-30, May 1-5, 7-10, 1951.			3.9		64	17	51		160	111	66		1.5		440	.60	1.0	230	98	33	669	7.8
May 19, 20 (12 p.m.-3 p.m.)	143	80	2.9		63	21	51		143	120	79		1.0		422	.57	163	244	126	31	736	7.8
May 20 (3 a.m.-11 a.m.)	1,119		8.8		31	7.8	21		121	28	18		3.0		183	.25	553	109	10	30	314	7.6
May 20 (11 a.m.-12 p.m.), 21 (12 p.m.-6 a.m.)	1,431		10		94	33	105		105	299	142		2.5		760	1.03	2,940	370	284	38	1,220	7.6
May 21 (6 a.m.-12 p.m.), 23-29	1,533		7.4		132	51	192		101	492	255		2.5		1,180	1.60	4,880	539	456	44	1,900	7.7
May 22, 30-31	656		17		60	16	51	--	120	105	77		4.0		424	.58	751	216	117	34	669	7.9
Residue on evaporation at 180°C.	172		18		38	10	19		117	41	24		5.0		235	.32	109	136	40	23	369	7.8

June 1-3, July 1-3...	189	16	50	12	25	108	74	42	3.5	304	.41	155	174	86	24	483	7.9
June 4, 9 (12 p.m.)	455	15	82	23	105	104	178	180	3.0	700	.95	860	289	214	43	1,130	7.9
June 5-6, 10, 15, 16																	
June 7-8, July 7	473	17	51	13	33	--	84	48	3.5	339	.46	433	181	91	28	530	8.0
June 11, 13 (12 p.m.)	151	16	69	21	54	--	184	65	3.2	490	.67	200	258	168	31	753	8.0
June 12, 13 (12 p.m.)																	
June 14-31	141	20	60	18	72	--	87	113	2.5	490	.67	187	224	100	41	851	7.3
June 12, 13 (12 m.)																	
June 12 p.m., 14-18, 20,	1,317	17	50	11	20	118	63	34	3.8	283	.38	1,010	170	73	20	446	7.9
July 12-13	46.7	20	50	12	19	118	74	27	3.5	284	.39	36	174	77	19	443	7.8
June 21-31																	
Aug. 1-16, 21-27	12.2	15	76	15	26	118	166	27	1.5	404	.55	13	251	154	19	609	7.8
Aug. 28-31	9.95	16	46	8.5	19	120	63	19	1.5	239	.33	6.4	150	31	22	914	7.5
Sept. 1-6, 12-20	1.44	14	42	6.3	17	136	39	16	2.3	220	.30	.9	139	28	21	318	7.8
Weighted average...	88.7	16	58	15	44	119	101	67	3.5	393	0.53	94	206	108	32	630	--

a Residue on evaporation at 180°C.

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79					--	58		80	86	86	82
2	76					--	57		79	85	90	--
3	70					--	58		65	83	--	--
4	70					--	58		69	83	--	--
5	73					--	58		69	87	--	--
6	73					--	58		71	87	--	--
7	70					--	--		76	86	--	--
8	73					--	--		86	82	--	--
9	73					--	--		78	86	--	--
10	70					--	--		85	86	--	--
11	--					--	--		78	--	--	--
12	--					--	--		75	83	--	84
13	--					--	--		73	92	--	74
14	--					--	--		77	--	--	75
15	--					--	--		79	--	--	--
16	--					--	--		73	--	--	--
17	--					--	--		76	--	--	--
18	--					--	--		78	--	--	--
19	--					--	--		86	--	--	--
20	--					--	--		87	--	--	--
21	--					--	--		84	--	--	--
22	--					60	--		75	--	82	--
23	--					62	--		84	--	84	--
24	--					59	--		83	--	85	--
25	--					59	--		84	--	86	--
26	--					58	--		85	--	85	--
27	--					65	--		--	--	84	--
28	--					60	--		--	--	86	--
29	--					53	--		--	--	90	--
30	--					54	--		--	--	90	--
31	--					60	--		--	--	96	--
Average	--					--	--		78	--	--	--

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	13	54	1.9						
2-----	10	46	1.2						
3-----	8.2	31	.7						
4-----	6.0	39	.6						
5-----	5.2	54	.8						
6-----	4.2	43	.5						
7-----	3.5	52	.5						
8-----	2.8	42	.3						
9-----	2.0	48	.3						
10-----	1.5	40	.2						
11-----	1.1	--	(a t)						
12-----	.9								
13-----	.6								
14-----	.5								
15-----	.3								
16-----	.1	--	0						
17-----	0								
18-----	0								
19-----	0								
20-----	0								
21-----	0	--	0						
22-----	0								
23-----	0								
24-----	0								
25-----	0								
26-----	0								
27-----	0								
28-----	0								
29-----	0								
30-----	0								
31-----	0								
Total-	59.9	--	7.3	0		0	0		0
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	0			0	--	0	0		
2-----	0			0	--	0	0		
3-----	.2	--	(e t)	.2		0	0		
4-----	.4			.4		0	0		
5-----	.2			.2		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		0	0		
11-----	0			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	--	0	0		
18-----	0			0		0	0		
19-----	0			0		0	0		
20-----	0			0		0	0		
21-----	0			0		65	--	e 80	
22-----	0			0		84	--	e 90	
23-----	0			0		54	--	e 20	
24-----	0			0		30	--	e 5	
25-----	0			0		19	--	e 2	
26-----	0			0		13	20		.7
27-----	0			0		9.6			
28-----	0			0		7.2			
29-----	--			--	--	4.4	8		.1
30-----	--			--	--	3.4			
31-----	--			--	--	2.7			
Total-	0		0	0.8	--	(t)	292.3	--	198.2

e Estimated.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.7			0.3			40	100	11
2-----	2.4			.2			279	1,670	s 3,800
3-----	2.1			.2		(e t)	636	3,100	s 6,230
4-----	1.8			.1			1,300	3,220	s 11,500
5-----	3.0	8	0.1	.1			790	2,500	5,330
6-----	3.4			0		0	334	1,410	1,270
7-----	2.4			.1			160	480	207
8-----	2.1			.2		(e t)	97	110	29
9-----	1.5			.1			76	110	21
10-----	1.0			.1			79	120	26
11-----	.5			0			319	1,120	s 3,540
12-----	.2			0			2,280	4,200	s 26,700
13-----	.2			0			2,950	5,160	s 41,000
14-----	.1			0		0	2,110	3,070	s 18,000
15-----	.1			0			922	2,360	s 6,080
16-----	.1			0			2,470	3,440	s 22,900
17-----	.1			4.8	31	.4	1,650	2,320	s 10,500
18-----	.1			282	--	a 1,720	1,110	1,300	3,900
19-----	.1	--	(e t)	1,080	3,370	s 10,100	1,160	1,020	3,190
20-----	.1			1,430	2,230	s 8,590	466	600	755
21-----	.8			1,230	3,900	s 11,900	168	410	186
22-----	1.1			351	2,830	s 2,720	105	160	45
23-----	1.1			386	1,280	s 1,270	70	125	24
24-----	.8			592	695	s 1,300	49	102	13
25-----	.5			648	1,020	1,780	35	100	9.4
26-----	.5			992	2,060	s 7,000	28	79	6.0
27-----	.4			833	3,170	s 7,450	22	--	a 3.6
28-----	.2			624	3,550	5,980	16	--	a 2.2
29-----	.1			216	1,400	816	12	--	a 1.3
30-----	.2			103	500	139	9.0	--	a.7
31-----	--	--	--	63	190	32	--	--	--
Total--	29.7	--	0.9	8,836.2	--	60,795.5	19,742.0	--	165,280.2
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6.2	--	a 0.3	28	20	1.5	44	0.2	
2-----	37	89	8.9	16	20	.9	1.2		
3-----	134	362	s 327	9.0			.9		
4-----	825	1,080	s 2,430	5.3			.6		
5-----	1,040	1,240	3,480	3.4			.2	--	e.1
6-----	502	930	1,280	1.8			.1		
7-----	196	530	280	1.1			0		
8-----	102	210	58	.8			0		
9-----	58	86	13	.4			0	--	0
10-----	38	84	8.6	.2	--	e.1	0		
11-----	27	55	4.0	.1			0		
12-----	18	53	2.6	.1			6.6	52	.9
13-----	14	52	2.0	.1			4.4	38	.5
14-----	8.1	--	a 1.0	.1			2.1	49	.3
15-----	6.7	--	a.8	.1			1.2		
16-----	4.4	40	.5	.1			1.0		
17-----	2.1			0			.7		
18-----	1.2			0			.5	37	.1
19-----	.9			0	--	0	.2		
20-----	.6			0			.1		
21-----	.3			.1	--	(t)	0		
22-----	3.0			50	66	s 12	0		
23-----	7.2			34	41	3.8	0		
24-----	4.1	--	e.3	9.9	20	.5	0		
25-----	2.7			31	23	1.9	0	--	0
26-----	1.8			56	35	5.3	0		
27-----	1.0			34	38	3.5	0		
28-----	1.0			20	45	2.4	0		
29-----	.8			11	40	1.2	0		
30-----	.7			5.8	49	.8	0		
31-----	14			3.0	40	.3	--	--	--
Total--	3,057.8	--	7,881.2	321.4	--	35.5	21.6	--	3.0
Total discharge for year (cfs-days)									32,361.7
Total load for year (tons)									234,203.8

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

BRAZOS RIVER BASIN--Continued
CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Particle-size analyses of suspended sediment, May to July 1951
(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	Instantaneous discharge (cfs)	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 20, 1951	9:20 a. m.	1,460	2,370	3,300	63	80	84	95	100	--	--					BCW
May 26	2:00 p. m.	1,200	1,470	1,120	79	84	91	96	98	100	--					SECV
June 4	7:30 a. m.	1,340	2,500	1,890	64	67	77	87	95	99	100					SECV
June 12	5:45 p. m.	2,680	5,360	2,780	--	72	87	94	96	98	100					SECV
June 13	6:45 a. m.	3,010	5,820	3,470	67	81	89	94	98	99	100					SECV
June 13	6:45 a. m.	3,010	5,820	3,480	--	5	8	89	99	99	100					SEN
June 14	10:20 a. m.	2,380	3,140	2,200	69	82	88	96	99	100	--					SECV
June 15	12:45 p. m.	766	2,240	1,770	73	87	93	97	98	99	100					SECV
June 15	12:45 p. m.	766	2,240	1,670	3	11	75	97	98	99	100					SEN
June 16	7:30 a. m.	2,130	3,620	2,640	--	74	77	95	97	99	100					SECV
June 17	8:40 a. m.	1,630	2,470	1,940	65	73	84	93	98	99	100					SECV
June 17	8:40 a. m.	1,630	2,470	1,870	2	6	30	99	99	99	100					SEN
July 4	8:00 a. m.	878	1,030	1,868	81	99	100	--	--	--	--	100				BCW
July 5	6:40 p. m.	982	1,200	1,050	82	90	92	96	97	98	99					SECV

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER AT POSSUM KINGDOM DAM NEAR GRAFORD, TEX.

LOCATION.--Immediately below dam on Brazos River, 2.6 miles upstream from Loving Creek, 11.3 miles southwest of Grafard, and 20 miles upstream from gaging station near Palo Pinto, Palo Pinto County.

DRAINAGE AREA.--22,550 square miles, approximately, of which 9,240 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: January 1942 to September 1951.

Water temperatures: October 1949 to September 1951.

EXTRMS. 1950-51.--Dissolved solids: Maximum, 1,490 ppm Aug. 1-10, Aug. 11-20; minimum, 1,150 ppm Dec. 1-31.

Hardness: Maximum, 458 ppm Aug. 1-10, 1-20; minimum, 391 ppm Apr. 1-30.

Specific conductance: Maximum, 2,650 micromhos per centimeter at 25°C. daily, 17-18; minimum daily, 1,840 micromhos Jan. 6.

Water temperature: Maximum, 45°F., 17-18; minimum, 38°F., 2-9, 1942; minimum, 829 ppm Sept. 1-10, 1942.

EXTRMS. 1942-51.--Dissolved solids: Maximum, 2,130 ppm Feb. 2-9, 1942; minimum, 318 ppm Dec. 21-31, 1942.

Hardness: Maximum, 661 ppm Feb. 2-9, 1942; minimum, 318 ppm Dec. 21-31, 1942.

Water temperatures (1949-51): Minimum, 45°F. on several days in February 1951.

REMARKS.--Values reported for dissolved solids are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for gaging station near Palo Pinto for water year October 1950 to September 1951 given in Water-Supply Paper 1212. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (ann)			Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate		
Oct. 1-31, 1950	768	9.8			139	19	293	103	335	445	--	3.0		1,290	1.75	2,670	425	340	60	2,170	7.5
Nov. 1-30	278	11			130	24	290	112	289	468	--	8		1,270	1.73	953	423	331	60	2,120	7.5
Dec. 1-31	386	9.4			123	24	254	110	287	418	--	1.0		1,150	1.56	1,200	406	316	58	1,990	7.2
Jan. 1-31, 1951	679	7.7			122	22	278	116	269	442	--	5		1,200	1.63	2,200	395	300	60	2,070	7.9
Feb. 1-28	419	13			127	27	257	116	267	435	--	8		1,180	1.60	1,330	428	333	57	2,060	7.6
Mar. 1-31	103	12			123	21	280	120	270	440	0.4	1.0		1,210	1.65	337	394	295	61	2,120	7.4
Apr. 1-30	364	13			122	21	294	120	273	458	--	1.5		1,240	1.69	1,220	391	292	62	2,160	7.7
May 1-31	329	12			127	21	283	122	271	450	4	2.0		1,230	1.67	1,090	404	304	60	2,180	7.7
June 1-30	757	13			124	28	285	125	277	460	--	5.0		1,250	1.70	2,550	424	322	59	2,170	7.3
July 1-10	609	12			126	23	299	124	282	470	--	1.0		1,270	1.73	2,090	409	308	61	2,140	7.4
July 11-20	1,743	13			127	26	316	126	297	495	--	5		1,340	1.82	6,310	424	321	62	2,320	7.8
July 21-31	1,697	11			136	26	346	123	297	580	1.8			1,460	2.03	5,150	446	346	63	2,520	7.7
Aug. 1-10	1,281	11			139	27	361	126	309	580	--	8		1,490	2.03	4,290	458	355	63	2,620	7.5
Aug. 11-20	1,066	11			137	25	381	131	313	570	--	8		1,490	2.03	4,290	445	338	64	2,580	7.6
Aug. 21-31	1,092	18			140	21	353	128	293	562	--	5		1,450	1.97	4,280	436	331	64	2,550	7.6
Sept. 1-30	622	17			137	25	347	126	293	560	--	1.5		1,440	1.96	2,420	445	342	63	2,490	7.4
Weighted average ...	603	12			131	24	308	120	291	490	--	1.7		1,320	1.80	2,150	426	327	61	2,280	--

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER AT POSSUM KINGDOM DAM NEAR GRAFORD, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement at approximately 8:30 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	74	60	49	46	46	48	54	57	62	--	--
2	76	73	60	49	46	46	48	54	57	62	--	--
3	76	73	60	49	46	46	48	55	57	62	--	--
4	76	73	60	50	46	46	48	55	57	--	--	--
5	75	73	60	50	46	46	51	55	57	63	--	--
6	75	73	60	50	46	46	51	55	57	63	--	--
7	75	73	57	50	46	47	51	55	57	63	--	--
8	75	73	57	50	45	47	51	55	57	63	--	--
9	75	69	57	50	45	47	51	55	57	63	--	--
10	75	69	57	50	45	47	51	55	57	63	76	--
11	74	69	57	49	45	47	54	55	57	--	--	--
12	74	--	57	49	45	47	54	55	57	--	71	--
13	74	69	57	49	45	47	54	55	57	--	71	--
14	74	69	55	--	45	47	54	55	58	--	71	--
15	74	69	55	49	45	47	54	55	58	--	71	--
16	74	65	55	49	45	47	54	55	58	--	71	--
17	74	65	55	49	45	47	54	58	58	--	--	--
18	74	65	55	49	45	47	54	58	58	--	--	--
19	74	65	55	49	45	47	51	58	58	--	--	--
20	74	65	55	49	45	47	51	58	60	--	--	--
21	74	65	53	49	46	47	51	58	60	--	--	--
22	74	65	53	49	45	47	51	58	60	--	--	--
23	74	62	53	--	46	47	51	57	60	--	72	73
24	74	62	53	49	46	47	51	57	60	--	72	73
25	73	62	53	49	46	47	54	57	60	--	72	73
26	73	62	53	49	46	47	54	57	60	--	72	--
27	73	62	53	49	46	47	54	57	60	--	72	--
28	73	62	49	49	--	48	54	57	62	--	72	--
29	74	62	49	49	--	48	54	57	62	--	--	--
30	74	60	49	49	--	48	54	57	62	--	--	--
31	73	--	49	49	--	48	--	57	--	--	--	--
Average	74	67	55	49	45	47	52	56	58	--	--	--

BRAZOS RIVER BASIN--Continued
BRAZOS RIVER NEAR WHITNEY, TEX.

LOCATION.--At Whitney Dam, Brazos River, on State Highway 22, 3.4 miles upstream from gaging station near Whitney, Hill County, 7.4 miles southwest of Whitney, and 25.3 miles upstream from Aquilla Creek.

DRAINAGE AREA.--26,190 square miles, (above gaging station) approximately, of which 9,240 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to May 1948, October 1948 to September 1951.

Water temperatures: October 1947 to May 1948, October 1948 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,430 ppm Sept. 21-30; minimum, 341 ppm May 17-21, 25-31.

Hardness: Maximum, 453 ppm Nov. 11-20; minimum, 144 ppm May 17-21, 25-31.

Specific conductance: Maximum daily, 2,540 micromhos on several days in September; minimum daily, 600 micromhos May 29.

Water temperatures: Maximum, 78°F Oct. 27, 29, 31; minimum, 38°F Jan. 31.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 1,560 ppm Oct. 1-10, 1948; minimum, 216 ppm May 17-22, 1949.

Hardness: Maximum, 542 ppm Oct. 1-10, 1948; minimum, 110 ppm Apr. 14-20, 1950.

Water temperatures: Maximum, 87°F July 12, 1949; minimum, freezing point Jan. 28-29, 1948.

REMARKS.--Samples for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined residue and specific conductance. Specific conductance is determined by the method of the U. S. Geological Survey. Discharge records are gaging station near Whitney for water year October 1950 to September 1951. No appreciable inflow below the sampling station. Sampling station is located at the gaging station except during periods of heavy local rains. These analyses probably represent pool water in river made by construction of a dam at this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, mg./l.	Non-carbonate			
Oct. 1-10, 1950.....	2,312																				
Oct. 11-20.....	785	7.8	9.2	132	20	269	289	100	299	425	4.5	4.5	3.0	1,190	1.65	7,550	412	330	59	2,070	7.5
Oct. 21-31.....	461	8.6	9.2	135	22	255	244	115	296	410	3.0	3.0	3.5	1,150	1.82	2,520	428	334	56	2,040	7.6
Nov. 1-10.....	513	6.1	8.6	133	22	244	244	134	279	390	279	4.8	4.8	1,150	1.56	1,430	422	312	59	1,960	7.7
Nov. 11-20.....	284	6.8	6.8	140	24	284	284	154	290	432	432	2.5	2.5	1,260	1.71	1,750	448	322	57	2,110	7.5
Nov. 21-30.....	213	5.5	5.5	142	24	272	272	158	291	432	432	6.1	6.1	1,250	1.70	958	453	324	57	2,100	7.4
Dec. 1-10.....	235	6.5	6.5	138	24	273	273	150	290	430	430	2.0	2.0	1,240	1.69	713	443	320	57	2,100	7.4
Dec. 11-20.....	532	6.1	6.1	127	25	241	241	162	249	390	390	2.0	2.0	1,120	1.52	711	420	288	55	1,950	7.8
Dec. 21-31.....	531	7.2	7.2	124	24	244	244	159	249	388	388	2.8	2.8	1,120	1.52	1,610	408	278	57	1,950	7.6
Jan. 1-10, 1951.....	328	5.6	5.6	122	24	248	248	150	256	392	392	1.8	1.8	1,120	1.51	983	389	286	58	1,900	8.0
Jan. 11-20.....	650	4.2	4.2	118	23	250	250	150	247	390	390	1.8	1.8	1,110	1.51	1,890	379	254	59	1,890	7.9
Jan. 21-31.....	894	5.1	5.1	114	23	256	256	153	251	388	388	1.0	1.0	1,160	1.56	2,800	403	290	59	1,960	8.0
Feb. 1-10.....	623	7.5	7.5	115	28	257	257	138	257	410	410	2.0	2.0	1,140	1.55	1,920	402	289	58	2,010	7.8
Feb. 11-19.....	716	6.4	6.4	108	26	234	234	138	226	378	378	3.5	3.5	1,030	1.43	2,030	376	264	57	1,760	7.7
Feb. 20-28.....	394	6.4	6.4	108	25	228	228	141	229	365	365	1.0	1.0	1,030	1.40	1,100	372	257	57	1,770	7.9
Mar. 1-10.....	315	12	12	116	23	248	248	169	240	378	378	1.0	1.0	1,000	1.50	938	394	246	58	1,910	7.5
Mar. 11-20.....	198	5.1	5.1	114	22	241	241	165	231	370	370	8.0	8.0	1,070	1.46	572	375	240	58	1,860	7.7
Mar. 21-31.....	154	5.0	5.0	112	21	242	242	166	230	365	365	8.0	8.0	1,060	1.44	441	366	230	59	1,840	7.7

Apr. 1-10.....	134	8.6	100	28	250	149	231	385	4.5	1,060	1.47	391	364	242	60	1,880	7.8
Apr. 11-20.....	188	5.4	100	28	246	148	229	380	4.0	1,070	1.46	543	364	243	59	1,880	7.8
Apr. 21-30.....	319	6.0	97	22	219	137	198	345	3.5	976	1.33	841	332	220	59	1,660	7.7
May 1-10.....	1,160	5.8	76	17	171	109	164	262	2.0	762	1.04	2,390	260	170	59	1,380	7.7
May 11-16, 22-24...	519	7.2	73	16	152	104	144	242	1.8	708	.96	982	248	163	57	1,270	7.7
May 17-21, 25-31...	748	9.4	44	8.1	62	102	59	94	1.5	341	.46	689	144	60	46	618	7.7
June 1-10.....	1,661	12	114	24	299	138	277	445	4.5	1,240	1.69	5,560	383	270	63	2,060	7.9
June 11-20.....	4,540	12	124	23	279	136	273	435	2.5	1,220	1.66	13,060	404	252	50	2,060	7.9
June 21-30.....	1,437	12	126	23	271	139	258	435	2.6	1,200	1.63	4,560	383	252	50	2,060	7.8
July 1-10.....	1,134	10	126	25	334	114	231	545	2.0	1,200	1.63	4,290	432	338	63	2,430	8.0
July 11-20.....	1,526	10	126	25	333	115	231	545	2.0	1,200	1.63	4,290	432	338	63	2,430	7.8
July 21-31.....	1,676	9.2	124	26	339	114	286	540	1.8	1,380	1.88	6,240	416	323	64	2,430	7.9
Aug. 1-10.....	1,423	5.0	129	26	326	115	270	540	2.5	1,360	1.85	5,230	429	335	62	2,400	7.4
Aug. 11-20.....	1,902	4.2	128	25	328	115	274	535	2.5	1,350	1.84	3,290	422	328	63	2,380	7.2
Aug. 21-31.....	1,042	4.2	126	25	328	114	276	530	1.2	1,350	1.84	3,800	418	324	63	2,380	7.2
Sept. 1-10.....	1,097	4.8	127	27	332	123	270	542	4.5	1,370	1.86	4,060	428	327	63	2,430	7.3
Sept. 11-20.....	754	6.8	128	27	334	122	274	545	4.0	1,380	1.88	2,810	430	330	63	2,430	7.3
Sept. 21-30.....	289	7.8	133	29	344	121	288	565	3.0	1,430	1.94	1,150	451	352	62	2,500	7.4
Weighted average...	840	8.2	119	23	276	127	260	437	2.6	1,190	1.62	2,700	392	288	61	2,060	--

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER NEAR WHITNEY, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement at approximately 1 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	76	65	54	39	54	54	57	59	65	70	70
2	76	76	64	56	40	54	55	57	60	65	70	70
3	76	75	64	57	40	54	56	57	60	65	70	70
4	76	70	63	57	41	56	56	58	59	65	70	70
5	76	69	58	57	42	56	56	58	60	65	70	70
6	76	69	54	56	42	56	56	58	60	65	70	70
7	77	69	51	57	44	56	56	58	60	66	69	70
8	76	67	50	56	45	55	56	59	61	66	70	70
9	75	65	51	57	44	56	56	--	61	66	71	70
10	76	64	53	57	45	56	56	59	61	66	71	70
11	76	64	53	56	45	56	56	59	61	66	70	70
12	77	64	54	56	46	56	57	58	61	66	70	70
13	77	64	53	56	45	55	57	59	62	67	70	70
14	77	64	54	56	44	56	57	58	62	67	71	70
15	76	64	54	56	44	56	56	59	62	67	71	70
16	76	63	54	56	44	56	56	59	63	67	71	70
17	77	62	54	54	43	56	57	58	62	67	69	70
18	77	62	54	54	43	56	57	58	62	67	70	70
19	77	60	54	52	41	55	57	59	63	67	70	70
20	76	60	55	50	40	56	57	59	63	67	71	69
21	76	60	54	48	41	56	57	58	63	67	71	69
22	76	60	54	46	41	56	57	58	64	68	71	69
23	76	60	53	46	42	56	57	59	64	68	71	69
24	77	59	53	41	42	56	57	58	64	68	71	69
25	77	59	54	40	43	56	57	58	64	68	71	69
26	77	58	53	40	43	56	57	59	65	68	71	69
27	78	58	54	40	43	56	57	59	65	68	71	69
28	77	58	51	39	43	58	57	59	66	68	71	69
29	78	58	52	39	--	57	57	59	66	68	71	69
30	77	59	52	39	--	56	57	59	66	68	71	69
31	78	--	52	38	--	57	--	59	--	68	71	--
Average	77	64	55	51	43	56	56	58	62	67	70	70

BRAZOS RIVER BASIN--Continued

LEON RIVER NEAR EASTLAND, TEX.

LOCATION.--At bridge on county road, 4.2 miles upstream from mouth of Colony Creek, 6.2 miles downstream from Texas Electric Service Company dam forming Olden Lake, 6.6 miles southeast of Eastland, Eastland County, and 11.6 miles northwest of Desdemona, Eastland County.

DRAINAGE AREA.--279 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1950 to August 1951.

Water temperatures: September 1950 to August 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 316 ppm Jan. 21-31, Feb. 1-10; minimum, 152 ppm July 24-26.

Hardness: Maximum, 200 ppm Feb. 1-10; minimum, 92 ppm July 24-26.

Specific conductance: Maximum daily, 636 micromhos Mar. 24, 6 p.m.; minimum daily, 214 micromhos July 24.

REMARKS.--Values reported for dissolved solids are residue on evaporation unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Samples collected twice daily during periods of flow at approximately 8 a.m. and 6 p.m. Samples composited by equal volume. No discharge records available for this station.

Chemical analyses, in parts per million, September 1950 to August 1951

Date of collection	Mean discharge (cfs)	Tem- per- ature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Per- cent non-carbon- atum	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, mag- nesium	Non-carbon- ate			
Sept. 12-20, 1950		11			43	6.9	16	131	24	26	26	1.8	1.8		214	0.29	136	57	20	341	7.7
Sept. 21-23		10			40	7.3	18	131	24	26	26	1.0	1.0		213	29	130	45	24	339	7.7
Oct. 24-27, 29-31		7.4			48	7.4	24	154	27	34	34	2.5	2.5		235	32	150	24	26	395	8.1
Nov. 1-3, 5-8		7.0			50	8.4	25	156	31	38	38	2.2	2.2		251	34	159	31	26	422	7.9
Nov. 18-19		4.2			53	8.2	33	165	37	45	45	2.0	2.0		277	38	166	31	30	465	8.0
Jan. 2, 5-10, 1951		3.6			61	9.7	34	197	36	48	48	2.2	2.2		304	41	192	30	28	526	8.0
Jan. 11-20		4.6			60	9.8	35	196	35	49	49	2.0	2.0		313	43	190	30	29	522	8.1
Jan. 21-31		3.8			61	9.6	36	199	37	49	49	2.2	2.2		316	43	192	28	29	531	8.0
Feb. 1-10		4.1			64	10	37	206	39	50	50	2.0	2.0		316	43	200	32	28	555	7.9
Feb. 11-19		3.6			60	9.4	36	194	39	48	48	2.0	2.0		305	41	188	29	30	533	8.0
Feb. 20-28		3.1			60	9.0	34	186	38	49	49	2.0	2.0		301	41	188	34	29	540	7.9
Mar. 1-10		3.6			58	9.4	39	186	37	55	55	2.0	2.0		300	41	183	30	32	533	7.9
Mar. 11-20		6.8			58	9.2	38	184	38	53	53	2.0	2.0		310	42	182	32	31	541	8.2
Mar. 21-31		5.6			54	9.4	41	174	37	57	57	2.0	2.0		304	41	173	30	34	542	8.0
Apr. 1-10		7.8			48	9.3	39	154	35	56	56	2.0	2.0		279	38	158	32	35	502	8.1
Apr. 11-20		7.0			43	9.2	45	148	34	60	60	2.0	2.0		274	37	145	24	40	508	7.9
Apr. 21-28		7.8			46	9.1	48	164	32	62	62	2.0	2.0		298	39	152	18	40	523	7.8

a Sum of determined constituents.

BRAZOS RIVER BASIN--Continued
LEON RIVER NEAR EASTLAND, TEX.--Continued

Chemical analyses, in parts per million, September 1950 to August 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180° C)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
May 1-5, 1951	8.4	8.6	46	10	8.6	50	186	29	60			1.2		2 287	0.39	156	20	38	517	8.0
May 11-13	8.6	8.6	46	8.6	8.6	47	184	23	62			1.1		2 287	.39	156	9	43	497	7.9
May 21-31	8.6	8.6	48	8.6	8.6	46	185	26	65			2.0		2 285	.39	156	20	39	531	7.7
June 1-9	12	12	40	6.4	6.4	29	130	26	33			2.2		233	.32	126	20	33	390	7.7
June 11-20	16	16	37	7.0	7.0	19	118	20	30			2.0		206	.28	121	24	25	340	7.4
June 21-28	15	15	38	6.1	6.1	19	124	18	28			1.8		202	.27	120	18	26	332	7.5
July 2-8	13	13	38	5.9	5.9	17	123	17	26			1.0		194	.26	119	18	24	322	7.3
July 24-26	9.2	9.2	29	4.7	4.7	12	99	9.8	18			1.8		152	.21	92	11	22	244	7.2
Aug. 4-8	16	16	42	5.7	5.7	20	142	14	28			1.0		200	.27	128	12	25	342	7.6
Aug. 15-16	17	17	42	5.9	5.9	22	144	15	30			1.0		204	.28	129	11	27	354	7.8

a Sum of determined constituents.

BRAZOS RIVER BASIN--Continued

LEON RIVER NEAR EASTLAND, TEX.--Continued

Temperature (°F) of water, September 1950 to August 1951
 /Once-daily temperature measurement at approximately 8 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1												--
2												--
3												--
4												--
5												--
6												--
7												--
8												--
9												--
10												--
11												--
12												74
13												75
14												75
15												76
16												76
17												--
18												--
19												76
20												75
21												76
22												74
23												72
24												--
25												--
26												--
27												--
28												--
29												--
30												--
31												--
Average												--

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	69		--	34	53	62	64	75	--	--	
2	--	61		59	35	58	54	64	77	82	--	
3	--	57		--	37	58	56	69	69	78	--	
4	--	--		46	39	58	58	61	70	79	80	
5	--	57		43	45	51	60	66	71	79	79	
6	--	57		43	47	55	61	--	71	78	81	
7	--	61		37	42	62	61	--	74	80	79	
8	--	62		46	42	62	60	--	77	80	81	
9	--	--		35	46	55	62	--	78	--	--	
10	--	--		40	55	56	62	--	--	--	--	
11	--	--		39	55	53	56	67	77	--	--	
12	--	--		43	55	46	56	67	74	--	--	
13	--	--		47	46	46	52	65	72	--	--	
14	--	--		45	37	43	59	--	76	--	--	
15	--	--		44	39	48	59	--	76	--	78	
16	--	--		40	38	50	58	--	77	--	78	
17	--	--		44	42	57	54	--	78	--	--	
18	--	62		44	46	53	59	--	79	--	--	
19	--	59		45	48	50	62	--	79	--	--	
20	--	--		44	45	51	64	--	79	--	--	
21	--	--		44	42	50	54	74	75	--	--	
22	--	--		42	47	54	61	64	80	--	--	
23	--	--		44	53	61	63	69	79	--	--	
24	59	--		41	53	54	62	70	78	79	--	
25	60	--		41	57	56	65	73	78	79	--	
26	61	--		41	58	57	66	75	78	89	--	
27	61	--		45	56	58	--	74	78	--	--	
28	--	--		41	62	58	--	75	78	--	--	
29	62	--		32	--	56	--	78	--	--	--	
30	62	--		35	--	52	--	76	--	--	--	
31	66	--		35	--	57	--	75	--	--	--	
Average	--	--		44	49	57	62	--	78	--	--	

BRAZOS RIVER BASIN--Continued
BRAZOS RIVER AT RICHMOND, TEX.

LOCATION.--At gaging station at bridge on U.S. Highway 59 in Richmond, Fort Bend County, 925 feet downstream from Texas & New Orleans Railroad bridge, and at mile 93.

DRAINAGE AREA.--44,050 square miles, approximately, of which 9,240 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1951.

Water temperatures: November 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,400 ppm Sept. 1-10; minimum, 222 ppm June 21-25.

Hardness: Maximum, 424, ppm Sept. 1-10; minimum, 129 ppm June 21-25.

Specific conductance: Maximum daily, 2,540 micromhos Sept. 4; minimum daily, 321 micromhos June 22.

Water temperatures: Maximum, 91°F Aug. 5; minimum, 42°F Dec. 6.

EXTREMES, 1945-51.--Dissolved solids: Maximum, 1,400 ppm Sept. 1-10, 1951; minimum, 133 ppm Aug. 27-31, 1947.

Hardness: Maximum, 446 ppm Sept. 1-10, 1948; minimum, 74 ppm Jan. 13-14, 18-20, 1950.

REMARKS.--Valuations on dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents.

Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (°F)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Bo-ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate		
Oct. 1-10, 1950.....	3,664	746	9.5	--	80	14	149		126	137	235	0.2	3.2	--	760	1.03	7,520	257	154	56	1,250 7.5
Oct. 11-21.....	2,351	746	11	0.00	124	20	226	1.6	151	260	358	.4	.8	0.22	1,081	1.47	6,860	392	268	56	1,820 8.0
Oct. 22-31.....	1,265	746	12	.00	111	21	189	1.2	197	200	280	.3	.8	1.16	971	1.32	3,320	364	202	53	1,550 8.0
Nov. 1-10.....	996	746	11	.00	104	21	170	3.2	217	174	255	.3	.5	1.14	895	1.22	2,410	346	168	51	1,430 8.0
Nov. 11-20.....	942	746	11	.00	104	22	165	6.4	235	167	248	.3	.5	2.22	886	1.20	2,250	350	158	50	1,430 8.0
Nov. 21-30.....	788	746	13	.00	105	23	169	3.6	256	173	248	.3	.2	1.15	910	1.24	1,940	356	146	50	1,460 8.2
Dec. 1-10.....		746	14	.00	100	22	161	4.8	245	152	233	.2	1.0	.36	839	1.14	1,690	340	139	50	1,380 7.9
Dec. 11-20.....		746	15	.00	106	22	182	3.2	275	142	241	.1	1.2	.31	760	1.03	1,700	355	130	49	1,410 7.8
Dec. 21-26.....	1,167	746	9.0	.05	110	22	187	4.0	230	179	275	.2	.8	.28	921	1.25	2,300	318	121	48	1,250 7.9
Dec. 27-31.....	924	746	8.4	.02	104	21	167	4.0	239	161	248	.2	.0	.37	832	1.16	2,180	365	174	52	1,530 7.9
Jan. 1-10, 1951.....	940	746	8.4	.02	104	21	167	4.0	239	161	248	.2	.0	.37	832	1.16	2,180	346	150	51	1,430 7.9
Jan. 11-20.....	839	746	11	.02	102	21	180	8	233	166	268	.3	2.0	.11	904	1.23	2,050	356	165	52	1,510 8.1
Jan. 21-31.....	965	746	9.5	.02	102	20	193	2.4	220	165	282	.2	1.0	.22	968	1.32	2,520	336	156	55	1,540 7.9
Feb. 1-10.....	1,111	746	8.8	.02	117	21	219	.4	194	211	338	.2	1.5	.17	1,010	1.37	3,030	378	220	56	1,730 8.0
Feb. 11-19.....	1,049	746	13	.04	102	21	206	2.8	184	191	314	.2	1.5	.25	953	1.30	2,700	341	190	57	1,620 7.7
Feb. 20-28.....	1,464	746	14	.03	96	18	182	2.8	174	178	274	.2	1.8	.27	854	1.16	3,380	314	171	56	1,470 7.8
Mar. 1-10.....	963	746	11	.02	88	17	152	2.4	190	143	222	.2	1.0	.30	a730	.99	1,900	290	134	53	1,270 7.9
Mar. 11-20.....	698	746	13	.04	94	20	142	2.4	242	126	313	.2	1.5	.23	a730	.99	1,380	316	118	49	1,260 8.0
Mar. 21-26, 31.....	912	746	15	--	88	22	140	--	230	115	218	.5	2.0	.05	745	1.01	1,830	310	122	50	1,280 7.9
Mar. 27-30.....	1,968	746	13	--	60	15	96	--	150	69	152	.4	.5	--	494	.67	2,620	211	88	88	882 7.9

a Sum of determined constituents.

1,177	18	--	72	15	79	--	216	78	111	.4	1.0	.20	493	.67	1,370	241	64	42	841	8.0
2,162	16	--	42	8.6	46	--	124	55	57	.4	2.5	.03	300	.41	1,750	140	39	42	506	7.5
2,227	19	.02	83	19	99	1.6	268	82	134	.4	.8	.38	580	.79	355	285	66	43	1,010	7.9
941	14	.04	73	19	121	2.0	208	102	182	.4	.8	.32	a 617	.84	1,370	260	90	50	1,070	7.6
1,612	14	.04	62	14	115	1.6	140	107	170	.4	1.5	.37	568	.80	2,560	212	98	54	1,000	7.3
1,064	16	.01	74	16	139	5.2	156	129	210	.4	1.5	.20	668	.91	1,920	250	122	54	1,170	7.5
3,201	16	.02	58	9.8	84	3.2	137	81	125	.3	3.5	.17	448	.61	3,970	185	72	49	791	8.0
4,776	16	.02	42	6.2	32	2.4	124	41	41	.3	5.0	.21	a 247	.34	3,190	130	29	34	424	7.8
5,692	17	.02	40	7.0	25	--	120	34	36	.3	3.5	--	222	.30	3,410	129	30	30	386	8.0
2,732	17	.02	46	10	54	--	123	78	86	.3	2.3	--	a 325	.54	2,400	156	54	43	374	7.9
1,466	15	.04	58	16.4	75	4.8	144	70	135	.4	.8	.16	a 364	.57	2,340	144	61	46	735	8.0
1,636	15	.04	92	16	212	4.8	134	194	322	.4	.8	.21	b 1,026	1.37	2,340	312	202	56	1,110	7.7
705	17	.03	92	22	232	1.2	123	210	342	.3	2.5	.15	b 1,026	1.39	1,940	320	219	60	1,110	7.6
952	17	--	68	14	131	--	143	120	192	.3	1.5	.19	654	.89	1,680	227	110	56	1,100	7.8
1,065	13	.05	121	28	302	.4	117	278	485	.3	3.5	.21	1,290	1.75	3,710	417	321	61	2,240	7.7
1,840	12	.02	123	28	312	1.6	127	272	500	.3	2.5	.30	1,310	1.78	2,970	422	318	62	2,360	7.6
647	14	.05	120	27	320	2.8	133	274	505	.3	2.5	.16	1,330	1.81	2,320	410	302	63	2,320	7.7
564	11	.02	122	29	341	1.6	120	291	538	.3	2.0	.16	1,400	1.90	2,130	424	325	64	2,440	7.5
1,963	10	.03	107	24	273	1.6	118	226	440	.3	2.0	.18	1,140	1.55	6,940	366	269	62	2,010	7.5
1,424	15	.02	64	9.8	113	3.2	118	103	179	.3	3.0	.40	570	.78	2,190	200	104	55	978	7.4
Weighted average...	13	0.02	80	16	139	2.4	160	134	214	0.3	2.2	0.21	696	0.95	2,680	266	134	53	1,180	--

a Sum of determined constituents.

b Residue on evaporation.

BRAZOS RIVER BASIN--Continued
BRAZOS RIVER AT RICHMOND, TEX.--Continued

Temperature (°F) of water, November 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--	65	--	--	73	68	74	86	87	86	86
2		--	68	64	--	74	66	74	85	88	88	86
3		--	63	62	48	71	67	75	81	86	89	86
4		--	60	63	47	71	67	80	80	86	89	86
5		--	61	61	52	71	67	78	82	88	91	86
6		--	42	62	--	73	70	--	82	88	90	86
7		--	44	49	56	75	70	73	85	88	88	86
8		--	47	49	59	78	71	73	84	87	--	85
9		--	--	52	60	78	70	78	82	87	88	85
10		--	59	56	61	78	70	80	85	87	88	84
11		--	58	54	65	77	65	78	85	88	88	84
12		--	56	59	67	59	66	76	84	88	89	82
13		--	58	64	67	56	67	76	81	88	86	80
14		--	62	59	48	60	72	77	84	87	87	80
15		--	67	55	--	63	71	76	86	86	87	79
16		--	63	61	49	57	70	77	86	86	87	79
17		--	--	62	55	61	71	78	86	87	87	76
18		--	60	65	61	59	77	77	87	88	86	76
19		--	61	67	65	66	77	77	86	88	84	77
20		--	63	66	66	--	77	79	86	87	85	78
21		--	61	65	66	67	78	81	86	88	87	80
22		--	59	57	65	69	80	82	87	87	87	79
23		--	60	61	66	71	79	85	85	87	87	79
24		--	60	54	67	72	77	78	84	86	87	79
25		--	61	54	68	68	77	79	84	86	87	79
26		--	61	57	71	64	80	83	85	86	86	90
27		--	55	60	71	65	78	84	85	87	--	87
28		--	56	54	58	72	67	75	78	85	86	83
29		--	59	54	47	--	61	75	85	88	87	81
30		--	62	54	--	--	67	78	85	87	88	81
31		--	52	--	--	67	--	85	--	86	85	--
Average		--	58	59	61	68	73	79	85	87	87	82

BRAZOS RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS
Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Instantaneous discharge (cfs)	Temperature (°F)	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)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃	Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day				

WHITE RIVER AT COUNTY ROAD CROSSING ABOUT 4½ MILES EAST OF CROSBYTON

Oct. 4, 1950.....	6.29		30				50	35		374	48	18			447	0.61	269	0	30	698	8.2
Jan. 19, 1951.....	4.46		36				44	63		528	94	40		1.0		584	339	0	39	1,060	8.2

WHITE RIVER BELOW FALLS AT U.S. HIGHWAY 82 ABOUT 4½ MILES EAST OF CROSBYTON

Oct. 4, 1950.....	7.22		35														260	0	35	699	8.5
Jan. 19, 1951.....	4.25		34				36	61		482	86	38		0.0		586	341	0	37	1,000	8.2
Mar. 17.....	4.59		40				34	59		487	87	39		1.0		583	328	0	38	1,020	8.6
July 20.....	1.17		44				22	36		4313	50	23		.8		399	203	0	41	668	8.5

BRAZOS RIVER NEAR SOUTH BEND ON STATE HIGHWAY 67

Dec. 8, 1950.....			18				368	372		1,190	180	1,180	2,800		5,820	7.92	2,450	2,300	51	9,770	7.9
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BRAZOS RIVER NEAR MARLIN

Dec. 7, 1950.....	236		8.1				116	21		188	241	362		1.0		1,090	376	222	59	1,860	8.0
Mar. 8, 1951.....	282		6.2				102	20		157	205	338		.5		3,971	336	208	59	1,700	8.1

LEON RIVER 300 FEET BELOW OLDEN LAKE

Mar. 13, 1951.....	0.46		18				58	8.5	46	194	47	55		2.2		328	180	28	36	544	7.7
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LEON RIVER 7 MILES SOUTH OF RANGER

Mar. 13, 1951.....	0.21		8.9				62	9.7	45	208	38	59		0.2		336	194	24	34	566	7.9
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COLONY CREEK 5.7 MILES SOUTH OF RANGER

Mar. 13, 1951.....	0.01		5.6				1,510	413	5,130	77	60	11,700			18,900	23.70	5,470	5,400	67	29,600	7.3
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ROUGH BRANCH CREEK 4.4 MILES NORTHEAST OF DESDEMONA

Mar. 14, 1951.....	0.02		22				76	38	204	356	58	310		0.5		888	346	54	56	1,670	8.3
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a Sum of determined constituents.
b Includes equivalent of 11 parts per million of carbonate (CO₃).
c Includes equivalent of 21 parts per million of carbonate (CO₃).
d Includes equivalent of 7.0 parts per million of carbonate (CO₃).

BRAZOS RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS--Continued
Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Instantaneous discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids (residue at 180°C)	Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot				Calcium, magnesium	Non-carbonate
LEON RIVER 4 MILES NORTH OF DeLEON																				
Mar. 14, 1951.....	0.32		17		118	23	177		271	31	368		0.8	868	1.18	389	167	50	1,590	8.1
LEON RIVER 2 MILES EAST OF DeLEON																				
Mar. 14, 1951.....	0.21		18		118	25	166		328	40	318		0.2	912	1.24	398	128	48	1,510	8.1
ARMSTRONG CREEK 3.3 MILES EAST OF DeLEON																				
Mar. 14, 1951.....	1.21		22		66	17	63		256	24	96		1.8	420	0.57	234	24	37	764	8.0
SABANA RIVER 3.8 MILES SOUTH OF DeLEON																				
Mar. 14, 1951.....	1.36		8.0		104	31	135		281	156	204		0.2	815	1.11	387	156	43	1,310	8.1
RUSH CREEK 7.3 MILES WEST SOUTHWEST OF DeLEON																				
Mar. 14, 1951.....	0.81		15		81	98	198		439	246	298		0.8	1,150	1.56	605	246	42	1,900	8.2
DUNCAN CREEK 5.5 MILES NORTH NORTHEAST OF COMANCHE																				
Mar. 14, 1951.....	0.56		22		80	89	175		467	195	255		1.0	1,050	1.43	566	183	40	1,730	8.0
LEON RIVER NEAR HASSE																				
Mar. 14, 1951.....	4.69		14		73	47	142		302	108	230		0.2	803	1.09	376	128	45	1,390	8.1
LEON RIVER AT U.S. HIGHWAY 281 NORTH OF HAMILTON																				
Dec. 8, 1950.....			13		64	32	54		320	32	80		0.0	457	0.62	291	29	29	828	8.3
SALADO CREEK ABOVE SPRING NO. 1 AT SALADO																				
Aug. 15, 1951.....	0.93								267		12					242			496	7.6
Sum of determined constituents.																				

a Sum of determined constituents.

SALADO SPRINGS, SPRING NO. 1, AT SALADO

Aug. 15, 1951	0.43					306		12						284			598	7.7
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SALADO SPRINGS, SPRING NO. 2, AT SALADO

Aug. 15, 1951	0.35					325		14						300			598	7.5
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SALADO SPRINGS, SPRING NO. 3, AT SALADO

Aug. 15, 1951	1.70	12		92	17	6.7	323	16	12	20		352	0.48	300	35	5	602	7.3
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SALADO SPRINGS, SPRING NO. 5, AT SALADO

Aug. 15, 1951	1.62						290		12					256			598	7.6
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SALADO CREEK BELOW SPRING NO. 5 AT SALADO

Aug. 15, 1951	5.53	11		87	16	8.3	250	15	12	17		291	0.40	233	28	7	571	7.6
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BRAZOS RIVER NEAR BRYAN

Oct. 24, 1950	796	13		110	19	220	161	223	330			a995	1.35	352	220	58	1,680	8.2
Dec. 4	304	11		93	25	207	192	212	288		0.8	939	1.28	335	178	57	1,670	8.1
Jan. 9, 1951	392	8.2		109	28	204	214	213	308		.0	a975	1.33	387	212	53	1,680	8.0
Feb. 12	990	10		122	23	259	165	247	405		.0	1,150	1.56	399	264	59	2,010	7.8
Mar. 9	405	9.9		94	22	178	214	164	258		1.0	884	1.20	325	150	54	1,480	8.2

a Sum of determined constituents.

COLORADO RIVER BASIN

COLORADO RIVER ABOVE BULL CREEK NEAR KNAPP, TEX.

LOCATION.--About 2½ miles above mouth of Bull Creek, 4½ miles south of Knapp, Scurry County, 6.7 miles west of Ira, and 14½ miles southwest of Snyder. RECORDS AVAILABLE.--Chemical analyses: April 1950 to September 1951.

Water temperatures: April 1950 to September 1951. REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation, unless noted otherwise, and for concentrations more than 1,000 ppm are sum of determined constituents. Days in which only conductance and chloride are reported represent periods of no flow as reported by the observer. Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temp-erature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo ⁴ -ride (F)	Ni-trate (NO ₃) (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per-cent so-dium carbonate	Specific conduct-ance (micro-mhos at 25°C)	pH		
														Parts per mil-lion	Tons per acre-foot	Tons per day	Calcium, mag-nesium	Non-carbon-ate					
Oct. 1, 1950			16		35	16	244		119	155	300		1.2		8,826	1.12		154	56	78	1,460	8.1	
Oct. 2-3, 9			13		28	26	84		126	98	50		4.0		351	.48		96	0	65	577	7.9	
Oct. 4-5, 9			18		94	28	626		137	227	965		1.2		2,030	2.76		350	237	80	3,610	8.1	
Oct. 14, 20			16		267	97	2,210		102	772	3,540		1.2		6,950	9.45		1,060	982	82	11,900	7.8	
Oct. 25, 19			15		68	18	290		b224	168	365		1.2		1,040	1.41		224	60	72	1,800	8.3	
Nov. 1, 18			12		60	21	252		214	224	265		1.2		982	1.34		236	60	70	1,620	7.9	
Nov. 8, 12			14		126	46	780		159	388	1,180		.5		2,610	3.55		504	373	77	4,520	7.7	
Dec. 3, 14, 23			3.4		159	50	1,060		117	486			.0		3,450	4.69		602	506	78	5,800	7.2	
Jan. 1, 9, 27, 1951			3.2		272	97	1,670		118	719	2,740		3.0		5,560	7.56		1,080	981	77	9,110	7.4	
Feb. 3, 21			8.4		122	56	446		c251	418	610		3.0		1,790	2.43		535	329	64	2,990	8.3	
Feb. 7, 16, 26			3.2		445	159	2,060		95	900	3,710		--		7,320	9.96		1,760	1,690	72	12,300	7.7	
Mar. 7, 14, 19, 30			4.6		791	254	3,170		92	1,340	5,990		--		11,600	15.64		3,020	2,940	70	18,400	7.6	
Apr. 6			--		--	--	--	--	--	--	23,500		--		--	--	--	--	--	--	--	59,000	--
Apr. 9			--		--	--	--	--	--	--	8,700		--		--	--	--	--	--	--	--	24,900	--
Apr. 19			--		--	--	--	--	--	--	13,200		--		--	--	--	--	--	--	--	34,200	--
Apr. 25			--		--	--	--	--	--	--	7,800		--		--	--	--	--	--	--	--	22,600	--
May 1, 28			11		979	319	4,370		76	1,700	8,100		--		15,500	21.08		3,750	3,690	72	24,000	7.6	
May 7, 14			15		1,890	594	6,600		105	2,830	13,100		--		25,100	34.14		7,160	7,070	67	36,600	7.7	
June 1			20		178	34	1,090		134	381	1,740		5.0		3,510	4.77		584	474	80	6,190	8.0	
June 4, 7, 14, 16			17		30	6.0	116		114	95	110		4.5		1,434	.59		100	6	72	744	7.8	
June 5, 10			22		62	21	443		106	259	598		4.8		1,460	1.99		241	154	80	2,550	7.9	
July 4-5, 16			16		30	6.3	73		141	61	55		3.0		a313	.43		101	0	61	538	8.0	
July 9			22		257	98	3,120		192	1,020	4,690		--		9,300	12.65		1,040	886	87	15,000	8.0	
Aug. 2			--		--	--	--	--	--	--	4,800		--		--	--	--	--	--	--	--	14,900	--
Aug. 11			--		--	--	--	--	--	--	425		--		--	--	--	--	--	--	--	2,060	--
Aug. 18			--		--	--	--	--	--	--	7,000		--		--	--	--	--	--	--	--	20,900	--
Aug. 21			--		--	--	--	--	--	--	7,350		--		--	--	--	--	--	--	--	21,800	--
Aug. 27			--		--	--	--	--	--	--	1,240		--		--	--	--	--	--	--	--	4,590	--

a Sum of determined constituents.

b Includes the equivalent of 3 parts per million carbonate (CO₃).

c Includes the equivalent of 5 parts per million carbonate (CO₃).

[illegible]

WESTERN GULF OF MEXICO BASINS

COLORADO RIVER BASIN--Continued

COLORADO RIVER ABOVE BULL CREEK NEAR KNAPP, TEX.--Continued

[illegible]

COLORADO RIVER BASIN--Continued
BULL CREEK NEAR IRA, TEX.

LOCATION --At gaging station 267 feet upstream from county road crossing, 1.5 miles upstream from Colorado River, 5.5 miles upstream from Chimney Creek, 5.8 miles west of Ira, Scurry County, and 6.9 miles northwest of Outhbert.

DRAINAGE AREA --388 square miles (contributing area)

RECORDS AVAILABLE --Chemical analyses: April 1950 to September 1951.

Water temperatures: April 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 2,150 ppm May 1-19; minimum, 248 ppm July 1-7.

Hardness: Maximum, 620 ppm Apr. 11-20; minimum, 110 ppm June 4 (4 a.m.-12 p.m.) 5-14, 16-30, July 1-7.

Specific conductance: Maximum daily, 3,940 microhos Feb. 28; minimum daily, 305 microhos June 14.

EXTREMES, April 1950 to September 1951.--Dissolved solids: Maximum, 3,100 ppm Aug. 16-20, 1950; minimum, 152 ppm May 2, 1950.

Hardness: Maximum, 620 ppm Apr. 11-20, 1951; minimum, 70 ppm Sept. 3-8, 12, 1950.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex.

Chemical analyses, in parts per million, October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Per-cent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Calcium, magnesium	Tons per day				
Oct. 1-7, 1950	0.66		16		38	7.1		58	149	43	57		2.5		320	0.44	0.6	124	2	50	542	7.8
Oct. 8, 15-20 .....	.13		14		62	32	160	197	115	248			2.8		777	1.06	.3	266	124	55	1,340	7.9
Oct. 9-14 .....	.12		13		48	9.5		96	169	68	110		3.8		454	1.62	.1	159	20	57	778	8.0
Oct. 21-31	a. 05		13		67	16	224	210	132	290			1.2		895	1.22	.1	233	61	68	1,530	7.9
Nov. 1-10	a. 0		12		85	26	352	240	191	488			1.2		1,270	1.73	.0	319	122	71	2,250	7.9
Nov. 11-20	a. 0		12		88	28	371	246	201	512			1.0		1,330	1.81	.0	326	125	71	2,340	7.9
Nov. 21-30	a. 03		11		89	26	366	252	198	505			1.0		1,320	1.80	.1	329	122	71	2,320	7.7
Dec. 1-10	a. 09		11		88	28	359	256	194	498		.8			1,300	1.77	.3	334	124	70	2,300	7.9
Dec. 11-20 .....	.10		7.5		80	31	391	268	229	510			.0		1,380	1.88	.4	327	108	72	2,450	7.9
Dec. 21-31	a. 05		6.1		110	38	359	278	268	500			.0		1,420	1.93	.2	430	202	64	2,460	7.9
Jan. 1-10, 1951 .....	.10		7.2		112	37	376	258	288	522			1.0		1,470	2.00	.4	432	220	65	2,530	8.0
Jan. 11-20	a. 09		3.4		129	45	434	278	358	602			2.0		1,710	2.33	.4	507	279	65	2,870	8.0
Jan. 21-31	a. 05		3.2		139	49	468	296	391	650		.5			1,850	2.52	.2	548	306	65	3,040	7.8
Feb. 1-10 .....	.10		4.2		132	48	417	282	380	572		.5			1,690	2.30	.5	527	296	63	2,810	7.8
Feb. 11-19 .....	.10		1.8		135	60	447	276	453	608		.2			1,840	2.50	.5	584	358	62	3,070	7.9
Feb. 20-28 .....	.11		3.2		127	60	469	244	468	635		.2			1,880	2.56	.6	564	364	64	3,160	7.9
Mar. 1-10 .....	.11		3.7		127	64	447	258	500	582		.0			1,850	2.52	.5	580	368	63	3,060	8.0
Mar. 11-20 .....	.14		4.6		108	65	476	197	523	592		.8			1,870	2.54	.7	537	376	66	3,130	8.1
Mar. 21-31 .....	.12		3.7		107	67	468	--	200	543	600	.2			1,910	2.60	.6	542	378	66	3,190	8.1

a Includes days of less than 0.05 second-foot flow.

COLORADO RIVER BASIN--Continued
BULL CREEK NEAR IRA, TEX.--Continued

Chemical analyses, in parts per million, October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sor-dium	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Apr. 1-10, 1951 ...	a. 0.08		2.7		102	70	509		178	565	622		0.2		1,960	2.67	0.4	542	396	67	3,270	8.1
Apr. 11-20, 1951 ...	.11		3.6		92	95	497		157	617	658		1.5		2,040	2.77	.6	620	492	64	3,390	7.9
Apr. 21-30, 1951 ...	.20		3.3		90	78	529		155	621	652		1.0		2,050	2.79	1.1	545	418	68	3,360	7.8
May 1-10, 1951 ...	a. 0.09		3.9		97	83	549		156	649	690		1.0		2,150	2.92	.5	584	456	67	3,500	7.8
May 11-19, 1951 ...	a. 1.11		3.5		102	83	543		176	653	675		1.0		2,150	2.92	6.4	596	452	66	3,480	7.9
May 20-31, 1951 ...	a. 6.69		1.5		34	7.6	76		161	50	66		5.0		343	.47	.6	116	0	59	573	8.0
June 1-3, 4 (12 p. m. -4 a. m.), 15 ...	a. 4.6		18		48	11	100		190	69	107		5.0		451	.61	5.6	165	10	57	792	8.2
June 4 (4 a. m.-12 p. m.), 5-14, 16-30 ...	a. 1.11		18		36	5.0	44		128	43	38		4.0		251	.34	.8	110	5	47	419	7.6
July 1-7, 1951 ...	24.0		16		36	4.8	44		142	32	38		2.5		248	.34	16	110	0	47	413	7.8
July 8-31, 1951 ...	a. 17		13		56	6.7	70		190	34	96		1.5		396	.54	.2	176	20	46	679	7.8
Aug. 1-31, 1951 ...	a. 79.1		18		36	5.7	56		143	42	55		1.5		294	.40	63	118	1	51	489	8.1
Sept. 1-12, 1951 ...	a. 0.05		18		50	9.8	95		166	73	111		5.0		474	.64	.1	166	30	56	772	7.2
Sept. 13-14, 1951 ...											161										947	
Sept. 15-16, 1951 ...											255										1,340	
Sept. 17-18, 1951 ...											255										1,360	
Sept. 19-20, 1951 ...											255										1,350	
Sept. 21-22, 1951 ...											230										1,350	
Sept. 23-24, 1951 ...											230										1,350	
Sept. 25-26, 1951 ...											230										1,350	
Sept. 27-28, 1951 ...											230										1,350	
Sept. 29-30, 1951 ...											230										1,350	
Weighted average	7.43		18		39	6.3	60		144	46	60		1.6		309	0.42	6.2	124	6	51	513	--

a Includes days of less than 0.05 second-foot flow.

b No flow, samples collected from pool, not included in weighted average.

