

103

Quality of Surface Waters of the United States 1952

Parts 9-14. Colorado River Basin to Pacific
Slope Basins in Oregon and Lower Columbia
River Basin

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1253

*Prepared in cooperation with the States of
California and Utah, U. S. Bureau of
Reclamation, and with other agencies*



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

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UNITED STATES DEPARTMENT OF THE INTERIOR

Fred A. Seaton, *Secretary*

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PREFACE

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QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1952

PARTS 9-14

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, 1951, to September 30, 1952. 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, 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.

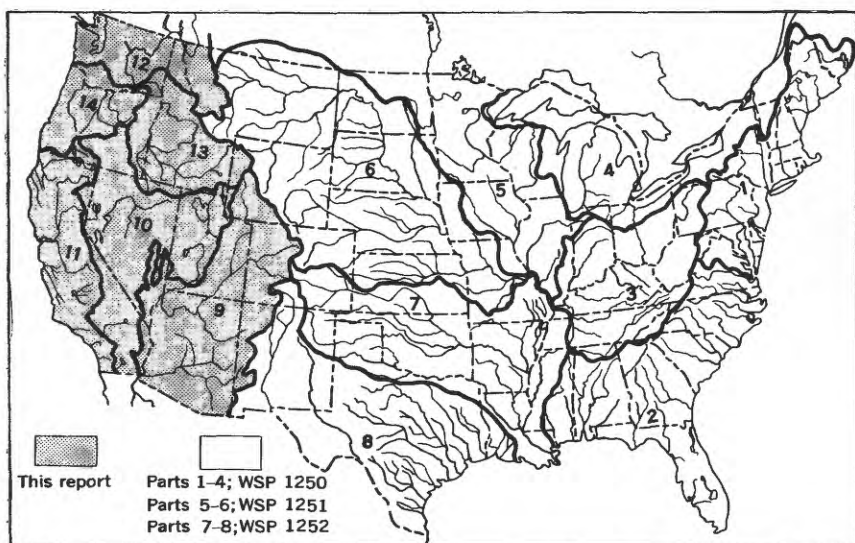


Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1952. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

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, 1952, 63 regular sampling stations on 21 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 103 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 pages

Quantities of suspended sediment are reported for 18 stations during the year ended September 30, 1952. 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 18 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 any time 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 or pipette cylinder 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, and the monthly averages of the maximum daily and 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 hardness, as calcium carbonate (CaCO_3), 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 is 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 times 10^6 (micromhos at 25°C). The discharge of the streams is reported in cubic-feet per second (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. A part per million of sediment is computed as 1,000,000 times the ratio of the weight of sediment to the weight of water-sediment mixture. Daily sediment loads are expressed in tons per day, and except for subdivided days are usually obtained by multiplying daily mean sediment concentration in parts per million by the daily mean discharge, and the appropriate conversion factor, normally 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)

X 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 (NO₃)

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 NO₃) 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 NO₃) 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 NO₃) 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 NO₃) 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

X 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)

7
✓ 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. 7). 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 (Magistád and Christiansen, 1944, p. 8-9; Wilcox, 1948, p. 6).

Sodium-adsorption-ratio

Sodium-adsorption-ratio (SAR) is the relative proportion of sodium to other cations in an irrigation water.

$$SAR = \frac{Na^+}{\sqrt{(Ca^{++} + Mg^{++})/2}}$$

where the ionic concentrations are expressed in milliequivalents per liter (or equivalents per million for most irrigation waters).

The term is used for soil extracts and irrigation waters to express the relative activity of sodium ions in exchange reactions with soil. SAR provides an estimate of the sodium or alkali hazard and reportedly is more significant for interpreting water quality than percent sodium because it relates more directly to the exchangeable sodium percentage the soil will attain when it and the water are in equilibrium.

The U. S. Salinity Laboratory diagram for classifying waters for irrigation divides water into four classes with respect to sodium hazard, the dividing points being at SAR values of 10, 18, and 26. They range from low-sodium water that can be used for irrigation on almost all soils to very high-sodium water which is generally unsatisfactory for irrigation.

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, 1950, and 1951, for many of the stations listed in this report are given in Water-Supply Papers 942, 950, 970, 1022, 1030, 1050, 1102, 1133, 1163, 1189, and 1200.

Geological Survey reports containing analyses of surface-water samples collected prior to 1941 are listed below. Publi-

cations 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.

1048. Discharge and sediment loads in the Boise River drainage basin, Idaho, 1939-40, 1948.
- 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

Financial assistance was furnished by the Bureau of Reclamation of the United States Department of the Interior, in the operation of some stations in Arizona and New Mexico. Investigations of chemical quality in the Great Basin and Pacific Slope basins in California were carried on in cooperation with the State of California. Investigations of chemical quality in the upper Virgin River basin, Utah, were initiated in 1951 in cooperation with the State of Utah. Sedimentation studies in the Pacific Slope basins in Washington were begun in 1950 with the City of Tacoma.

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

In addition to the cooperative program, many of the stations were operated from funds appropriated directly to the Geological Survey for quality-of-water investigations. Investigation of the chemical quality and suspended-sediment loads in the Colorado River basin in Arizona, Colorado, Nevada, New Mexico, and Utah have been carried on as a continuing Federal project since 1925.

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 as follows: In Arizona and New Mexico--J. D. Hem; in Colorado and Wyoming

(Colorado River basin), Nevada, Utah, California, Washington, Oregon, and Idaho--C. S. Howard. Any additional information on file may be obtained by writing or visiting the responsible Survey Quality of Water district office as listed in the following table.

<u>District office</u>	<u>Drainage basin</u>
Geology Bldg. University of N. Mex. University Station, Box 293 Albuquerque, N. Mex.	Colorado River basin (Arizona, New Mexico).
Post Office Box 2657 Building 504 Fort Douglas Salt Lake City, Utah	Colorado River basin (Colorado, Utah, Wyoming, and Nevada). The Great Basin (Utah, Nevada).
2520 Marconi Avenue Sacramento, Calif.	The Great Basin (California). Pacific Slope basins in California.
1001 N. E. Lloyd Blvd. Post Office Box 3418 Portland 14, Oreg.	Pacific Slope basins in Washington and upper Columbia River basin. Snake River basin. Pacific Slope basins in Oregon and lower Columbia River basin.

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.

LITERATURE CITED

- American Public Health Association, 1946, Standard methods for the examination of water and sewage, 9th ed, p. 1-112.
- Collins, W. D., 1928, Notes on practical water analysis: U. S. Geol. Survey Water-Supply Paper 596-H.
- Dean, H. T., 1936, Chronic endemic dental fluorosis: Am. Med. Assoc. Jour., v. 107, p. 1269-1272.
- Faucett, R. L., and Miller, H. C., 1946, Methemoglobinemia occurring in infants fed milk diluted with well waters of high nitrate content: Jour. Pediatrics, v. 29, p. 593.
- Hazen, Allen, 1892, A new color standard for natural waters: Am. Chem. Jour., v. 12, p. 427-428.
- Kilmer, V. J. and Alexander, L. T., 1949, Methods of making mechanical analyses of soils: Soil Sci. v. 68, p. 15-24.
- Lane, E. W., et al, 1949, Report of the Subcommittee on Terminology: Am. Geophys. Union Trans., v. 28, p. 937.
- Magistad, O. C., and Christiansen, J. E., 1944, Saline soils, their nature and management: U. S. Dept. Agriculture Circ. 707, p. 8-9.
- Maxcy, Kenneth F., 1950, Report on the relation of nitrate concentrations in well waters to the occurrence of methemoglobinemia: Natl. Research Council, Bull., Sanitary Engineer, p. 265, App. D.
- U. S. Inter-agency Report 7, 1943, A study of methods used in measurement and analysis of sediment loads in streams, a study of new methods for size analysis of suspended sediment samples, p. 82-90; U. S. Engineer Office, St. Paul, Minn.

- U. S. Inter-agency Report 8, 1948, A study of methods used in measurement and analysis of sediment loads of streams, measurement of the sediment discharge of streams, p. 70-76; U. S. Engineer Office, St. Paul, Minn.
- U. S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkali soils: U. S. Dept. Agriculture Handbook 60, p. 1-60.
- Waring, F. Holman, 1949, Significance of nitrates in water supplies: Jour. Am. Water Works Assoc., v. 72, no. 2.
- Wilcox, L. V., 1948, Explanation and interpretation of analyses of irrigation waters: U. S. Dept. Agriculture Circ. 784, p. 6.

CHEMICAL ANALYSES, WATER TEMPERATURES, AND SUSPENDED SEDIMENT

PART 9. COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM

COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.

LOCATION --At bridge at Hot Sulphur Springs, Grand County, 1 mile downstream from gaging station which is 3 miles upstream from Beaver Creek.

DAIRYAGE AREA 782 square miles (above gaging station).

RECORDS AVAILABLE --Chemical analyses: April 1949 to September 1952.

Water temperatures: April 1949 to September 1952.

EXTREMES, 1951-52. --Specific conductance: Minimum daily, 202 micromhos July 31; minimum daily, 59.5 micromhos June 12.

Water temperatures: Maximum observed, 63°F July 21-22; minimum observed, freezing point on many days during November to December.

EXTREMES, 1947-50. --Dissolved solids (1947-50): Maximum daily, 109 ppm Aug. 11-20, 1950; minimum, 38 ppm June 21-30, 1947.

Hardness (1947-50): Maximum daily, 20 ppm June 21-30, 1950; minimum, 2-30 ppm June 21-30, 1947.

Specific conductance: Maximum daily, 202 micromhos July 31, 1952; minimum daily, 47.6 micromhos June 27, 1947.

Water temperatures: Maximum observed, 65°F on several days during July and August, 1950; minimum observed, freezing point on many days during winter months.

REMARKS --Values reported for dissolved solids are residues after evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate magnesium					
Oct. 1-10, 1951...	104	14	18	3.2	8.3	82	6.2	1.5	0.3	96	0.13	27.0	58	0	24	0.5	142	7.4					
Oct. 11-20.....	97.4	14	17	3.2	8.1	78	6.0	2.1	0.2	94	0.13	24.7	56	0	24	0.5	138	7.6					
Oct. 21-31.....	115	16	17	3.3	8.0	78	6.4	1.9	0.2	96	0.13	28.8	56	0	24	0.5	137	7.6					
Nov. 1-10.....	102	--	--	--	--	--	--	--	--	93	0.13	25.6	--	--	--	--	138	--					
Nov. 11-20.....	102	14	18	3.4	7.8	76	11	1.2	0.4	90	0.12	24.8	59	0	22	0.4	135	7.4					
Nov. 21-30.....	96.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	132	--					
Dec. 1-10.....	90.8	--	--	--	--	--	--	--	--	91	0.12	22.3	--	--	--	--	139	--					
Dec. 11-17.....	86.3	14	16	3.8	9.5	80	8.1	1.2	0.5	83	0.11	19.3	56	0	27	0.6	125	7.4					
Apr. 1-10, 1952...	123	--	--	--	--	--	--	--	--	98	0.13	32.5	--	--	--	--	138	--					
Apr. 11-20.....	507	11	15	3.1	8.3	62	9.9	4.1	1.7	0.08	95	0.13	130	50	0	26	143	7.6					
Apr. 21-30.....	1,085	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	122	--					
May 1-10.....	1,851	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
May 11-20.....	1,558	11	9.8	2.2	4.9	44	5.8	1.0	0.7	87	0.08	240	34	0	24	0.4	106	7.6					
May 21-31.....	1,299	--	--	--	--	--	--	--	--	64	0.09	224	--	--	--	--	87.9	--					
June 1-10.....	2,823	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	64.1	--					
June 11-20.....	2,414	10	7.6	2.5	2.1	34	4.3	0.8	0.4	45	0.06	293	29	4	13	0.2	63.8	6.9					
June 21-30.....	1,230	--	--	--	--	--	--	--	--	62	0.08	206	--	--	--	--	88.6	--					

a Sum of determined constituents.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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 (residue at 180°C)			Hardness as CaCO ₃		Per- cent so- dium ad- sorp- tion ratio	Specific conductance (micro-mhos at 25°C)	Col- or or pH		
													Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
July 1-10, 1952..	494	--	--	--	--	--	--	--	--	--	--	--	86	0.12	115	--	--	--	127	--	--	
July 11-20.....	274	15	--	18	3.7	7.0	--	78	6.0	3.2	--	0.8	98	.13	72.5	60	0	20	0.4	149	7.4	--
July 21-31.....	277	--	--	--	--	--	--	--	--	--	--	--	109	.15	81.5	--	--	--	--	166	--	--
Sept. 19-30.....	195	--	--	--	--	--	--	--	--	--	--	--	72	.10	37.9	--	--	--	--	112	--	--
Weighted average	b712	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	93.4	--	--

b Represents 87 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

EAGLE RIVER BASIN

EAGLE RIVER AT GYPSUM, COLO.

(Records formerly collected at this site
were published as Eagle River below Gypsum)

LOCATION.--At bridge at Gypsum, Eagle County, about 400 feet upstream from Gypsum Creek and U. S. Highways 6 and 24, and about 475 feet upstream from gaging
DRAINAGE AREA.--844 square miles above sampling station (957 square miles above gaging station below Gypsum).
RECORDS AVAILABLE.--Chemical analyses April 1947 to September 1952.

Water temperatures April 1949 to September 1952.

EXTREMES 1951-52--Dissolved solids: Maximum daily, 1,750 micrograms; minimum daily, 1,370 ppm (sum) Aug. 11-12; minimum, 134 ppm June 11-20.

Specific conductance: Maximum daily, 1,750 microhms; minimum daily, 1,110 microhms Aug. 11-12; minimum, 134 microhms June 11-20.

Water temperatures: Maximum observed, 70°F July 13-14, 7-18, 27; minimum observed, 50°F Aug. 11-12, 27; freezing point on many days during December to March.

EXTREMES 1951-52--Dissolved solids: Maximum daily, 1,750 micrograms; minimum daily, 1,370 ppm (sum) Aug. 11-12; minimum, 134 ppm June 11-20.

Specific conductance: Maximum daily, 1,750 microhms; minimum daily, 1,110 microhms Aug. 11-12; minimum, 134 microhms June 11-20.

Water temperatures: Maximum observed, 70°F July 13-14, 7-18, 27; minimum observed, 50°F Aug. 11-12, 27; freezing point on many days during December to March.

Hardness (1947-50): Maximum daily, 1,850 microhms Aug. 6, 1949; minimum observed, 1,556 microhms June 4, 1948.

Specific temperatures (1949-52): Maximum observed, 76°F Aug. 24, 1949; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office
at Salt Lake City, Utah. Discharge records for gaging station below Gypsum for water year October 1951 to September 1952 given in WSP 1243. These records
include the inflow of Gypsum Creek, which was about 5 to 7 percent of the measured runoff at the gaging station, Eagle River below Gypsum. No other
appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Boiron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhms at 25° C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium					Non-carbonate	
Oct. 1-10, 1951..	234	--	--	--	--	--	--	--	--	--	--	--	--	1,020	1.39	644	466	307	--	1,300	--	--	
Oct. 11-20.....	241	11	--	139	29	87	--	194	312	90	--	1.4	--	766	1.04	498	466	307	24	1.4	1,110	7.9	--
Oct. 21-31.....	283	--	--	--	--	--	--	--	--	--	--	--	--	655	.89	500	--	--	--	--	972	--	--
Nov. 1-10.....	262	--	--	--	--	--	--	--	--	--	--	--	--	694	.94	491	--	--	--	--	1,030	--	--
Nov. 11-20.....	236	13	--	120	29	65	--	180	297	102	--	1.9	--	691	.94	440	418	271	25	1.4	1,050	7.6	--
Nov. 21-30.....	241	--	--	--	--	--	--	--	--	--	--	--	--	639	.87	416	--	--	--	--	965	--	--
Dec. 1-10.....	214	--	--	--	--	--	--	--	--	--	--	--	--	707	.86	409	--	--	--	--	1,080	--	--
Dec. 11-20.....	206	11	--	122	27	92	--	182	259	92	--	1.7	--	666	.93	362	416	266	24	1.3	1,030	7.9	--
Dec. 21-31.....	202	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	968	--	--
Jan. 1-10, 1952..	192	--	--	--	--	--	--	--	--	--	--	--	--	693	.94	359	--	--	--	--	1,020	--	--
Jan. 11-20.....	210	11	--	106	24	87	--	165	228	95	--	1.7	0.04	634	.86	359	363	228	29	1.5	965	7.7	--
Jan. 21-31.....	184	--	--	--	--	--	--	--	--	--	--	--	--	655	.89	325	--	--	--	--	991	--	--
Feb. 1-10.....	179	--	--	--	--	--	--	--	--	--	--	--	--	687	.93	332	--	--	--	--	1,000	--	--
Feb. 11-20.....	171	9.8	--	108	25	76	--	163	238	111	--	1.4	--	671	.91	310	372	239	31	1.7	1,030	7.6	--
Feb. 21-29.....	172	--	--	--	--	--	--	--	--	--	--	--	--	692	.94	321	--	--	--	--	1,050	--	--
Mar. 1-10.....	176	--	--	--	--	--	--	--	--	--	--	--	--	646	.88	307	--	--	--	--	991	--	--
Mar. 11-20.....	176	7.2	--	111	25	83	--	173	252	110	--	1.5	--	676	.92	321	380	238	32	1.9	1,050	7.8	--
Mar. 21-31.....	181	--	--	--	--	--	--	--	--	--	--	--	--	655	.89	320	--	--	--	--	1,010	--	--

a Not included for computation of weighted averages.

Apr. 1-10, 1952 .	288	--	--	--	--	--	--	--	--	674	.92	484	--	--	--	--	1,020	--
Apr. 11-19	436	7.5	--	86	21	--	33	--	145	180	46	--	--	182	19	--	716	7.8
Apr. 20-30	954	7.6	--	39	11	--	16	--	106	67	14	--	--	56	20	--	356	7.8
May 1-10	1,988	7.6	--	42	10	6.9	--	--	106	63	9.0	--	--	64	9	--	318	7.9
May 11-20	1,983	6.6	--	42	9.5	--	11	--	106	66	8.0	--	--	57	14	--	316	7.9
May 21-27	1,283	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	539	--
May 28-31	2,168	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	271	--
June 1-10	4,572	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	239	--
June 11-20	4,637	11	--	32	8.0	--	2.5	--	82	41	6.0	--	--	46	5	--	224	7.6
June 21-27	2,666	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	289	--
June 28-30, July 1-4	1,821	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	420	--
July 5-10	1,482	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	624	--
July 11-20	895	11	--	160	33	--	10	--	166	361	31	--	--	398	4	--	974	7.5
July 21-31	728	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	627	--
Aug. 1-2	716	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	844	--
Aug. 3-10	600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,830	--
Aug. 11-12	939	20	--	303	49	--	49	--	300	786	8.5	--	--	724	10	--	1,840	--
Aug. 13-20	645	13	0.04	189	36	--	22	--	199	454	21	--	--	456	7	--	1,130	7.6
Aug. 21-31	598	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,740	--
Sept. 1-10	429	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,730	--
Sept. 11-20	384	9.2	--	95	19	--	35	--	150	182	56	--	--	192	20	--	777	7.7
Sept. 21-30	301	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	877	--
Weighted average	c 818	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	522	--

b Sum of determined constituents.

c Represents 99 percent of runoff for water year October 1951 to September 1952.

EAGLE RIVER BASIN--Continued

EAGLE RIVER AT GYPSUM, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.

LOCATION --At Shoshone power plant, 6 miles upstream from gaging station at Glenwood Springs, Garfield County, which is half a mile upstream from Roaring Fork. DRAINAGE AREA --4,560 square miles, approximately (above gaging station). RECORDS AVAILABLE --Chemical analyses: October 1941 to September 1952.

Water temperatures: May 1949 to September 1952.

EXTREMES 1951-52 --Dissolved solids: Maximum, 507 ppm Jan. 1-10; minimum, 128 ppm June 11-20.

Hardness: Maximum, 234 ppm Aug. 1-10; minimum, 85 ppm June 11-20.

Specific conductance: Maximum daily, 1,010 microhmhos Jan. 8; minimum daily, 180 microhmhos June 16.

Water temperatures: Maximum observed, 66°F July 22-25, Aug. 7; minimum observed, freezing point on many days during November to March.

EXTREMES 1941-52 --Dissolved solids: Maximum, 2,030 ppm Aug. 10, 1947; minimum, 105 ppm June 1-10, 1942.

Hardness: Maximum, 1,480 ppm Aug. 10, 1947; minimum, 72 ppm June 1-20, 1942.

Specific conductance: Maximum daily, 2,260 microhmhos Aug. 10, 1947; minimum daily, 153 microhmhos May 24, 1948.

Water temperatures (1949-51): Maximum observed, 69°F July 31, 1951; minimum observed, freezing point on many days during winter months.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for gaging station at Glenwood Springs for water year October 1951 to September 1952 given in WSP 1243. No appreciable inflow between Shoshone power plant and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhmhos at 25°C)	Color or pH
														Parts per million	Tons per acre-foot	Calcium, mg./l.	Non-carbonate			
Oct. 1-10, 1951..	1,304	12	62	15	67	3.0	136	113	96	96	0.60	1,550	216	104	40	2.0	734			
Oct. 11-20	1,144	11	62	16	66	2.7	136	115	98	98	0.11	1,380	220	109	39	1.9	741			
Oct. 21-31	1,199	12	63	16	63	2.7	142	117	90	90	0.11	1,440	223	106	38	1.8	719			
Nov. 1-10	1,138	13	59	14	59	2.7	134	106	86	86	0.11	1,270	204	94	38	1.8	678			
Nov. 11-20	1,014	12	60	15	63	2.6	134	108	94	94	0.11	1,160	211	101	39	1.9	707			
Nov. 21-30	1,025	14	59	15	64	2.6	140	102	93	93	0.11	1,190	208	94	40	1.9	704			
Dec. 1-10	933	11	60	12	60	2.6	124	98	86	86	0.11	1,010	199	98	39	1.9	665			
Dec. 11-20	1,123	13	52	11	51	2.3	120	83	73	73	0.11	1,070	174	76	38	1.7	587			
Dec. 21-31	1,031	14	57	12	58	2.2	126	89	85	85	0.11	1,070	182	88	39	1.8	643			
Jan. 1-10, 1952..	713	14	58	15	65	2.6	156	117	124	124	0.11	1,070	182	88	39	1.8	643			
Jan. 11-20	945	14	58	13	68	2.2	130	99	101	101	0.11	1,110	188	92	42	2.1	721			
Jan. 21-31	911	13	56	14	70	2.5	131	97	102	102	0.11	1,040	187	90	43	2.2	717			
Feb. 1-10	821	13	60	15	78	2.8	135	107	115	115	0.11	1,020	211	100	44	2.3	769			
Feb. 11-20	810	13	60	15	80	2.8	136	108	117	117	0.11	1,020	211	100	45	2.4	783			
Feb. 21-29	804	13	62	13	84	2.8	138	106	121	121	0.11	1,030	207	96	46	2.5	803			
Mar. 1-10	744	12	60	14	84	2.7	136	104	122	122	0.11	1,030	207	96	46	2.5	794			
Mar. 11-20	914	12	58	11	69	2.5	126	91	98	98	0.11	1,010	180	86	44	2.2	693			
Mar. 21-31	1,381	11	41	9.4		2.4	105	66	70	70	0.11	1,150	141	55	43	1.8	529			
Apr. 1-10	1,273	11	57	14	61	2.5	124	107	87	87	0.11	1,400	200	98	40	1.9	710			
Apr. 11-20	2,819	12	55	12	35	2.6	129	81	42	42	0.11	2,470	174	69	30	1.2	322			
Apr. 21-30	5,695	11	44	10	17	2.4	130	52	17	17	0.11	3,570	146	40	20	0.6	368			

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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 so- dium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	Col- or	
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non- carbon- ate					
May 1-10, 1952 ..	10,060	11		34	6.6	11	1.9	103	40	8.0		1.4	--	180	0.24	4,890	112	28	17	0.5	274		
May 11-20	10,370	11		30	6.1	10	1.4	95	27	10		1.0	--	157	.21	4,480	100	22	17	.4	245		
May 21-31	6,625	12		30	6.6	12	1.3	92	31	13		.8	--	164	.22	3,820	102	27	20	.5	258		
June 1-10	18,010	10		33	5.2	7.5	1.5	100	25	6.0		1.0	--	147	.20	6,350	104	22	13	.3	239		
June 11-20	18,760	9.6		28	4.9	8.1	1.2	80	24	8.0		.7	--	128	.17	5,100	85	20	17	.4	208		
June 21-30	8,813	8.4		29	5.8	13	1.5	80	41	15		.8	--	150	.20	3,570	96	31	22	.6	251		
July 1-10	5,554	9.3		34	7.2	19	1.7	90	49	24		.6	--	194	.28	2,910	114	41	26	.8	327		
July 11-20	3,551	9.5		44	10	30	1.8	103	74	40		.7	--	266	.36	2,550	151	66	30	1.1	444		
July 21-31	2,941	11		56	13	34	2.2	124	98	45		.8	--	322	.44	2,560	193	92	27	1.1	526		
Aug. 1-10	2,602	12		69	15	43	2.6	143	121	62		1.0	--	398	.54	2,800	234	116	28	1.2	646		
Aug. 11-20	2,760	11		65	13	37	2.0	132	108	52		.7	--	358	.49	2,870	216	108	27	1.1	587		
Aug. 21-31	2,307	11		60	14	44	2.1	132	101	65		.7	--	366	.50	2,280	207	99	31	1.3	609		
Sept. 1-10	2,006	11		58	14	47	2.0	128	98	75		.5	--	378	.51	2,050	202	97	33	1.4	638		
Sept. 11-20	1,579	11		58	14	49	2.5	132	102	75		.5	--	392	.53	1,870	202	94	34	1.5	658		
Sept. 21-30	1,424	9.7		60	15	55	2.5	132	104	87		.4	--	412	.56	1,580	211	103	36	1.6	695		
Weighted average	3,362	11		40	8.5	25	1.8	106	55	33		0.9	--	236	0.32	2,140	135	48	28	0.9	386		

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CAMEO, COLO.

LOCATION.--At Grand Valley project diversion dam, 0.4 mile upstream from Plateau Creek, 3.7 miles upstream from Cameo, Mesa County, and 3 miles downstream from gaging station.

DRAINAGE AREA.--Approximately 8,060 square miles above gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1933 to September 1952.

Water temperatures: April 1949 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 819 ppm Jan. 1-10, Mar. 11-20, minimum, 172 ppm June 11-20.

Specific conductance: Maximum daily, 1,870 microhms Jan. 6; minimum daily, 284 microhms June 13.

Water temperatures: Maximum observed, 72°F July 26; minimum observed, freezing point on many days in December and January.

EXTREMES, 1933-52.--Dissolved solids, (1933-43, 1950-52): Maximum, 1,050 ppm Dec. 21-31, 1939; minimum, 143 ppm June 11-20, 1935.

Hardness (1933-35): Maximum, 399 ppm July 21-31, 1934; minimum, 98 ppm June 21-30, 1935.

Specific conductance (1941-52): Maximum daily, 1,850 microhms Jan. 8, 1944; minimum daily, 244 microhms July 2, 1947.

Water temperatures (1949-52): Maximum observed, 72°F July 26, 1952; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharges (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 at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhms at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1951..	1,988	--	--	--	--	--	--	--	--	--	--	--	--	671	0.91	3,600	--	--	--	--	1,110	--	--
Oct. 11-20 ..	1,857	9.9	--	81	23	120	160	160	171	175	--	2.4	--	684	.93	3,430	286	166	47	3.0	1,120	7.4	--
Oct. 21-31 ..	1,994	--	--	--	--	--	--	--	--	--	--	--	--	672	.91	3,620	--	--	--	--	1,090	--	--
Nov. 1-10 ..	1,809	--	--	--	--	--	--	--	--	--	--	--	--	687	.93	3,360	--	--	--	--	1,130	--	--
Nov. 11-20 ..	1,755	11	--	79	23	125	178	165	172	--	--	2.4	--	683	.93	3,240	282	146	48	3.2	1,120	7.6	--
Nov. 21-30 ..	1,888	--	--	--	--	--	--	--	--	--	--	--	--	774	1.05	3,530	--	--	--	--	1,210	--	--
Dec. 1-10 ..	1,622	--	--	--	--	--	--	--	--	--	--	--	--	760	1.03	3,330	--	--	--	--	1,240	--	--
Dec. 11-20 ..	1,750	13	--	85	28	144	198	177	206	--	--	2.8	--	762	1.04	3,600	327	165	49	3.5	1,280	7.3	--
Dec. 21-31 ..	1,800	--	--	--	--	--	--	--	--	--	--	--	--	614	.84	2,980	--	--	--	--	970	--	--
Jan. 1-10, 1952..	1,370	--	--	--	--	--	--	--	--	--	--	3.3	0.05	819	1.11	3,030	--	--	--	--	1,340	--	--
Jan. 11-20 ..	1,960	11	--	77	22	133	180	157	183	--	--	--	--	691	.94	3,150	282	135	51	3.5	1,140	7.5	--
Jan. 21-31 ..	1,618	--	--	--	--	--	--	--	--	--	--	--	--	723	.98	3,160	--	--	--	--	1,180	--	--
Feb. 1-10 ..	1,490	--	--	--	--	--	--	--	--	--	--	--	--	768	1.04	3,090	--	--	--	--	1,280	--	--
Feb. 11-19 ..	1,456	12	--	81	24	167	190	186	222	--	--	3.4	--	806	1.10	3,170	300	145	55	4.2	1,320	7.4	--
Feb. 20-29 ..	1,450	--	--	--	--	--	--	--	--	--	--	--	--	752	1.02	2,940	--	--	--	--	1,230	--	--
Mar. 1-10 ..	1,390	--	--	--	--	--	--	--	--	--	--	--	--	774	1.05	2,900	--	--	--	--	1,280	--	--
Mar. 11-20 ..	1,715	10	--	82	25	165	194	199	210	--	--	5.0	--	819	1.11	3,190	308	148	54	4.1	1,330	7.2	--
Mar. 21-31 ..	2,352	--	--	--	--	--	--	--	--	--	--	--	--	644	.88	4,090	--	--	--	--	1,050	--	--
Apr. 1-10 ..	2,026	--	--	--	--	--	--	--	--	--	--	--	--	720	.98	5,100	--	--	--	--	1,130	--	--
Apr. 11-20 ..	4,151	11	--	68	21	78	180	142	89	--	--	5.0	10	519	.71	7,630	256	108	40	2.1	826	7.5	--
Apr. 21-28 ..	8,325	--	--	--	--	--	--	--	--	--	--	--	--	342	.47	7,690	--	--	--	--	539	--	--

[illegible]

a Not included for computation of weighted averages.

b Sum of determined constituents.

c Represents 94 percent of runoff

representing 84 per cent of the water year October 1951 to September 1952.

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CAMEO, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GUNNISON RIVER BASIN
GUNNISON RIVER NEAR GRAND JUNCTION, COLO.

LOCATION.--At road bridge about half a mile downstream from gaging station, 1 mile downstream from point of diversion of Redlands power canal, and 1½ miles upstream from mouth and Grand Junction, Mesa County.

DRAINAGE AREA.--8,020 square miles approximately.

RECORDS AVAILABLE.--Chemical analyses October 1931 to September 1952.

Water temperatures: April 1949 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,830 ppm Oct. 21-31; minimum, 214 ppm May 11-20.

Hardness: Maximum, 982 ppm Nov. 21; minimum, 146 ppm May 11-20.

Specific conductance: Maximum daily, 2,410 micromhos Oct. 28; minimum daily, 304 micromhos May 13.

Water temperatures: Maximum observed, 76°F July 27; Aug. 3, 8-9; minimum observed, 33°F on several days during December to January.

EXTREMES, 1931-52.--Dissolved solids: Maximum, 2,820 ppm Sept. 11-20, 1934; minimum, 203 ppm May 11-20, 1944.

Hardness, (1931-35, 1943-52): Maximum, 1,370 ppm Sept. 11-20, 1934; minimum, 143 ppm June 1-10, 1933; May 11-20, 1948.

Specific conductance (1941-52): Maximum daily, 2,680 micromhos Nov. 5, 1950; minimum daily, 280 micromhos May 23, 1948.

Water temperatures (1949-52): Maximum observed, 80°F July 20, 1951; minimum observed, freezing point on several days during winter months.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1951...	862	20		242	88	201	7.6	268	1,080	22		11	--	1,800	2.45	4,190	988	746	31	2.8	2,170	--	
Oct. 11-20.....	662	17		214	83	157	7.6	212	980	22		8.0	0.27	1,580	2.16	2,840	876	702	28	2.3	2,050	--	
Oct. 21-31.....	873	19		238	94	207	8.8	268	1,100	25		10	--	1,850	2.49	4,310	980	761	31	2.9	2,230	--	
Nov. 1-10.....	978	16		198	77	154	8.3	266	859	19		8.4	--	1,470	2.00	3,880	810	592	29	2.4	1,880	--	
Nov. 11-20.....	993	21		179	73	151	8.0	238	798	21		10	--	1,390	1.89	3,720	748	535	30	2.4	1,760	--	
Nov. 21-30.....	880	--		--	--	--	--	314	--	--		--	--	--	--	--	982	724	--	--	2,310	--	
Nov. 22-30.....	1,062	20		158	68	147	6.9	247	713	22		7.8	--	1,280	1.71	3,610	674	471	32	2.5	1,620	--	
Dec. 1-10.....	848	20		157	69	139	6.9	247	703	20		8.9	--	1,250	1.70	2,860	675	472	31	2.3	1,610	--	
Dec. 11-20.....	855	23		165	72	139	6.0	236	722	20		10	--	1,280	1.74	2,260	708	498	30	2.3	1,650	--	
Dec. 26-31.....	918	19		142	59	140	6.2	218	653	18		8.0	--	1,150	1.56	2,540	597	418	33	2.5	1,500	--	
Jan. 1-10, 1952..	768	19		150	64	141	5.9	242	681	18		--	--	1,210	1.65	2,570	638	439	32	2.4	1,580	--	
Jan. 11-20.....	913	18		134	58	125	6.2	218	625	18		9.0	.18	1,100	1.50	2,710	573	394	32	2.3	1,460	--	
Jan. 21-31.....	863	19		131	59	134	5.7	223	619	17		9.8	--	1,100	1.50	2,560	570	387	34	2.4	1,460	7.5	
Feb. 1-10.....	825	18		131	60	134	7.5	222	622	16		7.4	--	1,110	1.51	2,470	574	392	33	2.4	1,460	7.6	
Feb. 11-20.....	824	17		129	60	133	6.0	273	629	17		7.6	--	1,100	1.50	2,450	568	394	33	2.4	1,450	7.6	
Feb. 21-28.....	833	16		120	56	125	5.3	274	575	17		7.3	--	1,030	1.40	2,320	530	354	34	2.4	1,370	7.7	
Mar. 1-10.....	834	16		122	57	125	5.7	204	589	17		7.8	--	1,040	1.41	2,340	539	372	33	2.3	1,400	7.7	
Mar. 11-20.....	865	18		124	58	118	6.7	218	572	18		1.0	--	1,020	1.39	2,380	548	370	32	2.2	1,380	--	
Mar. 21-31.....	903	14		121	60	124	6.2	216	579	18		1.1	.17	1,030	1.40	2,510	548	372	33	2.3	1,390	--	

GUNNISON RIVER BASIN--Continued
GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day	Calcium-magnesium	Non-carbonate						
Apr. 1-7, 1952...	1,221	14		106	45	88	7.1	216	421	15		0.9	--	803	1.09	2,650	450	272	29	1.8	1,130	--		
Apr. 8-13	2,807	14		72	23	46	5.6	182	221	10		.3	--	482	.66	3,650	274	125	28	1.2	706	--		
Apr. 14-20	5,693	14		59	18	26	5.1	166	120	7.5		.3	--	332	.45	5,100	221	85	20	.8	494	--		
Apr. 21-30	10,700	18		52	12	23	4.2	172	85	4.0		2.0	--	285	.39	8,230	179	38	21	.7	428	--		
May 1-10	16,940	17		46	9.9	15	3.3	148	66	3.0		1.9	--	235	.32	10,750	156	34	17	.5	367	--		
May 11-20	14,490	15		43	9.5	13	2.5	120	67	3.0		1.5	--	214	.29	8,370	146	48	16	.5	331	--		
May 21-31	8,937	16		50	15	23	3.0	138	115	5.5		1.7	--	297	.40	7,170	186	74	21	.7	452	--		
June 2-5, 10	14,420	15		49	14	10	3.1	120	95	4.0		2.0	--	251	.34	9,770	180	82	10	.3	381	--		
June 11-20	15,100	16		50	11	15	2.5	123	92	3.0		1.8	--	252	.34	10,270	170	69	16	.5	369	--		
June 21-30	7,899	13		52	14	22	3.3	115	129	4.5		2.0	--	296	.40	6,310	197	93	20	.7	448	--		
July 1-10	5,318	14		72	21	35	3.4	140	204	7.5		1.7	--	428	.58	6,150	266	152	22	.9	628	--		
July 11-20	2,815	15		97	30	58	4.8	163	332	10		1.8	--	629	.86	4,780	366	232	25	1.3	896	--		
July 21-31	1,799	15		135	43	93	6.8	197	508	14		4.6	--	916	1.25	4,450	514	352	28	1.8	1,240	--		
Aug. 1-10	1,941	17		135	44	83	5.9	194	504	12		4.4	--	901	1.23	4,720	519	359	26	1.6	1,210	--		
Aug. 11-20	1,730	18		172	57	121	7.9	220	688	16		4.0	--	1,190	1.62	5,860	664	483	28	2.0	1,540	--		
Aug. 21, 25-26 a .	2,303	20		--	--	--	--	221	984	19		.8	--	--	--	--	904	723	--	--	--	1,980	--	
Aug. 22-23, 27-31	2,077	20		168	58	116	6.5	219	682	18		7.1	--	1,180	1.60	6,020	658	478	27	2.0	1,520	--		
Sept. 1-10	1,132	18		180	70	142	7.0	219	786	20		6.9	--	1,340	1.82	4,100	737	558	29	2.3	1,730	--		
Sept. 11-20	906	16		216	85	164	7.3	222	1,000	22		8.6	--	1,630	2.22	3,990	888	708	28	2.4	2,040	--		
Sept. 21-30	11,818	18		166	64	117	6.0	216	710	16		7.6	--	1,210	1.65	5,940	677	500	27	2.0	1,590	--		
Weighted average	b 3,502	16		75	24	44	4.0	158	234	7.3		2.8	--	485	0.66	4,590	286	156	25	1.1	675	--		

a Not included for computation of weighted averages.

b Represents 93 percent of runoff for water year October 1951 to September 1952.

GUNNISON RIVER BASIN--Continued

GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

COLORADO RIVER BASIN

DOLORES RIVER BASIN

DOLORES RIVER AT GATEWAY, COLO.

LOCATION --At bridge on State Highway 141, 500 feet upstream from gaging station, which is 0.3 mile northwest of Gateway, Mesa County, 0.3 mile downstream from West Creek, and 8 miles upstream from Colorado-Utah State line.

DRAINAGE AREA.—4,350 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.

Water temperatures: April 1949 to September 1952.

EXTREMES, 1951-52. --Specific conductance: Maximum daily, 8,440 micromhos Sept. 23; minimum daily, 201 micromhos May 9.

Water temperatures: Maximum observed, 76°F July 26; minimum observed, freezing point on several days from December to February.

EXTRACTS, 1947-32.--DISSOLVED SOLIDS (1947-30): Maximum, 4,900 ppm Sept. 11-20, 1950; minimum, 198 ppm June 1-10, 1948. Hardness. (1947-50): Maximum 1140 non Sept 11-20 1950; minimum 130 non June 11-15 17-20 1948

hardness, (1547-56): maximum, 1,240 ppm sept. 11-20, 1950; minimum, 130 ppm June 11-13, 17-20, 1948.
Specific conductance: Maximum daily 10,000 micromhos Sept. 22, 1949: minimum daily 201 micromhos May 9, 1952.

Water temperatures, (1949-52): Maximum observed, 78°F Sept. 1, 1949: minimum observed, freezing point on many days; 20,000 microns, Sept. 22, 1949, minimum daily, 201 microns May 3, 1952.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)		Hardness as CaCO ₃		Percent sodium in total	Sulfate adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate						
Oct. 1-2, 1951	51.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,720	--	--	
Oct. 4-10	60.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,680	--	--	
Oct. 11-20	69.0	5.3	130	68	887	--	--	136	521	1,320	--	21	--	--	3,020	4.11	563	604	492	76	18	4,990	7.6
Oct. 21-31	102	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,020	--	--	
Nov. 1-10	85.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,920	--	--	
Nov. 11-20	92.9	7.1	119	55	727	--	--	150	403	1,100	--	12	--	--	2,500	3.40	627	523	400	75	14	4,160	7.7
Nov. 21-30	97.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,530	--	--	
Dec. 1-2	104	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5,170	--	--	
Dec. 3-10	93.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,610	--	--	
Dec. 11-20	77.5	10	138	66	773	--	--	204	440	1,180	--	10	--	--	2,720	3.70	569	616	449	73	14	4,770	7.1
Dec. 21-25	99.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,990	--	--	
Dec. 27-31	162	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,180	--	--	
Jan. 1-10, 1952	132	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,680	--	--	
Jan. 11-13, 15-19	203	9.6	109	43	578	--	--	196	305	865	--	8.4	0.10	--	2,010	2.73	--	449	288	74	12	3,430	7.5
Jan. 14	216	--	129	51	834	--	--	197	356	1,280	--	9.8	--	--	2,760	3.75	1,610	532	370	77	16	4,710	--
Jan. 21-22, 27-28	264	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,180	--	--	
Jan. 23, 26, 29-31	244	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,050	--	--	
Jan. 24-25	270	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,030	--	--	
Feb. 1-10	157	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,440	--	--	
Feb. 11-20	155	8.4	100	43	543	--	--	185	300	805	--	9.8	--	--	1,900	2.58	795	426	275	73	11	3,220	7.5
Feb. 21-29	156	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,100	--	--	
Mar. 1-8	167	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,330	--	--	
Mar. 9-10	274	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,410	--	--	
Mar. 11-15	212	11	104	40	377	--	--	183	318	538	--	4.7	--	--	1,480	2.01	847	424	271	66	8.0	2,540	7.9

Mar. 16-20, 1952	201	10	125	52	645	177	439	940	1.7	--	2,300	3.13	1,250	528	381	73	12	3,900	8.2
Mar. 21-27	195	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,200	--
Mar. 28	374	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,480	--
Mar. 29-31	446	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,430	--
Apr. 1, 3	548	12	122	38	212	180	372	270	7.3	--	1,120	1.52	1,660	460	313	50	4.3	1,780	7.9
Apr. 4-9	1,007	14	88	13	136	192	198	145	2.1	--	691	.94	3,560	273	116	52	3.6	1,420	7.9
Apr. 12, 14, 19-20	6,220	10	40	10	43	129	71	26	1.7	.08	275	.37	4,620	141	19	40	1.6	1,120	7.7
Apr. 21-30	8,650	8.9	42	8.1	16	149	42	11	1.6	--	203	.28	4,740	141	36	20	1.6	343	7.9
May 1-3, 5-6, 10	8,458	9.3	37	11	12	127	42	10	1.9	--	186	.25	4,250	138	34	16	4	328	7.9
May 4, 7-9	8,970	7.8	32	5.5	6.4	102	21	7.0	1.5	--	131	.18	3,170	102	19	12	3	225	8.1
May 11-20	6,167	6.8	36	5.5	6.4	116	21	6.0	1.1	--	140	.19	2,330	112	18	11	3	269	7.8
May 21-31	3,226	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	372	--
June 1-10	5,427	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	277	--
June 11-20	5,067	7.8	40	5.6	13	120	33	12	.9	--	171	.23	2,340	123	24	18	5	297	7.6
June 21-30	2,401	7.7	36	7.5	27	108	51	27	1.3	--	211	.29	1,370	121	32	33	1.1	376	7.6
July 1-10	1,796	10	53	11	38	139	75	47	1.6	--	304	.41	1,470	177	63	32	1.2	528	7.5
July 11-17	1,141	11	86	15	75	184	100	106	2.1	.11	456	.62	1,400	226	92	42	2.2	804	7.4
July 18-20	504	--	70	22	188	121	154	292	3.7	--	799	1.09	1,090	265	166	61	5.0	1,410	7.4
July 21-31	457	10	72	26	238	127	184	358	3.6	--	954	1.30	1,180	286	182	64	6.1	1,690	7.4
Aug. 1-2	509	11	77	25	126	147	190	174	5.4	--	681	.93	938	295	174	48	3.2	1,190	7.7
Aug. 3-10	345	11	68	26	286	131	181	425	4.5	--	1,070	1.46	997	276	169	69	7.5	1,910	7.5
Aug. 11-14, 17-20	289	11	109	34	339	147	366	455	6.7	--	1,390	1.89	1,080	412	282	64	7.3	2,280	7.3
Aug. 15-16	317	--	88	30	189	152	254	250	10	--	905	1.23	775	338	214	55	4.5	1,500	7.2
Aug. 21-22, 28-31	302	9.6	110	37	260	139	356	355	7.3	--	1,200	1.63	978	426	312	97	5.5	1,890	7.7
Aug. 23-25, 27	401	9.4	108	44	728	149	309	1,120	6.5	--	2,400	3.26	2,600	446	324	78	15	4,200	7.6
Sept. 1-2	208	--	--	--	--	--	281	298	--	--	--	--	--	--	--	--	--	1,660	--
Sept. 3-5	154	--	--	--	--	--	324	588	--	--	--	--	--	--	--	--	--	2,680	--
Sept. 6-10	135	--	--	--	--	--	373	850	--	--	--	--	--	--	--	--	--	3,500	--
Sept. 11-20	118	5.5	128	66	755	145	469	1,150	5.1	--	2,650	3.60	844	591	472	74	14	4,390	7.6
Sept. 21-22	168	--	--	--	--	--	507	1,200	--	--	--	--	--	--	--	--	--	4,550	--
Sept. 23	340	--	--	--	--	--	373	400	--	--	--	--	--	--	--	--	--	6,440	--
Sept. 24	307	--	--	--	--	--	410	455	--	--	--	--	--	--	--	--	--	2,360	--
Sept. 26	452	--	--	--	--	--	341	820	--	--	--	--	--	--	--	--	--	3,500	--
Sept. 27-29	260	--	--	--	--	--	328	238	--	--	--	--	--	--	--	--	--	1,900	--
Sept. 30	187	--	--	--	--	--	329	420	--	--	--	--	--	--	--	--	--	2,140	--
Weighted average	a 1,442	8.6	45	10	47	128	67	66	1.8	--	299	0.42	1,670	154	48	40	1.6	599	--

a Represents 93 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER BASIN

DOLORES RIVER BASIN--Continued

DOLORES RIVER AT GATEWAY, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (sum)		Hardness as CaCO ₃		Percent sodium carbonate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Apr. 1-5, 1952...	708	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,530	--	--
Apr. 7.....	2,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,020	--	--
Apr. 11-20.....	5,543	8.5	--	56	9.7	27	151	151	73	26	--	1.8	0.05	276	0.38	4,130	160	56	24	0.9	465	7.6
Apr. 21-30.....	8,503	9.3	--	43	8.4	13	119	119	49	15	--	2.0	--	198	.27	4,550	142	44	17	.5	345	8.1
May 1-10.....	8,483	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	310	--	--
May 11-20.....	6,203	10	--	44	8.0	12	140	140	35	12	--	1.2	--	191	.26	3,200	143	28	15	.4	315	7.7
May 21-31.....	3,217	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	388	--	--
June 2, 4-6, 10.....	5,058	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	288	--	--
June 11-20.....	4,731	7.2	--	37	6.7	15	116	116	35	14	--	1.0	--	173	.24	2,210	120	25	21	.6	289	7.7
June 21, 27-30.....	1,948	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	422	--	--
July 1-10.....	1,787	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	534	--	--
July 11.....	2,230	12	--	--	--	--	--	189	84	58	--	4.3	--	--	--	--	--	--	--	642	--	--
July 14-19.....	790	11	--	65	19	135	124	124	141	200	--	3.5	.11	636	.86	1,360	240	138	55	3.8	1,110	7.6
July 22-23.....	336	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,590	--	--
July 28-31.....	520	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,030	--	--
Aug. 1-2.....	461	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,240	--	--
Aug. 4-5.....	341	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,030	--	--
Aug. 6-10.....	282	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,910	--	--
Aug. 12, 16-19.....	266	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,360	--	--
Aug. 20.....	244	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,200	--	--
Aug. 21, 29.....	303	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,980	--	--
Sept. 1-3.....	215	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,710	--	--
Sept. 6-10.....	134	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,680	--	--
Sept. 11-20.....	114	5.4	--	126	67	763	155	155	464	1,160	--	4.0	--	2,670	3.63	822	590	463	74	14	4,460	7.8
Sept. 21-23.....	191	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,120	--	--
Sept. 24.....	219	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,460	--	--
Sept. 27-30.....	248	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,630	--	--
Weighted average	1,738	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	542	--	--

a Represents 87 percent of runoff for water year October 1951 to September 1952.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

COLORADO RIVER BASIN

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	34			98	900	238	104		
2-----	36			95	560	a 140	107		
3-----	64			97			123	89	28
4-----	51			92			127		
5-----	53			85			131		
6-----	55	28	4	92	89	21	120		
7-----	53			88			105		
8-----	55			88			90		
9-----	53			85			78		
10-----	51			92			74		
11-----	47			95	97	25	72		
12-----	45			95	90	e 23	69		
13-----	42			95	116	30	71		
14-----	43			104	76	21	74		
15-----	42			107	75	22	76		
16-----	40	57	8	111			80		
17-----	43			104			84		
18-----	64			98			88	85	a 23
19-----	71			76			94		
20-----	74			76	73	19	90		
21-----	79	150	a 32	79			100		
22-----	76	177	36	79			100		
23-----	79	140	a 30	107			105		
24-----	76			123			110		
25-----	74	107	25	119			120		
26-----	88			115			140		
27-----	115			101			130		
28-----	162	100	44	98	112	30	130		
29-----	123	250	83	92			135		
30-----	98	2,080	553	85			160		
31-----	92	1,780	442	--	--	--	270	1,000	a 730
Total-	2,078	--	1,440	2,856	--	1,018	3,357	--	1,445
Day	January			February			March		
	Mean dis-charge (cfs)	Mean concentration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concentration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concentration (ppm)	Tons per day
1-----	250	660	a 450	183	490	242	193	60	31
2-----	190	450	a 230	193	490	225	198	60	a 32
3-----	170	350	a 160	188	400	a 203	198	60	a 32
4-----	150	260	a 100	183	340	168	193	47	24
5-----	130	210	a 74	172	290	135	178	60	29
6-----	125	200	a 68	162	280	122	178	40	a 19
7-----	120	200	a 65	157	210	89	183	29	14
8-----	120	194	63	167	250	113	193	270	141
9-----	120	560	a 180	162	230	a 100	230	1,010	627
10-----	120	780	253	162	210	a 92	336	1,260	1,140
11-----	125	670	226	157	200	a 85	320	2,470	2,130
12-----	135	620	226	167	210	a 95	256	3,420	2,360
13-----	150	630	255	172	200	a 93	230	2,330	1,450
14-----	190	900	462	172	180	84	224	2,200	a 1,300
15-----	270	870	634	157	180	76	204	800	a 440
16-----	250	920	621	143	170	a 66	198	650	a 350
17-----	220	1,530	909	147	160	64	198	602	322
18-----	250	1,640	1,110	162	150	66	263	530	376
19-----	350	1,690	1,600	167	146	66	230	582	361
20-----	450	1,550	1,880	152	150	62	224	451	273
21-----	350	1,510	1,430	152	140	57	279	472	356
22-----	250	1,680	1,130	162	162	71	230	360	224
23-----	190	3,770	1,930	167	250	113	204	200	110
24-----	270	3,190	2,330	188	270	137	198	190	102
25-----	400	3,000	a 3,200	157	162	69	198	228	122
26-----	560	3,440	5,200	147	190	75	193	260	135
27-----	480	1,800	2,330	152	190	a 78	244	2,710	1,790
28-----	287	1,520	1,180	147	90	36	354	3,240	3,100
29-----	211	700	399	172	55	26	468	3,750	4,740
30-----	188	600	305	--	--	--	468	8,530	10,800
31-----	188	550	279	--	--	--	517	7,100	9,910
Total-	7,259	--	29,279	4,769	--	2,938	7,780	--	42,840

e Estimated.

a Computed from estimated concentration graph.

DOLORES RIVER BASIN

43

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	492	5,300	7,040	6,420	2,480	43,000	3,970	1,300	a 14,000
2-----	560	5,100	7,710	6,670	1,460	26,300	3,990	1,410	15,200
3-----	650	5,000	8,780	7,500	1,630	33,000	4,190	1,500	a 17,900
4-----	840	9,250	21,000	9,020	2,140	52,100	4,630	2,000	a 25,000
5-----	1,000	9,750	26,300	10,200	2,770	76,300	5,600	2,600	a 39,000
6-----	1,300	11,000	a 39,000	10,400	3,500	98,300	5,640	2,570	39,100
7-----	2,300	17,500	109,000	10,200	2,780	76,600	5,430	2,200	a 32,000
8-----	3,500	10,000	a 94,000	9,080	1,640	40,200	5,710	2,100	a 32,000
9-----	4,000	5,500	a 99,000	8,020	2,250	48,700	5,800	2,200	a 34,000
10-----	3,500	4,500	a 43,000	7,680	1,880	39,000	5,730	1,870	28,900
11-----	3,700	3,900	39,000	6,880	2,080	38,600	5,730	1,660	25,700
12-----	3,500	3,800	35,900	6,670	1,320	23,800	5,730	1,530	23,700
13-----	2,760	3,800	28,300	6,760	1,770	32,300	5,430	1,790	26,200
14-----	2,970	6,000	48,100	6,880	1,900	35,300	5,010	1,570	21,200
15-----	4,690	9,400	119,000	7,140	1,360	26,200	4,810	1,610	20,900
16-----	6,800	7,450	137,000	7,090	1,500	28,700	4,850	1,680	22,000
17-----	8,000	6,300	136,000	6,530	1,610	28,400	4,730	1,520	19,400
18-----	9,000	5,660	138,000	5,540	1,100	16,500	4,090	1,130	12,500
19-----	9,350	5,250	133,000	4,710	2,030	25,800	3,600	1,040	10,100
20-----	9,220	4,850	121,000	4,090	2,200	a 24,000	3,490	975	9,190
21-----	8,550	3,600	83,100	3,990	1,720	18,500	3,500	935	8,840
22-----	7,650	4,350	89,800	3,910	1,100	11,600	3,370	860	a 7,800
23-----	8,250	4,300	95,800	3,750	949	9,610	2,980	730	a 5,900
24-----	8,020	4,140	89,600	3,220	1,130	9,820	2,740	680	a 5,000
25-----	9,020	4,150	101,000	2,760	950	7,080	2,520	520	a 3,500
26-----	9,320	4,650	117,000	2,650	940	6,730	2,270	340	a 2,100
27-----	9,380	3,200	a 81,000	2,740	1,120	8,290	1,980	344	1,840
28-----	9,700	2,200	57,600	2,900	1,870	14,600	1,800	262	1,270
29-----	8,880	2,500	59,900	3,220	2,000	17,400	1,570	252	1,070
30-----	6,600	4,150	74,000	3,560	1,300	12,500	1,390	248	931
31-----	--	--	--	3,640	1,180	11,600	--	--	--
Total--	163,502	--	2,198,930	183,820	--	940,830	122,290	--	505,341
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-----	1,300	170	597	476	4,200	a 5,400	244	156	103
2-----	1,250	300	1,010	492	4,340	5,770	218	140	82
3-----	1,250	170	574	414	700	a 780	183	100	49
4-----	1,150	159	494	374	200	202	172	100	a 46
5-----	1,040	150	421	336	147	133	157	95	a 40
6-----	2,050	2,940	a 21,000	328	85	75	147	70	a 28
7-----	3,180	10,400	a 90,000	312	39	33	143	70	a 27
8-----	2,880	5,000	38,900	304	51	42	139	60	23
9-----	2,290	1,680	10,300	295	60	a 48	131	50	18
10-----	2,350	2,110	s 13,600	304	90	a 74	115	35	11
11-----	2,230	3,140	s 20,200	424	800	a 920	111	35	10
12-----	1,640	810	a 3,600	320	850	734	104	60	17
13-----	1,330	150	a 540	376	750	761	104	140	39
14-----	1,320	140	499	271	670	490	107	130	a 38
15-----	930	155	389	295	780	621	111	160	a 48
16-----	806	150	326	312	870	733	107	161	47
17-----	661	145	259	304	315	259	101	113	31
18-----	541	74	108	271	150	110	145	75	29
19-----	480	50	65	250	215	145	123	190	63
20-----	394	50	a 53	244	165	109	123	128	43
21-----	384	60	a 62	294	785	s 706	131	140	a 50
22-----	364	70	69	593	1,110	a 1,380	167	143	64
23-----	364	65	64	331	255	a 239	278		
24-----	374	80	a 81	471	1,180	a 1,800	287		
25-----	374	90	a 91	374	560	565	250		
26-----	364	100	a 98	304	440	a 360	379		
27-----	364	90	a 88	312	350	295	320		
28-----	384	350	a 360	532	1,240	a 2,460	263		
29-----	529	1,500	a 2,100	312	600	505	230		
30-----	726	6,000	a 12,000	295	400	a 320	198		
31-----	589	5,000	a 8,000	304	300	a 250	--	--	--
Total--	33,888	--	225,948	10,624	--	26,319	5,288	--	2,290

Total discharge for year (cfs-days)..... 547,511

Total load for year (tons)..... 3,978,648

s Computed by subdividing day.

a Computed from estimated concentration graph.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Particle-size analyses of suspended sediment, March to September 1952

(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	Water discharge (cfs)	Water temperature (° F)	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. 30, 1952..	12:30 p. m.	468		8,790	3,920	--	77		94	--	98	100	--	--	WCM
Mar. 30.....	12:30 p. m.	468		8,790	4,240	--	6		96	--	98	100	--	--	SPN
Mar. 30.....	12:30 p. m.	468		8,790	4,720	5	6		95	--	98	100	--	--	BN
Mar. 30.....	12:30 p. m.	468		8,790	4,480	55	83	90	95	97	98	100	--	--	SEWCM
Apr. 18.....	11:30 a. m.	8,280		6,020	4,180	--	25		40	--	63	79	92	99	100 SPWCM
Apr. 23.....	2:45 p. m.	8,080		4,270	2,920	--	14		23	--	45	68	87	98	100 SPWCM
Apr. 30.....	10:30 a. m.	6,070		4,170	3,000	--	15		21	--	47	73	91	99	100 SPWCM
May 5.....	3:30 p. m.	10,600		3,860	3,220	--	26		39	--	59	77	92	99	100 SPWCM
May 16.....	2:30 p. m.	7,300		2,210	2,490	--	14		22	--	39	58	81	97	100 SPWCM
May 25.....	11:00 a. m.	2,730		901	--	--	--		--	--	61	82	95	99	100 S
Aug. 20.....	11:30 a. m.	244		114	--	--	--		--	--	95	96	97	99	100 S
Sept. 12.....	10:30 a. m.	104		37	--	--	--		--	--	95	96	99	100	-- S

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH

LOCATION.--At gaging station, 1 mile downstream from Dolores River, 11 miles south of Cisco, Grand County, 97 miles upstream from Green River, and 235 miles upstream from San Juan River.

DRAINAGE AREA.--24,100 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1928 to September 1952.

Water temperatures: May 1949 to September 1952. Sediment records: May 1930 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,490 ppm Oct. 21-31; minimum, 208 ppm June 11-20.

Hardness: Maximum, 691 ppm Oct. 11-20; minimum, 131 ppm June 11-20.

Specific conductance: Maximum daily, 7,100 micromhos Oct. 26-27; minimum daily, 310 micromhos June 15.

Water temperatures: Maximum observed, 77°F Aug. 9, 16-17; minimum observed, freezing point Jan. 12.

Sediment concentrations: Maximum daily, 66,300 ppm Oct. 27; minimum daily, 28 ppm Oct. 15.

EXTREMES, 1928-52.--Dissolved solids: Maximum, 2,670 ppm Aug. 11-20, 1940; minimum, 202 ppm June 11-20, 1933.

Hardness: (1926-33, 1934-52): Maximum, 1,090 ppm Sept. 1-10, 1934; minimum, 131 ppm June 11-20, 1932.

Specific conductance: (1928-52): Maximum observed, 8,100 micromhos Sept. 30, 1946; minimum daily, 310 micromhos June 15, 1952.

Water temperatures: (1949-52): Maximum observed, 81°F Aug. 8, 1949; minimum observed, freezing point on 21 days during winter months.

Sediment concentrations: (1930-52): Maximum daily, 66,300 ppm Oct. 14, 1951; minimum daily, 14 ppm Oct. 21, 1949.

REMARKS: Values reported for dissolved solids are residues of evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂) (Fe)	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 (residue at 180°C)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium	Non-carbonate				
Oct. 1-10, 1951	2,717	15	154	68	193	193	7.8	214	643	165	8.7	0.12	1,410	1.92	10,340	664	486	38	3.3	1,890	--	--
Oct. 11-20	2,419	13	160	71	202	202	7.1	216	683	170	8.7	0.12	1,480	2.01	9,670	691	514	39	3.3	1,960	--	--
Oct. 21-31	3,078	13	164	85	204	204	8.3	216	683	185	8.8	0.12	1,360	2.03	12,360	676	500	39	3.4	1,970	--	--
Nov. 1-10	3,018	16	148	94	183	183	7.8	230	587	153	9.8	0.12	1,310	1.76	10,670	632	443	36	3.2	1,900	--	--
Nov. 11-20	3,036	16	135	66	199	199	6.9	219	536	159	9.8	0.12	1,270	1.73	10,480	586	368	40	3.3	1,750	--	--
Nov. 21-25, Dec. 4	2,967	18	130	57	191	191	7.1	207	536	170	10	0.12	1,260	1.71	10,160	559	390	42	3.5	1,760	8.1	--
Jan. 1, 1952	5,200	16	--	--	--	--	--	169	408	104	--	--	--	--	--	--	--	--	--	1,340	--	--
Jan. 10-20	2,898	16	126	52	206	206	7.8	219	481	209	11	0.13	1,270	1.73	9,830	534	354	45	3.9	1,840	7.8	--
Jan. 21-31	2,938	13	104	44	162	162	6.4	188	421	145	9.2	0.12	1,040	1.41	9,090	446	298	44	3.4	1,500	7.7	--
Feb. 1-10	2,620	15	111	49	215	215	8.2	201	444	230	9.6	0.12	1,220	1.66	9,290	478	314	43	4.3	1,800	7.8	--
Feb. 11-20	2,742	13	115	53	219	219	8.1	207	463	230	1.5	0.12	1,230	1.67	9,110	505	336	43	4.2	1,840	--	--
Feb. 24-28	2,492	14	115	51	197	197	6.7	204	467	201	1.5	0.12	1,180	1.60	7,940	496	330	46	3.9	1,750	--	--
Mar. 3-4, 6-9	2,867	13	119	51	208	208	7.3	204	467	212	1.4	0.12	1,200	1.63	9,350	506	340	47	4.0	1,790	--	--
Mar. 11-20	2,981	12	108	47	197	197	7.3	202	426	210	1.3	0.12	1,110	1.51	8,830	463	298	48	4.0	1,650	--	--
Mar. 21-31	3,568	13	100	43	170	170	6.5	186	394	164	1.0	0.12	993	1.35	9,370	426	274	46	3.6	1,480	--	--
Apr. 1-3, 5-7	4,833	11	99	37	138	138	6.7	196	348	120	9	0.12	881	1.20	11,500	399	236	42	3.0	1,300	--	--
Apr. 11-20	14,460	13	70	17	48	48	4.1	181	132	40	3.4	0.07	426	0.58	16,650	244	96	29	1.3	665	7.8	--
Apr. 21-30	28,380	12	49	12	23	23	2.8	142	78	15	2.8	0.07	273	0.37	20,920	172	56	22	1.8	429	8.0	--

a Not included for computation of weighted averages.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR CISCO, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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)	Boron per million	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium-adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
May 1-10, 1952.....	41,480	14		45	10	17	2.7	144		56	11		1.5	--	244	0.33	27,330	154	36	19	0.6	387	--
May 11-20.....	36,920	13		42	10	19	1.9	130		59	13		1.4	--	232	.32	24,380	146	40	22	.7	375	--
May 21-31.....	25,550	13		50	13	27	2.1	138		92	20		1.5	--	300	.41	20,700	178	66	24	.9	472	--
June 1-3, 5-6.....	38,600	11		43	11	19	1.7	123		70	13		1.7	--	254	.35	26,470	152	52	21	.7	388	--
June 11-20.....	46,530	11		38	8.7	16	2.2	111		54	11		1.0	--	208	.28	26,130	131	40	21	.6	344	--
June 21, 23, 27-29..	25,340	11		44	12	27	2.2	118		88	20		1.3	--	275	.37	18,810	160	63	26	.9	448	--
July 1-4, 9.....	16,760	11		54	16	40	2.8	125		128	34		1.5	--	364	.50	16,470	200	98	30	1.2	579	--
July 6-7.....	16,200	11		77	22	70		213		187	45		.4	--	b517	.70	22,610	282	108	35	1.8	838	--
July 11-20.....	6,160	12		79	27	70	3.4	152		245	60		2.8	0.13	575	.78	9,560	308	184	33	1.7	895	7.4
July 21-24, 30-31..	6,247	12		93	33	97	5.1	162		310	82		2.6	--	748	1.02	12,620	368	235	36	2.2	1,120	--
Aug. 1-10.....	6,011	14		103	37	111	5.4	177		354	96		4.4	--	838	1.14	13,600	409	264	37	2.4	1,240	--
Aug. 11-20.....	5,639	13		115	39	103	4.4	178		398	81		4.9	--	866	1.18	13,190	448	302	33	2.1	1,250	7.7
Aug. 21-24, 30-31..	5,812	14		114	41	116	5.7	189		397	89		4.4	--	902	1.23	14,150	453	298	35	2.4	1,300	--
Sept. 3-7, 9-13.....	3,547	14		128	53	156	5.7	193		505	136		6.6	--	1,150	1.56	11,010	538	380	38	2.9	1,600	--
Sept. 21-30.....	3,749	14		140	55	150	5.9	197		545	112		6.8	--	1,180	1.60	11,940	578	414	36	2.7	1,610	--
Weighted average ..	c 11,380	13		63	20	54	3.3	148		162	45		2.6	--	452	0.61	13,890	239	118	33	1.5	680	--

b Sum of determined constituents.

c Represents 81 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER NEAR CISCO, UTAH--Continued

[illegible]

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	2,340	500	a 3,200	2,810	350	a 2,700	2,800		
2-----	2,500	400	a 2,700	2,960	310	a 2,500	2,800		
3-----	2,660	364	2,610	2,900	134	1,050	2,810		
4-----	2,620	360	2,550	2,900	153	1,200	2,990		
5-----	2,740	600	4,440	2,990	109	880	2,960		
6-----	3,010	410	3,330	3,260	72	634	2,980		
7-----	2,980	340	2,740	3,050			2,880		
8-----	2,980	328	2,640	3,070			2,700		
9-----	2,850	237	1,820	3,160			2,400		
10-----	2,490	175	1,180	3,080	89	750	2,150		
11-----	2,350	114	723	3,140			2,000		
12-----	2,570	72	500	3,170			2,050		
13-----	2,420	122	797	3,190			2,100		
14-----	2,300	43	267	2,980			2,500		
15-----	2,320	28	175	3,100			3,000		b 540
16-----	2,490	33	222	3,210			2,750		
17-----	2,450	63	417	3,160	101	803	2,500		
18-----	2,250	69	419	3,010			2,600		
19-----	2,540	54	370	2,760			2,500		
20-----	2,500	55	371	2,850			2,550		
21-----	2,490	50	a 340	2,490			2,150		
22-----	2,590	40	280	2,500			2,750		
23-----	2,570	41	284	3,210			2,900		
24-----	2,470	30	200	3,430	82	687	3,200		
25-----	2,500	30	202	3,300			3,150		
26-----	3,470	34,000	s 35,600	3,080			3,050		
27-----	4,600	66,300	s 68,200	3,100			2,900		
28-----	3,680	1,790	17,800	2,890	--	e 640	2,700		
29-----	3,340	1,540	13,900	2,400	--	e 530	2,600		
30-----	3,230	1,350	11,800	2,690	--	e 600	3,500	--	b 5,000
31-----	2,920	700	5,520	--	--	--	5,800	--	b 80,000
Total--	85,220	--	185,597	89,850	--	26,530	86,720	--	100,660
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-----	5,200	--	b 40,000	2,900	511	4,000	2,620	390	a 2,800
2-----	3,400	120	1,100	2,800	537	4,060	2,690	350	a 2,500
3-----	3,150	163	1,390	3,000	580	a 4,700	2,800	310	2,340
4-----	2,650	130	a 930	3,100	619	5,180	2,800	272	2,060
5-----	2,400	100	a 650	3,050	685	5,640	2,690	340	a 2,500
6-----	2,500	100	a 680	2,900	660	a 5,200	2,730	850	6,270
7-----	2,400	100	a 650	2,650	600	a 4,300	2,830	2,600	19,900
8-----	2,400	100	a 650	2,500	570	3,850	2,990	2,840	22,900
9-----	2,450	150	a 990	2,600	810	5,690	3,170	3,880	33,200
10-----	2,500	221	1,490	2,700	800	5,830	3,280	3,470	30,700
11-----	2,600			2,750	690	5,120	3,390	3,500	32,000
12-----	2,700			2,700	639	4,660	3,290	3,100	a 28,000
13-----	2,800	135	1,050	2,700	730	5,320	2,760	2,000	14,900
14-----	3,000			2,800	710	5,370	2,800	730	5,520
15-----	3,300			2,750	790	5,870	2,780	600	a 4,500
16-----	3,500	76	718	2,650	620	4,440	2,810	810	6,150
17-----	3,500	95	898	2,710	820	a 6,000	2,900	920	7,200
18-----	3,450	464	4,320	2,760	1,370	10,200	3,230	1,200	10,500
19-----	3,400	732	6,720	2,920	1,290	10,200	2,960	1,000	7,990
20-----	3,300	417	3,720	2,680	1,200	a 8,700	2,890	820	6,400
21-----	3,200	434	3,750	2,500	1,100	a 7,400	3,070	210	1,740
22-----	3,150	570	4,850	2,620	1,200	a 8,500	3,030	166	1,360
23-----	3,100	635	5,310	2,800	990	a 7,500	2,960	191	1,530
24-----	3,000	640	a 5,200	2,900	560	4,380	2,890	86	671
25-----	3,200	660	a 5,700	2,620	500	3,540	2,980	67	539
26-----	3,350	663	6,000	2,470	400	2,670	3,140	87	738
27-----	3,500	632	5,970	2,190	280	1,660	3,640	400	a 3,900
28-----	3,600	480	4,970	2,280	290	1,790	3,970	1,380	14,800
29-----	3,800	433	3,660	2,470	300	a 2,000	4,230	3,220	36,800
30-----	3,200	481	4,160	--	--	--	4,450	3,320	39,900
31-----	3,000	421	3,410	--	--	--	4,890	3,300	43,600
Total--	96,200	--	123,036	78,470	--	153,770	97,660	--	393,908

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	4,760	3,190	41,000	26,900	1,460	106,000	32,000	316	27,300
2-----	4,450	2,390	28,700	26,700	1,530	110,000	33,400	500	45,100
3-----	4,270	2,210	25,500	29,900	2,320	187,000	35,900	1,500	145,000
4-----	4,470	2,700	a 33,000	37,300	2,340	236,000	39,000	1,500	a 160,000
5-----	4,600	5,510	88,400	44,700	2,000	a 240,000	44,600	1,200	145,000
6-----	5,020	6,200	84,000	50,600	1,810	247,000	47,100	1,400	178,000
7-----	5,900	8,530	136,000	53,900	2,000	291,000	48,800	1,800	a 240,000
8-----	7,720	9,100	a 190,000	51,100	1,100	152,000	52,500	1,800	a 260,000
9-----	9,870	7,500	a 200,000	47,700	1,180	152,000	55,700	1,600	a 240,000
10-----	9,100	5,700	140,000	46,000	1,400	a 170,000	56,300	1,300	a 200,000
11-----	9,800	3,200	82,900	40,900	1,800	a 180,000	55,000	1,180	175,000
12-----	9,690	2,620	68,500	37,900	1,790	183,000	55,300	1,210	181,000
13-----	8,980	2,060	49,900	36,000	1,800	a 190,000	54,200	900	132,000
14-----	9,360	3,080	77,800	39,700	2,000	a 210,000	50,500	850	116,000
15-----	11,400	4,700	145,000	42,600	2,100	242,000	47,100	560	73,800
16-----	14,300	6,180	239,000	44,800	2,050	248,000	46,700	620	78,200
17-----	16,900	7,150	326,000	44,700	1,900	a 230,000	47,400	900	115,000
18-----	19,200	6,000	311,000	39,000	1,750	184,000	41,100	900	a 100,000
19-----	21,700	6,210	364,000	33,100	1,700	a 150,000	35,300	900	a 86,000
20-----	23,700	3,520	225,000	28,500	1,730	133,000	32,700	903	79,700
21-----	24,300	2,210	145,000	27,500	1,500	a 110,000	33,400	982	88,600
22-----	24,300	2,280	150,000	27,400	1,400	104,000	32,100	810	a 70,000
23-----	24,900	4,600	309,000	26,000	1,350	94,800	29,300	704	55,700
24-----	24,000	3,320	215,000	23,900	1,300	a 82,000	28,000	580	a 44,000
25-----	26,000	4,150	291,000	21,400	1,250	a 72,000	26,000	500	a 35,000
26-----	28,800	4,590	357,000	21,600	1,200	70,000	25,000	420	a 28,000
27-----	31,100	2,320	195,000	23,100	864	53,900	22,700	351	21,500
28-----	33,900	2,000	163,000	24,600	600	a 40,000	21,600	322	18,600
29-----	36,200	2,310	226,000	26,600	373	26,800	19,700	349	18,600
30-----	30,300	1,800	a 150,000	28,800	453	35,200	18,400	290	a 14,000
31-----	--	--	--	30,700	400	a 33,000	--	--	--
Total--	488,790	--	5,056,700	1,085,000	--	4,562,700	166,800	--	3,171,300
	July			August			September		
1-----	18,100	236	11,500	8,000	915	19,900	5,500	700	a 10,000
2-----	17,700	198	9,460	7,640	870	17,900	5,080	500	a 6,900
3-----	16,700	178	8,030	7,080	600	11,500	4,720	400	5,100
4-----	15,500	183	7,660	6,570	620	a 11,000	4,450	170	2,040
5-----	14,700	180	a 7,100	5,900	580	a 9,200	4,110	200	2,220
6-----	14,800	1,600	63,900	5,300	540	a 7,700	3,810	231	2,380
7-----	17,600	8,200	390,000	5,080	500	a 6,900	3,560	258	2,490
8-----	16,000	4,500	a 220,000	4,740	480	a 6,100	3,430	250	a 2,300
9-----	15,800	800	34,100	4,690	520	6,870	3,320	260	a 2,200
10-----	14,500	300	11,700	4,910	390	5,170	3,120	150	a 1,300
11-----	13,500	850	a 31,000	5,360	800	11,600	2,920	83	654
12-----	12,400	620	20,800	5,970	800	a 13,000	2,780	67	503
13-----	11,600	580	18,200	6,550	570	10,100	2,660	--	--
14-----	10,600	520	a 15,000	6,170	450	7,500	2,660	--	e 460
15-----	9,630	280	7,280	5,940	320	5,130	2,730	--	--
16-----	8,610	164	3,810	5,970	380	6,130	2,960	--	--
17-----	7,790	232	4,880	5,630	310	4,710	3,160	--	--
18-----	6,980	200	a 3,800	5,170	330	a 4,600	3,080	--	e 2,400
19-----	6,470	123	2,150	4,700	210	2,660	3,010	--	--
20-----	5,990	76	1,260	4,930	2,220	29,600	2,990	--	--
21-----	5,740	75	1,160	5,170	2,000	27,900	3,300	--	--
22-----	5,430	69	1,010	5,690	3,080	47,300	3,340	--	--
23-----	5,020	46	623	6,170	3,640	60,600	3,760	531	5,260
24-----	4,850	71	930	6,500	2,500	43,900	4,250	--	--
25-----	4,720	70	a 890	6,340	1,500	a 26,000	4,050	--	--
26-----	4,890	650	a 8,600	5,830	1,500	a 24,000	3,990	--	--
27-----	5,430	--	e 12,000	5,650	1,500	a 23,000	3,910	69	709
28-----	6,360	1,400	a 24,000	5,720	1,000	a 15,000	3,780	--	--
29-----	7,430	2,500	a 50,000	5,430	900	a 13,000	3,600	--	--
30-----	8,000	3,550	76,700	5,300	810	11,600	3,490	--	--
31-----	8,440	1,300	29,600	6,040	1,020	16,600	--	--	--
Total--	323,280	--	1,077,143	180,340	--	506,070	107,560	--	76,791
Total discharge for year (cfs-days)									3,865,690
Total load for year (tons)									15,434,205

e Estimated.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR CISCO, UTAH--Continued

Particle-size analyses of suspended sediment, March to September 1952
(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	Water discharge (cfs)	Water temperature (° F)	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. 28, 1952.....	2:00 p.m.	3,530		943	4,560	--	51	--	72	--	89	97	100				SPWCM
May 26	9:00 a.m.	21,600		1,080	--	--	--	--	--	--	32	54	85		98		S
Sept. 21	6:00 p.m.	3,080		2,640	3,470	--	55	--	77	--	99	100	--				SPWCM
Sept. 21	6:00 p.m.	3,080		2,640	3,570	--	5	--	78	--	99	100	--				SPN
Sept. 21	6:00 p.m.	3,080		2,640	2,720	42	57	69	81	93	99	100	--				SBWCM
Sept. 21	6:00 p.m.	3,080		2,640	2,670	2	4	13	--	93	99	100	--				SEN

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR GREEN RIVER, WYO.

LOCATION.--At bridge on Green River--Linwood highway, about 1 mile upstream from gaging station near Green River, Sweetwater County, which is a quarter of a mile upstream from Splitter Creek, 1 mile southeast of town of Green River, and 4 miles upstream from high-water line of proposed Flaming Gorge Reservoir.

DRAINAGE AREA.--1,000 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses, May 1951 to September 1952.

Water temperatures: May 1951 to September 1952.

Sediment records: May 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 586 ppm Nov. 21-30; minimum 163 ppm June 11-20.

Hardness: Maximum, 323 ppm Nov. 21-30; minimum, 116 ppm June 11-20.

Specific conductance: Maximum daily, 1,010 micromhos Nov. 22; minimum daily, 240 micromhos June 11.

Water temperatures: Maximum observed, 75°F July 26; minimum observed, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 1,640 ppm Apr. 19; minimum daily, 10 ppm Oct. 1.

Sediment loads: Maximum daily, 32,900 tons July 15; minimum daily, 22 tons Feb. 11-29.

EXTREMES, May 1951 to September 1952.--Dissolved solids: Maximum, 586 ppm Nov. 21-30, 1951; minimum, 163 ppm June 11-20, 1952.

Hardness: Maximum, 323 ppm Nov. 21-30, 1951; minimum, 116 ppm June 11-20, 1952.

Specific conductance: Maximum daily, 1,010 micromhos Nov. 22, 1951; minimum daily, 240 micromhos June 11, 1952.

Water temperatures: Maximum observed, 75°F July 26, 1952; minimum observed, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 1,640 ppm Apr. 19, 1952; minimum daily, 9 ppm Sept. 25-31, 1951.

Sediment loads: Maximum daily, 32,900 tons July, 1952; minimum daily, 22 tons Feb. 11-29, 1952.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium	Non-carbonate					
Oct. 1-10, 1951..	1,392	9.4	0.01	54	19	41	3.4	178	148	7.2	0.2	0.2	--	366	0.50	1,360	212	66	29	1.2	568	7.5
Oct. 11-20.....	1,250	9.9	.01	59	22	42	3.2	191	156	7.5	.2	.1	--	332	.53	1,320	238	81	27	1.2	601	7.8
Oct. 21-31.....	1,289	11	.02	61	23	45	3.0	198	167	7.2	.2	.1	--	411	.56	1,430	246	84	28	1.3	622	7.8
Nov. 1-10.....	992	11	.01	63	23	44	2.7	210	163	7.5	.2	.1	--	416	.57	1,110	252	80	27	1.2	633	7.8
Nov. 11-20.....	791	11	.04	69	26	56	3.0	216	209	8.8	.2	.2	.12	489	.80	1,040	279	102	30	1.5	726	7.8
Nov. 21-30.....	752	12	.03	80	30	72	3.2	242	253	10	.3	.4	--	586	.87	1,190	323	124	32	1.7	840	7.8
Dec. 1-10.....	805	11	.02	69	25	43	3.0	208	186	7.5	.4	.1	--	465	.83	1,010	275	104	25	1.1	678	7.5
Dec. 11-20.....	645	11	.03	76	28	69	3.0	226	239	9.5	.2	.2	.16	561	.76	977	304	120	33	1.7	799	7.2
Dec. 21-31.....	863	11	.02	71	23	62	2.9	213	205	8.0	.2	.3	--	506	.89	906	272	97	33	1.6	724	7.4
Jan. 1-10, 1952.	641	11	.03	66	24	60	3.2	207	195	7.8	.2	.5	--	478	.85	827	263	94	33	1.6	694	7.4
Jan. 11-20.....	666	11	.02	70	24	53	1.9	208	193	7.0	.2	.8	.12	480	.85	863	273	102	29	1.4	682	7.7
Jan. 21-31.....	700	10	.03	66	23	50	1.9	196	183	6.8	.2	.6	--	452	.61	854	259	98	29	1.3	661	7.8
Feb. 1-10.....	714	9.5	.02	85	24	47	1.3	195	181	6.5	.2	.6	--	447	.61	862	260	100	28	1.3	653	7.4
Feb. 11-20.....	738	9.7	.03	68	25	50	1.3	201	190	6.8	.2	.6	.07	471	.64	939	272	108	28	1.3	675	7.4
Feb. 21-29.....	729	10	.02	68	25	51	1.4	204	193	6.5	.2	.6	--	477	.65	939	272	106	29	1.4	663	7.5
Mar. 1-10.....	730	11	.02	68	25	51	1.6	206	198	6.0	.2	.7	--	476	.65	938	272	104	29	1.4	697	7.6
Mar. 11-20.....	757	10	.02	66	25	51	1.6	208	196	7.5	.2	.7	.08	471	.64	963	285	97	29	1.4	689	7.7
Mar. 21-31.....	1,020	9.9	.03	85	25	53	1.7	204	196	8.5	.2	.5	--	469	.64	1,290	268	98	30	1.4	690	7.6

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180°C)			Hardness as CaCO ₃		Percent adsorption	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Apr. 1-10, 1952...	1,646	8.3	0.03	59	23	50	1.7	183	186	8.0	0.1	0.4	--	434	0.59	1,930	242	92	31	1.4	651	7.6
Apr. 11-20.....	3,233	8.2	.06	56	21	50	3.2	182	178	11	.4	1.4	0.12	320	.69	3,890	229	66	36	1.7	873	7.3
Apr. 21-30.....	7,036	11	.06	40	15	33	2.2	159	150	4.5	.3	1.6	--	328	.85	4,970	203	42	26	1.0	513	7.5
May 1-10.....	5,771	7.9	.03	40	12	14	1.2	150	49	2.5	.3	.8	.06	205	.28	3,190	184	32	17	.6	416	7.4
May 11-20.....	4,544	8.8	.03	42	14	17	2.0	154	65	4.0	.3	.6	--	240	.33	2,940	150	26	17	.5	335	7.5
May 21-31, June 1-2																	162	36	16	.6	384	7.5
June 3-10.....	8,212	9.2	.05	33	9.6	11	1.1	128	38	2.0	.3	.6	--	176	.24	3,900	122	17	16	.4	282	7.5
June 11-20.....	7,664	9.3	.04	30	9.8	11	1.1	122	35	2.0	.3	.5	.08	163	.22	3,370	116	16	17	.4	266	7.6
June 21-30.....	4,752	10	.06	42	15	23	1.6	178	62	5.5	.2	.7	--	280	.35	3,340	167	20	23	.8	422	7.4
July 1-10.....	3,383	9.9	.02	39	14	24	1.6	158	71	5.0	.2	.4	--	245	.33	2,220	155	26	25	.8	402	7.5
July 11-20.....	2,973	8.3	.03	40	14	21	1.3	159	66	4.0	.2	.7	.08	238	.32	1,910	158	27	22	.7	353	7.7
July 21-31.....	2,058	6.3	.03	41	14	23	1.5	156	75	4.5	.2	.6	--	246	.33	1,370	160	32	24	.8	409	7.7
Aug. 1-10.....	1,955	6.7	.03	40	14	25	1.5	147	83	4.5	.2	.8	--	251	.34	1,320	158	37	25	.9	409	7.7
Aug. 11-20.....	1,678	7.5	.05	44	15	30	1.8	152	99	5.1	.3	.4	.07	282	.38	1,260	172	47	27	1.0	447	7.6
Aug. 21-31.....	1,252	7.1	.03	47	17	38	2.3	154	124	6.5	.3	.5	--	319	.43	1,060	188	62	30	1.2	500	7.4
Sept. 1-10.....	1,058	7.5	.03	50	19	41	2.3	162	141	7.1	.2	.5	.10	352	.48	1,010	203	70	30	1.2	545	7.7
Sept. 11-12, 18-20	956	7.1	.03	52	20	44	2.0	164	153	6.2	.3	.7	--	371	.50	958	212	77	31	1.3	570	7.7
Sept. 21-30.....	805	7.5	.03	52	22	49	2.0	168	173	8.2	.3	.6	--	404	.55	878	220	82	32	1.4	614	7.7
Weighted average	a 3,183	9.4	0.04	47	16	29	1.9	168	97	5.2	0.3	0.6	--	294	0.40	1,730	184	46	25	0.9	459	--

a Represents 99 percent of runoff for water year October 1951 to September 1952.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER WYO.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	1,270	10	34	1,250	49	128	840	160	362
2-----	1,310	11	39	1,030			870	165	388
3-----	1,320	40	143	791			890	135	324
4-----	1,520	160	657	791			900	100	243
5-----	1,620	270	1,180	988			890	23	54
6-----	1,660	650	2,910	1,070	46	126	860		
7-----	1,390	600	2,250	960			800	42	91
8-----	1,310	90	318	860			720	23	41
9-----	1,280	32	111	1,060			660		
10-----	1,240	30	100	1,020			620		
11-----	1,240	22	74	960	24	51	600	29	47
12-----	1,240			1,040			600	23	37
13-----	1,240			1,110			620	56	94
14-----	1,270			1,140			630	40	68
15-----	1,280			947			640	70	121
16-----	1,270	22	77	830	39	79	680	23	40
17-----	1,250			870			680		
18-----	1,240			522			680		
19-----	1,240			415			680		
20-----	1,230			374			660		
21-----	1,230	22	77	748	39	79	660	23	40
22-----	1,280			770			680		
23-----	1,300			760			660		
24-----	1,300			750			640		
25-----	1,310			730			640		
26-----	1,320	22	77	720	39	79	640	23	40
27-----	1,340			720			640		
28-----	1,340			750			660		
29-----	1,300			770			680		
30-----	1,250			800			710	19	35
31-----	1,210	22	77	--			700	31	59
Total--	40,600	--	9,329	25,346	--	2,570	21,790	--	2,890
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-----	680	17	30	710	23	44	750	30	59
2-----	650			700			740		
3-----	640			700			730		
4-----	650			700			720		
5-----	650			710			720		
6-----	630	15	26	720	11	22	730	16	33
7-----	590			720			740		
8-----	600			720			730		
9-----	660			740			720		
10-----	660			720			720		
11-----	640	25	44	720	11	22	720	12	33
12-----	640			720			740		
13-----	660			740			760		
14-----	670			720			760		
15-----	660			730			750		
16-----	700	25	45	740	11	22	760	12	33
17-----	680			760			780		
18-----	670			770			780		
19-----	660			750			760		
20-----	660			730			760		
21-----	680	15	28	710	11	22	780	12	33
22-----	700			710			800		
23-----	700			710			840		
24-----	700			720			860		
25-----	720			720			920		
26-----	720	15	28	730	11	22	960	12	33
27-----	710			750			1,020		
28-----	700			750			1,140		
29-----	690			760			1,220		
30-----	680			--			1,300		
31-----	700			--			1,380		
Total--	20,770	--	1,023	21,080	--	858	26,090	--	1,283

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER WYO.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	1,490	36	131	6,280	1,270	21,500	5,540	78	1,200
2-----	1,380			6,130	420	6,950	5,880		
3-----	1,290			6,190	345	5,850	6,160		
4-----	1,280			6,370			6,640		
5-----	1,310			7,020			7,150		
6-----	1,520	87	357	7,630	478	9,680	7,320	209	3,990
7-----	1,950	67	353	7,840			6,050		
8-----	2,200	282	1,680	7,660			9,180		
9-----	2,160	220	1,280	7,770	370	7,590	10,200		
10-----	1,900	269	1,380	7,350			11,000		
11-----	1,910	221	1,140	6,640			11,300	442	12,100
12-----	2,100	435	2,470	5,820	238	2,830	10,800		
13-----	2,490	730	4,910	5,400			9,670		
14-----	2,810	1,610	13,300	5,430			8,540		
15-----	3,080	750	6,240	5,680	243	3,790	7,600		
16-----	3,280	890	7,880	6,220			6,800	135	2,320
17-----	3,580	1,290	12,500	6,400			6,370		
18-----	4,180	1,440	16,300	5,990	196	2,840	5,820		
19-----	4,260	1,640	18,900	5,320			5,180		
20-----	4,480	1,330	16,100	4,810			4,560	70	a 860
21-----	4,700	1,100	14,000	4,500			4,200	50	a 570
22-----	4,730	1,130	14,400	4,640			4,050	40	a 440
23-----	4,310	980	11,400	4,780			3,990	36	388
24-----	3,920	450	4,760	4,560	117	1,360	3,990	150	1,620
25-----	4,020	350	3,800	4,120			4,230	105	1,200
26-----	4,280	440	5,080	3,860			5,040	138	1,880
27-----	4,640	500	6,260	3,890			5,600	600	9,070
28-----	5,200	580	8,140	4,050			5,650	360	5,490
29-----	5,540	600	8,970	4,100	66	731	5,620	205	3,110
30-----	6,040	638	10,400	4,310	71	877	5,150	95	1,320
31-----	--	--	--	4,840			--	--	--
Total--	96,030	--	192,655	175,600	--	139,645	201,280	--	117,758
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-----	4,450	117	1,290	1,840	25	132	1,260	65	217
2-----	3,940			1,840			1,210		
3-----	3,630			1,900			1,140		
4-----	3,400	90	a 830	1,950			1,080		
5-----	3,180	70	a 800	2,070			1,010	30	86
6-----	3,080	50	a 420	2,160	114	665	998	18	47
7-----	2,980			2,070			970		
8-----	2,980			1,950			956		
9-----	3,030	35	282	1,860	30	156	984		
10-----	2,960			1,910			970		
11-----	2,830			2,240	520	3,140	970	192	503
12-----	2,740	37	300	2,140			970		
13-----	2,830			1,930			996		
14-----	3,630	3,600	32,900	1,770	42	203	1,030		
15-----	3,380			1,600			1,080		
16-----	3,260	1,600	14,100	1,490			1,080	170	a 480
17-----	3,130	900	7,610	1,460			1,050		
18-----	2,860	169	1,350	1,420	20	76	998		
19-----	2,600			1,380			942	155	396
20-----	2,470			1,350			900		
21-----	2,380	61	339	1,326	18	61	858	222	506
22-----	2,270			1,290			830		
23-----	2,200			1,280			816		
24-----	2,120	61	339	1,280	18	61	816	157	846
25-----	2,070			1,250			816		
26-----	2,010			1,220			802	80	171
27-----	1,910			1,210			788		
28-----	1,930			1,210			788		
29-----	1,950			1,180	63	276	774	11	23
30-----	1,910			1,250			760		
31-----	1,900			1,280			--		
Total--	86,010	--	70,437	50,100	--	7,947	28,644	--	8,142

Total discharge for year (cfs-days) 793,340

Total load for year (tons) 554,587

s Computed by subdividing day.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Particle-size of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (° F)	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, 15, 23, 30, 1951.....				20	--	--	--	--	--	--	72	91	97		98	S
Dec. 8, 18, 27.....				18	190	15	19	21	27	37	49	85	95		98	SBWCM
Jan. 4, 15, 1952				459	1,750	44	51	58	66	74	80	89	95		98	SBWCM
3:30 p. m.		3,080		942	4,430	44	50	--	68	--	86	93	97		98	SPWCM
5:00 p. m.		4,700		927	3,730	--	44	--	60	--	78	89	96		99	SPWCM
8:00 a. m.		6,040		927	2,040	34	39	46	53	57	81	89	96		98	SBWCM
8:00 a. m.		7,740		481	--	--	--	--	--	--	63	76	92		98	S
8:00 a. m.		7,630		418	--	--	--	--	--	--	57	73	89		98	S
3:30 p. m.																
June 3.....		6,250		215	--	--	--	--	--	--	67	67	80		90	S
June 3.....		6,340		174	--	--	--	--	--	--	49	66	83		96	S
June 10.....		11,300		427	1,090	18	21	25	33	43	56	75	91		99	SBWCM
4:30 p. m.		11,200		375	857	6	12	18	25	37	50	69	86		94	SBWCM
6:45 a. m.		5,990		104	--	--	--	--	--	--	40	56	77		98	S
June 18.....		5,650		157	--	--	--	--	--	--	31	43	54		79	S
7:00 p. m.		5,400		80	--	--	--	--	--	--	50	64	82		85	S
5:30 a. m.		5,400		80	--	--	--	--	--	--	57	69	84		95	S
6:30 p. m.		4,980		80	--	--	--	--	--	--	42	62	80		100	S
July 8.....		2,980		30	--	--	--	--	--	--	30	42	53		70	S
5:30 a. m.		3,000		52	--	--	--	--	--	--	72	82	89		85	S
July 26.....		2,010		39	--	--	--	--	--	--	87	94	97		89	S
Aug. 2.....		1,840		20	--	--	--	--	--	--						
Aug. 11.....		2,200		226	1,820	--	52	--	65	--	71	75	81		90	SPWCM
5:15 p. m.											85	94	97		100	S
Aug. 20.....		1,360		14	--	--	--	--	--	--	89	94	96		97	S
10:30 a. m.		1,180		49	--	--	--	--	--	--	27	41	83		98	S
Sept. 2.....		984		40	--	--	--	--	--	--						
Sept. 11.....		760		8	--	--	--	--	--	--	74	87	96		98	S
Sept. 28.....																

GREEN RIVER BASIN

BLACKS FORK NEAR GREEN RIVER, WYO.

LOCATION --At county highway bridge about 75 yards downstream from gaging station, which is 200 feet downstream from Dry Creek, 14.3 miles upstream from mouth, and 12.5 miles southwest of town of Green River, Sweetwater County.

DRAINAGE AREA --3 670 square miles

RECORDS AVAILABLE --Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952

EXTREMES: Maximum, 1,650 ppm Sept. 22-27, 29-30; minimum, 298 ppm June 2-7, 9-10.

Hardness: Maximum, 660 ppm Sept. 22-27, 29-30; minimum, 96 ppm Mar. 27-29, 31, Apr. 1-5, 7-8.

Specific conductance: Maximum daily, 2,390 microhmhos Oct. 1; minimum daily, 414 microhmhos Apr. 4.

Water temperatures: Maximum observed, 79° F July 31; minimum observed, freezing point on many days from November to March.

EXTREMES: March 1951-September 1952 --Dissolved solids: Maximum, 1,730 ppm Sept. 21-22, 24-30, 1951; minimum, 298 ppm June 2-7, 9-10, 1952.