COLORADO RIVER BASIN--Continued

BULL CREEK NEAR IRA, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	66	56	51	36	63	--	--	--	--	89	93
2	73	--	57	50	37	57	59	74	--	--	--	--
3	--	--	56	50	--	58	62	72	--	--	87	83
4	74	--	--	--	--	56	63	73	--	--	86	--
5	74	--	42	--	56	58	60	63	--	--	84	--
6	70	--	--	41	42	58	--	70	--	--	83	--
7	75	--	40	40	--	62	65	--	--	--	82	--
8	71	68	--	50	53	59	--	73	--	--	--	--
9	70	69	--	51	--	49	59	74	--	--	86	--
10	71	66	--	46	--	54	61	--	--	--	--	--
11	76	65	47	42	49	--	56	--	--	81	--	--
12	67	63	50	52	42	49	--	70	--	--	--	84
13	70	66	51	51	45	49	56	77	--	--	84	--
14	71	66	51	49	50	42	59	--	--	--	--	79
15	70	66	50	49	50	--	--	--	--	--	--	--
16	73	64	--	52	48	48	--	74	--	--	86	--
17	69	70	54	50	47	58	69	75	--	--	--	--
18	71	68	47	49	48	--	--	70	--	--	86	--
19	73	56	46	45	51	53	70	--	--	--	--	74
20	72	53	46	49	49	58	65	--	--	--	85	--
21	70	53	48	49	--	55	65	78	--	--	--	--
22	70	52	46	--	50	62	65	--	85	--	--	78
23	73	51	47	49	51	64	65	78	79	--	85	--
24	72	46	48	48	58	60	--	--	--	--	86	--
25	71	53	44	49	50	--	73	--	80	--	--	--
26	70	50	36	48	50	55	74	72	83	--	85	79
27	73	52	40	49	60	55	77	--	--	--	85	--
28	72	46	39	46	56	57	--	77	--	--	86	87
29	74	43	40	40	--	58	--	--	84	--	--	90
30	68	57	--	38	--	56	70	--	--	--	--	--
31	68	--	46	36	--	65	--	78	--	--	88	82
Average	72	--	--	47	--	56	--	--	--	--	--	--

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT COLORADO CITY, TEX.

LOCATION.--At gaging station at Colorado City, Mitchell County, 3.517 feet upstream from bridge on U.S. Highway 80, 4,100 feet upstream from Texas & Pacific Railway bridge, 1.6 miles upstream from Lone Wolf Creek, and at mile 796.

Drainage area.--4,082 square miles, of which 2,590 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: May 1946 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 18,500 ppm Apr. 1-30, May 1-7; minimum, 90 ppm July 3 (7 a.m.-12 p.m.), 23-25.

Hardness: Maximum, 2,610 ppm Apr. 1-30, May 1-7; minimum, 90 ppm July 3 (7 a.m.-12 p.m.), 4.

Specific conductance: Maximum daily, 28,500 micromhos Apr. 2, 4; minimum, 176 ppm Oct. 26, 1947.

EXTREMES, 1946-51.--Dissolved solids: Maximum, 27,800 ppm Aug. 9-12, 1946; minimum, 176 ppm Oct. 26, 1947.

Hardness: Maximum, 4,500 ppm Aug. 9-12, 1946; minimum, 65 ppm Sept. 15-20, 1949.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation unless noted otherwise and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate		
Oct. 1-7, 1950.....	7.90	13			106	36		794	142	259	1,240		3.5	2,520	3.43	54	412	286	61	4,460
Oct. 1-16.....	2.13	10			150	57	1,230		126	114	2,040		--	4,030	5.43	26	793	708	82	7,900
Oct. 17-31.....	1.40	5			226	49	1,230		121	97	2,970		--	6,540	8.89	18	793	708	83	9,370
Oct. 25-31.....	1.46	5.1			226	49	2,120		111	677	3,370		--	6,550	8.88	18	930	842	83	11,000
Nov. 1-10.....	a. 11	6.0			224	98	2,100		111	690	3,350		--	6,550	8.88	1.9	978	888	83	10,900
Nov. 11-20.....	a. 08	5.6			261	124	2,010		121	926	4,560		--	8,850	12.04	1.9	1,160	1,060	84	14,400
Nov. 21-30.....	a. 25	5.1			522	164	3,790		113	1,250	6,260		--	12,000	16.32	8.1	1,980	1,880	81	19,000
Dec. 1-10.....	.54	5.6			431	181	4,230		137	1,320	6,750		--	13,000	17.68	19	1,820	1,710	83	20,200
Dec. 11-20.....	1.67	7.2			404	166	3,710		151	1,200	5,940		--	11,500	15.64	52	1,690	1,570	83	17,400
Dec. 21-31.....	2.16	3.2			402	165	3,690		144	1,230	5,890		--	11,500	15.64	67	1,680	1,560	83	17,200
Jan. 1-31, 1951.....	1.71	4.2			406	169	3,770		144	1,250	6,010		--	11,700	15.91	54	1,710	1,590	83	18,500
Feb. 1-28.....	1.88	3.7			435	181	4,030		132	1,380	6,410		--	12,600	17.14	64	1,830	1,720	83	19,900
Mar. 1-31.....	.86	7.4			508	208	4,990	--	111	1,600	7,990		--	15,100	20.54	35	2,120	2,030	84	23,900
Apr. 1-30, May 1-7.....	a. 72	7.4			609	266	6,000		105	2,000	9,570		--	18,500	25.16	36	2,610	2,530	83	28,300
May 17-31.....	8.21	13			442	183	4,940		119	1,420	6,420		--	12,600	17.14	279	1,860	1,760	83	20,000
June 1-2.....	126	10			419	177	4,140		118	1,430	6,510		--	12,700	17.27	4,320	1,770	1,680	84	20,200
June 3-6, 12, 15, 16, 20	193	16			43	12	228		141	122	285		11	b788	1.07	411	157		42	1,470
June 7-11, 13, 14, 15	15.1	10			185	70	1,540		89	555	2,450		--	4,850	6.60	198	750	676	82	8,200
(12 p.m.-8 a.m.).....	1.67	13			148	47	1,140		84	372	1,840		1.0	3,600	4.90	16	563	494	82	6,420
June 21-30.....																				

a Includes days of less than 0.05 second-foot flow.

b Sum of determined constituents.

July 1-2, 3 (12 p.m. - 7 a.m.)	11	160	56	1,280	77	403	2,080	--	4,030	5.48	20,900	630	586	82	7,220	7.3
July 3 (7 a.m. - 12 p.m.)	16	26	5.9	94	147	55	82	1.2	357	.49	1,080	90	0	70	697	7.9
July 4	18	22	8.7	186	138	71	282	1.5	821	1.86	1,080	120	15	77	1,110	7.8
July 5	18	82	12	295	128	169	590	1.0	1,900	1.75	21	232	130	79	2,420	7.8
July 6-9	20	81	32	730	131	247	1,120	1.5	2,300	3.13	16	358	251	82	4,200	8.0
July 10	20	91	32	730	131	247	1,120	1.5	2,300	3.13	16	358	251	82	4,200	8.0
July 11-14	21	116	38	677	116	212	1,100	1.5	2,300	2.99	6.5	396	300	79	3,980	7.8
July 15-24, 29-31	17	132	65	1,130	97	412	1,800	1.0	3,690	5.02	0	597	518	80	6,350	7.7
July 25-28	14	86	29	598	69	215	958	4.0	1,940	2.64	4.2	334	277	80	3,530	7.6
Aug. 22 (10 a.m. - 10 p.m.), 26-27	16	40	10	172	158	70	221	1.8	620	.84	1,440	141	12	73	1,130	7.9
Aug. 22 (10 a.m. - 12 p.m.), 28-29	17	35	8.0	71	187	49	58	5.5	332	.45	1,410	120	0	56	568	7.8
Aug. 28-31	16	86	29	605	124	208	942	2.5	1,950	2.65	40	334	282	80	3,590	7.7
Sept. 1-12	14	119	41	915	116	269	1,460	.0	2,900	3.94	32	466	370	81	5,240	7.0
Sept. 13-18	10	179	70	1,560	92	486	2,520	--	4,870	6.62	5.3	734	659	82	8,500	7.7
Sept. 20, 22, 29	11	204	78	1,850	74	556	2,980	--	5,720	7.78	.0	830	769	83	9,880	7.3
Weighted average...																
	15	89	30	634	130	222	982	--	2,040	2.77	264	346	239	80	3,570	--

a Includes days of less than 0.05 second-foot flow.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.

LOCATION--At gaging station at bridge on State Highway 208 in Robert Lee, Coke County, half a mile upstream from Mountain Creek. DRAINAGE AREA--1,770 square miles approximately, of which 11,600 square miles is probably noncontributing.

RECORDS AVAILABLE--Chemical analyses October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

Sediment records: January 1949 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 5,540 ppm Apr. 1-10; minimum, 294 ppm June 3, 4.

Hardness: Maximum, 1,720 ppm Apr. 25-30; minimum, 97 ppm Aug. 12, 25-28.

Specific conductance: Maximum daily, 9,530 micromhos Apr. 5; minimum daily, 371 micromhos June 4.

Water temperatures: Maximum, 97°F July 27; minimum, 36°F Jan. 29.

Sediment loads: Maximum observed, 32,400 ppm Aug. 23.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 5,540 tons July 3; minimum daily, 0 tons on many days.

Hardness: Maximum, 1,720 ppm Apr. 25-30, 1951; minimum, 82 ppm Sept. 11-13, 19, 1950.

Water temperatures: Maximum, 97°F July 27, 1951; minimum, freezing point Jan. 28, 1948, Jan. 29, 1949.

Sediment concentrations: Maximum, 97°F July 27, 1951; maximum observed, 32,400 ppm Aug. 23, 1950.

Sediment loads: Maximum daily, 397,000 tons May 8, 1948; minimum daily, 0 tons on many days.

REMARKS--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of water-soluble constituents. Sediment concentrations are specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-4, 1950	39.5	59	12	12	59	16	195	129	158	258	3.0	84	783	1.06	213	108	67	213	108	67	1,360	8.0
Oct. 5-10	14.9	78	12	12	102	27	259	141	211	362	3.5	1,020	1.39	41	285	170	66	285	170	66	1,800	8.1
Oct. 11-20	4.46	102	9.8	9.8	102	27	307	144	265	452	.5	1,240	1.69	15	366	248	65	366	248	65	2,170	7.8
Oct. 21-31	1.52	116	12	12	116	32	349	143	317	520	1.4	1,420	1.93	5.8	421	304	64	421	304	64	2,430	7.8
Nov. 1-10	a.19	124	14	14	124	36	368	157	338	550	.8	1,510	2.05	.0	458	329	64	458	329	64	2,560	7.6
Nov. 11-20	a.0	117	13	13	117	36	359	165	321	532	.0	1,460	1.99	.0	440	305	64	440	305	64	2,490	7.6
Nov. 21-30	a.0	116	13	13	116	36	353	169	311	528	.0	1,440	1.96	.0	438	299	64	438	299	64	2,470	7.7
Dec. 1-10	a.25	122	11	11	122	41	360	173	325	550	.0	1,490	2.03	.0	473	331	62	473	331	62	2,560	7.6
Dec. 11-20	a.64	116	8	8	116	36	336	178	291	490	.2	1,390	1.84	.0	446	300	61	446	300	61	2,520	7.8
Dec. 21-31	a.37	108	6.8	6.8	108	29	358	161	270	440	.0	1,390	1.86	.0	435	292	61	435	292	61	2,450	8.1
Jan. 1-10, 1951	a.65	147	5.6	5.6	147	45	425	124	443	648	.0	1,770	2.41	.0	552	400	63	552	400	63	2,960	7.1
Jan. 11-20	a.46	169	5.1	5.1	169	47	448	120	507	682	.0	1,920	2.61	.0	615	516	61	615	516	61	3,130	7.9
Feb. 1-10	a.60	190	3.7	3.7	190	52	459	145	544	710	.0	2,030	2.76	.0	688	569	59	688	569	59	3,250	8.2
Feb. 11-19	1.01	207	6.2	6.2	207	56	441	116	584	710	1.8	2,060	2.80	.0	747	652	56	747	652	56	3,320	7.7
Feb. 20-28	1.94	250	4.1	4.1	250	59	498	96	687	820	.2	2,370	3.22	.0	866	788	56	866	788	56	3,820	7.7
Mar. 1-10	1.90	260	4.7	4.7	260	67	595	82	731	985	.0	2,680	3.64	.0	924	857	58	924	857	58	4,310	7.8

a. Includes days of less than 0.05 second-foot flow.

Mar. 11-20 .....	.39	6.2	246	65	627	--	74	695	1,020	1.5	2,700	3.67	2.6	821	61	4,420	7.4
Mar. 21-28	a. 05	5.0	200	62	585	--	64	613	920	.2	2,420	2.29		524	63	4,960	7.3
Mar. 29-31	9.43	5.6	349	84	860	--	84	1,020	1,360	2.0	3,720	5.06	95	1,220	61	5,880	7.6
Apr. 1-10	1.0	5.1	434	116	1,420	--	76	1,300	2,230	--	5,540	7.53	15	1,560	66	8,700	7.4
Apr. 11-20	a. 01	4.8	390	113	1,310	--	57	1,200	2,120	--	5,170	7.03	1	1,440	66	8,330	7.3
Apr. 21-30	a. 0	3.1	246	82	840	--	55	767	1,370	1.0	3,340	4.54	.0	951	66	5,560	7.2
Apr. 25-30	a. 12	3.4	492	121	1,270	--	58	1,440	2,080	--	5,420	7.40	31	1,720	61	8,700	7.2
Apr. 1-17	a. 04	3.6	416	103	1,240	--	69	1,220	2,010	--	5,030	6.84	.5	1,460	65	7,690	7.2
May 18, 19 (12 p. m. - 2 a. m.)	860	6.8	448	118	1,110	--	98	1,310	1,820	1.2	4,860	6.61	11, 300	1,600	60	7,540	7.9
May 19 (2 a. m. - 12 p. m.), 20-28	403	17	46	9.1	61	--	96	75	90	3.2	379	.52	412	152	74	632	7.9
May 29-31	15.1	15	70	14	125	--	95	143	195	2.2	664	.90	27	232	154	1,110	7.5
June 1-2, 3 (12 p. m. - 5 a. m., 12 m. - 1 p. m.), 6-10	127	15	73	19	250	--	119	186	362	2.5	5,1020	1.39	350	260	162	1,770	7.7
June 3 (5 a. m. - 12 m., 3 p. m. - 7 p. m.), 4	765	13	65	12	102	--	98	123	157	3.5	558	.76	1,150	212	131	957	7.6
June 3 (7 p. m. - 12 p. m.), 4	1,548	17	38	8.8	49	--	107	41	66	6.5	264	.40	1,230	123	36	511	7.6
June 3 (12 m. - 5 p. m.), 5 (12 m. - 12 p. m.), 21	1,090	24	95	24	389	--	135	222	592	5.0	1,420	1.93	4,180	336	225	2,570	8.2
June 5 (12 p. m. - 12 m.), 11, 12	1,316	21	130	38	809	--	198	370	1,200	1.2	2,670	3.63	9,490	480	318	4,600	8.2
June 11, 13, 29-30	12.2	15	82	21	273	--	115	214	402	2.0	1,070	1.46	35	291	197	1,910	7.5
June 12, 16 (10 a. m. - 12 p. m.), 24-28	111	16	74	17	179	--	117	160	269	1.8	834	1.13	250	254	158	1,390	7.5
June 14-15, 16 (12 p. m. - 1 a. m.)	88.6	13	86	31	380	--	106	282	558	3.2	1,410	1.92	261	342	255	2,480	8.1
June 16 (1 a. m. - 10 a. m.), 17-23	369	16	49	9.9	112	--	114	84	159	3.0	520	.71	518	163	70	897	7.6

a Includes days of less than 0.05 second-foot flow.

b Residue on evaporation.

COLORADO RIVER BASIN--Continued
COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesium	Non-carbonate			
July 1-2, 3 (12 p.m.-7 a.m.), 1951.....	3.80		17		76	18		204	120	183	295		2.5		901	1.23	9.2	264	165	63	1,520	8.2
July 3 (7 a.m.-12 p.m.)	3,819		29		94	31		593	967	64	562		2.2		1,850	2.52	19,100	352	0	78	3,230	7.6
July 4-10.....	537		18		30	7.8		101	130	74	100		3.5		412	.56	597	107	0	67	711	8.0
July 11-14.....	11.4		23		46	14		153	122	129	192		5		645	.88	20	172	72	66	1,120	8.0
July 15-20.....	1.50		17		76	21		229	130	207	318		3.0		966	1.31	3.9	276	170	64	1,640	7.9
July 21-31.....	a.25		19		98	29		314	118	298	452		1.8		1,270	1.73	.9	364	267	65	2,210	7.9
Aug. 1-11.....	a.0		17		135	43		429	93	422	658		4.0		1,750	2.38	.0	514	438	64	2,990	7.8
Aug. 12-25.....	386		13		29	3.9		69	106	63	64		4.0		311	.42	334	97	8	61	537	7.7
Aug. 26-31.....	573		15		39	8.8		105	112	91	122		3.0		454	.62	702	134	42	63	779	7.8
Aug. 15-22, 23 (12 p.m.-7 a.m.), 10 a.m.-12 p.m.).....	217		13		82	26		270	95	260	388		2.5		1,090	1.48	639	312	234	65	1,900	7.7
Sept. 1-10.....	7.16		15		50	15		161	127	143	200		1.5		1,667	.91	13	186	62	65	1,150	7.9
Sept. 11-19.....	12.2		12		81	21		255	122	237	352		2		1,020	1.39	34	288	188	66	1,790	7.7
Sept. 20-30.....	a.0		14		111	33		335	118	326	500		.5		1,380	1.88	.0	412	316	64	2,390	7.9
Weighted average....	75.8		17		69	18		223	197	153	290		3.0		868	1.21	182	246	84	66	1,510	--

a. Includes days of less than 0.05 second-foot flow.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	74	62	62	--	65	71	72	84	88	90	82
2	83	73	61	49	--	70	70	81	80	--	90	89
3	80	56	58	51	--	65	73	88	69	82	87	87
4	74	59	56	57	50	68	68	85	66	82	85	86
5	78	63	38	58	58	65	65	78	66	83	93	91
6	75	69	39	43	56	71	68	69	81	84	94	88
7	73	60	41	48	57	73	70	74	81	86	--	88
8	74	68	52	51	63	72	75	--	80	84	--	89
9	75	47	56	58	61	55	73	--	91	84	--	84
10	81	47	--	54	67	72	68	--	88	--	--	87
11	81	52	59	56	56	54	65	--	81	--	--	85
12	80	59	--	--	69	55	64	--	79	--	75	84
13	83	64	56	56	--	60	68	--	80	91	80	80
14	84	70	56	53	--	60	73	--	89	92	87	79
15	77	69	54	56	43	63	65	--	84	88	92	85
16	80	59	53	58	60	68	68	--	--	88	94	78
17	79	--	55	56	61	70	70	--	84	88	94	81
18	81	69	56	60	65	54	--	84	85	95	90	80
19	68	70	55	61	68	63	79	75	89	88	91	82
20	68	65	55	52	64	64	72	78	87	94	85	--
21	77	62	55	--	63	66	79	--	90	90	83	83
22	80	60	54	--	64	69	61	78	86	87	85	75
23	76	53	53	54	62	64	76	73	83	89	83	92
24	76	49	55	55	66	62	78	78	83	85	86	85
25	77	--	57	56	62	59	--	74	85	80	83	88
26	--	60	46	62	71	66	--	83	86	93	84	85
27	78	62	39	58	72	65	81	81	88	97	86	--
28	82	63	47	40	65	60	76	85	93	85	89	78
29	80	61	45	36	--	60	75	83	84	86	85	80
30	79	62	50	--	--	63	83	81	90	95	85	82
31	77	--	56	--	--	68	--	86	--	88	84	--
Average	78	62	52	54	--	64	72	--	83	88	87	84

WESTERN GULF OF MEXICO BASINS

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	46	72	8.9	0.6			0		
2-----	42	64	7.3	.5			0	--	0
3-----	38	63	6.5	.4	7	(t)	0		
4-----	32	76	6.6	.3			.1	9	(t)
5-----	22	72	4.3	.1			0	--	0
6-----	18	66	3.2	0			.3		
7-----	16	57	2.5	0			.5		
8-----	13	46	1.6	0			.5		
9-----	11	45	1.3	0			.5	9	(t)
10-----	9.4	40	1.0	0			.6		
11-----	8.6	--	a. 8	0			.6		
12-----	7.0	34	.6	0			.6		
13-----	5.6	37	.6	0			.6		
14-----	5.6	31	.5	0			.7		
15-----	4.3	36	.4	0			.7		
16-----	3.3	25	.2	0			.7	12	(t)
17-----	3.0	33	.3	0			.7		
18-----	2.6	34	.2	0	--	0	.7		
19-----	2.3	31	.2	0			.6		
20-----	2.3	29	.2	0			.5		
21-----	2.3	16	.1	0			.5		
22-----	2.0	26	.1	0			.5		
23-----	2.0			0			.5	9	(t)
24-----	1.9			0			.4		
25-----	1.6	16	.1	0			.4		
26-----	1.4			0			.4		
27-----	1.3			0			.4		
28-----	1.3			0			.4		
29-----	1.1			0			.4	12	(t)
30-----	1.0	7	(t)	0			.4		
31-----	.8			--	--	--	.4		
Total-	308.7	--	48.0	1.9	--	(t)	13.6	--	0.4
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.4			0.6			1.4		
2-----	.4			.6			1.3		
3-----	.3			.7			1.1	14	(t)
4-----	.3			.7			.8		
5-----	.4			.7			.8		
6-----	.4	36	(t)	.5			.8		
7-----	.4			.6			.6		
8-----	.4			.5			.6		
9-----	.4			.6			.6		
10-----	.3			.5			1.0	12	(t)
11-----	.7			.5			.8		
12-----	.7			.4			.6		
13-----	.7	60	0.1	.4			.5		
14-----	.7			.8			.5		
15-----	.5			.8			.4		
16-----	.7			1.6			.2		
17-----	.6			1.6			.2		
18-----	.6	28	(t)	1.6	52	0.2	.3	3	(t)
19-----	.6			1.4			.2		
20-----	.7			1.6			.2		
21-----	.6			1.6			.2		
22-----	.4			1.6			0		
23-----	.5			2.6			0		
24-----	.4			2.3			0	--	0
25-----	.4			2.3	30	.2	0		
26-----	.4	44	.1	1.9			.2	8	(t)
27-----	.4			1.9			0	--	0
28-----	.4			1.7			0	--	0
29-----	.4			--	--	--	11		
30-----	.6			--	--	--	11	8	.2
31-----	.6			--	--	--	6.3		
Total-	15.3	--	2.2	32.6	--	2.7	41.6	--	1.0

t Less than 0.05 ton.

a Computed from estimated concentration graph.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.3			0.4	6	(t)	7.0	36	0.7
2-----	1.9			.2	6	(t)	20	30	1.6
3-----	1.4			0			1,440	6,940	s 45,300
4-----	1.0			0			1,240	11,600	s 54,000
5-----	.7	12	(t)	0			990	21,500	s 57,900
6-----	.4			0			362	14,200	s 14,000
7-----	.4			0			198	9,200	s 5,050
8-----	.4			0			103	1,850	s 559
9-----	.3			0			65	180	32
10-----	.2			0	--	0	40	137	15
11-----	.1	5	(t)	0			25	90	6.1
12-----	0			0			32	100	s 8.8
13-----	0			0			18	70	3.4
14-----	0			0			64	546	s 154
15-----	0			0			74	400	80
16-----	0			0			1,720	11,800	s 67,100
17-----	0			0			944	12,600	s 33,000
18-----	0	--	0	492	1,960	s 24,700	336	7,270	6,940
19-----	0			2,380	14,500	s 104,000	158	2,200	939
20-----	0			286	9,180	s 7,600	93	350	88
21-----	0			149	3,230	s 1,820	58	200	31
22-----	0			355	4,880	s 10,700	38	74	7.6
23-----	0			420	7,580	s 9,920	24	78	5.1
24-----	0			178	3,370	s 2,430	16	80	2.6
25-----	3.7			481	5,550	s 10,500	12	48	1.6
26-----	3.6			78	725	s 169	9.4	48	1.2
27-----	2.0	6	(t)	69	200	37	7.8	45	.9
28-----	1.4			44	100	12	5.6	45	.7
29-----	1.3			22	34	2.0	3.3	36	.3
30-----	.7			14	34	1.3	2.3	36	.2
31-----	--	--	--	9.4	36	.9	--	--	--
Total--	22.8	--	0.5	4,978.0	--	171,892.2	8,105.4	--	285,128.8

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1.7	36	0.2	0			17	70	3.2
2-----	2.0	131	.7	0			11	82	2.4
3-----	2,710	14,200	s 148,000	0			6.3	77	1.3
4-----	2,510	16,200	s 108,000	0			3.3	74	.7
5-----	653	12,700	22,400	0			2.0	53	.3
6-----	258	8,300	5,780	0	--	0	1.4	70	.3
7-----	150	4,100	1,660	0			.8	56	.1
8-----	93	1,300	a 326	0			.4	45	(t)
9-----	58	--	80	0			.4	60	.1
10-----	34	235	22	0			29	151	18
11-----	20	--	a 8	0			52	130	18
12-----	13	86	3.0	156	1,450	s 1,060	21	90	5.1
13-----	7.8			18	300	15	18	62	3.0
14-----	5.0			82	346	s 85	8.6	60	1.4
15-----	3.0			84	100	23	4.3	52	.6
16-----	1.9	--	a 5	40	33	3.6	2.6	50	.4
17-----	1.4	--		16	22	1.0	1.6	34	.1
18-----	1.7	44		6.3	22	.4	1.0	42	.1
19-----	.6	--		2.6	20	.1	.3	40	(t)
20-----	.4	--		1.3	12	(t)	0		
21-----	0			.8	30	.1	0		
22-----	0			135	1,880	s 1,590	0		
23-----	0	--	0	2,000	18,600	s 126,000	0		
24-----	0			2,910	15,300	s 119,000	0		
25-----	.1	56	(t)	1,160	7,280	s 23,900	0	--	0
26-----	1.8	71	.3	377	--	b 7,000	0		
27-----	.8	79	.2	189	--	b 2,000	0		
28-----	.1	44	(t)	107	1,150	332	0		
29-----	0			87	600	109	0		
30-----	0	--	0	44	300	36	0		
31-----	0			25	219	15	--	--	--
Total--	6,527.3	--	286,284.4	7,421.0	--	281,170.2	181.0	--	55.2

Total discharge for year (cfs-days) 27,649.2

Total load for year (tons) 1,024,585.6

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Particle-size analyses of suspended sediment, May to August 1951

(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	Instantaneous discharge (cfs)	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 19, 1951	12:00 m.	1,510	12,500	4,750	53	64	77	86	94	96	98	100				SPCW
May 19	12:00 m.	1,510	12,500	5,340	0	2	30	87	92	96	98	100				SPN
May 21	9:45 p. m.	302	6,770	2,690	--	47	56	67	76	91	98	100				SPCW
May 22	12:19 a. m.	410	7,770	2,700	--	53	68	81	95	98	100	--				SPCW
June 3	7:30 p. m.	3,350	13,800	5,510	38	52	63	75	88	95	99	100				SBCW
June 3	7:30 p. m.	3,350	13,800	5,000	2	3	10	82	88	93	99	100				SBN
June 7	1:00 p. m.	189	9,260	3,810	--	91	94	95	98	100	--	--				SPCW
June 16	10:30 a. m.	2,420	17,000	3,380	--	61	73	83	87	95	98	100				SPCW
July 3	8:30 a. m.	3,240	17,600	3,810	--	55	64	77	84	90	96	100				SPCW
July 6	7:00 p. m.	214	7,120	3,920	--	86	97	97	98	100	--	--				SPCW
Aug. 12	12:30 p. m.	220	2,270	1,450	54	74	82	94	97	98	100	--				SBCW
Aug. 23	9:30 a. m.	3,130	32,400	3,210	55	68	79	88	93	98	99	100				SBCW
Aug. 23	3:30 p. m.	2,520	23,900	3,690	--	73	83	91	96	98	100	--				SPCW
Aug. 26	6:30 p. m.	286	7,500	4,520	--	89	92	92	96	100	--	--				SPCW

COLORADO RIVER BASIN--Continued
COLORADO RIVER NEAR SAN SABA, TEX.

LOCATION.--At gaging station at bridge on U.S. Highway 190, 5.2 miles downstream from San Saba River, 9.2 miles east of San Saba, San Saba County, and at mile 474.

DRAINAGE AREA.--30,600 square miles, approximately, of which 11,900 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

Sediment records: December 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,100 ppm July 9-10; minimum, 137 ppm May 26.

Hardness: Maximum, 308 ppm July 9-10; minimum, 100 ppm May 26.

Specific conductance: Maximum daily, 2,280 micromhos Aug. 30; minimum daily, 232 micromhos May 26.

Water temperatures: Maximum, 92 F Aug. 5-8; minimum, freezing point January 30.

Sediment concentrations: Maximum daily, 15,800 ppm Aug. 14.

EXTREMES, 1950-51.--Dissolved solids: Maximum daily, 0.4 ton Aug. 13.

Hardness: Maximum daily, 100 tons May 5-8; minimum, 137 ppm May 26, 1951.

Specific conductance: Maximum daily, 15,800 ppm Aug. 14.

Water temperatures: Maximum, 92 F Aug. 15, 1948; minimum, freezing point Jan. 29, 1948, Jan. 30, 1951.

Sediment loads: Maximum daily, 242,000 tons May 26, 1951; minimum daily, 0.4 ton Aug. 13, 1951.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation unless noted otherwise and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex.

Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Tem- perature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nes- ium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃) (B)	Bo- ron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Per- cent non-carbon- atum	Specific conduct- ance (micro- mhos at 25° C)	pH	
															Parts per million	Tons per acre- foot	Calcium, mag- nesium	Non-carbon- atum				
Oct. 1-10, 1950.....	249		14		38	11		42	162	26	49		1.8		265	0.36	178	140	7	39	464	7.9
Oct. 11-20.....	85.3		14		44	16		42	203	26	52		1.2		302	.41	70	176	10	34	522	7.9
Oct. 21-31.....	66.9		13		49	21		42	244	23	54		1.2		323	.44	58	209	9	31	571	8.2
Nov. 1-10.....	42.7		13		53	27	40	40	276	21	58		.5		352	.48	41	243	17	26	626	8.0
Nov. 11-20.....	52.2		13		60	30	41	313	18	62	60		.8		382	.52	54	273	16	25	683	8.0
Nov. 21-30.....	61.8		12		62	29	42	312	25	58			.9		a 382	.52	64	274	16	25	673	8.0
Dec. 1-10.....	55.5		12		60	29	42	314	19	58			.8		381	.52	57	268	11	25	688	8.0
Dec. 11-20.....	59.8		10		57	29	41	306	19	56			1.2		372	.51	60	261	10	26	651	8.0
Dec. 21-31.....	59.6	9.5	9		58	28	52	303	23	72			.8		400	.54	64	262	14	30	703	7.9
Jan. 1-10, 1951.....	71.7		10		57	29	59	291	27	86			1.0		a 412	.56	80	261	22	33	753	8.2
Jan. 11-20.....	63.3		10		60	29	62	296	26	94			1.5		430	.58	73	268	26	33	787	8.2
Jan. 21-31.....	56.2		10		56	30	48	301	22	68			1.5		a 384	.52	58	263	16	28	689	8.1
Feb. 1-10.....	75.0		10		58	29		52	293	30	76		1.0		a 401	.55	81	266	26	30	724	8.1
Feb. 11-19.....	83.4	9.4	9		60	27	58	292	28	83			1.0		a 411	.56	93	260	21	33	740	8.2
Feb. 20-28.....	93.3	9.8			60	27	57	282	33	84			1.2		423	.58	107	260	30	32	746	7.7

a Sum of determined constituents.

COLORADO RIVER BASIN--Continued
COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.—Continued																							
Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 100°C)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Mar. 1-10, 1951.....	82.8	9.4			60.26		63		281	33	90		1.2			429	0.58	96	256	26	35	764	7.7
Mar. 11-20.....	60.8	13			55.28		65	--	277	31	95		1.5			439	.60	72	252	25	36	785	8.1
Mar. 21-31.....	59.3	14			55.29		59	--	284	29	86		1.5			423	.58	68	256	24	33	761	7.9
Apr. 1-10.....	70.7	13			57.29		67	--	280	36	97		1.2			452	.61	85	261	32	36	806	8.2
Apr. 11-21.....	64.6	14			47.30		50		269	26	72		2.0			a373	.51	65	241	20	31	692	8.0
Apr. 22-30.....	216	13			62.23		92		236	64	132		2.5			513	.70	299	249	56	44	925	7.8
May 1-6.....	206	17			58.22		55		209	71	76		2.0			410	.56	228	235	64	34	714	7.7
May 7, 15-19.....	373	17			46.14		27		188	21	36		5.0			a258	.35	260	172	18	25	463	7.5
May 8-14.....	259	15			32.7.5		24		134	15	24		4.5			192	.26	134	111	1	32	330	7.5
May 20-21, 22 (12 p.m.-5 p.m., 7 p.m.-12 p.m.); 23 (12 p.m.-2 a.m.); 24 (11 a.m.-5 p.m.); May 22 (5 p.m.-7 p.m.); May 23 (2 a.m.-11 a.m.); May 23 (5 p.m.-12 p.m.); 25, 27-31.....	1,648 5,742 10,100 3,357 17,800	18 17 17 15 14			50.14 62.13 78.18 40.7.5 33.4.2		43 77 80 33 8.6		187 147 128 137 118	36 89 155 27 9.1	58 114 136 42 7.0		3.5 1.0 3.5 3.0 3.0			314 456 576 a284 a137	.43 .62 .78 .32 .19	1,400 7,070 15,700 2,120 6,580	182 208 268 131 100	30 88 164 18 3	34 44 39 35 16	555 784 928 416 240	7.7 7.7 7.6 7.8 7.8
May 26.....	1,828	16			37.6.1		17		129	18	20		3.2			191	.26	943	117	12	24	314	7.7
June 1-6, 9.....	1,272	14			44.8.0		36		119	46	52		4.0			266	.36	914	143	45	36	459	7.8
June 11, 12 (12 p.m.-2 p.m.); 13 (10 a.m.-2 p.m.); 16 (3 p.m.-12 p.m.); 17-20.....	3,560	17			44.8.5		44		128	38	67		3.0			314	.43	3,020	145	40	40	518	7.6
June 21-30.....	17,300 17,522	14 15			36.5.9 40.8.5		19 30		116 137	15 27	31 40		2.5 3.5			197 254	.27 .35	9,200 358	114 135	19 22	27	328	7.7
July 1-6.....	410	18			47.8.6		39		152	26	59		3.0			301	.41	333	153	28	36	499	7.9
July 7-8.....	1,180	18			72.15		147		132	145	210		6.0			729	.99	2,320	241	133	57	1,210	7.9
July 9-10.....	526	14			89.21		286		139	154	463		3.0			1,100	1.50	1,570	308	194	67	2,030	7.8
July 11-20.....	130	17			52.13		170		149	83	242		2.2			675	.92	237	183	61	67	1,200	7.6
July 21-31.....	25.8	18			45.15		126		175	65	168		1.5			536	.73	37	174	30	61	948	8.0

a Sum of determined constituents.

Aug. 1-10.....	63.9	14		45	16	104	191	51	138		1.0	502	.68	87	178	22	56	854	7.9
Aug. 11-13, 14 (12-p.m. 8 p.m.).....	706	18		50	13	104	191	66	126		1.5	491	.67	936	178	22	56	844	7.5
Aug. 15-20 (6 p.m.-12 p.m.).....	899	15		43	7.8	36	133	39	47		3.5	271	.37	658	139	30	36	458	7.6
Aug. 21-22.....	565	18		40	13	24	166	23	30		2.8	244	.33	372	153	17	25	409	7.4
Aug. 21-22, 24-27.....	704	16		60	19	68	196	63	105		2.2	458	.62	871	228	67	39	774	7.9
Aug. 23-28.....	527	16		74	16	290	138	149	430		8.3	1,050	1.43	1,490	250	138	72	1,890	7.6
Aug. 29-31.....																			
Sept. 1-10.....	106	16		41	9.4	156	152	81	190		4.0	585	.80	167	141	16	71	1,030	7.6
Sept. 11-16, 19-20.....	114	17		40	11	117	179	62	132		2.0	490	.67	151	145	0	64	836	7.9
Sept. 17-18.....	226	15		60	15	175	191	73	255		.8	728	.99	444	211	54	64	1,260	7.8
Sept. 21-30.....	86.8	4.8		40	12	88	184	51	96		1.0	422	.57	99	150	0	55	703	7.8
Weighted average...	585	15		43	9.4	39	142	32	56		2.8	280	0.38	442	146	30	37	478	--

COLORADO RIVER BASIN--Continued

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	73	62	51	--	66	70	77	80	86	85	88
2	80	68	58	55	--	69	58	78	80	87	86	90
3	78	58	56	54	33	65	67	80	75	86	90	89
4	76	58	58	52	--	62	67	83	72	86	90	90
5	70	61	49	--	52	65	69	82	75	87	92	88
6	73	58	42	50	55	70	70	81	76	86	92	90
7	75	60	44	46	53	74	--	78	77	85	92	89
8	75	62	47	48	55	68	68	--	81	85	92	86
9	75	57	49	48	56	75	62	75	78	86	89	87
10	76	48	51	50	59	69	68	75	85	86	87	81
11	77	52	46	48	64	61	59	71	81	87	90	86
12	78	51	50	53	65	50	60	70	77	87	89	81
13	78	48	53	58	43	54	62	72	74	89	--	80
14	79	62	52	51	40	57	68	73	77	89	84	80
15	78	64	50	56	43	60	69	70	76	89	84	79
16	70	64	51	53	48	67	65	74	77	89	87	72
17	70	60	52	55	50	69	66	74	--	90	87	71
18	74	59	52	55	51	52	74	69	82	91	87	73
19	74	67	52	58	58	58	78	71	82	91	87	73
20	71	58	53	53	58	67	--	80	83	91	81	79
21	75	60	53	48	59	64	70	82	84	88	86	79
22	70	60	52	53	61	65	67	68	83	89	89	76
23	74	61	48	53	58	66	73	70	86	90	86	79
24	69	50	48	52	61	60	75	72	85	91	87	79
25	72	51	53	51	65	61	70	68	82	85	87	78
26	70	57	50	56	66	56	74	68	87	90	88	82
27	66	58	43	53	66	64	70	72	85	91	86	82
28	70	57	48	--	60	65	71	76	81	89	86	75
29	70	58	43	34	--	60	78	78	85	89	86	79
30	73	59	47	32	--	62	78	83	81	89	88	81
31	69	--	49	--	--	66	--	82	--	88	88	--
Average	74	59	50	51	55	63	69	75	80	88	88	81

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Suspended sediment, December 1950 to September 1951

a Computed by subdividing day.

WESTERN GULF OF MEXICO BASINS

COLORADO RIVER BASIN--Continued

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Suspended sediment, December 1950 to September 1951--Continued

Day	April				May				June			
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	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-----	80	82	17	129	115	40	464	362	454			
2-----	73			91	85	21	386	290	302			
3-----	68			108	81	24	560	350	529			
4-----	80			114	82	25	5,420	5,330	s 80,200			
5-----	78			111	83	25	2,520	2,900	19,700			
6-----	70	82	14	682	--	a 7,800	2,480	2,200	14,600			
7-----	66			1,900	--	b 22,500	1,680	3,100	13,900			
8-----	64			602	2,650	4,310	1,400	3,200	12,100			
9-----	64			238	1,220	784	985	2,050	5,450			
10-----	64			252	430	292	755	900	1,830			
11-----	54	78	11	258	380	285	1,160	1,180	s 4,330			
12-----	52			210	510	289	5,370	3,050	s 56,700			
13-----	50			145	390	153	18,100	3,400	166,000			
14-----	50			105	200	57	22,100	2,000	119,000			
15-----	48			88	150	36	19,400	1,050	55,000			
16-----	46	76	9.3	73	120	24	8,980	1,500	36,400			
17-----	44			64	116	20	2,570	1,500	10,400			
18-----	44			59	102	16	5,880	4,650	s 91,100			
19-----	42			54	75	11	3,440	6,400	59,400			
20-----	48			50	80	11	1,850	4,800	24,000			
21-----	233	150	94	48	58	7.5	1,240	2,800	9,370			
22-----	650	270	s 498	2,320	3,050	s 51,800	848	1,050	2,400			
23-----	380	138	134	10,100	6,680	s 184,000	652	443	780			
24-----	192	112	58	5,790	10,200	s 164,000	518	300	420			
25-----	142	118	45	6,480	8,360	s 166,000	427	206	237			
26-----	108	128	37	17,800	4,950	s 242,000	364	169	166			
27-----	86	125	29	7,510	5,650	104,000	326	132	116			
28-----	73	137	27	1,810	5,300	25,900	301	122	99			
29-----	148	145	58	1,060	2,200	6,300	277	96	72			
30-----	185	139	69	738	700	1,390	262	96	68			
31-----	--	--	--	579	500	782	--	--	--			
Total--	3,362	--	1,315.2	59,568	--	982,882.5	110,675	--	785,123			
Day	July				August				September			
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	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-----	243	91	60	26	60	4.2	246	230	153			
2-----	228	92	57	44	60	7.1	182	150	74			
3-----	224	90	54	74	68	14	139	110	41			
4-----	210	82	46	148	90	36	108	100	29			
5-----	192	84	44	120	110	36	83	76	17			
6-----	1,360	1,200	s 5,350	85	62	14	66	58	10			
7-----	1,480	1,960	7,830	54	52	7.6	52	46	6.5			
8-----	880	1,630	3,870	39	45	4.7	62	50	8.4			
9-----	620	740	1,240	28	46	3.5	64	59	10			
10-----	436	280	330	21	40	2.3	57	60	9.2			
11-----	309	180	150	13	29	1.0	50	62	8.4			
12-----	224	120	73	9.8	23	.6	44	72	8.6			
13-----	172	96	44	7.0	22	.4	80	81	17			
14-----	139	82	31	3,690	7,990	s 128,000	86	90	21			
15-----	114	60	18	2,360	8,520	s 60,400	185	97	48			
16-----	97	42	11	876	3,550	s 9,010	213	108	62			
17-----	80	47	10	533	870	1,250	224	94	57			
18-----	68	43	7.9	342	490	452	228	90	55			
19-----	54	45	6.6	235	340	216	145	72	28			
20-----	48	44	5.7	185	270	135	111	78	23			
21-----	39	52	5.5	148	180	72	88	94	22			
22-----	29	55	4.3	129	140	49	70	88	17			
23-----	26	38	2.7	319	237	s 251	59	70	11			
24-----	24	45	2.9	377	210	214	50	58	7.8			
25-----	22	33	2.0	262	150	106	52	64	9.0			
26-----	21	30	1.7	626	190	s 527	52	52	7.3			
27-----	19	24	1.2	1,850	1,700	s 8,310	75	78	s 22			
28-----	19	31	1.6	1,090	1,230	3,620	199	360	193			
29-----	21	46	2.6	728	1,060	2,080	129	210	73			
30-----	35	50	4.7	503	1,090	1,480	94	85	22			
31-----	29	57	4.5	351	510	483	--	--	--			
Total--	7,462	--	19,271.9	15,272.8	--	216,786.4	3,293	--	1,070.2			
Total discharge for period Dec. 4 to Sept. 30 (cfs-days).....											213,486.8	
Total load for period Dec. 4 to Sept. 30 (tons).....											2,098,507.2	

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

COLORADO RIVER BASIN--Continued
COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Particle-size analyses of suspended sediment, May to August 1951
(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	Instantaneous discharge (cfs)	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, 1951	6:00 p. m.	440	2,980	1,090	84	92	95	99	100	--	--	--	--	--	BCW
May 22	1:20 p. m.	711	528	559	59	74	82	90	94	100	--	--	--	--	BCW
May 22	4:09 p. m.	3,810	2,700	2,240	61	67	79	88	94	98	100	--	--	--	BCW
May 22	8:20 p. m.	6,640	12,200	4,440	--	78	87	97	99	100	--	--	--	--	PCW
May 23	9:30 a. m.	11,900	8,280	6,610	--	74	86	97	--	100	--	--	--	--	PCW
May 23	11:400	11,400	7,700	3,400	--	77	90	99	--	100	--	--	--	--	PCW
May 24	4:580	4,580	9,000	5,870	--	85	90	98	100	--	--	--	--	--	PCW
May 26	8:40 a. m.	20,100	5,090	3,930	--	2	60	85	97	99	100	--	--	--	SPN
May 26	8:00 a. m.	20,100	5,090	4,070	57	70	81	90	96	99	100	--	--	--	SPCW
May 26	11:50 a. m.	18,800	4,460	3,590	--	83	88	100	--	--	--	--	--	--	PCW
May 28	8:00 a. m.	1,950	5,720	2,710	--	81	93	99	100	--	--	--	--	--	PCW
June 12	12:10 p. m.	5,300	3,750	2,840	--	62	75	84	97	99	100	--	--	--	SPCW
June 12	6:00 p. m.	8,620	4,780	4,050	--	65	75	86	94	99	100	--	--	--	SPCW
June 13	3:05 p. m.	19,700	3,200	2,830	--	75	84	94	--	99	100	--	--	--	SPCW
June 16	6:00 p. m.	4,910	1,640	1,270	65	81	89	95	99	100	--	--	--	--	BCW
June 19	7:00 p. m.	2,200	5,180	4,420	62	76	88	97	99	100	--	--	--	--	PCW
June 19	7:00 p. m.	2,200	5,180	3,900	--	1	61	94	99	100	--	--	--	--	PN
July 6	6:00 p. m.	2,460	1,780	1,180	75	78	84	92	96	100	--	--	--	--	BCW
July 8	6:30 p. m.	785	1,440	1,080	74	91	96	99	99	100	--	--	--	--	BCW
Aug. 14	8:20 a. m.	493	1,340	792	60	62	67	75	89	96	100	--	--	--	BCW
Aug. 14	8:48 a. m.	2,360	1,200	750	59	63	69	82	93	97	100	--	--	--	BCW
Aug. 14	10:53 a. m.	5,040	6,530	4,860	--	73	84	94	97	100	--	--	--	--	PCW
Aug. 14	2:35 p. m.	6,380	14,000	4,780	--	80	89	96	98	100	--	--	--	--	PCW
Aug. 14	5:00 p. m.	6,500	13,500	3,040	64	73	83	97	99	100	--	--	--	--	PCW
Aug. 14	5:00 p. m.	6,500	13,500	3,370	7	13	72	94	98	100	--	--	--	--	PN

COLORADO RIVER BASIN--Continued

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Particle-size analyses of suspended sediment, May to August 1951--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	Instantaneous discharge (cfs)	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. 14, 1951	6:53 p. m.	6,500	15,700	--	73	85	95	99	99	100	--	--	--	--	PCW
Aug. 15	2:30 a. m.	4,280	11,100	--	--	78	83	96	99	100	--	--	--	--	PCW
Aug. 16	7:00 a. m.	950	4,720	2,060	75	86	91	99	99	100	--	--	--	--	BCW
Aug. 29	6:00 p. m.	652	1,120	849	89	93	97	100	--	--	--	--	--	--	BCW

COLORADO RIVER BASIN--Continued
COLORADO RIVER AT AUSTIN, TEX.

LOCATION.--At raw-water intake of Austin City Water Plant, 4½ miles upstream from gaging station which is at southeast edge of Austin, Travis County, at Monopolis bridge on U. S. Highway 290, 2.8 miles upstream from Walnut Creek, 3.8 miles downstream from Waller Creek, 5 miles downstream from Barton Creek, drainage area--38,160 square miles (above gaging station) approximately, of which 11,900 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 299 ppm Sept. 1-30; minimum, 260 ppm Oct. 1-31.

Hardness: Maximum, 180 ppm July 1-31; minimum, 155 ppm May 1-31.

Specific conductance: Maximum daily, 543 micromhos Mar. 29, Sept. 4, 6; minimum daily, 346 micromhos Dec. 7.

Water temperatures: Maximum, 87°F on several days in August and September; minimum, 44°F Feb. 6.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 322 ppm Oct. 1-31, 1947; minimum, 251 ppm May 1-31, 1950.

Hardness: Maximum, 197 ppm Jan. 1-31, 1948; minimum, 152 ppm Nov. 1-30, 1949.

Water temperatures: Maximum, 87°F on several days during summer months; minimum, 43°F Jan. 28, 1948, Feb. 4, 1949.

REMARKS.--Values reported for dissolved solids concentrations are residue on evaporation. Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station at Austin for water year October 1950 to September 1951 given in Water-Supply Paper 1212. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (° F)	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 (residue at 180°C)		Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Calcium, mg./l.	Non-carbonate				
Oct. 1-31, 1950	576	9.2			41	16	25	164	29	29	40	0.2	1.2		260	0.35	404	168	34	24	462	7.7
Nov. 1-30	697	7.7			40	16	30	161	31	31	46	.2	1.0		268	.36	504	166	34	28	462	7.5
Dec. 1-31	734	9.2			40	16	34	164	34	49	2	.5			268	.36	531	166	31	31	475	7.6
Jan. 1-31, 1951	826	10			44	16	34	176	33	51	1	.1	.8		282	.38	629	176	32	30	493	7.9
Feb. 1-28	643	8.2			43	15	40	178	32	53	3	1.0			282	.38	490	169	23	34	491	7.9
Mar. 1-31	235	5.4			43	16	37	174	35	52	2	1.2			287	.39	182	174	31	32	517	7.7
Apr. 1-30	754	11			40	17	36	166	36	52	4	1.0			283	.38	576	170	34	32	496	7.6
May 1-31	1,749	11			39	14	41	166	33	52	--	1.0			283	.38	1,340	155	19	37	495	7.9
June 1-30	1,653	11			38	16	38	158	34	54	4	1.8			271	.37	1,210	161	31	34	490	8.0
July 1-31	1,997	13			36	22	29	150	36	58	3	.8			283	.38	1,500	180	57	26	494	8.0
Aug. 1-31	1,982	12			40	16	43	156	37	65	3	.8			295	.40	1,580	166	38	36	525	8.1
Sept. 1-30	806	12			40	16	48	154	39	67	3	.8			299	.41	651	166	40	36	529	8.0
Weighted average	1,056	11			39	17	37	161	35	55	0.3	1.0			282	0.38	804	167	35	32	497	--

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT AUSTIN, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 (Once-daily temperature measurement at approximately 10 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	74	84	60	45	64	65	70	78	81	87	--
2	80	74	81	56	47	64	65	72	75	82	87	--
3	79	72	60	--	45	64	64	71	75	82	85	--
4	78	68	60	56	45	64	65	70	74	83	87	87
5	77	68	64	57	45	64	66	70	75	84	87	86
6	76	68	58	56	44	66	69	70	75	83	--	87
7	76	69	57	54	54	66	67	71	75	83	86	86
8	76	70	59	55	54	67	67	74	78	83	85	86
9	76	69	57	53	56	68	69	72	79	84	85	86
10	74	62	57	55	58	59	66	71	78	83	86	86
11	75	62	59	53	58	59	64	72	80	84	86	84
12	75	62	59	54	61	58	64	70	79	84	86	84
13	75	64	59	55	62	58	64	70	76	85	86	81
14	76	64	59	55	54	59	65	70	78	85	85	80
15	76	67	59	56	50	61	65	71	77	85	85	79
16	76	62	58	56	52	64	65	71	80	86	86	79
17	75	66	58	57	50	61	65	71	80	84	86	78
18	75	65	58	58	60	60	66	72	81	84	85	77
19	76	65	58	57	61	59	69	72	80	84	85	77
20	73	65	59	56	58	60	71	72	81	85	85	77
21	75	64	59	56	59	62	70	73	81	84	84	79
22	75	66	59	56	61	64	70	73	82	84	84	79
23	76	66	59	56	61	64	72	73	80	84	84	79
24	72	61	59	56	61	64	69	74	80	85	85	80
25	75	61	59	56	61	62	69	72	83	84	85	81
26	72	61	60	56	62	62	71	75	81	85	85	79
27	72	62	57	56	65	64	73	75	81	85	86	80
28	75	63	55	54	65	64	71	76	81	84	87	80
29	75	61	54	50	--	62	71	75	82	84	86	80
30	75	64	54	50	--	62	71	76	81	86	86	80
31	75	--	54	48	--	65	--	77	--	86	86	--
Aver- age	76	66	58	55	56	63	68	72	79	84	85	81

COLORADO RIVER BASIN--Continued
COLORADO RIVER AT WHARTON, TEX.

LOCATION.--At gaging station at bridge on U.S. Highway 59 in Wharton, Wharton County, 1,000 feet downstream from Texas & New Orleans Railroad bridge, 12 miles upstream from Jones Creek, and at mile 67.

DRAINAGE AREA.--41,150 square miles, approximately, of which 11,900 square miles is probably noncontributing.

RECORDS AVAILABLE.--Chemical analyses: April 1944 to September 1951.

Water temperatures: October 1945 to September 1948, March 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 329 ppm Aug. 1-31; minimum, 206 ppm June 1-5, 10, 13.

Hardness: Maximum, 199 ppm Nov. 1-30; minimum, 127 ppm June 1-5, 10, 13.

Specific conductance: Maximum daily, 649 micromhos Aug. 19; minimum daily, 283 micromhos June 5.

Water temperatures: Maximum, 87°F on many days during June to September.

EXTREMES, 1944-51.--Dissolved solids: Maximum, 386 ppm Apr. 1-10, 1948; minimum, 144 ppm Feb. 24-28, 1949.

Hardness: Maximum, 231 ppm Feb. 1-10, 1947; minimum, 87 ppm Feb. 24-28, 1949.

Water temperatures (1945-48, 1950-51): Maximum, 94°F July 31, 1948; minimum, 45°F Jan. 15-16, 1946, Dec. 12, 1947.

REMARKS.--Values reported for dissolved solids concentration are residue on evaporation, unless noted otherwise. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (Fe)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Oct. 1-31, 1950....	662	10			51	16	34	34	203	32	46	0.2	1.5	312	0.42	558	193	27	28	7.7
Nov. 1-30.....	744	15			50	18	31	31	200	33	47	.3	1.0	306	.42	613	199	35	25	7.9
Dec. 1-31.....	825	5.5			50	16	37	37	200	34	51	.2	.8	296	.40	659	191	27	30	7.7
Jan. 1-31, 1951....	843	5.6			50	16	38	38	200	33	53	.2	.8	304	.41	692	191	27	30	538 8.1
Feb. 1-28.....	994	5.6			49	16	38	38	200	33	50	.1	1.2	293	.40	786	188	24	30	520 7.7
Mar. 1-31.....	486	9.6			54	15	47	47	228	37	52	--	2.0	a328	.45	430	196	11	34	567 7.9
Apr. 1-30.....	566	14			49	15	36	36	190	40	44	.4	2.0	321	.44	491	184	28	30	520 7.6
May 1-31.....	829	10			40	13	42	42	166	34	51	--	1.5	278	.38	622	153	17	37	500 7.7
June 1-5, 10, 13...	1,419	17			40	6.7	16	130	130	28	17	--	2.5	206	.28	789	127	21	21	325 7.9
June 6-9, 11-12, 14-30	2,213	15			34	14	34	167	33	48	.3	1.5	2.5	292	.40	1,740	167	30	30	485 8.2
July 1-31.....	739	13			42	16	42	170	36	58	.4	1.8	1.8	295	.40	589	171	32	35	540 7.9
Aug. 1-31.....	797	15			43	16	44	168	37	66	.2	.5	.5	329	.45	672	174	36	36	555 7.6
Sept. 1-30.....	1,277	13			40	12	44	154	34	56	.4	1.0	1.0	282	.38	972	149	23	39	466 7.7
Weighted average..	892	11			46	15	38	181	34	51	0.3	1.3	1.3	297	0.40	715	176	28	32	513 --

a sum of determined constituents.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT WHARTON, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement at approximately 7:30 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	--	--	57	57	70	64	76	78	84	84	--
2	80	74	--	58	56	69	65	77	79	84	85	86
3	80	69	--	57	59	68	75	76	79	84	85	--
4	79	68	--	55	62	54	64	78	79	85	86	85
5	79	73	--	56	61	57	66	76	77	85	86	87
6	--	--	--	58	59	57	--	76	76	84	86	86
7	74	69	--	53	59	62	65	77	76	--	87	85
8	75	64	--	57	60	63	68	--	77	84	87	86
9	72	56	--	54	58	60	69	77	78	85	87	--
10	73	--	--	--	57	61	68	78	77	85	86	85
11	74	--	--	56	58	64	70	79	81	85	86	86
12	75	--	--	58	60	57	69	79	80	85	87	87
13	75	--	--	55	62	62	70	80	81	85	86	87
14	74	--	--	54	61	64	70	81	78	85	85	87
15	75	69	--	53	--	63	70	80	76	85	87	85
16	73	70	--	56	--	65	--	81	78	--	86	86
17	74	--	--	55	63	65	73	82	80	85	86	87
18	--	--	--	55	65	64	74	82	81	87	86	86
19	74	--	--	54	67	59	71	81	83	87	86	85
20	73	--	--	--	64	58	75	82	84	87	86	85
21	72	--	--	58	66	61	74	83	84	--	86	87
22	72	--	--	54	66	63	76	83	83	--	86	87
23	73	--	--	55	68	64	74	83	83	--	86	87
24	--	--	--	53	69	66	73	83	84	--	--	86
25	73	--	--	--	70	64	75	84	83	--	86	87
26	74	--	62	57	70	63	75	83	85	--	87	86
27	73	--	62	56	71	64	76	84	84	--	87	85
28	74	61	62	56	70	65	75	83	87	--	87	86
29	75	--	--	--	--	63	75	84	85	--	87	--
30	75	--	--	--	--	63	75	83	--	--	87	--
31	75	--	--	--	--	62	--	84	--	--	86	--
Average	75	--	--	56	63	63	71	80	81	--	86	86

GUADALUPE RIVER BASIN

GUADALUPE RIVER AT VICTORIA, TEX.

LOCATION. --At gaging station at bridge on U. S. Highway 59 in Victoria, Victoria County, 1,300 feet upstream from Texas & New Orleans Railroad bridge, and 10 miles upstream from Coletto Creek.

DRAINAGE AREA. --5,311 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1945 to September 1946, October 1948 to September 1951.

Water temperatures: November 1950 to September 1951.

EXTREMES. 1950-51. --Dissolved solids: Maximum, 1,020 ppm June 23-24; minimum, 175 ppm June 4, 6, 15.

Hardness: Maximum, 318 ppm June 23-24; minimum, 112 ppm June 4, 6, 15.

Specific conductance: Maximum daily, 1,820 micromhos June 24; minimum June 15.

Water temperatures: Maximum, 89° F July 21-22; minimum, 40° F Feb. 1-2.

EXTREMES. 1945-46, 1948-51. --Dissolved solids: Maximum, 1,040 ppm Jan. 11-17, 1946; minimum, 175 ppm June 4, 6, 15, 1951.

Hardness: Maximum, 428 ppm Jan. 11-17, 1946; minimum, 112 ppm June 4, 6, 15, 1951.

REMARKS. Values reported for dissolved solids concentrations are residue on evaporation unless noted otherwise. Continuous records of specific conductance of daily samples for October 1945 to September 1951 available in district office at Austin, Tex. Some daily chloride determinations also available. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃	Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate	
Oct. 1-10, 1950	413		16	--	54	20	53		212	31	88	0.2	1.2	--	400	0.54	446	216	43	677
Oct. 11-20, 21-31	341		17	0.00	56	20	50	0.0	224	33	81	3	8	0.22	402	0.55	370	222	30	648
Oct. 13-20	304		20	0.00	62	25	85	2.4	217	51	152	3	5	23	512	70	420	258	80	42
Nov. 1-10	346		17	0.00	56	20	43	2.4	232	31	62	4	8	09	347	47	324	222	32	29
Nov. 11-20	334		14	0.01	58	20	42	1.2	238	33	63	4	8	17	348	47	314	226	32	29
Nov. 21-30	380		16	0.00	61	21	42	2.4	246	32	64	3	1.0	19	363	49	372	238	37	27
Dec. 1-10	405		15	0.02	57	20	41	4.4	239	31	65	1	2.2	21	358	49	391	224	28	28
Dec. 11-20	390		13	0.03	62	21	52	4.8	246	32	91	1	1.2	42	412	56	434	241	40	31
Dec. 21-31	429		12	0.03	66	19	46	4.0	259	30	76	1	2.2	26	409	56	474	242	30	29
Jan. 1-10, 1951	383		11	0.02	64	20	44	--	237	31	72	3	2.2	34	386	52	399	242	31	28
Jan. 11-20	405		11	0.02	60	20	49	2.0	235	33	79	2	2.5	17	360	52	416	232	39	31
Jan. 21-31	391		13	0.01	59	20	50	1.2	236	32	79	1	2.0	15	376	51	397	229	36	32
Feb. 1-10	383		12	0.02	59	20	52	1.6	232	34	84	2	2.0	18	382	52	395	239	39	33
Feb. 11-20	408		11	0.00	58	20	53	1.2	236	34	97	1	3.0	20	402	57	463	225	34	36
Feb. 21-31	487		10	0.00	54	21	58	1.6	233	34	98	1	3.0	31	418	57	527	231	48	35
Mar. 1-10	430		13	0.00	64	23	71	1.6	237	38	126	1	2.5	34	482	66	560	254	60	38
Mar. 11-20	376		16	0.00	52	23	56	4	211	35	97	3	3.2	18	387	53	393	224	51	35
Mar. 21-31	472		16	0.01	58	23	50	4.0	234	34	85	3	3.5	11	385	52	491	239	48	31
Apr. 1-5, 9-10	594		15	--	66	22	56	4	244	35	99	--	2.5	33	428	58	686	255	55	32
Apr. 6-8	520		14	--	72	26	117	--	220	46	220	--	3.0	--	4806	82	851	286	106	47
Apr. 11-20	431		18	0.00	52	22	69	1.0	186	37	122	3	3.5	09	433	59	504	220	68	41

a Sum of determined constituents.