Hardness: Maximum, 730 ppm Sept. 21-22, 24-30, 1951; minimum, 96 ppm Mar. 27-29, 31, Apr. 1-5, 7-8, 1952.

Specific conductance: Maximum daily, 2,390 microhmhos Oct. 1, 1951; minimum daily, 414 microhmhos Apr. 4, 1952.

Water temperatures: Maximum observed, 79° F July 31, 1952; minimum observed, freezing point on many days during winter months.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhmhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate					
Oct. 1-5, 1951...	74.0	14	0.07	134	67	266	7.6	195	858	98	0.5	0.6	--	1,600	2.18	320	610	450	48	4.7	2,010	7.4	15
Oct. 6 a	456	--	--	--	--	--	--	172	--	--	--	--	--	--	--	--	--	--	--	--	417	--	--
Oct. 8-10	377	14	.13	34	9.2	160	5.6	223	216	44	.7	2.2	--	595	.81	606	123	0	73	6.3	897	7.7	15
Oct. 11-13, 15-20	142	20	.10	92	33	182	7.2	234	459	85	.6	1.3	0.37	1,040	1.41	399	365	174	51	4.1	1,680	7.6	10
Oct. 22-27, 29-31	100	12	.06	115	49	177	6.4	249	546	88	.5	.3	--	1,150	1.56	310	488	284	44	3.5	1,570	7.7	40
Nov. 1-3, 5-10...	92.4	12	.04	123	54	180	11	247	574	94	.4	.2	--	1,220	1.66	304	534	318	42	3.4	1,550	8.1	12
Nov. 13-17, 19-20	86.1	12	.04	138	61	186	13	274	612	99	.4	.2	.34	1,310	1.78	301	596	358	40	3.3	1,760	8.0	22
Nov. 21, 23-24, 26-30	112	13	.04	132	63	188	11	307	624	101	.4	.5	--	1,370	1.96	414	638	372	39	3.2	1,810	8.1	20
Dec. 1, 3-8, 10...	92.5	12	.02	128	50	137	3.6	296	437	68	.3	.7	--	1,010	1.37	232	525	282	36	2.6	1,380	7.6	7
Dec. 11-15, 17-20	82.0	12	.03	136	54	144	4.4	330	475	76	.3	.8	.35	1,100	1.50	244	562	281	36	2.6	1,490	7.8	20
Dec. 21-22, 24, 26-29	70.0	12	.03	141	54	152	4.0	330	498	76	.2	.7	--	1,140	1.55	215	574	304	36	2.8	1,530	7.8	7
Jan. 1, 2-5, 7, 10-12	55.2	13	.03	138	52	151	3.6	320	487	74	.4	.8	--	1,120	1.52	187	558	296	37	2.8	1,500	7.6	20
Jan. 11-12, 14-19	60.9	13	.04	142	54	155	7.6	324	522	75	.3	.9	.25	1,180	1.60	194	576	311	37	2.8	1,570	7.8	10
Jan. 21-26, 28-31	71.2	14	.04	152	56	161	3.5	320	550	76	.3	1.3	--	1,230	1.67	236	610	348	36	2.8	1,610	7.8	5
Feb. 1-2, 4-9...	78.2	14	.05	130	50	141	3.0	296	467	70	.3	1.1	--	1,060	1.44	224	530	288	36	2.7	1,440	7.9	5
Feb. 11-16, 18-20	76.4	12	.03	123	47	124	3.5	304	409	74	.4	1.2	.17	983	1.34	203	500	252	35	2.4	1,400	7.6	5
Feb. 21, 23, 25-29	75.4	13	.03	127	48	124	4.0	312	420	82	.4	1.3	--	1,020	1.39	208	514	259	34	--	1,420	7.6	5
Mar. 1, 3-8, 10...	90.5	13	.04	118	45	136	3.7	294	418	70	.4	1.4	--	961	1.31	235	480	238	38	2.7	1,300	7.6	5
Mar. 11-15, 17-22	91.5	12	.05	110	42	101	3.8	280	335	62	.4	.9	.17	846	1.15	209	447	218	33	2.1	1,190	7.7	5
Mar. 25-26 &	135	--	--	--	--	--	--	206	272	23	--	3.6	--	--	--	--	--	--	--	--	840	7.5	5

a Not included for computation of weighted averages.

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR GREEN RIVER, WYO.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180°C)			Hardness as CaCO ₃		Per cent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Mar. 27-29, 31, Apr. 1-5, 7-8, 1952	385	14	0.02	33	3.2	69	2.0	167	79	20	0.4	1.1	--	306	0.42	318	96	0	60	3.1	497	7.7	10
Apr. 9-12, 14-19	1,685	16	.03	59	6.9	118	3.6	216	158	64	.4	.9	0.17	557	.76	2,550	176	0	59	3.9	875	7.7	15
Apr. 21-26, 28-30	2,784	15	.03	68	9.1	73	4.5	199	142	42	.4	1.4	--	464	.63	3,490	207	44	43	2.2	745	7.7	15
May 1-3, 5-10, ..	4,287	14	.03	51	17	42	3.8	202	89	22	.4	1.4	--	353	.48	4,070	197	32	31	1.3	553	7.9	20
May 12-17, 19-20	2,936	13	.04	57	17	50	3.2	214	101	28	.4	1.0	.11	390	.53	3,090	212	36	33	1.5	612	7.7	20
May 21-24, 26-29, 31	2,171	12	.03	56	19	43	2.9	216	93	24	.4	1.0	--	371	.50	2,170	218	40	30	1.3	586	7.6	15
June 2-7, 9-10, ..	2,666	12	.03	49	15	29	2.4	186	68	16	.5	1.1	--	298	.41	2,150	184	32	25	.9	470	7.7	20
June 11-14, 16-18	1,608	12	.03	54	17	34	2.4	186	93	18	.4	1.1	.10	340	.46	1,480	204	52	26	1.0	526	7.7	20
June 20 a,	687	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	760	--	--
June 21-23-28, 30	834	16	.05	80	27	95	4.6	261	220	49	.5	.8	--	b 622	.85	1,400	310	96	39	2.3	958	7.4	15
July 1-3, 5, 7-10	463	17	.05	95	37	130	5.3	288	337	61	.6	.6	--	b 825	1.12	1,030	389	153	34	2.9	1,200	7.6	15
July 11-12, 14-19	275	20	.05	102	38	188	6.0	288	463	78	.5	.8	.17	b 1,040	1.41	772	410	174	49	4.0	1,420	7.7	25
July 21-26, 28-31	148	15	.06	110	51	198	6.8	266	540	87	.5	.7	--	b 1,140	1.55	456	484	286	47	3.9	1,580	7.7	25
Aug. 1-2, 4-9, ..	173	15	.05	94	38	190	6.0	236	467	84	.7	.9	--	b 1,010	1.37	472	390	197	51	4.2	1,410	7.8	22
Aug. 11-16, 18-20	239	25	.06	96	35	178	5.2	256	433	75	.6	1.6	.30	988	1.34	638	384	174	50	3.9	1,410	7.5	8
Aug. 21-29, 29-30	98.2	14	.10	95	37	166	4.2	226	461	67	.5	.6	--	971	1.32	2,570	389	204	48	3.7	1,460	7.6	10
Sept. 2-6, 8-10, ..	56.2	9.9	.07	130	65	--	4.7	226	--	105	.6	.4	--	1,390	1.89	211	592	398	--	--	1,990	7.6	8
Sept. 11-13, 15-20	38.6	8.8	.06	138	72	258	5.3	224	821	119	.5	.4	.37	1,590	2.16	166	640	487	46	4.4	2,120	7.6	7
Sept. 22-27, 29-30	34.8	5.6	.07	139	76	297	5.5	222	864	123	.5	.3	--	1,650	2.24	155	660	478	47	4.5	2,190	7.6	7
Weighted average	c 643	14	0.04	84	19	71	3.7	214	155	37	0.4	1.1	--	487	0.66	845	238	92	39	2.0	740	--	--

a Not included for computation of weighted averages.

b Sum of determined constituents.

c Represents 83 percent of runoff for the water year October 1951 to September 1952.

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR GREEN RIVER, WYO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement, usually at 9:30 a. m. or 12:30 p. m. /

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

GREEN RIVER BASIN--Continued
HENRY'S FORK AT LINWOOD, UTAH

LOCATION.--About 75 yards upstream from gaging station, which is in Sweetwater County, Wyoming, 300 feet north of Wyoming-Utah State line at Linwood, Daggett County, Utah.

DRAINAGE AREA.--531 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,170 ppm Nov. 11-20; minimum, 312 ppm June 1-6, 9-10.

Hardness: Maximum, 730 ppm Nov. 11-20; minimum, 208 ppm June 1-6, 9-10.

Specific conductance: Maximum daily, 1,850 micromhos July 28; minimum daily, 395 micromhos May 15, June 2.

Water temperatures: Maximum observed, 65°F July 26-27; minimum observed, freezing point on many days during November to March.

EXTREMES, March 1951 to September 1952.--Dissolved solids: Maximum, 1,330 ppm Sept. 21-30, 1951; minimum, 312 ppm June 1-6, 9-10, 1952.

Hardness: Maximum, 806 ppm Sept. 21-30, 1951; minimum, 208 ppm June 1-6, 9-10, 1952.

Specific conductance: Maximum daily, 1,850 micromhos July 28, 1952; minimum daily, 395 micromhos May 15, June 2, 1952.

Water temperatures: Maximum observed, 65°F July 26, 1951, July 26-27, 1952.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃	Percent sodium in carbonate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot							Tons per day	Calcium, magnesium	Non-carbonate
Oct. 1-10, 1951.....	49.1	27	0.05	144	80	90	11	272	574	44	0.4	0.7	--	1,140	1.55	151	688	465	22	1.5	1,440	7.7	12
Oct. 11-20	44.9	24	.04	127	67	68	9.0	276	450	34	.5	.2	0.21	938	1.28	114	592	366	19	1.2	1,220	7.9	12
Oct. 21-31	67.0	22	.04	132	71	70	8.7	284	469	36	.5	.4	--	981	1.33	177	622	389	19	1.2	1,280	7.8	12
Nov. 1-10	45.3	22	.03	142	78	77	9.6	284	523	39	.4	.1	--	1,070	1.46	131	675	434	20	1.3	1,380	7.9	12
Nov. 11-20	45.2	24	.05	156	83	85	9.5	308	579	41	.4	.2	.23	1,170	1.59	143	730	478	20	1.4	1,490	8.0	12
Nov. 21-30	56.5	22	.04	135	78	77	4.0	287	502	37	.2	.6	--	1,040	1.41	159	658	422	20	1.3	1,340	8.0	10
Dec. 1-10	58.0	22	.03	144	77	83	6.0	281	529	39	.4	.5	--	1,090	1.48	171	676	438	21	1.4	1,390	8.0	15
Dec. 11-20	52.3	22	.04	145	78	94	4.0	286	542	40	.3	.6	.47	1,110	1.51	157	682	440	21	1.4	1,410	7.8	10
Dec. 21-31	43.0	17	.05	150	79	75	8.5	290	533	40	.2	.6	--	1,100	1.50	128	700	462	19	1.2	1,400	7.7	12
Jan. 1-10, 1952.....	57.1	20	.07	153	76	74	8.2	292	527	40	.2	.4	.27	1,100	1.50	80.5	694	494	19	1.2	1,380	7.9	20
Jan. 11-20	56.8	19	.05	150	77	74	8.6	286	534	40	.4	.6	--	1,100	1.50	115	691	486	19	1.2	1,410	7.7	15
Jan. 21-31	45.1	19	.09	138	74	69	7.1	286	514	38	.5	.6	--	1,060	1.43	128	649	430	19	1.2	1,350	7.8	10
Feb. 1-10	51.0	18	.04	137	72	72	7.2	278	498	36	.4	1.0	--	1,020	1.39	140	638	410	19	1.2	1,330	7.6	10
Feb. 11-20	49.1	18	.05	145	76	66	7.4	272	520	38	.3	1.1	.21	1,060	1.44	141	674	452	17	1.1	1,370	7.6	10
Feb. 21-29	49.4	18	.04	144	75	72	7.4	274	526	38	.3	1.1	--	1,080	1.44	141	688	444	19	1.2	1,370	7.7	10
Mar. 1-10	51.3	18	.04	138	71	53	6.9	266	461	38	.4	1.2	--	989	1.35	137	638	418	15	.9	1,300	7.8	5
Mar. 11-20	61.1	18	.04	137	72	70	8.0	268	506	34	.4	1.0	.20	1,010	1.37	167	638	418	19	1.2	1,310	7.8	10
Mar. 21-27	80.4	18	.04	133	68	67	7.0	260	478	36	.4	1.0	--	982	1.34	213	616	402	19	1.2	1,290	7.9	10
Mar. 28-31	114	19	.06	97	34	72	9.6	170	357	24	.4	1.3	--	705	.96	217	382	242	28	1.6	876	7.7	20

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

GREEN RIVER BASIN

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Apr. 1-5, 1952...	141	25	.06	104	46	70	12	224	360	27	.3	2.0	--	770	1.05	293	448	285	25	1.4	1,040	7.7	10
Apr. 8 b	265	--	--	--	--	--	--	180	356	15	--	--	--	--	--	--	--	--	--	--	953	--	--
Apr. 11, 14, 17 b	172	--	--	--	--	--	--	244	284	26	--	--	--	--	--	--	--	--	--	--	928	--	--
Apr. 18-30	203	18	.05	89	39	33	7.4	232	228	19	.4	.9	.08	550	.75	301	382	192	15	.7	783	7.7	10
May 1-3	216	18	.03	74	36	27	5.9	210	186	18	.4	.9	--	480	.65	280	332	180	15	.6	690	7.9	20
May 4-10	416	15	.02	64	22	11	4.3	182	106	10	.4	.8	--	323	.44	363	250	101	9	.3	484	7.6	25
May 11-20	452	16	.03	59	23	23	5.2	170	131	11	.4	.9	.08	354	.48	432	242	102	17	.6	518	7.9	25
May 21-31	312	15	.03	57	28	19	5.2	180	129	11	.4	.6	--	369	.50	311	257	110	14	.5	542	7.7	25
June 1-6, 9-10...	838	18	.04	57	16	17	5.2	166	95	8.0	.5	.8	--	312	.42	706	208	72	15	.5	468	7.7	30
June 7-8	1,190	20	--	63	26	42	--	178	178	16	--	1.1	--	456	.62	1,470	264	118	28	1.1	655	7.8	--
June 11-20	432	16	.04	62	21	19	4.3	170	124	10	.5	.4	.10	356	.48	415	241	102	14	.5	525	7.8	30
June 21-30	372	19	.03	74	32	30	5.9	210	184	16	.5	.6	--	482	.66	484	316	144	17	.7	698	7.7	25
July 1-10	195	19	.03	85	36	35	6.0	230	208	18	.5	.4	--	546	.74	287	360	172	17	.8	779	7.7	20
July 11-20	184	28	.05	113	43	50	9.2	256	312	22	.5	.4	.17	723	.98	359	459	249	19	1.0	983	7.9	20
July 21-27, 29-31	117	25	.06	118	52	55	8.7	274	353	24	.5	1.1	--	800	1.09	253	508	284	19	1.1	1,100	7.6	13
July 28 b	300	--	--	309	36	--	--	332	821	--	--	--	--	--	--	--	919	647	--	--	1,850	--	--
Aug. 1-10	130	24	.06	106	48	47	7.7	258	311	20	.3	1.1	--	711	.97	250	462	250	18	1.0	991	7.8	15
Aug. 11-20	157	22	.06	105	45	47	8.4	236	323	20	.3	1.0	.22	706	.96	299	447	254	18	1.0	982	7.7	15
Aug. 21-31	133	22	.06	103	45	47	7.9	230	317	20	.4	1.0	--	699	.95	251	442	254	18	1.0	973	7.6	15
Sept. 1-10	61.9	15	.09	116	63	63	8.4	230	433	32	.4	.9	--	872	1.19	146	548	360	20	1.2	1,180	7.9	15
Sept. 11-20	65.7	14	.09	111	60	60	7.8	230	410	28	.4	.2	.28	836	1.14	148	524	335	20	1.1	1,140	8.1	15
Sept. 21-30	54.7	14	.09	120	62	63	8.1	240	432	31	.5	.2	--	879	1.20	130	554	358	20	1.2	1,180	7.9	15
Weighted average	c 149	19	0.04	87	38	38	6.4	213	246	19	0.4	0.7	--	578	0.79	233	373	198	18	0.9	800	--	--

b Not included for computation of weighted averages.

c Represents 96 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

HENRYS FORK AT LINWOOD, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.

LOCATION.--At county bridge 1 mile north of Maybell, Moffat County, and about 3½ miles downstream from gaging station.

DRAINAGE AREA.--3,410 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1952.

Water temperatures: November 1950 to September 1952.

Sediment records: December 1950 to September 1952.

EXTREMES, 1950-52.--Dissolved solids: Maximum, 339 ppm Apr. 1-10; minimum, 83 ppm June 11-20.

Hardness: Maximum, 184 ppm Apr. 1-10; minimum, 50 ppm June 11-20.

Specific conductance: Maximum daily, 612 micromhos Apr. 8; minimum daily, 105 micromhos June 17, 23.

Water temperatures: Maximum observed, 75° F July 23-26; minimum observed, freezing point Nov. 2, 13.

Sediment concentrations: Maximum daily, 3,200 ppm Apr. 8; minimum daily, 4 ppm on many days.

Sediment loads: Maximum daily, 20,800 tons Apr. 11; minimum daily, 3 tons on many days.

EXTREMES, 1950-52.--Dissolved solids: Maximum, 339 ppm Apr. 1-10, 1952; minimum, 72 ppm June 21-30, 1951.

Hardness: Maximum, 184 ppm Mar. 1-10, 1951; Apr. 1-10, 1952; minimum, 43 ppm June 21-30, July 1-10, 1951.

Specific conductance: Maximum daily, 612 micromhos Apr. 8, 1952; minimum, 43 ppm June 21-30, July 1-10, 1951.

Water temperatures: Maximum observed, 82° F July 30, 1951, 8; minimum observed, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 6,000 ppm July 1, 1951; minimum daily, 2 ppm Jan. 21 to Feb. 4, 1951.

Sediment loads: Maximum daily, 20,800 tons Apr. 11, 1952; minimum daily, 1 ton Jan. 21 to Feb. 4, 1951.

REMARKS.--Prior to Jan. 30, 1951, samples were collected at bridge on S. Highway 40, 100 feet upstream from gaging station. Values reported for dissolved solids are residues on evaporation. Records of specific conductance and hardness available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243. No appreciable inflow between gaging station and sampling station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (residue at 180° C)		Hardness as CaCO ₃		Per- cent dissol- ed	So- dium ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25° C)	
															Parts per mil- lion	Tons per acre- foot	Calcium	Non- mag- nesium				
Oct. 1-10, 1951.....	266	9.4	0.04	33	13	37	4.0	154		58	22	0.4	0.4	--	255	0.35	197	136	10	36	1.4	423
Oct. 11-20.....	339	9.7	0.03	30	12	26	4.5	142		44	17	3	5	0.08	211	.28	193	124	8	30	1.0	350
Oct. 21-31.....	374	12	0.05	32	13	27	3.5	144		49	16	3	4	--	221	.30	223	134	16	30	1.0	364
Nov. 1-10.....	253	12	0.08	36	15	31	3.8	160		58	20	3	4	--	253	.34	193	152	20	30	1.1	414
Nov. 11-20.....	252	14	0.06	37	15	35	3.7	168		62	22	3	0	.07	270	.37	184	154	18	32	1.2	447
Nov. 21, 23, 26-29.....	258	15	0.05	37	16	36	3.7	172		65	20	3	7	.17	280	.38	195	158	18	33	1.2	461
Dec. 1-10.....	217	15	0.02	41	16	41	3.7	187		69	27	3	1	--	308	.42	180	168	16	34	1.4	501
Dec. 11-20.....	192	16	0.03	41	17	39	3.5	193		66	24	3	1	.18	304	.41	158	172	14	32	1.3	488
Dec. 21-31.....	199	15	0.04	36	14	35	3.2	170		57	21	3	5	--	268	.36	144	148	8	33	1.3	435
Jan. 1-10, 1952.....	189	15	0.03	38	16	39	2.5	180		65	24	3	1	--	303	.41	155	161	14	34	1.3	479
Jan. 11-20.....	236	16	0.03	37	15	34	2.1	174		58	19	3	1.2	.06	272	.37	173	154	12	32	1.2	431
Jan. 21-31.....	235	16	0.03	38	15	37	2.4	178		63	21	3	1	--	286	.39	197	156	10	34	1.3	452
Feb. 1-10.....	260	15	0.03	38	15	36	2.6	172		62	20	4	1.4	--	283	.38	199	156	16	33	1.3	449
Feb. 11-20.....	252	16	0.03	40	16	36	2.3	177		63	20	3	1	.06	286	.39	195	166	21	32	1.2	451
Feb. 21-29.....	243	15	0.03	39	16	36	2.4	176		64	21	3	1	--	284	.39	186	164	20	32	1.2	453
Mar. 1-10.....	249	16	0.04	39	18	38	2.5	179		65	22	3	1.1	--	294	.40	198	164	17	33	1.3	461
Mar. 11-20.....	282	15	0.06	38	17	37	2.7	174		66	22	4	9	.06	294	.40	208	165	22	32	1.3	457
Mar. 21-31.....	398	14	0.03	39	17	39	2.2	180		71	24	3	8	--	302	.41	325	168	20	33	1.3	465

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR WAYBELL, COLO.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952.--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 (residue at 180°C)		Hardness as CaCO ₃		Per- cent so- dium	So- dium ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	
															Parts per mil- lion	Tons per acre- foot	Calcium, mag- nesium	Non-carbon- ate					
Apr. 1-10, 1952	857	13	0.03	44	18	40	3.3	170		110	17	0.2	1.1	--	339	0.46	784	184	44	32	1.3	528	7.8
Apr. 11-20	3,629	14	.03	43	15	25	3.6	144		94	7.1	.4	3.3	0.03	278	.38	2,720	169	51	24	.8	428	7.7
Apr. 21-30	7,612	12	.16	24	11	12	3.2	114		44	3.5	.4	2.7	--	178	.24	3,660	105	12	19	.5	259	7.5
May 1-10	10,460	11	.22	23	8.0	7.0	2.4	100		29	2.5	.4	.9	--	137	.19	3,770	90	8	14	.3	197	7.6
May 11-20	8,597	11	.17	20	7.3	6.2	1.5	86		21	2.8	.4	.7	.04	117	.16	2,720	80	10	14	.3	171	7.6
May 21-31	6,336	13	.14	21	7.2	8.7	.9	88		22	2.4	.4	.7	--	129	.18	2,210	82	10	19	.4	192	7.4
June 1-10	11,110	11	.26	17	5.5	5.3	1.3	71		13	1.2	.4	.7	--	102	.14	3,060	65	7	15	.3	142	7.4
June 11-20	8,783	8.5	.19	13	4.1	4.5	1.0	60		9.5	1.4	.5	.7	.04	83	.11	1,970	50	0	16	.3	118	7.4
June 21-30	4,022	8.9	.07	15	4.9	7.2	1.0	64		15	3.5	.5	.7	--	95	.13	1,030	58	5	21	.4	146	7.5
July 1-10	1,974	9.2	.03	20	6.7	12	1.1	82		26	6.7	.5	.6	--	125	.17	686	78	10	25	.6	201	7.5
July 11-20	1,040	11	.04	24	9.9	17	1.9	104		33	11	.5	.8	.05	160	.22	449	100	16	26	.7	271	7.6
July 21-31	602	12	.14	31	12	25	2.5	136		44	17	.4	.7	--	214	.29	348	127	16	30	1.0	356	7.5
Aug. 1-10	635	11	.08	33	12	21	2.5	142		41	12	.4	.8	--	206	.28	353	132	16	25	.8	342	7.8
Aug. 11-20	589	9.9	.14	32	13	21	2.5	144		43	12	.4	.7	--	207	.28	329	134	16	25	.8	345	7.6
Aug. 21-31	414	7.0	.06	35	15	28	2.6	156		58	16	.5	.9	--	240	.33	268	149	21	29	1.0	406	7.7
Sept. 1-10	319	5.6	.05	36	15	32	2.5	158		60	21	.5	.8	--	252	.34	217	152	22	31	1.1	429	7.6
Sept. 11-20	225	3.6	.07	36	16	41	2.8	170		66	28	.5	.6	.09	276	.38	168	156	16	36	1.4	471	7.7
Sept. 21-30	183	4.0	.06	38	17	45	2.8	171		78	32	.5	.9	--	308	.42	152	165	25	37	1.5	518	7.7
Weighted average	2,013	11	0.16	23	8.2	11	1.9	97		31	4.8	0.4	1.1	--	146	0.20	794	91	12	20	0.5	219	--
a Represents 99.9 percent of runoff for water year October 1951 to September 1952.																							

a Represents 99.9 percent of runoff for water year October 1951 to September 1952.

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	172	14	7	356	42	33	250	15	9
2-----	190			320			240		
3-----	208			283			235		
4-----	240	250	162	236			230		
5-----	315	160	136	230			235		
6-----	370	30	28	311	17	12	225	7	4
7-----	351			299			210		
8-----	342			272			195		
9-----	338			258			180		
10-----	333			261			170		
11-----	338	32	29	272	26	18	180	9	5
12-----	333			275			190		
13-----	328			275			195		
14-----	342			283			195		
15-----	346			283			190		
16-----	333	16	15	268	31	21	190	7	4
17-----	342			196			190		
18-----	346			216			195		
19-----	342			220			195		
20-----	338			230			195		
21-----	338	43	46	275	--	--	195	--	--
22-----	342			280			200		
23-----	356			280			205		
24-----	356			280			200		
25-----	338			270			200		
26-----	365	43	46	260	--	--	190	7	4
27-----	405			250			190		
28-----	405			240			200		
29-----	443			240			205		
30-----	405			245			205		
31-----	365			--			200		
Total-	10,365	--	1,283	7,964	--	624	6,295	--	170
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-----	180	6	3	255	12	8	260	5	3
2-----	170			260			260		
3-----	165			260			250		
4-----	180			265			240		
5-----	195			265			240		
6-----	195	6	4	260	7	5	245	5	3
7-----	190			260			250		
8-----	200			260			250		
9-----	205			260			250		
10-----	210			260			245		
11-----	210	4	3	255	4	3	250	6	5
12-----	220			250			250		
13-----	230			250			245		
14-----	235			250			245		
15-----	230			250			245		
16-----	230	4	3	250	9	6	250	7	9
17-----	240			255			265		
18-----	250			260			280		
19-----	255			250			290		
20-----	260			245			300		
21-----	260	5	3	245	--	--	300	--	--
22-----	260			240			290		
23-----	260			235			290		
24-----	260			230			320		
25-----	260			230			350		
26-----	260	5	3	240	--	--	400	--	--
27-----	255			250			440		
28-----	250			260			470		
29-----	245			260			480		
30-----	245			--			510		
31-----	250			--			530		
Total-	7,055	--	101	7,310	--	160	9,490	--	151

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	608			8,380	261	5,910	8,580	216	5,000
2-----	640	12	21	8,790	260	6,170	8,720	156	3,670
3-----	670			9,060	273	6,680	9,060	168	4,110
4-----	700	161	304	9,920	260	6,960	9,610	180	4,670
5-----	750	820	1,660	10,700	315	9,100	11,100	300	8,990
6-----	800	1,220	2,640	11,500	390	12,100	13,200	300	10,700
7-----	850	1,290	2,960	12,100	270	8,820	13,200	200	7,130
8-----	950	3,200	8,210	12,100	250	8,170	12,800	166	5,740
9-----	1,200	2,120	6,870	11,200	300	9,150	12,700	151	5,180
10-----	1,410	1,690	6,430	10,700	241	6,960	12,100	165	5,390
11-----	2,290	2,920	8,800	9,080	213	5,220	11,400	164	5,050
12-----	2,570	1,710	11,900	7,780	200	4,200	11,200	156	4,720
13-----	2,840	1,350	10,400	8,020	216	4,680	10,700	158	4,560
14-----	3,020	1,200	9,780	8,910	226	5,440	9,970	148	3,980
15-----	3,840	1,400	14,500	9,750	254	6,690	9,250	162	4,050
16-----	4,180	1,290	14,600	10,100	208	5,670	8,910	138	3,320
17-----	3,360	900	8,160	10,200	153	4,210	8,480	130	2,980
18-----	3,480	580	5,450	8,670	198	4,630	6,540	128	2,280
19-----	4,690	1,200	15,800	7,050	184	3,500	5,760	96	1,490
20-----	5,820	1,250	19,600	6,410	143	2,470	5,620	84	1,430
21-----	6,630	1,000	17,900	6,700	194	3,510	5,620	97	1,470
22-----	7,780	850	17,900	7,570	287	5,870	4,940	93	1,240
23-----	6,630	800	10,700	6,540	160	2,830	4,440	83	995
24-----	5,840	370	5,830	5,500	134	1,990	4,130	75	836
25-----	6,480	400	7,000	5,080	151	2,070	4,020	68	738
26-----	7,310	420	8,300	5,080	154	2,110	4,270	66	991
27-----	8,000	470	10,200	5,700	141	2,170	3,630	98	960
28-----	8,500	410	9,410	6,060	177	2,900	3,370	62	564
29-----	9,490	346	8,870	6,430	155	2,690	3,000	53	429
30-----	9,460	310	7,920	7,160	177	3,420	2,800	54	408
31-----	--	--	--	7,680	201	4,280	--	--	--
Total--	120,980	--	264,157	260,220	--	160,570	239,120	--	103,051
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-----	2,690			762			471		
2-----	2,510			697			410		
3-----	2,260	40	244	710			358		
4-----	2,010			645	66	116	328	38	36
5-----	1,840			627			303		
6-----	1,760	390	1,850	573			287		
7-----	1,830	200	990	543			272		
8-----	1,840			531	--	e 100	261		
9-----	1,640			555			258		
10-----	1,360			710			247		
11-----	1,220	23	95	645			240	37	24
12-----	1,570			768	45	87	233		
13-----	1,410			801			222		
14-----	1,190			645			219		
15-----	1,040			555			222		
16-----	942	15	40	549	40	60	244		
17-----	854			555			233		
18-----	788			483			216	18	11
19-----	716			443			208		
20-----	671	--	e 20	443			216		
21-----	621			405			205		
22-----	585			421			196		
23-----	549	8	12	438	30	35	193	--	
24-----	507			405			187	--	
25-----	483			375			181	--	
26-----	477			405			181	--	
27-----	573	340	526	443			178	--	e 10
28-----	603	130	212	385			172	--	
29-----	658	750	sa 2,100	432	200	207	170	--	
30-----	730	2,000	3,940	432			168	--	
31-----	834	350	788	410	66	76	--	--	--
Total--	36,761	--	12,473	16,791	--	2,412	7,377	--	588

Total discharge for year (cfs-days) 729,608

Total load for year (tons) 545,740

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Particle-size analyses of suspended sediment, October 1951 to July 1952
 (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	Water discharge (cfs)	Suspended sediment												Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters								1.000		
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	
Oct. 3, 1951.....	4:00 p. m.	205	335	677	79	86	95	97	97	98	99	100	--	SBWCM	
Nov. 4.....	4:30 p. m.	236	12	--	--	--	--	--	--	69	78	94	98	S	
June 6, 1952.....	5:00 p. m.	13,600	252	840	38	47	58	70	84	87	96	98	99	SBWCM	
June 20.....	6:00 p. m.	5,580	107	--	--	--	--	--	--	87	93	96	99	S	
July 4.....	7:00 p. m.	1,920	62	--	--	--	--	--	--	65	84	92	95	S	

GREEN RIVER BASIN--Continued
LITTLE SNAKE RIVER NEAR LILY, COLO.

LOCATION --About 2 miles upstream from gaging station, which is 6 miles north of Lily, Moffat County, and 10 miles upstream from mouth.

DRAINAGE AREA --3,730 square miles, approximately (above gaging station).

RECORDS AVAILABLE --Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

EXTREMES, 1951-52 --Water temperatures: Maximum observed, 72°F July 24; minimum observed, 24°F Aug. 16-17, 24-25 1951; minimum, 129 ppm June 11-20, 1951.

Hardness (1950-51): Maximum, 588 ppm July 20, 1951; minimum, 84 ppm June 21-30, 1951.

Specific conductance (1950-51): Maximum daily, 1,530 micromhos July 20, 1951; minimum daily, 154 micromhos June 1, 1951.

Water temperatures: Maximum observed, 82°F Aug. 16, 1951; minimum observed, freezing point on many days during winter months.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (residue at 180°C)			Hardness as CaCO ₃		Percent sodium carbonate	Sedimentation ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 19-31, 1951...	107	18	0.07	30	8.3	91	3.8	200	104	28	0.4	1.4	0.11	378	0.51	109	109	0	63	3.8	596	8.0	18
Nov. 1-10.....	120	19	.05	39	9.6	79	3.4	208	109	24	.4	1.0	--	380	.52	123	137	0	55	2.9	599	8.0	8
Nov. 11-20.....	63.5	21	.01	56	15	74	7.6	234	134	26	.2	.5	.10	445	.61	76.3	201	10	43	2.3	674	7.9	10
Nov. 21, 27-30...	95.0	24	.03	60	17	67	6.0	256	122	22	.2	--	--	441	.60	113	220	10	39	2.0	664	8.0	10
Dec. 1-10.....	91.5	21	.02	56	15	56	1.8	220	104	18	.2	1.0	--	388	.53	95.9	201	20	37	1.7	581	7.9	5
Dec. 11-20.....	78.0	21	.02	58	15	54	1.8	224	101	22	.2	.8	.07	379	.52	79.8	206	22	36	1.6	576	7.9	7
Dec. 21-31.....	73.6	19	.04	54	13	46	1.8	208	86	18	.2	.8	--	339	.46	67.4	188	18	34	1.5	513	7.9	7
Jan. 1-10, 1952...	67.5	19	.05	54	12	43	1.4	208	82	14	.3	--	--	330	.45	60.1	184	7	33	1.4	500	8.0	7
Jan. 11-20.....	70.5	19	.05	51	12	45	1.7	206	87	14	.2	.4	.06	340	.46	64.7	176	8	35	1.5	519	8.0	10
Jan. 21-31.....	75.0	17	.02	55	14	44	2.2	212	88	15	.4	.8	--	338	.46	68.4	194	21	33	1.4	520	7.7	10
Feb. 1-10.....	81.0	19	.02	50	14	45	1.9	218	88	14	.4	.5	--	336	.46	73.5	182	4	35	1.5	518	7.8	10
Feb. 11-20.....	82.5	19	.02	54	13	44	2.4	208	88	15	.4	.6	.05	341	.46	76.0	188	18	33	1.4	530	7.9	10
Feb. 21-29.....	86.1	19	.02	52	13	47	2.1	220	91	15	.4	.6	--	338	.46	78.6	183	2	35	1.5	521	7.9	10
Apr. 17-19, 21-30	3,849	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	378	--	--
May 1-10.....	6,806	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	286	--	--
May 11-22.....	4,235	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	244	--	--
July 24-31.....	56.9	18	.03	68	20	98	5.3	226	217	33	.4	1.3	--	585	.80	89.9	252	66	45	2.7	885	7.4	8
Aug. 1-10.....	203	18	.25	80	18	120	5.3	240	265	36	.6	1.0	--	681	.93	373	274	77	48	3.1	1,010	7.5	20
Aug. 11-20.....	106	15	.05	60	19	112	4.1	240	214	34	.6	1.0	.11	588	.80	168	238	31	51	3.2	896	7.7	12
Aug. 21-31.....	65.2	17	.43	76	21	109	5.0	240	255	32	.6	.8	--	654	.89	115	276	80	46	2.9	973	7.6	25
Sept. 1-10.....	53.6	13	.04	66	20	140	4.8	258	253	44	.5	.9	--	680	.92	98.4	246	35	55	3.9	1,040	7.8	9
Sept. 11-20.....	21.5	12	.12	74	24	150	4.3	242	315	52	.4	1.4	.16	746	1.01	43.3	283	85	53	3.3	1,110	8.0	7
Sept. 21-30.....	18.0	9.0	.12	69	25	164	4.8	229	351	61	.4	1.6	--	802	1.09	39.0	275	88	56	4.3	1,200	8.0	7

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

LITTLE SNAKE RIVER NEAR LILY, COLO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GREEN RIVER BASIN--Continued

GREEN RIVER AT JENSEN, UTAH

LOCATION.--At bridge on U. S. Highway 40 at Jensen, Utah County, 15 miles below gaging station, which is 1 mile below Cub Creek and Chew Ranch, 4 miles southeast of Dinosaur National Monument headquarters, 8½ miles northeast of Jensen, and 12 miles upstream from Brush Creek.

RECORDS AVAILABLE: Chemical analyses: June 1947 to September 1952.

EXTREMES: 1951-52.--Dissolved solids: Maximum, 635 ppm Nov. 21-30; minimum, 175 ppm June 11-20.

Specific conductance: Maximum daily, 1953 microhos May 31; minimum daily, 1953 microhos Feb. 17; minimum daily, 1947 microhos May 31.

Water temperatures: Maximum observed, 70°F on several days; minimum observed, 36°F on several days during January and March.

Water temperatures: Maximum observed, 70°F on several days; minimum observed, 36°F on several days during January and March.

EXTREMES: 1947-52.--Dissolved solids: Maximum, 887 ppm Dec. 1-10, 1949; minimum, 161 ppm June 1-10, 1948.

Specific conductance: Maximum daily, 1949 microhos May 31; minimum daily, 1949 microhos May 31.

Water temperatures: Maximum observed, 75°F on several days in August 1949; minimum observed, 35°F on several days in January 1950 and 1951.

REMARKS: 1949-52.--Dissolved solids: Maximum observed, 75°F on several days in August 1949; minimum observed, 35°F on several days in January 1950 and 1951. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for gaging station near Jensen for water year October 1951 to September 1952 given in WSP 1243. No appreciable inflow between water sampling point and gaging station except during periods of heavy local rain.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (microhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1951..	2,589	--	--	65	--	--	76	198	219	--	--	1.4	0.20	531	0.72	3,710	--	107	--	799	--	--
Oct. 11-20	2,131	13	--	--	26	--	--	--	--	30	--	--	--	534	.73	3,100	--	107	38	2.0	776	7.8
Oct. 21-31	2,031	--	--	--	--	--	--	--	--	--	--	--	--	543	.74	2,980	--	--	--	--	809	--
Nov. 1-10	1,731	--	--	--	--	--	66	--	--	--	--	1.9	--	584	.79	2,730	--	--	--	--	849	--
Nov. 11-20	1,506	11	--	76	34	--	--	222	238	29	--	--	--	589	.80	2,080	330	148	30	1.6	869	7.7
Nov. 21-30	1,126	--	--	--	--	--	--	--	--	--	--	--	--	635	.86	1,930	--	--	--	--	879	--
Dec. 1-10	1,971	--	--	--	--	--	--	--	--	--	--	--	--	828	.85	2,180	--	--	--	--	885	--
Dec. 11-20	1,078	12	--	83	35	67	--	240	243	32	--	2.1	--	619	.84	2,000	351	154	29	1.6	865	7.6
Dec. 21-31	1,258	--	--	--	--	--	--	--	--	--	--	--	--	604	.83	1,900	--	--	--	--	854	--
Jan. 1-10, 1952..	1,613	--	--	--	--	--	--	--	--	--	--	--	--	603	.83	1,900	--	--	--	--	854	--
Jan. 11-20	1,259	13	--	77	29	66	--	235	219	29	--	.8	1.10	581	.78	1,910	311	126	31	1.6	830	7.7
Jan. 21-31	1,297	--	--	--	--	--	--	--	--	--	--	--	--	580	.79	2,030	--	--	--	--	830	--
Feb. 1-10	1,335	--	--	--	--	--	--	--	--	--	--	--	--	613	.83	2,210	--	--	--	--	886	--
Feb. 11-20	1,288	11	--	88	29	68	--	218	248	34	--	2.4	--	593	.81	2,080	336	160	30	1.6	833	7.8
Feb. 21-29	1,237	--	--	--	--	--	--	--	--	--	--	--	--	574	.78	1,930	--	--	--	--	843	--

GREEN RIVER BASIN--Continued

GREEN RIVER AT JENSEN, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Mar. 1-10, 1952.	1,303	--	--	70	22	--	--	--	251	--	--	--	--	584	0.79	2,050	--	--	--	844	--	--
Mar. 11-20.....	1,391	9.8	--	--	--	93	--	185	--	38	--	2.0	--	592	.81	2,220	285	114	43	873	8.1	--
Mar. 21-31.....	1,715	--	--	--	--	--	--	--	--	--	--	--	--	607	.83	2,810	--	--	--	886	--	--
Apr. 1-10.....	7,098	--	--	--	--	--	--	--	--	--	--	--	--	547	.74	10,480	--	--	--	810	--	--
Apr. 11-18.....	12,210	15	--	56	21	75	--	180	184	26	--	4.9	0.09	478	.63	13,760	226	78	42	727	7.9	--
Apr. 19-20.....	14,100	13	--	36	14	13	--	128	57	10	--	1.6	--	205	.28	7,800	152	48	15	344	8.1	--
Apr. 21-30.....	19,300	--	--	--	--	--	--	--	--	--	--	--	--	232	.32	12,090	--	--	--	335	--	--
May 1-10.....	23,860	--	--	--	--	--	--	--	--	--	--	--	--	216	.29	16,830	--	--	--	333	--	--
May 11-20.....	23,680	13	--	43	13	12	--	148	55	7.5	--	1.0	--	223	.30	14,240	161	40	14	361	7.7	--
May 21-31.....	17,380	--	--	--	--	--	--	--	--	--	--	--	--	206	.28	9,670	--	--	--	320	--	--
June 1-20.....	24,520	10	--	35	9.4	9.2	--	115	39	6.8	--	2.6	--	175	.24	11,590	126	32	14	283	7.7	--
June 21-29.....	12,850	9.1	--	--	--	--	--	118	36	6.2	--	--	--	412	.56	12,290	120	12	15	291	7.7	--
June 30.....	17,050	9.4	--	57	19	55	--	190	146	21	--	3.6	--	416	.57	8,520	220	64	35	630	7.7	--
July 1-10.....	17,582	10	--	58	19	55	--	190	144	21	--	4.2	--	396	.54	5,600	222	67	35	650	7.7	--
July 11-20.....	5,236	10	--	55	19	52	--	176	146	22	--	2.2	.11	410	.56	3,670	215	71	35	622	7.9	--
July 21-31.....	3,314	9.9	--	57	19	54	--	192	141	22	--	3.4	--	410	.56	3,670	220	62	35	646	7.6	--
Aug. 1-10.....	3,290	9.5	--	52	19	53	--	172	141	23	--	3.3	--	396	.54	3,520	208	66	36	624	7.8	--
Aug. 11-20.....	3,121	8.6	--	58	23	60	--	178	175	28	--	3.3	--	453	.62	3,820	239	93	35	705	7.8	--
Aug. 21-31.....	2,325	--	--	--	--	--	--	--	--	--	--	--	--	506	.69	3,180	--	--	--	772	--	--
Sept. 1-10.....	1,884	--	--	--	--	--	--	--	--	--	--	--	--	488	.66	2,500	--	--	--	741	--	--
Sept. 11-20.....	1,500	6.1	--	92	27	66	--	176	208	33	--	1.5	--	506	.69	2,050	266	122	35	778	7.6	--
Sept. 21-30.....	1,316	--	--	--	--	--	--	--	--	--	--	--	--	496	.67	1,780	--	--	--	755	--	--
Weighted average	b6,193	--	--	--	--	--	--	--	--	--	--	--	--	310	0.42	5,180	--	--	--	477	--	--

a Not included for computation of weighted averages.

b Represents 99 percent of runoff for water year October 1951 to September 1952.

GREEN RIVER BASIN--Continued

GREEN RIVER AT JENSEN, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement at approximately 12:00 m./

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH

LOCATION.--At gaging station, 1 mile below Cub Creek and Chew Ranch, 4 miles southeast of Dinosaur National Monument headquarters, 6½ miles north of Jensen, Uintah County, and 12 miles upstream from Brush Creek.

RECORDS AVAILABLE.--Sediment records: May 1948 to September 1952.

EXTREMES, 1951-52.--Sediment concentrations: Maximum daily, 15,800 ppm Apr. 9; minimum daily, 23 ppm Sept. 27-30.

Sediment loads: Maximum daily, 567,000 tons Apr. 9; minimum daily, 78 tons Sept. 27-30.

EXTREMES, 1948-52.--Sediment concentrations: Maximum daily, 15,800 ppm Apr. 9, 1952; minimum daily 22 ppm Sept. 21-30, 1951.

Sediment loads: Maximum daily, 567,000 tons Apr. 9, 1952; minimum daily, 66 tons Jan. 1-6, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1243. For records of chemical analyses and water temperatures see Green River at Jensen, Utah, page 71.

Suspended sediment, water year October 1951 to September 1952

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-----	1,510	20	a 80	2,220	500	a 3,000	1,340		
2-----	1,530	50	a 210	2,060	399	2,220	1,450		
3-----	1,830	4,100	a 21,000	1,810	330	a 1,600	1,350		
4-----	2,660	11,000	79,000	1,690	490	2,240	1,430	54	207
5-----	3,680	12,000	a 120,000	1,680	370	1,680	1,580		
6-----	3,110	4,400	36,900	1,580	160	683	1,370		
7-----	2,920	3,720	29,300	1,450	170	666	1,140	65	193
8-----	2,990	3,720	30,000	1,550	440	1,840	1,050		
9-----	2,920	3,660	28,900	1,630	670	2,950	1,020	--	
10-----	2,740	2,290	24,300	1,640	600	2,660	980	--	
11-----	2,660	2,660	a 19,000	1,610	500	2,170	960	--	
12-----	2,450	1,400	a 9,300	1,670	510	2,300	1,000	--	
13-----	2,290	870	5,380	1,720	560	a 2,600	1,020	--	
14-----	2,170	900	5,270	1,660	450	a 2,000	1,060	--	
15-----	2,070	970	5,420	1,540	300	a 1,200	1,120	60	e 170
16-----	2,010	--		1,350			1,130	--	
17-----	1,980	738		1,260			1,130	--	
18-----	1,980	--	e 3,700	830			1,120	--	
19-----	1,960	--		715	129	336	1,120	--	
20-----	1,940	--		702			1,120	--	
21-----	1,900	--		932			1,120		
22-----	1,890	--		988			1,130		
23-----	1,880	--	e 2,600	956			1,170		
24-----	1,880	--		1,070			1,200		
25-----	1,900	--		1,150	75	221	1,220		
26-----	2,000	--		1,180			1,250	50	170
27-----	2,160	--		1,190			1,300		
28-----	2,190	--		1,240	--		1,350		
29-----	2,190	--	e 3,200	1,240		e 220	1,400		
30-----	2,150	--		1,310	--		1,400		
31-----	2,200	--		--	--	--	1,300		
Total-	69,740	--	464,760	41,623	--	33,811	37,330	--	5,538

e Estimated.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	1,100			1,250			1,260		
2-----	980			1,260			1,280		
3-----	900	56	135	1,290			1,300		
4-----	800			1,320			1,300		
5-----	780			1,380	108	390	1,300	127	443
6-----	800			1,400			1,300		
7-----	850			1,400			1,300		
8-----	940			1,400			1,300		
9-----	980			1,350			1,330		
10-----	1,000			1,300			1,330		
11-----	1,050	49	142	1,290			1,320	131	469
12-----	1,100			1,290	259	910	1,320		
13-----	1,200			1,290			1,320		
14-----	1,250			1,290			1,340		
15-----	1,300			1,260			1,380		
16-----	1,310			1,270			1,400	160	610
17-----	1,340			1,290			1,420		
18-----	1,350			1,300			1,460		
19-----	1,350	74	264	1,300	113	393	1,480		
20-----	1,340			1,300			1,470		
21-----	1,320			1,290			1,430		
22-----	1,300			1,290			1,380		
23-----	1,290			1,280			1,240		
24-----	1,300			1,240			1,370	106	405
25-----	1,350			1,200			1,560		
26-----	1,330			1,200	60	198	1,470		
27-----	1,310			1,200			1,460		
28-----	1,290	119	416	1,210			1,480		
29-----	1,280			1,220			1,680	190	a 760
30-----	1,250			--	--	--	2,550	320	a 1,500
31-----	1,250			--	--	--	3,240	700	a 4,800
Total--	35,990	--	7,376	37,360	--	13,110	45,800	--	43,680
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-----	3,080	2,950	24,500	26,700	4,700	339,000	19,100	1,490	76,800
2-----	3,620	3,000	229,300	25,400	4,100	a280,000	20,700	1,550	86,600
3-----	4,140	3,180	35,500	25,800	4,000	a280,000	21,700	1,580	92,600
4-----	3,860	4,550	47,400	26,100	3,400	a240,000	23,500	1,640	104,000
5-----	4,540	5,230	64,100	27,700	2,790	209,000	25,200	1,900	128,900
6-----	5,340	5,800	a 84,000	29,600	2,920	233,000	27,300	2,050	151,000
7-----	7,700	6,800	a 140,000	31,500	2,790	237,000	30,800	1,710	142,000
8-----	12,700	13,000	a 450,000	32,800	2,600	230,000	30,500	1,200	a 99,000
9-----	13,300	15,800	567,000	32,400	2,380	208,000	30,800	1,300	a 110,000
10-----	12,700	14,700	504,000	30,600	2,300	a190,000	31,200	1,280	108,000
11-----	12,000	14,400	467,000	28,700	2,200	a170,000	30,500	--	
12-----	11,600	12,000	a 360,000	24,100	2,190	143,000	29,500	--	
13-----	10,800	9,980	291,000	21,400	--	--	28,700	--	e 83,000
14-----	10,700	6,230	180,000	21,100	--	--	26,800	--	
15-----	11,800	5,820	179,000	21,900	--	--	23,900	--	
16-----	14,400	7,200	a280,000	23,500	--	--	21,600	--	
17-----	14,200	7,500	a290,000	25,400	--	e130,000	20,100	--	
18-----	12,200	5,780	190,000	26,300	--	--	18,500	--	
19-----	12,800	5,610	194,000	23,600	--	--	15,800	1,050	
20-----	15,400	6,970	290,000	20,500	--	--	14,300	--	e 43,000
21-----	16,900	7,420	339,000	19,200	--	--	13,200	--	
22-----	18,700	6,600	a330,000	19,000	1,800	92,300	12,500	--	
23-----	19,500	6,000	a320,000	19,600	1,800	a 95,000	11,400	--	
24-----	18,000	5,200	a250,000	18,300	1,680	83,000	10,600	950	27,200
25-----	16,600	4,400	197,000	17,000	1,800	82,600	10,300	950	26,400
26-----	16,900	3,700	169,000	16,000	810	35,000	10,000	--	
27-----	18,800	2,750	140,000	15,400	610	25,400	10,500	--	e 29,000
28-----	20,500	2,700	149,000	15,900	880	37,800	11,500	--	
29-----	22,000	4,190	249,000	16,400	1,420	62,900	12,200	1,850	60,900
30-----	25,100	4,600	312,000	16,800	1,530	69,400	11,900	1,480	47,600
31-----	--	--	--	17,700	1,450	69,300	--	--	--
Total--	389,880	--	7,141,800	716,400	--	4,581,700	604,600	--	2,106,100

e Estimated.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	10,900	1,400	41,200	3,340	--	--	2,150	--	--
2-----	9,900	--	--	3,350	--	--	2,090	426	--
3-----	8,840	--	--	3,320	--	e 7,500	2,150	--	e 2,800
4-----	7,970	--	e 24,000	3,320	--	--	2,150	--	--
5-----	7,260	--	--	3,230	--	--	1,960	--	--
6-----	6,720	600	10,900	3,360	--	--	1,850	--	--
7-----	6,350	530	9,090	3,230	--	--	1,750	--	--
8-----	6,180	430	7,170	3,340	--	e 9,100	1,690	--	e 1,400
9-----	5,960	380	6,110	3,280	--	--	1,640	--	--
10-----	5,740	400	6,200	3,130	--	--	1,590	--	--
11-----	5,450	353	5,190	3,140	--	--	1,530	--	--
12-----	5,270	--	--	3,440	--	--	1,510	153	--
13-----	5,400	--	--	3,660	--	--	1,480	--	--
14-----	5,540	--	--	3,630	--	e 15,000	1,480	--	e 520
15-----	5,360	--	e 7,600	3,440	2,050	--	1,480	--	--
16-----	5,700	--	--	3,240	--	--	1,480	--	--
17-----	5,540	--	--	2,930	--	--	1,490	--	--
18-----	4,980	380	5,110	2,690	--	--	1,520	--	--
19-----	4,770	260	3,350	2,580	--	--	1,530	--	--
20-----	4,350	269	3,160	2,460	95	659	1,500	44	178
21-----	3,960	298	3,190	2,400	--	--	1,460	--	--
22-----	3,650	500	a 4,900	2,370	--	--	1,410	--	--
23-----	3,470	600	a 5,600	2,280	--	--	1,390	--	--
24-----	3,300	600	a 5,300	2,300	--	--	1,340	--	--
25-----	3,140	652	5,530	2,320	--	--	1,310	44	160
26-----	3,140	615	5,210	2,290	--	--	1,280	--	--
27-----	3,000	690	5,590	2,200	--	e 4,500	1,260	--	--
28-----	2,920	625	4,930	2,320	--	--	1,260	--	--
29-----	3,230	605	5,280	2,400	--	--	1,240	23	78
30-----	3,260	630	5,550	2,390	--	--	1,210	--	--
31-----	3,380	1,050	9,580	2,300	--	--	--	--	--
Total-	164,630	--	299,740	89,680	--	217,454	47,100	--	26,122

Total discharge for year (cfs-days) 2,280,133

Total load for year (tons) 14,941,191

e Estimated.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR JENSEN, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952

(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	Water discharge (cfs)	Water temperature (° F)	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. 15, 1951 ..	5:00 p. m.	2,050		940	1,670	72	82	91	95	97	98	--	--																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

GREEN RIVER BASIN--Continued

WHITE RIVER NEAR WATSON, UTAH

LOCATION --At gaging station, just downstream from Evacuation Creek, and 7 miles north of Watson, Uintah County.

DRAINAGE AREA --4,020 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

EXTREMES, 1951-52--Dissolved solids: Maximum, 957 ppm Apr. 7-8; minimum, 268 ppm June 1-10, 11, 14-20.

Specific conductance: Maximum observed, 1,320 micromhos Apr. 7; minimum daily, 374 micromhos June 22.

Water temperatures: Maximum observed, 78° F on several days during July to September; minimum observed, freezing point on many days during November to April.

EXTREMES, 1950-52--Dissolved solids: Maximum, 957 ppm Apr. 7-8, 1952; minimum, 230 ppm June 21-30, 1951.

Specific conductance: Maximum daily, 1,320 micromhos Apr. 7, 1952; minimum daily, 319 micromhos June 29, 1951.

Water temperatures: Maximum observed, 80° F July 3, 1951; minimum observed, freezing point on many days during winter months.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952.

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 at 180° C)		Hardness as CaCO ₃		Percent sodium in solution	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium					Non-carbonate
Oct. 1-10, 1951...	413	--	--	--	--	--	--	--	--	--	--	--	--	562	0.76	627	--	88	--	844	--	
Oct. 11-20 ..	393	18	71	23	--	76	--	224	161	60	--	0.4	0.11	502	.66	533	272	88	38	2.0	777	7.6
Oct. 21-31 ..	419	--	--	--	--	--	--	--	--	--	--	--	--	553	.75	626	--	--	--	--	832	--
Nov. 1-10 ..	379	--	--	--	--	--	--	--	--	--	--	--	--	526	.72	538	--	--	--	--	818	--
Nov. 11-20 ..	364	19	72	24	--	74	--	212	168	64	--	.1	--	536	.73	527	278	104	37	1.9	831	7.8
Nov. 21-30 ..	404	--	--	--	--	--	--	--	--	--	--	--	--	541	.74	590	--	--	--	--	829	--
Dec. 1-10 ..	347	--	--	--	--	--	--	--	--	--	--	--	--	607	.83	569	--	--	--	--	925	--
Dec. 11-20 ..	338	21	89	32	--	80	--	234	205	86	--	1.0	--	648	.88	591	354	162	33	1.8	982	7.8
Dec. 21-31 ..	339	--	--	--	--	--	--	--	--	--	--	--	--	534	.73	489	--	--	--	--	837	--
Jan. 1-10, 1952..	314	--	--	--	--	--	--	--	--	--	--	--	--	662	.90	561	--	--	--	--	1,020	--
Jan. 11-20 ..	348	17	77	24	--	72	--	218	164	69	--	1.2	.04	552	.75	519	290	112	35	1.8	851	7.7
Jan. 21-31 ..	321	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	892	--
Feb. 1-10 ..	337	--	--	--	--	--	--	--	--	--	--	--	--	583	.79	530	--	--	--	--	898	--
Feb. 11-20 ..	337	17	80	26	--	85	--	234	180	76	--	7.3	--	586	.80	533	306	115	38	2.1	932	7.4
Feb. 21-29 ..	332	--	--	--	--	--	--	--	--	--	--	--	--	587	.80	528	--	--	--	--	882	--
Mar. 1-10 ..	332	--	--	--	--	--	--	--	--	--	--	--	--	572	.78	513	--	--	--	--	870	--
Mar. 11-20 ..	327	13	77	25	--	93	--	222	201	72	--	7.1	--	606	.82	535	295	113	41	2.4	945	7.9
Mar. 21-31 ..	347	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	994	--
Apr. 1-6, 9-10 ..	1,225	--	--	--	--	--	--	--	--	--	--	--	--	685	.93	2,270	--	--	--	--	1,030	--
Apr. 7-8 ..	2,755	--	--	--	--	--	--	--	--	--	--	--	--	937	1.30	7,120	--	--	--	--	1,900	--
Apr. 11-20 ..	1,136	12	89	36	--	98	--	256	293	46	--	2.7	.09	722	.98	2,210	370	160	36	2.2	1,050	7.7
Apr. 21-23 ..	1,047	15	82	32	--	84	--	277	213	37	--	2.3	--	614	.84	1,740	336	109	35	2.0	983	7.6
Apr. 24-30 ..	1,293	15	63	26	--	66	--	235	159	29	--	9.8	--	479	.65	1,670	264	72	35	1.8	733	7.8

a Not included for computation of the weighted averages.

May 1-10, 1952...	2,473	14	53	24	46	133	124	22	14	418	57	2,780	230	72	30	1.3	657	7.9	20
May 11-20	2,761	11	59	19	43	231	90	22	5.5	564	.50	2,710	225	36	29	1.2	649	7.7	--
May 21-31	2,058	--	--	--	--	--	--	--	--	567	.50	2,040	--	--	--	--	585	--	--
June 1-10	3,864	--	--	--	--	--	--	--	--	268	.36	2,800	--	--	--	--	429	--	--
June 11, 14-20...	4,282	14	54	14	20	200	48	14	2.3	268	.36	3,110	192	28	18	.6	429	7.6	--
June 12-13	4,960	18	56	15	38	210	70	20	14	350	.48	4,690	201	29	29	1.2	593	7.5	--
June 21-30	2,295	--	--	--	--	--	--	--	--	300	.41	1,860	--	--	--	--	500	--	--
July 1-6, 8-10 ..	1,136	--	--	--	--	--	--	--	--	351	.48	1,080	--	--	--	--	558	--	--
July 7	1,380	--	--	--	--	--	--	--	--	621	.84	2,310	--	--	--	--	926	--	--
July 11-20	1,758	19	64	22	70	254	128	43	.8	472	.64	866	250	42	38	1.9	786	7.5	--
July 21-31	563	--	--	--	--	--	--	--	--	489	.66	734	--	--	--	--	782	--	--
Aug. 1-10	672	19	84	29	76	269	182	43	28	588	.80	1,070	328	108	33	1.8	929	7.3	--
Aug. 11-20	881	22	94	34	99	487	139	40	8.0	663	.90	1,580	374	0	37	2.2	1,100	7.4	--
Aug. 21-31	703	17	76	27	66	250	174	39	2.7	528	.72	1,000	300	96	32	1.6	840	7.7	--
Sept. 1-10	653	--	--	--	--	--	--	--	--	518	.70	913	--	--	--	--	809	--	--
Sept. 11-18	576	17	71	26	62	216	162	50	2.8	510	.69	793	284	107	32	1.6	802	7.8	--
Sept. 19-30	467	--	--	--	--	--	--	--	--	532	.72	871	--	--	--	--	877	--	--
Weighted average	b 996	--	--	--	--	--	--	--	--	442	0.60	1,190	--	--	--	--	699	--	--

b Represents 98 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

WHITE RIVER NEAR WATSON, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement at approximately 3:30 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	35	32	31	31	31	34	52	60	68	74	70
2	58	36	34	--	31	31	34	53	62	68	72	70
3	52	33	35	--	32	32	33	--	62	68	76	70
4	52	34	32	31	32	34	32	53	62	66	78	78
5	50	38	32	31	31	34	34	54	62	68	72	76
6	50	40	--	31	32	34	34	54	62	68	72	78
7	55	40	--	31	31	32	42	53	65	66	74	78
8	53	35	32	31	32	33	32	52	65	68	74	72
9	52	34	31	32	31	--	34	53	65	66	78	72
10	52	38	31	31	33	32	32	54	68	68	72	74
11	50	36	31	31	32	33	33	58	67	66	72	72
12	52	--	31	32	31	32	34	58	65	66	72	72
13	52	35	31	31	31	33	34	60	68	68	76	70
14	52	33	32	32	32	32	34	60	68	70	74	70
15	54	32	32	31	31	32	33	50	65	70	78	68
16	52	31	--	32	33	34	32	52	62	68	78	68
17	--	31	--	33	32	--	50	52	68	70	76	68
18	55	31	--	33	33	33	50	53	66	70	78	70
19	50	35	34	33	32	34	50	54	68	70	78	74
20	50	31	32	32	31	32	50	52	62	68	76	74
21	48	32	31	32	31	32	52	53	64	76	74	72
22	42	35	31	33	32	33	50	--	60	68	78	72
23	42	35	32	32	32	33	50	53	60	75	76	74
24	45	32	32	33	31	33	52	54	64	75	72	72
25	45	35	33	32	31	33	52	54	62	75	78	72
26	44	32	32	31	31	33	52	53	60	75	76	78
27	45	31	32	31	32	34	53	55	62	75	78	76
28	45	32	32	32	33	34	53	58	62	72	76	76
29	40	32	32	32	33	34	52	58	68	76	76	72
30	40	31	34	31	--	35	54	60	68	78	72	72
31	38	--	32	31	--	33	--	60	--	78	74	--
Average	49	34	32	32	32	33	42	55	64	70	75	73

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH

LOCATION.--At gaging station, 2 3/4 miles upstream from Willow Creek and 3 miles southwest of Ouray, Uintah County.

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

Sediment records: December 1950 to September 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1951	3,289	--	--	--	--	--	--	--	--	--	--	--	--	633	0.86	5,620	--	--	--	--	919	--
Oct. 11-20,	3,089	13	--	68	30	90	--	206	251	40	--	1.1	--	604	.82	5,040	293	124	40	2.3	892	8.0
Oct. 21-23, 27-28, 30-31,	3,909	--	--	--	--	--	--	--	--	--	--	--	--	678	.92	7,160	--	--	--	--	969	--
Nov. 2, 4, 6, 8, 10	2,938	--	--	--	--	--	--	--	--	--	--	--	--	622	.85	4,930	--	--	--	--	894	--
Nov. 11-20,	2,625	13	76	76	36	80	--	228	257	40	--	.8	--	642	.87	4,550	338	150	34	1.9	931	8.1
Nov. 21-30,	2,368	--	--	--	--	--	--	--	--	--	--	--	--	670	.91	4,280	--	--	--	--	970	--
Apr. 4-5, 9-10, 1952,	14,720	17	97	97	36	110	--	228	368	41	--	2.2	0.22	804	1.09	31,950	390	203	38	2.4	1,140	7.6
Apr. 19, 23,	16,600	18	72	72	24	55	--	218	175	25	--	3.4	--	493	.67	22,100	278	100	30	1.4	734	7.9
May 2, 12, 17, 23	31,700	12	52	52	15	33	--	198	80	12	--	.4	--	302	.41	25,850	191	29	27	1.0	475	7.7
June 3, 9, 14, 23	32,480	11	40	40	12	21	--	152	56	8.0	--	.4	--	224	.30	19,640	150	25	23	.7	351	7.8
July 10-20,	7,273	--	--	--	--	--	--	--	--	--	--	--	--	384	.52	7,540	--	--	--	--	602	--
July 21-31,	4,656	--	--	--	--	--	--	--	--	--	--	--	--	434	.59	5,430	--	--	--	--	690	--
Aug. 1-8,	4,728	--	--	--	--	--	--	--	--	--	--	--	--	516	.70	6,580	--	--	--	--	767	--
Aug. 14-20,	4,861	--	--	--	--	--	--	--	--	--	--	--	--	515	.70	6,900	--	--	--	--	763	--
Aug. 21-31,	4,316	--	--	--	--	--	--	--	--	--	--	--	--	576	.78	6,120	--	--	--	--	841	--
Sept. 1-10,	3,728	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	833	--
Sept. 11-15,	2,728	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	674	--
Sept. 16-30,	2,373	--	--	--	--	--	--	--	--	--	--	--	--	585	.80	3,750	--	--	--	--	879	--

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	1,940	150	786	3,460	1,010	9,440	2,450	448	2,850
2-----	1,960	200	1,080	3,390	833	7,620	2,530	448	3,050
3-----	2,140	520	3,000	3,220	800	a7,000	2,560	378	2,600
4-----	2,870	4,150	32,200	3,110	798	6,700	2,650	345	2,470
5-----	3,460	6,420	60,000	2,880	750	a5,800	2,670	450	3,240
6-----	4,630	7,330	91,600	2,860	720	5,560	2,700	600	4,370
7-----	4,440	10,100	121,000	2,740	600	a4,400	2,700	520	3,790
8-----	3,930	11,100	118,000	2,650	447	3,200	2,600	380	2,670
9-----	3,740	7,480	75,500	2,600	403	2,830	2,100	300	a1,700
10-----	3,780	4,300	43,900	2,680	408	2,950	1,300	230	a810
11-----	3,640	3,300	32,400	2,770	531	3,970	1,350	180	a660
12-----	3,510	3,700	35,100	2,740	402	2,970	1,420		
13-----	3,280	3,210	28,400	2,780	498	3,740	1,500		
14-----	3,150	1,920	16,300	2,860	457	3,530	1,550		
15-----	3,010	1,530	12,400	2,870	510	3,950	1,600	131	558
16-----	2,920	1,050	8,280	2,720	400	2,940	1,650		
17-----	2,840	980	7,510	2,570	410	2,840	1,750		
18-----	2,840	880	6,750	2,450	452	2,990	1,800	135	a660
19-----	2,840	790	6,060	2,380	524	3,370	1,900	135	a690
20-----	2,860	731	5,640	2,110	770	a4,400	2,000	137	758
21-----	2,860	732	5,650	2,270	880	a5,400	2,100	--	
22-----	2,900	607	4,750	2,250	828	5,030	2,200	--	
23-----	2,920	549	4,330	2,340	649	4,100	2,200	--	
24-----	2,950	550	a4,400	2,330	650	a4,100	2,250	--	
25-----	2,930	480	3,800	2,340	663	4,190	2,250	--	
26-----	3,230	1,600	14,000	2,380	630	4,050	2,300	--	b940
27-----	6,130	14,900	247,000	2,450	570	3,770	2,350	--	
28-----	5,220	11,500	162,000	2,440	460	3,030	2,400	150	
29-----	3,950	5,300	a57,000	2,440	440	a2,900	2,400	--	
30-----	3,760	2,100	21,300	2,440	425	2,800	2,450	--	
31-----	3,570	1,050	10,100	--	--	--	2,500	--	
Total-	104,000	--	1,240,216	79,520	--	129,570	66,180	--	43,166
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-----	2,200	--	--	2,200	100	594	2,200	--	--
2-----	2,100	--	--	2,200	--	--	2,200	--	--
3-----	2,000	--	--	2,250	--	--	2,150	--	--
4-----	1,800	--	--	2,300	--	--	2,200	--	--
5-----	1,700	--	--	2,400	--	--	2,200	--	--
6-----	1,550	--	--	2,450	--	--	2,100	--	--
7-----	1,450	--	--	2,500	--	--	2,230	116	698
8-----	1,450	--	--	2,600	85	597	2,250	--	--
9-----	1,450	--	--	2,500	--	--	2,300	--	--
10-----	1,450	--	--	2,300	--	--	2,300	--	--
11-----	1,450	--	--	2,250	--	--	2,350	--	--
12-----	1,600	--	--	2,250	--	--	2,300	--	--
13-----	1,800	--	--	2,250	--	--	2,300	--	--
14-----	2,050	131	725	2,250	--	--	2,300	152	944
15-----	2,150	--	--	2,300	--	--	2,300	--	--
16-----	2,250	--	--	2,300	--	--	2,300	--	--
17-----	2,350	--	--	2,300	--	--	2,350	--	--
18-----	2,400	--	--	2,300	--	--	2,400	--	--
19-----	2,350	--	--	2,300	--	--	2,450	--	--
20-----	2,350	--	--	2,300	--	--	2,500	--	--
21-----	2,350	--	--	2,350	83	527	2,500	--	--
22-----	2,370	131	838	2,300	--	--	2,500	--	--
23-----	2,350	--	--	2,200	--	--	2,450	--	--
24-----	2,350	--	--	2,200	--	--	2,400	--	--
25-----	2,350	--	--	2,200	--	--	2,350	--	--
26-----	2,300	--	--	2,200	--	--	2,500	--	--
27-----	2,380	--	--	2,200	--	--	2,600	--	--
28-----	2,250	--	--	2,200	--	--	2,800	--	--
29-----	2,250	--	--	2,200	159	944	3,000	--	--
30-----	2,280	--	--	--	--	--	3,300	--	--
31-----	2,200	--	--	--	--	--	3,800	--	--
Total-	63,170	--	c 23,000	66,550	--	c 17,000	75,880	--	c 34,000

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curves.

c Includes loads for missing days computed from water-sediment discharge curves.

f Stage discharge relation affected by ice Dec. 6-Apr. 4.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	5,400	--	--	29,800	--	--	29,000	--	--
2-----	7,000	--	--	30,800	5,460	454,000	30,400	--	--
3-----	13,500	--	--	31,300	--	--	31,500	2,000	170,000
4-----	11,000	1,500	44,600	32,600	--	--	31,800	--	--
5-----	11,800	--	--	33,600	--	--	33,000	--	--
6-----	11,000	--	--	35,000	--	--	34,300	--	--
7-----	13,000	--	--	36,100	--	--	36,500	--	--
8-----	15,900	15,300	637,000	39,500	--	--	39,600	--	--
9-----	18,900	16,800	857,000	40,800	--	--	41,400	1,350	151,000
10-----	17,200	14,400	669,000	40,400	--	--	42,400	--	--
11-----	15,600	--	--	38,000	3,000	308,000	43,400	--	--
12-----	14,900	--	--	37,600	2,670	271,000	42,600	--	--
13-----	13,700	--	--	33,800	--	--	40,900	--	--
14-----	12,600	--	--	32,000	--	--	39,100	1,360	144,000
15-----	12,600	6,810	232,000	32,100	--	--	37,100	--	--
16-----	13,800	--	--	32,600	--	--	34,400	--	--
17-----	15,300	--	--	33,200	2,620	235,000	31,500	--	--
18-----	14,600	--	--	33,200	--	--	29,400	--	--
19-----	13,700	6,720	249,000	32,200	--	--	27,000	--	--
20-----	15,300	--	--	28,700	--	--	23,600	--	--
21-----	17,200	--	--	26,100	--	--	20,900	--	--
22-----	18,400	--	--	25,600	--	--	19,400	--	--
23-----	19,900	8,800	473,000	25,200	--	--	17,900	1,210	58,500
24-----	20,400	--	--	24,800	--	--	16,300	--	--
25-----	19,500	5,320	280,000	23,100	--	--	16,200	--	--
26-----	20,000	--	--	22,400	--	--	16,000	--	--
27-----	22,000	--	--	22,400	--	--	16,500	--	--
28-----	24,600	--	--	22,800	--	--	17,600	--	--
29-----	26,400	--	--	24,200	--	--	18,200	--	--
30-----	28,200	--	--	25,900	--	--	18,400	--	--
31-----	--	--	--	27,200	--	--	--	--	--
Total-	483,400	--	c 9,900,000	951,800	--	c 8,300,000	876,300	--	c 3,400,000
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-----	17,500	--	--	4,750	2,260	29,000	4,070	5,300	58,200
2-----	15,800	--	--	5,040	5,600	a76,200	3,850	2,590	26,900
3-----	13,900	--	--	4,820	5,800	a75,500	3,690	1,650	16,400
4-----	12,100	--	--	4,770	2,100	27,000	3,570	1,410	13,600
5-----	11,100	--	--	4,580	1,960	24,200	3,470	1,350	12,600
6-----	10,400	--	--	4,410	2,080	24,800	3,280	1,330	a12,000
7-----	10,200	--	--	4,470	2,200	a27,000	3,090	1,300	a11,000
8-----	9,420	--	--	4,470	1,460	17,600	3,030	1,200	a9,800
9-----	8,820	--	--	4,450	1,300	a16,000	3,250	2,570	22,600
10-----	8,470	723	--	4,750	1,500	a19,000	3,090	1,550	12,900
11-----	8,160	--	--	6,860	6,100	a110,000	2,860	920	7,100
12-----	7,900	690	14,700	6,790	8,100	a150,000	2,720	820	6,020
13-----	7,520	704	14,300	5,810	5,100	a80,000	2,700	733	5,340
14-----	7,120	870	16,700	6,640	3,500	53,300	2,700	720	5,250
15-----	7,180	820	15,900	5,740	3,270	50,700	2,650	619	4,430
16-----	6,860	900	16,700	5,430	4,200	61,600	2,610	639	4,500
17-----	6,880	800	14,900	4,940	3,690	49,200	2,570	860	5,970
18-----	6,910	1,180	22,000	4,580	2,600	32,200	2,540	930	6,380
19-----	6,800	1,000	18,400	4,290	1,520	17,600	2,500	1,130	7,630
20-----	6,200	990	16,600	4,110	1,200	13,300	2,510	730	4,950
21-----	5,800	1,800	28,200	4,050	1,900	20,800	2,470	590	3,930
22-----	5,300	1,100	15,700	4,020	4,590	49,800	2,420	420	2,740
23-----	4,800	543	7,040	3,800	3,400	34,900	2,380	480	3,080
24-----	4,500	391	4,750	3,800	2,800	a29,000	2,330	503	3,160
25-----	4,340	390	4,570	3,600	2,190	21,300	2,310	500	3,120
26-----	4,290	410	4,750	3,470	2,000	18,700	2,260	500	3,050
27-----	4,380	452	5,350	4,320	4,350	50,700	2,220	509	3,050
28-----	4,250	476	5,460	5,700	19,000	a290,000	2,190	480	a2,800
29-----	4,290	1,130	13,100	4,920	18,200	242,000	2,140	440	2,540
30-----	4,320	950	11,100	5,200	15,200	213,000	2,140	400	2,310
31-----	4,730	2,390	30,500	4,630	13,900	174,000	--	--	--
Total-	240,240	--	577,720	148,210	--	2,098,400	83,610	--	283,350
Total discharge for year (cfs-days)									3,239,060
Total load for year (tons)									c 26,046,422

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curves.

c Includes loads for missing days computed from water-sediment discharge curves.

f Stage discharge relation affected by ice Dec. 6-Apr. 4.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH.--Continued

Particle-size analyses of suspended sediment; water year October 1951 to September 1952

(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	Water discharge (cfs)	Water temperature (° F)	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. 6, 1951.....	11:30 a. m.	2,880		742	1,180	39	46	53	56	65	68	80	98		100	SBWCM
Dec. 5.....	11:10 a. m.	2,670		615	--	--	--	--	--	--	--	37	52	86	100	SPWCM
May 23, 1952.....	2:50 p. m.	25,100		2,450	3,960	--	29	--	41	--	63	87	98		100	SPWCM
June 9.....	5:40 p. m.	41,500		1,100	--	--	--	--	--	--	50	--	89		100	SBWCM
June 23.....	3:20 p. m.	18,000		1,230	1,310	16	19	24	28	39	58	87	97		98	SBWCM
July 22.....	1:10 p. m.	5,300		828	--	--	--	--	--	--	84	97	100		--	S
Aug. 14.....	9:25 a. m.	5,660		3,240	3,200	--	52	--	71	--	89	98	100		--	SPWCM
Aug. 20.....	7:35 a. m.	4,110		1,000	2,040	--	49	--	65	--	86	97	100		--	SPWCM
Aug. 30.....	5:40 a. m.	5,640		14,900	4,600	--	38	--	66	--	93	98	99		100	SPWCM
Sept. 10.....	5:50 p. m.	3,030		1,170	1,550	28	36	42	53	64	76	96	99		100	SBWCM
Sept. 20.....	5:00 p. m.	2,520		518	--	--	--	--	--	--	48	73	98		99	S
Sept. 30.....	5:30 p. m.	2,140		311	--	--	--	--	--	--	53	86	99		99	S

COLORADO RIVER BASIN

 GREEN RIVER BASIN--Continued
 WILLOW CREEK NEAR OURAY, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GREEN RIVER BASIN--Continued
PRICE RIVER AT WOODSIDE, UTAH

LOCATION --At bridge on U. S. Highway 50 at Woodside, Emery County, and 20 miles upstream from mouth.
DRAINAGE AREA 1,500 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: December 1946 to September 1949, February 1951 to September 1952.
TEMPERATURES --Chemical analyses: February 1951 to September 1952.

EXTREMES 1951-52 --Dissolved solids: Maximum, 8,220 ppm Dec. 11; minimum, 592 ppm May 21-31.
Hardness: Maximum, 3,100 ppm Dec. 11; minimum, 353 ppm June 1-3, 6-10.

Specific conductance: Maximum daily, 8,340 micromhos Dec. 11; minimum daily, 814 micromhos June 1.
Water temperature: Maximum observed, 89° F July 30; minimum observed, freezing point on many days during November to March.

EXTREMES February 1951--Suspended solids: Maximum, 2,080 ppm Dec. 11, 1951; minimum, 592 ppm May 21-30, 1952.
Hardness: Maximum, 3,010 ppm Dec. 11, 1951; minimum, 353 ppm June 1-3, 6-10, 1952.

Specific conductance: Maximum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 814 micromhos June 1, 1952.
Water temperatures: Maximum observed, 89° F July 30, 1952.

REMARKS --Values reported for dissolved solids are means of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1951...	66.0	12	0.16	222	212	716	10	298	2,480	81	0.5	0.5	--	3,880	5.28	691	1,430	1,180	52	8.2	4,480	7.4
Oct. 11-20	34.9	10	.18	280	293	985	9.6	328	3,440	113	.5	10	0.59	5,300	7.21	499	1,900	1,630	53	9.6	5,780	7.5
Oct. 21-31	164	12	.60	295	251	820	8.8	316	3,090	94	.6	7.0	--	4,730	6.43	2,080	1,770	1,510	50	8.5	5,270	7.5
Nov. 1-10	45.1	14	.05	298	309	978	14	352	3,480	100	--	14	--	5,360	7.33	656	2,010	1,730	51	9.5	5,910	8.1
Nov. 11-20	45.2	11	.05	318	316	970	17	404	3,560	117	.4	15	.49	5,520	7.51	674	2,080	1,760	50	9.2	6,080	7.9
Nov. 21-30	67.0	12	.04	282	256	764	6.4	375	2,810	88	.6	13	--	4,400	5.98	796	1,710	1,400	49	8.0	4,960	7.7
Dec. 1-10	39.0	12	.03	312	338	1,000	5.2	487	3,640	120	.3	13	--	5,670	7.71	597	2,170	1,790	50	9.3	6,340	7.9
Dec. 11	22.0	--	--	432	469	1,520	1.520	646	5,310	175	--	--	--	8,220	11.2	488	3,010	2,480	53	12	8,540	--
Dec. 12-13	26.0	17	.08	400	412	1,220	18	650	4,380	142	.5	17	.65	6,930	9.42	486	2,680	2,160	49	10	7,260	7.8
Dec. 14-20	26.0	15	.08	342	320	910	15	579	3,330	113	--	17	.59	5,350	7.28	376	2,170	1,700	47	8.5	5,850	7.8
Dec. 21-31	26.0	12	.07	308	281	840	9.6	520	3,020	102	.2	15	--	4,840	6.58	340	1,920	1,500	49	8.3	5,410	7.8
Jan. 1-10, 1952 ..	26.0	13	.10	320	289	858	8.6	517	3,230	106	.5	14	--	5,060	6.92	357	1,980	1,560	48	8.4	5,630	7.6
Jan. 11-20	29.0	12	.08	277	247	748	8.1	474	2,720	90	.3	13	.33	4,350	5.92	341	1,710	1,320	49	7.9	4,870	7.6
Jan. 21-31	37.7	12	.03	270	287	843	8.7	460	2,920	96	.2	9.8	--	4,650	6.32	473	1,770	1,390	51	8.7	5,200	7.8
Feb. 1-10	44.5	12	.08	270	281	887	8.6	463	3,080	101	.2	14	--	4,890	6.65	588	1,830	1,450	51	9.0	5,480	7.8
Feb. 11-20	50.0	10	.10	264	267	850	8.7	448	2,930	98	.2	12	.33	4,660	6.34	634	1,760	1,390	51	8.8	5,280	7.9
Feb. 21-29	50.0	11	.06	261	267	842	8.6	428	2,920	99	.2	14	--	4,630	6.30	625	1,750	1,400	51	8.7	5,270	7.7

GREEN RIVER BASIN--Continued

PRICE RIVER AT WOODSIDE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
Mar. 1-10, 1952.	60.0	9.7	0.08	236	118	723	7.9	338	2,470	84	0.4	12	--	3,970	5.40	643	1,530	1,210	51	8.1	4,610	7.910
Mar. 11-20.....	114	8.4	0.07	214	212	705	7.9	352	2,410	82	0.4	11	0.25	3,820	5.20	1,180	1,410	1,120	52	8.2	4,500	7.915
Mar. 21-30.....	98.8	9.3	0.07	242	246	800	8.0	386	2,740	94	0.3	11	--	4,340	5.90	1,160	1,620	1,300	52	8.7	5,000	7.915
Mar. 27-31.....	475	8.4	0.06	134	95	382	6.7	220	1,240	42	0.6	6.3	--	2,020	2.75	2,590	725	544	53	6.2	2,600	7.925
Apr. 1-10.....	328	9.2	0.07	215	175	516	9.1	262	1,980	64	0.3	8.3	--	3,120	4.24	2,760	1,260	1,040	47	6.3	3,760	7.620
Apr. 11-19.....	329	9.8	0.06	140	122	300	6.6	287	1,180	47	0.2	5.9	0.20	1,930	2.62	1,710	851	616	43	4.5	2,520	7.515
Apr. 20-30.....	1,194	12	0.06	130	64	142	5.6	267	600	27	0.3	2.5	--	1,110	1.51	3,580	588	368	34	2.5	1,540	7.515
May 1-10.....	2,147	14	0.05	108	51	92	5.2	293	393	19	0.3	2.2	--	829	1.13	4,810	479	239	28	1.8	1,150	7.720
May 11-16, 18-20.	1,617	13	0.05	88	47	71	3.8	288	301	16	0.3	3.0	0.11	685	0.93	2,990	413	177	27	1.5	1,020	7.820
May 17 a.....	2,290	--	--	--	--	--	--	--	762	22	--	--	--	--	--	--	--	--	--	--	1,790	--
May 21-31.....	1,484	12	0.03	78	39	65	3.3	262	245	14	0.4	5.9	--	582	0.81	2,370	355	140	23	1.5	1,908	7.810
June 1-3, 6-10....	1,404	10	0.05	79	38	67	3.9	250	267	14	0.2	4.0	--	606	0.82	2,300	353	148	29	1.5	885	7.720
June 4-5 a.....	1,810	--	--	--	--	--	--	256	647	22	--	--	--	--	--	--	--	--	--	--	1,580	7.8--
June 11-20.....	775	11	0.05	91	47	80	3.7	252	339	20	0.3	2.4	0.08	719	0.98	1,500	420	214	29	1.7	1,040	7.810
June 21-30.....	405	11	0.05	109	71	166	5.1	282	622	26	0.3	3.0	--	1,150	1.56	1,280	564	333	39	3.0	1,570	7.710
July 1-10.....	214	7.0	0.04	129	102	240	6.5	264	957	36	0.3	3.2	--	1,610	2.19	930	742	525	51	3.8	2,170	7.810
July 11-20.....	119	7.8	0.07	170	149	375	7.9	284	1,520	52	0.3	2.9	0.22	2,410	3.28	774	1,040	820	44	5.1	3,070	7.815
July 21-31.....	108	7.1	0.10	190	148	425	9.2	260	1,630	54	0.4	2.7	--	2,590	3.52	755	1,080	870	46	5.6	3,160	7.810
Aug. 1-10.....	100	16	0.05	228	160	460	10	314	1,870	84	0.3	2.9	--	2,970	4.04	802	1,230	970	45	5.7	3,590	7.525
Aug. 11-21.....	111	13	0.07	226	158	465	9.8	288	1,860	60	0.4	2.0	0.33	2,940	4.00	881	1,210	978	45	5.8	3,550	7.625
Aug. 22-26, 28-31.	183	14	0.07	186	103	284	7.8	290	1,180	42	0.6	2.6	--	1,960	2.67	968	888	650	41	4.1	2,520	7.522
Aug. 27.....	802	13	--	138	34	148	--	272	517	32	--	5	--	1,020	1.39	2,210	464	262	40	2.9	1,440	--
Sept. 1-10.....	93.2	13	0.08	230	155	460	9.2	306	1,790	62	0.4	3.4	--	2,870	3.90	722	1,210	961	46	5.8	3,470	7.418
Sept. 11-20.....	103	9.3	0.07	185	147	465	8.9	286	1,700	55	0.4	4.4	0.34	2,700	3.67	751	1,070	832	48	6.0	3,320	7.622
Sept. 21-30.....	73.8	6.0	0.08	190	192	602	9.2	268	2,130	74	0.5	3.8	--	3,340	4.54	666	1,260	1,040	51	7.4	3,970	7.815
Weighted average	b328	12	0.06	125	81	203	5.4	283	778	31	0.3	4.2	--	1,380	1.88	1,220	645	413	40	3.5	1,780	--

a Not included for computation of weighted averages.

b Represents 95 percent of runoff for water year October 1951 to September 1952.

GREEN RIVER BASIN--Continued

PRICE RIVER AT WOODSIDE, UTAH --Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement at approximately 1:00 p. m. /

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

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH

LOCATION.--At gaging station, 1 mile southeast of the town of Green River, Emery County, 22 miles upstream from San Rafael River, and 117 miles upstream from mouth.

DRAINAGE AREA.--40,600 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1928 to September 1952.

Water temperatures: May 1949 to September 1952.

Water temperature records: May 1930 to September 1952.

EXTREMES, 1931-52.--Dissolved solids: Maximum, 936 ppm Dec. 11-20; minimum, 244 ppm June 11-20.

Barages: Maximum, 66 ppm Dec. 11-20; minimum, 135 ppm June 11-20.

Sulfate concentrations: Maximum observed, 347 micrograms June 17.

Water temperatures: Maximum observed, 80° F Aug. 3; minimum observed, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 15,306 ppm Apr. 10; minimum daily, 67 ppm Nov. 22.

Sediment loads: Maximum daily, 785,000 tons Apr. 10; minimum daily, 351 tons Nov. 22.

EXTREMES, 1928-52.--Dissolved solids: Maximum, 2,010 ppm Sept. 29, 1943; minimum, 194 ppm June 21-30, 1933.

Barages: Maximum, 488 ppm Dec. 21-31, 1933; minimum, 128 ppm June 21-30, 1933.

Sulfate concentrations: Maximum daily, 2,430 micrograms Sept. 29, 1943; minimum daily, 321 micrograms May 30, 1948.

Specific conductance: (1941-52): Maximum observed, 82° F July 31, Aug. 5-6, 1949; minimum observed, freezing point on several days during winter months.

Water temperatures: (1949-52): Maximum observed, 82° F July 31, Aug. 5-6, 1949; minimum observed, freezing point on several days.

Sediment concentrations (1930-52): Maximum daily, 63,600 ppm July 11, 1936; minimum daily, less than 100 tons on several days.

Sediment loads (1930-52): Maximum daily, 2,230,000 tons July 11, 1936; minimum daily, less than 100 tons on several days.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per acre-day	Calcium	Non-carbonate					
Oct. 1-10, 1951...	3,095	9.5	86	86	36	100	5.0	222	325	42		1.8	--	747	1.02	6,240	362	180	37	2.3	1,060	--	--
Oct. 11-20, 1951...	3,336	12	80	80	31	109	4.9	220	312	44		1.8	0.23	727	.99	6,550	327	146	42	2.6	1,050	--	--
Oct. 21-31, 1951...	3,800	12	83	83	34	104	4.2	228	318	40		1.5	--	750	.99	7,490	347	160	39	2.4	1,050	--	--
Nov. 1-10, 1951...	3,196	11	86	86	38	102	4.2	230	337	40		1.9	--	767	1.04	6,620	370	182	37	2.3	1,090	--	--
Nov. 11-20, 1951...	2,697	12	82	82	38	101	4.0	234	310	40		1.0	--	732	1.00	5,330	360	169	38	2.3	1,050	--	--
Nov. 21-30, 1951...	2,372	13	86	86	43	113	3.4	243	356	45		2.3	--	820	1.12	5,250	392	192	38	2.5	1,150	--	--
Dec. 1-10, 1951...	2,462	14	88	88	45	112	3.1	260	368	47		1.5	--	824	1.12	5,520	404	192	37	2.4	1,150	--	--
Dec. 11-20, 1951...	1,562	15	100	100	52	127	4.1	294	405	49		2.1	--	986	1.27	4,000	464	222	37	2.6	1,280	--	--
Dec. 21-31, 1951...	2,346	14	88	88	42	103	3.6	270	315	45		1.4	--	773	1.05	4,900	392	171	36	2.3	1,100	--	--
Jan. 1-10, 1952...	1,865	13	91	91	40	101	3.1	260	313	41		2.0	--	758	1.03	3,820	383	170	36	2.2	1,080	7.8	--
Jan. 11-20, 1952...	2,215	14	92	92	44	105	3.0	280	332	46		2.2	.22	814	1.11	4,870	410	181	35	2.3	1,140	7.6	--
Jan. 21-31, 1952...	2,591	13	78	78	38	90	3.6	246	282	38		2.1	--	662	.93	4,770	350	149	36	2.1	994	7.6	--
Feb. 1-10, 1952...	2,595	13	77	77	39	94	3.1	243	297	38		2.0	--	698	.95	4,890	352	154	36	2.2	1,010	7.7	--
Feb. 11-20, 1952...	2,470	14	79	79	40	97	4.0	244	287	40		2.1	.23	700	.95	4,670	362	162	37	2.2	1,030	--	--
Feb. 21-29, 1952...	2,408	14	82	82	41	100	4.0	252	304	43		2.1	--	716	.97	4,680	373	166	36	2.2	1,040	--	--

2,931	13	Mar. 1-10, 1962 .	82	41	100	4.1	252	308	41	1.8	--	722	98	4,660	373	166	37	2.2	1,050	--
2,870	13	Mar. 11-20 . . .	83	44	114	4.3	244	354	42	1.7	.23	780	106	5,410	386	186	39	2.5	1,120	--
2,921	13	Mar. 21-31 . . .	80	46	120	3.4	244	371	44	1.8	--	807	1.10	6,150	388	188	40	2.6	1,150	--
11,900	12	Apr. 1-10	88	39	125	5.2	239	373	44	3.1	--	820	1.12	25,020	380	154	41	2.8	1,170	7.7
15,980	14	Apr. 11-19	90	29	107	5.2	232	320	37	3.2	.18	728	99	30,250	344	184	40	2.5	1,050	7.9
22,400	16	Apr. 20-30	72	25	67	5.5	238	190	22	2.7	--	522	7.1	31,570	282	88	33	1.7	781	7.8
37,770	16	May 1-10	61	20	36	6.2	229	107	14	2.1	--	382	.52	38,960	234	46	24	1.0	589	7.8
37,720	19	May 11-20	54	17	32	6.2	204	88	10	2.0	--	336	.46	34,230	204	38	23	.9	519	--
27,010	14	May 21-31	58	17	32	4.9	216	89	12	1.7	--	347	.47	25,310	214	38	24	.9	551	--
35,770	12	June 1-10	50	14	25	3.2	184	72	8.0	1.6	--	265	.36	25,690	182	32	23	.8	456	--
37,160	11	June 11-20	44	11	20	3.5	168	52	7.0	1.7	--	310	.43	24,480	155	18	21	.7	390	--
15,860	11	June 21-30	50	15	30	3.2	180	86	13	1.5	--	244	.42	15,280	166	39	25	1.0	493	--
12,900	14	July 1-10	56	18	48	3.5	202	129	17	1.7	--	390	.53	13,580	214	48	32	1.4	604	--
7,642	13	July 11-20	58	22	58	4.8	202	152	21	.8	--	442	.60	9,120	235	70	34	1.6	871	--
4,902	13	July 21-31	67	26	79	4.3	217	207	27	1.4	--	545	.74	7,210	274	96	38	2.1	815	--
4,758	14	Aug. 1-10	86	29	86	6.3	244	253	39	2.9	--	643	.87	8,260	334	134	35	2.0	949	--
5,758	14	Aug. 11-20	80	29	87	6.7	245	259	36	1.4	--	634	.86	9,660	318	118	37	2.1	929	--
4,832	15	Aug. 21-31	87	35	89	5.8	250	295	36	3.7	--	694	.94	9,150	361	156	34	2.0	1,020	--
3,895	13	Sept. 1-10	89	38	87	7.7	253	288	42	2.1	--	684	.63	7,200	378	170	33	1.9	1,010	--
2,921	11	Sept. 11-20	87	40	93	4.9	268	308	37	2.0	--	722	.98	5,690	382	162	34	2.1	1,070	--
2,470	11	Sept. 21-30	87	41	96	6.6	234	319	45	1.9	--	715	.97	4,770	386	184	35	2.1	1,060	--
9,427	14	Weighted average	64	23	55	4.7	214	163	21	1.9	--	459	0.62	11,680	254	78	31	1.5	893	--

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement, generally during afternoon/