GUADALUPE RIVER BASIN--Continued

GUADALUPE RIVER AT VICTORIA, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180°C)		Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Apr. 21-30, 1951.....	363		17	0.02	62	23	63	0.0	231	35	109	0.3	1.5	0.17	436	0.59	427	249	60	35	768	8.3
May 1-10	575		18	.02	60	22	49	.0	232	31	83	.3	1.5	.15	379	.52	588	240	50	31	678	8.2
May 11, 17-18	414		17	--	56	20	85		174	37	158	.3	1.5	--	522	.71	583	222	79	45	902	7.9
May 12-16, 19-20 ..	490		18	.04	74	22	131	.0	184	42	257	.4	1.8	.04	710	.97	939	275	124	51	1,210	7.8
May 21-31	643		19	.03	56	17	45	.0	219	30	71	.4	2.8	.25	350	.48	608	210	30	32	630	7.8
June 1-3, 5, 7-10, 14, 16	4,113		16	.10	46	11	43	.0	155	24	75	.4	2.2	.32	307	.42	3,410	160	33	37	547	7.6
June 4, 6, 15	5,117		14	--	34	6.6	16		122	14	22	--	2.5	--	175	.24	2,420	112	12	24	303	7.7
June 11-13, 17-20 ..	970		17	.32	58	11	117	--	119	33	223	.3	1.8	.46	592	.81	1,550	190	92	57	993	7.5
June 21-22, 25-30 ..	507		24	.02	61	16	56	4.8	196	34	100	.4	2.0	.22	400	.54	548	218	58	35	708	8.1
June 23-24	531		20	.02	88	24	202	--	172	58	399	.6	3.0	--	1,020	1.39	1,460	318	177	58	1,670	8.3
July 1-10	348		23	.01	57	17	44	4.4	218	29	74	.3	1.0	.21	337	.49	335	212	34	31	634	8.0
July 11-20	303		20	.03	53	18	49	2.4	212	29	81	.3	2.0	.24	357	.49	292	206	32	34	645	8.0
July 21-31	282		21	.03	46	18	50	2.8	190	30	80	.3	2.0	.22	356	.48	271	189	34	36	614	7.9
Aug. 1-10	181		22	.07	44	19	52	.8	189	30	81	.3	2.0	.22	358	.49	175	188	33	37	614	7.9
Aug. 11-20	190		22	.02	47	19	49	1.2	199	29	76	.3	2.0	.22	354	.48	182	196	32	35	611	8.0
Aug. 21-31	187		23	.02	42	19	55	2.0	182	32	86	.3	1.5	.20	360	.49	182	183	34	39	625	7.8
Sept. 1-10	182		22	.02	48	19	56	.8	198	33	88	.3	1.0	.21	380	.52	187	198	36	38	654	7.8
Sept. 11-20	479		19	.04	47	16	48	.4	193	28	72	.3	1.2	.22	338	.46	437	184	26	36	588	7.8
Sept. 21-30	465		18	.00	42	14	36	.0	173	24	53	.3	2.5	.05	279	.38	350	162	21	33	486	8.0
Weighted average...	542		16	0.08	53	17	52	1.0	195	30	89	0.3	2.1	0.23	371	0.50	543	202	42	36	648	--

Sum of determined constituents.

GUADALUPE RIVER BASIN--Continued

GUADALUPE RIVER AT VICTORIA, TEX.--Continued

Temperature (°F) of water, November 1950 to September 1951

/Once-daily temperature measurement at approximately 9 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--	66	64	40	70	67	74	83	84	86	86
2		--	68	63	40	70	65	74	82	85	84	87
3		--	61	60	47	73	63	75	81	84	86	86
4		--	60	56	46	72	64	75	77	83	85	85
5		--	64	60	51	70	67	76	74	85	86	86
6		--	48	63	58	71	70	77	76	85	86	84
7		--	47	54	65	71	67	78	76	84	87	86
8		--	52	50	53	72	72	73	77	85	86	84
9		--	53	51	59	61	68	76	78	84	85	84
10		--	53	55	58	59	67	78	80	--	85	85
11		--	53	53	62	73	62	78	81	85	86	83
12		--	51	58	61	60	64	76	82	86	85	84
13		--	58	61	65	73	66	76	81	86	84	83
14		--	61	55	54	74	67	76	80	86	86	81
15		--	62	61	51	62	70	78	78	85	86	80
16		--	63	55	52	65	66	76	81	87	85	81
17		--	58	57	57	68	68	77	86	85	--	79
18		--	58	58	63	68	70	78	81	87	87	76
19		--	59	61	64	58	73	76	83	87	87	77
20		--	60	62	53	59	77	78	--	85	84	76
21		--	61	56	60	60	77	79	84	89	85	80
22		--	60	55	62	65	76	80	84	89	85	85
23		--	58	58	--	67	74	79	85	88	84	84
24		--	61	58	64	70	76	78	84	86	85	80
25		--	62	57	66	66	76	78	84	86	86	81
26		--	64	59	67	64	77	81	83	85	84	83
27		--	54	60	68	67	76	80	82	86	86	82
28		70	53	61	59	68	77	82	85	86	86	81
29		61	54	55	--	64	76	82	84	87	86	82
30		62	55	48	--	62	75	82	85	85	87	82
31		--	53	43	--	66	--	83	--	85	85	--
Average		--	58	57	57	67	70	78	81	86	86	82

GUADALUPE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN GUADALUPE RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Instantaneous discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃	Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day					
MEDINA RESERVOIR NEAR SAN ANTONIO																						
Nov. 28, 1950.....			9.9		76	16	47	234	134		20		3.5		455	0.62		260	69	28	655	7.9
DIVERSION LAKE BELOW LAKE MEDINA NEAR RIOMEDINA																						
Nov. 28, 1950.....	0.10		10		80	30	11		240	122	18		2.8		440	0.60		323	126	7	636	8.0
MEDINA RIVER AT BABY'S ROAD CROSSING NEAR RIOMEDINA																						
Nov. 28, 1950.....	1.05		9.9		82	22	8.9	233	95		16		0.0		398	0.54		295	104	6	572	7.9
MEDINA RIVER AT RIOMEDINA																						
Nov. 28, 1950.....	5.31		13		93	23	15	290	79		22		8.7		444	0.60		326	89	9	656	7.9
SAN ANTONIO RIVER ON STATE HIGHWAY 97 NEAR FLORESVILLE																						
Mar. 22, 1951.....			15		82	20	69	289	76		73		22		518	0.70		286	50	34	839	7.9
CIBOLO CREEK ON U. S. HIGHWAY 87 NEAR STOCKDALE																						
Mar. 23, 1951.....			16		56	11	75	200	79		72		0.2		409	0.56		184	20	47	683	8.0

NUECES RIVER BASIN

NUECES RIVER NEAR THREE RIVERS, TEX.

LOCATION.--At bridge on U.S. Highway 281, 4,100 feet downstream from gaging station, which is 2 miles south of Three Rivers, Live Oak County, DRAINAGE AREA.--15,600 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1945 to September 1946, October 1950 to September 1951.

Water temperatures: October 1950 to September 1951.

EXTREMES: 1950-51.--Dissolved solids: Maximum, 2,280 ppm Feb. 1-10; minimum, 185 ppm May 21-23, 24 (6 p.m.-12 p.m.).

Hardness: Maximum, 228 ppm Feb. 11-19; minimum, 60 ppm Sept. 8-12, 13 (12 p.m.-12 m.).

Specific conductance: Maximum daily, 2,280 micromhos Feb. 6; minimum daily, 223 micromhos June 5.

Water temperatures: Maximum daily 86°F on many days in August and September.

Sediment concentrations: Maximum daily, 10,300 ppm May 7.

Sediment loads: Maximum daily, 75,700 tons Sept. 14; minimum daily, 0 tons on many days.

EXTREMES, 1945-46, 1950-51.--Dissolved solids: Maximum, 1,280 ppm Feb. 1-10, 1951; minimum, 185 ppm May 21-23, 24 (6 p.m.-12 p.m.), 25-26, 27 (12 p.m.-12 m.), 1951.

Hardness: Maximum, 283 ppm Dec. 21-31, 1945; minimum, 60 ppm Sept. 8-12, 13 (12 p.m.-12 m.), 1951.

REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residue on evaporation and for concentrations more than 1,000 ppm are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. For the periods

October 1941 to September 1945, October 1946 to September 1947, and July 1949 to September 1949 specific conductance, numerous spot chlorides, and a

few partial analyses available in district office at Austin, Tex. Records of discharge for gaging station near Three Rivers, for water year October

1950 to September 1951 given in Water-Supply Paper 1212. No appreciable inflow between sampling point and gaging station except during periods of

heavy local rains.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃) (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Per-cent so-dium	Specific conductance (micro-mhos at 25° C)	pH	
														Parts per million	Tons per acre-foot	Tons per acre-day	Calcium mag-nesium	Non-carbonate				
Oct. 1-10, 1950.....	852	18		42	5.4	22		157	0	28	14		1.5		224	0.30	515	127	0	28	344	8.1
Oct. 11-20.....	17.0	17		52	8.2	26		183	-	27	30		2		262	.33	12	164	14	21	403	8.3
Oct. 21-30.....	1.57	20		58	9.2	27		208	0	28	30		2		302	.41	1.3	183	12	25	477	8.0
Nov. 1-4, 16-20.....	b, 11	22		62	7.2	30		240	0	29	46		1.2		355	.48	1	184	0	37	566	8.0
Nov. 1-3, 8, 11-13.....	b, 11	22		66	9.8	80		270	6	43	72		1.2		c 433	.59	1	205	0	46	684	8.4
Dec. 1, 3-8, 11-13.....	b, 2, 03	19		28	12	406		448	16	147	320		4.5		1,170	1.59	6.4	120	0	88	2,020	8.7
Dec. 20, 24-31.....	3.72	12		42	13	366		463	12	137	290		3.8		1,100	1.50	11	158	0	83	1,840	8.4
Jan. 1-31, 1951.....																						
Feb. 1-10.....	4.66	10		46	13	431		546	8	165	335		1.5		1,280	1.74	16	160	0	85	2,130	8.4
Feb. 11-19.....	6.16	8.4		45	28	354		455	18	164	298		3.0		1,140	1.55	19	228	0	77	1,920	8.6
Feb. 20-28.....	6.71	9.2		46	17	354		427	16	166	285		2.8		1,110	1.51	20	185	0	81	1,830	8.6
Mar. 1-10.....	5.47	11		47	16	341		430	17	148	268		2.5		1,060	1.44	16	174	0	81	1,760	8.6
Mar. 11-20.....	5.52	11		48	16	329		442	12	144	260		2.8		1,040	1.41	16	188	0	80	1,730	8.5
Mar. 21-27.....	10.9	11		42	13	325		447	0	146	245		2.5		1,000	1.36	29	158	0	82	1,700	8.2
Mar. 28-31.....	99.2	16		38	5.9	149		220	0	72	132		2.5		560	.76	150	120	0	73	916	7.6

a Includes carbonate as bicarbonate.

b Includes days of less than 0.05 second-foot flow.

c Sum of determined constituents.

NUECES RIVER BASIN--Continued
NUECES RIVER NEAR THREE RIVERS, TEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Per-cent so-dium	Specific conduct-ance (micro-mhos at 25° C)	pH
															Parts per mil-lion	Tons per acre-foot	Tons per acre-foot	Calcium mag-nesium	Non-carbon-ate			
Apr. 1-2, 9-10, 1951.	29.5	16		50	9.4	186		268	0	110	165		1.5		716	0.97	57	164	0	71	1,150	8.1
Apr. 11.....	14.5	15		40	6.8	145		244	0	80	112		2.0		556	.76	22	128	0	71	1,901	7.8
Apr. 12-20.....	6.23	12		44	12	244		362	0	131	181		1.0		834	1.13	14	160	0	77	1,370	8.1
Apr. 21-30.....	1.89	13		36	11	263		326	18	132	192		1.5		859	1.17	4.4	135	0	81	1,420	8.6
May 1-5, 13.....	66.4	19		36	11	281		337	28	128	204		2.5		918	1.25	165	135	0	82	1,490	8.6
May 6, 7 (12 p.m.-9 a.m.; 7 p.m.-12 p.m.), 8-10, 18 (6 a.m.-12 p.m.), 19-20, May 7 (9 a.m.-7 p.m.), 11-12, 14-17, 18 (12 p.m.-6 a.m.),.....				31	2.6	36		116	0	32	24		4.0		231	.31	586	88	0	47	346	7.9
May 21-23, 24 (6 p.m.-12 p.m.), 25-26, 27 (12 p.m.-12 m.),.....	708	19		31	3.1	83		154	0	60	56		5.0		374	.51	715	90	0	67	568	8.1
May 24 (12 p.m.-6 p.m.), 27 (12 m.-12 p.m.), 28-31.....	4,831	21		34	3.4	15		124	0	15	7.2		6.1		185	.25	2,410	99	0	25	269	7.9
May 24 (12 p.m.-6 p.m.), 27 (12 m.-12 p.m.), 28-31.....	1,350	24		42	5.0	37		154	0	31	30		5.0		264	.36	962	125	0	39	405	8.0
June 1-9, 10 (12 p.m.-12 m.), 11-12, 13 (12 p.m.-12 m.), 14 (12 p.m.-12 m.), 16-23.....	6,316	23		32	3.1	19		106	0	28	10		4.5		191	.26	3,260	93	6	31	271	7.7
June 10 (12 p.m.-12 m.), 11-13, 14 (12 p.m.-12 m.), 16-23.....	600	32		43	4.6	51		172	0	36	40		3.0		319	.43	517	126	0	47	471	7.9
June 14 (12 m.-12 p.m.), 15.....	2,013	20		31	3.3	25		106	0	34	14		5.0		208	.28	1,130	91	4	38	302	7.9
June 24-30.....	30.6	33		62	7.1	104		251	0	57	102		1.2		533	.72	44	184	0	55	822	8.0
July 1-9.....	21.5	46		61	7.6	137		267	0	59	140		2.2		602	.82	35	183	0	62	962	8.2
July 10-24.....	6.29	42		60	9.6	207		262	0	82	239		1.0		794	1.08	13	189	0	70	1,320	8.2
July 25-31.....	.66	38		50	6.2	101		210	0	52	109		1.0		478	.65	.9	160	0	58	783	8.2
Aug. 1-13, 30-31.....	b 1.08	62		39	6.9	107		232	0	40	90		.5		460	.63	1.3	126	0	65	708	8.1
Aug. 14-20.....	10.4	46		55	10	285		376	0	88	282		2.0		956	1.30	27	178	0	78	1,640	8.2
Aug. 21-29.....	5.14	48		34	6.3	274		a 484	--	67	170		1.0		c 838	1.14	12	111	0	84	1,400	8.4

a Includes carbonate as bicarbonate.

b Includes days of less than 0.05 second-foot flow.

c Sum of determined constituents.

Sept. 1-7	7.73	48	26	3.9	179	354	21	47	67	1.0	596	.81	12	81	0	82	898	8.6
Sept. 8-12, 13 (12 p. m.-12 m.)	23.5	54	18	3.5	257	502	20	59	79	1.0	c 738	1.00	47	60	0	90	1,160	8.6
Sept. 13 (12 m.-12 p. m.), 14 (10 a.m.-12 p.m.), 15-20, 23 (12 m.-12 p.m.), 24, 27 (12 p.m.-12 m.), 28-30	5.773	21	32	2.9	26	109	0	31	18	2.0	c 187	.25	2,910	92	2	38	304	7.8
Sept. 14 (12 p.m.-10 a. m.), 21-25, 23 (12 p. m.-12 m.), 25-26, 27 (12 m.-12 p.m.)	1.345	22	42	3.6	54	147	0	50	44	2.0	291	.40	1,060	120	0	49	481	8.0
Weighted average...	561	22	34	3.4	29	a 121	--	30	19	3.6	214	0.29	324	99	0	39	326	--

c Sum of determined constituents.

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR THREE RIVERS, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	77	63	--	--	68	68	74	78	84	84	86
2	82	68	--	--	--	67	--	72	80	84	84	86
3	81	64	--	--	--	67	70	74	82	82	84	86
4	77	58	--	--	--	68	65	76	72	82	--	86
5	77	--	--	--	--	69	68	74	72	84	86	86
6	75	--	56	--	66	80	68	64	76	82	86	86
7	75	--	--	--	64	74	68	70	80	82	84	86
8	78	--	--	--	65	76	66	68	82	82	86	86
9	69	--	--	--	65	78	60	72	84	82	84	86
10	68	--	--	48	--	78	60	72	--	82	84	84
11	71	--	--	--	68	74	62	78	84	82	84	86
12	75	--	--	--	65	72	64	74	82	82	84	84
13	72	--	62	--	64	72	64	78	80	82	86	84
14	70	--	--	--	66	74	62	78	80	82	84	74
15	72	--	--	--	68	70	70	76	82	82	84	74
16	72	--	--	--	68	72	68	78	84	80	84	78
17	70	--	--	51	67	72	70	76	84	82	86	74
18	70	64	--	--	66	70	72	76	84	80	86	74
19	70	--	--	--	68	72	72	76	82	82	84	74
20	70	61	62	--	65	72	76	78	84	82	84	76
21	71	--	--	--	67	74	78	78	84	82	84	78
22	65	--	--	--	66	65	78	78	84	82	84	78
23	66	--	--	--	68	70	74	78	84	82	86	80
24	68	--	--	54	67	68	76	78	84	--	86	76
25	70	--	--	--	68	72	76	78	84	84	84	80
26	70	--	--	--	67	68	78	--	82	84	--	80
27	70	--	62	--	68	68	76	--	82	84	86	78
28	71	--	--	--	69	76	78	82	82	82	84	80
29	72	--	--	--	--	60	78	80	84	84	86	78
30	75	--	--	--	--	64	72	78	82	84	86	80
31	--	--	--	46	--	64	--	--	--	84	86	--
Average	72	--	--	--	--	71	70	76	82	82	85	81

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR THREE RIVERS, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Suspended sediment, water year October 1930 to September 1931

Day	October			Mean discharge (cfs)	November		Mean discharge (cfs)	December			
	Mean discharge (cfs)	Suspended sediment			Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		
		Mean concentration (ppm)	Tons per day								
1-----	1,340	810	2,930	0.2	12	--	0	--	0		
2-----	1,600	660	2,850	.2			0	--	0		
3-----	1,760	515	2,450	.1			.1	}	(at)		
4-----	1,620	440	1,920	0			.1				
5-----	1,260	425	1,450	0			.1				
6-----	536	438	s 617	0	0						
7-----	168	510	231	0	0						
8-----	107	400	116	0	0						
9-----	75	260	53	0	0	0	--	0			
10-----	53	180	26	0	0	0	--	0			
11-----	40	140	15	0	--	0	.1	}	(at)		
12-----	32	90	7.8	0	--	0	.2				
13-----	25	70	4.7	0	--	0	.1				
14-----	18	58	2.8	0	--	0	0				
15-----	15	48	1.9	0	--	0	0				
16-----	12	43	1.4	.1	}	(at)	0	--	0		
17-----	9.7	35	.9	.1			0	--	0		
18-----	7.6	30	.6	.1			0	--	0		
19-----	6.0	--	a .6	.1			0	--	0		
20-----	5.2	40	.6	.1			0	--	0		
21-----	4.2	43	.5	0	--	0	0	--	0		
22-----	3.2	18	.2	0	--	0	0	--	0		
23-----	2.2	24	.1	0	--	0	0	--	0		
24-----	1.7	}	.1	0	--	0	1.6	}	a .4		
25-----	1.4			0	--	0	2.0				
26-----	1.0			23	.1	0	--			0	2.5
27-----	.6			0	--	0	--			0	2.5
28-----	.5			0	--	0	--			0	2.2
29-----	.4	14	--	0	--	0	2.2				
30-----	.3	}	12	0	--	0	2.5				
31-----	.2			--	--	--	--	2.8			
Total-	8,705.2	--	t12,680	1.0	--	t0.1	19.4	--	t3.3		

Day	January			Mean discharge (cfs)	February		Mean discharge (cfs)	March			
	Mean discharge (cfs)	Suspended sediment			Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		
		Mean concentration (ppm)	Tons per day								
1-----	3.0	}	--	3.8	}	a 1.1	6.8	84	1.5		
2-----	3.2			4.0			6.5	86	1.5		
3-----	2.8			3.8			6.2	88	1.5		
4-----	3.0			4.2			5.8	100	1.6		
5-----	2.8			5.0			5.5	92	1.4		
6-----	3.0	}	a 0.7	5.2	}	70	5.2	100	1.4		
7-----	3.5			5.2			5.0	76	1.0		
8-----	3.8			5.0			5.0	82	1.1		
9-----	3.2			5.2			4.5	96	1.2		
10-----	3.0			5.2			4.2	76	.9		
11-----	3.2	}	--	5.0	}	73	4.5	80	1.0		
12-----	3.8			5.5			4.8	86	1.1		
13-----	4.0			4.8			5.0	69	.9		
14-----	4.5			6.5			7.9	66	1.4		
15-----	4.2			6.9			6.8	76	1.4		
16-----	4.2	}	--	7.0	}	81	6.0	56	.9		
17-----	4.8			6.5			5.8	72	1.1		
18-----	4.5			6.8			5.8	59	.9		
19-----	4.2			7.3			4.8	55	.7		
20-----	4.0			7.6			3.8	53	.5		
21-----	3.8	}	--	6.2	}	108	3.2	57	.5		
22-----	4.2			6.5			2.6	56	.5		
23-----	4.2			6.5			1.9	4.8	185	2.4	
24-----	3.8			7.0			2.0	6.5	226	4.0	
25-----	3.8			6.8			1.7	7.0	222	4.2	
26-----	3.8	}	--	6.5	}	96	12	233	7.5		
27-----	3.5			6.2			100	1.7	39	258	27
28-----	3.8			6.8			86	1.6	94	200	51
29-----	4.0			--			--	--	56	310	47
30-----	3.8			--			--	--	156	1,270	s 517
31-----	3.8			--			--	--	91	1,040	256
Total-	115.2	--	22	162.4	--	41	582.9	--	940		

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

WESTERN GULF OF MEXICO BASINS

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR THREE RIVERS, TEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	Mean dis- charge (cfs)	April		Mean dis- charge (cfs)	May		Mean dis- charge (cfs)	June		
		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-----	60	385	62	1.4	100	0.4	965	1,700	4,430	
2-----	38	245	25	1.0	98	.3	925	1,500	3,750	
3-----	26	195	14	1.1	99	.3	2,120	2,040	s 14,900	
4-----	18	225	11	.8	130	.3	9,110	2,500	s 58,900	
5-----	14	190	7.2	114	1,380	s 487	12,500	810	27,300	
6-----	12	80	2.6	22	2,920	s 204	10,900	535	15,700	
7-----	10	86	2.3	702	4,870	s 13,800	8,050	554	12,000	
8-----	8.5	87	2.0	739	3,660	8,030	7,230	402	7,850	
9-----	7.9	59	1.3	114	2,150	662	5,960	246	3,960	
10-----	12	80	2.6	33	600	53	3,860	299	3,120	
11-----	13	160	5.6	18	367	18	921	}	1,660	
12-----	11	85	2.5	14	490	s 21	450		667	810
13-----	8.5	80	1.4	280	2,660	s 2,010	605	1,120	s 2,410	
14-----	6.8	67	1.2	300	4,580	s 4,580	2,640	2,080	s 14,300	
15-----	6.0	61	1.0	545	3,620	s 5,450	1,620	900	3,940	
16-----	5.5	120	1.8	1,720	3,420	15,900	645	2,150	3,740	
17-----	4.8	57	.7	1,420	2,650	10,200	625	1,950	3,290	
18-----	4.5	48	.6	2,160	2,050	12,000	507	1,050	1,440	
19-----	4.5	52	.6	2,840	1,680	12,900	271	550	402	
20-----	4.5	68	.8	985	1,650	4,390	143	355	137	
21-----	4.0	65	.7	2,620	1,900	13,400	84	238	54	
22-----	3.5	78	.7	5,010	1,000	13,500	53	132	19	
23-----	3.0	64	.5	5,490	405	6,000	38	88	9.0	
24-----	2.5	62	.4	2,410	1,920	s 12,800	28	68	5.1	
25-----	2.5	80	.5	5,910	2,250	s 35,400	23	58	3.6	
26-----	1.4	86	.3	6,160	1,100	18,300	20	49	2.6	
27-----	.8	74	.2	3,020	1,050	8,560	17	40	1.8	
28-----	.4	86	.1	1,590	1,150	4,940	15	33	1.3	
29-----	.4	83	.1	905	1,450	3,540	30	35	2.8	
30-----	.4	124	.1	825	1,550	3,450	81	71	s 20	
31-----	--	--	--	925	1,400	3,500	--	--	--	
Total-	294.4	--	150	46,875.3	--	214,100	70,436	--	184,200	

Day	Mean dis- charge (cfs)	July		Mean dis- charge (cfs)	August		Mean dis- charge (cfs)	September		
		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-----	83	107	24	0.1	}	47	--	4.8	68	0.9
2-----	41	78	8.6	.2				4.5	76	.9
3-----	24	54	3.5	.2				4.0	74	.8
4-----	14	52	2.0	.2				1.2	102	.3
5-----	10	50	1.4	.1				.4	165	.2
6-----	7.3	44	.9	0	}	--	0	.2	290	.2
7-----	6.0	46	.7	0				39	278	29
8-----	4.5	35	.4	0				16	278	12
9-----	3.5	36	.3	0				31	274	23
10-----	2.5	86	.6	0				25	186	13
11-----	1.8	98	.5	0				24	170	11
12-----	1.7	97	.4	1.2	110	.4	20	198	11	
13-----	1.4	72	.3	5.5	49	.7	1,940	4,290	s 41,600	
14-----	1.6	94	.4	5.5	44	.7	13,100	2,380	s 75,700	
15-----	1.2	74	.2	5.5	38	.6	18,300	900	44,500	
16-----	1.0	75	.2	5.2	37	.5	14,700	510	20,200	
17-----	2.2	76	.5	5.2	60	.8	8,800	550	13,100	
18-----	4.2	74	.3	5.5	38	.6	4,920	750	9,960	
19-----	3.2	91	.8	38	1,440	s 16	2,740	750	5,550	
20-----	4.1	86	1.0	7.9	110	2.3	1,550	960	4,020	
21-----	40	84	9.0	6.0	54	.9	805	1,020	2,220	
22-----	17	97	4.5	5.2	61	.9	326	900	792	
23-----	8.2	43	1.0	5.2	61	.9	718	1,850	s 5,610	
24-----	4.2	41	.5	5.2	84	1.2	1,450	2,810	s 12,500	
25-----	2.0	58	.3	5.2	92	1.3	450	800	972	
26-----	1.1	56	.2	5.2	73	1.0	448	938	s 1,480	
27-----	.6	55	.1	5.0	82	1.1	1,810	2,910	14,200	
28-----	.3			4.8	118	1.5	2,290	2,000	12,400	
29-----	.2	}	54	--	4.5	72	.9	2,060	900	5,010
30-----	.2				4.2	96	1.1	645	700	1,220
31-----	.2				4.5	90	1.1	--	--	--
Total-	292.2	--	t 63	135.3	--	t 35	77,222.1	--	271,000	

Total discharge for year (cfs-days).....									204,841.4	
Total load for year (tons).....									683,300	

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

NUECES RIVER BASIN--Continued
NUECES RIVER NEAR THREE RIVERS, TEX.--Continued

Particle-size analyses of suspended sediment, March to September 1951
(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	Instantaneous discharge (cfs)	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 30, 1951	3:00 p. m.	154	2,040	3,040	--	99	100	--	--	--	--	--	--	PCW
May 5	2:30 p. m.	152	1,460	1,160	84	90	95	98	100	--	--	--	--	BCW
May 7	12:00 m.	645	2,840	2,460	71	86	92	98	99	100	--	--	--	BCW
May 7	7:00 p. m.	1,440	10,300	4,440	--	76	85	93	97	99	100	--	--	SPCW
May 13	8:30 a. m.	364	2,660	2,160	30	58	94	98	99	100	--	--	--	BN
May 13	8:30 a. m.	364	2,660	2,280	65	81	89	96	100	--	--	--	--	BCW
May 16	7:00 p. m.	2,170	3,520	3,190	--	89	94	97	98	100	--	--	--	PCW
May 21	1:30 p. m.	2,770	1,890	1,570	71	79	82	91	97	100	--	--	--	BCW
May 25	8:30 a. m.	5,810	2,610	2,840	--	86	95	98	100	--	--	--	--	PCW
May 25	8:30 a. m.	5,810	2,610	2,180	14	66	86	93	98	100	--	--	--	PN
May 25	7:00 p. m.	6,500	1,640	1,470	82	89	91	95	96	97	99	100	--	SPCW
June 3	7:30 a. m.	965	1,310	2,150	--	80	88	95	99	99	100	--	--	SPCW
June 4	7:00 p. m.	11,000	1,660	3,620	--	92	97	97	99	100	--	--	--	PCW
June 11-12	--	--	667	2,200	83	87	93	97	99	100	--	--	--	BCW
June 16	8:00 a. m.	645	2,160	1,900	80	93	97	99	100	--	--	--	--	BCW
June 16	8:00 a. m.	645	2,160	1,730	6	66	98	99	99	100	--	--	--	BN
Sept. 14	8:00 a. m.	11,700	2,420	1,670	73	83	90	96	99	100	--	--	--	BCW
Sept. 15	1:00 p. m.	18,800	836	687	62	84	90	92	96	97	98	100	--	SPCW
Sept. 24	7:30 a. m.	2,000	3,420	2,800	77	86	94	98	99	100	--	--	--	BCW
Sept. 28	7:30 p. m.	2,530	1,700	1,350	9	16	96	99	99	100	--	--	--	BN
Sept. 28	7:30 p. m.	2,530	1,700	1,350	82	89	93	98	99	100	--	--	--	BCW

NUECES RIVER BASIN--Continued
NUECES RIVER NEAR MATHIS, TEX.

LOCATION.--At intake tower at Lake Corpus Christi near Mathis, San Patricio County, eight-tenths mile upstream from gaging station at bridge on U. S. Highway 59, 200 feet downstream from Texas & New Orleans Railroad bridge, and 4 miles southwest of Mathis.

DRAINAGE AREA.--16,660 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951.

Water temperatures: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 468 ppm May 1-24; minimum, 207 ppm Sept. 13-30.

Specific conductance: Maximum, 201 ppm May 1-24; minimum, 93 ppm May 25-31, Sept. 13-30.

Hardness: Maximum, 201 ppm May 1-24; minimum, 93 ppm May 25-31, Sept. 13-30.

Dissolved solids: Maximum daily, 893 micrograms May 13, 16; minimum daily, 252 micrograms Sept. 16.

Water temperatures: Maximum, 87° F Aug. 23-28, 31; minimum, 44° F Feb. 3-4.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 546 ppm June 1-30, 948, minimum, 175 ppm Apr. 27-30, 1949.

Hardness: Maximum, 201 ppm May 1-24; minimum, 93 ppm May 25-31, Sept. 13-30.

Water temperatures: Maximum, 87° F Aug. 23-28, 31; minimum, 44° F Feb. 3-4.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station downstream from intake tower at dam for water year October 1950 to September 1951 given in Water-Supply Paper 1212. No appreciable inflow between intake tower and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃		Per cent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate			
Oct. 1-31, 1950	216	24	21	50	6.3	5.1	42	190	29	39	3.9	0.3	1.2	302	0.41	176	151	151	0	38	479	8.0
Nov. 1-30	59.6	21	21	51	5.1	45	192	192	31	40	4.0	0.3	1.2	311	0.42	50	148	148	0	40	473	8.1
Dec. 1-31	47.6	22	22	53	4.9	50	205	205	34	40	4.0	0.3	2	313	0.43	40	152	152	0	42	501	7.9
Jan. 1-31, 1951	42.4	28	28	55	6.2	51	214	214	33	45	4.5	0.2	0	328	0.45	38	162	162	0	41	524	8.1
Feb. 1-28	45.0	23	23	58	6.6	49	219	219	34	45	4.5	0.2	0	332	0.45	40	172	172	0	38	540	8.0
Mar. 1-31	42.7	19	19	59	6.3	52	221	221	37	47	4.7	0.2	0	345	0.47	40	173	173	0	40	565	7.8
Apr. 1-30	48.1	21	21	63	6.9	58	238	238	37	56	5.6	0.2	0	386	0.52	50	186	186	0	41	610	7.9
May 1-24	324	22	22	69	7.0	93	250	250	50	104	10.4	0.2	0	468	0.64	408	201	201	0	50	803	7.8
May 25-31	3,180	20	20	32	3.3	36	134	22	22	22	2.2	0.2	0	222	0.30	1,910	93	93	0	45	350	7.7
June 1-30	2,318	24	24	37	4.8	29	138	26	26	26	2.6	0.2	0	217	0.30	1,360	112	112	0	36	354	7.6
July 1-31	67.0	25	25	45	4.2	34	166	30	30	25	2.5	0.2	0	257	0.35	46	130	130	0	36	419	7.5
Aug. 1-31	67.4	29	29	50	5.6	39	190	190	30	31	3.1	0.2	0	307	0.42	56	148	148	0	36	457	8.1
Sept. 1-12	63.7	30	30	54	5.5	46	210	33	35	4	4	0.2	0	328	0.45	56	157	157	0	39	502	8.3
Sept. 13-30	5,167	19	19	32	3.3	30	124	26	20	20	2.0	0.2	0	207	0.28	2,890	93	93	0	41	322	8.0
Weighted average	563	21	21	37	4.2	34	141	141	27	27	2.7	0.2	0	231	0.31	364	110	110	0	40	389	--

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR MATHIS, TEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	77	--	62	--	71	69	--	82	--	--	--
2	82	--	67	64	--	72	--	77	82	86	--	86
3	83	72	63	60	--	44	--	68	--	81	--	85
4	80	68	65	--	44	63	68	78	78	85	--	84
5	80	67	62	--	51	66	--	79	80	84	--	85
6	--	69	56	63	56	68	69	79	80	84	--	86
7	78	71	--	57	50	70	70	--	--	85	--	86
8	--	72	56	56	--	74	70	76	80	85	--	86
9	--	--	54	57	55	75	72	78	82	85	--	85
10	--	59	55	59	56	--	--	--	84	86	--	84
11	78	59	58	58	57	72	62	77	--	86	85	84
12	77	60	59	--	62	66	--	77	84	--	86	85
13	76	62	60	64	62	--	67	77	83	84	85	84
14	--	66	--	58	52	59	71	--	85	85	85	78
15	78	68	60	58	--	64	71	79	84	86	85	--
16	78	--	58	59	56	67	71	79	86	85	--	77
17	78	65	58	61	56	--	70	78	85	85	84	--
18	78	68	59	61	58	65	71	78	--	86	84	77
19	76	69	61	--	60	59	--	78	86	--	84	--
20	--	--	--	64	63	--	75	78	85	84	84	--
21	73	67	60	63	60	58	76	--	83	85	85	80
22	76	69	60	58	59	68	77	80	86	85	86	80
23	77	67	61	60	--	69	75	80	85	85	--	80
24	77	63	60	58	65	64	76	78	85	--	86	--
25	77	61	--	--	--	64	--	79	84	86	87	80
26	77	62	62	55	66	--	--	80	84	84	87	83
27	74	65	57	64	--	--	77	81	84	85	87	--
28	--	65	--	63	67	67	77	--	--	85	87	85
29	76	66	--	--	--	66	78	82	85	86	86	83
30	--	66	56	--	--	67	79	82	85	86	--	84
31	78	--	54	--	--	67	--	80	--	85	87	--
Average	--	66	--	--	--	--	--	--	83	85	--	--

NUECES RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN NUECES RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Instantaneous discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃		Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
ATASCOSA RIVER 3.0 MILES SOUTHWEST OF POTEET																							
Jan. 23, 1951.....	0		14		60	14	57	152	82	85				0.0		388	0.53		207	82	37	678	7.3
ATASCOSA RIVER 1.3 MILES SOUTH OF POTEET																							
Jan. 23, 1951.....	0.96						81	169	109	135			0.0						266	128	40	899	7.8
ATASCOSA RIVER 3.0 MILES NORTHWEST OF PLEASANTON																							
Jan. 23, 1951.....	2.3						72	171	119	101			0.0						250	110	38	810	7.9
ATASCOSA RIVER AT PLEASANTON																							
Jan. 23, 1951.....	3.35						91	200	140	120			0.0						280	116	41	937	7.7
ATASCOSA RIVER AT CAUGHMAN																							
Jan. 24, 1951.....	3.82						99	211	137	122			0.0						273	100	44	962	7.9
ATASCOSA RIVER NEAR MCCOY																							
Jan. 24, 1951.....	3.84						144	265	145	149			0.0						266	49	54	1,120	8.1
ATASCOSA RIVER ON U.S. HIGHWAY 281 AT CAMPBELLTON																							
Jan. 24, 1951.....	4.38		3.6		51	18	208	287	156	181			0.0			775	1.05		20	0	69	1,310	8.3
MATATE CREEK NEAR CAMPBELLTON																							
Jan. 24, 1951.....	0.44		5.0		10	6.1	1,290	1,390	297	995			2.8			3,290	4.47		50	0	98	5,260	8.9
LA PARITA CREEK NEAR CAMPBELLTON																							
Jan. 23, 1951.....	0.39		18		9.0	2.4	215	420	83	48			1.8			c 584	0.79		32	0	93	951	7.8

a Includes equivalent of 4 parts per million of carbonate (CO₃).

b Includes equivalent of 102 parts per million of carbonate (CO₃).

c Sum of determined constituents.

ATASCOSA RIVER AT WHITSETT

Jan. 25, 1951.....	4.7		5.2	42	14	380	d522	151	285		0.5	1,130	1.54	162	0	84	1,870	8.5
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ATASCOSA RIVER NEAR THREE RIVERS

Jan. 25, 1951.....	4.32					376	510	168	295		0.8			192	0	81	1,910	8.2
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NUECES RIVER NEAR OAKVILLE

Jan. 25, 1951.....	4.34					434	569	183	362		1.0			224	0	81	2,210	8.1
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NUECES RIVER NEAR GEORGE WEST

Jan. 25, 1951.....	5.49					465	529	150	500		0.0			284	0	78	2,550	8.2
--------------------	------	--	--	--	--	-----	-----	-----	-----	--	-----	--	--	-----	---	----	-------	-----

NUECES RIVER NEAR MIKESKA

Jan. 25, 1951.....	5.29					358	413	139	450		0.0			340	2	70	2,420	7.9
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d Includes equivalent of 11 parts per million of carbonate (CO₃).

RIO GRANDE BASIN

RIO GRANDE ABOVE CULEBRA CREEK NEAR LOBATOS, COLO.

LOCATION.--Half a mile southeast of La Sauses, 7 miles upstream from Culebra Creek, and 15 miles upstream from gaging station near Lobatos, Conejos County. DRAINAGE AREA.--7,700 square miles, above gaging station (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.). RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 472 ppm Apr. 20-30, May 1-10; minimum, 173 ppm Feb. 11-20.

Hardness: Maximum, 221 ppm Apr. 20-30; minimum, 88 ppm Feb. 11-20.

Specific conductance: Maximum daily, 721 micromhos May 6; minimum daily, 224 micromhos Feb. 12.

EXTREMES, 1946-51.--Dissolved solids: Maximum, 691 ppm July 21-31, 1948; minimum, 104 ppm May 2-10, 1947.

Hardness: Maximum 306 ppm July 21-31, 1948; minimum, 54 ppm June 1, 4-10, 1949.

Specific conductance: Maximum daily, 1,070 micromhos July 26, 1946; minimum daily, 122 micromhos June 1, 1949.

REMARKS: Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Culebra Creek which enters Rio Grande between sampling point and gaging station is usually dry at its mouth. In winter flow from other sources between sampling point and gaging station occurs only at times of heavy local rainfall. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	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 (residue on evaporation)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate				
Oct. 1-10, 1950.....	63.9	34	0.01	46	7.8	43	5.6	147	101	15	0.5	0.5	0.1	325	0.44	56	147	26	38	486	7.8	--
Oct. 11-20.....	58.7	--	--	47	11	39	--	--	--	--	--	--	--	346	.47	55	162	--	34	501	--	--
Oct. 21-31.....	61.9	--	--	52	12	45	--	--	--	--	--	--	--	350	.48	58	179	--	35	552	--	--
Nov. 1-10.....	51.9	--	--	60	13	52	--	--	--	--	--	--	--	438	.60	61	203	--	36	630	--	--
Nov. 11-20.....	125	--	--	59	13	49	--	--	--	--	--	--	--	423	.58	143	200	--	35	602	--	--
Nov. 21-30.....	148	--	--	40	8.7	27	--	--	--	--	--	--	--	256	.35	102	136	--	30	384	--	--
Dec. 1-10.....	155	--	--	39	8.2	26	--	--	--	--	--	--	--	273	.37	114	131	--	30	382	--	--
Dec. 11-20.....	250	--	--	32	6.9	17	--	--	--	--	--	--	--	210	.29	142	108	--	25	290	--	--
Dec. 21-31.....	240	--	--	36	7.3	22	--	--	--	--	--	--	--	230	.31	149	120	--	29	329	--	--
Jan. 1-10, 1951....	267	35	.01	33	7.3	20	6.4	125	49	6.5	.4	1.2	.1	239	.33	159	112	10	27	324	7.5	3
Jan. 11-20.....	289	--	--	32	6.1	18	--	--	--	--	--	--	--	203	.28	158	105	--	28	286	--	--
Jan. 21-31.....	282	--	--	28	5.3	16	--	--	--	--	--	--	--	182	.25	139	92	--	28	257	--	--
Feb. 1-10.....	258	--	--	30	5.6	17	--	--	--	--	--	--	--	190	.26	132	98	--	27	269	--	--
Feb. 11-20.....	298	--	--	27	5.1	16	--	--	--	--	--	--	--	173	.24	139	88	--	28	250	--	--
Feb. 21-28.....	305	--	--	35	6.6	23	--	--	--	--	--	--	--	230	.31	189	114	--	30	331	--	--
Mar. 1-10.....	251	--	--	35	6.6	21	--	--	--	--	--	--	--	223	.30	151	114	--	28	317	--	--
Mar. 11-20.....	166	--	--	44	9.8	31	--	--	--	--	--	--	--	291	.40	130	150	--	31	431	--	--
Mar. 21-31.....	96.6	--	--	52	11	39	--	--	--	--	--	--	--	345	.47	90	174	--	33	518	--	--
Apr. 1-10.....	123	36	.02	52	11	45	5.6	159	117	16	.6	1.2	a.1	362	.51	125	174	44	35	544	7.7	8
Apr. 11-19.....	105	--	--	42	9.4	32	--	--	--	--	--	--	--	273	.37	77	144	--	33	412	--	--
Apr. 20-30.....	59.8	--	--	64	15	66	--	--	--	--	--	--	--	472	.64	76	221	--	39	702	--	--
May 1-10.....	18.8	--	--	62	15	65	--	--	--	--	--	--	--	472	.64	24	216	--	40	707	--	--
May 11-21.....	16.5	--	--	51	12	53	--	--	--	--	--	--	--	381	.52	17	176	--	39	579	--	--
May 22-24-27.....	57.4	--	--	56	12	57	--	--	--	--	--	--	--	412	.56	64	189	--	40	412	--	--
May 28-31.....	197	--	--	32	6.6	24	--	--	--	--	--	--	--	214	.29	114	107	--	33	317	--	--

a Reported boron concentration is less than figure indicated.

June 1-5.....	72.4	--	--	38	9.1	35	--	--	--	--	296	40	59	132	--	36	422	--
June 6-12.....	26.8	--	--	59	14	59	--	--	--	--	458	62	33	204	--	39	667	--
June 13-20.....	34.6	--	--	40	9.1	37	--	--	--	--	308	42	29	138	--	37	442	--
June 21-30.....	19.9	--	--	37	8.6	34	--	--	--	--	294	40	16	128	--	37	420	--
July 1-10.....	b 3.86	37	02	38	8.3	37	6.4	61	8.2	.8	a.1	293	40	3.1	139	37	418	7.9
July 11-20.....	b 0	--	--	39	10	47	--	--	--	--	318	43	0	138	--	42	466	--
July 21-31.....	b 0	--	--	37	9.6	47	--	--	--	--	317	43	0	132	--	44	460	--
Aug. 1-10.....	b.82	--	--	34	9.4	49	--	--	--	--	308	42	.68	124	--	46	446	--
Aug. 11-20.....	b.46	--	--	32	8.8	38	--	--	--	--	276	38	.34	116	--	42	393	--
Aug. 21-31.....	22.0	--	--	31	6.9	39	--	--	--	--	270	37	16	106	--	45	388	--
Sept. 1-10.....	34.4	--	--	33	7.4	36	--	--	--	--	258	35	24	113	--	41	380	--
Sept. 11-20.....	23.9	--	--	32	6.7	34	--	--	--	--	254	35	16	108	--	41	367	--
Sept. 21-30.....	19.3	--	--	34	8.2	41	--	--	--	--	280	38	15	118	--	43	410	--
Weighted average.	110	--	--	37	7.8	27	--	--	--	--	253	0.34	75	124	--	32	366	--

a Reported boron concentration is less than figure indicated.

b No flow at gaging station July 10-31, Aug. 1-3, 9-17.

RIO GRANDE BASIN--Continued

RIO GRANDE AT EMBUDO, N. MEX.

LOCATION.--At gaging station a quarter of a mile downstream from bridge at Embudo, Rio Arriba County, and 2½ miles downstream from Embudo Creek.

DRAINAGE AREA.--10,400 square miles approximately (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).

RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1951.

Sediment records: January 1948 to September 1951.

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 76°F July 17; minimum, freezing point on several days in January and February.

Sediment concentrations: Maximum daily, 1,630 ppm Aug. 22; minimum daily, 10 ppm Jan. 1, and for composite period Jan. 3-11.

Sediment loads: Maximum daily, 1,250 tons Aug. 22; minimum daily, 10 tons Aug. 14.

EXTREMES, 1948-51.--Water temperatures (1949-51): Maximum observed, 76°F July 17, 1951; minimum, freezing point on several days in January and February 1951.

Sediment concentrations: Maximum daily, 10,200 ppm Aug. 5, 1948; minimum daily, 8 ppm for composite period Nov. 30 to Dec. 9, 1948.

Sediment loads: Maximum daily, 51,000 tons May 25, 1948; minimum daily, 10 tons Aug. 14, 1951.

REMARKS.--Flow affected by ice Feb. 2-4. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Temperature (°F) of water, water year October 1950 to September 1951
/Once-daily temperature measurement, generally between 6 a. m. and 10 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	52	36	33	32	37	49	46	62	--	71	67
2	53	--	35	--	32	37	49	--	60	--	--	--
3	51	--	35	33	32	36	49	--	57	--	73	67
4	54	--	34	33	32	37	51	--	56	--	--	67
5	55	--	33	33	33	38	50	--	58	--	--	60
6	54	--	33	33	35	39	--	--	58	--	--	59
7	56	--	34	32	36	38	54	--	57	--	--	60
8	55	--	35	32	36	40	50	--	59	--	--	60
9	55	--	35	32	38	47	48	--	58	--	a 68	--
10	55	43	--	32	40	41	55	--	59	--	65	--
11	54	43	--	34	41	42	--	61	58	--	65	--
12	55	42	--	35	40	40	54	61	58	68	65	63
13	53	37	a 37	32	37	39	47	--	60	--	70	a 62
14	52	37	35	32	39	40	55	--	61	--	71	a 64
15	52	37	35	32	35	40	56	--	62	--	70	a 63
16	52	37	34	35	35	42	56	60	67	74	70	a 63
17	53	39	34	34	--	42	57	56	67	76	70	a 63
18	52	39	35	35	--	40	58	58	68	73	69	a 63
19	51	39	35	34	35	40	59	60	--	71	--	a 64
20	53	40	35	35	34	40	61	62	--	70	68	a 63
21	53	41	34	35	34	41	60	61	--	69	--	--
22	53	39	35	37	35	42	62	65	--	69	68	--
23	53	39	35	40	36	43	61	66	--	69	66	--
24	52	40	35	42	36	42	62	65	--	68	66	--
25	51	40	34	41	36	46	62	65	--	68	68	--
26	51	42	--	41	--	47	59	67	--	69	--	a 63
27	53	41	--	41	--	46	57	67	--	69	--	a 61
28	51	37	34	41	37	46	56	68	--	70	64	a 62
29	50	37	33	39	--	48	54	60	--	69	67	a 61
30	49	36	33	34	--	49	49	59	--	--	67	a 60
31	--	--	33	34	--	47	--	62	--	--	67	--
Average	53	--	34	35	36	42	55	--	--	--	--	--

a Reading obtained between 4 p. m. and 7 p. m.

RIO GRANDE BASIN--Continued

RIO GRANDE AT EMBUDO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	262	53	42	236			365		
2-----	266	46	37	240			360		
3-----	280	62	47	236			347		
4-----	284	38	29	240			334		
5-----	284	49	38	252			312	13	12
6-----	280	34	26	248	28	19	338		
7-----	276	18	13	256			312		
8-----	280	17	13	260			356		
9-----	280	43	33	264			405		
10-----	280	42	32	264			460	--	e 15
11-----	276	41	31	248			465	--	e 18
12-----	268	41	30	248			487	--	e 20
13-----	260	36	25	244			520		
14-----	244	39	26	285			538		
15-----	256	37	26	300			526		
16-----	264	46	33	290	50	42	514		
17-----	272	19	14	320			498	16	21
18-----	272	20	15	340			470		
19-----	268	17	12	380			460		
20-----	268	34	25	425			430		
21-----	268			476			395		
22-----	268			430			400		
23-----	276			430			420	15	17
24-----	288			425			430		
25-----	268			415			440		
26-----	256	30	21	390	16	18	445	--	e 18
27-----	252			390			455	--	e 18
28-----	252			385			435		
29-----	260			390			455		
30-----	244			360			445	15	18
31-----	240	--	e 19	--	--	--	435		
Total-	8,352	--	776	9,667	--	790	13,252	--	526
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	435	10	12	370			465		
2-----	460	--	e 12	370			482		
3-----	450			450			492		
4-----	430			530			405		
5-----	415			435			415		
6-----	440			430	--	e 40	482	19	25
7-----	445	10	12	440			520		
8-----	420			470			562		
9-----	415			487			526		
10-----	415			498			526		
11-----	425			509			504		
12-----	425			532			520		
13-----	420			544			460		
14-----	415			498	30	40	450		
15-----	405			380			450	14	16
16-----	410			520			420		
17-----	420	13	15	544	--	e 44	395		
18-----	435			532	--	e 43	400		
19-----	435			544	30	44	385		
20-----	440			526			360		
21-----	430			520			356		
22-----	440			538	15	23	365		
23-----	455			556			342		
24-----	450			612			334		
25-----	455			593			338		
26-----	450			574	--	e 23	334	16	15
27-----	460	27	33	556	--	e 23	338		
28-----	460			514	15	21	347		
29-----	476			--	--	--	347		
30-----	462			--	--	--	347		
31-----	450			--	--	--	342		
Total-	13,563	--	612	14,072	--	976	13,009	--	575

e Estimated.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO GRANDE AT EMBUDO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	356	26	26	347	33	30	658	125	222
2-----	360			338			386	100	158
3-----	360			312			514	82	114
4-----	370			304			407	97	123
5-----	380			288			430	37	43
6-----	385	25	22	304	41	40	395	38	41
7-----	390			352			370	53	53
8-----	380			360			352	25	24
9-----	375			370			329	27	24
10-----	370			370			312	38	32
11-----	356			365	--	e 40	304	26	20
12-----	338			360			292		
13-----	308			370			280		
14-----	342			370			276		
15-----	329			347			280		
16-----	329			338	41	43	284		
17-----	329			375			284		
18-----	329			440			284		
19-----	324			410			284		
20-----	334			395			272		
21-----	329	26	24	415	56	63	264	23	15
22-----	329			420	42	48	252		
23-----	338			415	46	52	244		
24-----	334			420	72	82	244		
25-----	352			445	53	64	244		
26-----	342			470	41	52	244		
27-----	334			487	101	133	244		
28-----	308			526	101	143	236		
29-----	324			588	117	179	226		
30-----	360			684	120	228	219		
31-----	--	--	--	690	200	373	--	--	--
Total-	10,394	--	720	12,655	--	2,126	9,673	--	1,184
Day	July			August			September		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	226	30	17	233	450	280	230	130	81
2-----	226			230	550	342	228	95	58
3-----	219			226	136	83	264	90	60
4-----	216			230	178	111	248	90	60
5-----	212			244	140	92	230	76	47
6-----	212	33	17	236	198	126	222	75	45
7-----	212			222	85	51	216	79	46
8-----	205			205	101	56	222	81	49
9-----	198			194	52	27	222	95	57
10-----	198			194	62	32	219	103	61
11-----	194			194	50	26	216	112	65
12-----	194			191	50	26	212	80	46
13-----	194			191	24	12	205	78	43
14-----	205			191	20	10	212	81	35
15-----	202			188	22	11	219	80	35
16-----	194	20	11	188	30	15	212	56	32
17-----	188			184	34	17	208	58	33
18-----	188			188	40	20	212	56	32
19-----	191			188	38	a 19	219	57	34
20-----	188			188	34	17	222	50	30
21-----	194			202	102	as 66	216	35	19
22-----	191			272	1,630	s 1,250	212		
23-----	202			216	500	292	208		
24-----	212			230	447	278	205		
25-----	208			268	490	355	202		
26-----	202			276	--	e 250	194		
27-----	202			264	147	105	191		
28-----	205			264	122	87	194		
29-----	202			288	226	176	205		
30-----	202			264	232	165	216		
31-----	230			244	216	142	--	--	--
Total-	6,312	--	461	6,893	--	4,539	6,479	--	1,144

Total discharge for year (cfs-days) 124,321
 Total load for year (tons) 14,429

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUIU, N. MEX.

LOCATION.--At gaging station at bridge on State Highway 96, in Juan Jose Lobato Grant, 1½ miles upstream from El Rito Creek, 5 miles downstream from Abiquiu, Rio Arriba County, and 13.5 miles downstream from Abiquiu dam site.

DRAINAGE AREA.--2,170 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: January 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 35,300 ppm Aug. 25; minimum daily, 3 ppm Mar. 30.

Sediment loads: Maximum daily, 36,300 tons Aug. 25; minimum daily, less than 0.50 ton on many days.

EXTREMES, 1948-51.--Sediment concentrations: Maximum daily, 36,300 ppm Aug. 8, 1949; minimum daily, 3 ppm Mar. 30, 1951.

Sediment loads: Maximum daily, 102,000 tons July 13, 1949; minimum daily, less than 0.50 ton on many days in 1950-51.

REMARKS.--Flow affected by ice Dec. 6, 7, 24-26, 28, Dec. 30 to Jan. 23. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212. Correction: WSP 1163, p. 310. Rio Chama near Abiquiu, N. Mex. The annual total sediment load for water year October 1948 to September 1949 should read 1,566,000 tons instead of 1,466,000 tons.

Suspended sediment, water year October 1950 to September 1951

Day	October			Mean dis- charge (cfs)	November			Mean dis- charge (cfs)	December		
	Mean dis- charge (cfs)	Suspended sediment			Mean con- centration (ppm)	Tons per day	Mean dis- charge (cfs)		Suspended sediment		
		Mean con- centration (ppm)	Tons per day						Mean con- centration (ppm)	Tons per day	
1-----	14	148	a 6	17	30	1	14	35	1		
2-----	25	240	a 16	13	19	1	14	24	1		
3-----	19	188	a 10	12	30	1	11	48	1		
4-----	14	125	5	12	17	1	16	24	1		
5-----	13	118	4	14	38	1	15	14	1		
6-----	10	96	3	14	42	2	11	44	1		
7-----	9.5	110	3	13	56	2	13	30	1		
8-----	9.0	70	2	14	109	4	15	28	1		
9-----	9.5	85	a 2	12	78	3	17	42	2		
10-----	10	88	2	12	20	1	17	38	2		
11-----	8.0	70	2	12	32	1	17	36	2		
12-----	7.0	66	1	14	26	1	17	20	1		
13-----	7.0	74	1	17	30	1	17	23	1		
14-----	6.0	80	1	17	30	1	17	16	1		
15-----	7.0	70	1	17	32	1	17	9	(t)		
16-----	8.5	75	a 2	16	24	1	17	16	1		
17-----	6.0	67	a 1	17	11	1	15	24	1		
18-----	6.0	67	a 1	18	12	1	14	28	1		
19-----	5.3	62	a 1	17	14	1	14	27	1		
20-----	4.6	64	1	17	7	(t)	14	27	1		
21-----	302	13,100	s 25,000	17	6	(t)	14	19	1		
22-----	590	5,500	8,760	17	14	1	14	18	1		
23-----	520	1,300	1,830	16	5	(t)	14	28	1		
24-----	510	586	807	16	8	(t)	13	28	1		
25-----	450	1,080	1,310	15	11	(t)	12	30	1		
26-----	300	622	504	14	14	1	13	20	1		
27-----	89	250	60	14	9	(t)	14	64	2		
28-----	38	190	19	15	13	1	14	26	1		
29-----	28	73	6	15	11	(t)	14	28	1		
30-----	22	58	3	15	24	1	12	11	(t)		
31-----	19	24	1	--	--	--	13	32	1		
Total-	3,066.4	--	38,365	449	--	30	449	--	--	33	

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUIU, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	14	34	1	10	8	(t)	49	122	16
2-----	13	18	1	10	22	1	42	89	10
3-----	13	20	1	14	10	(t)	31	90	8
4-----	13	100	4	18	13	1	41	72	8
5-----	15	160	6	21	10	1	31	47	4
6-----	15	200	8	26	16	1	34	88	8
7-----	15	100	4	27	48	3	27	51	4
8-----	15	15	1	17	61	3	28	62	5
9-----	15	20	1	18	20	1	28	55	4
10-----	15	25	1	21	20	1	31	27	2
11-----	15	40	2	871	4,590	s 12,200	38	20	2
12-----	14	20	1	1,120	3,900	11,800	36	40	4
13-----	14	29	1	1,120	2,930	8,860	26	10	1
14-----	13	16	1	1,100	2,100	6,240	25	87	6
15-----	15	16	1	1,070	1,750	5,060	23	71	4
16-----	16	14	1	1,070	1,480	4,280	20	68	4
17-----	16	28	1	1,040	700	1,970	18	40	a 2
18-----	16	29	1	1,010	700	1,910	17	27	1
19-----	17	25	1	1,000	1,000	2,700	15	21	1
20-----	17	28	1	962	970	2,520	14	30	1
21-----	15	30	1	923	550	1,370	15	19	1
22-----	15	28	1	886	876	2,100	14	16	1
23-----	16	56	2	850	920	2,110	13	20	1
24-----	15	32	1	826	700	1,560	14	7	(t)
25-----	16	34	1	758	750	1,530	13	6	(t)
26-----	14	34	1	363	400	392	14	6	(t)
27-----	14	40	2	96	176	46	14	6	(t)
28-----	16	42	2	59	158	25	13	9	(t)
29-----	15	16	1	--	--	--	10	5	(t)
30-----	13	4	(t)	--	--	--	12	3	(t)
31-----	12	(t)	(t)	--	--	--	12	--	(et)
Total--	457	--	51	15,106	--	66,685	718	--	98
Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	14	4	(t)	7.5	35	1	532	300	431
2-----	12	26	1	9.0	47	1	540	290	394
3-----	10	16	(t)	7.0	45	1	548	280	429
4-----	11	21	1	8.5	63	1	540	230	335
5-----	10	--	e 1	7.5	72	1	540	240	350
6-----	17	50	2	7.0	74	1	540	250	365
7-----	16	49	2	6.5	62	1	540	230	335
8-----	21	39	2	8.0	38	1	540	270	394
9-----	20	49	3	14	76	3	540	240	350
10-----	17	88	4	23	108	7	540	240	350
11-----	15	56	2	39	188	18	532	180	259
12-----	11	48	1	72	1,090	s 824	532	230	330
13-----	9.0	34	1	440	3,850	4,570	532	210	302
14-----	8.0	34	1	492	1,450	1,930	532	280	402
15-----	9.5	29	1	492	900	1,200	524	270	382
16-----	14	70	3	492	950	1,260	532	290	417
17-----	16	50	2	507	430	589	524	234	331
18-----	12	36	1	1,070	2,380	s 7,120	515	180	250
19-----	13	39	1	1,080	1,680	4,900	515	220	306
20-----	14	34	1	1,080	1,550	4,520	507	220	301
21-----	15	55	2	1,070	1,100	3,180	500	190	256
22-----	15	49	2	548	557	824	800	1,250	s 3,350
23-----	16	25	1	515	346	481	874	3,340	7,880
24-----	17	81	4	540	338	493	802	560	1,470
25-----	12	52	2	540	400	583	779	330	694
26-----	10	77	2	532	300	431	769	280	581
27-----	8.5	44	1	540	251	366	779	290	610
28-----	7.0	42	1	532	176	253	769	250	519
29-----	9.0	58	1	532	300	431	758	260	532
30-----	8.0	56	1	532	290	417	962	456	1,180
31-----	--	--	--	532	308	442	--	--	--
Total--	387.0	--	47	12,275	--	34,850	18,437	--	24,085

e Estimated.