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

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	2,400	1,600	as 19,000	3,700	3,320	33,200	2,520	168	1,140
2-----	2,320	6,100	as 41,000	3,520	1,560	14,800	2,450	139	953
3-----	2,020	840	4,580	3,450	800	7,450	2,540	126	864
4-----	2,020	306	1,870	3,420	600	5,540	2,590	169	1,180
5-----	2,220	364	2,180	3,300	511	4,550	2,610	152	1,070
6-----	3,080	1,000	8,320	3,120	1,370	11,500	2,720	204	1,500
7-----	3,780	1,560	15,900	2,960	580	4,640	2,720	175	1,290
8-----	4,730	6,150	78,500	2,930	345	2,730	2,680	263	1,900
9-----	4,380	6,250	73,900	2,840	315	2,420	2,390	338	2,180
10-----	4,000	7,050	76,100	2,720	390	2,860	1,510	550	2,240
11-----	3,890	10,700	112,000	2,700	390	2,840	1,090	300	883
12-----	3,830	7,650	79,100	2,790	286	2,150	1,100	280	832
13-----	3,630	4,750	46,600	2,860	308	2,380	1,180	190	605
14-----	3,520	2,700	25,700	2,790	262	1,970	1,380	205	784
15-----	3,320	2,900	26,000	2,810	251	1,900	1,520	120	492
16-----	3,250	2,320	20,400	2,860	234	1,810	1,750	220	1,040
17-----	3,100	1,670	14,000	2,860	213	1,640	1,900	211	1,080
18-----	3,000	1,310	10,600	2,650	214	1,530	1,950	200	1,050
19-----	2,910	931	7,310	2,410	220	1,430	1,950	304	1,600
20-----	2,910	660	5,190	2,240	180	1,090	2,000	190	1,030
21-----	2,910	720	5,660	2,040	109	600	2,050	161	891
22-----	2,880	760	5,910	1,940	67	351	2,100	180	1,020
23-----	2,880	526	4,090	2,140	119	688	2,150	120	697
24-----	2,910	489	3,840	2,450	170	1,120	2,200	250	1,480
25-----	2,960	610	4,880	2,700	200	1,460	2,300	213	1,320
26-----	3,810	4,400	45,300	2,500	210	1,420	2,350	380	2,410
27-----	3,520	2,480	23,600	2,430	253	1,960	2,400	1,010	6,540
28-----	5,160	3,920	s 58,800	2,480	200	1,340	2,500	480	3,240
29-----	6,100	6,800	112,000	2,520	200	1,360	2,580	287	2,070
30-----	4,700	8,280	105,000	2,520	200	1,360	2,600	270	1,900
31-----	3,970	6,900	74,000	--	--	--	2,580	380	2,650
Total--	106,110	--	1,110,530	82,650	--	119,819	66,450	--	47,911
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-----	2,450	160	1,060	2,400	430	2,790	2,330	147	925
2-----	2,250	230	1,400	2,400	338	2,190	2,330	167	1,050
3-----	2,100	203	1,150	2,400	225	1,460	2,280	132	813
4-----	2,000	190	1,030	2,450	300	a 2,000	2,390	97	626
5-----	1,900	160	821	2,500	368	2,480	2,410	109	709
6-----	1,800	153	744	2,550	332	2,290	2,370	82	525
7-----	1,600	151	652	2,550	454	3,120	2,390	137	884
8-----	1,500	122	494	2,550	540	3,720	2,410	107	696
9-----	1,450	100	392	2,550	675	4,650	2,500	138	932
10-----	1,450	390	1,530	2,500	549	3,710	2,500	353	2,380
11-----	1,500	260	1,130	2,400	281	1,690	2,590	361	2,520
12-----	1,600	150	648	2,400	284	1,710	2,590	250	1,750
13-----	1,900	190	975	2,350	166	1,050	2,560	228	1,580
14-----	2,100	164	930	2,350	126	799	2,560	164	1,130
15-----	2,200	200	1,190	2,400	310	2,010	2,520	162	1,100
16-----	2,300	212	1,320	2,400	167	1,080	2,500	156	1,050
17-----	2,400	287	1,860	2,500	227	1,530	2,560	194	1,340
18-----	2,500	265	1,790	2,450	203	1,340	2,560	143	988
19-----	2,600	242	1,700	2,450	265	1,750	2,630	242	1,720
20-----	2,600	242	1,700	2,540	151	1,040	2,630	200	1,420
21-----	2,600	308	2,160	2,450	167	1,100	2,630	200	1,420
22-----	2,600	258	1,810	2,410	123	800	2,720	174	1,280
23-----	2,550	203	1,400	2,410	103	670	2,720	134	984
24-----	2,550	200	1,380	2,480	85	569	2,610	233	1,640
25-----	2,600	455	3,190	2,430	89	584	2,540	200	1,370
26-----	2,650	362	2,590	2,450	100	662	2,480	200	1,340
27-----	2,500	332	2,240	2,410	196	1,280	2,630	225	1,600
28-----	2,400	204	1,320	2,330	101	635	2,770	880	6,580
29-----	2,450	303	1,960	2,300	159	987	2,960	1,260	10,100
30-----	2,350	230	a 1,500	--	--	--	3,320	1,880	16,900
31-----	2,400	153	991	--	--	--	3,650	2,720	26,800
Total--	67,800	--	43,057	70,760	--	49,696	80,640	--	94,152

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	4,190	2,900	32,800	31,300	7,550	638,000	28,200	2,520	192,000
2-----	5,520	2,990	44,600	33,400	7,410	668,000	29,800	2,700	217,000
3-----	8,000	5,950	129,000	34,400	7,000	650,000	31,300	2,570	217,000
4-----	11,100	7,400	222,000	34,600	5,900	551,000	33,500	3,000	271,000
5-----	13,800	7,600	283,000	36,300	5,800	568,000	34,400	2,200	204,000
6-----	11,700	4,800	152,000	38,200	4,420	456,000	36,000	1,880	183,000
7-----	12,300	7,300	242,000	39,900	5,270	568,000	37,700	2,160	220,000
8-----	11,600	8,480	266,000	41,600	5,410	608,000	40,100	2,270	246,000
9-----	15,800	11,700	509,000	43,100	4,800	559,000	42,900	1,870	217,000
10-----	19,000	15,300	785,000	49,900	4,000	485,000	43,800	1,620	192,000
11-----	17,300	13,200	617,000	45,200	3,480	425,000	43,900	1,000	119,000
12-----	15,800	12,800	546,000	42,700	3,400	390,000	44,100	752	89,500
13-----	15,200	9,980	410,000	39,300	4,220	448,000	43,600	1,200	141,000
14-----	14,300	10,600	409,000	35,300	3,490	333,000	42,200	900	103,000
15-----	13,200	9,830	350,000	33,400	3,340	301,000	40,400	1,400	153,000
16-----	13,200	6,700	239,000	34,600	4,370	408,000	37,800	2,150	219,000
17-----	15,300	6,000	248,000	36,300	4,180	410,000	34,500	2,030	189,000
18-----	17,800	8,000	384,000	37,000	3,990	399,000	30,800	2,120	176,000
19-----	16,400	7,720	342,000	37,400	3,900	394,000	28,500	2,000	154,000
20-----	14,900	7,900	318,000	36,000	3,690	359,000	25,800	1,430	99,600
21-----	17,000	7,600	349,000	31,700	4,010	343,000	22,500	1,820	111,000
22-----	20,400	8,300	457,000	29,300	3,980	315,000	20,500	2,180	121,000
23-----	22,500	8,600	522,000	29,000	3,340	262,000	19,100	2,000	103,000
24-----	24,200	6,420	419,000	28,400	3,650	280,000	18,000	1,100	53,500
25-----	23,500	8,860	562,000	27,500	2,860	212,000	17,000	800	36,700
26-----	21,300	4,870	280,000	25,700	3,300	229,000	16,900	800	36,500
27-----	21,600	5,590	326,000	24,700	2,790	186,000	16,600	1,500	67,200
28-----	24,100	6,020	392,000	24,300	2,620	162,000	16,900	2,020	92,200
29-----	27,400	10,500	777,000	24,400	2,470	173,000	17,500	1,800	a 85,000
30-----	29,500	9,400	749,000	25,500	2,200	151,000	17,600	1,760	83,600
31-----	--	--	--	26,600	3,150	226,000	--	--	--
Total--	497,910	--	11,361,400	1,052,000	--	12,157,000	911,900	--	4,391,800
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-----	17,600	2,200	105,000	4,610	750	9,340	5,420	12,200	179,000
2-----	16,700	1,210	54,600	4,880	1,140	15,000	4,580	9,000	111,000
3-----	15,400	876	36,400	4,910	2,050	27,200	4,160	7,900	88,700
4-----	14,000	810	30,600	4,970	2,200	29,500	3,910	4,320	45,600
5-----	12,700	1,990	68,200	4,820	2,120	27,600	3,760	1,520	15,400
6-----	11,700	1,320	41,700	4,730	3,150	40,200	3,650	1,140	11,200
7-----	11,000	856	25,400	4,580	1,900	23,500	3,500	700	a 6,600
8-----	10,600	900	25,800	4,500	1,300	15,800	3,380	656	5,990
9-----	10,000	1,330	35,900	4,760	1,600	20,600	3,280	1,010	8,940
10-----	9,280	1,050	26,300	4,820	1,980	25,800	3,320	960	8,610
11-----	8,840	640	15,300	5,220	2,380	33,500	3,350	1,070	9,680
12-----	8,410	670	15,200	6,340	3,060	52,400	3,220	1,480	12,900
13-----	8,000	660	a 14,000	7,640	4,580	94,500	3,080	1,050	8,590
14-----	7,680	617	12,800	6,380	9,900	171,000	2,930	1,280	10,100
15-----	7,410	780	15,600	5,820	7,900	a 120,000	2,880	905	7,040
16-----	7,530	600	12,200	5,680	3,400	a 52,000	2,860	530	4,090
17-----	7,300	419	8,260	5,750	1,850	28,700	2,840	428	3,280
18-----	7,180	402	7,790	5,290	2,080	29,700	2,740	480	3,550
19-----	7,260	467	9,150	4,880	3,130	41,200	2,680	350	2,530
20-----	6,810	323	5,940	4,580	3,160	39,100	2,680	252	1,820
21-----	6,300	580	9,870	4,350	1,880	22,100	2,700	240	a 1,700
22-----	5,920	638	10,200	4,530	2,980	36,400	2,630	440	3,120
23-----	5,450	617	9,080	4,560	3,080	37,900	2,590	420	a 2,900
24-----	4,970	1,150	15,400	4,210	2,200	25,000	2,520	229	1,560
25-----	4,700	907	11,500	4,020	2,790	30,300	2,480	185	1,240
26-----	4,500	490	5,950	4,190	2,200	24,900	2,430	132	866
27-----	4,380	280	3,310	4,470	6,840	82,600	2,380	124	800
28-----	4,440	750	8,990	4,870	5,680	71,600	2,350	128	812
29-----	4,530	1,520	18,600	6,740	7,430	135,000	2,330	91	572
30-----	4,350	680	7,990	6,380	10,800	186,000	2,280	109	671
31-----	4,380	498	5,890	5,580	14,000	a 210,000	--	--	--
Total--	259,320	--	672,920	158,860	--	1,758,440	92,870	--	558,861
Total discharge for year (cfs-days).....									3,447,270
Total load for year (tons).....									32,365,586

s Computed by subdividing day.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued
GREEN RIVER AT GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952

(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	Water discharge (cfs)	Water temperature (°F)	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, 1951	4:15 p.m.	2,060		1,100	2,720	--	75	--	93	--	--	--	--	--	--	PWCM
Oct. 6	8:30 a.m.	2,960		1,030	6,100	--	83	--	95	--	100	--	--	--	--	SPWCM
Oct. 8	9:35 a.m.	4,760		6,000	3,600	99	73	89	88	91	95	97	100	--	--	SPWCM
Oct. 8	9:35 a.m.	4,760		6,000	3,640	53	68	79	87	91	95	97	100	--	--	SPWCM
Oct. 9	3:20 p.m.	4,270		5,660	3,270	--	74	--	93	--	97	99	100	--	--	SPWCM
Oct. 30	3:45 p.m.	4,470		7,700	2,730	--	72	--	95	--	99	99	100	--	--	SPWCM
Nov. 16	9:05 a.m.	2,640		211	458	54	67	79	88	92	93	96	100	--	--	SPWCM
Nov. 23	3:45 p.m.	2,320		215	--	--	--	--	--	--	88	93	98	99	100	S
Dec. 23	2:15 p.m.	2,960		345	--	--	--	--	--	--	86	92	97	99	100	S
Jan. 24, 1952	4:15 p.m.	2,350		163	--	--	--	--	--	--	86	96	98	100	100	S
Feb. 5	1:30 p.m.	2,500		387	--	--	--	--	--	--	86	96	98	100	100	S
Mar. 1	5:00 p.m.	2,300		102	--	--	--	--	--	--	86	94	99	--	--	S
Mar. 10	9:40 a.m.	2,560		388	--	--	--	--	--	--	89	95	98	100	--	S
Mar. 20	4:35 p.m.	2,650		310	--	--	--	--	--	--	93	98	100	--	--	S
Mar. 31	1:05 p.m.	3,780		2,640	4,280	--	44	--	66	--	94	98	100	--	--	SPWCM
Apr. 4	4:00 p.m.	10,400		6,630	5,680	--	38	--	57	--	79	98	99	--	--	SPWCM
Apr. 9	2:30 p.m.	17,200		12,500	5,780	--	46	--	67	--	85	96	99	--	--	SPWCM
Apr. 20	12:30 p.m.	14,700		7,870	4,960	--	44	--	66	--	85	93	100	--	--	SPWCM
Apr. 30	5:30 p.m.	30,300		8,140	3,480	--	33	--	48	--	78	95	100	--	--	SPWCM
Apr. 30	5:30 p.m.	30,300		8,140	3,660	--	11	--	47	--	78	95	100	--	--	SPN
May 8	9:50 a.m.	41,200		5,100	4,640	--	30	--	45	--	69	87	98	--	100	SPWCM
May 13	4:30 a.m.	38,500		5,380	4,180	--	17	--	26	--	48	87	100	--	--	SPWCM
May 19	12:30 p.m.	37,500		3,350	2,970	--	22	--	38	--	53	84	97	--	100	SPWCM
May 23	5:30 p.m.	28,800		2,460	3,060	--	35	--	48	--	77	96	99	--	100	SPWCM
May 31	4:50 p.m.	26,900		3,080	4,440	--	17	--	29	--	52	77	90	--	100	SPWCM
June 7	1:30 p.m.	37,700		2,430	4,380	--	24	--	35	--	87	93	98	--	100	SPWCM
June 13	1:40 p.m.	13,300		1,840	--	--	--	--	--	--	44	73	96	--	100	S
June 23	6:30 p.m.	18,600		1,990	--	--	--	--	--	--	36	60	87	--	99	S
June 26	2:30 p.m.	16,900		732	--	--	--	--	--	--	91	99	100	--	--	S

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952--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	Water discharge (cfs)	Water temperature (° F)	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 14, 1952.....	5:00 p. m.	7,610		639	--	--	--	--	--	--	56	71	94		S
July 28.....	4:35 p. m.	4,730		1,540	2,600	--	54	--	79	--	93	98	100	--	SPWCM
July 28.....	4:35 p. m.	4,730		1,540	2,410	--	17	--	75	--	93	98	100	--	SPN
July 28.....	4:35 p. m.	4,730		1,540	1,450	22	45	62	74	83	93	98	100	--	SBWCM
July 28.....	4:35 p. m.	4,730		1,540	1,880	2	9	48	81	82	93	98	100	--	SBN
Aug. 4.....	10:15 a. m.	5,000		2,310	3,860	--	72	--	92	--	97	98	100	--	SPWCM
Aug. 11.....	1:00 p. m.	4,970		2,380	3,170	--	73	--	97	--	97	98	100	--	SPWCM
Aug. 21.....	3:30 p. m.	4,240		1,660	4,680	--	74	--	92	--	98	99	100	--	SPWCM
Aug. 27.....	4:30 p. m.	4,330		10,400	4,620	--	49	--	84	--	99	100	--	--	SPWCM
Sept. 2.....	9:10 a. m.	4,540		9,580	5,280	--	69	--	98	--	99	100	--	--	SPWCM
Sept. 8.....	3:45 p. m.	3,400		665	1,300	49	61	78	87	92	98	99	100	--	SPWCM
Sept. 14.....	10:00 a. m.	2,930		897	2,580	--	72	--	91	--	98	98	99	--	SPWCM
Sept. 24.....	2:00 p. m.	2,520		286	1,500	--	72	--	87	--	97	98	99	--	SPWCM

GREEN RIVER BASIN

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH

LOCATION.--At gaging station 15 feet upstream from bridge on State Highway 24, 15 miles southwest of Green River, Emery County, and 35 miles upstream from mouth.

DRAINAGE AREA.--1,690 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1946 to September 1949, November 1950 to September 1952.

Water temperatures: July to September 1949, October 1950 to September 1952.

Sediment records: March 1948 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 4,440 ppm June 11-20; minimum, 330 ppm June 11-20.

Bardness: Maximum, 1,910 ppm Dec. 11-20; minimum, 330 ppm June 11-20.

Specific conductance: Maximum daily, 5,510 microhms/cm; minimum daily, 756 microhms/cm June 14.

Water temperatures: Maximum observed, 89°F July 23; minimum observed, freezing point on many days from December to February.

Sediment concentrations: Maximum daily, 67,300 ppm Oct. 27; minimum daily, 111 ppm Dec. 8.

EXTREMES, 1948-49, 1950-52.--Dissolved solids: Maximum, 5,010 ppm May 1-10, 1951; minimum, 541 ppm June 11-20, 1952.

Hardness: 1948-49, 1950-52: Maximum observed, 90°F July 19, 1951; minimum observed, freezing point on many days during winter months.

Specific temperatures (1949, 1950-52): Maximum observed, 90°F July 19, 1951; minimum daily, 0 ppm (no flow) Sept. 5 to Oct. 3, 1948.

Sediment concentrations (1948-52): Maximum daily, 115,000 ppm Aug. 4, 1951; minimum daily, 0 ppm (no flow) Sept. 5 to Oct. 3, 1948.

Sediment loads (1948-52): Maximum daily, 786,000 tons Aug. 4, 1951; minimum daily, 0 tons Sept. 5 to Oct. 3, 1948.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)			Hardness as CaCO ₃	Per-cent ad-sorp-tion	So-dium ad-sorp-tion ratio	Specific conduct-ance (micro-mhos at 25°C)	pH		
														Parts per mil-lion	Tons per acre-foot	Tons per day							
Oct. 1-2, 5-10, 1951.	27.2	9.7	0.12	372	223	641	16	287		2,820	74	0.4	2.0	--	4,290	5.83	315	1,840	1,630	43	6.5	4,780	7.5
Oct. 3-4	30.0	9.7	--	320	100	208		180		1,400	35	--	2.5	--	2,160	2.94	175	1,210	1,060	27	2.6	2,530	8.0
Oct. 11-20	21.1	7.4	.02	324	248	711	15	289		2,880	81	.4	1.7	0.51	4,410	6.00	281	1,830	1,590	46	7.2	4,970	7.7
Oct. 21-26, 30-31	79.2	9.7	.03	314	221	660	15	282		2,670	71	.5	2.7	--	4,100	5.35	877	1,690	1,460	46	7.0	4,660	7.8
Oct. 27-28	574	11	--	314	89	334		196		1,600	35	--	1.0	--	2,480	3.37	3,840	1,150	988	39	4.3	2,930	7.6
Nov. 1-10	64.8	12	.06	300	195	565	13	300		2,330	62	.4	3.9	--	3,630	4.94	635	1,550	1,300	44	6.2	4,180	7.8
Nov. 11-20	55.0	12	.03	282	196	539	12	336		2,230	62	.4	3.9	.41	3,500	4.76	520	1,510	1,230	43	6.0	4,060	7.8
Nov. 23, 26-30	70.7	11	.04	271	191	545	8.8	350		2,170	57	.2	3.9	--	3,430	4.96	655	1,460	1,170	43	6.2	3,950	7.6
Dec. 1-10	52.5	13	.05	256	193	577	10	352		2,170	59	.2	4.9	--	3,460	4.71	490	1,430	1,140	46	6.6	4,030	7.8
Dec. 11-20	40.0	14	.04	352	252	703	13	502		2,780	78	.2	4.7	.47	4,440	6.04	460	1,510	1,500	44	5.7	4,950	7.7
Dec. 21-31	49.5	12	.04	286	191	509	10	462		2,050	96	.1	4.0	--	3,330	4.53	445	1,500	1,220	42	5.7	3,830	7.7
Jan. 1-4, 1952	47.5	12	.08	254	159	429	7.1	405		1,790	51	.2	4.1	--	2,910	3.96	373	1,350	1,066	42	5.2	3,490	7.7
Jan. 5-8	36.8	13	.12	324	230	724	9.2	491		2,680	75	.3	5.0	--	4,300	5.65	470	1,520	1,360	47	7.5	4,790	7.6
Jan. 9, 12-15, 19	39.2	12	.06	260	156	394	7.0	448		1,680	49	.4	3.5	.24	2,760	3.78	284	1,200	923	40	4.8	3,900	7.7
Jan. 21-22, 25, 28, 31	54.2	11	.04	238	146	406	7.1	402		1,600	44	.4	2.3	--	2,640	3.39	386	1,170	840	43	5.2	3,180	7.6
Feb. 1-10	82.3	10	.06	208	137	389	6.5	358		1,520	43	.4	3.4	--	2,490	3.99	553	1,080	789	44	5.1	3,020	7.7
Feb. 11-20	108	9.9	.07	222	147	422	7.2	370		1,620	45	.4	2.9	.20	2,560	3.62	774	1,160	856	44	5.4	3,160	7.8
Feb. 21-23, 25-27	76.2	11	.04	228	145	379	6.7	368		1,560	47	.5	4.1	--	2,580	3.46	527	1,160	864	41	4.8	3,140	7.9

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 solidum	Sodium adsorption ratio (25°C)	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, 1952...	97.6	9.1	0.05	222	146	384	7.3	350		1,580	44	0.5	3.9	--	2,570	3.50	877	1,150	888	42	4.9	3,140	7.8	
Mar. 12-20	135	8.7	.05	232	158	522	7.3	344		1,960	56	.1	4.2	0.21	3,120	4.24	1,140	1,230	946	48	6.5	3,570	7.9	
Mar. 21-25	110	9.2	.05	220	154	420	7.0	352		1,870	54	.4	4.1	--	2,710	3.69	1,805	1,180	894	43	5.3	3,380	7.9	
Mar. 27-31	759	10	.05	232	76	263	6.8	200		1,250	37	.4	2.6	--	1,960	2.67	4,020	892	728	39	3.8	2,350	7.6	
Apr. 1-10	384	7.9	.04	220	125	399	7.9	246		1,580	51	.5	3.9	--	2,530	3.44	2,820	1,060	862	45	5.3	3,170	7.9	
Apr. 11-12, 1952...	242	10	.13	163	120	360	6.1	280		1,310	50	.4	3.0	.21	2,170	2.95	1,420	900	692	46	5.2	2,690	7.5	
Apr. 14-15	186	--	--	--	--	--	--	294		1,910	65	--	--	--	--	--	--	1,190	--	--	--	--	3,610	7.8
Apr. 23-28	598	10	.04	93	59	141	3.9	262		514	23	.4	2.8	--	976	1.33	1,580	474	260	39	2.8	1,360	7.9	
May 1-2, 4, 6, 8-9...	1,302	10	.17	79	43	83	3.9	247		331	14	.3	1.8	--	693	.94	2,440	394	184	31	1.8	978	7.8	
May 11-20	1,588	8.5	.07	80	41	69	3.2	251		282	10	.4	1.7	.09	619	.64	2,650	368	162	29	1.6	898	7.7	
May 21-31	1,595	8.2	.05	74	36	64	2.8	240		244	10	.2	1.7	--	559	.76	2,410	332	136	29	1.5	854	7.7	
June 1-3, 5-10	3,144	7.3	.05	83	38	63	3.2	225		278	9.0	.2	1.0	--	594	.81	5,040	363	178	27	1.4	898	7.8	
June 4-10	3,950	--	--	--	--	--	--	--		315	22	--	--	--	--	--	--	--	--	--	--	--	1,810	7.7
June 11-21, 23, 28-30...	2,153	8.1	.13	76	34	55	2.8	237		235	17	.2	1.9	--	541	.74	3,140	330	136	28	1.3	899	7.8	
June 21-30	1,044	8.9	.05	90	49	94	3.8	280		393	12	.1	1.6	--	782	1.06	2,200	428	213	32	2.0	1,120	8.0	
July 1-10	577	9.2	.11	100	59	135	4.2	280		519	19	.2	2.0	--	986	1.39	1,500	492	279	35	2.5	1,360	7.9	
July 11-20	254	11	.09	138	100	229	6.1	283		945	27	.3	1.6	.23	1,590	2.16	1,090	756	536	39	3.6	2,100	7.6	
July 21-31	139	12	.07	200	146	352	7.9	269		1,600	45	.3	2.1	--	2,540	3.45	953	1,100	879	43	5.1	3,110	7.5	
Aug. 1-8, 10	129	12	.06	212	126	318	9.0	241		1,440	39	.3	2.9	--	2,320	3.10	794	1,050	850	40	4.3	2,320	7.7	
Aug. 9	383	--	--	322	45	65	--	214		568	9	--	--	--	975	1.33	1,010	639	464	18	1.1	1,320	--	
Aug. 11-13, 16-18...	80.2	13	.07	132	177	403	1.7	245		2,040	52	.3	.9	.37	3,150	4.28	632	1,580	1,330	36	4.5	3,620	7.4	
Aug. 21-27, 29	248	12	.06	274	168	441	13	281		2,010	53	.3	1.9	--	3,100	4.22	2,080	1,370	1,160	41	5.2	3,700	7.5	
Aug. 28, 30-31	543	16	--	139	43	431	--	280		1,180	29	--	1.6	--	1,950	2.65	2,850	524	311	64	8.2	2,230	7.6	
Sept. 2-10	81.2	13	.11	244	165	447	9.8	282		1,910	52	.3	3.2	--	2,970	4.04	651	1,260	1,070	43	5.4	3,600	7.6	
Sept. 11	108	13	--	166	91	209	--	358		888	32	--	--	--	1,560	2.12	455	1,768	484	37	3.2	2,060	--	
Sept. 12-20	68.2	12	.09	223	163	456	9.2	271		1,860	52	.4	3.0	.36	2,910	3.96	536	1,230	1,000	44	5.7	3,520	7.7	
Sept. 21-30	76.3	11	.09	237	165	526	10	265		2,070	56	.3	1.8	--	3,210	4.37	681	1,270	1,050	47	6.4	3,630	7.8	
Weighted average...	b-430	8.9	0.08	116	62	149	4.4	250		612	20	0.3	1.7	--	1,100	1.50	1,280	544	340	37	2.8	1,450	--	

a Not included for computation of weighted averages.

b Represents 86 percent of runoff for water year October 1951 to September 1952.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER UTAH--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	32	630	54	74	2,280	456	70	620	120
2-----	59	2,940	sc 510	76	1,120	230		--	
3-----	36	2,420	235	71	815	156		690	
4-----	24	1,050	68	64	700	a 120	60	1,010	164
5-----	21	570	32	62	600	a 100	60	1,080	175
6-----	19	445	23	65	619	109	50	1,020	138
7-----	21	400	23	64	894	154	40	700	76
8-----	22	539	32	58	741	116	35	111	16
9-----	22	584	35	55	752	112		173	
10-----	22	500	a 30	59	856	136		189	
11-----	21	357	20	65	994	174	40	205	28
12-----	21	313	18	62	963	161		144	
13-----	20	341	18	59	1,020	162		210	
14-----	19	300	a 15	64	1,030	178	45	286	27
15-----	20	549	30	71	709	136		262	
16-----	20	484	26	64	949	164		310	
17-----	21	395	22	59	600	a 96	50	191	46
18-----	22	424	25	41	452	50		--	
19-----	23	476	30	30	491	40		220	
20-----	24	408	26	35	595	56	50	--	27
21-----	25	470	32	45	1,000	a 120		--	
22-----	26	565	40	58	1,100	a 170		403	
23-----	26	420	29	74	1,340	268	45	429	27
24-----	26	423	30	78	1,800	a 380		497	
25-----	28	453	34	--	--	--		--	
26-----	322	36,000	sa 47,000	--	580	--	50	420	46
27-----	1,150	67,300	sc 236,000	70	360	--		195	
28-----	385	19,900	20,700	--	1,590	--		351	
29-----	188	10,100	5,130	--	900	--	50	186	46
30-----	190	4,300	1,160	--	730	--		211	
31-----	81	2,390	523	--	--	--		--	
Total--	2,846	--	311,950	1,873	--	4,864	1,470	--	1,689
January			February			March			
1-----	50	253	34	70	336	64	74	630	a 130
2-----	50	310	42	71	418	80	86	660	a 150
3-----	45	354	43	73	900	177	85	850	195
4-----	45	268	33	74	1,220	244	86	1,880	437
5-----	40	320	28	76	1,180	242	92	1,110	276
6-----		222		80	780	168	88	1,200	285
7-----		236		85	1,070	246	102	1,110	306
8-----	35	360	43	92	930	a 230	110	1,300	386
9-----		492		98	1,100	a 290	117	1,500	a 470
10-----		--		104	1,800	a 510	136	3,200	s 1,200
11-----	40	490	38	102	2,290	631	232	4,700	a 2,900
12-----		457		108	1,100	321	217	4,200	c 2,500
13-----		451		112	610	184	159	2,250	966
14-----	45	286	93	117	700	221	138	1,830	682
15-----		321		122	840	a 280	136	2,140	786
16-----		--		117	1,500	a 470	117	2,160	682
17-----	50	2,180	31	108	1,900	a 550	115	2,200	683
18-----		--		100	1,790	483	117	1,920	607
19-----		510		98	1,160	307	112	1,800	544
20-----	50	390	75	96	1,070	277	106	1,620	464
21-----		210		92	930	231	124	1,630	546
22-----		200		76	1,000	205	119	1,500	482
23-----	55	--	68	78	1,020	215	104	1,320	371
24-----		226		72	1,000	a 190	98	1,160	307
25-----		200		72	1,030	200	104	1,210	340
26-----	57	580	a 68	71	1,130	217	139	1,400	a 530
27-----		740		68	900	165	398	13,000	c 14,000
28-----		440		61	630	a 100	537	19,800	28,700
29-----	60	280	45	69	596	111	712	26,600	51,100
30-----	63	300	a 51	--	--	--	1,080	29,000	90,000
31-----	66	370	66	--	--	--	1,070	22,100	s 66,300
Total--	1,426	--	1,795	2,562	--	7,609	6,910	--	267,325

s Computed by subdividing day.

a Computed from estimated concentration graph.

c Computed from partially estimated concentration graph.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	970	19,200	50,300	826	10,600	23,600	2,500	14,000	a 95,000
2-----	507	10,000	13,700	915	11,500	28,400	2,190	12,000	71,000
3-----	364	7,800	7,670	1,080	14,000	a 41,000	2,190	11,500	68,000
4-----	301	6,250	5,080	1,290	14,100	49,100	3,950	16,600	177,000
5-----	294	4,200	3,330	1,350	15,000	a 55,000	3,730	15,400	155,000
6-----	268	4,250	3,080	1,480	17,900	71,500	3,740	14,000	a 140,000
7-----	294	6,600	5,240	1,650	20,000	a 89,000	3,740	13,800	139,000
8-----	298	7,250	5,830	1,780	20,300	97,600	3,560	18,400	177,000
9-----	301	6,800	5,530	1,520	14,900	61,100	3,400	18,400	169,000
10-----	248	4,950	3,310	1,370	14,000	a 52,000	3,250	12,600	111,000
11-----	235	4,250	2,700	1,190	10,000	a 32,000	2,960	12,000	95,900
12-----	245	3,950	2,610	1,350	11,000	40,100	2,850	15,600	120,000
13-----	207	3,600	a 2,000	1,590	15,600	67,000	2,870	19,900	143,000
14-----	179	3,300	1,590	1,910	12,000	61,900	2,400	5,150	33,400
15-----	194	2,950	1,550	2,300	14,300	88,800	2,230	4,450	26,800
16-----	185	2,750	1,370	2,280	8,430	51,900	2,000	8,300	44,800
17-----	176	3,300	1,570	1,680	7,180	32,600	1,760	3,150	38,700
18-----	204	3,450	1,900	1,300	6,800	23,900	1,630	6,050	26,600
19-----	216	4,250	2,480	1,140	8,100	24,900	1,550	2,450	10,300
20-----	268	5,900	4,270	1,140	7,250	22,300	1,480	3,100	12,400
21-----	298	5,900	4,750	1,390	10,100	37,900	1,400	3,950	14,900
22-----	353	7,550	7,200	1,660	8,700	39,000	1,230	3,400	a 11,000
23-----	411	8,100	8,990	1,250	4,500	a 15,000	1,160	3,200	10,000
24-----	449	9,550	11,600	1,050	4,700	a 13,000	1,040	3,000	a 8,400
25-----	484	10,100	13,200	1,040	6,400	18,000	1,080	3,000	a 8,600
26-----	555	12,500	18,700	1,220	5,800	19,100	1,080	3,000	a 8,700
27-----	741	16,700	33,400	1,530	7,000	28,900	1,100	3,300	a 9,800
28-----	a 940	17,000	43,600	1,880	7,100	36,000	1,020	4,000	11,000
29-----	1,130	18,000	a 55,000	1,990	11,000	a 59,000	852	2,050	4,720
30-----	835	13,000	a 29,000	2,220	11,600	69,500	788	2,600	5,530
31-----	--	--	--	2,310	10,100	63,000	--	--	--
Total--	12,159	--	350,550	46,681	--	1,412,100	64,510	--	1,946,550

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-----	743	2,650	5,320	208	5,000	2,810	120	--	b 1,000
2-----	680	2,800	5,140	182	7,150	3,510	90	1,840	447
3-----	637	2,000	3,440	148	2,950	1,180	80	1,660	359
4-----	618	1,800	a 3,000	112	2,300	696	76	1,160	238
5-----	576	2,550	3,970	92	1,000	248	70	925	175
6-----	548	1,200	1,780	86	776	180	63	694	118
7-----	534	1,400	2,020	79	750	a 160	56	593	90
8-----	520	2,170	3,050	93	2,130	s 1,030	54	594	87
9-----	497	1,600	2,150	383	16,900	sc 19,800	60	582	94
10-----	420	850	964	156	12,000	sc 6,010	182	5,000	2,500
11-----	410	560	620	88	3,000	c 710	108	27,600	8,050
12-----	375	600	608	78	1,750	369	82	13,600	3,010
13-----	337	685	623	83	1,700	381	75	4,600	932
14-----	300	950	770	73	1,000	a 200	76	1,800	369
15-----	273	700	516	143	1,500	a 580	65	1,400	246
16-----	218	520	306	100	24,000	c 6,500	58	650	102
17-----	188	340	173	71	22,400	4,290	57	549	84
18-----	156	220	93	61	6,100	1,000	56	461	70
19-----	143	240	93	55	1,100	163	55	480	71
20-----	138	240	a 89	54	800	a 120	90	1,050	255
21-----	138	320	119	56	945	143	190	--	b 2,000
22-----	109	240	71	77	2,900	s 711	130	8,600	3,020
23-----	98	245	65	110	4,500	1,340	95	12,300	3,150
24-----	92	250	a 62	70	4,450	841	80	7,500	1,620
25-----	83	235	62	64	3,950	683	73	2,400	a 470
26-----	83	160	36	58	1,750	274	67	742	134
27-----	95	150	38	696	--	--	63	209	36
28-----	109	200	a 59	937	--	--	61	331	55
29-----	233	1,090	s 763	851	--	b 62,000	60	237	38
30-----	281	23,500	17,800	445	--	--	58	210	33
31-----	208	15,300	8,590	243	--	--	--	--	--
Total--	9,840	--	62,380	5,954	--	363,929	2,450	--	28,853

Total discharge for year (cfs-days)..... 158,681

Total load for year (tons)..... 4,759,594

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water sediment discharge curves.

c Computed from partially estimated concentration graph.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952

(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	Water discharge (cfs)	Water temperature (° F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Nov. 1, 1951 ...	10:40 a. m.	76		2,170	3,570	45	53	65	66	69	73	82	95	100	SBWCM
Nov. 9, 1951 ...	2:40 p. m.	56		747	1,160	24	37	47	55	61	68	82	98	99	SBWCM
Nov. 20, 1951 ...	10:20 a. m.	35		614	900	32	41	50	57	65	69	76	91	100	SBWCM
Dec. 7, 1951 ...	2:00 p. m.	40		512	899	48	51	62	67	75	82	93	99	99	SBWCM
Dec. 28, 1951 ...	10:15 a. m.	50		351	2,330	--	48	--	67	--	80	87	95	99	SPWCM
Feb. 6, 1952 ...	10:45 a. m.	80		671	4,950	--	32	--	53	--	68	79	99	100	SPWCM
Mar. 6, 1952 ...	11:30 a. m.	106		1,530	2,400	--	24	--	37	--	55	82	99	100	SPWCM
Mar. 12, 1952 ...	2:35 p. m.	188		4,250	3,950	--	47	--	60	--	80	93	100	100	SPWCM
Mar. 17, 1952 ...	3:45 p. m.	122		2,070	1,490	--	28	--	37	--	63	84	99	100	SPWCM
Mar. 25, 1952 ...	4:10 p. m.	115		1,640	3,310	--	48	--	58	--	73	88	99	100	SPWCM
Mar. 31, 1952 ...	9:15 a. m.	1,650		26,100	4,160	--	21	--	33	--	67	92	99	100	SPWCM
Apr. 9, 1952 ...	10:15 a. m.	322		6,250	5,240	--	46	--	61	--	75	90	100	100	SPWCM
Apr. 22, 1952 ...	9:30 a. m.	353		7,770	4,810	--	31	--	53	--	71	89	99	100	SPWCM
May 1, 1952 ...	10:00 a. m.	722		9,310	5,160	22	28	34	42	51	65	82	99	100	SPWCM
May 1, 1952 ...	10:00 a. m.	722		9,310	5,390	0	4	10	40	50	65	82	99	100	SPWCM
May 1, 1952 ...	10:00 a. m.	722		9,310	3,460	21	29	34	40	51	65	82	99	100	SPWCM
May 8, 1952 ...	5:00 p. m.	1,740		16,800	3,750	--	22	--	32	--	60	86	100	100	SPWCM
May 19, 1952 ...	3:00 p. m.	1,100		8,620	4,250	--	14	--	23	--	53	88	100	100	SPWCM
June 2, 1952 ...	3:00 p. m.	2,070		11,500	3,640	--	14	--	25	--	54	79	98	100	SPWCM
June 9, 1952 ...	3:15 p. m.	3,360		19,400	3,670	--	20	--	32	--	67	87	98	99	SPWCM
June 16, 1952 ...	3:30 p. m.	1,970		8,280	4,680	--	18	--	29	--	53	84	98	99	SPWCM
June 23, 1952 ...	6:30 p. m.	1,170		3,370	--	--	--	--	--	--	67	95	99	100	S
July 1, 1952 ...	11:00 a. m.	729		2,540	--	--	--	--	--	--	42	78	100	100	S
July 7, 1952 ...	10:00 a. m.	566		1,530	--	--	--	--	--	--	45	75	98	100	S
July 15, 1952 ...	10:00 a. m.	269		1,100	--	--	--	--	--	--	30	58	93	100	S
July 21, 1952 ...	2:35 p. m.	134		329	--	--	--	--	--	--	51	72	98	100	S
July 26, 1952 ...	2:50 p. m.	86		226	--	--	--	--	--	--	34	46	88	100	S

Aug. 12, 1952...	3:55 p. m.	78	1,500	4,040	--	55	--	88	--	88	100	100	100	SPWCM
Aug. 21	9:55 a. m.	86	1,110	3,040	--	49	--	81	--	92	97	98	100	SPWCM
Sept. 3	3:30 p. m.	80	1,660	3,560	49	62	72	78	85	91	95	99	100	SPWCM
Sept. 8	8:35 a. m.	87	480	1,970	37	51	62	68	77	85	83	89	100	SPWCM
Sept. 17	8:30 a. m.	88	528	1,250	46	51	63	71	76	83	90	98	100	SPWCM
Sept. 26	10:20 a. m.	70	941	5,280	--	62	--	80	--	92	98	100	100	SPWCM

DIRTY DEVIL RIVER BASIN

DIRTY DEVIL RIVER NEAR HITE, UTAH

LOCATION.--Samples collected near the mouth, above backwater of the Colorado River, about 9 miles upstream from Hite, Garfield County, and 3 miles downstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.

Water temperatures: May 1949 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 5,080 ppm July 21-29; minimum, 851 ppm Aug. 6-7.

Hardness: Maximum, 2,110 ppm July 21-29; minimum, 435 ppm Aug. 6-7.

Specific conductance: Maximum daily, 8,080 microhos July 29; minimum observed, freezing point Dec. 21.

Water temperatures: Maximum observed, 95°F July 26; minimum observed, freezing point Dec. 21.

EXTREMES, 1947-52.--Dissolved solids: Maximum, 6,310 ppm June 21-30, 1950; minimum, 708 ppm Mar. 21-24, 26-31, 1948.

Hardness: Maximum, 3,030 ppm July 12, 17, 19, 1951; minimum, 435 ppm Aug. 6-7, 1952.

Specific conductance: Maximum daily, 9,070 microhos June 23, 1950; minimum daily, 898 microhos Feb. 17, 1948.

Water temperatures: 1949-52.--Maximum observed, 97°F July 2, 1950; minimum observed, freezing point on several days during winter months.

REMARKS.--Prior to July 8, 1948, samples were collected at gaging station near Hanksville. Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. No records of discharge available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (microhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 1-2-6-10, 1951	21	0.04	440	67	167	12	183	1,350	120	0.4	2.5	--	--	2,270	3.09		1,370	1,220	21	2.0	2,670	7.6	10
Oct. 3-5.....	18	--	544	99	447	12	187	2,050	319	--	1.5	--	--	3,570	4.86		1,760	1,510	36	4.6	4,170	7.7	--
Oct. 6.....	28	0.06	346	63	110	12	169	1,030	109	--	0.31	0.31	0.31	1,770	2.41		1,120	992	17	1.4	2,180	7.8	10
Oct. 21-29.....	28	0.03	307	54	95	12	189	894	65	4	1.4	--	--	1,560	2.12		960	942	17	1.3	1,930	7.8	10
Oct. 27-30.....	16	--	383	58	298	12	187	1,820	172	--	2.3	--	--	2,990	4.07		1,920	1,490	29	3.2	3,440	7.7	--
Nov. 1-10.....	22	0.02	453	58	153	12	159	1,840	125	2	2.5	--	--	2,840	3.06		1,370	1,400	19	1.6	2,610	7.7	10
Nov. 11-20.....	23	0.03	556	128	8	17	1,040	122	118	2	2.9	2.9	2.9	1,830	2.49		1,120	974	20	1.7	2,220	7.7	10
Nov. 21-30.....	23	0.03	286	54	142	8.5	194	946	118	2	2.6	--	--	1,670	2.27		960	926	24	2.0	1,980	8.1	7
Dec. 1-10.....	26	0.05	318	64	190	10	220	942	200	2	3.2	--	--	1,860	2.53		1,080	878	28	2.5	2,350	7.7	8
Dec. 11-20.....	26	0.04	280	68	180	11	244	955	172	3	2.9	2.9	3.5	1,890	2.52		1,078	778	28	2.5	2,320	7.8	7
Dec. 21-24, 27, 31	26	0.05	285	52	120	10	5.6	764	107	2	2.4	--	--	1,440	1.92		875	705	23	1.9	2,350	7.8	7
Jan. 3-6-9-10, 1952	24	0.04	408	72	260	10	254	2,950	263	2	4.1	--	--	2,410	3.28		1,320	1,120	30	3.7	2,950	7.8	7
Jan. 11, 14.....	33	0.03	292	64	195	8.4	260	876	192	85	2	4.1	2.4	1,790	2.43		992	1,778	30	3.7	2,400	7.8	--
Jan. 15-20.....	24	0.04	178	37	96	4.8	174	516	81	--	2.2	2.2	2.1	1,030	1.40		596	454	26	1.7	1,400	7.8	6
Jan. 21, 26.....	23	--	200	35	76	8.3	165	536	81	--	2.3	--	--	1,030	1.40		643	508	21	1.3	1,410	7.7	--
Jan. 25, 27, 29-31	20	0.04	278	42	123	8.3	195	838	106	1	2.8	--	--	1,500	2.04		866	738	23	1.8	1,900	7.7	10
Feb. 1-10.....	22	0.05	250	43	147	7.7	186	779	142	1	3.0	--	--	1,480	2.01		801	685	28	2.3	1,920	7.7	10
Feb. 11-12, 17-20	24	0.11	247	50	174	7.8	132	763	184	2	4.3	4.3	1.7	1,530	2.03		822	684	31	2.6	2,040	7.6	5
Feb. 21-27.....	27	0.06	228	48	160	7.5	132	714	153	3	3.1	--	--	1,430	1.94		766	618	31	2.5	1,920	7.8	5
Mar. 1-10.....	23	0.09	229	49	174	7.8	180	740	184	3	3.0	--	--	1,480	2.01		773	628	33	2.7	1,980	7.7	8
Mar. 11-20.....	23	0.06	228	52	180	7.7	192	776	151	3	3.2	3.2	1.6	1,510	2.05		783	628	33	2.8	2,010	7.7	7
Mar. 21-31.....	26	0.05	210	62	145	7.7	189	739	152	3	6.1	--	--	1,430	1.94		779	624	29	2.3	2,040	7.4	5

DIRTY DEVIL RIVER BASIN--Continued

DIRTY DEVIL RIVER NEAR HITE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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	So- dium adsorp- tion ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Apr. 1-10, 1952..	25	0.07	252	66	184	8.3	175	937	137	0.2	4.1	--	--	1,700	2.31	900	756	31	2.7	2,240	7.4	10	
Apr. 11-20	24	.07	242	57	172	8.7	171	838	148	.3	2.0	--	0.19	1,580	2.15	838	698	31	2.6	2,110	7.4	10	
Apr. 21-30	21	.05	298	72	196	9.7	184	1,080	153	.2	3.1	--	--	1,910	2.60	1,040	905	29	2.6	2,470	7.5	10	
May 1-6	17	.05	366	59	152	9.0	156	1,160	98	.2	2.4	--	--	1,940	2.64	1,160	1,030	22	1.9	2,370	7.5	10	
May 11-20	15	.12	290	63	100	7.2	198	894	82	.3	3.0	.17	1.15	1,550	2.11	982	820	18	1.4	1,960	7.5	10	
May 21-31	14	.04	210	53	160	7.2	182	775	99	.3	3.0	--	--	1,410	1.92	742	593	32	2.6	1,890	7.6	5	
June 1-4	14	.05	212	50	109	7.2	196	661	89	.4	2.0	--	--	1,240	1.69	734	574	24	1.7	1,700	7.6	10	
June 5-6, 8	18	.06	488	80	269	12	178	1,700	150	.3	2.0	--	--	2,810	3.82	1,550	1,400	27	3.0	3,240	7.6	10	
June 11-20	14	.04	234	50	85	6.4	158	708	74	.4	3.1	.15	1.25	1,700	1.94	790	660	19	1.3	1,710	7.7	10	
June 21-30	13	.05	234	54	160	6.9	182	754	129	.4	3.2	--	--	1,430	2.45	781	632	31	2.5	1,940	7.7	10	
July 1-8	22	.33	254	66	221	8.7	204	895	155	.4	7.8	--	--	1,800	2.45	905	738	34	3.2	2,340	7.6	15	
July 9-10	19	--	440	79	265	17	190	1,590	129	--	7.9	--	--	2,620	3.56	1,420	1,270	29	3.1	3,060	7.5	--	
July 11-20	24	.06	352	85	294	17	174	1,310	249	.6	3.4	.44	2.40	3.29	2.40	1,230	1,080	34	3.6	3,060	7.7	15	
July 21-26	30	.07	548	181	861	61	319	1,900	1,340	.6	1.9	--	5.08	6.91	2,110	1,860	46	8.2	6,850	7.7	7		
July 30	17	--	576	105	354	253	2,170	1,221	121	--	1.7	--	--	3,470	4.72	1,870	1,660	29	3.6	3,860	--	--	
Aug. 2-5, 9-10 ..	18	.13	508	87	352	18	231	1,790	222	.4	2.1	--	--	3,110	4.23	1,620	1,440	32	3.8	3,640	7.4	25	
Aug. 6-7	13	--	110	39	117	18	206	388	82	--	1.6	--	--	851	1.16	1,335	886	37	2.4	1,300	--	--	
Aug. 11-20	17	.13	596	106	452	17	243	2,180	305	.3	1.2	.52	3.80	5.17	1,920	1,720	34	4.5	4,360	7.4	25		
Aug. 21-28	19	.13	594	92	317	17	228	2,000	192	.3	2.1	--	--	3,500	4.56	1,860	1,670	27	3.2	3,760	7.5	25	
Aug. 30	11	--	279	56	121	17	306	848	40	--	1.2	--	--	1,500	2.04	926	876	22	1.7	1,950	--	--	
Sept. 2-4, 6	22	.13	568	131	212	17	184	1,890	148	.6	4.0	--	--	3,070	4.18	1,860	1,700	20	2.1	3,420	7.5	18	
Sept. 13, 15-17, 20	21	.06	522	81	272	15	191	1,730	195	.6	3.0	.35	3.0	2.80	2.96	1,640	1,460	26	2.9	3,360	7.4	25	
Sept. 21-25, 27 ..	19	.11	540	74	316	14	141	1,860	141	.3	1.9	--	--	3,080	4.19	1,500	1,500	29	3.4	3,420	7.4	25	

DIRTY DEVIL RIVER BASIN--Continued

DIRTY DEVIL RIVER NEAR HITE, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	54	41	--	40	41	--	70	74	83	--	--
2	67	45	42	--	41	39	--	74	70	85	90	71
3	64	48	--	33	41	39	57	73	66	84	89	80
4	68	45	41	33	40	--	55	74	72	--	87	81
5	62	--	41	37	41	--	56	70	77	--	84	--
6	63	46	38	35	41	45	61	70	78	85	84	80
7	63	48	35	--	41	48	--	--	--	78	79	--
8	65	49	34	--	41	52	56	--	74	75	--	--
9	66	46	35	35	37	44	56	--	--	77	81	--
10	64	50	36	33	42	48	56	--	--	73	78	--
11	67	50	37	33	42	44	57	66	--	--	81	--
12	67	50	--	--	42	43	56	--	--	81	78	--
13	64	47	--	--	--	44	57	72	74	82	75	--
14	64	45	35	37	--	45	59	71	71	80	--	--
15	68	44	37	36	--	44	55	65	70	79	73	65
16	--	44	35	33	--	--	58	63	73	88	78	65
17	67	40	36	35	44	45	66	63	75	88	81	78
18	64	--	37	35	43	45	65	62	78	88	86	--
19	63	40	33	38	42	45	65	71	78	89	82	--
20	61	42	34	36	38	44	60	72	78	89	78	67
21	60	45	32	35	39	41	65	67	75	80	85	65
22	58	--	34	--	40	--	64	67	77	--	84	68
23	57	--	33	--	41	40	--	68	75	--	83	65
24	56	40	33	--	42	46	65	73	--	89	82	68
25	56	39	--	41	43	49	67	70	--	91	--	72
26	55	38	--	42	43	--	--	75	--	95	--	--
27	53	40	37	40	--	49	--	--	77	89	73	68
28	50	40	--	--	41	51	59	--	78	84	75	--
29	52	41	--	38	43	57	60	73	78	92	--	--
30	55	40	--	39	--	54	61	74	80	--	68	--
31	57	--	37	40	--	55	--	--	--	--	--	--
Average	61	44	--	--	41	46	60	--	--	--	--	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH

LOCATION--At gaging station at Hite, Garfield County, a quarter of a mile upstream from Trachyte Creek, 1 mile downstream from White Canyon, 8 miles downstream from Dirty Devil River, and 84 miles upstream from San Juan River.

DRAINAGE AREA.--76,600 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

Water temperatures: May 1949 to September 1952.

Sediment records: October 1948 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,990 ppm (sum) Sept. 22; minimum, 251 ppm June 11-20.

Hardness: Maximum, 1,080 ppm Sept. 22; minimum, 155 ppm June 11-20.

Specific conductance: Maximum daily, 2,470 microhos Sept. 22; minimum observed, freezing point Dec. 15, 20, Jan. 3.

Water temperatures: Maximum observed, 82°F July 28-29, Aug. 24; minimum observed, freezing point Dec. 15, 20, Jan. 3.

Sediment concentrations: Maximum daily, 21,400 ppm Oct. 27; minimum daily, 130 ppm Dec. 14.

Sediment loads: Maximum daily, 1,560,000 tons Apr. 30; minimum daily, 980 tons Dec. 14.

EXTREMES, 1948-52.--Dissolved solids (1950-52): Maximum, 1,990 ppm Sept. 22, 1952; minimum, 251 ppm June 11-20, 1952.

Hardness (1950-52): Maximum, 1,080 ppm Sept. 22, 1952; minimum, 155 ppm June 11-20, 1952.

Specific conductance (1950-52): Maximum daily, 2,470 microhos Sept. 22, 1952; minimum daily, 355 microhos June 19, 1952.

Water temperatures (1949-52): Maximum observed, 83°F July 31, 1951; minimum observed, freezing point on several days during winter months.

Sediment concentrations (1949-52): Maximum daily, 34,300 ppm Aug. 4, 1951; minimum daily, 49 ppm Jan. 10, 1951.

Sediment loads: Maximum daily, 1,770,000 tons Aug. 4, 1951; minimum daily, 447 tons Jan. 10, 1951.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbocationate (CO 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 sulfate ratio	Specific conductance (microhos at 25°C)
															Parts per million	Tons per acre-foot	Calcium	Non-carbonate		
Oct. 1-10, 1951....	5,152	12	138	139	58	165	6.1	226		590	116		4.9	--	1,230	1.87	583	398	38	1,950
Oct. 11-20.....	6,288	14	114	146	48	148	5.5	184		477	106		4.9	0.29	1,040	1.41	482	331	40	1,450
Oct. 21-31.....	7,085	13	136	158	53	163	5.9	214		559	106		4.9	--	1,040	1.63	562	397	38	1,600
Nov. 1-10.....	6,943	14	124	152	52	149	5.9	224		505	94		4.9	--	1,100	1.50	524	340	38	1,510
Nov. 11-20.....	6,125	14	115	152	52	151	5.7	250		568	106		4.9	.29	1,060	1.44	501	312	39	1,470
Nov. 21-30.....	5,699	15	120	150	50	157	5.7	251		479	114		4.8	--	1,110	1.51	505	316	40	1,520
Dec. 1-10.....	5,744	14	119	149	49	175	5.2	244		473	120		4.4	--	1,090	1.48	498	298	43	1,520
Dec. 11-20.....	5,585	14	129	156	56	190	0.0	252		527	144		5.6	--	1,250	1.70	552	346	42	1,720
Dec. 21-31.....	5,250	15	134	149	49	143	4.8	250		481	119		5.3	--	1,110	1.51	536	343	37	1,530
Jan. 1-10, 1952..	6,143	12	110	140	50	145	5.2	222		426	112		5.5	--	1,010	1.37	460	298	39	1,420
Jan. 11-20.....	6,950	15	128	151	51	169	5.2	260		494	143		6.1	.20	1,210	1.65	529	316	43	1,680
Jan. 21-31.....	6,775	12	108	146	43	137	5.6	206		405	114		4.6	--	970	1.52	446	276	40	1,390
Feb. 1-10.....	5,854	14	105	145	45	150	5.3	214		405	117		4.4	--	985	1.34	447	272	42	1,400
Feb. 11-12, 17-20.	5,435	14	107	145	45	159	5.3	218		424	126		4.6	.19	1,030	1.40	452	274	42	1,450
Feb. 21-29.....	5,241	14	108	147	46	165	5.4	228		412	138		5.0	--	1,040	1.41	458	268	44	1,500
Mar. 1-10.....	5,209	14	108	148	47	177	5.3	228		435	146		5.1	--	1,090	1.46	467	282	45	1,550
Mar. 11-20.....	5,936	13	114	144	44	163	5.3	224		454	122		5.5	.14	1,060	1.45	466	282	43	1,500
Mar. 21-31.....	6,250	13	103	145	45	161	5.2	204		426	124		5.4	--	1,010	1.37	442	275	44	1,460

Apr. 2-4, 7, 9-10, 1952	12	15,420	98	40	147	5.5	235	415	76	3.8	--	950	1.29	35,550	409	216	43	3.2	1,370
Apr. 11-20	12	28,610	79	28	94	4.8	205	258	50	4.4	.13	874	.92	52,060	312	144	39	2.3	1,000
Apr. 21-30	14	49,600	58	18	46	3.8	184	132	24	3.6	--	419	.57	56,110	218	68	31	1.3	642
May 1-10	13	74,860	48	16	30	3.0	182	94	15	3.0	--	318	.43	64,270	186	54	25	1.0	491
May 11-20	14	79,930	45	15	24	2.1	158	74	12	2.0	--	274	.37	59,130	174	44	23	.8	443
May 21-31	14	53,640	47	16	30	2.4	152	94	16	1.7	--	312	.42	45,190	164	59	26	1.0	496
June 1-10	12	77,300	50	14	28	2.1	153	97	14	1.7	--	308	.42	64,280	182	57	25	.9	488
June 11-20	11	89,220	44	11	20	2.4	141	63	11	1.7	--	251	.34	60,460	155	40	22	.7	399
June 21-30	11	47,080	45	14	27	2.1	135	91	16	1.5	--	287	.39	36,490	170	60	25	.9	460
July 1-6	14	33,370	49	17	38	2.3	144	121	22	1.2	--	346	.47	31,170	192	74	30	1.2	542
July 6-10	13	28,600	70	22	57	3.7	182	185	32	1.2	--	494	.67	35,150	285	116	32	1.5	743
July 11-20	12	18,920	64	23	57	3.3	168	185	34	1.2	.06	484	.66	24,720	254	118	32	1.6	733
July 21, 24-25, 27-30	13	10,980	78	30	64	4.7	179	261	59	1.0	--	652	.89	19,330	318	172	36	2.0	973
Aug. 1-10	15	11,190	102	37	106	6.1	199	351	71	2.8	--	813	1.11	24,560	408	244	36	2.3	1,200
Aug. 11-20	14	11,480	112	38	110	5.5	202	385	69	4.2	--	871	1.18	27,000	436	270	35	2.3	1,250
Aug. 21-31	14	10,800	122	41	103	5.7	212	445	63	2.5	--	951	1.29	27,730	473	300	32	2.1	1,320
Sept. 2-3, 5-7	15	9,698	118	43	110	5.4	240	421	66	3.0	--	928	1.26	24,300	472	275	33	2.2	1,320
Sept. 11-20	13	6,253	110	48	127	5.1	206	440	95	3.8	--	977	1.33	16,400	472	303	37	2.5	1,400
Sept. 21, 23-25, 28	11	7,032	137	51	149	6.0	200	548	114	5.2	--	1,180	1.60	23,400	552	388	37	2.8	1,620
Sept. 22	14	9,280	338	58	208		214	1,150	109	9.8	--	1,990	2.71	49,960	1,080	906	29	2.8	2,470
Weighted average		321,250	65	23	58	3.3	171	183	37	2.7	--	491	0.67	28,170	256	116	33	1.6	730

a Sum of determined constituents.

b Represents 97 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	4,220	641	7,300	8,960	5,600	135,000	5,430	611	8,960
2-----	4,440	700	8,390	7,660	4,390	90,800	5,610	331	5,010
3-----	4,530	646	7,900	6,960	2,720	51,100	5,720	300	a 4,600
4-----	4,820	830	10,800	6,800	1,800	33,000	5,770	271	4,220
5-----	5,120	1,030	14,200	6,700	1,800	a 33,000	5,810	430	6,750
6-----	4,980	1,000	13,400	6,610	1,820	32,500	6,040	346	5,640
7-----	4,960	2,900	38,800	6,510	1,030	18,100	6,270	391	6,620
8-----	5,210	2,500	35,200	6,550	905	16,200	6,130	195	3,230
9-----	6,130	900	14,900	6,370	675	11,600	5,660	184	2,810
10-----	7,110	1,420	27,300	6,230	946	15,900	5,000	215	2,900
11-----	7,550	3,020	61,600	6,190	636	10,600	4,020	379	4,110
12-----	6,960	2,580	48,500	6,090	538	8,850	3,370	280	a 2,500
13-----	6,390	2,800	48,300	6,090	382	6,280	2,940	200	a 1,600
14-----	6,310	4,340	73,900	6,130	377	6,240	2,800	130	980
15-----	6,250	4,180	70,200	6,170	423	7,050	2,900	243	1,900
16-----	6,000	4,200	68,000	6,110	447	7,370	3,000	285	2,150
17-----	5,870	4,720	74,800	6,020	500	8,130	3,610	281	2,740
18-----	5,880	3,290	52,200	6,150	526	8,730	4,120	286	3,180
19-----	5,900	1,970	31,400	6,190	573	9,580	4,280	285	3,290
20-----	5,770	1,650	25,700	6,110	612	10,100	4,840	300	3,920
21-----	5,680	1,190	18,200	5,590	508	7,870	4,880	335	4,410
22-----	5,750	1,010	15,700	5,480	446	6,600	4,860	371	4,870
23-----	5,630	1,060	16,100	5,050	382	5,210	4,420	327	3,900
24-----	5,650	880	13,400	5,060	882	12,000	4,400	262	3,110
25-----	5,660	511	7,810	5,380	545	7,920	4,640	280	a 3,500
26-----	5,830	1,410	22,200	6,080	687	11,300	5,210	308	4,330
27-----	7,110	21,400	411,000	6,330	741	12,700	5,590	307	4,630
28-----	7,470	11,400	230,000	6,190	527	8,810	5,650	319	4,870
29-----	9,640	5,200	135,000	6,020	437	7,100	5,500	320	4,750
30-----	9,440	10,800	275,000	5,810	511	8,020	5,830	1,380	21,700
31-----	9,770	8,200	216,000	--	--	--	6,370	3,550	61,100
Total--	192,010	--	2,093,200	187,690	--	607,460	150,670	--	198,280
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-----	7,400	3,900	77,900	8,130	842	13,900	4,880	386	5,090
2-----	8,710	4,460	105,000	5,840	723	11,600	4,910	384	5,090
3-----	7,600	4,290	88,000	5,880	724	11,500	5,030	369	5,010
4-----	5,830	3,980	62,800	5,750	565	8,770	5,080	360	a 4,900
5-----	4,910	3,310	43,900	5,770	471	7,340	5,130	370	a 5,100
6-----	4,810	2,720	35,300	5,830	476	7,490	5,330	374	5,380
7-----	4,330	1,860	21,700	5,880	521	8,270	5,400	395	5,760
8-----	4,200	1,200	13,600	5,960	537	8,640	5,400	413	6,020
9-----	3,490	758	7,140	5,810	556	8,720	5,430	483	7,080
10-----	3,320	508	4,560	5,590	657	9,920	5,500	680	10,100
11-----	3,630	700	6,860	5,310	928	13,300	6,000	1,600	25,900
12-----	3,520	400	3,800	5,290	827	11,800	6,230	2,220	37,300
13-----	3,740	277	2,800	5,240	800	a 11,000	6,430	3,350	58,200
14-----	4,060	288	3,160	5,360	900	a 13,000	6,330	2,300	39,300
15-----	4,200	310	3,520	5,410	1,100	a 16,000	5,900	1,460	23,300
16-----	4,760	320	4,110	5,470	1,500	a 22,000	5,660	1,300	a 20,000
17-----	5,540	460	6,880	5,540	1,440	21,500	5,630	1,010	15,400
18-----	6,680	750	13,500	5,540	879	13,100	5,650	860	13,100
19-----	6,630	1,030	18,400	5,480	738	10,900	5,720	830	12,800
20-----	6,530	778	13,700	5,450	682	10,000	5,810	751	11,800
21-----	6,570	777	13,800	5,450	999	14,700	5,940	597	9,570
22-----	6,840	880	a 16,000	5,410	1,140	16,700	5,880	497	7,890
23-----	6,530	870	a 15,000	5,310	943	13,500	5,940	442	7,090
24-----	6,250	769	13,000	5,190	529	7,410	5,960	484	7,790
25-----	6,060	749	12,300	5,130	555	7,690	5,980	536	8,650
26-----	5,980	726	11,700	5,310	677	9,710	5,980	471	7,600
27-----	6,550	780	13,800	5,280	522	7,440	5,870	472	7,480
28-----	7,550	800	16,300	5,150	435	6,050	5,940	590	9,460
29-----	8,180	808	17,800	4,940	400	5,340	6,130	820	13,600
30-----	7,420	839	16,800	--	--	--	7,130	1,000	19,300
31-----	6,590	811	14,400	--	--	--	8,000	1,300	28,100
Total--	178,410	--	697,530	159,800	--	327,290	180,200	--	443,160

a Computed from estimated concentration graph.

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	8,930	2,400	a58,000	59,200	9,290	1,480,000	59,400	1,920	308,000
2-----	9,910	3,880	104,000	56,800	8,370	1,280,000	62,600	1,880	318,000
3-----	10,300	5,600	156,000	57,800	7,130	1,110,000	64,000	1,840	318,000
4-----	12,500	6,220	210,000	62,700	4,600	780,000	66,800	1,990	359,000
5-----	15,100	6,190	252,000	74,100	4,300	860,000	71,100	2,260	434,000
6-----	16,600	6,190	277,000	81,600	4,700	1,040,000	81,600	2,300	507,000
7-----	17,700	6,230	298,000	88,600	4,650	1,110,000	86,200	2,200	512,000
8-----	16,700	6,600	298,000	90,600	4,600	1,130,000	87,700	2,090	495,000
9-----	18,000	6,940	352,000	89,400	5,610	1,350,000	95,100	2,140	549,000
10-----	23,300	9,350	588,000	87,800	4,800	1,140,000	98,500	2,180	580,000
11-----	28,500	11,200	862,000	87,600	2,930	693,000	101,000	2,200	600,000
12-----	27,000	10,300	751,000	85,500	3,000	a690,000	99,800	2,190	590,000
13-----	26,000	10,100	709,000	80,800	2,930	639,000	100,000	2,120	572,000
14-----	24,800	9,800	656,000	78,100	3,610	761,000	98,500	2,170	577,000
15-----	23,400	8,030	507,000	77,200	2,700	563,000	93,900	2,120	537,000
16-----	23,500	7,520	477,000	79,500	2,800	601,000	89,800	2,120	514,000
17-----	26,600	8,080	580,000	82,100	2,920	647,000	87,600	2,010	475,000
18-----	31,400	7,800	661,000	82,600	2,780	620,000	83,600	1,990	449,000
19-----	36,400	10,000	983,000	76,100	2,560	526,000	73,400	1,980	392,000
20-----	38,500	11,000	a1,100,000	69,800	2,150	405,000	64,600	1,840	321,000
21-----	40,000	9,730	1,050,000	65,000	2,180	383,000	59,500	1,840	296,000
22-----	41,000	6,300	711,000	59,800	2,250	363,000	57,300	1,750	271,000
23-----	43,800	6,430	760,000	57,500	2,600	404,000	53,600	1,600	232,000
24-----	46,500	8,320	1,040,000	55,100	2,560	381,000	49,600	1,600	a210,000
25-----	47,300	7,980	1,020,000	51,600	2,190	305,000	47,200	1,600	a200,000
26-----	49,200	8,200	a1,100,000	48,400	2,200	287,000	43,800	1,600	a190,000
27-----	50,400	8,400	a1,100,000	46,900	2,100	a270,000	42,400	1,600	183,000
28-----	53,000	8,500	1,220,000	48,200	2,000	a260,000	40,200	1,580	169,000
29-----	60,300	8,680	1,410,000	49,800	1,990	268,000	39,400	1,550	165,000
30-----	63,700	9,090	1,560,000	52,200	1,900	268,000	37,900	1,510	155,000
31-----	--	--	--	55,500	1,900	285,000	--	--	--
Total--	931,940	--	20,850,000	2,137,900	--	20,899,000	2,136,100	--	11,478,000
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-----	36,300	1,500	147,000	12,500	17,000	a570,000	12,200	6,500	a210,000
2-----	36,100	1,480	144,000	12,700	17,800	610,000	11,900	5,900	190,000
3-----	35,100	1,450	137,000	12,300	16,100	535,000	11,100	8,770	263,000
4-----	33,800	1,230	112,000	12,200	12,100	399,000	9,960	8,200	a220,000
5-----	30,400	951	78,100	11,800	8,480	270,000	8,980	6,400	155,000
6-----	28,500	1,000	77,000	11,300	6,980	213,000	8,490	4,250	97,400
7-----	27,200	1,040	76,400	10,800	6,200	a180,000	8,020	4,520	97,900
8-----	28,600	1,720	133,000	9,800	5,700	a150,000	7,800	4,100	a86,000
9-----	29,500	2,380	190,000	9,380	16,000	c410,000	7,380	3,500	a70,000
10-----	27,700	4,100	307,000	9,080	11,300	277,000	4,020	2,300	a44,000
11-----	25,000	4,300	a290,000	9,570	8,150	211,000	6,820	1,080	19,900
12-----	23,200	3,550	222,000	9,960	2,700	72,600	6,450	800	13,900
13-----	21,700	2,070	121,000	10,400	1,900	53,400	6,430	600	10,400
14-----	20,500	1,440	79,700	12,300	3,550	118,000	6,290	594	9,920
15-----	19,400	1,720	90,100	15,100	10,700	s441,000	6,080	547	8,980
16-----	18,200	1,350	66,300	12,700	7,010	247,000	6,000	532	8,620
17-----	16,800	780	35,400	11,800	3,680	117,000	5,870	610	9,670
18-----	15,800	615	26,200	11,600	6,450	202,000	6,110	1,100	18,100
19-----	14,700	600	a24,000	11,100	5,900	177,000	6,210	880	14,800
20-----	13,900	500	18,800	10,300	3,410	94,800	6,270	810	13,700
21-----	13,500	500	18,200	9,570	2,400	62,000	6,430	2,570	s47,500
22-----	12,600	490	a17,000	9,540	2,120	54,600	9,280	23,000	sc598,000
23-----	12,000	480	a16,000	9,700	1,800	47,100	7,550	9,730	c198,000
24-----	11,400	472	14,500	10,000	2,490	67,200	7,130	4,420	85,100
25-----	10,700	403	11,600	10,600	3,400	a97,000	6,900	2,320	43,200
26-----	10,100	440	a12,000	10,800	6,100	a180,000	7,300	2,200	43,400
27-----	9,570	461	11,900	11,200	12,100	s367,000	7,190	1,500	29,100
28-----	9,460	502	12,800	11,100	9,800	a290,000	6,980	1,100	20,700
29-----	10,500	1,850	52,400	11,300	9,230	282,000	6,880	1,000	a19,000
30-----	11,700	11,400	360,000	12,300	11,200	ss375,000	6,680	810	a15,000
31-----	12,200	15,000	a490,000	12,700	9,200	315,000	--	--	--
Total--	628,130	--	3,391,400	345,500	--	7,477,700	227,700	--	2,660,290
Total discharge for year (cfs--days).....									
Total load for year (tons).....									
									7,454,050
									71,123,310

s Computed by subdividing day.

a Computed from estimated concentration graph.

c Computed from partly-estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER AT HYTE, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (° F)	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, 1951.....	10:00 a.m.	4,560		937	4,170	66	73	77	81	84	90	97	99		100	BWCM
Oct. 11.....	7,620		3,150													SPWCM
Oct. 26.....	2:30 p.m.	5,870		1,050	2,780	--	55	--	60	--	97	99	100		--	SPWCM
Oct. 27.....	4:50 p.m.	6,720		18,200	2,260	--	22	--	73	--	99	100			--	SPWCM
Nov. 2.....	9:45 a.m.	7,750		4,380	3,090	--	58	--	77	--	88	96	100		--	SPWCM
Nov. 13.....	2:15 p.m.	6,110		288	1,560	--	74	--	83	--	94	98	98		99	SPWCM
Dec. 11.....	2:00 p.m.	3,950		374	1,040	27	34	40	50	54	62	81	97		100	SPWCM
Jan. 27, 1952...	11:15 a.m.	6,850		--	2,770	--	30	--	56	--	93	98	100		--	SPWCM
Feb. 18.....	11:45 a.m.	5,540		703	830	--	64	--	89	--	99	95	99		99	SPWCM
Mar. 11.....	3:15 p.m.	6,150		1,590	2,100	--	72	--	90	--	96	99	--		--	SPWCM
Mar. 30.....	10:15 a.m.	7,150		752	1,160	35	43	49	61	70	76	87	98		100	SPWCM
Apr. 3.....	3:15 p.m.	10,300		5,680	3,890	--	60	--	81	--	90	97	100		--	SPWCM
Apr. 3.....	3:15 p.m.	10,300		5,680	3,430	46	58	71	80	85	90	96	100		--	SPWCM
Apr. 11.....	9:00 a.m.	29,100		10,400	4,080	--	44	--	65	--	93	100	--		--	SPWCM
Apr. 22.....	8:45 a.m.	41,900		6,070	3,780	--	41	--	68	--	92	99	100		--	SPWCM
Apr. 24.....	12:45 p.m.	46,700		--	4,330	--	40	--	60	--	89	97	100		--	SPWCM
Apr. 26.....	4:30 p.m.	61,600		--	4,400	--	38	--	60	--	89	97	100		--	SPWCM
Apr. 29.....	4:30 p.m.	75,400		5,250	2,760	35	36	50	60	78	89	97	100		--	SPWCM
May 5.....	2:45 p.m.	87,400		4,090	4,180	--	33	--	49	--	78	94	99		100	SPWCM
May 10.....	3:45 p.m.	87,400		3,740	5,780	--	28	--	42	--	64	85	95		100	SPWCM
May 10.....	3:45 p.m.	87,400		3,740	1,210	23	28	34	40	50	64	85	95		100	SPWCM
May 15.....	12:30 p.m.	76,800		2,500	3,000	--	25	--	41	--	68	94	100		--	SPWCM
May 22.....	2:45 p.m.	58,900		2,140	4,950	--	28	--	42	--	80	96	99		100	SPWCM
June 5.....	11:00 a.m.	70,800		2,930	4,130	--	35	--	50	--	79	99	100		--	SPWCM
June 9.....	11:00 a.m.	84,200		1,970	3,760	--	30	--	45	--	65	93	99		100	SPWCM
June 16.....	12:15 p.m.	89,700		1,440	2,680	--	21	--	35	--	62	91	99		100	SPWCM
June 23.....	11:30 a.m.	53,700		1,270	2,600	--	21	--	32	--	71	96	99		100	SPWCM
July 5.....	2:15 p.m.	30,300		932	--	--	--	--	--	--	77	98	100		--	SPWCM

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER AT HITE, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952--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	Water discharge (cfs)	Water temperature (°F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
July 9, 1952	3:45 p. m.	29,600		3,840	4,460	--	54	--	78	--	93	99	100	SPWCM	
July 21,	3:15 p. m.	13,500		407	--	--	--	--	--	--	95	98	100	S	
July 27,	4:30 p. m.	9,440		593	--	--	--	--	--	--	99	100	--	S	
July 30,	4:30 p. m.	11,900		--	4,920	--	57	--	85	--	99	100	--	SPWCM	
Aug. 10,	3:30 p. m.	9,000		1,680	5,280	--	73	--	96	--	100	--	--	SPWCM	
Aug. 15,	6:00 p. m.	14,900		10,100	4,740	--	55	--	82	--	99	100	--	SPWCM	
Aug. 23,	9:45 a. m.	8,750		1,560	2,430	--	76	--	97	--	98	100	--	SPWCM	
Aug. 27,	6:45 a. m.	10,700		12,600	3,560	--	57	--	83	--	99	100	--	SPWCM	

ESCALANTE RIVER BASIN

ESCALANTE RIVER AT MOUTH NEAR ESCALANTE, UTAH

LOCATION. --At gaging station in Kane County, 5.1 miles upstream from mouth, 2.2 miles downstream from Davis Gulch, and about 50 miles southeast of Escalante, Garfield County.

RECORDS AVAILABLE. --Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES. 1951-52. --Dissolved solids: Maximum, 681 ppm (sum) Sept. 11; minimum, 208 ppm May 11-20.

Hardness: Maximum, 368 ppm Aug. 21-26; minimum, 148 ppm June 4-5, 7-10.

Specific conductance: Maximum daily, 1,420 micromhos July 11; minimum daily, 281 micromhos May 16.

Water temperatures: Maximum observed, 93° July 3; minimum observed, freezing point on several days during December to February.

EXTREMES. March 1951-September 1952. --Dissolved solids: Maximum, 681 ppm (sum) Sept. 11, 1952; minimum, 208 ppm May 11-20, 1952.

Hardness: Maximum, 368 ppm Aug. 21-26, 1952; minimum, 148 ppm June 4-5, 7-10, 1952.

Specific conductance: Maximum daily, 1,420 micromhos July 11, 1952; minimum daily, 281 micromhos May 16, 1952.

Water temperatures: Maximum observed, 93° July 3, 1952.

REMARKS. --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. No records of discharge available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (residue at 180°C)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1951..		15	0.02	60	20	30	6.2	176	115	29	0.2	0.9	--	370	0.50	232	88	21	0.9	572	7.9	8
Oct. 11-20		16	.03	60	23	29	4.3	179	117	33	.2	.4	0.09	377	.51	244	98	20	.8	586	8.0	6
Oct. 21-31		15	.01	59	22	24	5.2	182	101	24	.3	.8	--	344	.47	238	88	18	.7	549	7.6	5
Nov. 1-10		15	.01	56	21	23	3.6	172	92	26	.2	.8	--	326	.44	226	85	18	.7	514	7.8	10
Nov. 11-20		16	.01	54	23	26	2.2	177	98	31	.1	.4	.14	344	.47	228	94	20	.7	542	7.8	20
Nov. 21-25		16	.02	50	19	21	2.0	157	80	25	.3	.4	--	288	.39	203	74	16	.6	457	7.9	20
Dec. 1-10		18	.02	52	22	24	2.2	180	82	26	.4	.6	--	308	.42	220	72	19	.7	493	7.9	5
Dec. 11-20		19	.04	58	24	24	3.4	188	97	30	.2	.7	.16	336	.46	243	89	17	.7	524	7.5	5
Jan. 1-10, 1952..		20	.02	58	24	29	4.4	210	84	38	.2	1.0	--	321	.48	243	71	20	.8	546	8.0	10
Jan. 11-13		22	.03	55	23	26	3.6	190	80	29	--	.8	--	309	.30	232	76	21	.8	549	--	--
Jan. 27-31		17	.02	46	17	29	4.0	197	78	22	.3	1.1	--	308	.42	185	46	25	.9	472	--	--
Feb. 1-12		18	.02	48	19	26	3.6	177	76	22	.3	.9	.05	316	.43	198	53	22	.8	480	7.9	5
Feb. 13-26		18	.03	46	21	24	3.6	173	81	24	.3	.6	--	324	.44	206	94	20	.7	487	7.9	5
Mar. 1-10		16	.02	45	15	26	3.5	174	74	21	.3	.9	--	309	.43	196	44	25	1.0	474	7.9	5
Mar. 11-20		18	.03	46	20	26	3.5	166	76	21	.3	.5	.05	318	.43	197	53	22	.9	476	8.0	7
Mar. 21-31		16	.02	48	20	27	3.8	170	82	27	.1	1.4	--	310	.42	202	82	22	.8	468	7.6	5
Apr. 1-10		16	.02	45	19	30	3.8	183	76	22	.1	.9	--	304	.41	190	40	25	.9	481	7.8	5
Apr. 11-20		18	.02	46	20	27	3.6	180	74	26	.2	1.1	.07	313	.43	197	50	22	.8	486	7.9	5
Apr. 21-30		17	.02	40	18	21	4.0	182	60	19	.2	1.1	--	268	.36	174	43	20	.7	418	7.9	10
May 1-10		22	.03	44	17	17	4.2	188	52	18	.3	.9	--	263	.36	180	43	17	.6	412	7.7	5
May 11-20		17	.06	41	12	12	3.0	144	38	13	.3	.4	.06	208	.28	152	34	14	.4	332	7.8	10
May 21-31		21	.02	44	17	21	3.3	188	65	24	.3	.4	--	273	.37	180	50	20	.7	439	7.8	5

ESCALANTE RIVER BASIN--Continued

ESCALANTE RIVER AT MOUTH NEAR ESCALANTE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180°C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
June 4-5, 10, 1952		20	0.10	38	13	20	5.0	154	42	14	0.4	1.5	--	336	0.32		146	22	22	0.7	387	7.9	20
June 11-20		21	.03	49	20	26	4.0	168	175	20	.4	2.5	--	310	.82		204	27	21	.8	481	7.8	10
June 21-30		18	.02	56	26	33	4.8	170	117	42	.2	.7	--	396	.54		240	102	22	.9	617	7.8	10
July 1-10		18	.24	36	26	36	5.8	170	132	25	.3	1.4	--	412	.56		246	107	24	1.0	635	7.8	25
July 11-20		25	.11	68	26	38	6.5	202	610	25	.3	1.4	0.15	446	.61		276	111	22	--	1,430	--	--
July 21-30		22	.45	72	27	38	5.8	216	138	39	.3	.7	--	464	.63		290	114	22	1.0	684	7.8	10
Aug. 1-10		19	.33	76	26	45	6.5	232	182	35	.4	1.1	--	500	.68		296	106	24	1.1	751	7.6	10
Aug. 11-20		17	.34	88	25	41	6.5	230	173	35	.4	.7	.02	511	.69		322	134	21	1.0	772	7.6	10
Aug. 21-26, 28-29		18	.80	98	30	35	7.8	264	183	24	--	--	--	560	.76		368	182	17	--	810	7.5	25
Aug. 27		19	.02	82	27	37	5.9	224	346	27	--	--	--	--	--		--	--	--	--	1,050	--	--
Sept. 4-10		19	.02	82	27	37	5.9	224	180	40	.2	.8	--	492	.67		316	132	20	.9	753	7.9	17
Sept. 11		11	.03	82	38	32	121	303	260	39	--	.6	--	a 681	.93		310	82	46	3.0	1,010	--	--
Sept. 12-20		16	.03	75	22	29	5.7	210	128	34	.2	1.7	.07	a 426	.58		278	106	18	8	663	8.1	15
Sept. 22		10	--	59	26	26	102	246	246	13	--	.6	--	a 577	.78		254	52	47	2.8	838	--	--
Sept. 23-30		63	.03	63	24	26	4.8	b 185	114	26	.2	1.2	--	362	.49		266	104	18	--	584	8.0	10

a Sum of determined constituents.

b Includes equivalent of 7 ppm of carbonate (CO₃).

ESCALANTE RIVER BASIN--Continued

ESCALANTE RIVER AT MOUTH, NEAR ESCALANTE, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

SAN JUAN RIVER BASIN

SAN JUAN RIVER NEAR BLANCO, N. MEX.

LOCATION.--At highway bridge, half a mile downstream from gaging station which is 1 mile upstream from Canyon Largo and 1½ miles east of Blanco, San Juan County.

DRAINAGE AREA.--3 560 square miles, approximately (at gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1952.

Water temperatures: March 1949 to September 1952.

Sediment records: March 1949 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 385 ppm Jan. 21-31; minimum, 89 ppm June 21-28.

Hardness: Maximum, 211 ppm Jan. 21-31; minimum, 50 ppm June 21-28.

Specific conductance: Maximum observed, 651 micromhos Mr. 15; minimum observed, 107 micromhos June 20.

Water temperatures: Maximum observed, 79°F Aug. 6, 8, 12, 31; minimum, freezing point on many days during December, January and March.

Sediment concentrations: Maximum daily, 20,000 ppm Mar. 15; minimum daily, 10 ppm Oct. 23.

Sediment loads: Maximum daily, 142,000 tons Mar. 29; minimum daily, 2 tons Oct. 23.

EXTREMES, 1945-52.--Dissolved solids: Maximum, 1,030 ppm Aug. 16, 1947; minimum, 80 ppm July 1-8, 1949.

Hardness: Maximum, 680 ppm Aug. 16, 1947; minimum, 48 ppm July 1-8, 1949.

Specific conductance: Maximum observed, 1,420 micromhos Aug. 16, 1947; minimum observed, 107 micromhos June 20, 1952.

Water temperatures: Maximum observed, 79°F Aug. 6, 8, 12, 31, 1952; minimum, freezing point on many days during winter months.

Sediment concentrations (1949-52): Maximum daily, 20,000 ppm Mar. 15, 1952; minimum daily, 10 ppm Oct. 23, 1951.

Sediment loads (1949-52): Maximum daily, 142,000 tons Mar. 29, 1952; minimum daily, 1 ton Sept. 20-25, 1951.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1951 to September 1952 given in WSP 1243. No appreciable inflow between gaging station and sampling point. Stage discharge relation affected by ice Jan. 10-13.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Boron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)		
															Parts per million	Tons per acre-foot	Calcium, mg-per nestum	Non-carbonate				
Oct. 1-10, 1981	143	9.8	0.03	46	9.4	39	3.8	159	0	99	8.0	0.4	1.2	0.1	294	0.40	114	154	23	35	1.4	475
Oct. 11-20	122	---	---	44	9.8	44	---	---	---	---	---	---	---	---	310	42	102	163	---	37	1.5	499
Oct. 21-31	187	---	---	50	10	50	---	---	---	---	---	---	---	---	364	50	164	178	---	38	1.6	570
Nov. 1-10	137	---	---	47	11	47	---	---	---	---	---	---	---	---	340	46	126	182	---	36	1.5	537
Nov. 11-20	122	---	---	53	12	53	---	---	---	---	---	---	---	---	370	50	122	192	---	38	1.7	585
Nov. 21-30	157	---	---	56	11	51	---	---	---	---	---	---	---	---	366	48	151	182	---	38	1.6	563
Dec. 1-10	188	---	---	53	10	47	---	---	---	---	---	---	---	---	346	47	176	173	---	37	1.6	534
Dec. 11-20	241	---	---	58	11	50	---	---	---	---	---	---	---	---	376	51	245	190	---	36	1.6	574
Dec. 21-31	461	---	---	51	10	40	---	---	---	---	---	---	---	---	320	44	398	168	---	34	1.3	496
Jan. 1-10, 1982	560	15	.01	59	15	38	7.0	156	0	182	11	.5	2.2	1	392	53	593	208	80	28	1.1	590
Jan. 11-20	411	---	---	57	13	45	---	---	---	---	---	---	---	---	365	50	405	196	---	33	1.4	557
Jan. 21-31	376	---	---	60	15	49	---	---	---	---	---	---	---	---	395	54	400	211	---	34	1.5	600
Feb. 1-10	308	---	---	59	14	45	---	---	---	---	---	---	---	---	382	52	318	204	---	32	1.4	575
Feb. 11-20	328	---	---	58	13	44	---	---	---	---	---	---	---	---	366	50	324	198	---	33	1.4	566
Feb. 21-29	246	---	---	58	13	46	---	---	---	---	---	---	---	---	374	51	247	198	---	34	1.4	572

Mar. 1-10, 1952	420	--	--	--	--	--	--	--	--	13	58	52	12	53	90	--	--	--	--	--	388	.53	440	198	--	36	1.5	587	--
Mar. 11-20	923	--	--	--	--	--	--	--	--	12	52	12	53	93	90	--	--	--	--	--	374	.51	932	179	--	39	1.7	872	--
Mar. 21-31	1,428	--	--	--	--	--	--	--	--	14	50	14	34	34	34	--	--	--	--	--	326	.44	1,260	182	--	29	1.1	496	--
Apr. 1-10	4,781	14	--	--	--	3.0	188	0	70	2.8	.3	3.5	.04	258	35	3,330	177	48	14	5	404	7.8	--	--	--	--	--	--	--
Apr. 11-20	5,438	--	--	--	--	--	--	--	--	--	--	--	--	171	.23	2,510	112	--	13	.3	261	--	--	--	--	13	.3	261	--
Apr. 21-30	6,289	--	--	--	--	--	--	--	--	--	--	--	--	160	.20	2,550	100	--	16	.4	223	--	--	--	--	16	.4	223	--
May 1-10	7,587	--	--	--	--	--	--	--	--	--	--	--	--	133	.18	2,330	84	--	14	.3	190	--	--	--	--	14	.3	190	--
May 11-20	6,602	--	--	--	--	--	--	--	--	--	--	--	--	109	.15	1,940	68	--	16	.3	166	--	--	--	--	16	.3	166	--
May 21-31	4,717	--	--	--	--	--	--	--	--	--	--	--	--	109	.15	1,360	65	--	19	.4	161	--	--	--	--	19	.4	161	--
June 1-3, 5-10	8,579	--	--	--	--	--	--	--	--	--	--	--	--	102	.14	2,360	65	--	15	.3	145	--	--	--	--	15	.3	145	--
June 11-20	11,400	--	--	--	--	--	--	--	--	--	--	--	--	139	.19	4,280	94	--	13	.3	216	--	--	--	--	13	.3	216	--
June 21-30	6,285	--	--	--	--	--	--	--	--	--	--	--	--	91	.12	2,040	54	--	16	.3	121	--	--	--	--	16	.3	121	--
June 21-23	4,911	--	--	--	--	--	--	--	--	--	--	--	--	89	.12	1,180	50	--	19	.3	124	--	--	--	--	19	.3	124	--
June 24-30	3,435	--	--	--	--	--	--	--	--	--	--	--	--	100	.14	573	58	--	22	.4	154	--	--	--	--	22	.4	154	--
July 1-10	3,720	16	--	--	--	2.3	64	0	19	2.0	.3	.4	.17	121	.16	535	58	--	6	.5	138	6.8	--	--	--	6	.5	138	--
July 11-20	1,782	--	--	--	--	--	--	--	--	--	--	--	--	121	.16	535	70	--	23	.5	138	--	--	--	--	23	.5	138	--
July 21-31	1,271	--	--	--	--	--	--	--	--	--	--	--	--	158	.21	542	90	--	24	.6	243	--	--	--	--	24	.6	243	--
Aug. 1-10	1,081	--	--	--	--	--	--	--	--	--	--	--	--	154	.21	449	82	--	26	.6	230	--	--	--	--	26	.6	230	--
Aug. 11-20	1,792	--	--	--	--	--	--	--	--	--	--	--	--	186	.26	388	115	--	28	.7	287	--	--	--	--	28	.7	287	--
Aug. 21-30	1,290	--	--	--	--	--	--	--	--	--	--	--	--	272	.38	946	200	--	18	.5	409	--	--	--	--	18	.5	409	--
Aug. 28-31	839	--	--	--	--	--	--	--	--	--	--	--	--	182	.25	407	90	--	27	.7	275	--	--	--	--	27	.7	275	--
Sept. 1-10	399	--	--	--	--	--	--	--	--	--	--	--	--	207	.28	223	112	--	31	.9	328	--	--	--	--	31	.9	328	--
Sept. 11-20	314	--	--	--	--	--	--	--	--	--	--	--	--	203	.28	176	114	--	30	.8	319	--	--	--	--	30	.8	319	--
Sept. 21-30	585	--	--	--	--	--	--	--	--	--	--	--	--	203	.28	330	131	--	28	.8	312	--	--	--	--	28	.8	312	--
Weighted average	2,053	--	--	--	--	--	--	--	--	--	--	--	--	165	0.21	869	94	--	20	0.5	228	--	--	--	--	20	0.5	228	--

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 [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	b 60	50	38	34	34	44	47	b 56	b 58	68	b 78	70
2	--	41	37	a 32	33	41	b 45	b 56	b 58	63	78	70
3	58	42	35	33	36	32	46	b 55	b 52	b 63	a 75	75
4	57	42	38	32	35	37	50	b 55	b 55	b 64	b 77	a 70
5	50	41	35	33	35	41	b 47	b 55	b 60	61	a 70	75
6	57	45	38	--	34	a 43	49	b 55	b 58	b 65	b 79	--
7	60	50	34	32	36	42	51	b 55	b 56	b 65	78	75
8	58	45	32	32	38	47	47	b 52	b 68	70	79	80
9	61	45	32	32	34	43	b 47	b 50	b 58	b 65	a 75	a 75
10	58	--	33	32	36	47	46	b 50	61	b 70	a 75	75
11	59	45	32	32	36	39	47	55	60	b 67	b 78	a 60
12	60	45	33	32	35	43	49	b 56	62	68	b 79	75
13	58	48	32	32	36	40	47	b 60	b 55	72	a 69	75
14	55	45	33	32	34	41	55	b 58	61	70	a 70	70
15	56	40	32	32	36	40	b 48	b 58	b 63	b 70	70	a 50
16	54	45	33	a 33	b 34	38	55	55	b 60	b 72	78	65
17	58	48	33	35	33	40	58	45	b 65	b 72	a 70	70
18	--	43	33	a 34	33	42	54	b 45	60	82	a 78	65
19	57	42	32	33	34	42	57	b 52	b 61	b 70	a 75	65
20	55	48	32	32	34	40	50	54	63	b 71	a 75	b 70
21	54	45	33	32	37	36	50	55	b 61	b 76	78	b 67
22	53	44	32	32	33	35	54	b 51	64	76	70	60
23	47	37	32	32	34	35	54	53	b 60	76	b 76	65
24	51	35	32	33	--	38	55	60	63	b 75	75	a 50
25	50	37	33	33	37	43	b 54	60	65	70	76	a 55
26	50	35	32	36	40	45	--	b 60	65	74	75	a 58
27	50	37	32	35	40	47	--	55	b 69	75	70	a 60
28	48	35	33	35	40	48	--	63	b 60	b 72	75	60
29	48	38	32	35	43	b 45	49	60	63	75	75	70
30	48	38	32	37	--	b 45	55	b 58	62	b 75	--	--
31	a 45	--	32	35	--	40	--	b 57	--	b 78	79	--
Average	54	42	33	33	36	41	51	55	61	70	75	66

a Observation made before 11 a. m.

b Observation made after 6 p. m.