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUIU, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	1,140	480	1,480	910	7,330	18,000	38	370	38
2-----	1,100	790	2,350	814	700	a1,540	35	480	45
3-----	1,070	350	1,010	898	4,800	as12,000	32	280	24
4-----	1,050	361	1,020	726	1,000	a1,960	24	427	28
5-----	1,000	280	756	665	300	a540	20	244	13
6-----	556	269	404	492	133	177	19	250	a13
7-----	93	180	45	132	132	47	16	150	6
8-----	71	150	a29	57	121	19	17	150	7
9-----	57	130	a20	35	109	10	13	121	4
10-----	50	110	a15	23	134	8	12	124	4
11-----	49	90	a12	18	48	2	8.0	--	e3
12-----	49	80	11	15	--	e2	6.0	163	3
13-----	45	80	a10	12	51	2	4.6	190	2
14-----	49	80	a11	10	--	e1	4.1	141	2
15-----	49	150	20	9.5	40	1	3.8	68	1
16-----	41	142	16	7.5	25	1	4.6	--	e1
17-----	36	130	13	4.6	373	5	4.6	--	e1
18-----	41	135	a15	4.1	374	4	4.6	79	1
19-----	41	140	a16	4.4	366	4	3.5	60	1
20-----	41	150	17	4.4	61	1	1.6	--	(et)
21-----	45	184	22	90	8,200	sc10,700	1.6	56	(t)
22-----	44	190	23	129	19,700	s11,600	1.3	63	(t)
23-----	47	386	49	38	5,000	s800	1.2	41	(t)
24-----	52	456	64	63	31,700	5,390	1.2	--	(et)
25-----	61	542	89	335	35,300	s36,300	1.1	--	(et)
26-----	343	1,280	s2,190	160	23,900	10,300	1.2	--	(et)
27-----	988	1,610	a4,290	109	23,600	6,950	1.1	50	(t)
28-----	1,000	1,280	a3,460	59	9,900	1,580	1.1	72	(t)
29-----	936	980	a2,480	49	2,110	279	1.1	51	(t)
30-----	910	710	1,740	41	840	93	1.1	45	(t)
31-----	910	720	1,770	59	1,170	186	--	--	--
Total-	11,964	--	23,447	5,973.5	--	118,502	283.4	--	197
Total discharge for year (cfs-days).....									69,565.3
Total load for year (tons).....									306,390

e Estimated.

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

c Computed from partly estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUITO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951.
(Methods of analysis: B, bottom withdrawal tube; decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Instantaneous discharge (cfs)	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, 1950	2:15 p. m.	10	92	769	78	85	89	93	97	98	--	--	--	--	BWCM
Oct. 20	11:15 a. m.	4.6	51	825	73	90	97	98	98	99	--	--	--	--	BWCM
Oct. 21	6:00 p. m.	705	28,100	3,160	--	56	--	81	--	95	99	100	--	--	SPWCM
Feb. 11, 1951	10:00 a. m.	740	10,400	3,640	16	27	35	48	68	--	--	--	--	--	PWCM
May 13	3:30 p. m.	448	2,440	2,930	31	39	45	50	54	58	81	96	--	99	SBWCM
Aug. 1	9:40 a. m.	886	15,000	3,780	43	59	69	87	95	97	98	99	--	100	SPWCM
Aug. 1	9:40 a. m.	886	15,000	3,840	45	55	72	84	94	97	98	99	--	100	SBWCM
Aug. 10	9:50 a. m.	24	85	--	--	--	--	--	--	53	96	98	--	100	S

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.

LOCATION.--At gaging station 200 feet downstream from bridge on U.S. Highway 285, 2½ miles upstream from mouth, and 2½ miles northwest of Chamita, Rio Arriba County.

DRAINAGE AREA.--3,200 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1951.

Sediment records: October 1947 to September 1951.

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 89°F July 19; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 31,100 ppm Aug. 26; minimum daily, no flow Aug. 19, Sept. 16-18, 25.

Sediment loads: Maximum daily, 43,500 tons Aug. 4; minimum daily, 0 tons Aug. 19, Sept. 16-18, 25.

EXTREMES, 1947-51.--Water temperatures (1950-51): Maximum observed, 89°F July 19, 1951; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 40,100 ppm Aug. 3, 1950; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 83,700 tons May 27, 1948; minimum daily, 0 tons on many days.

REMARKS.--Flow affected by ice Dec. 3-8, Dec. 19 to Feb. 8. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Temperature (°F) of water, water year October 1950 to September 1951
/Once-daily temperature measurement at approximately 5 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	53	a36	32	32	43	60	52	64	71	72	a66
2	70	a48	38	32	32	40	64	60	63	73	77	a68
3	69	a38	a32	32	32	a32	64	72	62	a63	72	a65
4	58	51	42	32	32	44	55	73	66	74	73	69
5	74	a48	33	32	33	49	55	73	62	69	a72	69
6	71	a47	34	32	33	55	51	60	67	67	a74	69
7	63	a45	a33	32	33	a37	58	61	66	74	a74	70
8	62	a40	36	32	39	52	55	59	67	73	78	a72
9	70	a35	--	32	a32	54	65	71	67	76	a72	70
10	72	a33	a34	32	50	52	58	70	67	72	a75	a57
11	73	--	a37	32	43	a43	52	59	64	73	a69	66
12	a50	35	48	32	40	52	57	56	63	a68	76	a73
13	72	a33	46	32	36	50	69	51	64	72	89	73
14	63	a43	42	32	38	62	70	57	68	75	78	81
15	58	49	44	32	40	60	a56	56	69	80	78	76
16	72	42	--	32	42	59	52	52	74	82	76	a62
17	67	45	41	32	43	a38	a50	51	71	73	80	72
18	71	44	34	32	43	45	65	61	73	72	78	73
19	70	a40	32	32	45	50	65	59	69	89	78	72
20	68	a37	33	32	46	57	a52	61	71	a82	a76	72
21	60	--	32	32	48	58	68	60	70	a70	74	60
22	59	--	33	32	46	a42	57	65	71	a71	72	87
23	58	--	32	39	48	a45	55	62	70	81	74	74
24	59	--	33	41	47	57	a54	67	71	80	83	76
25	56	--	--	45	a42	a38	59	69	70	75	65	72
26	59	--	34	a32	45	a43	62	68	71	78	68	71
27	57	--	32	43	a42	a52	61	73	71	78	70	a62
28	59	49	32	40	50	50	64	70	71	79	68	66
29	--	46	32	32	--	52	55	65	71	76	70	61
30	58	45	32	32	--	54	54	62	72	72	74	a60
31	58	--	32	32	--	a49	--	66	--	77	74	--
Average	64	--	36	34	40	49	59	63	68	75	74	69

a Reading obtained between 8 a.m. and 12 m.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	27	4,200	as 860	15	55	2	11	108	3
2-----	40	8,640	s 1,110	9.0	38	1	9.7	133	3
3-----	32	2,000	173	8.4	29	1	9	110	3
4-----	27	982	72	9.0	68	2	10	180	5
5-----	9.7	538	14	7.7	53	1	10	225	6
6-----	7.0	580	11	9.0	65	2	8	260	6
7-----	7.0	620	12	9.0	92	2	15	270	11
8-----	24	750	49	10	118	3	35	400	38
9-----	16	274	12	9.7	75	2	39	370	s 39
10-----	9.7	218	6	10	150	4	37	314	31
11-----	8.4	173	4	17	250	a 11	35	330	31
12-----	7.0	123	2	22	251	15	35	370	35
13-----	7.7	132	3	26	280	21	37	275	27
14-----	7.0	192	4	31	258	22	32	225	19
15-----	6.4	200	3	29	302	24	28	208	16
16-----	6.4	172	3	32	212	18	28	170	a 13
17-----	5.7	244	4	34	218	20	28	158	12
18-----	5.1	89	1	31	186	16	24	160	10
19-----	5.1	54	1	31	144	12	30	240	19
20-----	7.7	74	2	29	168	13	30	507	41
21-----	53	1,400	s 1,240	31	196	16	30	390	a 32
22-----	556	7,920	s 12,500	28	206	16	30	280	23
23-----	486	4,310	5,660	25	196	13	30	250	20
24-----	451	3,180	3,870	22	165	10	25	260	18
25-----	418	2,700	3,050	22	157	9	25	530	a 36
26-----	382	2,150	2,220	25	96	6	25	925	62
27-----	148	577	231	28	134	10	25	1,420	96
28-----	62	182	30	27	150	11	25	1,300	88
29-----	42	130	a 15	18	115	6	25	700	48
30-----	37	89	9	13	100	4	25	280	19
31-----	20	73	4	--	--	--	25	210	14
Total-	2,920.9	--	31,175	619.8	--	293	780.7	--	824
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	25	400	27	20	77	4	88	200	48
2-----	25	270	18	20	59	3	78	87	18
3-----	25	180	12	40	72	8	64	119	21
4-----	25	220	15	60	120	19	71	124	24
5-----	25	400	27	100	230	62	53	156	22
6-----	25	330	22	100	630	170	44	167	20
7-----	25	200	14	90	1,050	255	46	90	11
8-----	25	210	14	80	1,170	253	42	106	12
9-----	25	170	11	73	710	140	48	223	29
10-----	25	130	9	64	871	151	60	161	26
11-----	25	200	14	470	7,110	s 17,000	62	140	23
12-----	25	150	10	973	7,500	19,700	57	153	24
13-----	25	170	11	1,010	6,630	18,100	46	113	14
14-----	25	180	12	1,070	4,500	13,000	44	118	14
15-----	25	180	12	1,130	4,540	13,900	39	89	9
16-----	30	200	16	1,130	3,920	12,000	31	118	10
17-----	40	210	23	1,100	3,740	11,100	29	146	11
18-----	40	200	22	1,040	3,290	9,240	31	118	10
19-----	40	200	22	951	3,000	7,700	24	138	9
20-----	40	520	56	900	2,740	6,660	28	166	13
21-----	40	700	76	860	2,660	6,180	32	144	12
22-----	50	300	40	831	2,180	4,890	32	206	18
23-----	50	1,200	162	786	2,270	4,820	29	164	13
24-----	50	1,050	142	759	2,110	4,320	31	172	14
25-----	50	1,030	139	714	2,290	4,410	31	182	15
26-----	45	681	83	500	1,560	2,110	34	214	20
27-----	45	780	95	206	405	225	42	294	33
28-----	40	500	54	118	213	68	44	285	34
29-----	40	370	40	--	--	--	46	245	30
30-----	35	77	7	--	--	--	39	198	21
31-----	30	75	6	--	--	--	35	165	16
Total-	1,040	--	1,211	15,195	--	156,488	1,380	--	594

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	35	281	27	66	955	170	500	2,080	2,810
2-----	32	172	15	46	600	75	500	1,740	2,350
3-----	24	153	10	42	391	44	516	1,550	2,160
4-----	32	540	47	46	480	60	516	1,640	2,280
5-----	48	487	63	68	1,700	312	508	1,820	2,500
6-----	57	455	70	148	4,200	1,680	516	1,500	2,090
7-----	60	329	53	170	2,800	1,290	516	1,500	2,090
8-----	53	261	37	225	3,600	2,190	508	763	1,070
9-----	51	243	33	210	3,100	1,760	516	1,120	1,560
10-----	39	296	31	190	2,120	1,090	532	1,300	1,870
11-----	24	244	16	174	1,700	799	524	1,180	1,870
12-----	21	210	12	166	1,600	717	508	1,100	1,510
13-----	15	162	7	387	7,270	s 8,250	508	1,270	1,740
14-----	8.4	137	3	437	4,700	5,550	508	945	1,300
15-----	10	350	9	424	3,600	4,120	500	962	1,300
16-----	31	1,070	90	412	3,500	3,890	508	746	1,020
17-----	42	769	87	444	2,750	3,300	508	852	1,170
18-----	49	1,080	143	821	5,280	s 12,400	508	758	1,040
19-----	62	1,380	231	940	5,350	13,600	493	896	1,190
20-----	60	800	130	951	4,150	10,700	500	756	1,020
21-----	60	780	126	984	3,300	8,770	493	1,000	1,330
22-----	71	1,400	268	869	2,350	4,240	686	981	s 1,970
23-----	91	3,820	939	580	2,550	3,990	910	2,940	7,220
24-----	105	3,200	907	564	2,150	3,270	813	2,360	5,180
25-----	105	2,100	595	524	1,540	2,180	795	2,070	4,440
26-----	112	1,450	438	516	1,340	1,870	822	1,920	4,260
27-----	86	1,400	325	548	1,360	2,010	930	1,960	4,920
28-----	97	2,100	550	524	1,490	2,110	940	2,640	6,700
29-----	124	1,780	566	508	1,520	2,080	973	2,140	5,620
30-----	105	1,320	374	516	1,520	2,120	1,030	2,150	5,980
31-----	--	--	--	508	1,390	1,910	--	--	--
Total--	1,709.4	--	6,232	12,808	--	106,547	18,585	--	81,360
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,130	2,670	8,150	813	3,720	8,170	56	927	138
2-----	1,090	2,140	6,300	768	1,800	3,730	25	494	33
3-----	1,070	1,680	4,850	852	2,640	s 6,420	20	411	22
4-----	1,080	1,710	4,990	839	17,900	s 43,500	10	223	6
5-----	1,100	1,440	4,280	741	6,500	13,000	5	196	3
6-----	845	1,150	s 2,800	687	2,630	4,880	5	161	2
7-----	250	97	65	326	890	s 827	5	89	1
8-----	100	35	9	128	590	204	4	60	1
9-----	40	29	3	80	400	86	3	60	(t)
10-----	20	21	1	53	199	28	3	90	1
11-----	10	8	(t)	39	124	13	2.6	46	(t)
12-----	9.7	15	(t)	28	80	6	2.3	54	(t)
13-----	12	11	(t)	18	50	2	2.6	25	(t)
14-----	18	17	1	10	34	1	.3	22	(t)
15-----	11	25	1	7.7	14	(t)	.3	42	(t)
16-----	10	31	1	5.1	15	(t)	0	--	0
17-----	6.4	29	1	3.4	16	(t)	0	--	0
18-----	10	350	9	.3	14	(t)	0	--	0
19-----	27	200	15	0	--	0	.3	19	(t)
20-----	20	100	5	.3	34	(t)	.3	12	(t)
21-----	22	68	4	34	3,160	s 928	.6	24	(t)
22-----	48	78	10	180	19,900	s 11,800	1.6	20	(t)
23-----	24	46	3	39	4,450	469	2.6	18	(t)
24-----	17	1,250	57	74	16,100	s 4,820	.3	18	(t)
25-----	34	415	38	186	18,800	s 14,200	0	--	0
26-----	104	1,130	s 927	170	31,100	14,300	.6	13	(t)
27-----	840	3,800	8,620	118	17,900	5,700	1.6	30	(t)
28-----	822	2,220	4,930	83	15,300	3,430	.6	15	(t)
29-----	813	1,740	3,820	62	5,600	937	.6	11	(t)
30-----	795	1,620	3,480	57	1,700	262	.9	13	(t)
31-----	804	1,780	3,860	64	1,870	323	--	--	--
Total--	1,182.1	--	57,231	6,465.8	--	138,037	153.1	--	209
Total discharge for year (cfs-days).....									72,839.8
Total load for year (tons).....									580,201

s Computed by subdividing day.

t Less than 0.50 ton.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951.

(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	Instantaneous discharge (cfs)	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. 2, 1950.....	8:15 a. m.	46	10,500	3,960	--	85	--	90	--	--	--	--	--	--	PWCM
Oct. 10.....	3:30 a. m.	8.4	224	3,260	--	73	--	84	--	--	--	--	--	--	PWCM
Oct. 20.....	10:00 a. m.	5.7	42	830	78	87	95	96	98	99	99	--	--	--	SBWCM
Oct. 22.....	9:15 a. m.	524	8,740	1,960	38	44	50	60	66	70	86	98	99	99	SBWCM
Jan. 3, 1951.....	3:00 p. m.	25	96	1,530	41	46	48	57	67	82	--	--	--	--	BWCM
Feb. 11.....	4:45 p. m.	900	14,000	2,740	11	13	20	30	41	51	74	93	99	99	SBWCM
Feb. 11.....	4:45 p. m.	900	14,800	1,900	15	27	29	37	47	61	75	92	99	99	SBWCM
Feb. 11.....	4:45 p. m.	900	12,100	2,420	0	4	17	33	44	53	70	86	98	98	SPN
May 10.....	4:15 p. m.	170	1,050	4,650	23	24	29	32	38	54	74	99	100	100	SBWCM
May 13.....	2:25 p. m.	451	5,760	1,880	--	40	--	--	58	--	67	74	85	95	SPWCM
July 27.....	9:00 a. m.	1,070	4,260	4,610	--	34	--	51	--	64	68	80	97	97	SPWCM
Aug. 1.....	6:00 p. m.	741	11,700	1,840	43	56	74	82	90	91	94	99	100	100	SPWCM
Aug. 1.....	6:00 p. m.	741	11,700	2,050	5	18	54	75	89	91	94	99	100	100	SPN
Aug. 1.....	6:00 p. m.	741	11,700	1,710	52	60	74	85	89	91	94	99	100	100	SBWCM
Aug. 1.....	6:00 p. m.	741	11,700	1,860	6	9	37	85	89	91	94	99	100	100	SEN
Aug. 2.....	11:15 a. m.	940	21,700	5,810	--	69	--	85	--	89	93	99	100	100	SPWCM
Aug. 26.....	5:30 p. m.	145	25,500	3,280	82	82	76	93	95	--	100	98	--	--	SPWCM
Sept. 1.....	10:15 a. m.	42	927	1,960	65	71	76	79	82	85	92	96	100	100	SBWCM

RIO GRANDE AT OTOMI BRIDGE NEAR SAN ILDEFONSO, N. MEX.

LOCATION.--At gaging station 400 feet (revised) downstream from bridge on State Highway 4, 1½ miles southwest of San Ildefonso Pueblo, San Ildefonso Pueblo Grant, 2½ miles downstream from Rio Pojoaque, and 7 miles west of Pojoaque, Santa Fe County.
DRAINAGE AREA.--14,300 square miles, approximately (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.)
RECORDS AVAILABLE.--Chemical analyses: October, 1946 to September 1951.

Sediment temperatures: October 1947 to September 1951.

Sediment temperatures: October 1947 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 884 ppm Aug. 26; minimum, 166 ppm June 21-30.

Hardness: Maximum, 572 ppm Aug. 26; minimum, 106 ppm June 21-30.

Specific conductance: Maximum observed, 84°F July 14, 16, 18; minimum daily, 236 micromhos June 28.

Water temperatures: Maximum daily, 20.200 ppm Aug. 26; maximum observed, 46,000 ppm Aug. 10; minimum daily, 81 ppm May 5.

Sediment concentrations: Maximum daily, 55,400 tons Aug. 4; minimum daily, 57 tons Aug. 19.

EXTREMES, 1946-51.--Dissolved solids: Maximum, 884 ppm Aug. 26, 1951; minimum, 149 ppm May 1-10, 1948, June 21-30, 1949.

Hardness: Maximum, 572 ppm Aug. 26, 1951; minimum, 85 ppm June 21-30, 1949.

Specific conductance: Maximum daily, 1,230 micromhos Aug. 26, 1951; minimum daily, 188 micromhos June 16, 1948.

Water temperatures (1948-51): Maximum observed, 84°F July 14, 16, 18, 1951; minimum, freezing point on many days during winter months.

Sediment concentrations (1947-51): Maximum daily, 32,200 ppm July 14, 1950; minimum daily, 16 tons Oct. 11, 1948.

Sediment loads (1947-51): Maximum daily, 184,000 tons July 14, 1950; minimum daily, 16 tons Oct. 11, 1948.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1950 to September 1951 are given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids			Hardness as CaCO ₃	Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH	
														Parts per million	Tons per acre-foot	Tons per day					
Oct. 1-10, 1950.....	305		30		45	9.0	32		179	59	10		0.4	273	0.37	225	150	3	32	424	8.1
Oct. 11-20.....	270		27		40	8.5	29		160	53	9.8		.4	247	.34	180	135	4	32	391	8.1
Oct. 21-31.....	538		30		50	10	25		160	78	8.5		.6	281	.38	408	166	35	25	427	7.5
Nov. 1-10.....	279		28		42	9.0	28		168	55	9.5		.4	259	.35	195	142	4	30	397	7.6
Nov. 11-20.....	329		28		45	9.4	30		175	61	11		.4	271	.37	241	151	8	30	420	7.4
Nov. 21-30.....	458		30		45	9.6	31		161	71	12		.7	276	.38	344	152	20	31	427	7.5
Dec. 1-10.....	392		29		42	8.4	27		161	55	9.5		.6	250	.34	285	140	8	30	385	7.4
Dec. 11-20.....	544		30		41	8.3	24		151	57	9.0		.8	244	.33	358	136	13	28	376	7.4
Dec. 21-31.....	489		29		39	8.2	22		150	51	7.5		.6	231	.31	305	131	8	27	357	7.5
Jan. 1-10, 1951.....	505		27		40	9.0	25		154	54	7.5		.9	239	.33	326	137	11	28	369	7.8
Jan. 11-20.....	504		28		40	9.1	25		155	52	8.5		.9	240	.33	327	138	10	28	375	7.8
Jan. 21-31.....	519		30		39	8.2	22		147	47	7.5		.8	226	.31	317	131	10	27	353	7.6
Feb. 1-10.....	517		31		41	8.1	23		155	49	7.5		1.3	237	.32	331	136	9	27	366	7.4
Feb. 11-20.....	1,508		23		54	12	21		159	94	4.5		1.3	288	.39	1,170	184	54	20	448	7.5
Feb. 21-28.....	1,248		24		48	12	19		148	84	4.5		1.2	266	.36	896	170	48	20	416	7.6
Mar. 1-10.....	566		30		39	8.7	22		146	52	7.5		1.0	232	.32	353	134	14	28	360	7.6
Mar. 11-20.....	490		29		40	6.7	25		150	54	7.0		1.3	237	.32	314	128	4	30	381	7.8
Mar. 21-31.....	384		28		41	6.2	27		156	56	9.5		.7	247	.34	256	136	8	30	393	7.8

RIO GRANDE BASIN--Continued
RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Apr. 1-10, 1951	390		29		43	8.2	29		161	60	9.5			0.8	258	0.35	141		9	410	7.8
Apr. 11-20	353		29		43	8.3	29		159	62	11			.7	261	.35	249		11	414	7.7
Apr. 21-30	384		26		41	8.4	23		157	52	9.5			.9	238	.32	247		8	377	7.7
May 1-10	400		26		41	7.8	21		155	45	9.5			1.0	227	.31	245		8	357	7.9
May 11-20	947		22		46	8.6	17		156	59	6.5			1.4	236	.32	603		24	373	8.0
May 21-31	1,098		21		42	8.0	17		136	54	4.0			1.0	215	.29	637		25	344	7.7
June 1-10	932		20		37	6.7	18		133	45	4.0			.8	190	.26	120		19	305	7.7
June 11-20	723		19		34	6.1	14		120	39	3.0			.7	175	.24	342		12	278	7.5
June 21-30	922		20		33	5.7	12		115	35	2.5			.7	166	.23	413		12	259	7.5
July 1-10	840		21		37	5.8	14		132	38	3.0			.7	184	.25	417		8	292	7.5
July 11-20	208		25		44	7.3	26		172	47	8.0			.6	243	.33	136		0	385	7.5
July 21-31	557		23		42	7.2	20		149	53	5.0			.8	224	.30	337		12	357	7.5
Aug. 1-10	878		23		56	11	21		152	95	4.8			1.8	288	.39	683		60	456	7.8
Aug. 11-21	198		26		42	7.9	25		166	49	8.0			.6	240	.33	128		2	381	7.9
Aug. 22-25, 27-31	443		25		66	10	28		215	84	8.5			1.1	329	.45	394		30	522	8.0
Aug. 26	670		15		180	30		57	214	486	10			.7	884	1.20	1,600		37	1,230	7.8
Sept. 1-10	280		25		45	9.2	27		170	58	8.0			1.0	257	.35	194		11	409	7.9
Sept. 11-20	197		27		37	8.0	25		161	42	8.5			.5	227	.31	121		0	361	8.1
Sept. 21-30	187		27		37	8.1	24		162	40	8.8			.3	225	.31	114		0	358	8.0
Weighted average	546		25		44	8.7	22	--	151	61	6.6			0.9	242	0.33	357		22	379	--

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /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	61	48	40	34	a 32	a 42	47	a 51	a 64	65	a 74	71
2	55	46	a 41	a 37	a 32	a 42	a 55	a 58	a 65	66	a 77	a 74
3	55	a 49	36	a 35	a 36	35	a 60	a 59	58	65	73	68
4	56	a 50	37	a 36	32	a 43	52	a 64	57	71	67	66
5	57	a 52	a 38	a 38	a 35	a 45	a 55	a 67	61	72	72	63
6	58	a 52	a 37	a 35	a 37	a 48	49	a 60	60	69	72	63
7	55	a 50	a 38	32	a 42	a 49	a 52	a 61	62	a 76	75	64
8	56	a 53	a 42	a 33	a 40	a 47	a 57	60	63	a 79	70	a 70
9	55	a 40	a 39	a 33	a 41	a 52	a 58	a 66	60	a 79	68	66
10	55	a 33	a 43	a 34	a 43	a 49	a 52	60	a 67	a 78	a 74	64
11	53	a 41	37	a 37	a 49	43	a 55	58	61	a 78	66	64
12	53	--	37	a 37	40	a 47	a 57	61	60	a 78	70	a 70
13	54	a 37	36	a 39	37	41	a 59	56	61	a 80	69	58
14	55	38	36	32	32	a 50	a 58	54	61	a 84	74	61
15	57	41	35	a 33	32	a 54	a 58	57	62	a 82	68	a 67
16	53	38	a 41	a 36	36	a 53	a 57	56	63	a 84	71	a 72
17	53	38	a 41	a 39	36	a 48	a 58	53	63	78	71	62
18	a 63	a 44	32	a 36	37	a 44	a 59	50	64	a 84	a 81	a 70
19	53	43	a 35	a 38	39	a 47	a 60	60	64	76	a 81	a 72
20	a 64	42	a 41	a 38	36	a 51	a 57	60	65	a 80	75	a 72
21	a 58	42	a 38	36	37	a 51	a 64	58	62	80	74	a 63
22	53	43	a 40	a 41	41	a 55	59	60	64	a 79	66	61
23	50	a 45	a 37	a 44	41	a 54	a 64	58	63	a 82	67	a 68
24	51	37	32	a 43	40	a 53	a 60	60	63	75	66	a 70
25	51	a 44	a 36	a 41	43	a 52	a 58	58	62	a 81	66	a 68
26	51	a 45	a 35	a 39	40	a 52	a 59	a 67	66	a 82	69	a 71
27	50	37	a 40	a 41	40	a 50	57	67	67	76	70	a 62
28	46	37	a 36	39	37	a 47	a 61	a 72	64	a 76	64	62
29	a 55	37	32	a 39	--	a 48	a 53	a 68	66	a 75	70	58
30	53	36	a 34	a 33	--	a 51	a 54	a 67	a 71	75	68	a 71
31	47	--	a 35	a 32	--	51	--	62	--	69	71	--
Average	54	43	37	37	38	48	57	60	63	77	71	66

a Reading obtained between 12 m. and 6 p. m.

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	Mean dis-charge (cfs)	October		Mean dis-charge (cfs)	November		Mean dis-charge (cfs)	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-----	300	546	442	273	260	192	388	299	313
2-----	347	7,000	6,560	273	236	174	398	296	318
3-----	307	1,270	1,050	273	176	130	375	251	254
4-----	310	700	586	273	157	116	371	270	270
5-----	310	528	442	282	167	127	363	336	329
6-----	297	524	420	282	160	122	363	321	315
7-----	291	412	324	282	176	134	359	293	284
8-----	294	328	260	288	210	163	375	305	309
9-----	297	303	243	279	300	226	440	475	564
10-----	294	363	288	285	288	222	486	555	728
11-----	285	285	219	297	218	175	520	610	856
12-----	285	286	220	285	200	a 154	530	710	1,020
13-----	279	283	213	279	168	127	569	650	999
14-----	258	244	170	291	175	137	580	698	1,090
15-----	249	205	138	321	280	243	560	667	1,040
16-----	264	185	132	318	309	265	569	639	982
17-----	267	195	141	318	260	223	564	545	830
18-----	276	165	123	363	425	417	525	524	743
19-----	273	204	150	398	510	548	503	425	577
20-----	264	155	110	416	466	523	498	385	518
21-----	261	190	134	481	615	799	460	446	554
22-----	782	8,180	s 18,400	508	675	926	450	382	464
23-----	817	3,700	8,160	486	630	827	460	454	564
24-----	844	2,780	6,340	476	624	802	581	366	475
25-----	830	2,150	4,880	465	457	574	492	372	494
26-----	772	1,880	3,920	455	411	505	498	344	463
27-----	430	950	1,100	430	486	564	525	373	529
28-----	318	642	550	435	405	476	508	517	709
29-----	297	415	333	420	320	363	492	435	578
30-----	291	299	235	420	342	388	503	450	611
31-----	279	251	187	--	--	--	514	378	525
Total--	11,668	--	56,412	10,652	--	10,642	14,739	--	18,305

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	375	232	235	393	224	238	1,140	1,520	4,680
2-----	375	157	159	347	159	149	1,070	1,370	3,810
3-----	355	158	151	321	155	134	1,020	1,470	4,050
4-----	371	145	145	297	133	107	978	1,720	4,540
5-----	368	221	232	282	81	62	914	1,360	3,360
6-----	420	274	311	351	320	303	886	970	2,320
7-----	416	203	228	470	490	622	844	980	2,230
8-----	402	160	174	508	700	960	830	874	1,960
9-----	406	282	309	542	740	1,080	817	874	1,490
10-----	393	247	262	492	630	837	817	650	1,430
11-----	367	217	215	476	450	578	817	644	1,420
12-----	363	185	181	455	346	425	758	690	1,370
13-----	335	179	162	676	2,120	s 4,910	752	674	1,410
14-----	332	208	186	900	2,500	6,080	739	722	1,500
15-----	332	216	194	851	1,620	3,720	726	744	1,460
16-----	343	162	150	830	1,430	3,200	720	658	1,280
17-----	351	182	172	900	1,620	3,940	706	764	1,460
18-----	363	263	258	1,340	3,070	s 11,800	713	648	1,250
19-----	371	216	216	1,520	2,960	12,100	652	706	1,240
20-----	371	216	216	1,520	2,480	10,200	646	619	1,080
21-----	347	215	201	1,520	2,080	8,540	622	606	1,020
22-----	339	223	204	1,190	1,790	s 5,900	710	784	s 1,690
23-----	375	284	288	986	1,460	3,890	1,150	1,620	5,030
24-----	398	392	421	1,000	1,640	4,430	994	1,470	3,950
25-----	420	403	457	970	1,310	3,430	978	1,430	3,780
26-----	398	320	344	886	1,370	3,650	963	1,380	3,590
27-----	368	330	346	1,020	1,280	3,530	935	1,310	3,310
28-----	347	168	156	1,040	1,300	3,650	935	1,160	2,930
29-----	388	475	498	1,030	969	2,690	935	1,210	3,050
30-----	440	303	360	1,160	1,320	4,130	994	1,220	3,270
31-----	--	--	--	1,180	1,470	4,680	--	--	--
Total-	11,269	--	7,431	25,553	--	109,765	25,761	--	74,960
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,240	1,430	4,790	1,110	6,960	s 21,700	314	1,980	1,680
2-----	1,250	1,350	4,560	1,000	4,000	10,800	300	1,750	1,420
3-----	1,220	1,380	4,550	1,110	3,550	s 11,700	310	1,570	1,310
4-----	1,230	1,290	4,280	1,750	10,400	s 55,400	320	1,500	1,300
5-----	1,210	1,160	3,790	1,080	5,000	14,600	310	950	795
6-----	1,050	1,120	s 3,240	956	2,360	6,090	280	726	549
7-----	500	620	837	634	1,500	2,570	250	825	557
8-----	300	280	227	400	1,290	1,390	250	766	517
9-----	209	173	98	360	734	713	240	695	450
10-----	194	137	72	380	7,710	s 9,390	228	800	492
11-----	192	128	66	258	2,750	1,920	213	690	397
12-----	189	138	70	327	7,180	s 10,800	213	480	276
13-----	224	1,540	sc 1,390	252	2,500	1,700	211	689	393
14-----	346	5,700	sc 11,000	201	568	308	203	456	250
15-----	199	1,100	591	183	278	137	194	473	248
16-----	192	815	422	172	266	124	194	443	232
17-----	183	473	334	163	191	84	183	581	287
18-----	177	347	166	157	178	75	186	396	199
19-----	194	1,080	566	153	139	57	184	564	280
20-----	188	540	274	153	171	71	190	369	169
21-----	190	515	264	155	226	95	192	727	377
22-----	209	900	508	366	9,670	s 11,300	192	690	358
23-----	215	730	424	309	7,550	s 6,800	184	581	289
24-----	211	725	413	360	6,900	s 8,900	186	482	242
25-----	190	550	282	792	15,300	s 35,900	190	485	249
26-----	195	394	207	670	20,200	36,500	184	394	194
27-----	816	9,190	s 22,700	465	10,200	12,800	184	374	186
28-----	1,030	3,500	9,730	499	7,130	s 12,800	183	414	205
29-----	1,040	2,100	5,900	536	11,400	s 22,500	184	368	183
30-----	1,010	1,980	5,400	339	3,500	3,200	190	427	219
31-----	1,020	1,980	s 5,510	324	2,120	1,850	--	--	--
Total-	16,613	--	92,561	15,614	--	302,274	6,642	--	14,323
Total discharge for year (cfs-days).....									199,343
Total load for year (tons).....									900,743

s Computed by subdividing day.

c Computed from partly estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951
(Methods of analysis: P, pipette; D, decantation; P, pipette; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Instantaneous discharge (cfs)	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. 2, 1950.....	8:00 a.m.	371	9,440	1,630	--	76	--	78	--	89	95	99		100	SPWCM
Oct. 10.....	4:45 p.m.	294	285	--	--	--	--	--	--	24	61	97		100	S
Oct. 20.....	4:00 p.m.	264	165	--	--	--	--	--	--	20	48	91		99	S
Oct. 22.....	10:30 a.m.	928	11,200	2,030	--	56	--	67	--	64	94	99		100	SPWCM
Dec. 13.....	2:20 p.m.	552	717	--	--	--	--	--	--	12	53	81		98	S
Jan. 4, 1951.....	2:30 p.m.	498	337	--	--	--	--	--	--	9	22	79		98	100 S
Feb. 11.....	7:15 p.m.	1,230	4,560	--	--	--	--	--	--	20	65	88		98	S
Feb. 11.....	10:30 p.m.	1,560	10,100	4,810	14	19	25	33	47	64	82	94		99	SBWCM
Feb. 11.....	10:30 p.m.	1,560	9,230	1,280	6	10	18	28	49	63	87	97		100	SBN
Feb. 11.....	10:30 p.m.	1,560	9,340	2,500	16	19	22	31	45	64	83	95		99	SPWCM
Mar. 27.....	1:30 p.m.	388	204	--	--	--	--	--	--	21	32	74		99	100 S
May 10.....	5:59	564	3,690	1,940	17	18	22	26	32	42	63	91		99	SBWCM
May 13.....	5:30 p.m.	928	1,430	5,150	29	36	44	50	58	67	79	91		97	SBWCM
July 1.....	10:30 a.m.	1,240	1,430	--	--	--	--	--	--	24	49	83		95	S
July 27.....	10:30 a.m.	978	13,900	5,300	35	43	52	61	64	71	90	98		100	SPWCM
July 27.....	10:30 a.m.	978	13,900	2,390	36	43	53	61	65	71	90	98		100	SBWCM
Aug. 1.....	11:30 p.m.	986	5,120	2,890	--	51	--	70	--	85	90	98		99	SPWCM
Aug. 4.....	1:15 p.m.	2,580	14,800	3,610	46	56	65	72	78	84	92	99		100	SPWCM
Aug. 4.....	1:15 p.m.	2,580	14,800	1,940	43	53	62	71	76	84	92	99		100	SBWCM
Aug. 10.....	5:00 p.m.	1,040	8,910	5,000	--	19	--	32	--	71	81	93		99	SPWCM
Aug. 12.....	8:00 p.m.	481	21,400	2,890	39	52	64	74	84	94	97	99		100	SPWCM
Aug. 12.....	8:00 p.m.	481	21,400	2,490	46	59	72	80	91	94	97	99		100	SBWCM
Aug. 20.....	11:40 a.m.	155	2,069	1,500	--	--	--	--	--	36	55	83		96	S
Aug. 22.....	3:45 p.m.	520	17,500	2,120	--	66	--	89	--	--	--	--		--	PWCM
Aug. 23.....	4:00 p.m.	470	21,400	1,180	--	45	--	80	--	99	--	--		--	PWCM
Sept. 1.....	11:45 a.m.	314	1,980	1,210	0	2	7	9	12	24	80	98		100	SBWCM
Sept. 10.....	4:15 p.m.	225	857	--	--	--	--	--	--	20	67	97		100	S
Sept. 20.....	4:20 p.m.	192	447	--	--	--	--	--	--	20	56	94		99	S

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.

LOCATION.--At gaging station in Santo Domingo, Pueblo Grant, at highway bridge, 0.3 mile northeast of Domingo, Sandoval County, 2½ miles east of Santo Domingo Pueblo, and 4 miles upstream from mouth.

DRAINAGE AREA.--640 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: January 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 57,600 ppm Aug. 23; maximum observed, 208,000 ppm Aug. 21; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 84,300 tons Aug. 23; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Sediment concentrations: Maximum daily, 88,300 ppm Aug. 5, 1948;

minimum daily, no flow on many days.

Sediment loads: Maximum daily, 355,000 tons Aug. 1, 1950; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	17	14,600	s 2,880	0	--	0	0	--	0
2-----	2	4,000	22	.2	54	(t)	0	--	0
3-----	1	355	1	.2	40	(at)	.1	248	s. 3
4-----	1	282	.8	.1	34	(t)	0	--	0
5-----	.8	231	.5	0	--	0	0	--	0
6-----	.6	217	.4	.1	60	(at)	.2	--	e. 4
7-----	.6	114	.2	.2	95	.1	.2	292	s. 4
8-----	.6	145	.2	0	--	0	.1	--	e. 2
9-----	.3	129	.1	0	--	0	0	--	0
10-----	0	--	0	.2	--	e. 1	0	--	0
11-----	0	--	0	.1	}	(et)	0	--	0
12-----	0	--	0	.1			0	--	0
13-----	0	--	0	.1			0	--	0
14-----	0	--	0	0	--	0	0	--	0
15-----	0	--	0	0	--	0	0	--	0
16-----	0	--	0	0	--	0	0	--	0
17-----	0	--	0	0	--	0	0	--	0
18-----	0	--	0	0	--	0	.1	}	e. 1
19-----	0	--	0	0	--	0	.1		
20-----	0	--	0	0	--	0	.1		
21-----	0	--	0	0	--	0	.1	}	e. 1
22-----	0	--	0	0	--	0	.1		
23-----	0	--	0	0	--	0	.1		
24-----	0	--	0	0	--	0	.1	}	e. 1
25-----	.1	}	0	0	--	0	.1		
26-----	.1		0	0	--	0	.1		
27-----	.1		0	0	--	0	.1	}	e. 2
28-----	.1	--	(et)	0	--	0	.1		
29-----	.2	}	0	0	--	0	.1		
30-----	.1		0	0	--	0	.1	--	e. 1
31-----	0	--	0	--	--	--	.2	--	e. 1
Total-	24.6	--	2,905.2	1.3	--	0.3	2.1	--	2.9

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	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-----	.1	--	e. 2	0		0	0		0
4-----	.1	--	e. 2	.4		e. 4	0		0
5-----	.1	--	e. 1	.7		e. 6	0		0
6-----	.1	--	e. 1	1		e. 1	0		0
7-----	.2	--	e. 2	.5		e. 4	0		0
8-----	.3	--	e. 3	.1		e. 2	0		0
9-----	.7	--	e. 4	0		0	0		0
10-----	.4	--	e. 3	0		0	.3	1,600	s 3
11-----	.2	--	e. 2	0		0	0		0
12-----	.2	73	sa. 2	0		0	0		0
13-----	.1	66	s. 1	0		0	0		0
14-----	.2	60	s. 1	0		0	0		0
15-----	.2	44	s. 1	0		0	0		0
16-----	.2	67	s. 2	0		0	0		0
17-----	.1	88	s. 2	0		0	0		0
18-----	.2	56	s. 3	0		0	0		0
19-----	.2	--	e. 2	0		0	0		0
20-----	.2	--	e. 2	0		0	0		0
21-----	.2	--	e. 2	0		0	0		0
22-----	.1	--	e. 1	0		0	0		0
23-----	.1	--	e. 1	0		0	0		0
24-----	.1	--	e. 1	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-----	0	--	0	--		--	0		0
30-----	0	--	0	--		--	0		0
31-----	0	--	0	--		--	0		0
Total-	4.3	--	4.1	2.7		2.6	0.3		3
Day	April			May			June		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	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	52	8,000	sa 14,000
5-----				0	--	0	62	52,500	s 12,400
6-----				0	--	0	27	41,500	s 3,670
7-----				0	--	0	4	4,000	43
8-----				0	--	0	1	1,000	3
9-----				0	--	0	.6	--	e 2
10-----				0	--	0	.1	--	e 1
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	0	--	0
18-----				0	--	0	0	--	0
19-----				0	--	0	0	--	0
20-----				0	--	0	0	--	0
21-----				26	26,900	s 3,640	0	--	0
22-----				5	18,000	a 240	0	--	0
23-----				3	6,900	a 56	0	--	0
24-----				2	2,500	a 14	0	--	0
25-----				2	500	a 3	0	--	0
26-----				1	--	e. 5	0	--	0
27-----				.3	--	e. 2	0	--	0
28-----				0	--	0	0	--	0
29-----				0	--	0	0	--	0
30-----				0	--	0	0	--	0
31-----				0	--	0	0	--	0
Total-	0		0	39.3	--	3,953.7	146.7	--	30,119

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	224	55,100	s 47,400	0.2		e 0.2
2-----	0	--	0	50	31,000	4,180	.2		e .1
3-----	0	--	0	15	--	e 380	0		0
4-----	0	--	0	19	13,200	sa 2,060	0		0
5-----	0	--	0	4	39,500	s 2,540	0		0
6-----	0	--	0	.8	20,000	43	0		0
7-----	0	--	0	.4	--	e 5	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-----	0	--	0	5	--	e 100	0		0
13-----	0	--	0	10	--	e 800	0		0
14-----	0	--	0	.1	--	e 1	0		0
15-----	0	--	0	0	--	0	0		0
16-----	0	--	0	.2	--	e 1	0		0
17-----	0	--	0	.1	--	e .3	0		0
18-----	0	--	0	0	--	0	0		0
19-----	0	--	0	0	--	0	0		0
20-----	0	--	0	0	--	0	0		0
21-----	0	--	0	28	7,620	s 11,400	0		0
22-----	0	--	0	45	32,900	s 5,240	0		0
23-----	0	--	0	408	57,600	s 84,300	0		0
24-----	0	--	0	33	25,800	s 2,980	0		0
25-----	0	--	0	290	43,500	s 43,000	0		0
26-----	0	--	0	10	6,500	176	0		0
27-----	32	7,450	s 3,300	.1	1,000	a .3	0		0
28-----	0	--	0	56	18,000	sa 14,000	0		0
29-----	0	--	0	38	31,500	s 4,120	0		0
30-----	0	--	0	2	3,100	17	0		0
31-----	.4	680	as 5	.8	--	e 1	--		--
Total-	32.4	--	3,305	1,239.5	--	222,744.6	0.4		0.3

Total discharge for year (cfs-days)..... 1,493.6

Total load for year (tons)..... 263,040.7

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951
(Methods of analysis: P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Instantaneous discharge (cfs)	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, 1950	6:30 p. m.	125	67,400	3,980	--	56	--	79	--	95	98	99	--	SPWCM
Oct. 3	9:00 a. m.	2	429	1,530	25	45	77	91	100	--	--	--	--	DWCM
Nov. 7	9:30 a. m.	82	282	1,030	46	53	68	83	100	--	--	--	--	DWCM
May 21, 1951	11:50 a. m.	82	56,500	3,510	--	64	--	82	--	89	96	99	100	SPWCM
June 5	7:00 a. m.	74	72,100	4,520	--	65	--	89	--	95	98	100	--	SPWCM
July 27	7:00 p. m.	16	20,100	5,610	--	66	--	86	--	99	100	--	--	SPWCM
Aug. 1	8:50 a. m.	318	70,500	4,270	--	47	--	66	--	82	89	96	100	SPWCM
Aug. 19	10:10 p. m.	19	9,580	3,850	--	82	--	96	--	100	--	--	--	SPWCM
Aug. 21	11:35 p. m.	588	91,700	3,350	31	41	52	59	69	82	91	99	100	SPWCM
Aug. 21	11:35 p. m.	588	91,700	3,370	31	40	48	59	72	82	91	99	100	SPWCM
Aug. 24	2:45 a. m.	39	34,000	4,500	--	88	--	98	--	100	--	--	--	PWCM
Aug. 24	2:50 a. m.	39	35,400	3,890	--	79	--	96	--	98	99	100	--	SPWCM
Aug. 25	12:15 a. m.	106	16,500	3,470	--	62	--	79	--	--	--	--	--	PWCM
Aug. 25	2:15 a. m.	558	64,600	6,110	--	38	--	58	--	82	92	96	99	SPWCM
Aug. 29	4:25 a. m.	2.8	27,900	2,620	4	10	46	94	98	99	99	100	--	SPN
Aug. 29	4:25 a. m.	2.8	27,900	3,020	56	69	84	91	92	99	99	100	--	SPWCM
Aug. 29	4:25 a. m.	2.8	27,900	1,850	60	77	90	95	99	99	99	100	--	SPWCM
Aug. 29	4:25 a. m.	2.8	27,900	1,680	3	6	28	--	98	99	99	100	--	SBN
Aug. 29	6:15 a. m.	184	54,700	4,560	--	52	--	74	--	90	96	99	100	SPWCM

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.

LOCATION.--At gaging station about 1½ miles (revised) upstream from mouth and 6 miles (revised) north of Bernalillo, Sandoval County.

DRAINAGE AREA.--1,040 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1951.

Sediment records: April 1948 to September 1951.

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 92°F Aug. 6; minimum, freezing point on many days.

Sediment concentrations: Maximum daily, 63,000 ppm July 24; maximum observed, 135,000 ppm July 23; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 167,000 tons July 25; minimum daily, 0 tons on many days. EXTREMES, 1948-51.--Water temperatures (1950-51): Maximum observed, 92°F Aug. 6; minimum, freezing point on many days.

Sediment concentrations: Maximum daily, 66,700 ppm Sept. 20, 1950; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 167,000 tons July 25, 1951; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Temperature (°F) of water, water year October 1950 to September 1951
(Once-daily temperature measurement at approximately 6 a.m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	--	32	32	--	33	38	35	--	--	65	--
2	46	--	32	a38	--	33	34	38	--	--	70	--
3	51	--	32	--	a34	a36	38	35	--	--	58	--
4	a65	--	32	a42	32	32	45	41	--	--	65	--
5	55	--	32	35	a33	35	36	45	--	--	68	--
6	49	32	a38	a39	32	32	40	45	--	--	60	--
7	--	--	32	34	32	32	38	40	--	--	60	--
8	--	--	a40	--	32	37	35	46	--	--	60	--
9	47	a32	32	--	35	40	34	45	--	--	--	--
10	51	--	a55	a40	35	a60	35	45	--	--	--	--
11	46	a32	35	32	35	36	34	38	--	--	--	--
12	--	a45	a42	a35	a40	42	32	48	--	--	--	--
13	--	--	32	32	35	35	33	45	--	--	--	--
14	--	60	a40	32	a33	35	32	46	--	--	--	--
15	--	50	35	a34	32	35	36	45	--	--	a60	--
16	47	40	a40	a32	32	38	a35	40	--	--	--	--
17	--	40	35	34	34	35	38	38	--	--	a70	--
18	--	55	a40	a35	32	33	40	40	--	--	--	--
19	--	60	35	32	38	a48	43	46	--	--	--	--
20	--	55	a40	a40	32	35	37	--	--	--	--	--
21	--	a55	35	32	32	34	42	52	--	--	--	--
22	--	--	38	a55	--	a50	43	45	--	--	--	--
23	--	35	32	35	a50	35	42	50	--	a73	60	--
24	--	48	35	a45	45	33	46	50	--	54	60	--
25	--	40	a42	32	42	34	40	50	--	62	58	--
26	--	--	34	a45	40	40	45	--	--	63	58	--
27	--	32	a41	32	32	42	38	--	--	62	60	--
28	--	50	35	a47	--	33	45	--	--	--	60	--
29	--	a48	a45	a42	--	35	45	--	--	--	61	--
30	--	35	35	--	--	32	35	--	--	--	58	--
31	--	--	a50	--	--	38	--	--	--	a70	56	--
Average	--	--	37	37	35	37	39	--	--	--	--	--

a Reading obtained after 12m. Diurnal fluctuation generally 15° to 30° except during periods of ice cover.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5	7,700	104	0	--	0	6	2,700	44
2-----	62	30,400	s 7,100	0	--	0	4	1,800	a 19
3-----	12	18,000	583	0	--	0	2	200	1
4-----	5	9,620	130	0	--	0	4	1,200	13
5-----	4	9,080	98	0	--	0	7	3,500	66
6-----	3	6,300	51	1	2,550	7	5	4,200	57
7-----	3	4,500	a 36	1	3,200	9	6	5,000	81
8-----	3	4,500	a 36	1	3,500	9	4	3,800	41
9-----	2	4,890	26	0	--	0	8	6,250	135
10-----	2	5,150	28	0	--	0	6	4,600	75
11-----	1	2,400	6	1	600	2	8	6,000	130
12-----	0	--	0	1	800	2	10	6,000	162
13-----	0	--	0	6	1,000	16	6	1,910	31
14-----	0	--	0	9	2,300	56	11	2,800	83
15-----	0	--	0	8	3,800	82	10	4,100	111
16-----	1	2,230	6	7	4,800	91	12	4,000	130
17-----	0	--	0	8	4,600	99	16	2,000	86
18-----	0	--	0	7	4,100	77	12	3,300	107
19-----	0	--	0	10	5,400	146	4	3,500	38
20-----	0	--	0	12	8,800	285	4	2,900	31
21-----	0	--	0	10	7,900	213	8	1,700	37
22-----	0	--	0	9	6,800	165	10	2,800	76
23-----	0	--	0	8	4,500	97	9	4,300	104
24-----	0	--	0	10	5,300	143	6	4,190	68
25-----	0	--	0	8	4,300	93	5	5,700	77
26-----	0	--	0	5	2,000	27	4	4,700	51
27-----	0	--	0	2	1,100	6	4	4,700	51
28-----	0	--	0	2	1,200	6	4	5,700	62
29-----	0	--	0	1	736	2	4	6,100	66
30-----	0	--	0	1	949	3	6	5,500	89
31-----	0	--	0	--	--	--	6	5,600	91
Total-	103	--	8,204	128	--	1,636	211	--	2,213
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5	2,400	32	0	--	0	12	889	29
2-----	4	4,000	43	0	--	0	14	1,700	64
3-----	2	2,000	11	1	920	2	15	2,670	108
4-----	6	3,500	57	2	1,140	6	12	900	29
5-----	2	5,500	a 30	10	4,600	124	11	2,000	59
6-----	3	6,600	53	8	3,800	82	10	1,800	49
7-----	0	--	0	11	5,800	172	14	1,180	45
8-----	0	--	0	16	4,600	199	14	1,130	43
9-----	0	--	0	8	3,000	65	14	1,180	45
10-----	0	--	0	20	3,100	167	16	1,500	65
11-----	0	--	0	26	2,700	190	10	1,660	45
12-----	2	2,200	a 12	29	3,500	274	10	2,300	62
13-----	3	2,300	a 19	19	2,300	118	15	2,600	105
14-----	0	--	0	28	3,060	231	10	3,600	97
15-----	0	--	0	15	3,000	122	5	3,800	51
16-----	1	1,400	4	28	3,470	262	3	1,800	15
17-----	0	--	0	30	1,400	113	6	2,700	44
18-----	5	5,200	70	43	3,000	348	11	2,400	71
19-----	10	9,200	248	45	4,960	603	12	2,800	84
20-----	8	9,500	205	47	4,100	520	14	1,900	72
21-----	4	6,000	65	35	3,000	284	22	2,000	119
22-----	6	8,000	130	40	3,500	a 378	28	1,600	121
23-----	5	6,900	93	45	3,100	377	35	1,800	170
24-----	4	5,850	63	49	2,140	283	49	1,940	257
25-----	4	3,500	38	38	2,300	236	40	2,000	216
26-----	4	5,300	57	19	3,510	180	43	2,450	284
27-----	4	5,800	63	16	1,940	84	60	1,840	298
28-----	6	8,200	133	14	762	29	49	2,250	298
29-----	4	4,000	43	--	--	--	47	1,750	222
30-----	3	3,500	a 28	--	--	--	20	650	35
31-----	2	1,000	a 5	--	--	--	6	424	7
Total-	97	--	1,502	642	--	5,449	627	--	3,209

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	14	800	30	15	4,000	162	1		
2-----	17	1,000	46	15	3,400	138	1		
3-----	11	950	28	4	2,900	31	1		
4-----	10	751	20	10	2,400	65	4		
5-----	12	1,220	40	6	1,600	26	3		
6-----	11	944	28	25	2,300	155	2		
7-----	9	1,650	40	102	5,800	1,600	3		
8-----	6	924	15	74	5,600	1,120	3		
9-----	2	1,090	6	56	5,400	616	3		
10-----	0	--	0	56	5,200	786	2	--	e 10
11-----	0	--	0	44	4,200	499	3		
12-----	2	800	4	44	3,920	466	6		
13-----	2	801	4	56	1,900	287	4		
14-----	0	--	0	35	3,060	289	4		
15-----	0	--	0	20	4,100	221	4		
16-----	0	--	0	39	1,900	200	2		
17-----	1	1,500	4	28	2,600	197	2		
18-----	1	723	2	130	3,000	1,050	0	--	0
19-----	4	1,230	13	102	3,000	826	0	--	0
20-----	6	1,770	29	87	4,300	1,010	0	--	0
21-----	3	1,800	15	35	3,500	331	0	--	0
22-----	2	2,600	14	68	1,690	310	0	--	0
23-----	2	1,640	9	13	1,200	42	0	--	0
24-----	0	--	0	10	900	24	0	--	0
25-----	2	1,760	10	8	1,400	30	0	--	0
26-----	2	2,700	15	3			0	--	0
27-----	11	1,940	58	1			0	--	0
28-----	8	1,960	42	1			0	--	0
29-----	11	3,550	105	2	--	e 7	0	--	0
30-----	20	3,500	189	2			0	--	0
31-----	--	--	--	2			--	--	--
Total-	169	--	766	1,093	--	10,723	48	--	170
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	871	47,800	s164,000	4	3,000	a32
2-----	0	--	0	190	26,100	s14,300	1		
3-----	0	--	0	320	44,300	s59,000	1		
4-----	0	--	0	35	26,500	2,500	1		
5-----	0	--	0	190	32,700	s23,900	1		
6-----	0	--	0	96	26,800	s12,400	2	--	e 4
7-----	0	--	0	65	24,800	s5,630	1		
8-----	0	--	0	1	13,000	35	1		
9-----	0	--	0	0	--	0	1		
10-----	0	--	0	0	--	0	1		
11-----	0	--	0	0	--	0	0	--	0
12-----	0	--	0	0	--	0	0	--	0
13-----	0	--	0	0	--	0	0	--	0
14-----	0	--	0	0	--	0	0	--	0
15-----	0	--	0	1	--	e 20	0	--	0
16-----	0	--	0	0	--	0	0	--	0
17-----	0	--	0	2	42,500	s1,260	0	--	0
18-----	0	--	0	1	28,000	a 76	0	--	0
19-----	0	--	0	0	--	0	0	--	0
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-----	540	63,000	s164,000	52	41,900	s8,190	0	--	0
25-----	483	52,400	s167,000	90	29,100	s10,200	0	--	0
26-----	73	34,900	s6,750	53	33,400	s7,150	0	--	0
27-----	2	7,000	a38	13	13,800	484	0	--	0
28-----	0	--	0	2	7,500	40	0	--	0
29-----	0	--	0	56	8,400	s5,050	0	--	0
30-----	0	--	0	590	41,100	s93,800	0	--	0
31-----	0	--	0	44	25,000	2,870	0	--	0
Total-	54	1,850	s6,750	28	10,000	756	--	--	--
Total-	1,152	--	344,538	2,700	--	411,761	14	--	68

Total discharge for year (cfs-days) 6,984

Total load for year (tons) 790,239

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951

(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	Instantaneous discharge (cfs)	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. 2, 1950	7:00 a.m.	100	30,600	2,480	23	34	46	62	--	--	86	--	--	--	DSWCM
Nov. 20	3:00 p.m.	14	8,490	1,200	69	75	83	87	90	93	99	100	--	--	SPWCM
Nov. 30	5:35 a.m.	1	1,210	972	94	95	96	96	96	96	99	100	--	--	SPWCM
Dec. 14	10:35 a.m.	8	1,910	3,350	--	72	--	88	--	--	93	98	100	--	SPWCM
Dec. 20	7:00 p.m.	2	1,580	2,910	35	55	70	80	--	--	--	--	--	--	DWCM
Jan. 2, 1951	4:00 p.m.	12	7,090	993	61	65	72	77	85	90	98	100	--	--	SPWCM
Jan. 2	4:00 p.m.	12	6,600	2,500	5	8	28	66	79	86	97	100	--	--	SPWCM
Mar. 5	6:00 p.m.	10	2,210	2,770	60	67	75	82	87	95	--	--	--	--	BWCM
May 1	6:00 p.m.	170	2,530	2,030	68	84	94	97	99	100	--	--	--	--	BWCM
May 7	6:00 p.m.	140	3,080	2,150	37	45	50	61	71	81	--	--	--	--	BWCM
July 24	9:45 a.m.	140	59,000	4,270	--	71	--	93	--	100	100	--	--	--	SPWCM
July 25	11:35 a.m.	535	73,900	3,820	--	56	--	72	--	83	89	98	--	--	SPWCM
July 25	12:55 p.m.	480	71,000	3,590	57	66	70	73	81	90	95	99	100	--	SPWCM
July 25	12:55 p.m.	460	71,000	3,280	5	6	9	81	87	90	96	99	100	--	SPN
July 25	12:55 p.m.	460	71,000	3,500	56	67	76	84	88	90	96	99	100	--	SPWCM
July 25	12:55 p.m.	460	71,000	3,840	1	1	5	--	--	90	96	99	100	--	SPN
Aug. 1	9:00 a.m.	1,410	66,500	3,330	--	52	--	67	--	78	86	97	100	--	SPWCM
Aug. 3	10:55 a.m.	435	56,100	4,740	--	72	--	89	--	95	98	100	--	--	SPWCM
Aug. 6	3:00 a.m.	750	61,400	3,810	--	51	--	74	--	85	89	94	100	--	SPWCM
Aug. 17	12:20 p.m.	31	81,000	3,300	--	88	--	91	--	98	99	100	--	--	SPWCM
Aug. 23	4:15 a.m.	270	67,800	4,840	51	65	77	86	90	93	94	96	100	--	SPWCM
Aug. 23	4:15 a.m.	270	67,800	4,200	49	62	75	86	89	93	94	96	100	--	SPWCM
Aug. 23	9:55 a.m.	4	41,800	4,780	62	69	--	81	--	86	90	95	100	--	SPWCM
Aug. 24	9:45 a.m.	94	50,000	3,320	--	68	--	89	--	93	95	99	100	--	SPWCM
Aug. 25	8:00 a.m.	4	16,100	2,940	--	83	--	87	--	92	94	97	98	--	SPWCM
Aug. 25	3:00 a.m.	3,200	57,800	4,350	--	56	--	79	--	88	94	99	99	--	SPWCM

RIO GRANDE BASIN--Continued

LOCATION.--At gaging station 2 miles northwest of Sandia Pueblo, 3 miles southwest of Bernalillo, Sandoval County, 3.5 miles downstream from State Highway 44, and 8.5 miles downstream from Jemez River.

DRAINAGE AREA.--17,300 square miles, approximately (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).

RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1951.

Sediment records: November 1947 to September 1951.

EXTREMES, 1950-51.--Water temperatures: Maximum, 93°F Aug. 18; minimum, freezing point on many days in December, January, and February.

Sediment concentrations: Maximum daily, 49,600 ppm July 24; maximum observed, 101,000 ppm July 24; minimum daily, 30 ppm July 12.

Sediment loads: Maximum daily, 209,000 tons Aug. 1; minimum daily, 3 tons Oct. 20, Sept. 13-15.

EXTREMES, 1947-51.--Water temperatures (1948-51): Maximum, 93°F Aug. 18, 1951; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 50,300 ppm Aug. 2, 1950; minimum daily, 18 ppm May 13, 17, 1950.

Sediment loads: Maximum daily, 320,000 tons July 24, 1949; minimum daily, 2 tons May 18, 19, 1950.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Temperature (°F) of water, water year October 1950 to September 1951. [Seven-day mercury actuated thermograph]

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	72	58	60	46	47	40	36	32	32	31	45	36	60	42	51	40	70	57	82	66	80	66	84	63
2	71	53	56	46	43	33	31	32	31	32	31	43	38	63	41	42	74	54	82	66	84	71	82	64
3	71	54	53	42	41	32	37	31	32	31	37	31	67	43	72	42	72	55	82	64	78	71	83	63
4	70	53	53	38	48	37	39	31	33	31	44	31	58	48	75	47	70	57	85	67	81	69	83	64
5	75	57	54	39	46	32	42	32	33	32	50	32	59	43	--	51	74	56	85	66	81	69	85	57
6	74	54	54	40	35	32	39	32	33	31	53	35	60	45	72	56	75	59	85	66	85	70	87	58
7	76	50	55	41	38	32	35	32	41	31	54	37	63	46	70	49	75	55	85	68	84	69	80	63
8	69	51	--	--	44	32	32	32	43	31	52	42	61	43	69	52	76	56	84	65	86	69	82	64
9	72	54	--	--	48	34	33	32	49	33	58	44	64	44	72	52	78	56	88	66	86	63	81	58
10	76	54	--	32	48	34	33	32	51	36	57	48	64	41	73	53	74	58	87	68	86	65	80	51
11	76	53	42	32	46	34	35	32	51	38	52	41	60	38	73	55	75	58	87	65	90	64	80	57
12	--	--	42	32	48	37	--	32	48	40	52	35	64	38	73	55	81	57	90	65	86	68	75	50
13	--	--	41	32	47	36	39	32	43	33	53	34	67	40	64	51	81	61	86	66	88	67	79	46
14	72	49	47	36	44	35	38	32	42	31	58	40	68	42	67	51	82	60	89	64	89	66	82	48
15	67	55	50	39	45	35	38	32	40	31	58	40	68	45	64	49	80	60	91	59	89	64	84	54
16	69	52	47	35	46	35	37	31	43	31	58	42	66	44	69	48	85	60	90	66	88	63	77	50
17	72	52	48	33	42	32	41	32	44	33	51	38	65	48	57	51	82	64	92	64	92	64	79	50
18	74	54	47	35	42	31	43	32	46	35	52	35	67	47	70	48	85	66	87	64	93	64	77	51
19	72	50	51	40	42	31	43	31	44	38	50	32	66	50	71	55	86	67	85	63	86	67	76	48
20	--	--	50	54	51	43	41	32	47	34	55	36	61	51	72	58	78	64	89	63	87	65	76	50
21	--	--	48	54	41	42	31	44	32	47	34	60	69	47	71	59	63	61	92	63	88	65	70	54
22	63	50	54	43	40	32	42	32	49	37	56	44	72	49	74	58	77	56	--	--	94	71	49	56
23	63	50	50	39	40	32	45	33	44	35	59	39	40	72	50	70	57	76	--	--	92	63	74	43
24	63	48	50	36	40	32	46	33	44	36	60	35	52	74	57	63	55	76	--	--	93	63	73	50
25	64	49	50	36	38	32	48	34	47	41	60	39	67	46	77	58	77	56	--	--	87	79	64	75
26	83	49	50	36	38	--	46	33	50	38	62	46	63	47	80	60	76	58	88	67	73	66	74	49
27	59	45	50	36	40	32	46	32	49	38	53	43	71	45	81	62	80	58	92	64	75	65	77	47
28	61	40	38	36	32	35	38	34	34	34	56	36	54	30	81	64	59	86	86	86	82	64	75	50
29	61	43	48	35	38	31	32	31	--	--	58	38	58	34	77	62	63	59	89	70	80	63	77	56
30	--	--	44	48	35	38	31	32	31	--	--	58	38	34	74	62	63	59	89	70	80	63	77	54
31	61	47	--	--	37	31	32	31	--	--	56	43	--	--	73	60	--	--	85	66	82	64	78	54
Average	69	50	52	37	42	33	40	32	43	34	54	36	64	45	71	54	78	59	87	63	84	66	79	54

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	252	3,060	s 2,590	252	827	563	356	1,480	1,420
2-----	328	10,100	8,940	240	666	432	335	1,520	1,370
3-----	62	5,500	921	235	745	473	356	1,400	1,350
4-----	40	4,460	462	246	742	493	349	1,500	1,410
5-----	40	2,500	270	252	822	559	349	1,160	1,090
6-----	33	1,600	143	246	783	520	350	1,200	1,130
7-----	37	1,440	144	240	832	539	350	1,070	1,010
8-----	230	2,120	1,320	246	807	536	363	1,630	1,600
9-----	240	1,500	972	246	954	634	378	1,600	1,630
10-----	32	400	35	252	1,020	694	430	1,760	2,040
11-----	21	296	17	252	1,030	701	466	2,140	2,690
12-----	18	248	12	270	987	720	508	2,070	2,840
13-----	14	230	9	246	781	519	508	2,110	2,890
14-----	45	400	49	258	832	580	550	1,860	2,760
15-----	170	1,080	496	264	758	540	560	2,070	3,130
16-----	200	896	484	294	865	687	560	1,660	2,510
17-----	30	250	20	307	890	738	560	1,830	2,770
18-----	16	167	7	314	999	847	528	2,100	2,990
19-----	12	140	5	363	1,240	1,220	508	1,550	2,130
20-----	10	129	3	396	1,840	1,970	497	1,690	2,270
21-----	28	315	s 45	421	1,940	2,210	518	1,920	2,690
22-----	150	904	366	476	2,180	2,800	455	1,870	2,300
23-----	486	9,680	s 13,100	455	2,140	2,630	412	1,510	1,680
24-----	300	5,550	4,500	438	2,180	2,580	438	1,560	1,840
25-----	378	3,290	3,360	438	2,020	2,390	476	1,540	1,980
26-----	396	2,570	2,750	430	1,810	2,100	486	1,560	2,050
27-----	328	1,970	1,740	412	1,880	2,090	486	2,000	2,620
28-----	190	1,520	780	396	1,550	1,660	486	1,950	2,560
29-----	98	795	210	387	1,580	1,650	476	2,000	2,570
30-----	98	628	166	378	1,420	1,450	476	1,900	2,440
31-----	190	1,020	523	--	--	--	486	2,200	2,890
Total--	4,472	--	44,459	9,650	--	35,525	14,056	--	66,650
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	508	2,400	3,290	270	62	45	560	1,480	2,240
2-----	518	2,180	3,050	250	582	393	455	1,300	1,600
3-----	508	1,670	2,290	280	1,200	a 907	328	852	755
4-----	508	1,950	2,670	350	1,560	1,470	387	1,420	1,480
5-----	497	1,660	2,230	600	1,960	3,180	349	828	780
6-----	500	1,900	2,560	750	3,400	6,880	210	580	329
7-----	510	2,060	2,840	795	3,400	7,300	235	510	324
8-----	455	1,830	2,250	810	3,700	8,090	264	744	530
9-----	455	2,480	3,050	625	2,500	4,220	349	788	743
10-----	455	1,650	2,030	586	2,380	3,770	349	682	643
11-----	476	2,480	3,190	599	2,520	4,080	625	1,900	3,210
12-----	518	1,770	2,480	1,220	7,140	s 33,200	342	532	491
13-----	560	2,120	3,210	1,560	7,600	32,000	307	948	786
14-----	497	2,480	3,330	1,530	4,000	16,500	276	619	461
15-----	466	2,180	2,740	1,400	6,000	22,700	230	433	269
16-----	446	2,040	2,460	1,320	4,500	16,000	225	394	239
17-----	455	1,630	2,000	1,420	5,000	19,200	235	423	268
18-----	476	2,380	3,060	1,450	5,000	19,600	430	1,160	1,350
19-----	497	2,060	2,760	1,420	4,300	16,500	186	496	249
20-----	518	2,060	2,880	1,450	3,810	14,900	162	436	191
21-----	528	2,160	3,080	1,420	3,840	14,700	120	208	67
22-----	528	1,480	2,110	1,450	3,160	12,400	118	260	83
23-----	560	1,460	2,210	1,420	3,100	11,900	118	271	86
24-----	540	1,720	2,510	1,450	3,010	11,800	126	353	120
25-----	518	1,980	2,770	1,500	3,040	12,300	336	846	s 801
26-----	510	2,180	3,000	1,420	2,450	9,390	147	390	155
27-----	510	1,980	2,730	1,000	2,380	6,430	108	396	115
28-----	520	1,900	2,670	664	1,570	2,810	106	345	99
29-----	530	1,780	2,550	--	--	--	147	537	213
30-----	520	1,440	2,020	--	--	--	115	268	83
31-----	500	412	556	--	--	--	94	181	46
Total--	15,587	--	80,576	29,009	--	312,665	8,039	--	18,806

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	289	650	s 555	190	959	492	825	1,100	2,450
2-----	118	221	70	150	711	288	840	913	2,070
3-----	90	198	48	106	443	127	1,040	1,300	3,650
4-----	86	165	38	64	334	58	948	1,260	3,230
5-----	96	176	46	52	234	33	795	6,810	14,600
6-----	68	120	29	186	589	296	600	3,400	5,510
7-----	120	361	117	252	931	633	486	1,730	2,270
8-----	394	750	s 850	174	2,200	1,030	363	877	660
9-----	387	370	387	200	1,580	853	342	796	735
10-----	129	258	90	225	1,180	717	750	1,290	2,610
11-----	208	238	134	210	797	452	705	1,180	2,250
12-----	96	190	49	190	498	255	356	510	490
13-----	68	96	18	387	1,200	1,250	252	316	215
14-----	59	78	12	586	1,700	2,690	240	380	233
15-----	209	533	s 360	586	2,600	4,110	235	366	232
16-----	276	419	312	518	1,460	2,040	235	355	225
17-----	80	73	16	539	1,130	1,640	690	1,230	2,290
18-----	59	54	9	705	1,810	3,450	651	670	1,180
19-----	56	70	11	1,130	3,100	9,460	276	260	194
20-----	80	166	36	1,370	4,500	16,600	174	226	106
21-----	82	372	82	1,450	3,650	14,300	154	229	95
22-----	242	604	s 407	1,370	3,150	11,700	132	216	77
23-----	288	530	412	780	1,360	2,860	168	608	s 383
24-----	96	142	37	664	1,260	2,260	1,000	2,400	6,480
25-----	101	223	61	690	1,030	1,920	984	1,260	3,350
26-----	132	634	226	625	829	1,400	508	700	960
27-----	123	670	223	963	1,520	s 4,140	497	718	963
28-----	115	603	187	948	1,580	4,040	455	613	753
29-----	348	1,180	s 1,160	560	863	1,300	387	556	581
30-----	421	1,380	1,570	625	733	1,240	404	641	699
31-----	--	--	--	795	1,140	2,450	--	--	--
Total--	4,936	--	7,552	17,290	--	94,084	15,492	--	59,741

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	1,090	1,660	4,890	2,050	32,100	s 209,000	195	2,820	1,480
2-----	1,100	1,560	4,680	735	17,200	s 32,900	215	3,200	1,860
3-----	1,000	1,580	4,270	984	11,200	s 32,600	195	2,010	1,060
4-----	800	971	2,100	993	8,120	s 25,300	174	1,000	470
5-----	677	992	1,810	1,310	17,600	s 65,300	80	612	132
6-----	651	918	1,610	1,020	10,000	27,500	35	562	53
7-----	486	742	974	378	5,500	5,610	18	567	28
8-----	258	600	418	200	4,500	2,430	16	552	24
9-----	174	236	111	94	707	179	14	400	15
10-----	144	82	32	53	417	60	14	669	25
11-----	100	43	12	47	800	102	14	756	29
12-----	60	30	5	138	12,500	4,660	10	486	13
13-----	50	41	6	126	4,580	1,560	4	271	3
14-----	50	18,700	s 1,360	58	3,500	548	3	323	3
15-----	60	11,000	1,780	28	3,000	227	3	431	3
16-----	92	5,400	1,340	23	1,180	73	14	527	20
17-----	20	2,500	a 135	16	900	39	17	488	22
18-----	15	971	39	18	6,600	321	14	396	15
19-----	4	514	6	39	1,600	168	12	326	11
20-----	10	2,210	60	61	2,200	362	14	344	13
21-----	12	2,500	a 81	22	375	22	16	292	13
22-----	10	1,230	33	38	5,060	519	18	316	15
23-----	10	5,000	135	349	25,400	s 37,200	25	425	29
24-----	379	49,600	s 84,400	118	20,200	6,440	23	410	25
25-----	161	38,700	s 25,200	256	27,300	s 19,900	21	379	21
26-----	50	20,000	2,700	876	25,800	61,000	16	297	13
27-----	16	6,000	258	539	20,500	29,800	18	294	14
28-----	151	15,400	s 8,120	451	16,800	s 40,800	22	298	18
29-----	677	8,860	16,200	1,260	40,900	s 175,000	18	266	13
30-----	912	3,340	8,220	321	23,000	19,900	24	218	14
31-----	476	2,170	2,790	220	8,000	4,750	--	--	--
Total--	9,695	--	173,786	12,821	--	804,270	1,262	--	5,454

Total discharge for year (cfs-days).....

142,309

Total load for year (tons).....

1,703,568

s Computed by subdividing day.

a Computed from estimated concentration graph.

Aug. 3.	10:30 a. m.	1,110	10,400	6,030	--	70	--	86	--	--	--	--	--	--	PWCM
Aug. 3.	12:00 m.	1,470	26,500	5,630	--	70	--	88	--	--	--	--	--	--	PWCM
Aug. 4.	3:05 p. m.	1,090	5,160	4,340	--	48	--	74	--	--	--	--	--	--	PWCM
Aug. 20.	8:45 a. m.	61	2,570	2,240	--	83	--	98	--	--	--	--	--	--	SPWCM
Aug. 23.	9:25 a. m.	1,900	53,200	3,440	52	60	74	84	89	97	98	99	100	100	SPWCM
Aug. 23.	9:25 a. m.	1,900	53,200	2,060	46	57	72	84	94	97	98	99	100	100	SPWCM
Aug. 23.	9:55 a. m.	1,200	42,900	4,980	--	61	--	86	--	96	--	--	--	--	SPWCM
Aug. 29.	7:10 a. m.	2,010	55,700	4,410	--	56	--	83	--	94	96	99	100	100	SPWCM
Aug. 29.	9:30 a. m.	720	39,300	4,060	49	62	69	79	85	95	99	100	100	100	SPWCM
Aug. 29.	9:30 a. m.	720	39,300	3,500	47	59	71	80	89	95	99	100	100	100	SPWCM
Aug. 29.	2:05 p. m.	1,130	33,500	4,100	--	54	--	78	--	94	--	--	--	--	SPWCM

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.

LOCATION.--At gaging station at bridge on U.S. Highway 60, 2½ miles east of Bernardo, Socorro County, and 3½ miles upstream from Rio Puerco.

DRAINAGE AREA.--19,230 square miles, approximately (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).

RECORDS AVAILABLE.--Sediment records: October 1947 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 23,800 ppm Aug. 30 minimum daily, no flow on many days.

Sediment loads: Maximum daily, 100,000 tons Aug. 22; minimum daily, 0 tons on many days.

EXTREMES, 1947-51.--Sediment concentrations: Maximum daily, 42,400 ppm Aug. 3, 1950; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 240,000 tons July 24, 1949; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, water year October 1950 to September 1951

Day	October			Mean dis- charge (cfs)	November		Mean dis- charge (cfs)	December	
	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-----	57	640	98	22	51	3	455	2,730	3,350
2-----	50	350	47	24	150	10	425	2,800	3,210
3-----	37	245	24	36	154	15	395	2,980	3,180
4-----	40	200	a 22	37	156	16	395	2,240	2,390
5-----	79	1,630	348	30	153	12	410	2,450	2,710
6-----	41	330	37	32	115	10	386	2,320	2,420
7-----	25	148	10	51	280	a 39	386	2,190	2,280
8-----	51	326	45	68	204	37	395	2,380	2,540
9-----	59	319	51	79	172	37	425	2,500	2,870
10-----	33	102	9	91	280	69	440	2,300	2,730
11-----	22	122	7	92	324	80	425	2,400	2,750
12-----	21	136	8	97	296	78	455	2,770	3,400
13-----	21	58	3	103	330	92	515	2,810	3,910
14-----	20	60	3	133	710	255	550	2,660	3,950
15-----	21	44	2	133	982	353	585	2,850	4,500
16-----	20	45	2	122	545	180	602	2,770	4,500
17-----	19	51	3	139	600	225	620	2,990	5,010
18-----	16	36	2	157	1,120	475	602	2,570	4,180
19-----	15	45	2	165	1,210	539	568	2,580	3,960
20-----	14	35	1	181	1,650	806	532	2,510	3,610
21-----	14	50	2	200	2,700	1,460	500	2,480	3,350
22-----	14	32	1	240	4,420	2,860	485	2,360	3,090
23-----	14	37	1	302	4,080	3,330	485	2,250	2,950
24-----	13	43	2	350	3,880	3,670	485	1,760	2,300
25-----	14	84	3	395	4,450	4,750	470	1,770	2,250
26-----	13	68	2	410	3,830	4,240	470	1,670	2,120
27-----	14	32	1	425	3,300	a 3,790	470	1,670	2,120
28-----	17	41	2	425	3,080	3,530	485	2,030	2,660
29-----	17	37	2	425	2,920	3,350	515	2,030	2,820
30-----	20	40	2	440	2,870	3,410	515	1,840	2,560
31-----	19	56	3	--	--	--	500	1,880	2,540
Total--	830	--	745	5,404	--	37,721	14,946	--	96,210

a Computed from estimated concentration graph.

RIO GRANDE BASIN

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	515	1,760	2,450	500	1,740	2,350	740	1,910	3,820
2-----	568	1,860	2,850	300	1,150	932	573	1,790	2,770
3-----	568	1,900	2,910	260	870	611	496	1,660	2,220
4-----	568	2,020	3,100	270	1,020	744	420	1,310	1,490
5-----	550	1,700	2,520	330	1,600	1,430	404	1,110	1,210
6-----	568	1,710	2,620	425	3,200	3,670	287	1,160	899
7-----	532	1,600	2,300	780	3,720	7,830	183	519	256
8-----	500	1,680	2,270	900	3,900	9,460	111	422	128
9-----	532	1,680	2,410	820	2,860	6,320	69	150	28
10-----	532	1,530	2,200	742	2,920	5,850	63	90	15
11-----	532	1,500	2,150	638	1,850	3,190	76	317	65
12-----	532	1,580	2,270	620	1,970	3,300	63	114	19
13-----	550	1,570	2,330	1,020	5,140	s 19,600	76	252	52
14-----	568	1,760	2,700	1,580	7,700	32,800	76	238	49
15-----	550	1,690	2,510	1,630	5,800	25,500	56	86	13
16-----	568	1,540	2,380	1,540	4,840	20,100	48	70	9
17-----	568	1,580	2,420	1,400	4,200	15,900	43	60	7
18-----	550	1,650	2,450	1,450	4,000	15,700	43	72	8
19-----	532	1,670	2,400	1,490	3,900	15,700	57	334	51
20-----	550	1,490	2,210	1,540	3,500	14,600	80	329	71
21-----	532	1,510	2,170	1,450	3,540	13,900	68	104	19
22-----	532	1,430	2,050	1,340	3,100	11,200	58	58	9
23-----	532	1,400	a 2,010	1,310	3,000	10,600	57	61	9
24-----	532	1,410	2,030	1,340	3,800	13,700	58	63	10
25-----	550	1,540	2,290	1,400	3,660	13,800	61	63	10
26-----	568	1,520	2,330	1,450	3,460	13,500	60	52	8
27-----	585	1,500	2,370	1,310	3,270	11,600	66	112	20
28-----	602	1,560	2,540	1,080	2,740	7,990	69	93	17
29-----	602	1,590	2,580	--	--	--	66	65	12
30-----	568	1,400	2,150	--	--	--	49	73	10
31-----	550	1,430	2,120	--	--	--	78	189	40
Total-	17,086	--	74,070	28,915	--	301,907	4,654	--	13,342
Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	101	187	51	32	58	5	165	495	221
2-----	80	126	27	29	61	5	346	875	s 839
3-----	68	83	15	30	63	5	416	1,100	1,240
4-----	67	90	16	30	65	5	350	826	781
5-----	52	95	13	26	48	3	507	1,110	s 1,550
6-----	46	105	13	26	75	5	500	800	1,080
7-----	60	68	11	25	81	5	322	625	543
8-----	58	124	19	24	74	5	192	1,000	s 485
9-----	61	56	9	21	61	3	83	796	s 197
10-----	52	67	9	19	69	4	84	524	119
11-----	68	64	12	17	56	3	63	160	27
12-----	80	104	22	18	73	4	54		
13-----	55	59	9	18	49	2	83		
14-----	45	51	6	16	56	2	38	113	14
15-----	40	78	8	16	48	2	29		
16-----	40	59	6	16	68	3	28		
17-----	40	48	5	36	109	11	29		
18-----	39	56	6	68	126	23	29		
19-----	39	62	7	64	98	17	18	69	4
20-----	45	78	9	68	104	19	16		
21-----	48	63	8	355	2,280	s 3,010	15		
22-----	42	72	8	350	2,120	2,000	12		
23-----	43	100	12	388	1,750	1,830	9		
24-----	37	65	6	290	1,580	1,240	18	63	3
25-----	34	80	7	131	775	s 312	12		
26-----	33	60	5	100	353	95	36		
27-----	33	87	8	120	294	95	60		
28-----	34	80	7	84	171	39	67	108	18
29-----	36	104	10	150	440	s 220	63		
30-----	34	84	8	242	801	523	60		
31-----	--	--	--	215	742	431	--	--	--
Total-	1,510	--	352	3,024	--	9,926	3,704	--	7,259

s Computed by subdividing day.

a Computed from estimated concentration graph.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	62	127	21	0	--	0	169	7,860	3,590
2-----	63			471	13,200	s 28,900	161	6,400	2,780
3-----	58			73	9,260	1,830	103	2,590	720
4-----	102	300	sa 110	29	2,200	172	39	300	32
5-----	263	1,380	980	123	5,920	s 2,460	42	329	37
6-----	157	529	224	820	9,920	s 25,000	34	325	30
7-----	125	396	134	195	4,500	s 2,410	21	243	14
8-----	113	329	100	151	5,680	s 2,520	18	191	9
9-----	52	38	2	75	2,780	s 576	15	41	2
10-----	18			44	828	98	11	80	2
11-----	15			29	320	25	4	40	(t)
12-----	12	3,400	sa 4,900	27	197	14	6	75	1
13-----	78			19	82	4	1	61	(t)
14-----	46	14,000	s 2,410	17	71	3	1	--	(et)
15-----	9	800	19	15	29	1	0	--	0
16-----	4	123	1	13	26	1	0	--	0
17-----	2			11	43	1	0	--	0
18-----	1			9	13	(t)	0	--	0
19-----	1	0	0	3	8	(t)	0	--	0
20-----	0			1	23	(t)	0	--	0
21-----	0			152	6,300	sc 44,000	0	--	0
22-----	0	123	(t)	518	23,000	sc 100,000	0	--	0
23-----	1			79	10,000	s 3,690	0	--	0
24-----	0			37	607	61	0	--	0
25-----	0	--	0	127	10,200	s 5,600	0	--	0
26-----	0	--	0	80	5,000	1,080	0	--	0
27-----	12	10,500	s 632	164	8,800	s 4,690	0	--	0
28-----	5	750	10	269	17,500	12,700	0	--	0
29-----	0	--	0	199	10,200	5,480	0	--	0
30-----	1	--	(et)	588	23,800	s 47,800	0	--	0
31-----	0	--	0	192	18,600	9,640	--	--	--
Total-	1,200	--	9,584	4,530	--	298,756	625	--	7,218

Total discharge for year (cfs-days)..... 86,428
 Total load for year (tons) 857,100

e Estimated.

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

c Computed from partly estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO GRANDE NEAR BERNARDO, N. MEX.--Continued

Particle-size analyses of suspended sediment, November 1950 to September 1951
(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	Instantaneous discharge (cfs)	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. 10, 1950	4:00 p. m.	94	447	1,250	32	39	51	67	--	99	--	--	--	--	--	SDWCM
Nov. 20	4:00 a. m.	181	1,500	942	45	54	61	69	80	93	--	--	--	--	--	BWCM
Dec. 1	8:00 a. m.	455	2,490	1,260	35	36	47	54	63	77	87	99	--	100	--	SBWCM
Dec. 15	1:05 p. m.	568	2,550	2,800	--	31	--	49	--	66	77	94	100	100	--	SPWCM
Jan. 2, 1951	10:30 a. m.	571	2,600	2,430	--	27	--	35	--	50	62	86	--	99	--	SPWCM
Jan. 22	10:00 a. m.	515	1,540	2,520	--	37	--	52	--	64	74	91	--	99	--	SPWCM
Feb. 13	5:00 p. m.	1,750	10,300	3,750	16	20	28	45	58	75	92	98	--	100	--	SBWCM
Feb. 13	5:00 p. m.	1,750	9,790	6,020	13	16	25	41	54	72	86	96	--	100	--	SPWCM
Feb. 13	5:00 p. m.	1,750	10,300	5,540	0	4	13	35	61	70	87	98	--	99	--	SPN
Feb. 14	12:35 p. m.	1,540	8,880	2,760	22	25	33	40	47	57	81	97	--	100	--	SBWCM
Feb. 14	12:40 p. m.	1,540	7,380	3,700	--	29	--	46	--	65	79	93	--	100	--	SPWCM
Mar. 12	10:30 a. m.	63	134	1,280	47	58	67	74	78	82	93	99	--	100	--	SPWCM
Aug. 2	2:30 p. m.	1,140	23,900	4,270	63	76	87	91	93	96	98	100	--	--	--	SPWCM
Aug. 2	7:00 a. m.	1,140	23,900	2,780	58	76	86	91	94	96	98	100	--	--	--	SPWCM
Aug. 22	7:00 a. m.	163	33,300	4,080	--	56	--	85	--	99	--	--	--	--	--	SPWCM
Aug. 22	7:00 a. m.	163	33,500	3,880	43	55	71	79	85	99	100	--	--	--	--	SPWCM
Aug. 22	7:00 a. m.	163	33,500	2,730	46	62	82	92	98	99	100	--	--	--	--	SPWCM
Aug. 23	8:00 a. m.	92	16,200	2,520	--	82	--	99	--	100	--	--	--	--	--	SPWCM
Aug. 25	3:00 p. m.	318	28,300	3,690	--	59	--	96	--	99	--	--	--	--	--	SPWCM
Aug. 30	8:00 a. m.	860	21,800	2,880	--	86	--	98	--	99	--	--	--	--	--	SPWCM
Aug. 30	1:00 p. m.	1,090	35,400	4,180	--	69	--	86	--	95	98	100	--	--	--	SPWCM
Aug. 31	10:40 a. m.	218	18,460	2,900	62	77	86	86	91	97	99	100	--	--	--	SPWCM
Aug. 31	10:40 a. m.	218	18,460	1,700	66	77	86	91	95	97	99	100	--	--	--	SPWCM
Sept. 1	8:00 a. m.	173	8,220	4,640	--	80	--	90	--	97	--	--	--	--	--	SPWCM

RIO GRANDE BASIN--Continued

RIO PUERCO BELOW CABEZON, N. MEX.

LOCATION.--One-fourth mile upstream from mouth of Chico Arroyo, 4½ miles southwest of Cabezon, Sandoval County, 1½ miles downstream from gaging station above Chico Arroyo near Guadalupe, and 5½ miles downstream from gaging station at Cabezon.

DRAINAGE AREA.--420 square miles at gaging station above Chico Arroyo near Guadalupe.

RECORDS AVAILABLE.--Sediment records: April 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 135,000 ppm Aug. 1; maximum observed, 414,000 ppm Aug. 6; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 141,000 tons Aug. 1; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Sediment concentrations: Maximum daily, 155,000 ppm; July 13, 1949; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 155,000 tons Sept. 19, 1950; minimum daily, 0 tons on many days.

REMARKS.--Discharge obtained from station at Cabezon Oct. 1 to June 30, and from station above Chico Arroyo near Guadalupe July 1 to Sept. 30. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff. Discharge records for gaging stations at Cabezon and above Chico Arroyo near Guadalupe for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, water year October 1950 to September 1951									
Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	118	49,000	s 29,000						
2-----	62	72,400	s 16,900						
3-----	3	21,000	a 170						
4-----	.5	5,000	a 7						
5-----	.2	--	e 1						
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--	183.7	--	46,078	0	0	0		0	

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO PUERCO BELOW CABEZON, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----				0	--	0	0.1		(et)
2-----				0	--	0	.1		(et)
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	.3		e 1
11-----				0	--	0	0		0
12-----				3	--	e 200	0		0
13-----				9	--	e 460	0		0
14-----				2	--	e 150	0		0
15-----				1	--	e 80	0		0
16-----				.5	--	e 35	0		0
17-----				.3	--	e 15	0		0
18-----				.3	--	e 15	0		0
19-----				.2	--	(et)	0		0
20-----				.1	--	(et)	0		0
21-----				0	--	0	0		0
22-----				0	--	0	0		0
23-----				0	--	0	0		0
24-----				0	--	0	0		0
25-----				0	--	0	0		0
26-----				.3	--		0		0
27-----				.2	--	e 15	0		0
28-----				.2	--		0		0
29-----				--	--	--	0		0
30-----				--	--	--	0		0
31-----				--	--	--	0		0
Total-	0		0	17.1	--	1,000	0.5		1
Day	April			May			June		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1-----	0	--	0	1	27,000	a 73			
2-----	0	--	0	.1	10,000	a 3			
3-----	0	--	0	0	--	0			
4-----	0	--	0	0	--	0			
5-----	0	--	0	0	--	0			
6-----	0	--	0	0	--	0			
7-----	0	--	0	10	38,000	sa 2,300			
8-----	8	52,100	s 2,310	17	83,000	3,950			
9-----	5	78,000	1,080	11	70,000	2,160			
10-----	.8	66,000	a 150	7	65,000	1,270			
11-----	1.1	40,000	a 10	4	48,000	538			
12-----	0	--	0	2	30,000	a 160			
13-----	0	--	0	2	30,000	a 160			
14-----	0	--	0	.8	28,000	a 60			
15-----	0	--	0	.5	20,000	a 27			
16-----	0	--	0	.3	15,000	a 12			
17-----	0	--	0	3	18,000	sa 570			
18-----	0	--	0	2	46,000	258			
19-----	0	--	0	1	25,000	68			
20-----	0	--	0	1	38,000	106			
21-----	4	39,400	sa 1,030	.5	30,000	40			
22-----	2	71,800	s 490	.2	19,000	a 10			
23-----	.1	42,000	a 12	.1	10,000	a 3			
24-----	0	--	0	0	--	0			
25-----	0	--	0	0	--	0			
26-----	0	--	0	0	--	0			
27-----	1	38,000	sa 220	0	--	0			
28-----	3	40,000	sa 500	0	--	0			
29-----	9	55,000	1,390	0	--	0			
30-----	8	42,000	a 940	0	--	0			
31-----	--	--	--	0	--	0			
Total-	42.0	--	8,142	63.5	--	11,768	0		0

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO PUERCO BELOW CABEZON, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	280	135,000	s 141,000	0.2	11,000	6
2-----	0	--	0	68	72,800	s 34,400	.1	3,000	1
3-----	0	--	0	29	75,900	sa 9,210	0	--	0
4-----	0	--	0	2	34,000	a 190	0	--	0
5-----	0	--	0	1	40,000	a 112	0	--	0
6-----	0	--	0	80	124,000	s 75,000	0	--	0
7-----	0	--	0	4.1	54,000	620	0	--	0
8-----	0	--	0	2.9	55,000	447	0	--	0
9-----	0	--	0	2.1	42,000	a 247	0	--	0
10-----	0	--	0	1	22,000	59	0	--	0
11-----	0	--	0	.5	5,000	a 7	0	--	0
12-----	0	--	0	.3	2,000	a 2	0	--	0
13-----	0	--	0	.2	1,000	a 1	0	--	0
14-----	0	--	0	.1	400	(at)	.1	--	(et)
15-----	0	--	?	.1	100	(at)	0	--	0
16-----	.1	--	(et)	0	--	0	0	--	0
17-----	.2	--	(et)	0	--	0	0	--	0
18-----	0	--	0	0	--	0	0	--	0
19-----	0	--	0	.1	100	(t)	0	--	0
20-----	0	--	0	0	--	0	0	--	0
21-----	.2	--	(et)	16	20,200	s 2,270	0	--	0
22-----	.4	--	e 1	2.0	17,200	sa 148	0	--	0
23-----	.2	--	(et)	.1	6,000	a 2	0	--	0
24-----	66	120,000	s 43,000	14	22,600	s 1,970	0	--	0
25-----	215	86,800	s 122,000	82	107,000	s 36,900	0	--	0
26-----	142	119,000	87,900	2	58,000	325	0	--	0
27-----	3.1	46,000	399	1	53,000	148	0	--	0
28-----	.8	16,000	34	160	73,000	s 60,400	0	--	0
29-----	.2	1,500	a 1	74	76,300	s 20,500	0	--	0
30-----	.1	--	(et)	3	28,000	227	0	--	0
31-----	78	30,700	46,400	1	17,000	a 46	--	--	--
Total-	506.3	--	299,735	826.5	--	384,231	0.4	--	7

Total discharge for year (cfs-days) 1,640.0
 Total load for year (tons) 750,962

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO PUERTO BELOW CABEZON, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951
(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	Instantaneous discharge (cfs)	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, 1950.....	3:00 p. m.	433	92,600	3,840	--	32	--	41	--	62	83	97		100	SPWCM	
Apr. 22, 1951.....	10:00 a. m.	2	74,900	3,500	79	88	--	96	98	100	--	--		--	SPWCM	
Apr. 22.....	10:00 a. m.	2	74,900	3,350	78	88	96	98	99	100	--	--		--	SPWCM	
July 24.....	12:55 p. m.	14	111,000	5,140	--	73	--	97	--	99	99	100		--	SPWCM	
July 25.....	9:15 a. m.	212	93,700	3,490	43	50	61	71	79	89	96	99		100	SPWCM	
July 25.....	9:15 a. m.	212	93,700	1,830	7	15	44	70	84	89	96	99		100	SPN	
July 25.....	9:15 a. m.	212	93,700	5,470	42	51	60	68	78	89	96	99		100	SPWCM	
July 25.....	9:15 a. m.	212	93,700	2,950	1	6	13	--	84	89	96	99		100	SEN	
July 26.....	1:40 a. m.	488	224,000	5,560	--	41	--	52	--	72	83	95		100	SPWCM	
July 26.....	6:30 p. m.	14	79,400	3,690	--	78	--	98	--	100	--	--		--	SPWCM	
Aug. 1.....	1:20 p. m.	1,160	94,700	8,440	--	38	--	50	--	72	92	99		100	SPWCM	
Aug. 24.....	3:50 p. m.	(a)	59,600	3,810	--	30	--	44	--	61	88	98		100	SPWCM	
Aug. 25.....	6:00 p. m.	14	97,900	3,200	--	78	--	94	--	96	98	100		--	SPWCM	
Aug. 29.....	1:45 a. m.	140	74,600	4,670	--	49	--	66	--	84	95	100		--	SPWCM	

a Local inflow between gaging station and sampling site.

RIO GRANDE BASIN--Continued

CHICO ARROYO NEAR GUADALUPE, N. MEX.

LOCATION.--At gaging station a quarter of a mile upstream from mouth, 4½ miles (revised) northwest of Guadalupe, Sandoval County, and 5½ miles southwest of Cabezon.

DRAINAGE AREA.--1,390 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: July 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 78,500 ppm Aug. 29; maximum observed, 128,000 ppm Aug. 21; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 245,000 tons Aug. 1; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Sediment concentrations: Maximum daily, 113,000 ppm July 23, 1949; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 744,000 (revised) tons Sept. 19, 1950; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

REVISIONS.--Revised figures of discharge in cfs for water years 1948-50 given in Water-Supply Paper 1282. Revised figures of suspended sediment resulting from revisions of discharge given herewith:

Suspended sediment, water years October 1947 to September 1950

Date	Mean discharge (cfs)	Suspended sediment	
		Mean concentration	Tons per day
1947-48 water year		(percent)	
Aug. 5.....	378	2.68	121,000
August, total.....	563.5	--	156,600
1948-49 water year			
Oct. 30, 1948.....	9	6.63	1,610
Oct. 31.....	480	6.10	s 102,000
October, total.....	745	--	173,200
July 22, 1949.....	187	4.94	s 41,500
July 23.....	1,560	11.3	s 473,000
July, total.....	3,427	--	891,800
Aug. 9.....	930	9.14	s 274,000
Aug. 10.....	454	5.60	s 91,300
Aug. 17.....	315	4.56	s 92,200
August, total.....	2,418	--	631,700
Sept. 9.....	463	2.73	s 119,000
Sept. 10.....	122	5.59	18,400
September, total.....	1,275	--	266,300
1949-50 water year		(parts per million)	
July 8.....	299	91,500	s 101,000
July 13.....	204	24,300	s 57,000
July, total.....	954	--	256,100
Aug. 11.....	235	8,880	s 43,300
Aug. 12.....	427	66,900	s 124,000
August, total.....	713	--	174,000
Sept. 19.....	1,980	106,000	s 744,000
Sept. 20.....	590	74,700	s 163,000
September, total.....	3,557	--	1,141,000

s Computed by subdividing day.

1947-48 water year

Total discharge for period July 1 to Sept. 30, 1948 (cfs-days)..... 691.6
 Total load for period July 1 to Sept. 30, 1948 (tons)..... 176,000
 Daily maximum, 121,000 tons Aug. 5.

1948-49 water year

Total discharge for year (cfs-days)..... 8,810
 Total load for year (tons)..... 2,088,000
 Daily maximum, 473,000 tons July 23.

1949-50 water year

Total discharge for year (cfs-days)..... 5,249
 Total load for year (tons)..... 1,573,000
 Daily maximum, 744,000 tons Sept. 19.

RIO GRANDE BASIN--Continued

CHICO ARROYO NEAR GUADALUPE, N. MEX.--Continued

Particle-size analyses of suspended sediment, water years October 1947 to September 1950

Date	Mean discharge (cfs)	Date	Instantaneous discharge (cfs)
Aug. 5, 1948	378	July 8, 1950	2,820
Oct. 30	9	July 22	336
Oct. 31	480	July 25	1,570
July 23, 1949	1,560	July 26	1,440
Aug. 9	930	Aug. 11	3,600
Aug. 17	315	Aug. 12	448
Sept. 9	463	Sept. 19	3,900
Sept. 10	122	Sept. 25	108

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

CHICO ARROYO NEAR GUADALUPE, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5	8,500	sa 580						
2-----	4	25,000	270						
3-----	1	12,000	a 30						
4-----	.5	--	e 10						
5-----	.1	--	e 1						
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-	10.6	--	891	0		0	0		0
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	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	--	(et)
5-----				0	--	0	.1		
6-----				0	--	0	.1		
7-----				0	--	0	0		0
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	0	--	0
18-----				.1	--	(et)	0	--	0
19-----				.1	--	(et)	0	--	0
20-----				0	--	0	0	--	0
21-----				.1	--		.1	--	(et)
22-----				.1	--		0	--	0
23-----				.1	--		0	--	0
24-----				.1	--	(et)	0	--	0
25-----				.1	--	(et)	0	--	0
26-----				.1	--		0	--	0
27-----				.1	--		0	--	0
28-----				.1	--		0	--	0
29-----				--	--	--	0	--	0
30-----				--	--	--	0	--	0
31-----				--	--	--	0	--	0
Total-	0		0	1.0	--	2	0.7	--	1

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

CHICO ARROYO NEAR GUADALUPE, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	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	--	0
2-----	0	--	0	.1		(et)	0	--	0
3-----	0	--	0	0		0	0	--	0
4-----	0	--	0	0		0	0	--	0
5-----	0	--	0	0	--	0	.1	}	--
6-----	0	--	0	0	--	0	0		(et)
7-----	.3	--	e1	.1	}	--	0		0
8-----	0	--	0	.1		(et)	0		0
9-----	0	--	0	0		0	0		0
10-----	0	--	0	0		0	0		0
11-----	0	--	0	0	--	0	0	--	0
12-----	0	--	0	0	--	0	0	--	0
13-----	0	--	0	0	--	0	0	--	0
14-----	0	--	0	.1	}	--	0	--	0
15-----	0	--	0	.1		--	0	--	0
16-----	0	--	0	.1		--	0	--	0
17-----	0	--	0	.1		--	0	--	0
18-----	0	--	0	.1	}	--	0	--	0
19-----	0	--	0	.1		(et)	0	--	0
20-----	0	--	0	.1		--	0	--	0
21-----	.3	}	(et)	.1		--	0	--	0
22-----	.1			.1		--	0	--	0
23-----	0			.1		--	0	--	0
24-----	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	}	(et)	0	--	0	0	--	0
30-----	.1			0	--	0	0	--	0
31-----	--			0	--	0	--	--	--
Total-	0.9	--	2	1.4	--	2	0.2	--	1
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	1,070	62,400	s 245,000	0.5	9,000	12
2-----	0	--	0	107	43,600	s 15,800	.3	3,000	a2
3-----	0	--	0	430	72,000	sa 102,000	.2	--	e2
4-----	0	--	0	5	33,000	462	.1	--	e1
5-----	0	--	0	5	26,000	351	0	--	0
6-----	0	--	0	3	--	e 200	0	--	0
7-----	0	--	0	2	17,800	96	0	--	0
8-----	0	--	0	.7	1,000	2	0	--	0
9-----	0	--	0	.2	--	e1	0	--	0
10-----	0	--	0	0	--	0	0	--	0
11-----	0	--	0	0	--	0	0	--	0
12-----	0	--	0	0	--	0	0	--	0
13-----	0	--	0	0	--	0	0	--	0
14-----	0	--	0	0	--	0	0	--	0
15-----	0	--	0	0	--	0	0	--	0
16-----	0	--	0	0	--	0	0	--	0
17-----	0	--	0	0	--	0	0	--	0
18-----	0	--	0	0	--	0	0	--	0
19-----	0	--	0	0	--	0	0	--	0
20-----	0	--	0	.4	3,800	4	0	--	0
21-----	0	--	0	827	38,400	s 218,000	0	--	0
22-----	0	--	0	771	66,200	s 180,000	0	--	0
23-----	0	--	0	42	26,000	2,950	0	--	0
24-----	27	59,000	s 7,370	163	44,300	s 25,000	0	--	0
25-----	.7	58,000	114	413	65,200	s 82,400	0	--	0
26-----	16	52,800	s 4,650	152	55,800	s 26,500	0	--	0
27-----	17	43,000	s 3,130	25	35,000	2,450	0	--	0
28-----	0	--	0	570	39,200	s 127,000	0	--	0
29-----	0	--	0	810	78,500	s 209,000	0	--	0
30-----	0	--	0	45	31,200	s 4,640	0	--	0
31-----	838	12,300	s 183,000	4	15,000	162	--	--	--
Total-	898.7	--	198,264	5,445.3	--	1,240,018	1.1	--	17
Total discharge for year (cfs-days)									6,359.9
Total load for year (tons)									1,439,198

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued
CHICO ARROYO NEAR GUADALUPE, N. MEX.--Continued

Particle-size analyses of suspended sediment, July to August 1951

(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	Instantaneous discharge (cfs)	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
July 24, 1951.....	7:20 a. m.	165	110,000	4,380	--	63	--	81	--	84	87	95		SPWCM
July 25.....	10:45 a. m.	2	50,400	2,630	--	77	--	79	--	94	96	99	100	SPWCM
July 26.....	1:40 a. m.	100	61,200	4,100	--	76	--	94	--	96	97	99	100	SPWCM
July 27.....	8:20 p. m.	237	33,400	4,570	--	58	--	84	--	--	--	--	--	PWCM
July 31.....	10:20 p. m.	5,900	105,000	4,180	--	44	--	63	--	79	84	94	100	SPWCM
Aug. 1.....	12:15 a. m.	10,100	63,400	4,890	--	60	--	97	--	99	100	--	--	SPWCM
Aug. 1.....	8:15 a. m.	720	60,800	3,020	40	44	52	58	67	79	89	98	100	SPWCM
Aug. 1.....	8:15 a. m.	720	60,800	3,460	2	14	48	57	69	79	89	98	100	SPN
Aug. 1.....	8:15 a. m.	720	60,800	3,110	44	48	55	63	72	79	89	98	100	SBWCM
Aug. 1.....	8:15 a. m.	720	60,800	3,330	5	7	36	70	79	89	98	--	100	SEN
Aug. 4.....	9:30 a. m.	3	33,300	3,450	--	61	--	75	--	83	86	97	100	SPWCM
Aug. 21.....	5:15 p. m.	1,160	92,100	3,520	--	34	--	51	--	67	79	98	100	SPWCM
Aug. 21.....	8:30 p. m.	4,800	83,700	4,960	--	43	--	61	--	80	89	98	100	SPWCM
Aug. 21.....	10:00 p. m.	3,600	72,200	3,730	--	45	--	66	--	80	92	99	100	SPWCM
Aug. 22.....	1:30 a. m.	2,290	115,000	2,880	11	23	28	37	44	53	62	89	100	SPWCM
Aug. 22.....	1:30 a. m.	2,290	115,000	2,880	24	29	34	41	47	53	62	89	100	SPWCM
Aug. 22.....	7:00 a. m.	820	66,400	4,370	--	47	--	61	--	75	82	98	100	SPWCM
Aug. 22.....	1:50 p. m.	349	56,900	3,420	--	47	--	58	--	70	77	93	100	SPWCM
Aug. 24.....	4:15 p. m.	450	54,900	3,720	--	39	--	--	--	68	74	90	100	SPWCM
Aug. 24.....	5:40 p. m.	370	51,500	4,730	--	38	--	44	--	73	80	95	99	SPWCM
Aug. 25.....	1:20 a. m.	370	97,300	3,220	--	33	--	50	--	58	66	88	100	SPWCM
Aug. 25.....	7:30 a. m.	530	68,500	3,050	--	40	--	48	--	63	78	97	100	SPWCM
Aug. 25.....	11:10 a. m.	230	73,300	3,540	--	49	--	68	--	76	86	98	100	SPWCM
Aug. 27.....	3:30 a. m.	42	35,300	4,190	--	78	--	87	--	89	92	96	100	SPWCM
Aug. 28.....	3:45 p. m.	1,400	59,800	4,000	35	37	46	64	68	80	91	97	100	SPWCM
Aug. 28.....	3:45 p. m.	1,400	59,800	3,500	3	6	--	--	64	80	91	97	100	SPN
Aug. 28.....	3:45 p. m.	1,400	59,800	5,130	31	38	46	55	68	80	91	97	100	SBWCM

Aug. 28	3:45 p. m.	1,400	59,800	4,830	0	2	8	--	69	80	91	97	100	SBN
Aug. 28	4:20 p. m.	620	57,700	3,070	34	37	41	48	56	72	63	97	100	SPWCM
Aug. 28	4:20 p. m.	620	57,700	3,070	31	34	41	48	59	72	83	97	100	SBWCM
Aug. 28	7:20 p. m.	2,420	70,600	4,300	--	33	--	51	--	72	82	95	100	SPWCM
Aug. 28	9:30 p. m.	2,420	81,400	2,630	--	65	--	67	--	75	90	99	100	SPWCM
Aug. 28	12:45 a. m.	2,420	101,000	3,020	--	36	--	53	--	73	87	97	100	SPWCM
Aug. 28	9:30 a. m.	770	82,800	3,810	33	37	44	49	55	63	75	95	100	SPWCM
Aug. 29	9:30 a. m.	770	82,800	4,040	2	2	13	48	56	63	75	95	100	SPN
Aug. 29	9:30 a. m.	770	82,800	3,710	32	38	45	49	57	63	75	95	100	SBWCM
Aug. 29	9:30 a. m.	770	82,800	3,580	2	3	6	--	58	63	75	95	100	SBN
Aug. 29	4:00 p. m.	335	57,300	3,150	--	52	--	65	--	75	85	97	100	SPWCM

RIO GRANDE BASIN--Continued

SAN JOSE RIVER AT CORREO, N. MEX.

LOCATION.--At gaging station 0.6 mile upstream from U. S. Highway 66, 0.7 mile northeast of Correo, Valencia County, and 13 miles upstream from mouth.

DRAINAGE AREA.--2,610 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: July 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 36,000 ppm July 24, Aug. 5; maximum observed, 82,700 ppm Aug. 29; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 45,000 tons July 24; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Sediment concentrations: Maximum daily, 50,600 ppm Sept. 22, 1950; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 79,400 tons Sept. 26, 1948; minimum daily, 0 tons on many days.

REMARKS.--No flow during period January to March; record is deleted. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	69	17,000	sa 9,600						
2-----	6.9		e 180						
3-----	1.0		e 8						
4-----	.2		(et)						
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-	77.1		9,788	0		0	0		0

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

SAN JOSE RIVER AT CORREO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Suspended sediment, water year October 1960 to September 1961—Continued									
Day	April			May			June		
	Mean dis- charge (cfs)	Suspended sediment		Mean dis- charge (cfs)	Suspended sediment		Mean dis- charge (cfs)	Suspended sediment	
		Mean concen- tration (ppm)	Tons per day		Mean concen- tration (ppm)	Tons per day		Mean concen- tration (ppm)	Tons per day
1-----							0	--	0
2-----							0	--	0
3-----							0	--	0
4-----							18	6,700	sa 3,100
5-----							3.4	14,000	sa 290
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-----							--	--	--
Total-	0		0	0		0	21.4	--	3,390
July			August			September			
1-----	0	--	0	0	--	0	33	4,070	463
2-----	0	--	0	5.2	9,100	sa 280	11	1,730	51
3-----	0	--	0	30	22,000	s 2,810	1.4	382	3
4-----	0	--	0	93	33,000	s 11,700	0	--	0
5-----	0	--	0	126	36,000	sb 15,000	0	--	0
6-----	0	--	0	30	24,400	1,980	42	16,000	sb 2,000
7-----	0	--	0	21	14,900	845	7.6	9,440	194
8-----	0	--	0	2.1	5,200	a 29	.7	3,170	6
9-----	0	--	0	0	--	0	0	--	0
10-----	0	--	0	0	--	0	0	--	0
11-----	0	--	0	0	--	0	0	--	0
12-----	0	--	0	0	--	0	0	--	0
13-----	0	--	0	0	--	0	0	--	0
14-----	0	--	0	0	--	0	0	--	0
15-----	0	--	0	0	--	0	0	--	0
16-----	0	--	0	28	12,300	s 1,400	0	--	0
17-----	0	--	0	.2	7,140	4	0	--	0
18-----	0	--	0	0	--	0	0	--	0
19-----	0	--	0	0	--	0	0	--	0
20-----	5.6	12,000	sa 410	0	--	0	0	--	0
21-----	0	--	0	0	--	0	0	--	0
22-----	0	--	0	43	12,700	s 2,620	0	--	0
23-----	6.2	19,000	sa 450	176	19,700	s 10,500	0	--	0
24-----	315	36,000	sb 45,000	224	8,720	s 7,820	0	--	0
25-----	42	21,800	s 2,750	445	32,500	s 42,500	0	--	0
26-----	4.0	15,300	165	104	24,400	s 9,360	0	--	0
27-----	122	23,000	sb 9,900	39	9,100	s 1,160	0	--	0
28-----	40	23,400	s 2,500	29	6,810	s 911	0	--	0
29-----	6.9	18,100	337	306	34,600	s 38,000	0	--	0
30-----	.6	10,000	a 16	43	12,200	1,420	0	--	0
31-----	0	--	0	48	10,000	1,300	--	--	--
Total-	542.3	--	61,528	1,792.5	--	149,639	95.7	--	2,617
Total discharge for year (cfs-days) 2,529.0									
Total load for year (tons) 226,962									

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

RTO GRANDE BASIN--Continued

SAN JOSE RIVER AT CORREO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951

(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	Instantaneous discharge (cfs)	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, 1950	8:45 p. m.	38	18,900	4,470	--	93	--	96	--	--	--	--	--	--	--	PWCM
Oct. 3, 1951	10:35 a. m.	9.1	25,500	4,440	--	72	84	--	--	--	--	--	--	--	--	PWCM
July 24	10:45 a. m.	9.1	22,600	3,340	--	62	--	82	--	--	--	--	--	--	--	PWCM
July 27	3:10 p. m.	257	27,700	3,330	70	76	77	77	78	92	95	98	--	100	--	SBWCM
July 27	3:10 p. m.	257	27,700	3,970	9	11	21	--	--	--	--	--	--	100	--	SEN
July 27	3:10 p. m.	257	27,700	4,720	75	81	84	89	90	92	95	98	--	100	--	SPWCM
July 27	3:10 p. m.	257	27,700	3,460	0	17	81	89	91	92	95	98	--	100	--	SPN
Aug. 4	3:30 a. m.	308	58,200	3,960	--	69	--	84	--	95	97	100	--	--	--	SPWCM
Aug. 22	9:25 a. m.	205	24,800	3,630	--	73	--	93	--	--	--	--	--	--	--	PWCM
Aug. 23	10:15 p. m.	611	27,000	3,120	--	65	--	80	--	--	--	--	--	--	--	PWCM
Aug. 24	2:45 a. m.	854	12,200	3,520	--	69	--	83	--	--	--	--	--	--	--	PWCM
Aug. 25	11:50 p. m.	1,020	66,200	5,770	--	65	--	82	--	--	--	--	--	--	--	PWCM
Aug. 29	4:05 a. m.	420	82,700	4,020	22	28	30	43	59	89	96	99	--	100	--	SPWCM
Aug. 29	4:05 a. m.	420	82,700	1,765	0	11	47	67	81	89	96	99	--	100	--	SPN
Aug. 29	4:05 a. m.	420	82,700	2,060	40	51	60	67	76	89	96	99	--	100	--	SEWCM
Aug. 29	4:05 a. m.	420	82,700	2,265	2	10	23	--	82	89	96	99	--	100	--	SEN
Aug. 29	11:00 a. m.	480	28,700	3,410	--	69	--	77	--	--	--	--	--	--	--	PWCM
Sept. 6	2:00 p. m.	38	12,700	4,060	--	90	--	95	--	--	--	--	--	--	--	PWCM

RIO GRANDE BASIN--Continued

RIO PUERCO AT RIO PUERCO, N. MEX.

LOCATION.--At gaging station in San Clemente Grant, at Atchison, Topeka and Santa Fe Railroad bridge, 7 miles downstream from San Jose River, and 15 miles west of Los Lunas, Valencia County.

DRAINAGE AREA.--5,160 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1951.

Sediment records: July 1948 to September 1951.

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 85°F July 27; minimum observed, 63°F Oct. 5.

Sediment concentrations: Maximum daily, 166,000 ppm July 27; maximum observed, 307,000

ppm Aug. 1; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 749,000 tons Aug. 29; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Water temperatures (1949-51): Maximum observed, 88°F July 12, 1950; minimum observed, 33°F Jan. 12, 1950.

Sediment concentrations: Maximum daily, 195,000 ppm Aug. 8, 1949; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 1,090,000 tons Sept. 20, 1950; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Temperature (°F) of water, water year October 1950 to September 1951
/Once-daily temperature measurement at approximately 12 m./^a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--									--	79	--
2	68									--	74	--
3	64									--	72	--
4	64									--	78	--
5	63									--	79	--
6	67									--	80	--
7	--									--	78	77
8	--									--	70	80
9	--									--	--	--
10	--									--	--	--
11	--									--	--	--
12	--									--	--	--
13	--									--	--	--
14	--									--	--	--
15	--									--	--	--
16	--									--	82	--
17	--									--	78	--
18	--									--	--	--
19	--									--	--	--
20	--									--	--	--
21	--									--	--	--
22	--									--	71	--
23	--									--	71	--
24	--									84	64	--
25	--									81	71	--
26	--									70	--	--
27	--									85	70	--
28	--									--	67	--
29	--									--	68	--
30	--									--	70	--
31	--									--	77	--
Average												

^a There was no flow on most days when no temperature is indicated.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO PUERCO AT RIO PUERCO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	163	32,500	sa28,800				1	--	e1
2-----	132	62,400	s37,800				3	--	e3
3-----	130	84,000	30,600				2	--	e2
4-----	31	63,000	5,470				0	--	0
5-----	18	70,000	3,530				1	--	e1
6-----	8	70,000	1,570				0	--	0
7-----	3	56,000	a470				0	--	0
8-----	1	30,000	a81				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				0	--	0
18-----	0	--	0				0	--	0
19-----	0	--	0				0	--	0
20-----	0	--	0				0	--	0
21-----	0	--	0				0	--	0
22-----	0	--	0				0	--	0
23-----	0	--	0				0	--	0
24-----	0	--	0				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				0	--	0
30-----	0	--	0				0	--	0
31-----	0	--	0				0	--	0
Total-	486	--	108,321	0		0	7	--	7
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	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-----	1	--	e3	0		0			
3-----	0	--	0	0		0			
4-----	0	--	0	0		0			
5-----	0	--	0	0		0			
6-----	0	--	0	3		e5			
7-----	0	--	0	2		3			
8-----	0	--	0	1		e1			
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	0		0			
18-----	1	--	e2	0		0			
19-----	2	--	e3	0		0			
20-----	2	--	e1	0		0			
21-----	0	--	0	0		0			
22-----	0	--	0	0		0			
23-----	0	--	0	0		0			
24-----	0	--	0	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	--		--			
30-----	0	--	0	--		--			
31-----	0	--	0	--		--			
Total-	6	--	9	6		9	0	--	0

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO PUERCO AT RIO PUERCO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	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-----							5		e 20
6-----							3		e 5
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-	0		0	0		0	8		25
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	1,400	83,300	s 651,000	36	22,000	2,140
2-----	0	--	0	759	128,000	s 284,000	17	11,000	505
3-----	0	--	0	202	95,700	s 62,800	8	7,500	182
4-----	0	--	0	531	108,000	s 178,000	3	4,000	a 32
5-----	0	--	0	246	68,000	46,800	1	2,500	a 7
6-----	0	--	0	92	50,000	12,900	1	6,500	as 146
7-----	0	--	0	57	72,000	11,500	4	22,500	s 290
8-----	0	--	0	38	77,000	8,190	1	11,000	30
9-----	0	--	0	14	38,000	a 1,490	0	--	0
10-----	0	--	0	6	28,000	a 454	0	--	0
11-----	0	--	0	2	21,000	a 113	0	--	0
12-----	0	--	0	1	14,000	a 38	0	--	0
13-----	0	--	0	0	--	0	0	--	0
14-----	0	--	0	0	--	0	0	--	0
15-----	0	--	0	0	--	0	0	--	0
16-----	0	--	0	25	35,100	s 3,180	0	--	0
17-----	0	--	0	20	15,000	810	0	--	0
18-----	0	--	0	6	6,500	a 105	0	--	0
19-----	0	--	0	2	5,000	a 27	0	--	0
20-----	0	--	0	0	--	0	0	--	0
21-----	0	--	0	0	--	0	0	--	0
22-----	0	--	0	1,100	96,000	s 666,000	0	--	0
23-----	0	--	0	554	97,000	s 168,000	0	--	0
24-----	107	21,000	s 18,200	311	40,300	s 43,400	0	--	0
25-----	158	40,400	s 20,200	1,700	97,300	s 548,000	0	--	0
26-----	58	83,300	s 27,400	562	60,500	s 114,000	0	--	0
27-----	187	166,000	s 83,600	146	68,000	28,200	0	--	0
28-----	100	56,000	15,700	43	52,000	6,280	0	--	0
29-----	43	55,000	a 6,800	1,850	115,000	a 749,000	0	--	0
30-----	16	42,000	a 1,900	688	106,000	s 230,000	0	--	0
31-----	10	32,000	a 880	111	65,000	20,200	--	--	--
Total-	659	--	174,480	10,468	--	3,835,467	71	--	3,312
Total discharge for year (cfs-days)									11,711
Total load for year (tons)									4,121,630

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO PUERTO AT RIO PUERTO, N. MEX.--Continued

Particle-size analyses of suspended sediment, July to August 1951
 (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	Instantaneous discharge (cfs)	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, 1951.....	1:30 p. m.	2	25,600	5,960	--	56	--	59	--	--	--	--	--	--	PWCM
July 25.....	6:05 p. m.	270	194,000	4,200	63	68	74	84	89	91	93	95	99	100	SPWCM
July 26.....	6:05 p. m.	270	194,000	4,650	25	36	50	83	88	91	93	95	99	100	SPN
July 27.....	6:05 p. m.	270	194,000	3,990	52	60	67	76	83	91	93	95	99	100	SBWCM
July 28.....	6:05 p. m.	270	194,000	3,830	7	10	32	--	--	91	93	95	99	100	SEN
Aug. 1.....	5:35 p. m.	3,580	261,000	3,800	--	40	--	51	--	65	77	92	100	--	SPWCM
Aug. 4.....	2:00 a. m.	925	134,000	2,920	--	46	--	63	--	80	90	99	100	--	SPWCM
Aug. 6.....	8:55 p. m.	87	54,600	2,640	--	69	--	93	--	94	97	99	100	--	SPWCM
Aug. 16.....	7:00 p. m.	78	55,900	5,770	--	75	--	95	--	99	100	--	--	--	SPWCM
Aug. 22.....	1:40 p. m.	4,190	243,000	4,350	--	34	--	48	--	66	76	96	100	--	SPWCM
Aug. 22.....	2:00 p. m.	3,730	190,000	3,460	--	41	--	58	--	73	86	97	100	--	SPWCM
Aug. 23.....	12:00 m.	742	99,300	2,220	--	48	--	62	--	81	95	100	--	--	SPWCM
Aug. 24.....	9:25 a. m.	690	43,100	4,410	49	57	60	70	76	82	90	98	100	--	SPWCM
Aug. 24.....	9:25 a. m.	690	43,100	4,160	49	55	62	68	73	82	90	98	100	--	SPWCM
Aug. 24.....	3:00 p. m.	190	29,500	5,440	--	67	--	83	--	92	95	100	--	--	SPWCM
Aug. 25.....	9:15 a. m.	3,860	130,000	3,130	--	42	--	54	--	74	89	98	100	--	SPWCM
Aug. 25.....	6:30 p. m.	986	90,400	4,460	49	52	60	67	79	88	92	99	100	--	SPWCM
Aug. 25.....	6:30 p. m.	986	90,400	2,170	51	57	64	70	81	88	92	99	100	--	SPWCM
Aug. 26.....	7:30 a. m.	755	93,200	2,870	--	59	--	74	--	86	94	100	--	--	SPWCM
Aug. 29.....	12:35 p. m.	3,410	129,000	3,680	--	48	--	63	--	80	92	99	100	--	SPWCM
Aug. 29.....	1:30 p. m.	3,700	162,000	4,280	--	40	--	53	--	73	89	99	100	--	SPWCM
Aug. 29.....	3:30 p. m.	4,000	120,000	2,970	--	49	--	59	--	79	94	99	100	--	SPWCM

RIO GRANDE BASIN--Continued

RIO PUERCO NEAR BERNARDO, N. MEX.--Continued

LOCATION.--At gaging station at bridge on U. S. Highway 85, 1.2 miles southwest of Bernardo, Socorro County, 3 miles upstream from mouth, and 16 miles south of Belen.