SAN JUAN RIVER BASIN

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SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	110	80	25	190	100	a 51	144	53	21
2-----	117			172	51	24	149	47	19
3-----	119			147	59	23	160	28	12
4-----	121	34	12	123	69	23	155	25	10
5-----	130			132	65	23	180	74	36
6-----	165			138	59	22	167	74	33
7-----	172	23	10	119	32	10	200	74	40
8-----	172			113	25	8	220	87	52
9-----	167			112	40	12	250	81	55
10-----	153	26	10	121	55	18	250	94	63
11-----	142			123	38	13	200	51	28
12-----	144			121	33	11	220	59	35
13-----	132	20	7	140	75	28	240	80	52
14-----	124			172	80	37	250	67	45
15-----	123			149	64	26	250	73	49
16-----	121	15	5	121	110	a 36	250	74	50
17-----	117			95	530	136	250	76	51
18-----	106			79	350	75	250	56	38
19-----	103	25	7	82	150	33	250	56	38
20-----	103	21	6	140	360	136	250	64	43
21-----	103	18	5	192	66	34	200	148	80
22-----	101	13	4	172	49	23	220	154	91
23-----	89	10	2	174	68	32	250	154	104
24-----	86	18	4	167	78	35	250	152	103
25-----	83	20	a 4	190	58	30	250	142	96
26-----	113	690	s 280	162	70	31	300	147	119
27-----	361	4,160	sc 4,600	128	70	a 24	300	92	75
28-----	341	2,000	c 1,800	117	70	a 22	300	85	69
29-----	218	800	a 470	123	64	21	400	112	121
30-----	179	350	a 170	149	60	24	600	--	e 8,100
31-----	162	200	87	--	--	--	2,000	11,100	59,900
Total-	4,477	--	7,633	4,163	--	1,021	9,355	--	69,628
Day	January			February			March		
	Mean dis-charge (cfs)	Mean concentration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concentration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concentration (ppm)	Tons per day
1-----	1,500	4,180	16,900	345	90	84	450	3,860	s 4,800
2-----	900	1,000	2,430	329	95	84	421	2,300	2,610
3-----	600	251	407	345	135	126	291	900	707
4-----	500	150	202	317	80	68	239	357	230
5-----	400	133	144	309	60	50	236	154	98
6-----	300	--	e 80	297	76	s 65	236	132	84
7-----	350	124	117	283	81	s 66	283	157	120
8-----	398	150	161	270	77	s 60	287	800	620
9-----	333	90	81	282	75	s 59	697	6,020	s 12,400
10-----	320	40	35	298	100	a 80	1,060	7,000	20,000
11-----	350	42	40	385	180	187	900	4,250	10,300
12-----	390	110	116	369	240	239	700	2,070	3,910
13-----	400	158	171	373	360	363	572	1,300	2,010
14-----	426	260	299	321	596	s 506	596	745	1,200
15-----	435	240	282	329	300	266	554	20,000	29,900
16-----	361	120	117	301	210	171	614	17,300	s 28,900
17-----	381	212	218	325	225	285	1,530	17,000	s 74,600
18-----	435	786	923	345	285	265	1,120	6,800	20,600
19-----	450	495	601	266	230	165	1,310	10,500	s 38,900
20-----	485	390	a 510	262	170	120	1,330	6,500	23,300
21-----	465	260	a 330	280	95	72	1,000	3,200	8,640
22-----	403	185	169	262	85	60	688	1,460	2,700
23-----	361	85	83	313	94	79	542	683	1,000
24-----	353	61	58	283	90	69	500	376	508
25-----	381	60	62	239	82	53	542	436	638
26-----	412	120	133	195	90	47	1,060	1,950	s 5,860
27-----	381	128	132	172	95	44	1,460	10,900	s 43,300
28-----	357	120	116	206	150	83	1,870	14,500	s 73,900
29-----	353	109	104	252	610	415	2,630	19,800	s 142,000
30-----	329	90	80	--	--	--	2,640	13,700	97,700
31-----	333	90	81	--	--	--	2,780	11,200	84,100
Total-	13,842	--	25,182	8,553	--	4,231	29,136	--	735,635

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

c Computed from partly estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	3,070	10,700	88,700	5,420	700	10,200	6,230	392	6,590
2-----	3,380	12,000	110,000	5,990	680	11,000	6,350	626	10,700
3-----	3,540	11,500	110,000	7,120	1,370	26,300	7,120	1,250	24,000
4-----	3,960	10,000	107,000	8,270	1,900	42,400	11,400	2,830	87,100
5-----	4,400	10,400	124,000	9,260	2,250	56,400	9,650	1,280	33,400
6-----	5,200	8,100	114,000	10,000	1,600	43,200	8,930	918	22,100
7-----	5,760	8,700	135,000	8,930	900	21,700	9,280	1,050	26,300
8-----	6,860	6,250	116,000	8,270	820	18,300	10,000	1,180	31,900
9-----	6,110	4,060	67,000	8,270	850	19,000	10,000	1,380	37,300
10-----	5,530	2,800	41,800	7,120	750	14,400	9,650	1,450	37,800
11-----	4,890	1,900	25,100	6,350	500	8,570	10,000	1,000	27,000
12-----	4,310	1,500	17,500	6,600	500	8,910	9,650	1,170	30,500
13-----	3,960	1,200	12,800	6,860	620	11,500	8,930	830	20,000
14-----	4,500	1,200	14,600	7,390	650	13,000	8,270	940	21,000
15-----	5,530	1,750	26,100	7,960	680	14,600	8,270	812	18,100
16-----	5,760	1,800	28,000	7,960	900	19,300	8,930	900	21,700
17-----	5,990	1,300	21,000	7,120	419	8,050	7,960	694	14,900
18-----	6,230	1,550	26,100	5,990	350	5,660	7,120	750	14,400
19-----	6,350	1,500	25,700	5,100	375	5,160	6,860	660	12,200
20-----	6,860	1,400	25,900	4,690	250	3,170	6,860	690	12,800
21-----	6,230	950	16,000	4,590	192	2,360	6,860	378	7,000
22-----	6,230	980	16,500	4,690	182	2,300	6,110	300	4,950
23-----	6,110	1,230	20,300	4,130	210	2,840	5,420	275	4,020
24-----	5,530	760	11,600	3,700	190	1,900	4,600	444	5,510
25-----	5,870	850	13,500	3,540	420	4,010	4,400	272	3,230
26-----	5,990	1,000	a 16,000	4,040	361	3,940	4,200	188	2,130
27-----	6,230	1,200	a 20,000	4,590	350	4,340	4,000	--	e 1,800
28-----	7,390	2,300	a 46,000	4,990	380	5,120	3,700	143	1,430
29-----	7,670	2,600	c 54,000	5,640	444	6,760	3,400	74	679
30-----	5,640	605	9,210	5,870	489	7,750	3,070	68	564
31-----	--	--	--	6,110	760	12,500	--	--	--
Total--	165,080	--	1,458,410	196,580	--	414,160	217,220	--	541,103

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-----	3,000	184	1,490	1,280	325	1,120	560	27	41
2-----	2,920	55	434	1,380	710	2,650	490	25	33
3-----	2,780	89	668	1,420	200	767	455	35	43
4-----	2,640	125	891	1,240	158	529	426	169	194
5-----	2,780	177	1,330	1,160	111	348	398	123	132
6-----	3,700	338	3,380	1,060	100	292	365	65	a 64
7-----	3,540	840	8,030	928	88	220	353	38	96
8-----	2,920	135	1,060	840	102	231	341	37	34
9-----	2,920	1,730	sc 20,000	740	83	186	317	18	15
10-----	3,000	9,320	sc 80,800	740	72	144	287	22	17
11-----	2,510	373	2,530	780	96	202	269	21	15
12-----	2,260	420	2,560	698	97	183	262	22	16
13-----	2,080	200	1,120	686	100	185	283	110	84
14-----	1,920	110	570	688	105	189	445	390	a 470
15-----	1,760	100	475	843	550	a 1,300	365	295	291
16-----	1,660	95	426	773	515	1,070	321	110	a 95
17-----	1,560	80	337	662	105	188	325	70	a 61
18-----	1,480	86	339	626	83	140	329	52	46
19-----	1,380	78	291	632	119	203	291	64	50
20-----	1,330	55	198	650	3,600	6,320	246	59	39
21-----	1,330	48	172	1,100	7,550	s 25,800	298	67	54
22-----	1,240	50	167	1,420	5,250	20,100	761	1,200	s 2,770
23-----	1,200	63	204	1,040	500	1,400	1,020	620	1,710
24-----	1,120	72	218	1,020	230	632	822	79	175
25-----	1,120	285	862	850	175	402	644	99	172
26-----	1,120	822	2,490	808	160	349	538	52	75
27-----	1,100	700	2,190	731	90	178	485	50	65
28-----	1,200	1,970	6,380	766	70	a 140	445	53	64
29-----	1,560	7,470	31,500	822	50	111	412	72	80
30-----	1,510	6,300	25,700	773	60	a 130	408	70	a 77
31-----	1,420	600	2,300	650	40	70	--	--	--
Total--	62,100	--	199,112	27,806	--	65,760	12,979	--	7,018

Total discharge for year (cfs-days) 751,291

Total load for year (tons) 3,529,893

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

c Computed from partly estimated concentration graph.

SAN JUAN RIVER BASIN--Continued
SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Particle-size analyses of suspended sediment, November 1951 to August 1952
(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	Water discharge (cfs)	Water temperature (°F)	Suspended sediment ^a											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. 20, 1951 ...	12:30 p.m.	108		376	701	80	84	91	96	98	99	100	--	--	--	SPWCM
Dec. 30 ...	5:00 p.m.	b 600		11,700	2,570	--	62	--	79	--	97	99	100	--	--	SPWCM
Dec. 31 ...	9:30 a.m.	b 2,000		3,070	45	45	53	66	75	86	97	99	100	--	--	SPWCM
Dec. 31 ...	9:30 a.m.	b 2,000		10,200	3,060	11	37	61	80	87	97	99	100	--	--	SPN
Dec. 31 ...	9:30 a.m.	b 2,000		10,200	2,860	12	40	63	78	83	97	99	100	--	--	SPN
Dec. 31 ...	9:30 a.m.	b 2,000		10,200	2,850	7	46	58	71	83	97	99	100	--	--	SPN
Feb. 14, 1952 ...	1:30 p.m.	b 2,287		10,770	2,750	7	46	58	71	83	97	99	100	--	--	SPWCM
Mar. 1 ...	9:30 p.m.	578		1,390	3,300	--	82	--	92	--	99	100	100	--	--	SPWCM
Mar. 10 ...	10:00 a.m.	1,240		5,630	3,830	--	45	--	74	--	94	98	96	--	--	SPWCM
Mar. 11 ...	8:10 p.m.	b 900		3,910	3,960	--	66	--	88	--	97	98	99	--	--	SPWCM
Mar. 20 ...	8:10 a.m.	1,710		5,850	3,560	--	44	--	87	--	92	95	97	--	--	SPWCM
Mar. 30 ...	6:30 p.m.	2,780		12,000	6,300	--	59	--	82	--	97	99	100	--	--	SPWCM
Apr. 1 ...	6:00 p.m.	3,070		8,610	3,290	--	60	--	66	--	91	98	99	--	--	SPWCM
Apr. 11 ...	3:50 p.m.	5,100		2,730	3,150	27	33	43	46	49	51	60	79	--	--	SPWCM
Apr. 11 ...	3:50 p.m.	5,100		2,730	3,098	16	25	28	34	41	51	60	79	--	--	SPWCM
Apr. 11 ...	3:50 p.m.	5,100		2,730	817	13	14	22	31	40	51	60	79	--	--	SPN
Apr. 11 ...	3:50 p.m.	5,100		2,730	1,150	13	24	24	29	37	51	60	79	--	--	SPN
Apr. 12 ...	11:00 a.m.	4,590		1,190	2,000	--	31	--	51	--	74	97	99	--	--	SPWCM
Apr. 20 ...	1:15 p.m.	7,670		1,390	2,150	29	36	45	57	68	80	94	99	--	--	SPWCM
Apr. 29 ...	4:30 p.m.	6,860		2,060	4,530	--	27	--	41	--	59	71	83	--	--	100 SPWCM
Apr. 29 ...	4:30 p.m.	6,860		2,060	4,880	--	24	--	39	--	59	71	83	--	--	100 SPN
May 6 ...	7:30 p.m.	10,400		1,920	3,940	--	41	--	70	--	92	98	99	--	--	SPWCM
May 15 ...	6:15 p.m.	8,590		1,888	1,740	--	43	--	66	--	88	98	100	--	--	SPWCM
June 10 ...	5:00 p.m.	10,400		1,470	2,730	--	28	--	44	--	66	84	93	--	--	99 SPWCM
June 14 ...	3:20 p.m.	8,930		1,290	2,910	--	19	--	29	--	62	79	90	--	--	100 SPN
June 14 ...	3:20 p.m.	8,930		1,290	3,340	--	14	--	28	--	62	79	90	--	--	98 SPWCM
July 1 ...	6:00 p.m.	3,300		1,159	994	22	32	43	54	62	80	93	97	--	--	99 SPWCM
July 10 ...	9:45 a.m.	2,710		12,900	4,060	--	67	--	91	--	99	100	--	--	--	SPWCM
July 26 ...	1:35 p.m.	1,120		736	3,600	--	76	--	91	--	97	99	100	--	--	SPWCM

^a When S is shown the values given for sizes 0.062 and larger are those determined by the sieve method.

^b No gage-height record, discharge reported is daily mean value estimated by Surface Water Branch.

SAN JUAN RIVER BASIN--Continued
SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Particle-size analyses of suspended sediment, November 1951 to August 1952 --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	Water discharge (cfs)	Water temperature (°F)	Suspended sediment ^a											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. 2, 1952	10:45 a.m.	1,280	879	1,250	39	46	60	71	82	94	99	100		--	SBWCM
Aug. 10	9:00 a.m.	b 740	72	--	--	--	--	--	--	74	83	96		--	S
Aug. 20	8:00 a.m.	656	4,110	2,900	--	74	--	93	--	99	99	100		--	SPWCM
Aug. 22	11:00 a.m.	1,420	4,950	5,480	--	67	--	93	--	99	100	--		--	SPWCM
Aug. 22	11:00 a.m.	1,420	4,950	4,240	51	63	77	92	98	98	100	--		--	SBWCM

^a When S is shown the values given for sizes 0.062 and larger are those determined by the sieve method.

^b No gage-height record, discharge reported is daily mean value estimated by Surface Water Branch.

SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /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	a 52	42	--	39	42	42	55	54	62	a 68	65
2	65	b 40	42	--	35	40	44	56	52	65	b 74	b 68
3	62	42	40	34	a 37	40	48	54	55	62	a 64	70
4	64	50	--	34	36	38	49	56	55	b 62	a 64	72
5	58	41	40	32	38	42	48	52	56	65	a 66	b 73
6	56	44	36	34	36	44	50	56	58	64	76	b 74
7	58	45	32	34	38	42	52	53	54	62	a 67	a 68
8	59	46	33	38	36	42	50	53	55	b 65	a 68	b 73
8	60	47	32	32	38	44	53	54	56	b 62	a 66	b 72
10	60	45	32	32	34	44	50	54	b 56	b 65	a 67	72
11	64	46	31	34	38	42	45	56	63	b 65	a 66	b 69
12	61	45	32	34	38	40	48	55	b 58	b 66	a 66	b 68
13	62	44	32	34	36	42	52	55	58	b 66	a 68	68
14	64	42	31	36	36	44	55	55	58	b 67	b 75	69
15	55	44	--	34	36	42	50	54	62	b 68	a 66	66
18	a 52	42	31	36	38	42	54	b 52	60	b 68	a 65	b 70
17	60	45	--	38	38	42	42	50	59	b 69	a 68	b 68
18	58	44	31	42	35	42	50	b 48	60	b 69	a 68	69
18	58	40	32	39	35	42	52	54	61	b 69	b 77	68
20	56	42	32	35	36	42	50	55	b 60	b 72	a 70	60
21	54	41	a 31	34	36	42	52	56	60	b 72	b 78	61
22	48	44	32	34	--	42	50	54	62	b 74	b 76	62
23	50	44	32	38	39	42	52	54	b 60	b 74	b 73	64
24	55	40	31	35	37	44	52	54	b 60	b 75	b 76	66
25	52	45	32	36	36	45	54	b 58	60	b 73	b 75	a 67
26	b 50	b 43	32	40	38	46	54	59	62	b 74	b 75	67
27	53	40	34	36	40	40	54	58	b 62	a 78	a 65	66
28	53	39	32	36	40	45	50	60	b 62	74	b 74	65
29	48	36	34	36	40	48	55	60	b 63	b 74	74	65
30	50	a 38	36	38	--	45	54	58	64	b 74	74	67
31	50	--	34	38	--	42	--	58	--	b 75	76	--
Average	57	43	34	36	37	43	50	55	59	69	70	67

a Observation made before 11 a. m.

b Observation made after 6 p. m.

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	180	50	24	236	119	a 76	236	52	33
2-----	208	1,700	955	236	100	64	232	54	34
3-----	196	119	63	232	77	48	228	38	23
4-----	184	64	32	228	46	28	244	26	17
5-----	188	30	15	228	34	21	244	45	30
6-----	196	24	13	208	42	24	220	16	10
7-----	200	39	21	212	37	21	170	48	22
8-----	196			196	27	14	160	79	34
9-----	173			200	54	29	180	62	30
10-----	156	26	12	196	43	23	180	130	63
11-----	149	22	9	196	55	29	180	94	46
12-----	146			196	93	49	232	68	43
13-----	146			196	83	44	248	100	67
14-----	149			212	78	45	230	96	60
15-----	149			208	65	37	240	94	a 61
16-----	143	18	6	200	66	36	230	93	58
17-----	140			200	68	37	220	80	a 48
18-----	134			204	58	32	240	68	44
19-----	121			196	78	41	256	48	33
20-----	121			216	108	63	240	63	41
21-----	121	18	7	208	88	49	200	133	72
22-----	121			212	65	37	210	126	71
23-----	127			224	40	24	230	117	73
24-----	140			240	34	22	260	148	104
25-----	140			244	36	24	284	148	113
26-----	292	2,230	s 2,790	224	36	22	252	160	109
27-----	340	3,320	3,050	216	24	14	240	81	52
28-----	268	1,500	a 1,100	216	38	22	220	80	a 48
29-----	244	660	a 430	224	21	13	208	72	40
30-----	220	200	119	224	19	11	252	110	75
31-----	232	114	71	--	--	--	646	2,600	4,530
Total--	5,520	--	8,832	6,428	--	999	7,412	--	6,084
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-----	527	2,500	a 3,600	296	165	132	310	439	367
2-----	390	750	a 790	300	150	a 120	305	380	314
3-----	315	380	323	310	170	142	292	110	87
4-----	300	245	198	300	203	164	264	80	57
5-----	292	173	136	288	155	121	260	80	56
6-----	268	170	123	288	149	116	260	70	49
7-----	280	165	125	288	175	138	280	63	48
8-----	272	178	131	288	173	135	288	500	388
9-----	260	176	124	288	180	140	325	300	263
10-----	260	120	84	292	500	b 390	335	550	497
11-----	244	112	74	335	700	b 630	335	550	497
12-----	280	139	105	340	770	b 710	330	560	499
13-----	284	110	84	340	800	b 550	320	160	138
14-----	320	141	122	310	410	b 340	305	127	105
15-----	315	132	112	300	250	b 200	310	129	108
16-----	276	117	87	280	170	129	315	170	145
17-----	284	99	76	284	190	146	418	2,800	3,160
18-----	380	229	235	296	284	227	418	1,100	1,240
19-----	375	490	496	305	230	189	460	1,400	1,740
20-----	320	240	207	280	119	90	548	1,650	2,440
21-----	296	118	94	272	90	66	490	1,150	1,520
22-----	280	120	91	284	90	a 69	390	380	400
23-----	284	87	69	288	45	35	340	240	220
24-----	276	81	60	292	83	65	276	270	201
25-----	305	68	56	272	60	44	350	220	208
26-----	330	120	107	236	83	53	534	2,800	s 4,420
27-----	330	183	163	260	100	70	690	7,180	s 13,800
28-----	310	158	132	276	50	37	786	4,280	s 9,440
29-----	292	144	114	296	110	88	914	6,960	s 19,100
30-----	288	156	121	--	--	--	882	5,570	s 14,000
31-----	296	172	137	--	--	--	732	4,700	s 9,300
Total--	9,509	--	8,376	8,484	--	5,334	13,062	--	84,807

s Computed by subdividing day.

a Computed from estimated gage height graph.

b Computed from partly estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	756	6,920	14,700	2,310	450	2,810	4,450	290	3,480
2-----	676	5,900	10,800	2,640	800	b 5,700	4,560	300	3,690
3-----	708	5,500	10,500	3,590	1,200	b 12,000	5,030	470	6,380
4-----	812	3,800	8,330	4,560	1,700	b 21,000	7,110	1,110	21,300
5-----	955	4,200	10,800	5,150	1,900	b 26,000	6,560	720	12,800
6-----	1,280	5,900	20,100	5,650	1,500	b 23,000	6,170	580	9,660
7-----	1,500	6,500	26,300	5,520	1,000	b 15,000	6,840	1,380	25,100
8-----	1,750	6,000	28,400	4,680	700	8,850	8,390	1,310	29,700
9-----	1,710	3,300	15,200	4,560	600	b 7,400	8,390	800	18,100
10-----	1,490	2,240	9,010	4,450	360	4,330	8,680	870	20,400
11-----	1,410	1,470	5,600	4,120	340	3,780	9,280	1,000	25,100
12-----	1,250	1,150	3,880	4,230	420	4,800	8,390	810	18,300
13-----	1,040	950	2,670	4,560	480	5,910	7,670	870	13,900
14-----	1,070	1,150	3,320	5,030	470	6,380	7,250	470	9,200
15-----	1,370	2,650	9,800	5,520	510	7,600	7,250	700	13,700
16-----	1,630	2,050	9,020	5,400	440	6,420	7,670	830	17,200
17-----	1,880	2,450	12,400	4,800	460	5,960	6,560	550	9,740
18-----	2,120	2,000	11,400	3,800	350	3,590	5,520	430	6,410
19-----	2,390	1,400	9,030	3,000	240	1,940	5,030	500	6,790
20-----	2,640	1,050	7,480	2,640	195	1,390	5,030	370	5,020
21-----	2,390	750	4,840	2,640	145	1,090	5,150	450	6,260
22-----	1,980	700	3,740	2,470	125	834	4,560	260	3,200
23-----	1,720	600	2,790	2,150	150	871	4,120	270	3,000
24-----	1,700	550	2,520	1,850	700	3,500	3,700	260	2,600
25-----	2,150	700	4,060	1,740	225	1,060	3,390	310	2,840
26-----	2,640	690	4,920	1,960	190	1,010	3,190	195	1,680
27-----	3,100	1,400	11,700	2,230	150	903	3,000	280	2,270
28-----	4,230	5,600	64,000	2,640	280	2,000	2,730	160	1,180
29-----	3,400	3,300	30,300	3,290	360	3,200	2,470	270	1,800
30-----	2,560	600	4,150	3,700	280	2,800	2,560	170	1,180
31-----	--	--	--	4,120	260	2,890	--	--	--
Total-	54,287	--	361,760	115,000	--	193,958	170,700	--	301,980
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-----	2,560	220	1,520	788	130	277	406	45	49
2-----	2,560	220	1,520	838	580	1,310	370	29	
3-----	2,470	170	1,130	820	440	974	360	30	29
4-----	2,310	150	936	740	170	340	335	18	16
5-----	2,470	340	b 2,300	684	90	166	305	35	29
6-----	3,490	1,000	b 9,400	611	112	185	284	40	31
7-----	4,230	1,000	b 11,000	569	100	154	272	25	18
8-----	3,100	350	b 2,900	548	98	145	268	23	17
9-----	2,730	270	1,990	576	63	98	260	19	13
10-----	2,640	680	4,850	569	49	75	248	25	17
11-----	2,390	260	1,680	562	95	144	236		
12-----	2,080	130	730	520	104	146	224		
13-----	1,900	100	513	478	46	59	204		
14-----	1,720	85	395	460	32	40	196		
15-----	1,570	62	263	562	73	111	180		
16-----	1,380	58	216	632	50	85	170	16	8
17-----	1,220	40	132	514	38	53	163		
18-----	1,120	40	121	448	33	40	166		
19-----	1,070	38	110	418	32	36	177		
20-----	1,040	32	90	406	29	32	173		
21-----	1,040	44	124	436	35	41	208	35	20
22-----	1,000	36	97	520	53	74	350	345	326
23-----	948	28	72	484	40	52	716	1,000	1,930
24-----	928	24	60	466	36	45	716	500	967
25-----	1,010	45	123	466	27	34	625	195	329
26-----	991	55	147	424	26	30	514	115	160
27-----	883	60	143	424	330	378	450	126	153
28-----	874	460	1,090	442	420	501	420	94	107
29-----	937	420	1,060	424	65	74	400	54	58
30-----	1,000	3,100	8,370	478	102	132	375	86	87
31-----	910	300	737	448	78	94	--	--	--
Total-	54,569	--	53,819	16,755	--	5,925	9,771	--	4,465

Total discharge for year (cfs-days)..... 471,497
 Total load for year (tons)..... 1,036,339

s Computed by subdividing day.

b Computed from partly estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIPROCK, N. MEX.

LOCATION.--At gaging station on left bank 3 miles west (revised) of Shiprock, San Juan County, and 6 miles downstream from Chaco River.

DRAINAGE AREA.--12,900 square miles approximately.

RECORDS AVAILABLE.--Water temperatures: December 1950 to September 1952.

Sediment records: December 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum observed, 80°F Sept. 5, 6; minimum, freezing point on many days during November, December and January.

Sediment concentrations: Maximum daily, 33,200 ppm Jan. 20; minimum daily, 20 ppm July 22.

Sediment loads: Maximum daily, 369,000 tons April 28; minimum daily, 31 tons Sept. 11.

EXTREMES, 1950-52.--Water temperatures: Maximum observed, 82°F July 2, 22, 1951;

minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 64,800 ppm Aug. 25, 1951; minimum daily, 8 ppm July 13, 1951.

Sediment loads: Maximum daily, 578,000 tons Aug. 25, 1951. minimum daily, 5 tons Aug. 21, Sept. 12-24, 1951.

REMARKS.--Flow affected by ice Nov. 16-19, Dec. 9-27, Jan. 9-11. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Temperature (°F) of water, water year October 1951 to September 1952

[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	--	--	38	32	40	n40	b50	55	n58	72	b62	72
2	65	--	44	32	--	--	b50	53	55	65	n58	--
3	72	43	43	32	--	40	b50	b50	50	--	--	72
4	--	n37	43	32	45	40	b52	n55	55	74	b68	74
5	b53	b44	b40	32	45	--	53	55	55	68	b61	80
6	55	45	35	a32	40	--	n44	55	a55	--	74	80
7	a50	b46	32	32	40	--	55	55	65	66	a74	--
8	b62	48	b32	32	38	50	52	55	65	--	a76	76
9	n55	48	n32	32	43	50	b55	b55	a59	n67	n76	74
10	66	44	32	32	--	--	b52	56	55	--	n72	76
11	66	n44	32	32	--	43	48	--	55	b65	n69	75
12	b62	--	32	32	--	--	b51	55	65	65	n70	b70
13	b67	45	32	34	--	42	n42	55	--	--	n73	72
14	46	46	35	32	40	45	--	55	a65	b73	n73	--
15	b59	43	b32	34	40	50	b55	65	a65	65	n74	--
16	53	39	32	35	--	45	50	n55	64	b74	--	73
17	59	n32	32	35	--	45	55	51	65	75	76	--
18	63	n32	32	35	--	40	--	--	65	75	--	b64
19	--	--	32	35	40	b40	56	65	64	75	--	72
20	61	45	32	n32	45	40	a45	65	65	75	76	62
21	n48	--	--	32	43	45	55	65	n59	68	n70	62
22	b52	a39	32	--	43	n35	b55	56	64	74	78	64
23	55	44	n32	35	n40	40	55	b59	66	73	--	64
24	56	b42	32	35	a40	45	55	62	64	75	a72	64
25	55	n37	32	--	--	47	b45	b64	68	--	76	--
26	53	40	32	40	42	50	b43	64	68	--	b75	64
27	--	40	32	n32	40	52	b48	b64	n56	79	75	70
28	n47	39	32	35	--	--	55	66	68	b66	76	70
29	a56	--	32	40	--	54	n55	66	a65	b65	n66	--
30	b49	--	a32	34	--	51	55	a55	71	b65	--	--
31	--	--	n33	43	--	52	--	60	--	63	--	--
Average	57	--	34	34	--	--	51	58	62	--	--	--

n Observation made before 11 a.m.

b Observation made after 6 p.m.

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued

Suspended sediment, water year October 1951 to September 1952

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 con- centration (ppm)	Tons per day
		Mean con- centration (ppm)	Tons per day						
1-----	360	6,000	a 5,830	510	3,800	a 5,230	532	220	316
2-----	430	1,800	2,090	500	1,850	a 2,500	582	270	424
3-----	450	1,000	1,220	500	625	844	602	110	179
4-----	460	2,000	a 2,480	490	360	476	643	170	295
5-----	435	2,950	3,460	457	385	475	664	210	376
6-----	462	1,350	1,680	440	400	475	678	450	824
7-----	479	900	1,160	440	390	463	608	530	870
8-----	484	700	915	482	310	387	556	240	360
9-----	462	368	459	457	370	457	550	280	416
10-----	376	210	213	452	270	330	500	300	405
11-----	367	290	287	457	370	457	450	160	a 194
12-----	367	220	218	446	380	a 458	380	140	136
13-----	336	110	100	550	1,180	1,750	360	180	175
14-----	344	120	111	496	700	937	390	200	211
15-----	336	130	118	496	1,350	1,810	400	210	227
16-----	344	180	167	480	2,680	3,470	410	150	166
17-----	340	170	156	435	1,360	1,600	420	170	193
18-----	395	132	141	405	1,040	1,140	440	150	178
19-----	336	120	a 109	390	710	a 748	440	260	309
20-----	308	110	91	385	680	707	410	180	199
21-----	331	118	105	405	1,060	a 1,160	350	150	a 142
22-----	344	105	98	435	560	656	360	120	117
23-----	362	128	125	440	580	689	380	100	103
24-----	331	106	95	514	360	500	450	130	158
25-----	318	65	56	538	220	320	520	120	168
26-----	614	13,900	s 25,700	563	230	350	600	300	486
27-----	1,160	25,400	sa 80,500	556	180	270	646	320	553
28-----	1,020	19,300	53,200	526	150	213	657	340	603
29-----	857	5,900	13,700	526	150	a 213	657	350	905
30-----	615	4,600	7,640	508	150	a 206	768	1,550	3,210
31-----	700	5,200	a 9,830	--	--	--	1,620	10,200	s 61,100
Total--	14,523	--	212,054	14,259	--	29,293	16,997	--	73,998
	January			February			March		
1-----	4,900	18,800	s 270,000	745	360	724	715	1,700	3,280
2-----	1,630	6,600	29,000	685	350	a 647	1,210	11,500	a 37,600
3-----	1,250	2,520	8,500	664	400	a 717	832	8,800	19,800
4-----	997	1,250	3,360	692	500	934	650	4,000	7,020
5-----	857	500	1,160	692	470	878	600	1,700	a 2,750
6-----	730	260	512	692	440	822	608	2,000	a 3,280
7-----	615	360	598	650	420	737	596	2,000	a 3,220
8-----	692	950	1,770	650	490	860	629	1,900	3,230
9-----	680	770	1,410	657	420	745	671	1,500	2,720
10-----	650	350	614	700	600	a 1,130	1,240	12,000	a 40,200
11-----	540	120	175	840	1,050	a 2,380	1,360	13,500	49,600
12-----	671	160	290	979	1,350	a 3,570	1,310	11,000	a 38,900
13-----	784	200	423	857	1,150	a 2,660	979	5,040	13,300
14-----	988	1,000	2,670	784	1,200	2,540	857	2,000	4,630
15-----	1,050	20,000	56,700	708	1,040	1,990	874	2,600	6,140
16-----	832	4,000	8,990	730	600	a 1,180	882	1,800	4,290
17-----	840	3,500	7,940	671	500	a 906	1,940	14,000	s 109,000
18-----	1,360	7,900	s 32,100	657	500	a 887	2,320	29,000	182,000
19-----	1,560	12,700	53,500	685	550	1,020	1,840	16,000	75,500
20-----	1,260	33,200	113,000	602	360	585	2,200	13,500	80,200
21-----	934	19,400	48,900	622	310	521	1,950	11,300	59,500
22-----	816	10,200	a 22,500	643	200	347	1,400	5,700	21,500
23-----	792	4,150	8,870	636	200	343	1,140	3,600	11,100
24-----	768	1,800	3,730	685	220	407	1,010	2,500	6,820
25-----	808	1,300	a 2,840	622	250	a 420	961	1,700	4,410
26-----	874	1,280	3,020	582	280	440	1,150	4,000	12,400
27-----	934	560	1,410	570	300	462	2,110	13,100	74,600
28-----	808	520	1,130	582	300	a 471	2,810	18,300	a 139,000
29-----	784	680	1,440	608	540	a 886	3,380	21,100	193,000
30-----	722	600	a 1,170	--	--	--	3,410	21,900	202,000
31-----	768	500	a 1,040	--	--	--	3,130	18,300	155,000
Total--	31,894	--	686,762	19,890	--	30,209	44,764	--	1,569,990

s Computed by subdividing day.

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN

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SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	3,500	16,800	159,000	8,260	3,900	87,000	10,500	800	22,700
2-----	3,600	15,700	153,000	8,080	3,300	76,400	10,300	1,300	36,200
3-----	3,960	15,700	168,000	9,570	4,300	111,000	10,900	1,200	35,300
4-----	4,450	16,800	202,000	11,700	3,500	111,000	16,000	3,800	164,000
5-----	5,000	15,500	209,000	13,700	3,000	111,000	18,700	8,800	343,000
6-----	5,740	12,800	198,000	15,400	5,000	208,000	17,000	2,700	124,000
7-----	6,500	10,800	190,000	16,200	2,500	109,000	16,600	1,200	53,800
8-----	7,540	11,700	238,000	14,100	2,800	107,000	18,700	1,700	85,800
9-----	8,440	7,800	178,000	13,300	2,400	86,200	19,200	3,250	168,000
10-----	7,190	2,800	54,400	12,900	3,000	104,000	18,700	2,100	106,000
11-----	6,870	5,000	90,000	10,900	2,000	a 58,900	19,200	1,700	88,100
12-----	6,160	5,300	88,100	10,500	2,000	56,700	19,600	1,800	95,300
13-----	5,510	1,100	16,400	11,300	1,500	45,800	17,900	1,900	a 91,800
14-----	5,870	1,500	a 23,000	11,700	1,500	47,400	15,800	700	29,900
15-----	6,500	3,600	63,200	12,500	2,400	31,000	15,800	1,200	51,200
16-----	7,720	2,700	56,300	13,700	2,700	99,900	16,200	2,350	103,000
17-----	7,900	3,200	68,300	13,300	2,400	88,200	16,600	1,000	44,800
18-----	8,260	4,700	a 105,000	10,900	1,700	a 50,000	13,700	1,000	37,000
19-----	8,630	4,300	100,000	9,000	1,600	38,900	12,500	1,550	52,300
20-----	9,000	3,000	a 72,900	7,700	1,400	29,100	12,100	1,850	60,400
21-----	9,570	2,200	56,800	7,360	600	11,900	12,100	1,800	58,800
22-----	8,260	2,700	60,200	7,190	600	11,600	11,300	1,050	32,000
23-----	8,440	3,300	75,200	6,840	1,000	18,500	9,980	1,100	29,600
24-----	7,540	2,800	57,000	5,830	1,050	16,500	8,820	1,950	46,400
25-----	7,540	4,500	91,600	5,360	850	12,300	8,080	600	13,100
26-----	8,260	4,500	100,000	5,510	750	11,200	7,540	450	9,160
27-----	8,820	4,000	a 95,300	6,330	700	12,000	7,070	1,900	36,300
28-----	10,500	13,000	369,000	6,840	1,200	22,200	6,670	1,800	32,400
29-----	12,900	8,800	307,000	8,260	950	21,200	5,510	350	5,210
30-----	9,570	5,500	142,000	9,380	1,600	40,500	5,360	750	10,900
31-----	--	--	--	9,760	1,150	30,300	--	--	--
Total--	219,340	--	3,786,700	313,370	--	1,912,700	398,360	--	2,066,470
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-----	5,200	680	9,550	2,070	8,580	48,000	938	300	760
2-----	5,360	400	5,790	2,010	8,400	45,600	840	200	a 454
3-----	5,200	750	a 10,500	2,200	6,250	a 37,100	780	120	253
4-----	5,050	760	10,400	1,950	1,800	9,480	706	60	114
5-----	5,050	750	10,200	1,730	600	2,800	671	31	56
6-----	6,870	1,650	a 29,700	1,580	460	1,960	636	52	89
7-----	7,720	1,200	25,000	1,440	480	1,870	580	40	a 63
8-----	6,330	950	a 16,200	1,260	260	953	559	30	45
9-----	5,200	800	a 11,200	1,140	270	831	517	28	36
10-----	5,510	1,200	a 17,900	1,090	500	1,470	497	28	35
11-----	5,050	1,100	15,000	1,070	320	924	438	26	31
12-----	4,480	800	9,680	1,140	250	770	412	40	44
13-----	4,090	700	7,730	1,010	200	545	393	40	42
14-----	3,390	300	2,750	975	130	342	432	50	a 58
15-----	3,190	160	1,380	968	120	314	531	150	a 215
16-----	2,910	140	1,100	1,220	380	a 1,250	504	70	95
17-----	2,650	84	458	1,180	160	510	478	280	a 361
18-----	2,490	68	457	990	80	a 214	484	1,560	2,040
19-----	2,270	53	325	915	70	a 173	490	830	1,100
20-----	2,270	72	441	922	81	202	517	230	321
21-----	2,270	100	613	870	100	235	497	200	268
22-----	2,070	20	112	1,580	5,070	s 23,500	892	4,270	s 13,100
23-----	1,950	44	232	1,780	5,300	a 25,500	1,780	18,200	87,500
24-----	1,840	35	174	1,530	2,400	a 9,910	1,840	5,500	27,300
25-----	1,840	70	348	1,440	1,200	4,670	1,580	500	a 2,130
26-----	1,900	250	a 1,280	1,260	510	1,740	1,310	350	1,240
27-----	1,900	700	3,590	1,220	780	2,570	1,100	240	713
28-----	2,010	2,800	15,200	1,180	2,200	7,010	1,040	170	477
29-----	2,420	11,900	77,800	1,100	820	2,440	982	120	a 318
30-----	2,820	12,500	95,200	1,100	750	2,230	930	90	226
31-----	2,340	10,100	63,800	1,140	800	a 2,460	--	--	--
Total--	113,440	--	444,110	41,060	--	237,573	23,354	--	139,484
Total discharge for year (cfs-days).....									1,251,251
Total load for year (tons).....									11,191,343

s Computed by subdividing day.

a Computed from estimated concentration graph.

SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (°F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.006	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Oct. 9, 1951.....	9:30 a. m.	457		329	506	27	34	43	50	60	82	98	100	--	SBWCM
Oct. 28.....	8:40 a. m.	979		19,800	4,040	61	78	86	91	95	99	100	--	--	SPWCM
Oct. 28.....	8:40 a. m.	979		19,800	4,100	1	4	9	87	96	99	100	--	--	SPN
Oct. 28.....	8:40 a. m.	979		19,800	3,960	64	78	87	94	97	99	100	--	--	SBWCM
Nov. 16.....	5:00 p. m.	470		2,780	2,440	--	89	--	93	--	84	98	100	--	SPWCM
Jan. 3, 1952.....	5:30 p. m.	1,220		2,790	2,130	--	76	--	90	--	97	99	100	--	SPWCM
Jan. 15.....	5:00 p. m.	1,020		20,700	4,260	--	78	--	91	--	100	--	--	--	SPWCM
Jan. 20.....	7:00 a. m.	1,330		36,300	3,380	52	73	85	95	97	100	--	--	--	SPWCM
Jan. 20.....	7:00 a. m.	1,330		36,300	3,800	3	10	31	95	96	100	--	--	--	SPN
Jan. 20.....	7:00 a. m.	1,330		36,300	3,230	47	58	76	91	99	100	--	--	--	SBWCM
Feb. 14.....	9:30 a. m.	776		1,100	1,550	--	59	--	73	--	78	82	92	100	SPWCM
Mar. 11.....	5:30 p. m.	1,170		13,100	2,960	49	61	69	79	89	92	93	95	98	SPWCM
Mar. 11.....	5:30 p. m.	1,170		13,100	2,920	8	16	56	82	90	92	93	95	98	SPN
Mar. 11.....	5:30 p. m.	1,170		13,100	3,140	48	60	71	82	89	92	93	95	98	SBWCM
Mar. 17.....	5:30 p. m.	3,380		26,700	4,190	--	40	--	57	--	78	88	93	97	SPWCM
Mar. 30.....	3:15 p. m.	5,000		25,900	5,920	--	39	--	52	--	71	76	94	99	SPWCM
Apr. 2.....	6:45 p. m.	4,830		15,800	4,580	--	31	--	44	--	71	86	97	100	SPWCM
Apr. 5.....	6:20 p. m.	5,930		15,000	4,320	--	28	--	41	--	86	94	94	99	SPWCM
Apr. 11.....	11:40 a. m.	6,330		4,310	1,640	15	21	26	32	44	48	61	87	98	SPWCM
Apr. 11.....	11:40 a. m.	6,330		4,310	1,840	10	15	23	28	40	48	61	86	98	SPN
Apr. 11.....	11:40 a. m.	6,330		4,310	1,350	18	22	28	32	39	48	61	86	98	SBWCM
Apr. 11.....	11:40 a. m.	6,330		4,310	1,360	10	15	23	29	37	48	61	86	98	SPN
Apr. 29.....	10:30 a. m.	13,300		6,090	3,660	--	35	--	52	--	70	78	92	99	SPWCM
May 7.....	5:25 p. m.	15,400		1,930	2,160	19	27	34	40	50	85	87	98	100	SBWCM
May 20.....	3:20 p. m.	7,190		1,330	--	--	--	--	--	--	24	24	68	99	S
June 11.....	9:00 a. m.	20,000		20,000	--	--	--	--	--	--	46	60	77	95	S

June 15, 1952...	9:45 a. m.	15,500	1,420	3,240	--	15	--	25	--	43	57	78	97	100 SPWCM
June 15.....	9:45 a. m.	15,500	1,420	3,390	--	12	--	23	--	43	57	78	97	100 SPN
June 21.....	9:40 a. m.	12,900	1,940	1,110	4	7	8	12	17	24	36	59	99	-- SEWCM
July 11.....	7:30 a. m.	5,380	1,470	3,480	--	70	--	88	--	95	97	97	99	-- SPWCM
July 27.....	1:25 p. m.	1,840	754	3,840	--	75	--	88	--	92	93	94	99	-- SPWCM
July 30.....	7:00 p. m.	2,910	12,800	4,710	--	64	--	87	--	95	97	98	99	-- SPWCM
Aug. 6.....	11:00 a. m.	1,520	284	1,420	--	36	--	48	--	60	65	79	91	-- SPWCM
Aug. 22.....	5:52 p. m.	2,270	7,290	5,190	--	71	--	82	--	85	87	90	97	100 SPWCM
Sept. 22.....	5:45 p. m.	1,180	3,840	4,240	--	71	--	92	--	95	97	98	99	100 SPWCM
Sept. 25.....	4:30 p. m.	2,070	20,500	4,160	--	71	--	90	--	93	93	95	98	-- SPWCM

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH

LOCATION.--At bridge on State Highway 47, 1,800 feet downstream from gaging station and 20 miles southwest of Bluff, San Juan County.

DRAINAGE AREA.--23,000 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: February to June 1927, October 1929 to September 1952.

Water temperatures: May 1944 to September 1952.

Sediment records: August to September 1928, July 1929 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,220 ppm Dec. 16-20; minimum, 152 ppm June 11-20.

Hardness: Maximum, 622 ppm Dec. 16-20; minimum, 104 ppm June 11-20.

Specific conductance: Maximum daily, 1,620 micromhos Dec. 19; minimum daily, 208 micromhos June 17.

Water temperatures: Maximum observed, 81°F July 18, Aug. 2; minimum observed, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 118,000 ppm Sept. 22; minimum daily, not determined.

Sediment loads: Maximum daily, 976,000 tons Sept. 22; minimum daily not determined.

EXTREMES, 1929-52.--Dissolved solids: Maximum, 1,860 ppm July 21-31, 1934; minimum, 152 ppm June 11-20, 1952.

Hardness: Maximum, 874 ppm July 21-31, 1934; minimum, 104 ppm June 11-20, 1952.

Specific conductance (1941-52): Maximum daily, 2,070 micromhos Aug. 26, 1943; minimum daily, 208 micromhos June 17, 1952.

Water temperatures (1944-52): Maximum observed, 85°F July 21, 1929; minimum daily, 0 ppm July 3-13, 1934, Aug. 24-27, 1938.

Sediment concentrations: Maximum daily, 309,000 ppm Sept. 21, 1929; minimum daily, 0 ppm July 3-13, 1934, Aug. 24-27, 1938.

Sediment loads: Maximum daily, 12,000,000 tons Oct. 14, 1941 (rev.); minimum daily 0 ton July 3-13, 1934, Aug. 24-27, 1938.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1245.