DRAINAGE AREA.--5,860 square miles, approximately

RECORDS AVAILABLE.--Sediment records: October 1947 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 168,000 ppm Aug. 23; maximum observed, 248,000 ppm Aug. 2; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 814,000 tons Aug. 2; minimum daily, 0 tons on many days.

EXTREMES, 1947-51.--Sediment concentrations: Maximum daily, 215,000 ppm July 22, 1949; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 958,000 tons July 24, 1949; minimum daily, 0 tons on many days.

REMARKS.--No flow during period November to June; tabulation deleted January to June. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0		0						
2-----	164	75,000	sa 64,000						
3-----	136	84,000	s 37,000						
4-----	82	88,800	21,100						
5-----	36	72,000	7,260						
6-----	10	70,000	1,960						
7-----	3	53,000	445						
8-----	.1	9,000	2						
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-	431.1	--	131,787	0		0	0		0

s Computed by subdividing day.

a Computed from estimated concentration graph.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO PUERCO NEAR BERNARDO, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	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	102	82,500	23,600
2-----	0	--	0	1,830	149,000	s 814,000	46	63,000	8,110
3-----	0	--	0	408	123,000	s 147,000	17	51,200	2,440
4-----	0	--	0	412	135,000	s 176,000	2	42,200	236
5-----	0	--	0	245	97,800	s 70,100	0	--	0
6-----	0	--	0	134	65,000	24,400	0	--	0
7-----	0	--	0	79	65,000	14,400	0	--	0
8-----	0	--	0	63	75,800	13,400	0	--	0
9-----	0	--	0	38	87,000	9,590	0	--	0
10-----	0	--	0	10	79,000	2,210	0	--	0
11-----	0	--	0	2	57,000	319	0	--	0
12-----	0	--	0	.4	9,910	11	0	--	0
13-----	0	--	0	0	--	0	0	--	0
14-----	0	--	0	0	--	0	0	--	0
15-----	0	--	0	20	40,000	sa 12,000	0	--	0
16-----	0	--	0	60	45,800	s 15,700	0	--	0
17-----	0	--	0	2	3,300	19	0	--	0
18-----	0	--	0	9	13,000	316	0	--	0
19-----	0	--	0	4	2,500	27	0	--	0
20-----	0	--	0	.2	2,850	2	0	--	0
21-----	0	--	0	0	--	0	0	--	0
22-----	.1	9,100	sa 2	44	35,200	s 7,050	0	--	0
23-----	0	--	0	1,270	168,000	s 740,000	0	--	0
24-----	0	--	0	857	82,600	s 227,000	0	--	0
25-----	86	30,900	s 21,000	1,430	93,500	s 525,000	0	--	0
26-----	45	61,600	s 8,150	946	118,000	s 302,000	0	--	0
27-----	51	85,300	s 19,200	278	93,000	75,000	0	--	0
28-----	147	154,000	s 68,400	158	76,000	33,600	0	--	0
29-----	48	63,000	8,470	706	96,400	s 313,000	0	--	0
30-----	15	65,000	2,730	1,480	161,000	s 722,000	0	--	0
31-----	.9	58,200	147	246	101,000	s 75,100	--	--	--
Total-	393.0	--	128,099	10,631.6	--	4,319,244	167	--	34,386
Total discharge for year (cfs-days)									11,622.7
Total load for year (tons)									4,613,496

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO PUERCO NEAR BERNARDO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951
 (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	Instantaneous discharge (cfs)	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. 2, 1950	8:00 a. m.	325	51,900	3,080	--	84	--	93	--	99	100	--	--	--	SPWCM
Oct. 3	5:00 p. m.	155	112,000	4,740	--	74	--	88	--	97	99	100	--	--	SPWCM
July 28, 1951	10:50 a. m.	275	202,000	3,680	--	65	--	88	--	93	99	98	--	100	SPWCM
Aug. 1	7:00 a. m.	3,460	145,000	4,540	48	55	67	70	82	86	93	99	100	100	SPWCM
Aug. 2	7:00 a. m.	3,460	145,000	3,880	49	54	64	74	80	84	93	99	100	100	SPWCM
Aug. 2	11:00 a. m.	4,340	123,000	3,930	--	50	--	65	--	92	96	99	100	100	SPWCM
Aug. 7	12:00 a. m.	55	56,700	3,720	--	91	--	96	--	100	--	--	--	--	PWCM
Aug. 10	8:00 a. m.	13	82,100	4,620	--	88	--	97	--	100	--	--	--	--	SPWCM
Aug. 16	8:00 a. m.	55	39,100	4,770	--	73	--	96	--	99	100	--	--	--	SPWCM
Aug. 23	6:15 a. m.	1,430	141,000	4,990	41	51	57	64	75	85	93	98	100	100	SPWCM
Aug. 23	6:15 a. m.	1,430	141,000	2,970	43	51	59	67	78	85	93	98	100	100	SPWCM
Aug. 24	6:00 a. m.	830	73,900	2,710	--	56	--	63	--	90	97	100	--	--	SPWCM
Aug. 25	1:00 a. m.	830	62,000	4,850	--	54	--	73	--	100	--	--	--	--	PWCM
Aug. 25	2:35 a. m.	1,980	68,000	6,710	--	61	--	72	--	100	91	100	--	--	PWCM
Aug. 25	1:45 p. m.	1,980	131,000	2,770	36	42	42	53	63	71	91	100	--	--	SPWCM
Aug. 25	1:45 p. m.	1,980	131,000	2,920	2	5	12	51	59	71	91	100	--	--	SPN
Aug. 25	1:45 p. m.	1,980	131,000	2,330	36	40	46	51	60	69	91	100	--	--	SPWCM
Aug. 25	4:00 p. m.	3,150	150,000	3,200	20	44	51	59	69	81	96	100	--	--	SPWCM
Aug. 25	4:00 p. m.	3,150	150,000	2,700	41	47	55	61	70	81	96	100	--	--	SPWCM
Aug. 25	7:00 p. m.	3,460	123,000	3,240	--	58	--	72	--	87	96	100	--	--	SPWCM
Aug. 26	4:00 a. m.	1,040	144,000	3,130	--	52	--	67	--	83	94	99	100	100	SPWCM
Aug. 29	3:00 p. m.	470	127,000	3,070	--	54	--	74	--	87	96	100	--	--	SPWCM
Aug. 29	6:00 p. m.	665	115,000	4,740	--	48	--	67	--	83	95	100	--	--	SPWCM
Aug. 29	10:00 p. m.	2,850	143,000	3,020	--	48	--	56	--	74	91	100	--	--	SPWCM
Aug. 29	10:00 p. m.	2,850	157,000	3,620	--	41	--	55	--	76	92	99	100	100	SPWCM
Aug. 30	2:30 a. m.	3,250	152,000	4,290	36	38	45	53	61	73	86	99	100	100	SPWCM
Aug. 30	2:30 a. m.	3,250	152,000	4,090	33	40	47	53	64	73	86	99	100	100	SPWCM
Aug. 30	2:30 a. m.	3,250	128,000	2,910	30	48	--	62	--	79	93	100	--	--	SPWCM
Aug. 30	10:00 a. m.	1,310	163,000	3,430	--	41	--	51	--	72	81	97	100	100	SPWCM
Sept. 4	6:00 a. m.	4	45,800	4,260	--	50	--	95	--	100	--	--	--	--	SPWCM

RIO GRANDE BASIN--Continued

RIO SALADO NEAR SAN ACACIA, N. MEX.

LOCATION.--At gaging station 1 mile upstream from mouth, 2 miles northeast of San Acacia, Socorro County, 1.7 miles downstream from bridge on U.S. Highway 85, and 15 miles north of Socorro.

DRAINAGE AREA.--1,380 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: July 1948 to September 1951.

EXTREMES, 1950-51.--Sediment concentrations: Maximum daily, 174,000 ppm Aug. 1; maximum observed, 282,000 ppm Aug. 1; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 372,000 tons Aug. 24; minimum daily, 0 tons on many days.

EXTREMES, 1948-51.--Sediment concentrations: Maximum daily, 174,000 ppm Aug. 1, 1951; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 372,000 tons Aug. 24, 1951; minimum daily, 0 tons on many days.

REMARKS.--No flow during period January to June; record is deleted. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	150	75,900	s 59,300						
2-----	4	50,000	a 560						
3-----	1	10,000	a 27						
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-	155	--	59,887	0		0	0		0

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO SALADO NEAR SAN ACACIA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0	--	0	339	174,000	s 245,000	0	--	0
2-----	0	--	0	374	110,000	s 120,000	0	--	0
3-----	0	--	0	364	114,000	s 196,000	0	--	0
4-----	0	--	0	407	92,200	s 135,000	0	--	0
5-----	0	--	0	31	65,600	s 6,590	0	--	0
6-----	0	--	0	5	82,000	1,150	0	--	0
7-----	0	--	0	2	66,000	370	0	--	0
8-----	0	--	0	1	57,000	160	0	--	0
9-----	0	--	0	0	--	0	0	--	0
10-----	0	--	0	0	--	0	0	--	0
11-----	0	--	0	0	--	0	0	--	0
12-----	0	--	0	0	--	0	1	62,500	175
13-----	0	--	0	0	--	0	0	--	0
14-----	10	58,500	s 4,350	0	--	0	0	--	0
15-----	3	95,000	826	0	--	0	0	--	0
16-----	1	53,000	148	266	83,600	s 104,000	0	--	0
17-----	0	--	0	10	64,000	a 1,800	0	--	0
18-----	0	--	0	0	--	0	0	--	0
19-----	0	--	0	1	31,600	85	0	--	0
20-----	0	--	0	1	66,000	185	0	--	0
21-----	4	72,900	s 1,700	80	12,000	sa 76,800	0	--	0
22-----	3	60,000	504	787	131,000	s 345,000	0	--	0
23-----	2	40,500	s 1,640	835	91,100	s 331,000	0	--	0
24-----	1	58,000	a 160	848	98,100	s 372,000	0	--	0
25-----	62	96,100	s 36,300	647	86,100	s 164,000	0	--	0
26-----	3	58,000	a 490	823	108,000	s 309,000	0	--	0
27-----	0	--	0	2	50,000	280	0	--	0
28-----	1	91,500	s 531	0	--	0	0	--	0
29-----	1	98,800	s 740	0	--	0	0	--	0
30-----	0	--	0	0	--	0	0	--	0
31-----	26	65,400	s 11,200	0	--	0	--	--	--
Total-	117	--	58,589	5,823	--	2,406,420	1	--	175

Total discharge for year (cfs-days) 6,096

Total load for year (tons) 2,525,071

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO SALADO NEAR SAN ACACIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951

(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	Instantaneous discharge (cfs)	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, 1950	10:00 a. m.	240	111,000	3,720	--	50	60	69	78	80	89	98		100	--	SPWCM
Oct. 14	11:15 a. m.	56	165,000	8,740	--	71	--	95	--	--	99	99	99	100	--	SPWCM
Oct. 15, 1951	12:45 p. m.	34	138,000	2,470	70	84	90	--	--	98	98	99	99	100	--	SPWCM
July 15	12:45 p. m.	34	138,000	2,690	2	6	33	88	92	98	98	99	100	100	--	SPN
July 15	12:45 p. m.	34	138,000	2,770	63	79	91	95	97	98	98	99	99	100	--	SBWCM
July 15	12:45 p. m.	34	138,000	2,530	5	10	17	--	98	98	98	99	99	100	--	SBN
July 15	5:05 p. m.	a 2	141,000	4,800	--	81	--	89	--	--	--	--	--	100	--	SPWCM
July 16	10:17 a. m.	a 1	96,700	4,050	--	92	--	94	--	99	99	99	99	100	--	SPWCM
July 21	2:03 p. m.	1	119,000	3,760	--	94	--	95	--	--	--	--	--	100	--	SPWCM
July 22	12:47 a. m.	21	95,900	3,270	--	76	--	99	--	99	--	--	--	--	--	SPWCM
July 22	10:30 a. m.	3	53,000	3,550	72	89	95	95	95	100	--	--	--	--	--	SPWCM
July 22	10:30 a. m.	3	53,000	3,910	8	11	28	84	96	100	--	--	--	--	--	SPN
July 22	10:30 a. m.	3	53,000	3,890	73	81	97	98	99	100	--	--	--	--	--	SBWCM
July 22	10:30 a. m.	3	53,000	3,780	5	7	10	20	--	100	--	--	--	--	--	SBN
July 23	5:02 a. m.	10	92,600	3,380	--	83	--	98	--	100	--	--	--	--	--	SPWCM
July 25	11:15 a. m.	100	133,000	3,090	66	82	93	97	98	99	99	99	99	99	--	SPWCM
July 25	11:15 a. m.	100	133,000	2,490	67	79	90	96	98	99	99	99	99	99	--	SBWCM
July 25	6:45 p. m.	160	80,200	3,900	--	59	--	82	89	95	99	99	99	100	--	SPWCM
July 28	9:02 a. m.	7	142,000	4,750	--	80	--	98	--	99	100	--	--	--	--	SPWCM
July 28	2:00 p. m.	2	139,000	3,710	--	89	--	96	--	100	--	--	--	--	--	SPWCM
July 29	3:10 p. m.	a 1	70,800	3,780	--	88	--	98	--	100	--	--	--	--	--	SPWCM
July 31	12:20 p. m.	40	219,000	5,300	--	67	--	94	--	97	97	98	98	100	--	SPWCM
July 31	8:20 p. m.	339	102,000	4,260	--	54	--	79	--	90	95	98	98	99	--	SPWCM
Aug. 1	8:45 a. m.	450	210,000	4,660	--	43	--	61	--	78	86	96	96	99	--	SPWCM
Aug. 1	3:25 p. m.	106	138,000	3,360	--	61	--	84	--	93	94	99	99	100	--	SPWCM
Aug. 1	8:20 p. m.	2,070	282,000	5,510	--	25	--	37	--	56	68	86	86	98	--	SPWCM
Aug. 2	12:20 a. m.	1,940	132,000	4,210	--	47	--	65	--	80	92	99	99	100	--	SPWCM
Aug. 2	10:00 p. m.	2	94,500	3,600	69	81	94	97	97	99	99	100	100	--	--	SPWCM

a Estimated.

Aug. 2	2	Aug. 2	3,710	1	6	44	88	97	99	100	--	SPN
Aug. 2	2	Aug. 2	3,600	69	85	92	97	98	99	100	--	SBWCM
Aug. 2	2	Aug. 2	4,200	3	4	14	--	--	99	100	--	SBN
Aug. 3	2,270	Aug. 3	2,160	--	29	--	39	--	54	82	94	SPWCM
Aug. 3	810	Aug. 3	2,940	--	43	--	54	--	72	92	99	SPWCM
Aug. 3	467	Aug. 3	4,350	--	42	--	60	--	80	91	100	SPWCM
Aug. 4	1,100	Aug. 4	3,430	--	41	--	55	--	74	97	100	SPWCM
Aug. 4	810	Aug. 4	3,500	--	43	--	59	--	75	92	99	SPWCM
Aug. 5	100	Aug. 5	5,040	42	55	64	73	80	86	94	99	SPWCM
Aug. 5	100	Aug. 5	4,560	2	51	31	74	80	86	94	99	SBN
Aug. 5	100	Aug. 5	4,800	43	54	36	75	82	88	94	99	SPWCM
Aug. 5	100	Aug. 5	4,800	3	5	10	--	82	86	94	99	SBN
Aug. 6	a 5	Aug. 6	5,120	--	78	--	95	--	98	100	--	SPWCM
Aug. 16	306	Aug. 16	1,920	--	54	--	79	--	90	95	100	SPWCM
Aug. 16	40	Aug. 16	4,080	--	78	--	97	--	98	99	99	SPWCM
Aug. 22	1,240	Aug. 22	4,340	--	41	--	53	--	54	68	88	SPWCM
Aug. 22	1,170	Aug. 22	4,110	--	44	--	70	--	79	88	100	SPWCM
Aug. 23	1,490	Aug. 23	2,780	--	43	--	60	--	79	89	100	SPWCM
Aug. 23	8,500	Aug. 23	3,780	20	22	26	29	32	38	60	87	SPWCM
Aug. 23	8,500	Aug. 23	3,110	2	5	10	--	32	38	60	87	SPN
Aug. 23	8,500	Aug. 23	2,990	15	19	23	26	32	38	60	87	SPWCM
Aug. 23	8,500	Aug. 23	2,830	2	3	5	--	32	38	60	87	SBN
Aug. 24	7,240	Aug. 24	2,520	--	35	--	45	--	59	73	89	SPWCM
Aug. 24	1,060	Aug. 24	2,670	--	55	--	74	--	97	97	98	SPWCM
Aug. 24	1,190	Aug. 24	2,840	--	41	--	55	--	71	86	97	SPWCM
Aug. 25	415	Aug. 25	5,280	41	50	58	67	78	81	85	93	SPWCM
Aug. 25	415	Aug. 25	4,820	0	4	23	66	74	81	85	93	SPN

a Estimated.

RIO GRANDE BASIN--Continued

RIO SALADO NEAR SAN ACACIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951--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	Instantaneous discharge (cfs)	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. 25, 1951.....	5:17 a. m.	415	74,600	4,420	28	41	53	62	73	81	85	93		99	--	SBWCM	
Aug. 25.....	5:17 a. m.	415	74,600	5,260	0	2	6	--	--	77	81	85	93		99	--	SN
Aug. 26.....	3:10 a. m.	3,070	119,000	7,250	--	29	--	45	--	60	79	96	99		100	--	SPWCM
Aug. 26.....	6:30 a. m.	1,190	114,000	2,440	--	43	--	50	--	--	69	82	95		99	--	SPWCM

RIO GRANDE BASIN--Continued

SOCORRO MAIN CANAL NORTH AT SAN ACACIA, N. MEX.

LOCATION.--At San Acacia diversion dam, half a mile upstream from canal gaging station, and 0.7 mile east of San Acacia, Socorro County.

RECORDS AVAILABLE.--Sediment records: October 1947 to September 1951.

EXTREMES, 1950-51.--Sediment loads: Maximum daily, 40,800 tons Aug. 1; minimum daily, 0 tons on many days.

EXTREMES, 1947-51.--Sediment loads: Maximum daily, 40,800 tons Aug. 1, 1951; minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Monthly and annual summary of suspended-sediment discharge, water year October 1950 to September 1951

Month	Water discharge (cfs-days)	Suspended Sediment (tons)
1950		
October	1,434	60,097
November	871	6,273
December	27	211
1951		
January	3	23
February	6	36
March	2,943	3,812
April	2,352	883
May	2,291	3,236
June	1,815	2,778
July	1,123	115,935
August	2,165	352,439
September	533	18,646
Total for year	15,583	a 564,169

a Total load for Rio Grande at San Acacia diversion dam is the sum of the load for the Rio Grande at San Acacia and the load for Socorro Main Canal, North, or 5,863,528 tons.

Mar. 1-10.....	324	81	16	60	226	164	38	1.5	502	.68	439	268	83	33	775	7.6
Mar. 11-20.....	12.0	86	20	81	246	221	56	1.7	633	.86	30.8	302	98	40	961	7.6
Mar. 21-31.....	5.76	89	20	95	246	232	56	.8	634	.89	10.2	304	102	40	991	7.5
Apr. 1-10.....	5.80	94	20	102	256	244	61	1.7	687	.93	10.8	316	106	41	1,040	7.6
Apr. 11-20.....	4.82	96	21	114	262	265	71	.9	731	.99	9.12	326	112	43	1,110	7.7
Apr. 21-30.....	3.08	92	23	120	246	280	75	.9	749	1.02	6.23	324	122	45	1,140	7.7
May 1-10.....	2.60	90	22	122	245	279	73	.8	747	1.02	5.24	315	114	46	1,120	8.1
May 11-20.....	3.01	96	23	122	255	288	76	1.4	772	1.05	6.27	334	125	44	1,150	8.1
May 21-31.....	79.1	76	15	68	223	172	37	2.3	513	.70	110	251	68	37	785	8.2
June 1-10.....	138	78	14	62	225	158	30	3.9	488	.66	182	252	68	35	765	7.5
June 11-20.....	2.71	86	20	105	233	257	60	2.2	680	.92	4.98	286	106	44	1,040	7.4
June 21-30.....	1.87	82	21	120	224	279	66	2.4	715	.97	3.03	291	108	47	1,090	7.4
July 1-10.....	7.94	76	19	83	216	206	45	2.0	568	.77	12.2	288	90	40	870	7.3
July 11-12.....	.45	88	25	254	201	249	58	.9	634	.86	4.077	322	138	35	971	8.0
July 13-20.....	a 1.02	218	59	354	360	821	136	2.6	1,690	2.30	4.05	568	482	41	2,400	7.8
July 21-31.....	.96	160	40	230	458	547	101	1.0	1,390	1.81	3.45	564	188	47	1,920	7.6
Aug. 1-4.....	788	182	42	223	355	705	64	1.1	1,410	1.93	3.000	626	336	44	1,930	7.7
Aug. 5-10.....	315	110	22	89	273	281	36	2.3	705	.96	600	365	142	35	1,030	7.8
Aug. 11-21.....	33.6	32	103	24	295	275	58	1.5	752	1.02	68.2	356	114	41	1,130	7.9
Aug. 22.....	1,540	146	28	114	260	348	22	.4	747	1.02	3.110	480	266	21	1,090	8.1
Aug. 23-27, 30-31..	1,219	174	36	164	309	615	45	.4	1,210	1.65	3,980	562	329	38	1,670	7.9
Aug. 28-29.....	200	131	29	105	248	427	35	.4	875	1.19	472	446	243	34	1,260	8.0
Sept. 1-11.....	26.8	106	22	122	253	324	58	3.4	790	1.07	57.2	355	148	43	1,180	7.9
Sept. 12-30.....	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weighted average..	249	89	18	73	226	214	36	1.8	570	0.78	383	296	111	35	856	--

a No flow during part of period.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Temperature (°F) of water, October 1950 to August 1951

[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	59	54	44	--	b 34	42	45	--	--	65	70	
2	a 64	49	45	34	b 33	42	47	--	--	63	77	
3	58	40	37	33	a 34	38	47	--	--	65	70	
4	62	40	45	33	a 34	--	50	--	--	66	69	
5	60	42	40	35	b 47	40	47	--	--	65	69	
6	58	42	34	37	b 50	--	48	--	--	70	70	
7	58	42	34	33	37	--	47	--	67	65	72	
8	58	45	37	32	38	45	54	--	--	70	70	
9	60	44	40	34	42	50	47	--	--	b 77	70	
10	58	33	37	33	42	48	53	--	--	69	--	
11	57	33	38	b 45	47	45	40	--	--	66	72	
12	56	34	40	37	47	38	40	--	--	--	72	
13	57	34	37	37	47	47	45	--	b 69	--	71	
14	55	38	40	36	34	47	50	--	61	66	b 86	
15	58	45	40	33	33	42	--	--	60	70	--	
16	55	b 47	40	35	b 47	49	--	--	60	68	65	
17	55	--	38	37	40	42	--	--	61	--	66	
18	57	--	37	37	40	35	b 69	--	64	--	--	
19	54	46	38	35	39	--	52	--	63	--	--	
20	55	46	38	34	37	38	--	--	64	--	--	
21	52	45	38	37	40	43	--	b 78	63	--	--	
22	56	45	36	b 42	42	47	--	--	63	--	60	
23	53	41	35	38	38	50	--	a 74	b 74	68	65	
24	53	40	36	37	44	48	--	--	66	--	65	
25	50	47	--	--	42	50	--	75	b 75	67	66	
26	51	40	35	b 49	47	48	--	--	64	70	62	
27	51	37	36	--	45	48	--	--	58	65	65	
28	48	37	36	40	40	47	--	--	62	65	b 82	
29	47	46	34	39	--	40	--	--	65	70	65	
30	50	39	34	34	--	45	--	--	--	67	--	
31	49	--	35	36	--	49	--	--	--	68	--	
Average	55	42	38	36	41	44	--	--	--	--	--	

a Reading obtained between 10:30 a. m. and 11:30 a. m.

b Reading obtained between 3 p. m. and 7 p. m.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day
1-----	100	72,000	20,200	1.3	899	3	483	9,000	11,700
2-----	102	46,300	13,200	1.2	598	2	483	8,000	10,400
3-----	77	47,000	10,100	1.2	602	2	383	6,800	7,030
4-----	34	62,000	5,900	1.4	728	3	391	11,700	12,400
5-----	20	27,000	1,460	1.4	616	2	456	10,400	12,800
6-----	10	11,300	305	12	742	s 20	474	11,000	14,100
7-----	9.2	6,200	154	8.0	932	20	399	10,200	11,000
8-----	8.0	2,700	58	7.5	1,240	25	424	14,400	16,500
9-----	8.6	2,210	51	6.0	931	15	440	6,200	9,740
10-----	7.5	1,300	26	14	1,250	s 48	483	5,170	6,740
11-----	3.0	1,200	10	17	1,160	53	465	6,800	8,540
12-----	2.0	1,120	6	20	949	51	492	2,560	3,400
13-----	1.6	850	4	72	15,600	s 4,200	492	2,900	3,850
14-----	1.6	727	3	57	5,400	831	545	2,750	4,050
15-----	1.4	637	2	74	2,600	519	584	3,340	5,270
16-----	1.2	935	3	77	7,800	1,620	623	3,420	5,750
17-----	1.4	708	3	94	9,600	2,440	623	3,200	5,380
18-----	1.2	707	2	151	12,600	5,140	603	3,880	6,320
19-----	1.2	683	2	170	11,100	5,090	623	2,660	4,470
20-----	1.2	638	2	208	11,800	6,630	663	2,900	5,190
21-----	1.2	475	2	220	11,000	6,530	642	2,640	4,580
22-----	1.2	647	2	250	17,400	11,700	574	3,500	5,420
23-----	1.4	597	2	302	15,200	12,400	574	2,000	3,100
24-----	1.6	685	3	353	16,000	15,200	500	1,760	2,380
25-----	1.6	584	2	483	16,600	21,600	518	1,900	a 2,660
26-----	1.6	452	2	456	11,600	14,300	527	2,070	2,950
27-----	1.6	440	2	500	2,680	3,620	500	1,760	2,360
28-----	1.6	376	2	456	7,200	8,860	492	1,840	2,440
29-----	1.4	430	2	448	13,000	15,700	536	2,340	3,390
30-----	.9	349	1	440	14,200	16,900	545	2,980	4,390
31-----	1.4	1,030	4	--	--	--	509	9,400	12,900
Total--	407.6	--	51,515	4,902.0	--	153,524	16,046	--	211,220
Day	January			February			March		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day
1-----	536	16,000	a 23,200	424	2,500	2,860	815	4,850	10,700
2-----	584	8,400	13,200	296	2,000	1,600	623	1,840	3,100
3-----	574	2,700	4,180	250	2,700	1,820	509	1,540	2,120
4-----	555	2,900	4,350	270	3,100	2,260	399	1,500	a 1,620
5-----	564	2,400	3,650	296	1,500	1,200	317	1,420	1,220
6-----	555	2,550	3,820	424	1,950	2,230	256	1,000	a 691
7-----	509	2,350	3,230	750	3,360	s 7,370	151	674	275
8-----	527	1,820	2,580	1,050	4,400	12,500	110	552	164
9-----	492	1,550	2,060	920	3,700	9,190	34	443	41
10-----	536	1,860	2,690	908	3,040	7,450	29	299	23
11-----	500	2,800	3,780	770	2,800	5,820	26	320	22
12-----	545	1,340	1,970	613	1,900	3,140	26	404	28
13-----	509	1,650	2,270	644	3,360	s 8,670	27	286	21
14-----	555	1,540	2,310	1,480	9,600	38,400	28	478	36
15-----	584	2,050	3,230	1,560	7,650	32,200	22	358	s 22
16-----	603	2,200	3,560	1,630	7,150	31,500	11	236	7
17-----	574	2,530	3,920	1,560	4,500	19,000	10	168	5
18-----	574	2,250	3,490	1,470	7,000	27,800	9.2	206	5
19-----	518	2,320	3,240	1,580	4,700	20,100	10	136	4
20-----	500	1,500	2,020	1,390	5,700	21,400	11	185	5
21-----	500	1,900	2,560	1,530	5,400	22,300	9.8	157	4
22-----	545	1,780	2,620	1,660	5,280	23,700	6.0	189	3
23-----	594	2,700	4,330	1,530	4,160	17,200	6.0	164	3
24-----	642	7,000	12,100	1,360	3,880	14,200	5.5	120	2
25-----	555	12,000	a 18,000	1,420	3,190	12,200	4.7	130	2
26-----	684	5,000	9,230	1,440	4,140	16,100	4.7	118	1
27-----	694	3,800	7,120	1,480	4,340	17,300	5.5	117	2
28-----	603	2,000	3,260	1,190	11,600	37,300	5.1	108	1
29-----	584	2,500	3,940	--	--	--	5.1	126	2
30-----	509	2,400	3,300	--	--	--	5.5	132	2
31-----	474	3,130	4,010	--	--	--	5.5	137	2
Total--	17,278	--	163,250	29,895	--	416,810	3,486.6	--	20,133

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	6.0	123	2	2.9	113	1	54	438	64
2-----	6.0	160	3	2.9	84	1	70	570	108
3-----	6.0	130	2	2.9	97	1	203	678	372
4-----	6.0	154	2	2.6	76	1	186	491	247
5-----	5.5	139	2	2.6	433	3	208	700	393
6-----	5.5	134	2	2.3	492	3	250	848	572
7-----	5.5	145	2	2.6	168	1	220	510	303
8-----	5.5	145	2	2.3	132	1	151	826	337
9-----	5.5	133	2	2.3	122	1	34	1,250	s 119
10-----	6.5	180	3	2.6	87	1	5.1	940	13
11-----	5.5	146	2	2.6	94	1	3.9	438	5
12-----	5.5	130	2	2.6	104	1	3.2	242	2
13-----	5.1	119	2	2.9	75	1	3.2	200	a 2
14-----	4.7	138	2	2.9	131	1	3.2	190	2
15-----	4.7	101	1	3.2	108	1	2.9	144	1
16-----	4.7	95	1	2.6	123	1	2.6	124	1
17-----	5.1	94	1	2.9	90	1	2.6	260	2
18-----	3.9	124	1	2.9	128	1	2.3	320	2
19-----	3.5	123	1	4.3	91	1	1.6	292	1
20-----	3.5	126	1	3.2	79	1	1.6	231	1
21-----	3.5	115	1	28	364	s 117	1.4	190	1
22-----	3.5	128	1	180	1,750	850	1.4	121	(t)
23-----	3.2	130	1	180	1,270	617	1.2	104	(t)
24-----	3.5	176	2	160	1,050	454	1.2	120	(t)
25-----	2.9	132	1	119	890	286	1.2	118	(t)
26-----	2.9	127	1	8.6	490	11	1.2	66	(t)
27-----	2.6	112	1	9.2	338	8	1.8	144	1
28-----	2.6	152	1	4.3	291	3	2.0	100	1
29-----	2.9	323	3	4.4	365	s 5	2.0	138	1
30-----	3.2	196	2	79	520	s 111	2.3	106	1
31-----	--	--	--	98	520	138	--	--	--
Total--	135.0	--	50	926.6	--	2,624	1,423.9	--	2,554
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	2.9	154	1	64	128,000	s 27,000	160	22,200	9,590
2-----	3.2	152	1	2,030	100,000	s 643,000	80	18,000	3,890
3-----	3.2	170	1	709	87,900	s 176,000	26	9,210	647
4-----	3.5	146	1	350	103,000	s 131,000	8	6,000	130
5-----	18	956	s 46	456	77,700	s 126,000	3.5	2,250	21
6-----	39	632	s 63	934	48,000	s 118,000	3.5	820	8
7-----	2.0	476	3	324	26,000	s 21,900	3.5	424	4
8-----	3.2	402	3	153	19,800	s 8,360	3.5	350	3
9-----	2.6	323	2	18	16,900	s 852	2.9	224	2
10-----	1.8	210	1	5.5	13,000	a 193	2.3	211	1
11-----	.7	135	(t)	5.1	6,140	85	1.8	100	(at)
12-----	.2	--	(et)	3.9	1,240	13	0	--	0
13-----	0	--	0	2.0	831	4	0	--	0
14-----	6.0	28,400	s 272	1.4	515	2	0	--	0
15-----	.7	86,000	169	1.2	500	a 2	0	--	0
16-----	.7	51,000	100	261	55,100	s 57,500	0	--	0
17-----	.2	--	--	5	18,000	243	0	--	0
18-----	.2	--	e 9	.5	4,500	a 8	0	--	0
19-----	.4	--	--	.3	1,000	a 1	0	--	0
20-----	0	--	0	.2	800	(at)	0	--	0
21-----	.2	--	--	.2	500	(at)	0	--	0
22-----	.2	--	e 14	1,540	67,500	s 341,000	0	--	0
23-----	.3	50,100	42	1,160	104,000	s 395,000	0	--	0
24-----	.2	109,000	63	1,810	92,000	s 681,000	0	--	0
25-----	.2	143,000	86	1,390	82,700	s 373,000	0	--	0
26-----	.2	69,100	39	1,500	81,500	s 379,000	0	--	0
27-----	.1	54,000	15	350	60,000	58,800	0	--	0
28-----	7.2	135,000	s 3,170	150	38,200	16,000	0	--	0
29-----	1.4	80,000	314	250	38,200	26,700	0	--	0
30-----	.1	51,700	14	1,830	108,000	s 580,000	0	--	0
31-----	.5	42,800	60	494	58,800	s 98,200	--	--	--
Total--	99.1	--	4,521	15,798.3	--	4,258,862	295.0	--	14,296

Total discharge for year (cfs-days) 90,693.1
 Total load for year (tons) 5,299,359

e Estimated.

s C. nputed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951
(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	Instantaneous discharge (cfs)	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, 1950	6:30 a. m.	100	124,000	4,520	41	52	62	74	90	93	97	99		SPWCM	
Oct. 2	1:00 p. m.	411	102,000	4,600	58	68	78	85	90	92	97	100	100	SPWCM	
Nov. 10	7:00 a. m.	77	1,130	2,480	27	36	48	62	--	97	--	--	--	SDWCM	
Nov. 20	7:30 a. m.	170	12,500	--	--	--	--	--	--	40	58	87	100	S	
Dec. 1	5:00 p. m.	483	3,650	2,700	51	63	76	90	98	99	100	--	--	BWCM	
Dec. 10	7:00 a. m.	492	3,080	--	32	--	--	44	--	61	87	80	100	SPWCM	
Dec. 15	5:00 p. m.	545	3,050	2,590	--	53	--	74	--	98	100	--	--	SPWCM	
Dec. 20	7:00 a. m.	688	3,350	2,040	41	44	52	61	75	89	97	99	100	SPWCM	
Jan. 18, 1951	3:00 p. m.	564	2,120	3,110	--	43	--	66	--	--	--	--	--	PWCM	
Feb. 1	9:00 p. m.	1,494	11,700	4,420	12	13	20	28	47	64	91	99	100	SPWCM	
Feb. 14	11:10 a. m.	1,450	9,850	1,490	18	22	36	45	60	70	87	100	--	SPN	
Feb. 14	11:15 a. m.	1,450	9,730	4,480	2	6	25	43	52	61	77	94	99	SPWCM	
Feb. 14	11:25 a. m.	1,450	8,770	4,180	25	31	41	54	63	71	84	95	100	SPWCM	
July 28	12:30 p. m.	75	169,000	5,260	68	77	91	92	96	99	99	99	99	SPWCM	
July 28	12:30 p. m.	75	169,000	4,540	66	76	90	95	98	99	99	99	99	SPWCM	
July 28	3:30 p. m.	60	163,000	4,660	--	79	--	97	--	100	--	--	--	SPWCM	
Aug. 2	9:30 a. m.	438	66,700	4,210	--	74	--	94	--	99	99	100	--	SPWCM	
Aug. 2	3:15 p. m.	4,830	116,000	3,240	--	68	--	88	--	93	97	100	--	SPWCM	
Aug. 16	6:00 a. m.	1,080	80,100	3,380	--	59	--	82	--	97	99	100	--	SPWCM	
Aug. 16	7:00 a. m.	1,010	69,700	3,920	--	62	--	84	--	95	97	99	100	SPWCM	
Aug. 16	4:30 p. m.	152	58,900	4,710	73	85	91	94	94	98	100	--	--	SPWCM	
Aug. 16	4:30 p. m.	152	58,900	4,740	62	78	86	95	96	98	100	--	--	SPWCM	
Aug. 22	8:00 a. m.	2,750	60,900	4,210	--	59	--	76	--	96	99	100	--	SPWCM	
Aug. 22	11:00 a. m.	1,020	52,300	4,160	--	54	--	72	--	91	98	100	--	SPWCM	
Aug. 23	6:30 a. m.	2,200	152,000	4,620	--	56	--	66	--	89	94	100	--	SPWCM	
Aug. 23	8:30 a. m.	2,000	125,000	4,860	46	58	69	78	85	91	94	98	99	SPWCM	
Aug. 23	8:30 a. m.	2,000	125,000	4,730	52	62	69	80	86	91	94	98	99	SPWCM	
Aug. 23	2:00 p. m.	925	104,000	3,610	--	65	--	85	--	95	98	100	--	SPWCM	

RIO GRANDE BASIN--Continued
RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1950 to August 1951--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	Instantaneous discharge (cfs)	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. 24, 1951	7:00 a. m.	3,460	101,000	3,990	--	53	--	63	--	72	84	99		100	SPWCM
Aug. 24	12:30 p. m.	647	115,000	3,120	--	56	--	77	--	91	97	100		--	SPWCM
Aug. 26	7:00 a. m.	2,120	75,600	3,620	--	60	--	83	--	99	100	--		--	SPWCM
Aug. 29	7:30 p. m.	429	37,500	5,720	--	58	--	79	--	97	100	--		--	SPWCM
Aug. 30	1:06 a. m.	1,930	106,000	3,360	--	60	--	78	--	94	97	100		100	SPWCM
Aug. 30	8:00 a. m.	2,070	107,000	3,140	--	55	--	71	--	86	90	98		100	SPWCM

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ANTONIO, N. MEX.

LOCATION.--At gaging station at bridge on U. S. Highway 380, about 0.9 mile east of San Antonio, Socorro County.

DRAINAGE AREA.--27,400 square miles, approximately (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).

RECORDS AVAILABLE.--Sediment records: August to September 1951.

REMARKS.--Maximum sediment concentration observed during period, 112,000 ppm Aug. 30. Records of discharge for period June to September 1951 given in Water-Supply Paper 1212.

Suspended sediment, August to September 1951

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----				--	--	--	278	54,500	s 44,100
2-----				--	--	--	143	35,500	s 14,500
3-----				--	--	--	84	24,000	5,440
4-----				--	--	--	35	16,500	1,560
5-----				--	--	--	10	5,000	135
6-----				--	--	--	.8	444	1
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-----				930	51,300	s 139,000	0	--	0
26-----				2,090	85,200	s 527,000	0	--	0
27-----				496	65,800	s 96,100	0	--	0
28-----				305	52,000	44,400	0	--	0
29-----				202	37,000	s 21,700	0	--	0
30-----				1,640	79,300	s 478,000	0	--	0
31-----				827	74,800	s 185,000	--	--	--
Total-				6,490	--	1,489,200	550.6	--	65,736

Total discharge for period Aug. 25 to Sept. 30 (cfs-days) 7,040.6
 Total load for period Aug. 25 to Sept. 30 (tons) 1,554,936

s Computed by subdividing day.

RIO GRANDE BASIN--Continued
RIO GRANDE AT SAN ANTONIO, N. MEX.--Continued

Particle-size analyses of suspended sediment, August 1951
(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	Instantaneous discharge (cfs)	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. 24, 1951	12:30 p. m.	3,820	100,000	2,700	--	59	--	80	--	96	98	99		100	SPWCM
Aug. 24	4:00 p. m.	3,210	84,500	2,970	--	67	--	90	--	91	95	99		100	SPWCM
Aug. 25	11:05 a. m.	1,280	52,900	4,170	--	72	--	87	--	92	96	100		100	SPWCM
Aug. 26	1:00 p. m.	3,000	86,400	2,850	--	60	--	83	--	92	94	99		100	SPWCM
Aug. 26	7:00 p. m.	1,500	87,100	3,950	61	70	81	87	94	95	96	99		100	SPWCM
Aug. 26	7:00 p. m.	1,500	87,100	5,040	4	6	11	89	93	95	96	99		100	SPN
Aug. 26	7:00 p. m.	1,500	87,100	6,430	76	79	86	91	93	95	96	99		100	SPWCM
Aug. 30	5:00 p. m.	2,900	104,000	6,410	--	35	--	87	--	92	95	100		---	SPWCM
Aug. 30	6:00 p. m.	2,330	92,100	4,480	--	63	--	85	--	92	95	99		100	SPWCM
Aug. 30	7:00 p. m.	2,280	93,300	4,460	--	67	--	86	--	92	95	99		100	SPWCM

RIO GRANDE BASIN--Continued
Continued
RIO GRANDE TIFFANY CHANNEL NEAR SAN MARCIAL, N. MEX.

LOCATION.--At water-stage recorder at Atchison, Topeka & Santa Fe Railway bridge over Tiffany Channel, 3 miles northeast of San Marcial, Socorro County. Tiffany Channel is bypass channel carrying water around the main channel gaging station at San Marcial.

RECORDS AVAILABLE.--Chemical analyses: April 1950 to September 1951.

Water temperatures: October 1950 to September 1951.

Sediment records: April 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: 24 Maximum, 1,730 ppm Aug. 23-24; minimum, 696 ppm Feb. 21-28.

Hardness: Maximum 849 ppm Aug. 23-24; minimum, 286 ppm July 21-23.

Specific conductance: Maximum daily, 2,160 micromhos Aug. 24; minimum daily, 826 micromhos Feb. 21.

Water temperature: Maximum observed, 94°F July 10, 18, 29; minimum observed, 35°F Dec. 27, 29, Feb. 1, 2, 15.

Sediment concentrations: Maximum daily, 36,800 ppm Aug. 31; minimum daily, no flow July 28.

Sediment loads: Maximum daily, 15,200 tons Aug. 25; minimum daily, 0 tons July 28.

EXTREMES, April 1950 to September 1951.--Dissolved solids: Maximum, 1,730 ppm Aug. 23-24, 1951; minimum, 696 ppm Feb. 21-28, 1951.

Hardness: Maximum, 849 ppm Aug. 23-24, 1951; minimum, 287 ppm July 11, 13, 16, 18, 1950.

Specific conductance: Maximum daily, 2,160 micromhos Aug. 24, 1951; minimum daily, 826 micromhos Feb. 21, 1951.

Sediment concentrations: Maximum daily, 41,700 ppm Sept. 22, 1950; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 15,200 tons Aug. 25, 1951; minimum daily, 0 tons on many days.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are residue on evaporation. Records of discharge for water year October 1950 to September 1951 furnished by Santa Fe district office of Surface Water Branch; records for composite of Tiffany Channel and main channel given under Rio Grande at San Marcial in Water-Supply Paper 1212. Quality of water records for Rio Grande near San Marcial given on page 447.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate			
Oct. 1-10, 1950.....	4.05															888	1.21	9.71	308		55	1,370
Oct. 11-20.....	1.67				94	18	172									888	1.21	4.00	304		56	1,370
Oct. 21-31.....	.75				90	21	175									846	1.15	1.71	311		55	1,380
Nov. 1-10.....	.44				92	22	193									942	1.28	1.12	320		57	1,490
Nov. 11-20.....	.59				93	23	214									1,020	1.39	1.62	326		59	1,620
Nov. 21-30.....	3.57				103	24	208									1,000	1.36	9.64	356		56	1,520
Dec. 1-10.....	4.45				101	26	213									1,020	1.39	12.3	359		56	1,550
Dec. 11-20.....	7.06				107	27	219									1,050	1.43	20.0	378		56	1,580
Dec. 21-31.....	9.21				103	25	210									1,030	1.40	25.6	360		56	1,540
Jan. 1-10, 1951.....	14.2				96	30	217									972	1.32	37.3	363		57	1,490
Jan. 11-20.....	19.0				98	32	226									956	1.30	49.0	376		57	1,460
Jan. 21-31.....	16.5				95	23	184									944	1.28	42.1	340		54	1,450
Feb. 1-10.....	26.1				96	26	198									912	1.24	64.3	346		55	1,420
Feb. 11-20.....	54.7				88	28	179									858	1.17	127	334		54	1,330
Feb. 21-28.....	69.4				83	22	121									698	.95	130	298		47	1,080
Mar. 1-10.....	36.9				92	25	222									1,000	1.36	99.6	332		59	1,560
Mar. 11-20.....	24.0				90	23	198									959	1.30	62.1	319		57	1,480
Mar. 21-31.....	23.3				90	24	208									1,550	1.35	62.3	323		58	1,550

RIO GRANDE BASIN--Continued
RIO GRANDE TIFFANY CHANNEL NEAR SAN MARCIAL, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951.--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (residue at 180°C)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per acre-foot	Calcium, mg./nestum	Non-carbonate			
Apr. 1-10, 1951	37.3				96	26	222								1,050	1.43	106	346		58	1,640	
Apr. 11-20	38.6				100	28	280								1,180	1.60	123	364		61	1,840	
Apr. 21-30	38.8				104	28	280								1,250	1.70	124	374		62	1,960	
May 1-10	36.7				97	27	280								1,230	1.87	122	353		63	1,930	
May 11-20	35.2				100	28	252								1,160	1.58	110	364		60	1,800	
May 21-31	54.8				98	26	242								1,120	1.52	186	352		60	1,740	
June 1-10	43.4				86	23	200								963	1.31	113	309		56	1,450	
June 11-20	28.9				90	21	186								909	1.24	70.9	311		57	1,390	
June 21-30	9.58				89	22	202								962	1.31	24.9	312		58	1,470	
July 1-10	3.69				89	24	217								1,010	1.37	10.1	320		60	1,560	
July 11-20	2.21				84	23	215								982	1.84	5.86	304		61	1,540	
July 21-31	.54				84	21	197								947	1.29	1.38	296		59	1,470	
Aug. 1-10	11.6				104	23	164								947	1.39	29.7	354		50	1,390	
Aug. 11-20	31				134	24	202								98	1.53	35	324		57	1,510	
Aug. 21-24, 25-31	69.6				175	26	202								1,060	1.44	20.1	462		43	1,500	
Aug. 25-28	43				238	56	203								1,730	2.55	196	849		34	2,160	
Sept. 1-10	25.7				100	22	189								918	1.25	63.7	340		52	1,380	
Sept. 11-20	3.35				89	23	183								898	1.22	8.12	316		56	1,410	
Sept. 21-30	.35				88	23	169								876	1.19	.83	314		54	1,390	
Weighted average	20.6				100	26	207								1,010	1.37	56.2	356		56	1,550	

RIO GRANDE BASIN--Continued

RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement generally between 12 m. and 6 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	--	47	42	35	45	63	68	78	a 85	--	82
2	--	--	46	--	a 35	46	64	67	73	a 71	--	a 75
3	--	--	47	36	44	49	67	a 71	a 71	92	83	84
4	68	51	48	39	--	46	59	74	76	a 73	76	86
5	--	60	48	a 37	45	53	64	76	74	81	a 81	83
6	--	--	39	37	47	50	62	74	75	93	87	85
7	73	--	39	--	48	--	62	a 66	a 73	--	--	84
8	--	--	48	36	50	52	62	71	a 70	86	87	78
9	--	--	46	38	57	53	69	76	--	87	84	--
10	a 68	--	46	36	51	58	69	76	--	94	84	a 78
11	--	--	46	40	52	61	a 54	86	--	88	88	75
12	66	--	48	36	52	42	69	76	a 70	a 82	87	78
13	--	--	46	--	47	48	70	a 61	74	--	90	76
14	--	49	46	39	38	53	--	72	a 76	91	89	77
15	69	--	48	40	a 35	50	69	a 68	84	a 84	89	a 70
16	--	--	48	38	42	--	68	72	--	92	--	73
17	--	--	a 40	--	44	55	a 60	68	a 81	--	89	76
18	78	--	43	a 39	48	47	74	a 64	88	94	--	73
19	68	48	42	45	45	47	66	--	86	89	--	a 69
20	--	--	42	45	48	58	63	--	82	a 91	84	75
21	--	--	45	44	a 40	a 53	a 66	--	--	81	91	78
22	61	50	43	46	47	55	74	76	86	91	--	77
23	--	--	a 36	--	50	--	71	74	--	93	70	a 73
24	62	--	40	48	51	59	73	--	a 71	--	80	--
25	a 52	45	--	50	51	--	70	74	83	a 87	68	75
26	--	47	39	49	49	61	a 64	81	a 80	88	70	79
27	--	47	35	a 48	48	59	73	79	90	93	70	78
28	--	48	38	45	45	55	65	a 79	92	a 86	80	a 71
29	60	45	a 35	45	--	59	a 61	78	a 84	94	82	70
30	--	45	--	--	--	58	68	84	a 82	a 76	83	a 72
31	--	--	--	--	--	62	--	78	--	--	--	--
Average	--	--	43	--	46	53	66	74	79	87	--	77

a Reading obtained between 9 a. m. and 12 m.

RIO GRANDE BASIN--Continued

RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	3.1	1,300	a11	0.4	150	a0.2	3.6	146	1.4
2-----	4.6	2,800	a35	.4	130	a.1	3.6	177	1.7
3-----	4.4	4,600	a55	.4	100	a.1	3.6	57	.6
4-----	5.4	5,700	83	.4	92	.1	4.1	37	.4
5-----	5.7	3,900	a60	.4	154	.2	4.4	61	.7
6-----	4.6	1,700	a21	.5	--	e.2	4.1	48	.5
7-----	3.8	670	6.9	.5	--	e.2	4.6	57	.7
8-----	3.3	490	a4.4	.5	--	e.2	5.7	36	.6
9-----	3.1	420	a3.5	.5	--	e.2	5.1	26	.4
10-----	2.5	330	2.2	.4	--	e.1	5.7	48	.7
11-----	2.0	270	a1.5	.5	--	e.2	5.7	48	.7
12-----	1.6	239	a1.0	.6	--	e.2	5.7	85	1.3
13-----	1.3	237	.8	.7	--	e.2	5.7	63	1.0
14-----	1.4	190	a.7	.5	52	.1	6.4	47	.8
15-----	1.3	169	.6	.5	--	e.1	6.4	61	1.1
16-----	1.3	170	a.6	.5	--	e.1	7.1	63	1.2
17-----	1.3	180	a.6	.6	--	e.1	7.8	55	1.2
18-----	2.1	242	1.4	.7	--	e.2	8.8	50	1.2
19-----	2.6	361	2.5	.6	81	.1	8.5	47	1.1
20-----	1.8	300	a1.5	.7	--	e.2	8.5	44	1.0
21-----	1.3	200	a.7	1.0	--	e.2	8.8	28	.7
22-----	1.0	195	.5	1.3	84	.3	8.8	40	1.0
23-----	.9	180	a.4	1.4	--	e.3	8.8	62	1.5
24-----	.8	181	.4	1.8	--	e.2	8.5	48	1.1
25-----	.8	132	.3	2.5	37	.2	8.5	45	a1.0
26-----	.7	150	a.3	7.8	80	1.7	8.5	43	1.0
27-----	.6	170	a.3	8.1	66	1.4	10	57	1.5
28-----	.6	190	a.3	4.6	55	.7	9.2	75	1.9
29-----	.5	199	.3	3.6	23	.2	9.2	54	1.3
30-----	.5	180	a.2	3.6	55	.5	10	50	a1.4
31-----	.5	170	a.2	--	--	--	11	45	a1.3
Total--	65.4	--	297.1	46.0	--	8.8	216.4	--	32.0
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	12	45	1.5	19	36	1.8	59	875	139
2-----	11	40	a1.2	26	38	2.7	50	645	87
3-----	11	33	1.0	23	41	2.5	39	275	29
4-----	11	32	1.0	25	60	a4.0	36	265	26
5-----	12	34	1.1	26	75	5.3	36	228	22
6-----	12	45	1.5	29	80	6.3	34	213	20
7-----	10	20	a.5	25	79	5.3	21	287	24
8-----	13	27	.9	24	94	6.1	29	264	21
9-----	26	52	3.7	31	193	16	27	210	15
10-----	24	87	5.6	33	133	12	28	277	21
11-----	31	112	9.4	30	120	9.7	27	213	16
12-----	35	75	7.1	29	100	7.8	25	170	11
13-----	16	40	a1.7	28	79	6.0	26	159	11
14-----	13	45	1.6	26	80	5.6	26	143	10
15-----	15	30	1.2	73	430	85	24	286	19
16-----	16	23	1.0	87	525	123	23	250	a16
17-----	16	35	a1.5	73	520	102	23	218	14
18-----	16	29	1.3	68	386	71	22	122	7.2
19-----	16	37	1.6	63	520	88	22	118	7.0
20-----	16	35	1.5	70	453	86	22	126	7.5
21-----	15	24	1.0	71	1,180	226	23	189	12
22-----	15	45	1.6	71	1,160	222	23	187	12
23-----	15	76	a3.1	74	1,170	234	24	190	a12
24-----	15	66	2.7	63	1,040	177	24	200	13
25-----	16	59	2.5	66	1,160	207	23	230	a14
26-----	16	71	3.1	68	1,020	187	23	233	14
27-----	17	55	2.5	68	913	168	23	214	13
28-----	17	69	3.2	74	887	177	23	137	8.5
29-----	18	79	3.8	--	--	--	23	113	7.0
30-----	19	66	a3.4	--	--	--	23	175	11
31-----	18	45	a2.2	--	--	--	24	270	17
Total--	513	--	75.2	1,363	--	2,244.1	865	--	656.2

e Estimated.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	24	180	12	36	281	27	50	356	48
2-----	30	150	12	36	295	29	48	400	52
3-----	35	280	26	36	348	34	47	554	70
4-----	37	390	39	37	350	35	41	543	60
5-----	40	270	29	37	434	43	43	518	60
6-----	41	300	33	40	506	55	42	525	60
7-----	42	275	31	39	400	42	41	533	59
8-----	43	326	38	37	420	42	40	491	53
9-----	41	287	32	35	450	43	41	510	a 56
10-----	40	350	38	34	558	51	41	530	a 59
11-----	39	160	17	28	657	50	40	550	a 59
12-----	39	220	23	41	462	51	39	561	59
13-----	40	287	31	51	534	74	40	569	61
14-----	40	280	a 30	45	512	62	39	593	62
15-----	39	280	29	35	600	57	32	611	53
16-----	39	284	30	36	680	66	28	622	47
17-----	39	262	28	22	860	51	22	652	39
18-----	39	267	28	24	700	45	19	635	33
19-----	37	216	22	34	800	a 73	15	578	23
20-----	35	216	20	36	600	58	15	594	24
21-----	35	209	20	40	375	40	13	524	18
22-----	35	301	28	57	224	34	13	494	17
23-----	36	248	24	66	234	42	12	500	a 16
24-----	39	364	38	61	280	a 46	10	516	14
25-----	40	239	26	50	344	46	8.8	533	13
26-----	37	252	25	54	271	40	8.8	480	11
27-----	37	243	24	55	296	44	8.4	434	9.8
28-----	37	315	31	54	324	47	8.0	402	8.7
29-----	36	323	31	54	299	44	7.6	554	11
30-----	36	256	25	56	280	42	6.2	561	9.4
31-----	--	--	--	56	298	45	--	--	--
Total-	1,127	--	820	1,322	--	1,458	818.8	--	1,164.9
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	5.3	508	7.3	5.6	770	as 16	49	21,200	2,800
2-----	4.2	428	4.9	.2	390	a. 2	40	14,300	1,540
3-----	3.7	434	4.3	.1	260	. 1	35	6,500	614
4-----	3.7	420	4.2	14	310	s 12	34	2,000	184
5-----	2.5	650	4.4	15	441	18	26	683	48
6-----	3.1	540	4.5	13	400	14	21	570	32
7-----	5.0	910	a 12	27	594	as 60	15	381	15
8-----	2.1	770	4.4	25	860	58	15	423	17
9-----	1.8	370	1.8	11	500	15	12	360	a 12
10-----	5.5	764	s 16	5.0	400	5.4	9.7	277	7.3
11-----	3.0	745	s 16	1.8	205	1.0	8.2	320	7.1
12-----	1.2	650	2.1	.6	252	.4	6.8	237	4.4
13-----	4.1	947	as 17	.4	264	.3	4.8	277	3.6
14-----	3.3	1,170	10	.4	260	a. 3	3.9	276	2.9
15-----	3.3	780	6.9	.3	276	.2	3.4	307	2.8
16-----	1.8	350	1.7	.3	240	a. 2	2.5	279	1.9
17-----	2.4	724	as 10	.3	209	.2	1.1	212	.6
18-----	1.8	1,000	4.9	.4	250	a. 3	1.2	233	.8
19-----	1.0	530	1.4	.3	280	a. 2	.9	320	.8
20-----	.2	490	.3	.3	346	.3	.7	213	.4
21-----	1.9	1,180	s 11	.2	271	.1	.5	174	.2
22-----	.7	600	1.1	.2	220	a. 1	.4	217	.2
23-----	.2	377	.2	41	18,200	s 3,060	.4	274	.3
24-----	.1	390	a. 1	43	31,800	s 4,100	.4	270	a. 3
25-----	.2	414	.2	150	30,600	s 15,200	.3	311	.3
26-----	.6	320	.5	104	19,900	s 5,880	.2	303	.2
27-----	.2	391	.2	123	28,100	s 10,500	.4	480	.5
28-----	1.8	467	s 3	38	12,600	1,290	.3	450	.4
29-----	0	--	0	41	10,600	1,170	.3	940	.8
30-----	.1	210	a. 1	31	7,700	644	.3	420	.3
31-----	.1	257	.1	141	36,800	s 14,900	--	--	--
Total-	64.9	--	150.6	833.4	--	56,946.3	293.7	--	5,298.1
Total discharge for year (cfs-days).....									7,528.6
Total load for year (tons).....									69,151.3

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951
(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	Instantaneous discharge (cfs)	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, 1950.....	12:50 p. m.	4.1	5,260	1,920	--	89	--	92	--	--						PWCM
July 10, 1951.....	3:00 p. m.	5.3	1,120	2,360	42	59	75	83	87	90						BWCM
Aug. 3.....	3:15 p. m.	1	290	610	75	92	89	92	94	98						BWCM
Aug. 10.....	12:45 p. m.	5.9	503	1,060	67	78	81	86	91	93						BWCM
Aug. 23.....	10:45 a. m.	88	27,900	5,600	--	90	--	97	--	--						PWCM
Aug. 25.....	4:40 p. m.	113	8,740	7,410	--	87	--	95	--	100						PWCM
Aug. 31.....	3:00 p. m.	168	38,300	4,650	--	95	--	98	--	100						SPWCM
Sept. 1.....	4:20 p. m.	48	19,200	3,660	79	90	95	95	95	97	100					SPWCM
Sept. 1.....	4:20 p. m.	46	19,200	3,660	75	93	98	99	99	100						SPWCM
Sept. 3.....	4:00 p. m.	34	5,300	3,080	--	87	--	96	--	100						SPWCM

RIO GRANDE BASIN--Continued
RIO GRANDE AT SAN MARCIAL, N. MEX.

LOCATION.--At gaging station at Atchison, Topeka & Santa Fe Railway bridge, 1.1 miles downstream from San Marcial, Socorro County, and 17½ miles southwest of San Antonio.

DRAINAGE AREA.--27,700 square miles, approximately (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).

RECORDS AVAILABLE.--Chemical analyses: July 1946 to September 1951.

Water temperatures: January 1949 to September 1951.

Sediment records: July 1946 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 1,380 ppm Aug. 24; minimum, 376 ppm Feb. 21-28.

Hardness: Maximum, 756 ppm Aug. 24; minimum, 204 ppm Feb. 21-28.

Specific conductance: Maximum daily, 2,150 micromhos May 7; minimum daily, 580 micromhos Feb. 26.

Water temperatures: Maximum observed, 97°F Aug. 11; minimum, freezing point Jan. 8, Feb. 1.

Sediment concentrations: Maximum daily, 58,300 ppm Aug. 24; minimum daily, no flow on many days.

EXTREMES, 1946.--Maximum daily, 130,000 tons Aug. 1, 1946; minimum daily, 16,700 tons Aug. 1, 1946.

Hardness: Maximum, 820 ppm Aug. 11-16, 19-22, 1946; minimum, 141 ppm Aug. 1, 1946.

Specific conductance: Maximum daily, 2,470 micromhos Sept. 28, 1946; minimum daily, 345 micromhos June 18, 1948.

Water temperatures (1949-51): Maximum observed, 97°F Aug. 11, 1946; minimum, freezing point on several days.

Sediment concentrations: Maximum daily, 93,600 ppm Aug. 11, 1946; minimum daily, 0 tons on many days.

Sediment loads: Maximum daily, 366,000 tons July 25, 1949; minimum daily, 0 tons on many days.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of chemical analyses and sediment loads for years prior to 1946 have been published in Water Bulletins of International Boundary and Water Commission. Records of discharge for water year October 1950 to September 1951 furnished by Santa Fe district office of Surface Water Branch. Record given in Water-Supply Paper 1212 is composite of main channel and Rio Grande Tiffany Channel. Quality-of-water records for Tiffany Channel given on page 441.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH		
														Parts per million	Tons per acre-foot	Total	Non-carbonate				
Oct. 1-10, 1950.....	84.4		22		132	26	167		272	421	107		1.9	1,010	1.37	230	438	214	45	1,500	7.7
Oct. 11-20.....	22.3		35		92	19	171		259	258	152		.5	856	1.16	52	308	96	55	1,350	7.8
Oct. 21-31.....	14.5		35		92	19	179		256	251	170		.4	872	1.19	34	308	98	56	1,390	7.8
Nov. 1-10.....	8.31		37		96	21	194		273	254	190		2.2	928	1.26	21	326	102	56	1,490	7.7
Nov. 11-20.....	32.0		31		108	25	146		282	281	118		.9	859	1.17	74	372	142	46	1,320	7.3
Nov. 21-30.....	150		27		94	21	105		246	248	63		2.4	681	.93	276	321	120	42	1,030	7.5
Dec. 1-10.....	238		25		84	16	79		227	196	41		2.2	555	.75	354	276	90	38	847	7.3
Dec. 11-20.....	339		27		78	16	80		223	177	47		1.7	537	.73	492	260	78	40	828	7.3
Dec. 21-31.....	391		28		74	15	67		210	139	37		1.5	484	.68	511	246	74	37	749	7.3
Jan. 1-10, 1951.....	372		23		74	15	69		211	165	43		1.6	500	.68	502	246	73	37	772	7.3
Jan. 11-20.....	411		24		74	14	74		215	158	43		1.3	494	.67	548	242	66	40	770	8.1
Jan. 21-31.....	399		25		77	14	92		226	170	61		1.1	551	.75	594	250	84	44	864	8.2

RIO GRANDE BASIN--Continued
RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate		
Feb. 1-10, 1951.....	385		22		71	13	74		202	157	44		1.2		482	0.66	501	230	65	41	750
Feb. 11-20.....	64		22		66	12	60		194	141	30		1.5		451	.59	1,120	219	80	33	592
Feb. 21-28.....	1,159		20		72	15	46		232	177	24		1.5		563	.77	1,555	251	61	44	888
Mar. 1-10.....	365		30		74	15	91		232	172	64		1.0		563	.77	1,555	251	61	44	888
Mar. 11-20.....	37.1		33		94	20	191		233	246	183		1.5		888	1.21	89	316	84	57	1,440
Mar. 21-31.....	31.5		33		94	22	209		275	281	192		1.4		967	1.31	83	325	100	58	1,540
Apr. 1-10.....	18.2		35		98	24	218		276	287	211		2.2		1,020	1.39	50	343	117	58	1,640
Apr. 11-20.....	5.91		32		101	27	257		284	372	253		1.9		1,150	1.56	18	363	130	61	1,840
Apr. 21-30.....	a1		31		105	29	288		285	372	283		2.0		1,250	1.70	3.4	381	148	62	2,000
May 1-10.....	a.87		32		99	29	306		284	373	302		1.8		1,280	1.74	3.0	366	134	65	2,060
May 11-20.....	a3.85		29		105	27	274		272	374	255		2.0		1,200	1.63	10.9	373	150	61	1,920
May 21-31.....	a13.8		27		108	24	256		282	369	230		1.8		1,150	1.56	43	363	132	61	1,830
June 1-10.....	b.45		31		89	24	231		273	311	205		2.1		1,030	1.40	1.3	320	97	61	1,650
Aug. 1-7.....	62.5		23		162	36	181		254	690	57		1.3		1,240	1.69	209	552	344	42	1,720
Aug. 8-20.....	21.1		21		89	18	103		180	304	42		2.8		669	.91	38	298	148	43	937
Aug. 24.....	(c)		--		219	51	156		315	746	50		1.5		1,380	1.68	--	756	498	31	1,870
Aug. 21-31.....	472		19		162	31	137		171	606	43		2.6		1,080	1.47	1,380	532	392	36	1,560
Sept. 1-10.....	d 64.0		19		129	26	140		220	493	50		.4		937	1.27	162	429	246	42	1,330
Weighted average....	163		24		83	16	83		206	212	46		1.6		567	0.77	250	273	104	40	861

a No flow during part of period.

b No flow June 5 to Aug. 3.

c Sample not representative for entire day. Discharge included in discharge reported for Aug. 21-31.

d No flow Sept. 9-30.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement usually obtained between 9 a. m. and 1 p. m. 7

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	49	a 52	39	31	a 50	56	63	--		--	77
2	--	49	49	--	--	a 47	57	63	73		--	71
3	64	--	49	a 39	--	a 46	68	72	70		--	80
4	67	41	45	39	--	39	55	74	78		--	75
5	a 71	a 57	44	a 41	36	44	55	a 74	--		76	80
6	67	42	38	a 40	40	44	a 60	a 74	--		86	80
7	66	44	35	a 37	41	45	54	67	--		--	89
8	a 67	54	43	a 32	46	50	a 63	a 72	--		84	--
9	64	--	43	a 39	a 57	a 52	61	82	--		85	--
10	64	36	43	a 36	45	a 57	--	--	--		83	--
11	60	38	42	38	a 51	57	a 58	--	--		a 97	--
12	62	--	45	33	50	41	a 63	--	--		76	--
13	65	--	43	40	44	45	a 69	--	--		--	--
14	a 67	46	43	a 33	38	49	a 67	a 72	--		--	--
15	a 70	a 50	41	--	35	a 50	--	a 74	--		--	--
16	--	a 50	43	35	35	--	a 69	a 68	--		--	--
17	65	43	a 44	--	37	56	58	70	--		--	--
18	64	a 53	39	a 43	a 49	43	69	65	--		--	--
19	60	48	37	43	43	44	a 64	--	--		--	--
20	64	--	35	39	46	57	58	--	--		--	--
21	a 66	--	a 40	38	45	54	74	--	--		--	--
22	61	47	a 44	--	43	52	78	70	--		--	--
23	a 65	--	39	a 43	45	--	a 75	74	--		a 83	--
24	50	a 49	37	a 46	a 50	a 59	--	70	--		a 72	--
25	50	48	--	a 50	a 52	a 58	72	70	--		69	--
26	53	a 48	33	44	48	55	62	a 79	--		60	--
27	56	a 46	a 39	48	48	54	70	a 81	--		a 69	--
28	a 61	a 45	a 35	44	39	49	--	a 84	--		68	--
29	55	42	a 37	42	--	52	a 58	78	--		81	--
30	a 57	42	35	--	--	55	a 62	a 84	--		73	--
31	52	--	--	--	--	56	--	72	--		77	--
Average	62	--	41	40	44	50	64	--	--		--	--

a Reading obtained between 1 p. m. and 5 p. m.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	61	10,600	1,750	9.0	301	7	226	2,590	1,580
2-----	122	24,000	as 9,700	8.5	297	7	226	2,360	1,440
3-----	106	31,000	8,870	6.5	270	a 5	235	2,310	1,470
4-----	110	37,000	11,400	8.5	251	6	228	2,580	1,570
5-----	120	40,500	13,600	9.6	178	5	242	1,950	1,270
6-----	92	38,700	9,970	10	232	6	200	1,820	983
7-----	77	17,000	3,530	11	241	7	218	1,270	748
8-----	63	7,000	1,190	10	249	7	272	1,680	1,220
9-----	55	3,190	474	6.0	240	a 4	265	1,670	1,190
10-----	38	1,090	112	4.0	240	3	245	2,070	1,370
11-----	28	648	49	5.5	153	2	268	1,870	1,350
12-----	21	498	28	6.0	200	a 3	278	1,790	1,340
13-----	18	454	22	15	300	a 12	272	1,900	1,400
14-----	21	423	24	20	376	20	300	2,030	1,640
15-----	19	338	17	27	446	33	322	1,780	1,550
16-----	18	340	a 17	36	790	77	363	1,560	1,530
17-----	18	356	17	43	785	91	366	1,620	1,600
18-----	23	305	19	51	954	131	387	1,650	1,720
19-----	29	426	33	55	1,340	199	411	1,690	1,780
20-----	28	325	25	62	1,600	a 270	420	1,630	1,850
21-----	24	249	16	62	1,800	a 300	423	1,560	1,780
22-----	21	296	17	67	2,040	369	423	1,380	1,580
23-----	21	262	15	79	2,200	a 470	411	1,410	1,560
24-----	19	263	13	104	2,490	699	390	1,350	1,420
25-----	14	270	10	134	2,700	977	330	1,200	a 1,100
26-----	11	305	9	182	2,400	1,180	350	679	642
27-----	11	265	8	214	2,070	1,200	402	1,190	1,290
28-----	9.6	193	5	218	2,450	1,430	345	1,240	1,180
29-----	9.6	219	6	218	2,730	1,610	375	757	768
30-----	9.6	268	7	268	2,420	1,480	423	920	1,070
31-----	9.6	268	7	--	--	--	423	1,400	a 1,600
Total-	1,226.4	--	60,960	1,905.6	--	10,610	10,043	--	42,669
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	426	1,630	1,870	200	301	163	973	1,650	4,330
2-----	399	1,200	a 1,300	180	320	a 180	566	1,520	2,320
3-----	420	1,100	1,250	160	250	a 110	447	1,200	1,450
4-----	426	1,050	1,210	200	630	a 340	390	1,070	1,130
5-----	447	1,050	1,270	252	640	s 529	360	917	891
6-----	432	1,150	1,340	665	1,300	2,330	302	800	652
7-----	315	800	680	432	1,320	1,540	240	832	539
8-----	330	300	267	387	1,000	1,040	160	595	257
9-----	240	400	259	650	1,700	2,980	114	519	160
10-----	285	400	308	726	1,750	3,430	98	670	177
11-----	290	350	274	640	1,510	2,610	64	427	74
12-----	360	1,210	1,180	498	1,300	1,750	42	303	34
13-----	466	1,350	1,700	474	1,320	1,690	38	250	26
14-----	372	710	713	402	1,000	1,090	38	315	32
15-----	408	510	562	1,010	2,220	s 7,410	36	523	51
16-----	478	526	679	1,430	3,070	11,900	35	400	a 38
17-----	482	450	a 590	1,390	3,120	11,700	31	304	25
18-----	462	1,190	1,480	1,320	2,320	8,270	31	407	34
19-----	405	1,130	1,240	1,200	2,500	8,100	28	275	21
20-----	387	1,180	1,230	1,280	2,510	8,670	28	268	20
21-----	366	1,000	988	1,280	2,550	8,810	29	283	22
22-----	393	1,200	a 1,300	1,240	2,380	7,970	31	279	23
23-----	417	1,010	1,140	1,120	2,170	6,560	33	260	a 23
24-----	408	1,030	1,130	1,080	1,950	5,690	36	258	25
25-----	408	1,000	1,100	1,110	1,500	4,500	32	206	18
26-----	414	1,110	1,240	1,170	1,630	5,780	32	231	20
27-----	444	1,020	1,140	1,110	2,000	5,990	33	305	27
28-----	444	1,190	1,430	1,160	2,080	6,510	31	273	23
29-----	411	1,190	1,320	--	--	--	30	185	15
30-----	411	900	a 1,000	--	--	--	31	209	17
31-----	300	450	a 360	--	--	--	28	276	21
Total-	12,216	--	31,550	22,766	--	127,622	4,367	--	12,495

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	33	494	43	1.0	332	1	3.1	310	a 3
2-----	29	203	16	1.6	175	1	.5	242	(t)
3-----	18	270	13	1.3	260	1	.5	227	(t)
4-----	15	327	13	1.6	262	1	.4	266	(t)
5-----	16	247	11	.8	324	1	0	--	0
6-----	18	298	14	1.3	550	2	0	--	0
7-----	17	189	9	.6	572	1	0	--	0
8-----	14	205	8	.3	500	(t)	0	--	0
9-----	13	196	7	.2	200	(t)	0	--	0
10-----	9.0	200	a 5	0	--	0	0	--	0
11-----	10	206	6	0	--	0	0	--	0
12-----	9.6	135	3	.5	250	(at)	0	--	0
13-----	9.6	102	3	17	550	a 25	0	--	0
14-----	7.5	198	4	14	294	11	0	--	0
15-----	6.5	253	4	1.0	222	1	0	--	0
16-----	4.0	109	1	1.0	240	1	0	--	0
17-----	4.5	112	1	0	--	0	0	--	0
18-----	4.5	124	2	0	--	0	0	--	0
19-----	2.2	167	1	0	--	0	0	--	0
20-----	.7	170	(t)	0	--	0	0	--	0
21-----	.4	189	(t)	0	--	0	0	--	0
22-----	.2	200	(t)	21	300	17	0	--	0
23-----	0	--	0	36	262	25	0	--	0
24-----	0	--	0	24	272	18	0	--	0
25-----	.2	262	(t)	7.5	266	5	0	--	0
26-----	1.0	224	1	12	300	10	0	--	0
27-----	2.5	273	2	11	242	7	0	--	0
28-----	2.5	420	a 3	8.5	269	6	0	--	0
29-----	1.6	800	3	11	385	11	0	--	0
30-----	1.6	280	1	11	391	12	0	--	0
31-----	--	--	--	10	394	11	--	--	--
Total-	251.1	--	175	194.2	--	169	4.5	--	4
	July			August			September		
1-----				0	--	0	374	43,000	s 45,200
2-----				0	--	0	141	41,400	16,300
3-----				0	--	0	68	28,500	5,230
4-----				1.4	200	a 1	34	20,700	1,900
5-----				87	43,100	10,500	18	10,000	486
6-----				161	52,700	s 23,900	4.0	1,800	19
7-----				188	50,600	s 27,200	.6	165	(t)
8-----				201	16,300	s 12,100	.1	100	(at)
9-----				46	7,580	s 843	0	--	0
10-----				17	16,000	734	0	--	0
11-----				.7	3,000	6	0	--	0
12-----				.1	40	(t)	0	--	0
13-----				0	--	0	0	--	0
14-----				0	--	0	0	--	0
15-----				0	--	0	0	--	0
16-----				0	--	0	0	--	0
17-----				.3	--	(et)	0	--	0
18-----				9.0	--	(et)	0	--	0
19-----				.3	--	(et)	0	--	0
20-----				0	--	0	0	--	0
21-----				0	--	0	0	--	0
22-----				1.1	200	a 1	0	--	0
23-----				248	23,100	s 23,900	0	--	0
24-----				390	58,300	s 62,900	0	--	0
25-----				1,010	39,000	s 106,000	0	--	0
26-----				804	30,000	65,100	0	--	0
27-----				1,090	48,800	s 150,000	0	--	0
28-----				315	40,500	s 36,400	0	--	0
29-----				235	38,300	25,200	0	--	0
30-----				141	29,800	s 11,900	0	--	0
31-----				960	49,900	s 133,000	--	--	--
Total-	0	0	0	5,905.9	--	689,686	639.7	--	69,135
Total discharge for year (cfs-days).....									59,519.4
Total load for year (tons).....									1,045,075

e Estimated.

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued
RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1950 to September 1951
(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	Instantaneous discharge (cfs)	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, 1950	11:00 a.m.	62	10,200	3,140	--	90	--	91	--	--	--	--	--	--	--	PWCM
Oct. 9	11:45 a.m.	55	3,480	2,440	--	92	--	94	--	--	--	--	--	--	--	PWCM
Nov. 10	1:40 p.m.	5.5	387	1,180	54	71	81	92	--	--	--	--	--	--	--	DWCM
Dec. 1	1:40 p.m.	230	1,870	1,160	70	78	89	94	96	98	100	--	--	--	--	BWCM
Dec. 10	11:10 a.m.	268	2,170	970	78	90	95	97	98	99	--	--	--	--	--	BWCM
Dec. 17	3:00 p.m.	360	1,490	5,760	--	90	--	99	--	--	--	--	--	--	--	PWCM
Dec. 27	1:20 p.m.	423	1,940	1,080	89	91	98	98	99	99	100	99	--	--	100	BWCM
Dec. 30	12:40 p.m.	518	867	6,430	--	83	--	91	--	93	96	--	--	--	--	SPWCM
Jan. 9, 1951	12:00 m.	378	1,150	3,900	--	86	--	94	--	--	--	--	--	--	--	PWCM
Feb. 15	3:00 p.m.	1,430	a 2,490	5,460	--	90	--	97	--	--	--	--	--	--	--	PWCM
Feb. 15	3:00 p.m.	1,430	b 3,570	2,830	60	77	84	85	85	85	--	--	--	--	--	BWCM
Feb. 15	3:00 p.m.	1,430	c 2,590	1,320	64	82	86	87	88	89	--	--	--	--	--	BWCM
Mar. 8	2:00 p.m.	150	561	5,580	69	83	94	93	99	100	--	--	--	--	--	BWCM
Aug. 10	11:35 a.m.	24	18,900	3,840	--	97	--	97	--	100	--	--	--	--	--	SPWCM
Aug. 23	1:45 p.m.	345	37,700	2,870	--	93	--	98	--	--	--	--	--	--	--	PWCM
Aug. 23	3:30 p.m.	411	31,600	2,990	--	91	--	98	--	--	--	--	--	--	--	PWCM
Aug. 25	6:50 a.m.	980	36,200	1,560	--	90	--	95	--	--	--	--	--	--	--	PWCM
Aug. 25	1:30 p.m.	1,370	34,800	3,500	73	77	85	95	97	100	--	--	--	--	--	SPWCM
Aug. 25	3:30 p.m.	1,370	34,800	3,740	3	10	31	97	98	100	--	--	--	--	--	SPN
Aug. 25	1:30 p.m.	1,370	34,800	2,350	76	93	98	99	99	100	--	--	--	--	--	SEWCM
Aug. 25	1:30 p.m.	1,370	34,800	2,360	5	9	21	--	--	100	--	--	--	--	--	SEN
Aug. 27	2:20 p.m.	1,180	50,600	4,130	--	87	--	98	--	100	--	--	--	--	--	SPWCM
Aug. 31	9:00 a.m.	1,980	26,300	4,160	--	86	--	94	--	100	--	--	--	--	--	SPWCM
Aug. 31	2:00 p.m.	1,280	24,500	3,800	--	88	--	95	--	100	--	--	--	--	--	SPWCM
Sept. 4	12:25 p.m.	31	21,300	2,950	--	76	--	93	--	100	--	--	--	--	--	SPWCM

a Sample taken between right bank and center of stream.
b Sample taken at center of stream.
c Sample taken between left bank and center of stream.

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.

LOCATION.--At bridge at Puerto de Luna, Guadalupe County, 18½ (revised) miles upstream from gaging station near Puerto de Luna which is 14 miles upstream from Alamo-Gordo Dam.

DRAINAGE AREA.--3,970 square miles, approximately (contributing area) (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: July 1939 to September 1941, November 1946 to September 1951.

Water temperatures: June 1949 to September 1951.

Sediment records: January 1949 to September 1951.

EXTREMES, 1930-51.--Dissolved solids: 1. Maximum, 2,620 ppm Apr. 21-30; minimum, 376 ppm July 14.

Hardness: Maximum, 1,800 ppm July 14; minimum, 284 ppm July 14.

Water temperature: Maximum, 98°F July 14; minimum, 59°F Jan. 31.

Sediment concentrations: Maximum daily, 41,300 ppm June 5; minimum daily, 27 ppm Sept. 21-30.

Sediment loads: Maximum daily, 271,000 tons June 5; minimum daily, 5 tons Sept. 21-30.

EXTREMES, 1939-41, 1946-51.--Dissolved solids: Maximum, 2,620 ppm Apr. 21-30, 1951; minimum, 287 ppm May 11-16, 18-20, 1941.

Hardness: Maximum, 1,880 ppm July 14, 1951; minimum, 200 ppm May 11-16, 18-20, 1941.

Water temperatures: Maximum daily, 3,080 microhos Apr. 2, 1947, July 7, 1951; minimum daily, 344 microhos Sept. 21, 1941.

Sediment concentrations (1949-51): Maximum observed, 98°F July 5, 19, 1949; minimum daily, 24 ppm May 22, 1950.

Sediment loads (1949-51): Maximum daily, 41,300 ppm June 5, 1951; minimum daily, 5 tons Sept. 21-30, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Discharge records for gaging station near Puerto de Luna for water year October 1950 to September 1951 given in Water-Supply Paper 1212. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate			
Oct. 1-10, 1950	112		18		564	72	60		185	1,470	125	--	0.4	2,390	3.25	723	1,710	1,580	7	2,710	7.3
Oct. 11-20	100		16		566	75	59		165	1,490	130	--	0.4	2,430	3.30	858	1,720	1,580	8	2,780	7.6
Oct. 21-31	98.2		15		562	73	58		175	1,300	125	--	0.4	2,470	3.32	855	1,730	1,570	9	2,830	7.7
Nov. 1-10	98.2		15		570	72	85		175	1,300	130	--	0.4	2,490	3.39	868	1,730	1,580	10	2,790	7.4
Nov. 11-20	99.4		16		576	72	85		184	1,520	130	--	0.4	2,470	3.36	874	1,770	1,620	7	2,800	7.6
Nov. 21-30	101		16		578	80	62		179	1,510	132	--	0.4	2,470	3.36	874	1,770	1,620	7	2,800	7.6
Dec. 1-10	111		17		576	85	57		182	1,510	131	--	1.3	2,470	3.36	740	1,790	1,640	7	2,830	7.4
Dec. 11-20	112		16		580	84	50		175	1,510	134	--	0.8	2,460	3.35	744	1,780	1,650	6	2,800	7.5
Dec. 21-31	104		15		588	80	59		171	1,490	130	--	0.6	2,430	3.30	882	1,750	1,610	7	2,770	7.5
Jan. 1-10, 1951	101		15		584	67	85		172	1,520	137	--	0.6	2,480	3.39	879	1,730	1,590	10	2,830	7.4
Jan. 11-20	106		16		574	73	89		183	1,520	139	--	0.5	2,500	3.40	716	1,730	1,580	10	2,840	7.6
Jan. 21-31	86.8		15		588	76	79		185	1,540	139	--	0.5	2,530	3.44	593	1,780	1,630	9	2,860	7.6
Feb. 1-10	95.8		15		578	79	70		180	1,510	142	--	0.5	2,480	3.37	641	1,770	1,620	8	2,850	7.5
Feb. 11-20	100		16		584	78	70		172	1,530	138	--	1.1	2,500	3.40	675	1,780	1,640	8	2,840	7.6
Feb. 21-28	110		15		596	75	72		176	1,550	138	--	1.0	2,530	3.44	751	1,800	1,650	8	2,870	7.7

RIO GRANDE BASIN--Continued
PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Calcium, magnesium	Carbonate		
Mar. 1-10, 1951.....	108		15		604	76		69	171	1,560	146		0.9	2,550	3.47	1,820	1,680	2,900	7.9
Mar. 1-30.....	102		15		600	80	58	58	171	1,540	138	--	1.1	2,520	3.43	1,830	1,690	2,870	7.8
Mar. 21-31.....	92.4		18		588	74		66	164	1,560	96	--	.9	2,500	3.40	1,770	1,640	2,890	7.4
Apr. 1-10.....	82.8		18		582	73		94	178	1,550	139	--	.7	2,540	3.45	1,750	1,610	2,900	7.4
Apr. 11-20.....	74.7		18		604	75		83	162	1,610	133	--	.8	2,600	3.54	1,820	1,680	2,950	7.5
Apr. 21-30.....	71.4		18		604	74		92	164	1,610	145	--	.8	2,620	3.56	1,810	1,680	2,940	7.5
May 1-10.....	69.6		18		600	75		87	158	1,600	141	--	1.0	2,600	3.54	1,810	1,680	2,940	7.4
May 11-14, 18, 20.....	96.0		18		548	70		83	146	1,470	132	--	1.2	2,390	3.25	1,660	1,540	2,740	7.5
May 15-17, 19.....	169		19		277	38		48	167	700	60	--	1.6	1,230	1.87	847	710	1,570	7.9
May 21-31.....	85.4		17		530	67		78	175	1,400	118	--	1.1	2,300	3.13	1,600	1,450	2,660	7.5
June 1-4, 9-10.....	97.5		19		591	73		88	166	1,570	138	--	.8	2,560	3.48	1,770	1,640	2,890	7.5
June 5-8.....	690		19		362	45		45	193	886	73	--	1.9	1,550	2.08	1,090	930	1,880	7.5
June 11-20.....	67.4		17		597	73		91	180	1,570	142	--	1.0	2,560	3.48	1,760	1,630	2,890	7.5
June 21-30.....	54.4		17		592	74		87	166	1,570	145	--	1.0	2,560	3.48	1,760	1,650	2,920	7.4
July 1-10.....	39.6		16		616	83		56	156	1,610	145	0.5	.6	2,610	3.58	1,800	1,700	2,920	7.4
July 11-13, 18-20.....	147		16		512	117		35	167	1,600	135	.5	.9	2,610	3.58	1,800	1,700	2,920	7.5
July 14-16.....	1,280		16		512	117		35	167	1,600	135	.5	.9	2,610	3.58	1,800	1,700	2,920	7.5
July 15-17.....	585		16		172	22		28	163	331	33	.5	1.9	735	1.00	520	384	604	7.8
July 21-22, 26-31, Aug. 1.....	74.2		18		584	68		73	172	1,530	115	--	.7	2,470	3.38	1,740	1,600	2,810	7.4
July 23-25.....	343		19		277	32		36	220	632	44	--	1.1	1,150	1.56	1,070	822	1,490	7.6
Aug. 2, 6.....	492		17		155	21		28	199	323	23	--	1.6	667	.91	886	473	943	7.9
Aug. 3-5, 7-10.....	221		15		282	35		41	195	670	54	--	2.9	1,200	1.63	1,160	848	1,540	7.6
Aug. 11-20.....	139		16		496	61		74	170	1,300	111	--	.8	2,140	2.91	1,490	1,350	2,500	7.5
Aug. 22, 24-29.....	405		16		211	24		34	183	474	39	--	1.2	889	1.21	972	625	1,210	7.6
Aug. 21, 23, 30, 31.....	148		16		462	55		70	168	1,200	102	--	.8	1,990	2.71	1,380	1,240	2,350	7.6
Sept. 1-10.....	132		16		530	62		78	173	1,300	112	--	.7	2,270	3.09	1,580	1,440	2,350	7.6
Sept. 11-20.....	83.1		16		596	70		81	175	1,560	130	--	1.5	2,540	3.45	1,780	1,630	2,870	7.7
Sept. 21-30.....	69.6		16		602	74		92	172	1,610	133	--	1.5	2,610	3.55	1,810	1,670	2,920	7.7
Weighted average..	121		17		476	59		63	177	1,230	105	--	1.1	2,040	2.77	1,430	1,280	2,370	--

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 [Once-daily temperature measurement, usually between 11 a. m. and 6 p. m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 69	62	52	47	35	58	60	57	--	b 79	80	a 64
2	69	56	47	43	37	49	61	a 56	--	b 76	89	a 73
3	71	a 42	50	45	a 37	44	62	74	--	b 71	80	b 76
4	63	58	52	49	46	59	56	75	--	81	87	69
5	74	59	38	43	50	58	58	b 71	65	b 77	84	61
6	a 60	63	43	46	57	59	b 54	a 64	73	b 78	a 70	a 68
7	75	61	47	46	53	58	a 60	60	b 65	b 76	b 76	a 69
8	b 62	54	53	45	55	59	62	a 53	b 73	b 80	b 75	76
9	66	b 45	55	45	--	52	62	69	--	b 75	b 80	76
10	b 63	49	b 43	47	b 55	56	44	66	80	b 75	76	a 63
11	74	53	59	44	53	46	52	72	80	b 76	84	a 64
12	71	a 52	53	50	58	54	b 58	65	75	b 71	b 76	74
13	a 55	54	57	42	41	57	70	65	70	75	b 76	a 59
14	71	56	55	47	45	60	70	71	b 77	81	b 75	a 59
15	57	--	56	52	47	b 40	62	a 57	74	b 75	80	56
16	a 54	50	53	50	51	56	64	b 56	71	b 82	74	75
17	68	--	b 52	47	56	b 48	b 60	--	a 74	80	b 71	a 53
18	68	54	50	54	61	46	64	76	a 61	79	b 74	a 62
19	67	58	54	51	51	60	70	74	b 80	82	b 85	a 69
20	a 54	53	52	45	58	a 42	--	71	75	84	80	73
21	75	53	51	51	59	65	--	--	b 75	83	70	b 65
22	69	58	52	50	59	60	--	--	80	b 73	a 65	71
23	67	--	55	47	52	65	--	--	b 75	b 79	76	b 68
24	70	--	50	49	55	65	--	--	b 80	b 79	78	71
25	75	b 50	52	57	52	60	--	--	80	78	70	67
26	a 60	56	48	54	54	b 58	--	--	b 77	80	72	--
27	b 65	56	46	46	57	58	66	--	b 78	a 79	70	--
28	65	a 40	47	44	59	48	a 52	--	b 80	a 80	77	--
29	a 60	55	49	35	--	56	59	--	b 81	80	76	--
30	60	56	50	38	--	57	52	--	b 79	b 79	76	71
31	a 51	--	a 45	33	--	61	--	--	--	--	a 66	--
Average	65	54	51	47	52	57	--	--	75	78	76	67

a Reading obtained before 11 a. m.

b Reading obtained after 6 p. m.

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	106	271	78	100	117	32	97		
2-----	122	212	70	97	158	41	94	148	38
3-----	129	539	188	94	182	46	100		
4-----	122	256	84	91	193	47	129	174	53
5-----	109	275	a 81	91	200	a 49	112		
6-----	112	344	104	97	269	70	112		
7-----	106	234	67	103	219	61	122		
8-----	97	262	69	94	245	62	126		
9-----	100	166	45	115	112	35	115	146	46
10-----	112	174	53	100	126	34	103		
11-----	106	88	25	103	137	38	118		
12-----	100	347	94	103	91	25	112		
13-----	100	789	213	118	119	38	112	109	33
14-----	100	196	53	109	108	32	109		
15-----	97	98	26	100	110	a 30	109		
16-----	103	321	89	88	110	26	109		
17-----	94	186	47	88	110	a 26	103	109	33
18-----	100	186	50	91	212	52	118		
19-----	103	188	52	91	386	95	112		
20-----	100	240	65	103	116	32	118		
21-----	100	200	a 54	88	110	a 26	109		
22-----	85	167	38	94	111	28	109		
23-----	106	145	41	97	115	a 30	112	123	35
24-----	100	155	42	106	130	a 37	97		
25-----	97	195	51	109			103		
26-----	94	154	39	103			103		
27-----	94	209	53	112	146	41	112		
28-----	91	186	46	97			97		
29-----	80	121	26	106			97	132	36
30-----	88	177	42	97	148	41	103		
31-----	100	175	47	--	--	--	97		
Total-	3,153	--	2,032	2,985	--	1,238	3,369	--	1,205
Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	112			40			103		
2-----	122			60			106		
3-----	103			100	91	23	103		
4-----	94	85	24	129			97	92	26
5-----	97			132			115		
6-----	97			112			106		
7-----	88			103			106		
8-----	100			100	87	23	106		
9-----	100			88			115		
10-----	100	161	44	94			122	127	38
11-----	103			88			109		
12-----	115			106			112		
13-----	115			91	87	22	103		
14-----	109			97			112		
15-----	122			91			122		
16-----	112	180	53	100			106	100	a 29
17-----	103			103			103		
18-----	94			100	84	24	103		
19-----	97			118			115		
20-----	94			109			109		
21-----	91			106			109		
22-----	100	84	22	97			97	36	10
23-----	88			100	70	20	91		
24-----	100			115			85		
25-----	85			122			82		
26-----	109			129			106		
27-----	100			112	84	26	91		
28-----	91	121	29	103			91	92	22
29-----	97			--	--	--	88		
30-----	50			--	--	--	88		
31-----	44	91	11	--	--	--	88		
Total-	3,032	--	1,043	2,845	--	638	3,189	--	772

a Computed from estimated concentration graph.

RIO GRANDE BASIN
RIO GRANDE BASIN--Continued

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PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	80	142	31	75	98	19	44	162	18
2-----	80			72			38		
3-----	80			75			37		
4-----	80			75			46		
5-----	91	39	9	68	47	8	1,890	41,300	sb 271,000
6-----	80			60			469	22,200	s 29,400
7-----	85			68			240	6,000	3,890
8-----	82			68			162	3,800	1,660
9-----	85			65			118	3,200	1,020
10-----	85	45	a 10	70			62	1,000	167
11-----	75			70			65	580	102
12-----	80			60			60	720	117
13-----	80			56			62	750	126
14-----	72			56			75	600	122
15-----	65	190	37	151	6,000	sb 4,260	62	380	64
16-----	58			150	9,500	b 3,850	75	480	97
17-----	82			163	9,900	sb 4,730	91	560	138
18-----	75			129	2,000	697	68	380	70
19-----	78			212	7,340	sb 4,530	60	420	68
20-----	82	56	11	205	3,000	1,660	56	380	57
21-----	78			150	1,480	599	50	220	30
22-----	72			109	2,750	809	48	270	35
23-----	72			146	3,650	1,440	46	470	58
24-----	70			136	1,600	588	44	650	77
25-----	70	80	15	85	700	161	48	384	51
26-----	75			65	500	88	50	1,000	a 140
27-----	68			58	420	66	52	1,500	316
28-----	62			54			78	580	110
29-----	75			48	185	24	70	450	70
30-----	72	--	--	42			58	--	--
31-----	--			46			--	--	--
Total--	2,289	--	550	2,887	--	23,763	4,324	--	309,108
Day	July			August			September		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1-----	52	210	29	38	500	51	140	780	295
2-----	44	240	29	534	29,600	s 57,500	122	490	161
3-----	44	280	33	349	18,400	17,300	91	340	84
4-----	38	400	41	230	8,000	4,970	135	2,050	sb 1,370
5-----	38	350	36	109	4,500	1,320	130	2,600	sb 1,070
6-----	38	250	26	451	15,100	s 20,500	85	770	177
7-----	38	213	21	328	11,500	10,200	68	650	119
8-----	35			252	5,200	3,450	315	6,090	s 8,230
9-----	34			162	2,200	962	109	650	191
10-----	35	198	22	114	800	246	82	320	71
11-----	46			258	2,720	s 2,920	85	450	103
12-----	52			205	1,500	830	100	500	135
13-----	323	10,200	s 21,400	191	1,800	928	94	380	96
14-----	1,230	15,500	s 61,900	143	2,800	1,080	88	270	64
15-----	942	12,400	s 32,600	97	244	64	94	200	51
16-----	442	10,000	11,900	80	306	66	80	200	43
17-----	370	9,800	9,790	72			72	330	64
18-----	235	4,800	3,050	78	255	52	78	300	63
19-----	132	1,500	535	78			72		
20-----	94	920	233	88	365	93	68	81	15
21-----	80	580	125	100			68		
22-----	78	380	80	58			68		
23-----	606	22,600	s 52,000	156	1,500	632	68		
24-----	284	12,600	sb 9,590	417	13,200	s 22,600	68		
25-----	158	10,100	4,310	349	15,000	14,100	70		
26-----	210	12,900	sb 10,100	252	10,200	6,940	60	27	5
27-----	88	2,500	b 594	378	11,200	11,400	62		
28-----	46	1,000	124	328	8,000	7,080	72		
29-----	46	1,000	124	252	2,800	1,910	80		
30-----	42	700	79	182	1,600	786	80		
31-----	40	1,000	108	154	1,000	416	--	--	--
Total--	5,920	--	218,981	7,283	--	212,683	2,804	--	12,487

Total discharge for year (cfs-days) 44,080
Total load for year (tons) 784,480

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from partly-estimated concentration graph.

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Particle-size analyses of suspended sediment, June to September 1951.
 (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	Instantaneous discharge (cfs)	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 5, 1951.....	3:45 p. m.	1,250	43,400	3,610	--	23	--	35	--	--	60	77	90	--	98	100	SPWCM
June 5.....	5:05 p. m.	800	40,400	3,250	--	26	--	39	--	--	72	94	99	--	100	--	SPWCM
June 6.....	9:50 a. m.	450	21,200	3,900	--	53	--	72	--	--	84	94	99	--	100	--	SPWCM
June 7.....	7:05 p. m.	170	3,900	3,300	--	60	--	78	--	--	86	96	99	--	100	--	SPWCM
June 27.....	7:00 p. m.	60	2,330	2,690	--	27	--	28	--	--	77	97	99	--	100	--	SPWCM
June 29.....	7:00 p. m.	60	556	643	27	31	35	38	45	59	88	100	--	--	--	--	SBWCM
July 1.....	1:00 p. m.	1,000	33,900	4,190	--	46	--	63	--	74	85	96	99	--	100	--	SPWCM
July 14.....	3:15 a. m.	2,000	21,200	2,820	35	41	45	57	72	81	91	98	100	--	--	--	SPWCM
July 14.....	21,000	2,000	21,200	2,810	13	16	36	57	75	81	91	98	100	--	--	--	SPN
July 14.....	3:15 a. m.	2,000	21,200	2,810	36	40	49	62	70	81	91	98	100	--	--	--	SBWCM
July 14.....	3:15 a. m.	2,000	21,200	1,080	16	20	23	29	47	81	91	98	100	--	--	--	SEN
July 14.....	5:45 a. m.	1,250	17,800	4,610	--	42	--	54	--	82	93	99	100	--	--	--	SPWCM
July 16.....	12:10 p. m.	450	8,640	3,360	--	75	--	82	--	95	99	100	--	--	--	--	SPWCM
July 23.....	4:30 a. m.	950	38,800	3,740	--	40	--	62	--	87	96	100	--	--	--	--	SPWCM
July 26.....	5:00 a. m.	550	27,900	3,540	--	46	--	88	--	87	90	96	99	100	--	--	SPWCM
Aug. 2.....	7:10 a. m.	1,040	42,100	3,750	--	44	--	66	--	83	91	98	100	--	--	--	SPWCM
Aug. 2.....	4:00 p. m.	620	31,900	3,530	--	54	--	75	--	92	96	99	100	--	--	--	SPWCM
Aug. 3.....	6:20 p. m.	300	14,800	4,190	--	60	--	82	--	95	99	100	--	--	--	--	SPWCM
Aug. 6.....	5:00 a. m.	480	18,600	3,640	--	51	--	75	--	95	99	100	--	--	--	--	SPWCM
Aug. 6.....	7:30 a. m.	470	18,500	4,500	--	46	--	76	--	95	99	100	--	--	--	--	SPWCM
Aug. 11.....	8:00 a. m.	550	8,250	4,160	--	16	--	31	--	72	96	99	100	--	--	--	SPWCM
Aug. 22.....	7:50 a. m.	670	6,320	4,220	--	42	--	63	--	84	94	98	100	--	--	--	SPWCM
Aug. 24.....	10:50 a. m.	670	26,700	3,450	38	52	63	76	80	87	94	99	99	--	--	--	SPWCM
Aug. 24.....	10:50 a. m.	670	26,700	3,680	24	43	53	68	77	87	94	99	99	--	--	--	SPN
Aug. 24.....	10:50 a. m.	670	26,700	2,140	35	42	49	53	61	87	94	99	99	--	--	--	SEWCM
Aug. 24.....	10:50 a. m.	670	26,700	2,160	7	22	61	74	85	87	94	99	99	--	--	--	SEN
Aug. 24.....	6:20 p. m.	470	19,400	4,380	--	47	--	71	--	91	97	99	100	--	--	--	SPWCM
Aug. 25.....	6:45 p. m.	250	11,600	3,340	--	72	--	81	--	94	98	100	--	--	--	--	SPWCM
Aug. 27.....	6:30 p. m.	340	11,700	5,120	--	60	--	82	--	93	97	99	100	--	--	--	SPWCM
Sept. 1.....	7:40 a. m.	130	1,010	972	24	28	36	40	44	49	50	69	82	92	--	--	SBWCM
Sept. 8.....	6:40 p. m.	150	1,190	1,070	22	28	34	36	41	50	69	85	93	--	--	--	SBWCM

RIO GRANDE BASIN--Continued
PECOS RIVER BELOW ALAMOGORDO DAM, N. MEX.

LOCATION.--At gaging station 1,200 feet downstream from Alamogordo Dam, $1\frac{1}{2}$ miles downstream from Alamogordo Creek, and $4\frac{1}{2}$ miles northeast of Guadalupe, DeSaca County.

DRAINAGE AREA.--4,390 square miles, approximately (contributing area).

RECORDS AVAILABLE.--Chemical analyses: June 1937 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 2,420 ppm July 26 to Aug. 2; minimum, 1,020 ppm Aug. 3-10.

Hardness: Maximum, 1,710 ppm July 26 to Aug. 2; minimum, 727 ppm Aug. 3-10.

Specific conductance: Maximum daily, 2,860 micromhos Aug. 1, 2; minimum daily, 1,270 micromhos Oct. 15, Aug. 6.

EXTREMES, 1952.--Dissolved solids: Maximum, 2,990 ppm Apr. 21-30, 1952; minimum, 435 ppm Oct. 1-8, 1941.

Hardness: Maximum, 1,800 ppm July 1-8, 1941; minimum, 727 ppm Oct. 1-8, 1941.

Specific conductance: Maximum daily, 3,200 micromhos Jan. 1-6, 1948; minimum daily, 1,313 micromhos July 22, 1937.

REMARKS.--Records of specific conductance of daily samples available in District office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Tem- perature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nes- ium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Bo- ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per- cent so- sium	Specific conductance (micro-mhos at 25°C)	pH
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, mg. per milliliter	Non-carbon- ate			
Oct. 1-10, 1950	113		12		257	35	39		131	673	48		0.8	1,130	1.54	345	785	678	10	1,470	7.3
Oct. 11-20	106		11		261	34	41		132	673	52		.5	1,140	1.55	326	791	683	10	1,460	7.3
Oct. 21-31	6.77		13		281	44	48		141	756	60		.8	1,270	1.73	23.2	882	766	11	1,620	7.6
Nov. 1-10	5.84		14		280	48	52		145	772	62		.4	1,300	1.77	20.5	896	777	11	1,660	7.3
Nov. 11-20	6.28		14		286	44	51		140	773	62		.6	1,300	1.77	22.0	894	780	11	1,650	7.3
Nov. 21-30	7.06		15		302	53	50		153	835	61		.3	1,390	1.89	26.5	972	846	10	1,730	8.0
Dec. 1-10	5.24		15		304	54	50		155	833	66		.3	1,400	1.90	19.8	980	854	10	1,730	8.0
Dec. 11-20	6.00		15		314	62	62		151	904	73		.6	1,510	2.05	24.5	1,040	915	12	1,860	7.9
Dec. 21-31	5.60		15		316	57	54		152	872	69		.3	1,460	1.99	22.1	1,020	898	10	1,800	8.0
Jan. 1-10, 1951	2.58		13		326	46	49		150	854	70		.6	1,430	1.94	9.96	1,000	880	10	1,770	7.7
Jan. 11-20	3.35		15		328	50	47		151	869	71		.4	1,450	1.97	13.1	1,020	400	9	1,810	7.6
Jan. 21-31	4.35		14		330	50	52		151	877	72		.5	1,470	2.00	17.3	1,030	906	10	1,820	7.4
Feb. 1-10	3.79		14		332	53	52		149	887	72		.3	1,480	2.01	15.1	1,050	924	10	1,840	7.5
Feb. 11-20	4.25		12		342	48	59		148	909	72		.5	1,520	2.07	17.4	1,050	930	11	1,860	7.8
Feb. 21-28	6.05		14		344	49	62		145	915	70		.4	1,530	2.08	25.0	1,060	941	11	1,870	7.8
Mar. 1-10	5.53		13		352	49	57		145	945	75		.4	1,560	2.12	23.3	1,080	960	10	1,910	7.8
Mar. 11-20	72.4		16		346	53	62		150	935	76		.6	1,560	2.12	30.5	1,080	958	11	1,910	7.8
Mar. 21-31	1,248		11		364	49	58		140	968	75		.5	1,590	2.16	5,360	1,110	995	10	1,940	7.8
Apr. 1-10	57.2		13		368	53	55		137	979	79		.7	1,610	2.19	249	1,140	1,020	10	1,970	7.4
Apr. 11-20	70.8		14		370	53	54		139	968	80		.5	1,630	2.22	312	1,140	1,030	9	1,980	7.5
Apr. 21-30	460		12		380	53	60		140	1,010	79		.4	1,660	2.26	2,060	1,170	1,050	10	2,010	7.5
May 1-10	532		12		390	55	60		138	1,050	85		.2	1,700	2.31	2,440	1,200	1,090	10	2,050	7.5
May 11-20	88.6		12		398	57	62		137	1,070	90		.6	1,760	2.39	421	1,230	1,120	10	2,110	7.4
May 21-31	91.3		12		404	55	56		134	1,070	86		.2	1,750	2.38	431	1,230	1,120	9	2,110	7.4

RIO GRANDE BASIN--Continued
 PECOS RIVER BELOW ALAMOGORDO DAM, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate			
June 1-10, 1951....	54.9		14		392	57	57		135	1,050	88		0.5		1,720	2.34	255	1,210	1,100	9	2,080	7.4
June 11-20	447		12		410	56	56		131	1,090	88		.5		1,780	2.42	2,150	1,250	1,150	9	2,130	7.4
June 21-30	1,344		14		414	57	61		134	1,100	88		.6		1,800	2.45	6,530	1,270	1,160	9	2,150	7.4
July 1-10	390		14		422	59	57		132	1,130	80		.6		1,830	2.49	1,930	1,300	1,190	9	2,170	7.4
July 11-20	1,243		15		404	58	66		133	1,090	90		1.0		1,790	2.43	6,010	1,260	1,140	10	2,140	7.7
July 21-25	740		15		352	50	46		170	902	74		2.2		1,530	2.08	3,060	1,080	944	8	1,880	7.5
July 26 to Aug. 2 ..	105		16		552	80	66		153	1,460	132		3.6		2,420	3.29	686	1,710	1,560	8	2,800	7.5
Aug. 3-10	100		13		232	36	34		182	594	42		4.0		1,020	1.39	275	727	594	9	1,360	7.7
Aug. 11-20	90.8		13		256	39	37		149	649	53		3.7		1,120	1.52	275	769	677	9	1,470	7.7
Aug. 21-31	92.8		13		280	45	45		149	733	59		3.3		1,250	1.70	313	884	762	10	1,610	7.7
Sept. 1-10	94.0		13		277	40	46		145	719	59		2.6		1,230	1.67	312	856	735	10	1,580	7.4
Sept. 11-20	94.0		14		344	52	52		140	839	94		2.0		1,540	2.09	393	1,070	958	10	1,910	7.4
Sept. 21-30	91.0		13		406	61	64		151	1,090	84		2.0		1,800	2.45	442	1,260	1,140	10	2,140	7.4
Weighted average ..	206		13		382	54	58		139	1,020	81		0.9		1,680	2.28	934	1,180	1,060	10	2,020	--

RIO GRANDE BASIN--Continued

PECOS RIVER AT U.S. HIGHWAY 70, NEAR ACME, N. MEX.

LOCATION.--At bridge on U.S. Highway 70, approximately 3 miles above gaging station near Acme which is 1 mile southeast of Melena railroad station, 3½ miles downstream from Salt Creek, 5 miles southwest of Acme, Chaves County, and 13 miles northeast of Roswell.

DRAINAGE AREA.--11,380 square miles approximately. (Contributing area), (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1951. (above gaging station).

EXTREMES, 1950-51.--Dissolved solids: Not listed because of inadequate record.

EXTREMES, 1937-51.--Dissolved solids: Maximum, 19,870 ppm May 23 to June 2, 1938; minimum, 806 ppm May 24, 1941.

Hardness: Maximum, 5,320 ppm May 23 to June 2, 1938; minimum, 528 ppm May 24, 1941.

Specific conductance: Maximum daily, 39,300 microhos Aug. 9, 1945; minimum daily, 955 microhos Aug. 21, 1941.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Discharge records for gaging station near Acme for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (microhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-10, 1950	483		13		294	43		115	114	808	160		2.1		1,490	2.03	1,940	910	817	22	1,970	7.4
Oct. 11-20	96.1		13		414	72		170	131	1,210	234		1.3		2,180	2.96	566	1,330	1,220	22	2,730	7.4
Oct. 21-31	43.2		14		438	74		189	125	1,280	264		1.4		2,320	3.16	271	1,400	1,300	23	2,940	7.4
Nov. 1-10	16.4		14		500	101		257	132	1,500	390		3.6		2,830	3.85	125	1,660	1,560	25	3,640	7.4
Nov. 11-20	11.5		15		536	112		367	144	1,620	560		1.5		3,280	4.46	102	1,800	1,680	31	4,240	7.5
Nov. 21-30	9.9		14		546	138		428	141	1,720	675		1.8		3,590	4.88	96.0	1,930	1,810	33	4,690	7.2
Dec. 1-10	9.4		13		576	149		488	152	1,790	795		1.2		3,890	5.29	98.7	2,050	1,920	34	5,070	7.4
Dec. 11-20	13.0		13		538	136		465	145	1,700	725		1.4		3,650	4.96	128	1,900	1,780	35	4,780	7.5
Dec. 21-31	11.8		13		538	136		450	152	1,670	720		1.8		3,600	4.90	115	1,900	1,780	34	4,770	7.7
Jan. 1-10, 1951	18.3		11		514	128		432	149	1,580	695		1.6		3,430	4.66	169	1,810	1,690	34	4,570	7.8
Jan. 11-20	13.6		11		564	146		535	149	1,750	870		1.3		3,950	5.37	145	2,010	1,890	37	5,280	7.9
Jan. 21-31	8.4		9.5		596	157		662	149	1,850	1,080		1.4		4,430	6.02	100	2,130	2,010	40	5,960	7.8
Feb. 1-10	9.4		11		562	149		603	147	1,890	935		1.5		4,210	5.73	107	2,060	1,940	39	5,530	7.9
Feb. 11-20	9.8		11		612	167		669	139	1,910	1,110		1.5		4,550	6.19	120	2,210	2,100	40	6,140	7.2
Feb. 21-28	15.0		11		644	164		913	142	2,060	1,480		1.3		5,360	7.29	217	2,360	2,250	46	7,250	7.4
Mar. 1-10	8.3		11		624	178		840	142	2,080	1,300		1.9		5,100	6.94	114	2,290	2,170	44	6,860	7.5
Mar. 11-21	6.5		12		674	186		911	146	2,140	1,320		1.8		5,220	7.10	92.6	2,450	2,330	42	7,020	7.5
Mar. 22-31	6.1		16		542	107		263	171	1,640	365		2.5		3,020	4.11	4,980	1,780	1,650	24	3,660	7.6
Mar. 23-31	1,389		22		414	62		67	152	1,100	115		2.2		1,850	2.52	6,940	1,290	1,160	10	2,240	7.6
Apr. 1-10	133		16		508	102		219	132	1,520	335		2.1		2,770	3.77	995	1,690	1,560	22	3,460	7.5
Apr. 11-20	26.4		17		536	112		278	133	1,640	415		1.6		3,070	4.18	2,190	1,800	1,690	25	3,800	7.5
Apr. 21-29	120		19		612	134		447	128	1,900	685		1.4		3,460	5.25	1,250	2,080	1,970	32	4,860	7.7
May 1-17	25.1		20		676	180		916	198	2,000	1,540		3.1		5,430	7.38	368	2,430	2,260	45	7,510	7.4
May 18-20	167		20		572	133		402	115	1,860	580		1.2		3,630	4.94	1,640	1,970	1,860	31	4,540	7.3
May 21-31	26.0		19		688	191		841	179	2,090	1,440		2.2		5,370	7.30	377	2,530	2,380	42	7,250	7.2

RIO GRANDE BASIN--Continued

PECOS RIVER AT U.S. HIGHWAY 70, NEAR ACME, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
June 1-6, 1951	a 0.3		19		670	170	925	202	1,880	1,600			3.5		5,370	7.30	2,370	2,200	46	7,450	7.3
June 20-30	897		15		464	70	85	130	1,280	135			1.0		2,110	2,875	1,450	1,340	11	2,500	7.7
July 1-6	754		17		512	75	95	126	1,420	150			8		2,330	3,174	1,590	1,480	12	2,690	7.8
July 25-31	238		15		416	59	100	140	1,160	122			4.9		1,950	2,651	1,280	1,170	15	2,340	7.5
Aug. 1-10	b 16.4		15		504	83	136	92	1,510	174			3.3		2,470	3.36	1,600	1,520	16	2,900	7.6
Aug. 11-20	b 63.6		14		203	31	126	124	584	140			.6		1,160	1.58	634	532	30	1,650	7.6
Aug. 21 to Sept. 4	138		15		383	67	214	118	1,100	320			3.4		2,180	2.94	1,230	1,130	27	2,870	7.7
Sept. 5-7	a --		--		--	--	--	--	--	--			--		--	--	--	--	--	--	--
Sept. 8-10	156		11		206	30	81	94	579	94			1.2		1,050	1.43	638	560	32	1,450	7.8
Sept. 11-13	31.7		12		398	72	177	93	1,200	246			1.4		2,150	2.92	1,290	1,210	23	2,740	7.8
Sept. 14-18	56.0		15		676	176	828	164	2,070	1,360			2.8		5,210	7.09	2,410	2,280	43	6,980	7.9
Sept. 19-24	.2		16		861	324	2,020	350	2,570	3,510			--		9,490	12.9	3,530	3,240	55	13,300	7.4
Sept. 25-30	a --		--		--	--	--	--	--	--			--		--	--	--	--	--	--	--
Weighted average...	c 132		14		438	73	145	135	1,230	224			1.8		2,190	2.98	1,390	1,280	18	2,700	--

a No flow at gage June 2-19, Sept. 5-7, 25-30.

b No flow during part of period Aug. 1-20.

c Represents 72 percent of runoff for water year October 1950 to September 1951.

RIO GRANDE BASIN--Continued
PECOS RIVER NEAR ARTESIA, N. MEX.

LOCATION.--At gaging station at bridge on State Highway 83, 4.3 miles east of Artesia, Eddy County, 7.0 miles north of mouth of Rio Penasco, and 17 miles north of McMillan Dam.

DRAINAGE AREA.--15,300 square miles, approximately (contributing area).

RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1951.

Water temperatures: January 1949 to September 1951.

Sediment records: January 1949 to September 1951.

EXTREMES: 1950-51.--Dissolved solids: Maximum, 560 ppm June 11-22; minimum, 1,340 ppm June 6.

Specific conductance: Maximum, 875 ppm June 6.

Water temperatures: Maximum observed, 87°F July 28, Sept. 5, 7; minimum observed, 33°F Jan. 30-31, Feb. 1.

Sediment concentrations: Maximum daily, 14,600 ppm Oct. 6; minimum daily, 10 ppm Nov. 24, 30, Dec. 1.

Sediment loads: Maximum daily, 69,300 tons Oct. 5; minimum daily, less than 0.5 ton on several days.

EXTREMES, 1937-51.--Dissolved solids: Maximum, 10,900 ppm Aug. 11-13, 17-21, 1945; minimum, 653 ppm July 25, 27, 1950.

Hardness: Maximum daily, 3,430 ppm Aug. 11-13, 17-21, 1945; minimum, 326 ppm June 6, 1949.

Specific conductance: Maximum daily, 17,200 micromhos Aug. 20, 1945; minimum daily, 898 micromhos Sept. 22, 1941.

Sediment concentrations (1949-51): Maximum observed, 89°F June 28, 1949; minimum observed, 33°F Jan. 30-31, Feb. 1, 1951.

Sediment loads (1949-51): Maximum daily, 14,600 tons Oct. 6, 1950; minimum daily, less than 0.5 ton on several days.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂) (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na) (K)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
													Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate		
Oct. 1-5, 1950.....	379		14	436	125	537		180	1,330	880		5.6	3,420	4.65	1,600	1,450	42	7.2
Oct. 6-10.....	506		14	324	63	232		140	919	355		5.1	1,980	2.69	2,710	953	32	7.4
Oct. 11-20.....	154		17	456	131	558		135	1,450	895		2.8	3,580	4.87	1,490	1,570	42	7.2
Oct. 21-31.....	110		17	460	164	700		132	1,670	1,120		1.7	4,220	5.74	1,250	1,870	45	7.2
Nov. 1-10.....	89.6		17	518	133	784		157	1,740	1,300		3.5	4,620	6.23	1,120	1,820	43	7.6
Nov. 11-20.....	85.7		17	526	154	800		208	1,770	1,460		3.1	4,950	6.73	1,230	2,160	46	7.7
Nov. 21-30.....	101		15	528	203	848		211	1,730	1,410		3.5	4,860	6.91	1,330	2,150	46	7.7
Dec. 1-10.....	92.9		15	550	204	903		220	1,780	1,500		4.4	5,060	6.98	1,270	2,030	47	7.8
Oct. 11-20.....	88.0		16	564	212	929		212	1,900	1,580		3.2	5,310	7.22	1,260	2,260	47	7.7
Dec. 21-31.....	90.3		15	554	209	917		214	1,870	1,540		3.0	5,210	7.09	1,270	2,240	47	7.8
Jan. 1-10, 1951.....	96.3		14	546	207	926		214	1,840	1,500		3.5	5,140	6.99	1,340	2,220	48	7.7
Jan. 11-20.....	91.1		14	564	205	947		212	1,880	1,570		3.8	5,290	7.19	1,300	2,050	48	7.7
Jan. 21-31.....	76.2		12	568	220	980		215	1,910	1,630		2.3	5,440	7.40	1,120	2,320	48	7.8
Feb. 1-10.....	85.5		15	566	220	956		222	1,880	1,630		3.8	5,390	7.33	1,240	2,320	47	7.8
Feb. 11-20.....	94.8		16	556	210	957		185	1,870	1,550		4.4	5,280	7.15	1,350	2,250	48	7.5
Feb. 21-28.....	77.5		14	578	219	1,030		179	1,950	1,680		4.4	5,560	7.56	1,160	2,340	49	7.7

RIO GRANDE BASIN--Continued
PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Per cent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per foot	Tons per day	Calcium	Non-carbonate			
Mar. 1-10, 1951....	76.4	12			590	227	1,080		159	2,060	1,740		4.0		5,790	7.87	1,190	2,410	2,280	49	8,120	7.4
Mar. 11-20.....	69.0	13			578	235	1,130		165	2,050	1,820		3.0		5,920	8.05	1,100	2,410	2,270	50	8,350	7.5
Mar. 21-30.....	116	13			594	242	1,080		160	2,130	1,780		3.8		5,920	8.05	1,050	2,480	2,350	49	8,430	7.5
Mar. 24.....	1,090	21			534	109	307		196	1,580	446		1.4		3,100	4.22	9,120	1,780	1,620	27	3,930	7.5
Mar. 25-31.....	1,320	14			466	70	94		147	1,260	176		2.0		2,150	2.92	7,660	1,450	1,330	12	2,670	7.6
Apr. 1-3.....	289	17			480	77	176		156	1,300	270		2.8		2,400	3.26	1,870	1,510	1,390	20	2,970	7.5
Apr. 4-10.....	87.7	17			538	127	460		165	1,620	720		2.9		3,570	4.86	845	1,660	1,730	35	4,720	7.4
Apr. 11-20.....	75.1	17			564	165		771	150	1,940	1,240		4.3		4,820	6.56	977	2,220	2,090	43	6,610	7.4
Apr. 21-30.....	67.3	13			632	234	1,080		137	2,170	1,740		3.9		5,940	8.08	1,060	2,520	2,410	48	6,210	7.2
May 1-10.....	108	16			562	165	653		133	1,890	280		1.8		4,540	3.43	1,310	1,400	1,510	39	6,170	7.3
May 11-20.....	142	21			590	112	614		133	1,890	1,830		8.5		5,130	4.13	1,360	2,190	2,080	39	6,170	7.3
May 21-23.....	142	18			480	112	403		159	1,360	1,630		2.5		3,080	4.13	1,180	1,610	1,480	35	4,140	7.5
May 24-31.....	75.6	18			530	180	1,020		134	1,790	1,630		2.1		5,240	7.13	1,070	2,060	1,950	52	7,460	7.4
June 1-5, 8-10.....	34.1	17			622	247	1,280		168	2,130	2,130		--		6,570	8.94	605	2,570	2,430	52	9,250	7.3
June 6.....	182	21			208	38	189		209	476	306		.9		1,340	1.82	658	675	504	38	2,060	7.6
June 7.....	51	14			254	73	636		152	695	1,020		2.8		2,770	3.77	381	934	809	60	4,460	7.2
June 11-22.....	59.7	25			668	277	1,560		172	2,380	2,560		--		7,560	10.3	1,220	2,810	2,660	55	10,700	7.3
June 23-30.....	782	17			534	82	163		148	1,490	228		2.5		2,590	3.52	5,470	1,670	1,550	18	3,070	7.5
July 1-10.....	589	15			524	82	173		135	1,460	258		2.0		2,580	3.51	4,100	1,640	1,530	19	3,100	7.5
July 11-14.....	234	16			446	108	448		124	1,310	745		3.9		3,140	4.27	1,980	1,560	1,460	38	4,370	7.6
July 15-20.....	880	16			508	72	130		130	1,380	196		3.4		2,370	3.22	5,630	1,560	1,460	15	2,820	7.7
July 21-31.....	624	16			466	77	183		135	1,290	284		4.8		2,390	3.25	4,030	1,480	1,370	21	2,970	7.7
Aug. 1-5.....	86.8	17			514	128	467		153	1,560	770		8.2		3,540	4.81	830	1,810	1,660	36	4,760	7.7
Aug. 6-13.....	25.6	17			596	165	1,000		122	1,960	1,630		4.5		5,490	7.41	377	2,230	2,150	49	7,620	7.8
Aug. 14-18.....	44.1	15			484	104	491		113	2,530	160		4.5		3,430	4.69	383	1,660	1,570	35	4,680	7.6
Aug. 19-27.....	183	14			668	184	1,380		136	2,400	2,220		5.5		2,540	3.43	1,250	1,400	1,320	23	3,300	7.7
Aug. 28-31.....	26.8	15			462	112	567		137	1,390	925		6.1		3,540	4.81	830	1,610	1,500	43	4,990	7.7
Sept. 1-10.....	34.0	15			588	102	1,080		124	1,980	1,780		3.7		5,720	7.78	216	2,300	2,200	51	6,080	7.2
Sept. 11-17.....	34.6	13			476	142	618		110	1,550	1,050		2.6		3,910	5.32	365	1,770	1,680	43	5,480	7.2
Sept. 18-30.....	14.1	16			668	290	1,510		121	2,320	2,560		3.9		7,430	10.1	283	2,860	2,760	53	10,500	7.3
Weighted average...	192	16			504	116	403		155	1,500	653		3.2		3,270	4.45	1,700	1,730	1,610	34	4,300	--

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement, generally before 12 m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71		--	48	a 33	55	51			--	--	a 86
2	70		--	45	a 36	55	a 60			--	--	86
3	72		--	40	a 40	a 55	59			--	--	80
4	68		--	a 45	40	49	57			--	--	a 84
5	68		--	40	48	a 55	a 63			--	--	a 87
6	67		--	40	50	53	49			--	--	a 79
7	85		--	39	a 53	a 60	57			--	--	a 87
8	64		--	a 40	a 55	a 63	66			--	--	a 85
9	62		--	a 45	a 52	a 51	a 65			--	--	85
10	66		--	40	a 58	53	63			--	--	a 83
11	67		--	39	52	a 52	55			--	--	73
12	65		--	a 47	55	47	--			--	--	74
13	65		--	43	a 42	a 55	--			--	--	a 77
14	a 72		--	42	a 40	a 60	--			--	--	a 76
15	70		--	40	a 41	a 59	--			--	--	a 80
16	66		50	41	43	a 55	--			--	--	a 74
17	67		a 49	a 50	50	53	--			--	--	a 76
18	65		40	45	50	a 49	--			--	--	a 75
19	63		42	48	50	49	--			--	--	a 83
20	62		42	45	50	53	--			--	--	a 77
21	66		42	42	47	55	--			--	--	a 78
22	a 68		45	a 47	a 53	a 60	--			a 79	--	a 74
23	a 66		44	a 49	49	a 60	--			a 79	--	a 77
24	a 66		44	a 49	a 55	52	--			75	--	a 81
25	a 67		42	43	53	53	--			77	--	a 80
26	a 66		43	a 55	52	52	--			79	--	a 82
27	a 66		39	51	a 60	54	--			a 86	--	a 78
28	62		37	a 47	a 56	51	--			a 87	--	a 75
29	a 64		a 42	a 60	--	45	--			81	a 81	a 77
30	--		a 45	a 33	--	52	--			--	a 83	73
31	--		40	a 33	--	52	--			--	83	--
Aver- age	67		--	44	49	54	--			--	--	79

a Reading obtained during afternoon.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	188	710	360	94	128	32	92	10	2
2-----	184	510	253	90	80	19	94	76	19
3-----	178	370	178	83	78	17	92	25	6
4-----	234	744	470	83	70	a 16	98	89	24
5-----	1, 110	12, 000	s 69, 300	87	60	14	97	72	18
6-----	1, 260	14, 600	s 55, 000	91	72	18	98	79	21
7-----	464	8, 080	s 10, 300	90	90	22	100	77	21
8-----	320	4, 320	3, 730	98	75	20	92	75	19
9-----	269	1, 840	1, 340	91	89	22	85	87	20
10-----	216	940	548	89	53	13	81	80	17
11-----	203	688	377	89	24	6	85	88	20
12-----	200	539	291	92	27	7	86	105	24
13-----	189	463	236	93	36	9	85	110	25
14-----	173	403	188	90	78	19	86	60	a 14
15-----	152	295	121	92	29	7	89	47	11
16-----	140	282	107	93	60	15	90	54	13
17-----	137	192	71	91	50	a 12	90		
18-----	127	165	56	96	42	11	93		
19-----	111	220	66	100	53	14	90		
20-----	108	185	54	101	54	15	86	48	12
21-----	110	102	30	98	41	11	82		
22-----	114	111	34	102	23	6	85		
23-----	114	120	a 37	106	13	4	86		
24-----	106	133	38	102	10	3	86	58	14
25-----	106	134	38	102	13	4	89		
26-----	100	144	39	108	23	7	95		
27-----	96	172	44	104	64	18	97		
28-----	106	227	65	98	64	17	94	58	14
29-----	140	123	46	95	15	4	94		
30-----	121	122	40	94	10	3	94		
31-----	101	110	30	--	--	--	91		
Total-	7, 177	--	143, 487	2, 842	--	385	2, 802	--	467
Day	January			February			March		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1-----	93	58	15	65	73	17	75	52	11
2-----	94			56			74		
3-----	95			96			79		
4-----	94			134			80		
5-----	94	49	12	104	55	13	81	43	9
6-----	89			84			81		
7-----	91			80			76		
8-----	100			79			74	48	9
9-----	108	55	15	78	55	13	72		
10-----	105			79			72		
11-----	100			88			77	36	7
12-----	100			89			76		
13-----	94	40	9	85			75		
14-----	92			95			74		
15-----	95			114			71	40	7
16-----	88			112	40	10	63		
17-----	87	40	9	104			59		
18-----	89			91			68		
19-----	86			88	39	8	59	35	5
20-----	80	41	8	82			56		
21-----	79			78			56		
22-----	83			77	39	8	56	1, 420	s 2, 660
23-----	82	41	8	77			237		
24-----	77			79			1, 090		
25-----	74			79			1, 290	4, 800	17, 100
26-----	73	41	8	75	39	8	1, 320		
27-----	72			79			1, 450		
28-----	72			76			1, 400		
29-----	72			--	--	--	1, 400	4, 280	16, 200
30-----	78	41	8	--	--	--	1, 360		
31-----	76			--	--	--	1, 100		
Total-	2, 712	--	343	2, 423	--	343	12, 163	--	135, 108

s Computed by subdividing day.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Suspended sediment, water year October 1950 to September 1951--Continued

Suspended sediment, water year October 1950 to September 1951--Continued									
Day	Mean dis-charge (cfs)	April		Mean dis-charge (cfs)	May		Mean dis-charge (cfs)	June	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean con-centration (ppm)	Tons per day		Mean con-centration (ppm)	Tons per day		Mean con-centration (ppm)	Tons per day
1-----	459	1,840	s 2,330	345	1,540	s 2,350	34	318	29
2-----	247	1,100	734	755	2,880	5,870	33	180	16
3-----	160	620	268	860	2,850	6,620	33	551	49
4-----	109	460	135	770	2,490	5,180	37	65	65
5-----	90	276	67	800	2,480	5,360	49	223	30
6-----	68	215	39	860	3,350	7,780	182	4,130	s 2,570
7-----	76	131	27	860	2,650	6,150	51	550	76
8-----	99			564	1,780	s 2,800	32	226	20
9-----	91			275	1,060	787	28	208	16
10-----	81	71	17	201	700	380	27	181	13
11-----	77			152	521	214	30	283	23
12-----	87			140	326	123	35	486	46
13-----	74			118	214	68	26	189	13
14-----	84	94	20	105	241	68	19	160	8
15-----	81			90	54	13	20	200	a 11
16-----	69			76	38	8	20	213	12
17-----	67			63	35	a 6	23	81	5
18-----	74	94	18	69	35	a 6	28	249	19
19-----	68			70	35	a 7	34	179	16
20-----	70			193	600	a 313	28	258	20
21-----	75			156	896	377	25	220	15
22-----	81	81	18	144	708	275	428	3,890	s 5,900
23-----	90			125	517	174	635	4,300	7,370
24-----	78			104	793	223	465	2,800	3,520
25-----	76			90	317	77	620	3,120	s 5,590
26-----	66	91	15	104	300	84	860	4,200	9,750
27-----	57			86	294	68	950	3,800	9,750
28-----	54			75	152	31	920	3,680	9,140
29-----	41	110	14	63	200	34	920	3,600	8,940
30-----	55			48	322	41	890	3,800	9,130
31-----	--	--	--	35	127	12	--	--	--
Total--	2,904	--	4,000	8,396	--	45,499	7,482	--	72,162
		July			August			September	
		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-----	950	3,500	8,980	132	1,240	442	5.5	30	(at)
2-----	1,140	3,990	s 12,400	94	834	211	11	50	a 1
3-----	950	3,240	8,310	86	529	123	26	258	18
4-----	830	3,550	7,960	68	320	59	28	146	11
5-----	890	3,250	7,810	54	75	11	14	719	27
6-----	544	2,160	s 3,340	49			4.1	236	3
7-----	224	1,180	714	35	63	6	1.1	72	(t)
8-----	151	810	a 330	19			1.0	101	(t)
9-----	120	420	136	15			1.0	298	1
10-----	91	220	54	10	61	2	48	1,110	s 228
11-----	81	274	s 94	7.8			90	850	s 232
12-----	310	2,650	s 2,390	6.3	177	3	52	410	58
13-----	152	795	s 338	63	1,050	s 346	24	250	16
14-----	392	2,600	s 4,490	58	5,460	s 837	14	90	3
15-----	830	5,200	11,600	12	350	11	19	58	3
16-----	830	4,450	9,970	2.7			22	60	a 4
17-----	860	3,680	8,540	1.7			21	79	4
18-----	920	3,310	8,220	1.2	66	(t)	19	28	1
19-----	920	3,300	8,200	1.2			18	38	2
20-----	920	3,050	7,580	1.3			14	56	2
21-----	890	2,910	6,990	1.3	50	(at)	13	88	3
22-----	860	2,880	6,690	1.2			13	68	2
23-----	920	2,720	6,760	217	4,170	s 5,610	13	60	a 2
24-----	1,120	3,050	9,220	392	11,100	s 12,000	18	58	3
25-----	1,090	2,780	8,180	152	5,200	2,130	21	50	3
26-----	755	2,500	5,100	114	2,100	646	15	40	a 2
27-----	402	1,460	1,580	74	700	52	11	33	1
28-----	285	852	656	45	234	28	8.5	30	a 1
29-----	235	1,330	844	30	118	10	8.8	20	(at)
30-----	170	2,840	1,300	20	55	3	11	18	1
31-----	137	1,540	570	12	36	1	--	--	--
Total--	18,969	--	159,346	1,770.7	--	22,547	565.0	--	632
Total discharge for year (cfs-days).....									70,205.7
Total load for year (tons).....									584,319

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, March to August 1951

(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	Instantaneous discharge (cfs)	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. 27, 1951	4:50 p. m.	1,420	4,920	3,490	48		65		88	96	99		100		PSWCM
June 22	4:40 p. m.	620	5,550	5,180	57		83		96	99	100		--		PSWCM
June 25	--	650	2,820	3,540	42		68		87	98	100		--		PSWCM
June 27	11:00 a. m.	975	3,860	3,560	47		65		90	98	100		--		PSWCM
July 1	10:35 a. m.	980	3,900	3,460	38		55		84	96	99		100		PSWCM
July 2	8:20 a. m.	1,260	4,630	3,620	34		48		82	96	100		--		PSWCM
July 12	9:30 a. m.	385	2,910	3,270	53		74		91	98	100		--		PSWCM
July 15	10:30 a. m.	890	5,700	5,170	52		76		93	99	100		--		PSWCM
July 20	10:35 a. m.	945	3,220	3,420	41		54		84	97	100		--		PSWCM
July 23	11:00 a. m.	920	2,780	3,570	38		49		83	97	100		--		PSWCM
July 25	8:45 a. m.	1,160	2,720	2,980	35		52		85	98	100		--		PSWCM
Aug. 23	6:25 p. m.	335	7,670	3,160	59		82		93	98	100		--		PSWCM

RIO GRANDE BASIN--Continued
CARLSBAD MAIN CANAL AT HEAD NEAR CARLSBAD, N. MEX.

LOCATION.--At gaging station at head of Carlsbad project main canal at Avalon Dam, 5 miles north of Carlsbad, Eddy County. Samples collected from canal whenever there was flow in canal, otherwise samples were collected from Lake Avalon at the head gates and are those for which specific conductance values only are given.

RECORDS AVAILABLE.--Chemical analyses: February 1939 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 5,670 ppm June 24-26; minimum, 3,060 ppm July 1-10.

Hardness: Maximum, 2,800 ppm June 24-26; minimum, 1,810 ppm Apr. 1-10.

Specific conductance: Maximum daily, 8,410 microhmhos June 25; minimum daily, 3,100 microhmhos July 25.

EXTREMES, 1939-51.--Dissolved solids: Maximum, 6,310 ppm Apr. 11-12, 1949; minimum, 1,340 ppm Sept. 2-4, 1946.

Hardness: Maximum, 2,810 ppm June 1-10, 1945; minimum, 744 ppm Sept. 2-4, 1946.

Specific conductance: Maximum daily, 9,730 microhmhos June 5, 1945; minimum daily, 401 microhmhos June 3, 1948.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for period April to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (microhmhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Oct. 1-2, 10, 1950 ..	--	--	12	--	540	122	402	--	142	1,690	600	--	1.3	--	3,440	4.68	1,950	1,730	32	4,380	7.6
Oct. 3-9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,930	--
Oct. 11-20	--	--	17	--	540	121	376	--	145	1,670	570	--	.9	--	3,370	4.58	1,940	1,730	31	4,280	7.2
Oct. 21-31	--	--	17	--	548	121	376	--	151	1,700	560	--	.8	--	3,400	4.82	1,860	1,740	30	4,280	7.5
Nov. 1-10	--	--	17	--	548	119	338	--	135	1,670	545	--	.8	--	3,350	4.53	1,860	1,730	30	4,200	7.8
Nov. 11-20	--	--	18	--	548	119	345	--	146	1,670	530	--	.8	--	3,360	4.49	1,860	1,740	29	4,120	7.6
Nov. 21-30	--	--	15	--	548	124	327	--	144	1,660	525	--	1.8	--	3,270	4.43	1,860	1,760	27	4,170	7.6
Dec. 1-12	--	--	15	--	544	124	339	--	145	1,660	520	--	2.0	--	3,260	4.43	1,870	1,750	28	4,160	7.7
Dec. 13-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,200	--
Dec. 21-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,220	--
Jan. 1-10, 1951	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,200	--
Jan. 11-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,210	--
Jan. 21-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,240	--
Jan. 25-31	--	--	13	--	578	119	333	--	137	1,700	548	--	.4	--	3,360	4.57	1,930	1,820	27	4,280	7.4
Feb. 1-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,280	--
Feb. 5-10	--	--	13	--	572	122	347	--	137	1,710	560	--	.3	--	3,390	4.61	1,930	1,820	28	4,290	7.6
Feb. 11-14	--	--	14	--	568	121	359	--	132	1,720	565	--	.9	--	3,410	4.64	1,910	1,810	29	4,290	7.5
Feb. 15-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,380	--
Feb. 21-28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,480	--
Mar. 1-6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 7-10	190	--	13	--	578	125	373	--	128	1,760	595	--	1.0	--	3,500	4.76	1,960	1,850	29	4,430	7.5
Mar. 11-20	187	--	13	--	578	124	376	--	133	1,760	595	--	1.1	--	3,500	4.79	1,960	1,850	30	4,480	7.6
Mar. 21-31	281	--	14	--	566	128	391	--	134	1,760	635	--	1.1	--	3,580	4.87	1,990	1,880	30	4,550	7.6

RIO GRANDE BASIN--Continued

CARLSBAD MAIN CANAL AT HEAD NEAR CARLSBAD, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Apr. 1-10, 1951 ...	381		14		536	116	339		130	1,630	530		2.4		3,230	4.39	1,810	1,710	29	4,150	7.4
Apr. 11-20	268		16		554	112	344		133	1,650	540		2.5		3,280	4.46	1,840	1,730	29	4,180	7.3
Apr. 21-30	281		15		594	130	446		140	1,800	710		2.2		3,720	5.13	2,020	1,700	33	4,820	7.2
May 1-5	54.0		17		640	134	514		135	2,000	910		2.2		4,360	5.93	2,260	2,120	36	5,640	7.2
May 6-10	129		16		612	145	472		130	1,960	810		1.5		3,980	5.41	2,130	2,020	33	5,380	7.5
May 11-20	118		17		532	123	420		135	1,610	680		1.2		3,450	4.69	1,830	1,720	33	4,530	7.4
May 21-31																					
June 1-10	158		17		562	131	458		144	1,690	750		2.0		3,680	5.00	1,940	1,820	34	4,780	7.4
June 11-20	169		15		620	147	460		137	1,820	810		1.8		3,940	5.36	2,150	2,040	32	5,080	7.4
June 21-23, 27-30 ..	321		14		558	133	397		127	1,710	650		1.8		3,530	4.80	1,940	1,840	31	4,590	7.6
June 24-26	275		15		778	209	811		130	2,410	1,380		2.1		5,670	7.71	2,800	2,690	39	7,310	7.6
July 1-10	452		14		562	113	246		127	1,650	410		2.4		3,060	4.16	1,870	1,760	22	3,750	7.7
July 11-20	316		16		554	118	337		118	1,670	540		3.1		3,300	4.49	1,870	1,770	28	4,140	7.7
July 21-25, 29-31 ..	187		17		550	109	310		127	1,570	535		3.2		3,160	4.30	1,820	1,720	27	4,080	7.5
July 26-29	--		--		--	--	--		--	--	--		--		--	--	--	--	--	--	--
Aug. 1-10	304		17		592	127	409		137	1,750	675		2.3		3,640	4.95	2,000	1,890	31	4,670	7.6
Aug. 11-20	304		16		550	116	362		126	1,680	555		2.5		3,340	4.54	1,850	1,750	30	4,220	7.5
Aug. 21-31	161		15		616	128	430		124	1,820	710		2.3		3,780	5.14	2,060	1,960	31	4,850	7.3
Sept. 1-4, 6-10	78.9		13		604	122	485		106	1,800	780		3.1		3,860	5.25	2,010	1,920	34	5,490	7.4
Sept. 5	--		--		--	--	--		--	--	--		--		--	--	--	--	--	--	--
Sept. 11-16	83.0		14		532	121	420		124	1,810	680		2.5		3,440	4.68	1,820	1,720	33	4,460	7.6
Sept. 17-20	12.4		12		634	145	499		125	1,950	800		2.5		4,100	5.58	2,080	2,080	33	5,080	7.5
Sept. 20-25	--		--		--	--	--		--	--	--		--		--	--	--	--	--	--	--
Sept. 26-30	--		--		--	--	--		--	--	--		--		--	--	--	--	--	--	--
Weighted average ^a	202		15		574	125	385		130	1,720	627		2.2		3,510	4.77	1,950	1,840	30	4,490	--

^a For period Mar. 7 to Sept. 3.

RIO GRANDE BASIN--Continued

PECOS RIVER AT CARLSBAD, N. MEX.

LOCATION.--At gaging station at Green Street Bridge in Carlsbad, Eddy County, half a mile upstream from Dark Canyon.

DRAINAGE AREA.--18,100 square miles (contributing area).

RECORDS AVAILABLE.--Chemical analyses: May 1937 to September 1951.

Water temperatures: July to September 1951.

EXTREMS, 1957-46, 1951.--Dissolved solids: Maximum, 3,590 ppm May 1, 1941; minimum, 360 ppm May 22, 1941.

Hardness: Maximum, 1,970 ppm May 1, 1941; minimum, 280 ppm May 22, 1941.

Specific conductance: Maximum daily, 5,870 micromhos Apr. 25, 1942; minimum daily, 269 micromhos Sept. 20, 1941, and 649 micromhos May 22, 1941. (The sample for Sept. 20, 1941, represents back-water from Dark Canyon and not flow past the Carlsbad gage).

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium carbonate	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 11, 1950	117		--	--	--	--	--	--	156	--	545	--	--	--	--	--	--	--	--	--	2,980	--
Nov. 21	254		--	--	--	--	--	--	169	--	515	--	--	--	--	--	--	--	--	--	4,010	--
Jan. 2, 1951	162		--	--	--	--	--	--	187	--	495	--	--	--	--	--	--	--	--	--	3,890	--
Feb. 13	80		--	--	--	--	--	--	216	--	480	--	--	--	--	--	--	--	--	--	3,470	--
Mar. 21	64		--	--	--	--	--	--	212	--	470	--	--	--	--	--	--	--	--	--	3,470	--
May 1	61		--	--	--	--	--	--	222	--	460	--	--	--	--	--	--	--	--	--	3,480	--
June 13	53		--	--	--	--	--	--	227	--	450	--	--	--	--	--	--	--	--	--	3,360	--
July 21-31	56.9		20	376	117	117	280	a215	1,140	470	470	3.4	3.4	3.86	2,510	3.41	386	1,420	1,240	30	3,420	7.7
Aug. 1-10	53.0		21	378	117	117	284	220	1,120	460	460	3.3	3.3	3.53	2,470	3.36	353	1,420	1,240	29	3,430	7.6
Aug. 11-20	50.7		18	382	114	114	284	220	1,160	460	460	3.5	3.5	3.46	2,530	3.44	346	1,420	1,240	30	3,430	7.7
Aug. 21-31	51.2		20	374	110	110	277	212	1,130	450	450	3.5	3.5	3.41	2,470	3.36	341	1,390	1,210	30	3,320	7.5
Sept. 1-10	47.9		19	372	112	112	271	213	1,120	450	450	3.6	3.6	3.37	2,450	3.33	317	1,390	1,210	30	3,350	7.5
Sept. 11-20	45.0		19	364	123	123	245	210	1,120	430	430	3.8	3.8	2.83	2,410	3.28	283	1,420	1,240	27	3,350	7.9
Sept. 21-30	41.9		18	356	114	114	256	210	1,100	420	420	3.7	3.7	2.68	2,370	3.22	268	1,360	1,180	29	3,250	7.8

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

WESTERN GULF OF MEXICO BASINS

RIO GRANDE BASIN--Continued

PECOS RIVER AT CARLSBAD, N. MEX.--Continued

Temperature (°F) of water, July to September 1951

[Once-daily temperature measurement at approximately 5 p. m.]

Dec	Jan	Feb	Mar	Apr	May	June
-----	-----	-----	-----	-----	-----	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										--	86	88
2										--	87	85
3										--	87	87
4										--	86	86
5										--	87	87
6										--	88	86
7										--	87	88
8										--	92	85
9										--	90	87
10										--	--	84
11										--	85	84
12										--	86	83
13										--	87	76
14										--	86	82
15										--	87	79
16										--	85	78
17										--	86	74
18										--	86	75
19										--	86	79
20										--	86	81
21										--	86	80
22										--	86	77
23										89	85	77
24										87	86	81
25										85	85	82
26										86	85	82
27										86	86	79
28										87	86	78
29										88	86	85
30										89	88	80
31										88	88	--
Average										--	87	82

RIO GRANDE BASIN--Continued

REFINERY INTAKE CANAL NEAR LOVING, N. MEX.

(Weekly samples taken from canal in sec. 13, T-23-S, R-28-E, representing water in Harroun Canal diverted from Pecos River at dam in sec. 11, T-23-S, R-28-E)

Date of collection	Specific conductance (micromhos at 25°C)	Chloride (Cl) ppm	Date of collection	Specific conductance (micromhos at 25°C)	Chloride (Cl) ppm
Oct. 6, 1950.....	4,130	580	Apr. 5, 1951.....	4,170	620
Oct. 12.....	4,120	585	Apr. 12.....	4,520	685
Oct. 19.....	4,400	645	Apr. 19.....	4,650	735
Oct. 26.....	4,400	630	Apr. 26.....	4,980	800
Nov. 2.....	4,450	620	May 3.....	4,810	760
Nov. 9.....	4,310	595	May 10.....	4,610	735
Nov. 16.....	4,330	590	May 17.....	4,640	735
Nov. 23.....	4,320	595	May 24.....	4,530	720
Nov. 30.....	4,290	585	May 31.....	4,390	685
Dec. 7.....	4,310	595	June 7.....	4,410	700
Dec. 14.....	4,240	585	June 14.....	4,500	715
Dec. 21.....	4,710	695	June 21.....	4,450	690
Dec. 28.....	4,550	695	June 28.....	4,830	785
Jan. 4, 1951.....	3,920	580	July 5.....	4,620	725
Jan. 11.....	4,310	590	July 13.....	4,770	750
Jan. 18.....	4,290	595	July 19.....	5,030	800
Jan. 25.....	4,400	625	July 26.....	4,350	695
Feb. 1.....	4,440	715	Aug. 4.....	4,630	730
Feb. 8.....	4,590	695	Aug. 10.....	4,870	785
Feb. 15.....	4,450	680	Aug. 17.....	4,920	780
Feb. 22.....	4,480	695	Aug. 23.....	4,770	765
Mar. 1.....	4,380	680	Aug. 30.....	4,760	760
Mar. 8.....	4,270	630	Sept. 6.....	4,720	755
Mar. 15.....	4,670	705	Sept. 13.....	4,680	730
Mar. 22.....	4,500	700	Sept. 20.....	4,640	730
Mar. 29.....	4,470	695	Sept. 27.....	4,630	725

RIO GRANDE BASIN--Continued

PECOS RIVER EAST OF MALAGA, N. MEX.

LOCATION.--One and one-half miles upstream from gaging station near Malaga which is 3 miles southeast of Malaga, Eddy County, and 3 miles downstream from Black River.

DRAINAGE AREA.--19,190 square miles, approximately (contributing area), (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1951.

EXTREMES, 1950-51--Dissolved solids: Maximum, 4,970 ppm July 11-20, Aug. 11-20; minimum, 2,850 ppm Oct. 3-10.

Hardness: Maximum, 2,310 ppm July 11-20; minimum, 1,590 ppm Oct. 3-10.

Specific conductance: Maximum daily, 6,990 micromhos July 21; minimum daily, 2,590 micromhos Oct. 4.

EXTREMES, 1937-51--Dissolved solids: Maximum, 5,290 ppm Aug. 2-10, 1946; minimum, 384 ppm Sept. 21-22, 1941.

Hardness: Maximum, 2,310 ppm July 11-20, 1951; minimum, 1,590 ppm Oct. 3-10, 1951.

Specific conductance: Maximum, 7,690 micromhos Aug. 8, 1946; minimum, 450 micromhos Sept. 21, 1941.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are sums of determined constituents. Discharge records for gaging station near Malaga for water year October 1950 to September 1951 given in Water-Supply Paper 1212. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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 (sum)			Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			
Oct. 1-2, 1950.....	112		21		468	170	517		173	1,560	865		6.3		3,690	5.02	1,120	1,970	1,720	38	5,150	7.5
Oct. 3-10.....	854		15		426	126	322		132	1,340	550		3.2		2,850	3.88	6,570	1,860	1,470	31	3,870	7.6
Oct. 11-20.....	300		16		490	155	394		164	1,570	670		3.4		3,380	4.60	2,740	1,860	1,730	32	4,570	7.6
Oct. 21-31.....	339		16		522	159	401		180	1,680	680		5.7		3,520	4.79	2,220	1,960	1,810	31	4,710	7.6
Nov. 1-10.....	333		18		538	155	388		179	1,680	655		5.0		3,530	4.80	3,170	1,960	1,830	30	4,720	7.6
Nov. 11-20.....	328		16		534	152	393		174	1,660	665		5.2		3,510	4.77	3,110	1,960	1,820	30	4,660	7.7
Nov. 21-30.....	312		16		532	145	425		178	1,670	680		4.6		3,560	4.84	3,000	1,920	1,780	32	4,630	7.4
Dec. 1-10.....	313		17		516	142	385		178	1,600	635		3.2		3,390	4.61	2,860	1,870	1,730	31	4,430	7.7
Dec. 11-20.....	186		16		522	146	465		178	1,680	735		4.4		3,640	4.95	1,830	1,900	1,760	35	4,780	7.8
Dec. 21-31.....	139		16		526	165	514		188	1,710	830		5.2		3,660	5.25	1,450	1,990	1,840	36	5,080	7.7
Jan. 1-10, 1951.....	212		15		490	165	437		198	1,570	745		4.4		3,520	4.79	2,010	1,900	1,740	33	4,710	7.9
Jan. 11-20.....	188		13		506	149	428		178	1,600	700		3.4		3,480	4.75	1,770	1,880	1,730	33	4,580	7.9
Jan. 21-31.....	142		14		536	158	477		181	1,710	775		3.2		3,760	5.11	1,440	1,990	1,840	34	4,970	7.6
Feb. 1-10.....	127		15		530	163	510		189	1,710	825		3.0		3,850	5.24	1,320	1,990	1,840	36	5,140	7.6
Feb. 11-20.....	132		13		496	186	513		179	1,620	820		3.4		3,710	5.05	1,220	1,860	1,730	37	4,860	7.3
Feb. 21-31.....	136		16		482	170	482		176	1,590	800		7.1		3,660	4.97	1,360	1,860	1,730	37	4,860	7.3
Mar. 1-10.....	147		16		482	170	482		176	1,590	800		4.6		3,660	4.97	1,580	1,860	1,730	38	4,860	7.7
Mar. 11-20.....	108		15		522	152	553		167	1,700	865		4.4		3,890	5.29	1,130	1,930	1,790	38	5,180	7.6
Mar. 21-31.....	97.1		12		508	162	571		137	1,720	900		4.3		3,940	5.36	1,030	1,930	1,820	39	5,280	7.5
Apr. 1-10.....	136		17		492	167	496		193	1,620	810		6.5		3,700	5.03	1,360	1,910	1,760	36	5,030	7.4
Apr. 11-20.....	65.8		20		510	162	606		183	1,730	980		6.6		4,120	5.60	732	2,020	1,870	39	5,650	7.5
Apr. 21-30.....	82.8		19		538	201	682		184	1,870	1,100		5.2		4,510	6.13	1,010	2,170	2,020	41	6,110	7.5

May 1-10.....	120	17	506	191	585	167	1,780	940	5.7	4,110	5.59	1,330	2,050	1,910	38	5,560	7.4
May 11-20.....	89.6	17	308	190	622	165	1,760	1,000	4.6	4,200	5.71	1,020	2,030	1,910	38	5,700	7.4
May 21-31.....	106	18	490	182	579	169	1,710	930	3.1	3,990	5.43	1,140	1,970	1,840	39	5,360	7.3
June 1-10.....	75.3	20	486	182	619	191	1,710	970	3.2	4,080	5.55	830	1,960	1,800	41	5,530	7.4
June 11-20.....	74.2	18	510	180	604	182	1,700	950	4.0	4,030	5.48	807	1,930	1,800	40	5,520	7.4
June 21-30.....	71.1	20	534	187	602	170	1,770	1,010	5.1	4,210	5.73	808	2,100	1,960	38	5,700	7.4
July 1-10.....	56.9	18	548	190	630	153	1,820	1,060	4.9	4,350	5.92	668	2,150	2,020	39	5,830	7.2
July 11-20.....	31.3	21	568	201	786	161	2,000	1,260	4.9	4,970	6.76	420	2,310	2,180	42	6,660	7.4
July 21-31.....	145	19	496	170	522	159	1,590	910	3.7	3,790	5.15	1,480	1,940	1,810	37	5,240	7.6
Aug. 1-10.....	83.2	18	504	181	630	159	1,740	1,010	4.5	4,170	5.67	937	2,100	1,870	41	5,580	7.7
Aug. 11-20.....	41.7	23	574	203	812	170	1,960	1,310	5.6	4,970	6.76	560	2,270	2,130	44	6,730	7.8
Aug. 21-31.....	67.3	21	552	202	715	166	1,880	1,180	5.6	4,640	6.31	843	2,210	2,070	41	6,270	7.8
Sept. 1-10.....	59.6	21	544	193	712	176	1,880	1,130	5.1	4,570	6.22	735	2,150	2,010	42	6,250	7.8
Sept. 11-20.....	71.4	20	530	198	706	181	1,850	1,130	2.9	4,530	6.16	873	2,140	1,990	42	6,160	7.6
Sept. 21-30.....	70.4	19	528	195	669	181	1,780	1,110	3.4	4,390	5.97	834	2,110	1,970	41	6,090	7.6
Weighted average..	159	16	505	185	470	171	1,630	772	4.4	3,640	4.95	1,560	1,910	1,770	35	4,880	--

RIC GRANDE BASIN--Continued

PECOS RIVER NEAR RED BLUFF, N. MEX.

LOCATION.--At pipeline bridge, 2½ miles downstream from gaging station at Red Bluff which is 0.2 mile downstream from Red Bluff Creek, and 5.5 miles upstream from Delaware River, Eddy County.

DRAINAGE AREA.--19,540 square miles (contributing area), (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 10,300 ppm July 22; minimum, 3,840 ppm July 2-3.

Hardness: Maximum, 2,620 ppm July 22; minimum, 1,590 ppm July 2-3; minimum daily, 4,620 micromhos July 25.

SPRINGS: Maximum daily, 19,100 micromhos July 25; minimum daily, 1,900 ppm June 3, 1948.

EXTREMES, 1937-51.--Dissolved solids: Maximum, 10,300 ppm July 22; minimum, 3,840 ppm July 2-3, 1948.

Hardness: Maximum daily, 19,100 micromhos July 25; minimum daily, 1,900 ppm June 3, 1948.

SPRINGS: Maximum daily, 19,100 micromhos July 25; minimum daily, 1,900 ppm June 3, 1948.

Specific conductance: Maximum daily, 18,600 micromhos Aug. 14, 15, 1947; minimum daily, 268 micromhos Sept. 19, 1946.

REMARKS.--Records of specific conductance of daily samples available in district office in Albuquerque, N. Mex. Discharge records for gaging station at Red Bluff for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951.

Date of collection	Mean discharge (cfs)	Tem- perature (°F)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent non-sol- utes (micro- mhos at 25°C)	pH	
															Parts per mil- lion	Tons per acre- foot	Tons per day	Total	Non-carbon- ate			
Oct. 11-20, 1950	304	15			503	142	597	159	1,610	950		3.7			3,900	5.30	3,200	1,850	1,720	41	5,370	7.4
Oct. 1-31	339	17			554	147	571	171	1,680	910		4.1			3,950	5.37	3,620	1,940	1,790	39	5,350	7.4
Nov. 1-10	336	16			552	144	553	171	1,700	850		3.5			3,880	5.28	3,520	1,950	1,810	37	5,170	7.5
Nov. 11-20	326	14			540	132	540	171	1,680	875		3.6			3,900	5.30	3,430	1,930	1,780	38	5,250	7.5
Nov. 21-30	304	16			534	143	563	171	1,680	910		3.7			3,950	5.37	3,240	1,960	1,820	38	5,350	7.7
Dec. 1-10	317	14			532	164	913	173	1,740	1,440		4.1			4,890	6.65	4,190	2,000	1,860	50	6,900	7.6
Dec. 11-20	199	14			534	174	985	175	1,770	1,580		4.5			5,130	6.98	2,760	2,050	1,960	51	7,230	7.5
Dec. 21-31	134	14			542	183	1,010	180	1,810	1,610		4.4			5,260	7.15	1,900	2,100	1,960	51	7,430	7.5
Jan. 1-10, 1951	221	15			490	170	727	204	1,750	1,190		3.6			4,290	5.83	2,580	1,920	1,750	45	6,030	7.7
Jan. 11-20	206	14			530	156	670	179	1,680	1,080		2.4			4,220	5.74	2,360	1,960	1,820	43	5,820	7.7
Jan. 21-31	154	13			544	156	766	172	1,680	1,250		1.8			4,510	6.13	1,860	2,000	1,860	45	6,320	7.8
Feb. 1-10	129	13			542	171	898	175	1,760	1,440		2.3			4,910	6.68	1,710	2,060	1,910	49	6,960	7.8
Feb. 11-20	139	14			506	170	882	181	1,710	1,380		4.8			4,760	6.47	1,790	1,960	1,810	49	6,770	7.3
Feb. 21-28	122	13			496	184	934	182	1,760	1,460		5.3			4,870	6.62	1,600	1,950	1,800	51	7,090	7.3
Mar. 1-10	171	14			497	182	1,020	182	1,800	1,700		4.3			4,800	6.62	2,030	1,960	1,730	48	6,190	7.6
Mar. 11-20	112	14			504	160	948	169	1,690	1,470		3.7			4,370	6.47	1,870	1,900	1,780	52	6,930	7.4
Mar. 21-31	108	11			534	174	1,130	150	1,820	1,760		4.0			5,510	7.49	1,610	2,050	1,920	55	7,870	7.4
Apr. 1-10	130	13			506	184	908	170	1,720	1,460		3.8			4,880	6.64	1,710	2,020	1,880	49	6,970	7.3
Apr. 11-20	76.7	14			512	187	1,110	176	1,760	1,760		4.5			5,430	7.38	1,120	2,050	1,900	54	7,860	7.4
Apr. 21-30	80.3	15			524	218	1,650	181	1,980	2,590		--			7,100	9.66	1,540	2,280	2,130	61	10,300	7.3
May 1-10	117	13			540	206	1,120	146	1,940	1,760		2.4			5,650	7.68	1,780	2,190	2,060	53	7,960	7.3
May 11-20	88.7	14			516	198	1,160	164	1,840	1,830		2.1			5,940	7.67	1,350	2,100	1,970	55	8,090	7.4
May 21-31	115	16			508	188	1,130	186	1,780	1,770		2.1			5,490	7.47	1,700	2,040	1,890	55	7,920	7.5

June 1-10.....	85.0	17	492	192	1,210	166	1,780	1,890	2.2	5,870	7.71	1,300	2,020	1,880	57	8,140	7.5
June 11-20.....	76.2	16	538	204	1,190	153	1,940	1,940	2.9	5,810	7.90	1,200	2,180	2,060	54	8,340	7.3
June 21-30.....	64.0	19	564	215	1,340	162	1,940	2,160	--	6,320	8.60	1,090	2,280	2,190	56	9,030	7.3
July 1-4-10.....	51.5	17	566	218	1,270	139	1,960	2,070	--	6,170	8.39	858	2,310	2,190	54	8,820	7.3
July 2-3.....	85.5	16	414	136	715	137	1,300	1,190	2.3	3,840	5.22	868	1,580	1,480	49	5,640	7.1
July 11-21.....	27.8	17	610	246	2,030	130	2,190	3,230	--	8,390	11.4	630	2,530	2,430	63	12,100	7.2
July 22.....	38	22	607	268	2,730	151	2,340	4,250	--	10,300	14.0	1,060	2,620	2,490	69	15,100	7.8
July 23-31.....	208	16	442	148	770	131	1,480	1,230	3.7	4,150	5.64	2,330	1,710	1,600	49	5,980	7.8
Aug. 1-10.....	79.3	17	510	181	1,160	145	1,800	1,830	2.3	5,560	7.59	1,190	2,060	1,940	55	8,020	7.8
Aug. 11-20.....	36.7	18	559	240	1,930	156	2,030	3,070	--	7,920	10.8	785	2,380	2,350	64	11,600	7.8
Aug. 21-31.....	62.6	21	588	242	2,150	156	2,110	3,410	--	8,600	11.7	1,450	2,460	2,390	65	12,500	7.8
Sept. 1-10.....	59.6	19	568	235	1,770	147	2,110	2,770	--	7,840	10.2	1,210	2,360	2,280	62	10,800	7.8
Sept. 11-20.....	73.1	17	563	239	1,690	168	1,990	2,740	--	7,320	9.96	1,440	2,380	2,280	61	10,700	7.7
Sept. 21-30.....	75.9	17	544	229	1,550	166	1,970	2,470	--	6,560	9.53	1,410	2,300	2,160	59	9,940	7.6
Weighted average..	a 146	15	525	170	891	169	1,740	1,420	3.6	4,850	6.60	1,910	2,010	1,870	49	6,810	--

a Mean discharge for water year October 1950 to September 1951 was 164 second-feet. Runoff in period of record was 87 percent of total for water year.

RIO GRANDE BASIN--Continued
PECOS RIVER NEAR ORLA, TEX.

LOCATION.--At gaging station 600 feet upstream from Pasotex pipe-line crossing, 6 miles southeast of Orla, Reeves County, 11 miles downstream from Salt (Screwhear) Draw, and 14 miles downstream from Red Bluff Dam.

RECORDS AVAILABLE.--21,300 square miles (contributing area).

RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1951.

EXTREMES 1950-51.--Dissolved solids: Maximum, 6,880 ppm Sept. 1-30; minimum, 1,660 ppm Oct. 1-4.

Hardness: Maximum, 2,370 ppm Sept. 1-30; minimum, 742 ppm Oct. 1-4.

Specific conductance: Maximum daily, 11,600 microhos Sept. 5-8; minimum daily, 2,500 microhos Oct. 2.

EXTREMES 1937-51.--Dissolved solids: Maximum, 9,640 ppm Oct. 21-31, 1947; minimum, 1,090 ppm June 1-2, 1948.

Hardness: Maximum, 3,240 ppm Feb. 11, 13, 16-19, 1946; minimum, 602 ppm June 1-2, 1948.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples from November 1941 to September 1951 available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Temperature (°F)	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) (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Oct. 1-4, 1950.....	82.8	11	17	17	241	34	270	70	635	430	4.5		1,660	2.26	371	742	684	44	2,560	7.3
Oct. 5-6, 8-10.....	14.0	17	17	17	478	142	1,000	99	1,440	1,680	3.5		4,810	6.54	182	1,780	1,700	55	7,110	7.6
Oct. 7, 11-31.....	44.6	17	17	17	458	152	713	116	1,560	1,130	5.0		4,090	5.56	493	1,770	1,670	47	5,710	7.6
Nov. 1-30.....	35.2	17	17	17	468	121	728	132	1,660	1,000	1.0		4,060	5.52	386	1,660	1,560	49	5,440	7.8
Dec. 1-31.....	12.6	13	13	13	532	163	779	124	1,810	1,210	1.5		4,570	6.22	155	2,000	1,900	46	6,220	7.7
Jan. 1-31, 1951.....	10.9	9.0	9.0	9.0	560	191	947	133	1,910	1,520	1.5		5,200	7.07	153	2,180	2,070	49	7,200	7.8
Feb. 1-28.....	114	16	16	16	496	156	742	134	1,690	1,150	2.0		4,320	5.88	1,330	1,880	1,770	46	6,020	7.8
Mar. 1-5, 27-31.....	136	15	15	15	518	167	822	135	1,750	1,300	1.0		4,640	6.31	1,730	1,980	1,870	47	6,540	7.7
Mar. 6-26.....	11.3	9.5	9.5	9.5	580	185	1,090	116	2,000	1,700	.5		5,620	7.64	171	2,210	2,110	52	7,920	7.6
Apr. 1-30.....	384	16	16	16	482	146	712	130	1,650	1,100	2.0		4,180	5.68	4,330	1,830	1,720	46	5,790	7.9
May 1-31.....	387	23	23	23	492	167	765	87	1,740	1,200	1.5		4,430	6.02	4,630	1,910	1,840	46	6,180	7.5
June 1-30.....	150	21	21	21	496	170	857	112	1,800	1,300	2.0		4,700	6.39	1,900	1,940	1,840	49	6,600	7.5
July 1-31.....	468	23	23	23	526	177	881	102	1,850	1,380	.5		4,890	6.65	6,180	2,040	1,960	48	6,910	7.7
Aug. 1-31.....	147	27	27	27	534	166	946	108	1,820	1,480	.8		5,030	6.84	2,000	2,020	1,930	50	7,180	7.7
Sept. 1-30.....	19.6	23	23	23	590	219	1,500	96	2,120	2,360	--		6,880	9.36	364	2,370	2,280	58	10,100	7.2
Weighted average ..	152	21	21	21	505	164	813	109	1,750	1,260	1.4		4,580	6.23	1,880	1,930	1,840	48	6,420	--

RIO GRANDE BASIN--Continued
PECOS RIVER BELOW GRANDFALLS, TEX.

LOCATION.--At gaging station at bridge on State Farm-to-Market Road 11 between Grandfalls and Imperial, 7.1 miles southeast of Grandfalls, Ward County, and 10 miles downstream from Chacator Draw.

DRAINAGE AREA.--27,820 square miles, approximately (contributing area).

RECORDS AVAILABLE.--Chemical analyses: April 1939 to June 1942, October 1946 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 12,900 ppm May 1-5; minimum, 3,400 ppm Oct. 1-4, 7.

Hardness: Maximum, 3,780 ppm May 1-5; minimum, 1,310 ppm Oct. 1-4, 7.

Specific conductance: Maximum daily, 18,200 microhms May 1-4; minimum daily, 4,760 microhms Sept. 12.

EXTREMES, 1939-42, 1946-51.--Dissolved solids: Maximum, 12,900 ppm May 1-5, 1951; minimum, 339 ppm June 5, 1947.

Hardness: Maximum, 3,780 ppm May 1-5, 1951; minimum, 339 ppm June 5, 1947.

REMARKS.--Values reported for dissolved solids are sum of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1212.

Chemical analyses, in parts per million, water year: October 1950 to September 1951

Date of collection	Mean discharge (cfs)	Tem-perature (° F)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	Sodium (Na)		Potas-sium (K)	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per-cent so-lidum	Specific conductance (microhms at 25° C)	pH	
							(Na)	(K)								Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 1-4, 7, 1950 . . .	145		18		268	157		696		104	994	1,210		2.0		3,400	4.62	1,330	1,310	1,230	54	5,310	7.7
Oct. 5-6, 8-14 . . .	86.6		20		440	124	1,440		116	1,720	2,020			--		5,820	7.92	1,360	1,610	1,510	66	8,390	7.7
Oct. 15-31 . . .	31.9		24		595	201	2,170		146	2,430	3,120			--		8,600	13.55	858	2,310	2,190	67	12,000	7.7
Nov. 1-30 . . .	26.2		24		739	297	2,620		196	2,930	3,930			--		10,600	12.62	656	3,060	2,900	65	14,600	7.9
Dec. 1-31 . . .	41.2		19		725	355	2,480		204	2,840	3,920			--		10,400	14.14	1,160	3,270	3,100	62	13,900	7.8
Jan. 1, 3, 5-13, 18-20, 22-25, 27, 29, 1951	39.4		18		697	357	2,500		166	2,760	4,000			--		10,400	14.14	1,110	3,210	3,070	63	15,000	7.7
Jan. 2, 4, 14-17, 21, 26, 28, 30-31 . . .	36.7		15		548	259	1,810		141	2,110	2,870			--		7,660	10.44	802	2,430	2,320	62	11,300	7.8
Feb. 1-28 . . .	30.4		17		734	362	2,420		172	2,860	3,890			--		10,400	14.14	854	3,320	3,180	61	14,800	7.8
Mar. 1-31 . . .	24.3		16		740	365	2,600		177	2,920	4,130			--		10,900	14.82	715	3,350	3,200	63	15,300	7.8
Apr. 1-30 . . .	22.7		14		744	370	2,940		151	2,940	4,050			--		10,700	14.55	656	3,380	3,250	62	15,400	8.0
May 1-5 . . .	19.2		16		798	434	3,180		189	3,390	4,970			--		12,900	17.54	669	3,780	3,620	65	18,200	7.9
May 6-23 . . .	45.1		13		628	353	2,450		166	2,310	2,300			--		7,950	9.59	858	2,610	2,470	55	13,400	7.8
May 24-31 . . .	22.8		17		735	360	2,470		113	3,090	3,900			--		9,560	13.00	599	3,200	3,050	59	13,500	7.8
June 1-30 . . .	20.5		27		785	359	2,470		118	3,080	3,900			--		10,300	14.55	592	3,430	3,340	63	15,200	7.4
July 1-18 . . .	16.7		28		775	350	2,360		102	3,030	3,730			--		10,300	14.01	464	3,370	3,290	60	14,800	7.7
July 19-31 . . .	32.5		28		711	274	1,700		115	2,610	2,690			--		8,070	10.98	708	2,900	2,810	56	11,500	7.8
Aug. 1-31 . . .	14.3		26		742	323	2,070		107	2,860	3,280			--		9,350	12.72	361	3,180	3,090	59	13,300	7.7
Sept. 1-11, 17-30 . .	16.2		20		686	330	2,060		135	2,660	3,310			--		9,130	12.42	399	3,070	2,960	59	13,100	7.4
Sept. 12-16 . . .	106		19		331	132	930		116	1,160	1,480		2.0			4,110	5.59	1,180	1,370	1,270	60	6,450	7.4
Weighted average . .	31.3		20		645	292	2,070		152	2,510	3,240		--			8,840	12.02	747	2,810	2,690	62	12,500	--

RIO GRANDE BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN RIO GRANDE BASIN IN NEW MEXICO

Chemical analyses, in parts per million, water year October 1950 to September 1951.

Date of collection	Mean discharge (cfs)	Temperature (°F)	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		Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate		
CORRALES RIVERSIDE DRAIN HALF A MILE ABOVE ALAMEDA BRIDGE, NEAR ALAMEDA																					
Mar. 20, 1951.....							39	10	36		19			--	306			138	26	36	435
May 14.....							60	9.9	39					(b)			190	190	31	528	
Jul 16.....							46	7.8	28					(b)			147	147	29	414	
Sept. 18.....							--	--	38					(b)			224	224	27	572	
CORRALES RIVERSIDE DRAIN HALF A MILE ABOVE OUTLET NEAR ALBUQUERQUE																					
Mar. 20, 1951.....							50	9.6	36		11			--	328			164	24	32	447
May 14.....							54	10	40					(b)			176	176	33	503	
July 16.....							45	7.9	29					(b)			145	145	30	404	
Sept. 18.....							--	--	40					(b)			219	219	28	581	
ALBUQUERQUE RIVERSIDE DRAIN AT HEAD NEAR SANDIA PUEBLO																					
Mar. 20, 1951.....							31	12	45		27			--	317			127	27	44	450
May 14.....							54	11	46					(b)			190	190	36	545	
July 16.....							47	9.5	35					(b)			156	156	33	442	
ALBUQUERQUE RIVERSIDE DRAIN AT ATRISCO HEADING AT ALBUQUERQUE																					
Mar. 20, 1951.....							33	11	38		15			--	294			128	32	39	400
May 15.....							55	9.8	37					(b)			178	178	31	500	
July 16.....							51	9.0	29					(b)			164	164	28	440	
Sept. 17.....							--	--	36					(b)			213	213	27	539	
ALAMEDA INTERIOR DRAIN AT OUTLET AT ALBUQUERQUE																					
May 15, 1951.....							50	14	64					0.1			182	182	43	638	
July 17.....							66	10	47					(b)			206	206	33	588	
Sept. 17.....							--	--	64					(b)			324	324	30	824	
ALBUQUERQUE RIVERSIDE DRAIN ONE MILE ABOVE OUTLET, NEAR ISLETA																					
Mar. 20, 1951.....							58	11	42		20			--	375			190	32	33	534
May 15.....							50	13	58					(b)			178	178	41	669	
July 16.....							66	12	52					--			214	214	35	655	
Sept. 17.....							--	--	60					(b)			230	230	36	692	
a Includes equivalent of 16 parts per million of carbonate (CO ₃).																					
b Less than 0.1 part per million of boron.																					
c Includes equivalent of 20 parts per million of carbonate (CO ₃).																					
d Includes equivalent of 12 parts per million of carbonate (CO ₃).																					

a. Includes equivalent of 16 parts per million of carbonate (CO₃).

b. Less than 0.1 part per million of boron.

c. Includes equivalent of 20 parts per million of carbonate (CO₃).

d. Includes equivalent of 12 parts per million of carbonate (CO₃).

ATRISCO RIVERSIDE DRAIN HALF A MILE ABOVE OUTLET NEAR ISLETA

Mar. 21, 1951.....	44	11	38	a148	95	17	--	322	155	34	35	464
May 15.....	64	11	45				(b)	(b)	204	32	32	593
July 17.....	52	9.3	34				0.1		168	31	479	
Sept. 17.....	--	--	40						202	30	555	

ISLETA RIVERSIDE DRAIN AT OUTLET NEAR ISLETA

Mar. 20, 1951.....	38	12	55	a154	102	22	--	378	144	18	45	497
May 16.....	68	14	59				(b)	(b)	227	36	668	
July 17.....	97	15	61				(b)	(b)	304	30	821	
Sept. 18.....	--	--	67				(b)	(b)	340	30	888	

ISLETA INTERIOR DRAIN ABOVE INDIAN DRAIN AT ISLETA

May 16, 1951.....	83	16	74				0.1		273	37	784	
July 17.....	98	13	66				(b)		298	33	832	
Sept. 17.....	--	--	72				(b)		340	32	882	

UPPER PERALTA RIVERSIDE DRAIN ONE AND ONE HALF MILES ABOVE OUTLET, NEAR LOS LUNAS

Mar. 21, 1951.....	48	11	44	d156	101	19	--	348	165	37	37	488
May 16.....	82	12	45				(b)	(b)	254	28	572	
July 17.....	71	11	43				(b)	(b)	222	30	601	
Sept. 18.....	--	--	49				(b)	(b)	217	33	651	

TONE INTERIOR DRAIN AT STATE HIGHWAY 47 NEAR BELEN

Mar. 21, 1951.....	82	22	112				0.1		295	45	1,000	
May 16.....	119	26	127				.2		404	41	1,230	
Sept. 18.....	--	--	106				(b)		376	38	1,060	

LOWER PERALTA RIVERSIDE DRAIN HALF A MILE ABOVE OUTLET NEAR BELEN

Mar. 21, 1951.....	43	16	70	d128	184	35	--	494	174	68	50	687
May 16.....	65	16	86				(b)	(b)	228	43	785	
July 18.....	95	17	79				0.1		307	36	900	
Sept. 19.....	--	--	82				(b)	(b)	308	37	915	

a Includes equivalent of 16 parts per million of carbonate (CO₃).

b Less than 0.1 part per million of boron.

d Includes equivalent of 12 parts per million of carbonate (CO₃).

RIO GRANDE BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN RIO GRANDE BASIN IN NEW MEXICO--Continued
Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)
														Parts per million	Tons per acre-foot	Total	Non-carbonate		
SAUSAL INTERIOR DRAIN AT BELEN																			
May 16, 1951.....					72	22	206						0.1			270		62	1,350
July 18.....					100	19	180						.2			328		54	1,300
Sept. 19.....					--	--	138						(b)			298		50	1,090
BELEN RIVERSIDE DRAIN AT OUTLET NEAR BELEN																			
May 17, 1951.....					62	15	66						0.1			216		40	704
July 18.....					79	15	66						(b)			258		36	748
Sept. 19.....					--	--	58						(b)			240		34	686
BOSQUE AND LUNA INTERIOR DRAIN AT OUTLET NEAR BOSQUE																			
May 17, 1951.....					73	28	198						0.1			297		59	1,390
July 18.....					117	27	184						.4			403		50	1,510
Sept. 19.....					--	--	198						(b)			440		49	1,550
SABINAL RIVERSIDE DRAIN AT OUTLET NEAR BOSQUE																			
Mar. 21, 1951.....					75	25	177		a 216	372	91		--	954		290	113	57	1,320
May 17.....					98	27	184					0.1				356		53	1,420
July 18.....					116	26	181					.4				396		50	1,470
Sept. 19.....					--	--	194					(b)				432		49	1,520
LAS NUTRIAS INTERIOR DRAIN AT OUTLET NEAR BERNARDO																			
May 17, 1951.....					42	17	102						0.1			175		56	796
July 18.....					76	16	94						.1			256		44	885
Sept. 20.....					--	--	103						(b)			278		45	891
LOWER SAN JUAN RIVERSIDE DRAIN AT U. S. HIGHWAY 60, NEAR BERNARDO																			
Mar. 21, 1951.....					38	14	72		a 136	152	33		--	464		152	41	51	628
May 17.....					47	15	92					(b)				179		53	763
July 17.....					75	16	88					0.1				253		43	843
Sept. 19.....					--	--	97					.3				253		45	870

^a Includes equivalent of 16 parts per million of carbonate (CO₃).

^b Less than 0.1 part per million of boron.

RIO GRANDE BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN RIO GRANDE BASIN IN NEW MEXICO--Continued
Chemical analyses, in parts per million, water year October 1950 to September 1951--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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)	Dissolved solids		Hardness as CaCO ₃	Percent non-carbonate	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot day	Total			

LAKE MC MILLAN AT MC MILLAN DAM NEAR LAKEWOOD--Continued

Mar. 20.....									126		1,890							8,790	
Apr. 30.....									144		1,330							7,260	
June 11.....									135		1,110							6,420	

PECOS RIVER AT FORD CROSSING IN MAJOR JOHNSON SPRING AREA NEAR LAKEWOOD

Oct. 10, 1950.....									147		535							4,200	
Nov. 20.....									145		505							4,100	
Jan. 3, 1951.....									143		535							4,180	
Feb. 12.....									147		590							4,370	
Mar. 20.....									146		650							4,570	
Apr. 30.....									166		820							4,230	
June 11.....									186		1,040							4,180	
July 23.....									189		395							3,390	
Sept. 5.....									138		720							4,900	

PECOS RIVER AT DAM SITE 3, NEAR CARLSBAD

Oct. 10, 1950.....									150		585							4,350	
Nov. 20.....									142		525							4,150	
Jan. 2, 1951.....									141		525							4,130	
Feb. 12.....									142		570							4,280	
Mar. 20.....									136		630							4,450	
Apr. 30.....									119		970							5,800	
June 11.....									150		780							5,020	
July 24.....									114		480							3,860	
July 25.....									135		580							4,360	
Aug. 1.....									144		770							5,010	
Aug. 8.....									124		500							3,980	
Aug. 15.....									124		550							4,250	
Aug. 22.....									132		710							4,880	
Aug. 29.....									137		720							4,810	

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