Chemical analyses, in parts per million, December 1951 to September 1952

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 (residue at 180°C)		Hardness as CaCO ₃		Percent dissolved	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
Dec. 16-20, 1951.	243	17	0.03	170	48	148	3.2	250	631	44	0.4	5.1	--	1,220	1.66	800	622	416	34	2.6	1,560	7.8
Dec. 21-31.	776	15	0.04	133	36	120	3.0	222	484	36	6	4.1	--	981	1.31	2,010	480	298	35	2.4	1,270	7.7
Jan. 1-10, 1952.	1,358	13	0.05	110	31	101	3.6	184	416	24	5	5.1	--	811	1.10	2,970	402	251	35	2.2	1,110	7.7
Jan. 11-20.	1,924	14	0.04	114	31	109	3.6	215	418	24	3	4.9	0.12	844	1.15	4,380	412	236	37	2.4	1,150	7.8
Jan. 21-31.	1,050	14	0.03	122	30	124	124	203	467	27	3	7.4	--	917	1.25	2,600	438	262	39	2.6	1,240	7.9
Feb. 1-10.	718	13	0.04	122	37	109	109	209	456	31	3	5.0	--	912	1.24	1,770	456	285	34	2.2	1,230	7.9
Feb. 11-20.	742	12	0.04	118	34	108	108	195	445	29	3	4.7	--	875	1.19	1,750	434	274	35	2.2	1,180	7.9
Feb. 21-29.	640	11	0.04	117	36	102	102	200	436	29	3	3.4	--	869	1.18	1,500	440	276	34	2.1	1,160	7.9
Mar. 1-10.	798	12	0.05	122	37	114	114	196	479	29	3	4.7	--	929	1.26	2,000	456	296	35	2.3	1,240	7.9
Mar. 11-20.	1,318	13	0.05	115	33	102	102	218	407	26	4	7.0	--	823	1.12	2,530	422	244	34	2.2	1,120	7.6
Mar. 21-31.	2,059	12	0.03	102	26	79	79	208	315	20	4	6.7	--	673	.92	3,740	362	191	32	1.8	931	7.6
Apr. 1-10.	6,007	12	0.03	73	19	41	41	176	174	13	4	5.5	--	428	.58	6,940	260	116	26	1.1	615	7.7
Apr. 11-20.	7,284	11	0.02	50	12	27	27	144	97	7.5	4	4.6	.06	278	.38	5,470	174	56	25	.9	416	7.8
Apr. 21-30.	9,521	11	0.02	46	8	29	29	120	93	9.5	4	3.5	--	260	.35	6,680	150	52	29	1.0	390	7.8
May 1-10.	12,100	10	0.02	43	10	19	19	120	78	5.5	4	2.4	--	228	.31	7,450	148	50	22	.7	345	7.8
May 11-20.	11,510	13	0.03	46	7	10	10	132	52	3.3	3	1.3	--	206	.28	6,400	146	35	13	.4	321	7.7
May 21-31.	6,836	12	0.03	44	8.1	14	14	114	70	4.6	3	1.3	--	218	.30	4,020	144	50	18	.5	338	7.7

June 1-10, 1952...	14,730	13	.04	44	7.3	13	125	56	3.2	3	1.2	--	205	.28	8,150	140	38	16	.5	319	7.8
June 11-20.....	15,760	12	.06	32	5.9	8.7	92	41	2.5	.3	1.0	--	152	.21	6,470	104	29	15	.4	237	7.9
June 21-30.....	8,283	13	.06	24	6.2	12	110	61	4.1	.3	1.0	--	185	.25	4,140	126	36	17	.4	294	7.5
July 1-6, 9-10.....	5,353	14	.03	44	8.3	21	115	81	5.5	.3	.8	--	237	.32	3,430	144	50	24	.8	364	7.7
July 7-8.....	7,345	16	--	68	13	27	159	134	7.0	1.7	--	--	345	.47	6,840	223	92	21	.8	522	--
July 11-20.....	3,335	13	.02	52	10	25	119	112	7.1	1.9	.06	--	287	.39	2,820	170	73	24	.8	439	7.7
July 21-29.....	1,838	13	.03	56	16	29	131	139	11	.3	.8	--	338	.48	1,770	208	98	24	.9	518	7.6
July 30-31.....	3,547	20	--	109	25	95	251	335	19	--	1.4	--	8728	.99	6,870	375	170	36	2.1	1,040	--
Aug. 1-2.....	2,280	20	--	95	18	96	215	312	13	--	.9	--	8681	.90	4,070	311	135	40	2.4	976	--
Aug. 3-10.....	1,709	16	.03	68	15	40	142	176	12	.4	1.9	--	398	.54	1,840	231	114	28	1.2	583	7.9
Aug. 11-20.....	1,027	13	.03	79	20	56	161	235	16	.4	1.3	--	507	.69	1,410	279	147	30	1.5	744	7.6
Aug. 21-22, 25-31	1,185	15	.07	77	20	56	163	230	14	.4	1.9	--	511	.69	1,630	274	140	31	1.5	747	7.7
Aug. 23-24.....	1,410	14	--	96	28	75	201	322	12	--	1.4	--	8647	.88	2,460	354	190	31	1.7	970	--
Sept. 1-10.....	774	13	.04	82	22	87	158	262	18	.4	1.4	--	556	.76	1,160	295	166	31	1.6	806	7.7
Sept. 11-20.....	456	11	.08	92	28	105	166	363	26	.4	1.6	.13	707	.96	870	344	208	36	2.1	1,010	7.8
Sept. 21-25.....	1,860	16	.08	122	28	105	239	413	24	.4	.4	--	851	1.16	4,270	420	224	35	2.2	1,190	7.4
Sept. 26-30.....	1,368	16	.05	86	20	65	168	273	18	.4	3.4	--	595	.81	2,200	296	159	32	1.6	842	7.8
Weighted average	b 4,262	12	0.04	65	12	30	134	121	8.1	0.3	2.3	--	312	0.42	3,590	186	76	26	1.0	460	--

a Sum of determined constituents

b Represents 96 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	2,010	--	--	1,980	--	--	542	--	--
2-----	800	--	--	864	--	--	563	--	--
3-----	557	--	--	662	--	--	634	--	--
4-----	476	--	--	662	--	--	679	--	--
5-----	451	--	--	645	--	--	810	--	--
6-----	437	147	173	623	--	--	1,180	--	--
7-----	409	121	134	552	--	--	656	--	--
8-----	423	--	--	547	--	--	628	3,000	5,090
9-----	451	120	146	574	--	--	563	2,500	3,800
10-----	451	310	377	516	--	--	466	--	--
11-----	437	108	127	505	--	--	380	1,700	1,740
12-----	386	81	84	536	--	--	330	1,400	1,250
13-----	391	66	70	547	--	--	280	1,200	907
14-----	373	68	68	876	--	--	237	1,000	640
15-----	369	--	--	628	--	--	307	--	--
16-----	373	61	61	601	--	--	211	748	426
17-----	360	32	31	601	--	--	228	1,040	640
18-----	369	--	--	579	--	--	244	1,250	824
19-----	360	70	68	563	--	--	266	1,710	1,230
20-----	378	--	--	520	--	--	266	1,510	1,080
21-----	370	--	--	495	--	--	230	1,290	801
22-----	360	--	--	495	--	--	200	530	286
23-----	350	--	--	576	--	--	190	553	284
24-----	319	--	--	720	--	--	192	255	132
25-----	352	--	--	708	--	--	199	230	124
26-----	364	--	--	617	--	--	364	1,750	1,720
27-----	1,200	--	--	617	--	--	461	2,790	3,470
28-----	1,150	--	--	634	--	--	584	2,100	3,310
29-----	1,080	--	--	601	--	--	634	2,460	4,210
30-----	846	--	--	536	--	--	1,480	10,200	s 42,800
31-----	1,100	--	--	--	--	--	4,000	30,000	s 351,000
Total--	17,752	--	b 370,000	19,563	--	b 390,000	18,004	--	b 510,000
	January			February			March		
1-----	3,010	30,300	s 252,000	750	3,770	7,630	557	1,870	2,810
2-----	3,110	22,000	s 199,000	738	3,630	7,230	750	3,500	7,090
3-----	1,660	11,600	52,000	744	3,740	7,510	1,270	10,800	s 40,500
4-----	1,240	7,100	23,800	726	3,100	6,080	1,050	8,500	24,100
5-----	1,000	4,600	12,400	656	2,550	4,520	822	11,900	28,400
6-----	840	2,750	6,240	858	4,190	9,710	720	9,100	17,700
7-----	738	2,200	a 4,400	697	2,710	6,000	640	4,600	7,950
8-----	612	1,600	2,640	679	2,970	5,440	662	3,400	6,080
9-----	679	1,500	a 2,700	874	2,550	4,640	674	4,600	8,370
10-----	674	1,200	a 2,200	656	2,390	4,230	816	5,250	11,600
11-----	617	1,100	a 1,800	685	2,250	4,160	1,250	10,200	s 37,700
12-----	505	1,010	1,380	756	2,770	5,650	1,460	12,900	s 52,100
13-----	495	690	922	878	3,560	8,420	1,340	14,300	51,700
14-----	1,060	2,430	s 8,290	840	3,000	a 6,600	1,070	12,400	35,800
15-----	1,180	3,990	s 13,800	780	2,680	5,640	921	9,100	22,600
16-----	1,400	10,000	a 38,000	714	2,180	4,200	870	5,700	13,400
17-----	1,330	10,100	36,000	691	2,580	4,810	998	6,050	16,300
18-----	2,380	16,700	s 158,000	885	2,820	5,220	1,800	14,700	s 81,000
19-----	6,980	35,500	s 736,000	708	2,790	5,330	1,780	20,100	96,600
20-----	3,300	27,000	a 240,000	685	2,110	3,900	1,890	25,600	117,000
21-----	1,630	22,280	97,700	682	2,190	3,910	1,920	19,200	99,500
22-----	1,180	27,600	87,900	640	2,030	3,510	1,800	14,900	72,400
23-----	970	17,500	45,800	656	2,140	3,790	1,410	10,700	40,700
24-----	858	11,300	28,200	879	2,620	4,800	1,200	7,470	24,200
25-----	949	9,700	24,900	679	1,950	3,570	1,010	4,900	13,400
26-----	1,240	11,500	38,500	645	2,010	3,500	970	4,160	10,900
27-----	1,220	10,900	35,900	612	1,920	3,190	1,140	5,100	15,700
28-----	1,040	7,800	21,900	595	2,250	3,610	2,190	17,400	s 106,000
29-----	894	5,400	13,000	590	1,570	2,500	2,600	19,700	s 158,000
30-----	786	4,100	8,700	--	--	--	4,070	39,500	s 490,000
31-----	780	5,100	10,700	--	--	--	4,140	30,000	335,000
Total--	44,347	--	2,200,572	20,358	--	149,500	43,790	--	2,043,560

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Includes loads for missing days, computed from water-sediment discharge curves.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	4,440	30,100	361,000	9,590	7,590	197,000	9,490	4,200	108,000
2-----	4,740	27,300	349,000	8,330	5,670	128,000	10,400	4,030	113,000
3-----	4,830	24,500	320,000	8,510	5,200	119,000	10,800	4,200	122,000
4-----	4,940	22,200	296,000	10,300	6,120	170,000	11,700	5,000	158,000
5-----	5,310	21,600	310,000	12,500	6,930	234,000	18,200	8,210	403,000
6-----	5,630	21,300	324,000	14,500	8,140	319,000	18,200	7,940	390,000
7-----	6,290	20,700	352,000	16,000	9,900	428,000	15,900	5,440	234,000
8-----	7,350	18,500	367,000	15,400	8,200	341,000	16,500	6,230	278,000
9-----	8,110	17,000	372,000	13,600	6,430	236,000	18,000	5,900	207,000
10-----	8,430	14,800	337,000	12,300	6,030	201,000	18,100	5,580	273,000
11-----	7,540	11,900	242,000	11,900	5,560	179,000	18,200	6,050	297,000
12-----	6,960	9,100	171,000	10,700	4,670	135,000	18,600	5,800	230,000
13-----	6,220	8,820	148,000	10,700	4,600	133,000	18,400	4,750	236,000
14-----	5,390	7,480	109,000	11,100	4,990	150,000	16,800	4,980	226,000
15-----	5,680	8,210	126,000	12,000	5,900	191,000	15,400	4,700	295,000
16-----	6,780	9,520	174,000	13,000	7,400	260,000	15,000	4,780	194,000
17-----	7,900	11,000	235,000	13,900	7,000	263,000	15,800	5,160	221,000
18-----	8,230	9,920	220,000	12,900	5,360	167,000	14,800	4,980	199,000
19-----	8,950	10,600	256,000	10,700	4,780	136,000	12,700	3,810	131,000
20-----	9,190	9,720	241,000	8,230	3,300	73,300	11,900	3,580	115,000
21-----	9,530	9,300	239,000	7,480	2,960	59,600	11,700	3,600	114,000
22-----	9,860	9,400	251,000	7,200	3,280	63,800	11,600	3,810	119,000
23-----	8,910	7,360	177,000	7,140	3,520	87,900	10,200	3,720	102,000
24-----	8,670	6,200	145,000	6,510	3,400	59,800	8,850	3,290	78,600
25-----	7,770	5,580	117,000	5,630	2,470	37,500	8,090	2,800	61,200
26-----	8,010	5,580	121,000	5,160	2,100	29,300	7,370	2,310	46,000
27-----	8,670	7,170	168,000	5,560	2,590	39,000	7,010	2,950	55,800
28-----	9,170	6,800	169,000	6,400	3,620	62,600	6,620	1,970	35,200
29-----	11,800	10,600	338,000	6,960	4,050	76,100	6,110	1,840	30,400
30-----	12,800	13,300	460,000	8,030	4,500	97,600	5,380	1,890	27,500
31-----	--	--	--	9,130	4,480	110,000	--	--	--
Total-	228,120	--	7,494,000	311,360	--	4,785,500	387,620	--	5,139,700
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-----	5,290	1,290	18,400	2,420	26,500	173,000	1,120	3,900	11,600
2-----	5,160	1,570	21,900	2,140	17,000	98,200	1,020	2,320	6,390
3-----	5,190	1,690	23,700	2,040	6,250	34,400	921	1,780	4,430
4-----	4,830	1,630	21,300	2,150	6,250	36,300	816	1,270	2,800
5-----	4,670	1,440	18,200	2,070	5,600	31,300	738	1,130	2,250
6-----	5,700	5,860	81,800	1,770	3,170	15,100	702	1,100	2,080
7-----	7,270	12,400	244,000	1,610	2,500	10,900	656	962	1,700
8-----	7,420	7,690	154,000	1,480	1,950	7,790	623	829	1,390
9-----	6,240	4,070	68,600	1,370	1,980	7,320	579	1,010	1,580
10-----	5,780	4,350	67,900	1,180	1,720	5,480	563	780	1,190
11-----	5,820	5,400	84,900	1,080	2,200	6,420	526	630	895
12-----	4,900	5,780	76,500	1,100	1,600	4,750	456	800	985
13-----	4,340	3,100	36,300	1,030	1,600	4,450	413	400	446
14-----	3,980	2,000	21,500	1,080	1,480	4,320	395	235	251
15-----	3,660	1,760	17,400	977	1,400	3,690	391	400	422
16-----	3,270	1,500	13,200	928	1,250	3,130	413	250	279
17-----	2,970	1,200	9,620	984	1,800	4,780	510	1,400	1,930
18-----	2,670	2,770	20,000	1,150	3,040	9,440	505	360	491
19-----	2,450	1,350	8,930	1,030	1,790	4,980	461	190	236
20-----	2,300	900	5,590	907	1,400	3,430	490	410	542
21-----	2,220	1,150	6,890	786	1,810	3,840	1,110	18,600	55,700
22-----	2,160	1,050	6,120	688	1,780	4,280	2,360	118,000	876,000
23-----	2,010	1,290	7,000	1,030	18,700	35,600	2,020	113,000	875,000
24-----	1,940	648	4,970	1,790	8,300	40,100	1,880	36,800	187,000
25-----	1,740	909	4,270	1,550	9,200	38,500	1,910	33,500	173,000
26-----	1,730	1,180	5,510	1,440	6,400	24,900	1,710	18,500	85,400
27-----	1,790	1,440	6,960	1,410	7,900	30,100	1,560	12,200	51,400
28-----	1,910	1,850	9,540	1,170	4,800	15,200	1,350	8,730	31,800
29-----	4,010	9,780	140,000	1,220	4,300	14,200	1,190	8,310	26,700
30-----	3,330	30,300	286,000	1,120	6,220	18,800	1,030	5,000	13,900
31-----	3,300	31,100	277,000	1,080	6,820	19,900	--	--	--
Total-	120,050	--	1,778,000	41,980	--	714,610	28,438	--	2,396,987
Total discharge for year (cfs-days)									1,281,580
Total load for year (tons)									27,972,369

s Computed by subdividing day.

n Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952

(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	Water discharge (cfs)	Water temperature (° F)	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. 4, 1951	8:00 a. m.	662		1,360	949	53	65	79	85	91	96	99	100			SBWCM
Nov. 14	11:00 a. m.	1,080		50,100	3,900	49	65	75	86	94	97	98	99	100		SPWCM
Nov. 14	1:00 a. m.	1,080		50,100	3,320	49	61	75	84	93	97	99	99	100		SBWCM
Dec. 18	3:45 p. m.	327		1,250		--	--	--	--	--	21	36	84	100		S
Dec. 30	1:30 p. m.			11,400	4,510	--	23	31	31	--	50	67	84	100		SPWCM
Jan. 19, 1952	2:00 p. m.	1,600		4,400	2,830	--	25	31	37	--	40	54	81	98		SPWCM
Jan. 19	7:30 a. m.	7,310		33,800	4,790	--	34	--	--	--	66	78	90	100		SPWCM
Jan. 22	3:00 p. m.	1,110		23,900	3,680	61	--	--	71	--	78	88	96	100		SPWCM
Jan. 31	11:00 a. m.	900		5,020	3,170	--	20	--	27	--	45	68	88	99		SPWCM
Mar. 3	4:00 p. m.	1,360		13,000	5,610	--	22	--	35	--	62	85	98	100		SPWCM
Mar. 13	1:45 a. m.	1,400		14,900	3,790	--	59	--	78	--	85	93	99	100		SPWCM
Mar. 13	11:45 a. m.	1,400		10,600	4,140	47	57	68	77	81	85	93	99	100		SPWCM
Mar. 28	9:15 a. m.	1,980		10,600	5,120	--	40	--	--	--	79	87	97	100		SPWCM
Apr. 18	9:25 a. m.	7,460		9,420	3,410	--	14	--	19	--	32	52	77	95		SPWCM
Apr. 30	9:15 a. m.	13,400		13,700	4,470	--	29	--	43	--	59	72	87	99		SPWCM
May 9	9:15 a. m.	13,500		6,330	3,710	--	13	--	21	--	38	60	82	97		SPWCM
May 26	8:35 a. m.	5,210		1,930	--	--	--	--	--	--	24	50	86	98		S
July 1	10:05 a. m.	5,220		1,580	--	--	--	--	--	--	19	42	79	98		S
July 8	8:30 a. m.	7,500		4,430	4,430	--	43	--	54	--	63	75	94	100		SPWCM
July 30	10:45 a. m.	4,270		32,900	4,020	50	--	72	--	--	89	93	98	100		SPWCM
Sept. 1	10:15 a. m.	1,150		5,330	5,330	--	51	--	64	--	69	80	96	100		SPWCM
Sept. 24	9:05 a. m.	2,030		41,400	2,930	--	25	--	--	--	50	77	99	100		SPWCM

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.

LOCATION --At gaging station at head of Marble Gorge at Lees Ferry, Coconino County, just upstream from Paria River, 28 miles downstream from Utah-Arizona State line, 61.5 miles upstream from Little Colorado River, and 79 miles downstream from San Juan River.

DRAINAGE AREA --107,900 square miles approximately.

RECORDS AVAILABLE --Chemical analyses: January to July 1926, October 1926 to June 1947, October 1928 to September 1930, October 1942 to October 1945, October 1947 to September 1952.

Water temperatures: July 1949 to September 1952.

Sediment records: October 1928 to December 1933, November 1942 to September 1944, October 1947 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,140 ppm Oct. 1-10, Dec. 21-31; minimum, 236 ppm June 11-20.

Hardness: Maximum, 586 ppm Oct. 1-10; minimum, 150 ppm June 11-20.

Specific conductance: Maximum observed, 2,010 micromhos Sept. 26; minimum observed 339 micromhos June 14.

Water temperatures: Maximum observed, 84°F Aug. 3; minimum, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 25,200 ppm Sept. 25; minimum daily, 515 ppm Dec. 17.

EXTREMES, 1928-50, 42-45.--Dissolved solids: Maximum, 1,990,000 tons May; minimum daily, 4,140 tons Dec. 17.

Hardness: Maximum, 47-52.--Dissolved solids: Maximum, 1,410 ppm Oct. 11-20, 1928; minimum 209 ppm June 11-20, 1929.

Specific conductance (1949-52): Maximum observed, 380 micromhos Oct. 13, 1945; minimum observed, 318 micromhos June 9, 1949.

Water temperatures (1949-52): Maximum observed, 84°F Aug. 3, 1933; minimum, freezing point on many days during winter months.

Sediment concentrations (1928-33, 1942-44, 1947-52): Maximum daily, 83,300 ppm Aug. 31, 1930; minimum daily, 300 ppm Jan. 8, 1949.

Sediment loads (1928-33, 1942-44, 1947-52): Maximum daily, 9,490,000 tons Aug. 7, 1929; minimum daily, 1,220 tons Jan. 8, 1949.

REMARKS --Values reported for dissolved solids are means of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1951 to September 1952 given in WSP 1245.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 chloride	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate						
Oct. 1-10, 1951...	6,133	13	0.02	154	49	147	5.0	227	564	92	0.4	3.0	0.2	1,140	1.55	18,880	586	400	35	2.6	1,610	7.6	18
Oct. 11-20.....	6,998	15	0.02	138	49	140	3.0	224	509	98	0.4	4.3	0.2	1,070	1.46	20,230	546	365	36	2.6	1,560	7.4	12
Oct. 21-31.....	6,949	13	0.01	134	47	148	2.6	217	504	98	0.4	3.5	0.2	1,060	1.44	19,890	527	349	38	2.8	1,530	7.5	7
Nov. 1-10.....	8,690	13	0.01	147	47	146	4.0	221	555	82	0.4	3.6	0.2	1,110	1.51	26,040	560	380	36	2.7	1,580	7.6	15
Nov. 11-20.....	7,024	14	0.01	132	48	134	3.4	235	471	94	0.3	5.2	0.3	1,020	1.39	19,340	531	338	35	2.5	1,490	7.7	5
Nov. 21-30.....	6,723	15	0.01	113	46	133	6.8	219	439	95	0.3	3.0	(a)	968	1.30	17,890	467	288	38	2.7	1,430	7.8	5
Dec. 1-10.....	6,686	15	0.01	98	53	154	8.4	226	461	105	0.3	4.0	(a)	1,010	1.37	18,100	462	278	41	3.1	1,490	7.7	5
Dec. 11-20.....	4,221	15	0.01	117	51	154	6.2	224	451	116	0.3	2.9	(a)	1,030	1.40	11,740	502	310	40	3.0	1,530	---	5
Dec. 21-31.....	5,412	15	0.01	124	54	170	5.6	266	491	124	0.4	4.2	(a)	1,140	1.55	16,660	532	314	42	3.4	1,670	---	5
Jan. 1-10, 1952..	8,425	12	0.01	105	29	119	7.4	208	381	92	0.2	7.4	(a)	965	1.18	19,680	422	282	37	2.5	1,300	7.7	10
Jan. 11-20.....	8,245	13	0.02	117	42	132	6.8	231	435	101	0.3	4.3	(a)	985	1.24	16,870	454	275	41	3.1	1,470	7.8	10
Jan. 21-31.....	8,390	14	0.01	110	36	130	5.6	217	369	100	0.3	4.9	(a)	977	1.19	19,870	423	244	40	2.8	1,340	7.8	5
Feb. 1-10.....	6,991	12	0.01	108	38	129	6.4	203	394	100	0.3	4.1	(a)	932	1.21	16,840	426	260	39	2.7	1,350	7.2	5
Feb. 11-20.....	6,566	13	0.01	111	42	136	7.0	216	407	111	0.3	4.0	(a)	937	1.27	16,610	450	274	39	2.8	1,420	7.8	5
Feb. 21-29.....	6,182	13	0.01	110	43	142	1.0	219	410	113	0.3	4.0	(a)	953	1.30	15,910	452	272	40	2.9	1,430	7.8	5

a. Reported boron concentration is less than .1.

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

c. Includes equivalent of 9 parts per million of Carbonate (CO₃).

Mar. 1-10, 1952....	6,267	15	.03	112	45	151	5.5	230	409	117	.3	5.2	.16	973	1.32	16,460	464	276	41	3.0	1.460	7.3 10
Mar. 11-20	7,334	14	.02	118	43	151	5.2	229	435	113	.3	3.9	.11	985	1.34	19,500	472	264	41	3.0	1,460	7.7 10
Mar. 21-31	7,790	14	.02	110	41	144	5.2	219	409	98	.3	4.1	.16	934	1.27	19,640	443	264	41	3.0	1,390	7.7 5
Apr. 1-10	19,260	14	.03	100	34	121	5.7	216	356	70	.3	1.7	.13	809	1.10	42,070	390	212	40	2.7	1,200	7.7 10
Apr. 11-20	35,700	14	.03	83	27	88	4.9	206	289	45	.4	1.6	.11	633	.98	61,010	316	148	37	2.2	.960	7.7 20
Apr. 21-30	59,310	14	.04	59	18	48	3.7	173	146	24	.4	1.6	.08	400	.54	64,050	231	79	32	1.4	623	7.9 40
May 1-10	88,330	14	.03	54	16	33	5.0	170	107	15	.3	1.7	.17	330	.45	78,700	200	61	26	1.0	523	7.8 18
May 11-20	96,700	12	.02	47	13	24	3.0	158	75	13	.3	1.3	.09	266	.36	69,450	171	42	23	.8	430	7.8 27
May 21-31	64,650	12	.03	46	15	29	4.0	150	93	15	.3	1.3	.10	290	.39	50,620	176	54	26	.9	461	7.8 22
June 1-10	90,430	13	.03	53	14	29	3.3	167	90	14	.3	.9	.04	299	.41	73,000	187	50	25	.9	481	7.7 27
June 11-20	11,200	13	.04	44	9.9	22	3.0	141	65	10	.3	1.0	.07	236	.32	70,860	150	35	24	.8	388	7.8 31
June 21-30	60,130	12	.06	46	11	25	3.3	141	74	14	.3	1.0	.05	256	.35	41,560	160	44	25	.9	418	7.7 32
July 1-10	39,130	15	.06	87	15	35	3.9	163	114	19	.3	1.2	.10	340	.46	35,920	204	70	27	1.1	544	7.7 15
July 11-20	24,610	15	.33	66	19	49	4.5	168	165	31	.3	.9	.10	434	.59	28,940	242	105	30	1.4	668	7.7 45
July 21-31	14,150	13	.03	74	34	67	4.5	178	212	47	.3	1.8	.09	532	.72	20,330	263	137	33	1.7	624	7.7 10
Aug. 1-10	14,540	16	.03	96	29	97	5.5	187	317	63	.3	3.8	.13	720	.98	28,460	368	206	37	2.2	1,070	7.6 20
Aug. 11-20	12,970	15	.01	105	33	104	5.8	197	352	66	.4	4.1	.18	782	1.06	27,360	398	238	38	2.3	1,160	7.6 20
Aug. 21-31	12,540	14	.01	113	37	105	6.4	201	385	66	.4	4.4	.18	829	1.13	28,070	432	267	34	2.2	1,220	7.6 25
Sept. 1-10	11,230	12	.01	128	40	119	6.7	230	433	66	.4	4.5	.22	923	1.26	27,990	464	266	34	2.3	1,330	7.7 25
Sept. 11-20	7,061	10	.01	110	41	120	5.9	211	394	78	.4	3.9	.22	867	1.18	16,530	443	270	37	2.5	1,280	7.6 15
Sept. 21-30	9,030	14	.02	149	44	143	6.8	210	540	88	.4	4.5	.20	1,060	1.48	26,660	553	361	36	2.6	1,540	7.7 10
Weighted average.	24,740	13	0.04	68	21	57	4.2	174	180	34	0.3	1.9	--	465	0.83	31,060	256	114	32	2.8	714	--

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement, generally prior to 11 a. m./

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

a Observation made between 11 a. m. and 6 p. m.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	7,690	3,650	s 83,000	11,500	6,840	212,000	6,640	1,520	27,300
2-----	10,500	21,900	s 555,000	11,500	9,120	283,000	6,340	1,680	28,800
3-----	5,930	18,800	301,000	10,200	12,400	341,000	5,990	1,440	23,300
4-----	5,120	10,300	142,000	8,430	8,440	182,000	5,810	1,450	22,700
5-----	5,210	6,500	91,400	7,880	6,020	128,000	6,150	1,720	28,600
6-----	5,120	5,000	69,100	7,700	7,400	154,000	7,250	2,560	50,100
7-----	5,580	4,200	63,300	7,460	6,750	136,000	6,980	2,250	42,400
8-----	5,490	3,350	49,700	7,460	4,880	98,300	7,080	2,090	40,000
9-----	5,290	3,050	43,600	4,420	3,470	69,500	7,080	1,860	35,600
10-----	5,400	2,900	42,300	7,350	3,210	63,700	4,040	2,190	41,600
11-----	6,210	3,700	62,000	7,210	2,450	47,700	6,470	1,840	32,100
12-----	7,380	3,650	72,700	7,010	1,980	37,100	5,610	1,370	21,500
13-----	8,280	3,300	73,800	6,910	1,960	36,600	4,940	1,170	15,600
14-----	7,770	2,850	59,800	7,010	1,970	37,300	4,250	960	11,000
15-----	7,110	2,500	48,000	7,010	1,870	35,400	3,770	773	7,870
16-----	6,940	3,000	56,200	7,250	2,000	39,200	3,380	624	5,690
17-----	6,940	3,800	67,500	7,320	2,380	47,000	2,980	515	4,140
18-----	6,600	4,420	78,800	6,940	1,840	34,500	2,930	535	4,230
19-----	6,440	5,000	a 87,000	6,740	1,990	36,200	3,530	662	6,310
20-----	6,310	5,600	95,400	6,840	1,860	34,400	4,150	792	8,870
21-----	6,210	4,750	79,600	6,770	1,720	31,400	4,590	984	12,200
22-----	6,020	3,420	55,600	6,700	1,690	30,600	4,820	1,010	13,100
23-----	5,810	2,300	36,100	6,340	1,430	24,500	5,120	1,000	13,800
24-----	5,840	2,250	35,500	6,470	1,400	24,500	5,180	1,300	18,200
25-----	5,690	2,180	33,500	7,520	2,080	42,200	5,100	1,090	15,000
26-----	5,630	2,020	30,700	6,770	3,210	58,700	4,860	1,230	16,100
27-----	5,780	1,900	29,700	6,340	1,970	33,700	4,920	1,010	13,400
28-----	6,370	1,860	32,000	6,470	2,140	37,400	5,320	1,190	17,100
29-----	7,770	5,000	105,000	6,940	2,120	39,700	5,870	1,670	26,500
30-----	9,120	5,800	146,000	6,910	1,990	37,100	6,500	1,720	30,200
31-----	12,200	10,300	339,000	--	--	--	7,250	3,180	62,200
Total-	207,750	--	3,064,000	224,370	--	2,422,700	168,100	--	665,500
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-----	11,100	6,360	s 200,000	8,580	3,120	72,300	5,900	1,470	23,400
2-----	10,900	9,000	265,000	7,770	2,820	58,200	5,990	1,660	26,800
3-----	11,800	8,700	277,000	7,250	2,730	53,400	6,020	1,410	22,900
4-----	11,500	7,840	243,000	6,940	2,330	43,700	6,150	1,260	20,900
5-----	9,200	5,350	133,000	6,700	2,160	39,100	6,470	1,500	26,200
6-----	7,040	4,200	79,800	6,570	1,950	34,600	6,600	1,700	30,300
7-----	5,870	2,980	47,200	6,500	1,630	28,600	6,540	1,700	30,000
8-----	5,720	2,320	36,800	6,500	1,440	25,300	6,410	1,650	28,600
9-----	5,460	2,020	29,800	6,600	1,450	25,800	6,280	2,180	36,600
10-----	5,660	1,800	27,500	6,500	1,270	22,300	6,310	1,910	32,500
11-----	4,820	1,440	18,700	6,470	1,450	25,300	6,500	1,960	34,400
12-----	4,130	1,060	11,800	6,440	1,590	27,800	6,770	1,680	30,700
13-----	4,150	1,000	a 11,000	6,310	1,700	29,000	7,380	2,110	42,000
14-----	4,440	1,020	12,200	6,410	1,810	31,300	7,990	3,410	73,600
15-----	4,540	1,100	13,500	6,670	1,890	34,000	8,100	3,630	79,400
16-----	5,180	1,600	22,400	7,040	1,890	35,900	7,950	4,590	98,500
17-----	5,780	3,020	47,100	6,810	1,730	31,800	7,380	4,440	88,500
18-----	5,930	2,580	41,300	6,540	1,690	29,800	7,080	3,440	65,800
19-----	8,580	4,700	109,000	6,470	1,920	33,500	6,940	2,770	51,900
20-----	15,900	11,000	s 468,000	6,500	1,860	32,600	7,250	2,590	50,700
21-----	11,100	11,800	354,000	6,150	2,080	34,500	7,950	3,510	75,300
22-----	9,000	10,800	262,000	6,280	1,710	29,000	7,880	4,230	90,000
23-----	8,320	7,620	171,000	6,440	1,660	28,900	8,100	6,010	131,000
24-----	8,280	4,800	107,000	6,340	1,670	a 28,600	7,990	4,850	105,000
25-----	7,770	4,550	95,500	6,150	1,680	27,900	7,600	3,680	75,500
26-----	7,350	4,320	85,700	5,930	1,970	31,500	7,280	3,020	59,400
27-----	7,250	3,380	66,200	6,020	1,780	28,900	7,110	2,540	48,800
28-----	7,280	3,700	72,700	6,210	1,920	32,200	7,210	2,290	44,600
29-----	7,770	3,830	80,300	6,120	1,810	29,900	7,350	2,010	39,900
30-----	8,930	3,720	89,700	--	--	--	8,080	2,560	55,700
31-----	9,240	3,370	84,100	--	--	--	9,180	3,600	89,000
Total-	239,990	--	3,561,300	191,210	--	896,500	221,700	--	1,707,900

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	11,800	6,380	203,000	78,600	8,580	1,820,000	68,400	3,770	698,000
2-----	13,100	8,650	306,000	70,800	8,160	1,560,000	71,900	3,500	679,000
3-----	14,600	9,400	371,000	68,400	6,390	1,180,000	76,400	3,900	804,000
4-----	15,400	10,200	424,000	69,600	6,800	1,280,000	80,800	4,630	1,010,000
5-----	17,100	10,100	468,000	77,500	5,800	1,210,000	83,000	5,890	1,320,000
6-----	21,100	11,700	667,000	89,600	6,450	1,560,000	94,800	5,480	1,400,000
7-----	22,400	10,900	659,000	99,800	7,390	1,990,000	102,000	4,500	1,240,000
8-----	24,900	11,200	753,000	108,000	6,750	1,970,000	104,000	4,120	1,180,000
9-----	24,200	10,500	686,000	112,000	6,520	1,970,000	108,000	3,160	921,000
10-----	28,000	10,600	801,000	109,000	5,240	1,540,000	115,000	3,630	1,130,000
11-----	32,900	11,200	995,000	109,000	5,750	1,680,000	121,000	3,520	1,150,000
12-----	37,000	13,000	1,300,000	105,000	4,910	1,390,000	122,000	3,340	1,100,000
13-----	34,700	13,100	1,230,000	97,800	4,400	1,160,000	121,000	2,940	960,000
14-----	34,300	13,500	1,250,000	93,800	4,280	1,080,000	121,000	3,100	1,010,000
15-----	31,600	12,200	1,040,000	92,800	5,050	1,270,000	119,000	2,980	957,000
16-----	30,000	11,200	907,000	92,800	4,240	1,060,000	111,000	3,410	1,020,000
17-----	31,200	10,300	868,000	95,800	4,430	1,150,000	107,000	2,980	864,000
18-----	35,600	9,880	950,000	97,800	4,290	1,130,000	105,000	2,880	816,000
19-----	42,100	10,200	1,160,000	95,800	3,560	921,000	96,800	2,670	712,000
20-----	47,600	10,700	1,380,000	87,400	4,400	1,040,000	86,300	2,930	683,000
21-----	49,700	10,100	1,360,000	80,800	5,020	1,100,000	77,500	2,810	588,000
22-----	50,800	9,000	1,230,000	75,300	4,000	813,000	73,000	2,570	507,000
23-----	54,000	8,590	1,250,000	70,800	3,830	1,100,100	70,800	2,600	497,000
24-----	56,100	8,780	1,330,000	68,400	3,690	681,000	65,000	2,190	384,000
25-----	57,200	9,020	1,390,000	65,000	3,740	666,000	60,500	2,770	452,000
26-----	57,200	8,170	1,280,000	60,500	3,910	639,000	56,100	2,140	324,000
27-----	60,800	7,710	1,260,000	56,100	3,430	520,000	52,800	2,300	328,000
28-----	63,900	7,520	1,300,000	55,000	4,150	616,000	50,600	2,200	301,000
29-----	68,500	7,750	1,430,000	57,200	3,610	558,000	48,000	1,930	250,000
30-----	75,100	6,980	1,420,000	59,400	4,010	643,000	47,000	2,230	283,000
31-----	--	--	--	62,700	3,020	511,000	--	--	--
Total--	1,142,700	--	29,646,000	2,561,500	--	35,392,000	2,617,700	--	23,546,000
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-----	44,500	1,850	222,000	16,200	5,300	232,000	13,300	8,880	319,000
2-----	43,000	1,840	214,000	16,500	6,540	291,000	13,500	8,420	307,000
3-----	42,500	1,820	209,000	15,700	5,950	252,000	13,100	8,180	289,000
4-----	41,600	2,010	226,000	15,200	5,480	225,000	12,800	7,740	267,000
5-----	39,700	1,680	180,000	15,000	4,620	167,000	12,000	5,820	189,000
6-----	36,500	1,710	169,000	15,000	3,420	139,000	10,900	5,610	165,000
7-----	34,800	1,830	181,000	14,200	3,600	138,000	9,940	6,150	165,000
8-----	34,800	2,710	255,000	13,500	2,760	101,000	9,390	5,980	152,000
9-----	36,500	2,620	258,000	13,100	2,850	101,000	8,860	4,900	117,000
10-----	37,400	3,160	319,000	12,000	2,880	93,300	8,520	4,300	98,900
11-----	34,000	2,800	257,000	11,600	2,690	84,300	7,980	4,100	88,300
12-----	31,400	2,910	247,000	11,200	2,700	81,600	7,490	3,540	71,600
13-----	28,600	2,440	188,000	11,600	2,600	82,700	7,280	2,350	46,200
14-----	26,600	2,140	154,000	12,000	2,900	94,000	7,050	1,830	34,800
15-----	24,800	2,070	139,000	12,200	2,100	69,200	7,050	1,180	22,500
16-----	23,100	2,180	136,000	15,200	2,900	120,000	7,120	1,060	20,400
17-----	21,400	1,780	103,000	16,200	2,980	130,000	6,860	870	16,100
18-----	19,900	1,360	73,100	13,500	7,390	269,000	6,560	860	15,200
19-----	18,700	1,360	68,700	13,100	5,260	186,000	6,590	998	17,800
20-----	17,600	1,060	50,400	13,100	3,620	135,000	6,630	1,250	22,400
21-----	16,500	1,090	48,600	12,600	4,340	148,000	7,050	2,800	53,300
22-----	16,000	1,130	48,800	11,800	5,920	189,000	8,340	8,650	195,000
23-----	15,400	976	40,600	11,400	4,440	137,000	10,100	5,100	139,000
24-----	14,500	1,050	41,500	11,400	3,580	110,000	12,600	7,450	253,000
25-----	13,700	863	31,900	11,400	3,660	113,000	9,780	25,200	665,000
26-----	13,300	972	34,900	12,600	3,940	136,000	8,710	20,700	487,000
27-----	12,600	880	29,900	13,500	4,500	164,000	8,480	11,000	252,000
28-----	12,200	900	29,600	13,500	3,940	144,000	8,870	6,930	162,000
29-----	12,200	2,000	65,900	13,100	5,350	189,000	8,480	4,650	106,000
30-----	13,300	3,220	118,000	13,300	5,400	194,000	8,090	3,150	68,800
31-----	16,000	3,600	156,000	13,100	7,820	277,000	--	--	--
Total--	793,100	--	4,292,900	414,000	--	4,812,100	273,220	--	4,805,300
Total discharge for year (cfs-days)									9,055,340
Total load for year (tons)									114,932,510

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (°F)	Suspended sediment												Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Oct. 1, 1951.....	8:40 a.m.	5,930		2,600	2,570	--	88	--	92	--	--	--	--	--	--	PWCM
Oct. 2.....	11:30 a.m.	9,980		27,200	3,180	51	59	66	81	89	95	97	99	100	100	SPWCM
Oct. 2.....	11:30 a.m.	9,980		27,200	3,370	7	8	10	--	93	95	97	99	100	100	SPN
Oct. 2.....	11:30 a.m.	9,980		27,200	2,990	48	59	71	83	92	95	97	99	100	100	SPWCM
Oct. 2.....	11:30 a.m.	9,980		27,200	2,580	5	10	16	--	--	95	97	99	100	100	SPN
Oct. 2.....	2:30 p.m.	8,950		27,100	2,870	--	62	--	85	--	96	99	100	--	--	SPWCM
Oct. 12.....	9:10 a.m.	7,250		3,920	3,850	--	50	--	64	--	80	92	98	99	99	SPWCM
Oct. 13.....	9:15 a.m.	8,360		3,270	2,870	--	34	--	51	--	71	88	98	99	99	SPWCM
Oct. 14.....	9:45 a.m.	7,880		--	5,150	--	55	--	71	--	83	91	98	100	100	SPWCM
Oct. 24.....	9:20 a.m.	5,970		2,600	4,380	--	59	--	67	--	72	81	96	100	100	SPWCM
Oct. 31.....	9:10 a.m.	12,900		12,200	3,320	42	51	63	77	82	90	95	99	100	100	SPWCM
Oct. 31.....	9:10 a.m.	12,900		12,200	3,220	3	8	23	71	83	90	95	99	100	100	SPN
Oct. 31.....	9:10 a.m.	12,900		12,200	3,200	38	51	64	76	84	90	95	99	100	100	SPWCM
Oct. 31.....	9:10 a.m.	12,900		12,200	3,390	9	11	17	47	83	90	95	99	100	100	SPN
Oct. 31.....	11:30 a.m.	13,100		11,700	2,790	--	60	--	79	--	97	--	--	--	--	SPWCM
Oct. 31.....	12:00 p.m.	12,700		10,300	3,800	--	48	--	77	--	91	--	--	--	--	SPWCM
Oct. 31.....	5:30 p.m.	12,200		8,260	2,040	--	71	--	75	--	88	94	99	100	100	SPWCM
Nov. 1.....	8:45 a.m.	11,900		6,450	3,360	--	49	--	65	--	82	91	100	--	--	SPWCM
Nov. 11.....	12:15 p.m.	7,210		2,220	1,750	--	47	--	57	--	65	78	98	100	100	SPWCM
Nov. 21.....	9:10 a.m.	6,910		1,890	1,560	--	24	--	33	--	46	73	96	98	98	SPWCM
Nov. 21.....	9:30 a.m.	6,970		1,650	1,250	--	42	--	45	--	61	78	94	100	100	SPWCM
Dec. 11.....	2:00 p.m.	6,440		1,760	1,830	22	25	30	34	39	45	66	96	100	100	SPWCM
Dec. 21.....	2:50 p.m.	4,560		953	2,020	14	18	23	29	35	46	71	94	100	100	SPWCM
Jan. 1, 1952....	10:10 a.m.	10,200		4,350	5,470	14	17	21	30	42	58	81	97	100	100	SPWCM
Jan. 2.....	11:00 a.m.	11,100		--	2,140	--	56	--	73	--	87	93	98	100	100	SPWCM
Jan. 2.....	4:30 p.m.	10,000		8,330	3,340	40	41	56	65	76	83	93	99	100	100	SPWCM
Jan. 2.....	4:30 p.m.	10,000		8,330	3,200	1	4	12	66	78	83	93	99	100	100	SPN
Jan. 2.....	4:30 p.m.	10,000		8,330	2,090	42	51	61	68	77	83	93	99	100	100	SPWCM
Jan. 2.....	4:30 p.m.	10,000		8,330	2,190	17	21	34	45	74	83	93	99	100	100	SPN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952--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	Water discharge (cfs)	Water temperature (° F)	Suspended sediment											Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Jan. 3, 1952	10:00 a.m.	12,700	--	4,430	--	53	72	--	86	93	99	100	SPWCM		
Jan. 14	1:10 p.m.	4,320	964	2,330	27	31	35	39	44	51	73	94	100	SPWCM	
Jan. 20	10:00 a.m.	18,000	--	3,820	--	31	--	45	--	75	89	98	100	SPWCM	
Jan. 20	12:30 p.m.	17,100	10,200	3,050	16	24	24	33	46	81	82	99	100	SPWCM	
Jan. 20	12:30 p.m.	17,100	10,200	2,340	4	5	24	48	68	81	82	99	100	SPN	
Jan. 20	12:30 p.m.	17,100	10,200	2,140	28	33	41	50	66	81	82	99	100	SPWCM	
Jan. 20	12:30 p.m.	17,100	10,200	2,110	--	--	36	49	63	81	82	99	100	SEN	
Jan. 20	4:45 p.m.	15,000	--	5,150	--	40	--	71	--	88	94	99	100	SPWCM	
Jan. 21	12:30 p.m.	11,500	--	3,070	--	54	--	77	--	87	94	99	100	SPWCM	
Jan. 22	2:30 p.m.	8,970	11,500	3,250	--	59	80	89	95	89	91	97	100	SPWCM	
Feb. 1	11:00 a.m.	8,700	3,040	5,050	--	32	--	45	--	59	81	97	100	SPWCM	
Feb. 11	1:45 p.m.	6,500	1,480	8,320	--	37	--	46	--	62	83	98	100	SPWCM	
Feb. 21	1:40 p.m.	6,150	1,880	3,790	--	39	--	54	--	65	84	98	100	SPWCM	
Mar. 2	12:20 p.m.	5,980	1,640	2,330	--	25	--	37	--	49	69	96	100	SPWCM	
Mar. 13	10:00 a.m.	7,210	1,970	3,380	--	29	--	39	--	51	69	95	100	SPWCM	
Mar. 21	12:15 p.m.	7,740	3,380	2,940	--	49	--	74	--	77	87	97	100	SPWCM	
Mar. 31	11:30 a.m.	9,000	3,370	3,870	--	36	--	56	--	70	86	99	99	SPWCM	
Apr. 7	11:00 a.m.	20,800	10,300	4,850	--	39	--	62	--	86	93	98	100	SPWCM	
Apr. 11	8:40 a.m.	30,800	10,600	3,970	--	31	--	34	--	72	88	97	100	SPWCM	
Apr. 12	9:00 a.m.	37,400	12,800	4,090	--	30	--	52	--	78	91	98	100	SPWCM	
Apr. 13	9:00 a.m.	37,400	12,800	3,930	--	3	--	53	--	78	91	98	100	SPN	
Apr. 21	4:00 p.m.	49,200	9,050	2,380	--	20	--	40	--	62	73	94	100	SPWCM	
Apr. 27	12:15 p.m.	61,700	7,280	6,010	--	28	--	45	--	69	82	93	100	SPWCM	
Apr. 30	1:30 p.m.	76,200	7,030	4,670	--	25	--	42	--	60	79	94	100	SPWCM	
May 2	3:15 p.m.	97,300	7,120	5,720	--	32	--	51	--	71	87	97	100	SPWCM	
May 6	12:10 p.m.	89,600	5,670	4,100	--	25	--	39	--	62	81	95	100	SPWCM	
May 7	9:15 a.m.	98,800	6,910	5,620	--	22	--	34	--	53	70	93	100	SPWCM	
May 8	8:30 a.m.	105,000	7,000	4,640	--	24	--	38	--	59	75	93	100	SPWCM	
May 8	8:30 a.m.	105,000	7,000	3,500	--	3	--	3	--	59	75	93	100	SPN	
May 9	4:00 p.m.	113,000	5,740	3,650	--	27	--	40	--	60	80	95	100	SPWCM	

May 13, 1952....	9:30 a. m.	98,000	4,410	6,280	--	19	--	29	--	46	71	93	SPWCM	100
May 15.....	9:50 a. m.	92,000	4,060	5,780	--	17	--	26	--	47	72	93	SPWCM	100
May 20.....	11:00 a. m.	88,500	4,400	5,760	--	20	--	28	--	48	74	95	SPWCM	100
May 21.....	11:45 a. m.	81,900	4,380	5,140	--	14	--	22	--	47	72	91	SPWCM	100
May 23.....	8:30 a. m.	70,800	3,540	5,430	--	16	--	24	--	50	75	95	SPWCM	99
May 27.....	8:45 a. m.	56,100	3,430	2,510	--	15	--	24	--	55	80	97	SPWCM	100
May 27.....	8:45 a. m.	56,100	3,420	2,600	--	8	--	23	--	55	80	97	SPN	100
May 27.....	8:45 a. m.	56,100	3,420	4,080	14	19	23	28	35	55	80	97	SPWCM	100
May 27.....	8:45 a. m.	56,100	3,420	3,950	3	6	18	26	40	55	80	97	SEN	100
June 2.....	8:30 a. m.	71,900	3,280	4,320	--	12	--	20	--	42	68	92	SPWCM	99
June 5.....	9:30 a. m.	83,000	4,370	2,850	--	15	--	22	--	38	60	89	SPWCM	100
June 6.....	11:20 a. m.	93,000	5,440	4,640	--	12	--	29	--	48	71	92	SPWCM	100
June 7.....	12:00 m.	102,000	3,860	2,900	--	20	--	30	--	52	76	94	SPWCM	100
June 9.....	11:15 a. m.	108,000	2,900	3,460	16	20	25	31	38	52	74	92	SPWCM	100
June 10.....	8:00 a. m.	115,000	3,550	2,220	--	19	--	28	--	45	64	92	SPWCM	99
June 16.....	7:40 a. m.	111,000	3,400	1,550	--	10	--	19	--	28	53	86	SPWCM	100
June 19.....	9:50 a. m.	99,800	2,980	2,710	--	14	--	21	--	35	59	88	SPWCM	100
June 21.....	10:00 a. m.	77,800	2,580	2,940	--	14	--	19	--	41	71	94	SPWCM	100
June 23.....	8:00 a. m.	70,800	2,360	1,380	--	9	--	18	--	37	71	93	SPWCM	100
June 25.....	9:20 a. m.	60,500	2,730	1,330	--	9	--	16	--	33	70	94	SPWCM	100
June 27.....	10:30 a. m.	51,700	2,210	1,660	8	10	13	17	23	34	62	92	SPWCM	100
July 1.....	8:10 a. m.	43,000	1,650	3,980	--	14	--	22	--	43	71	97	SPWCM	100
July 7.....	10:30 a. m.	53,400	1,680	--	--	--	--	--	--	50	81	98	S	100
July 14.....	10:45 a. m.	27,600	2,110	3,560	--	33	--	47	--	64	86	98	SPWCM	100
July 21.....	8:15 a. m.	13,800	1,100	--	--	--	--	--	--	61	85	97	S	99
July 28.....	8:00 a. m.	12,800	1,766	--	--	--	--	--	--	61	84	98	S	100
July 31.....	12:00 m.	10,200	3,740	4,250	--	47	--	70	--	85	95	100	SPWCM	--
July 31.....	5:10 p. m.	15,700	2,790	4,340	--	47	--	70	--	87	96	100	SPWCM	--
Aug. 1.....	8:30 a. m.	15,500	3,270	3,480	--	40	--	50	--	92	97	100	SPWCM	--
Aug. 1.....	5:40 p. m.	16,000	3,730	4,610	--	53	--	70	--	85	95	100	SPWCM	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952--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	Water discharge (cfs)	Water temperature (° F)	Suspended sediment										Methods of analysis		
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.350	0.500	1.000
Aug. 7, 1952.....	2:00 p. m.	14, 200		3, 590	4, 180	--	55	--	73	--	84	94	100		SPWCM	
Aug. 7.....	2:00 p. m.	14, 200		3, 590	3, 880	--	4	--	74	--	84	94	100		SPN	
Aug. 7.....	2:00 p. m.	14, 200		3, 590	3, 700	46	59	70	78	81	84	94	100		SPWCM	
Aug. 7.....	2:00 p. m.	14, 200		3, 590	3, 680	5	8	18	78	82	84	94	99	100		SBN
Aug. 17.....	9:00 p. m.	15, 200		2, 490	3, 020	--	51	--	66	--	82	93	100		SPWCM	
Aug. 18.....	1:10 p. m.	13, 300		7, 730	3, 940	--	57	--	84	--	92	97	100		SPWCM	
Aug. 23.....	10:10 a. m.	11, 200		4, 140	3, 880	--	64	--	84	--	90	97	100		SPWCM	
Aug. 26.....	8:30 a. m.	12, 600		2, 280	2, 940	--	50	--	83	--	74	90	99	100		SPWCM
Aug. 26.....	11:30 a. m.	13, 500		2, 470	2, 840	--	47	--	64	--	76	92	100		SPWCM	
Aug. 26.....	2:30 p. m.	14, 200		3, 100	2, 660	--	43	--	57	--	72	89	99	100		SPWCM
Aug. 26.....	7:00 p. m.	13, 300		6, 710	3, 760	--	45	--	85	--	88	95	100		SPWCM	
Sept. 5.....	11:30 a. m.	12, 000		4, 050	4, 220	--	71	--	87	--	91	96	100		SPWCM	
Sept. 15.....	9:15 a. m.	7, 050		1, 110	2, 540	--	48	--	71	--	81	94	99	100		SPWCM
Sept. 22.....	9:20 a. m.	8, 970		7, 640	3, 820	--	55	--	76	--	91	97	100		SPWCM	
Sept. 22.....	12:25 p. m.	8, 860		7, 030	4, 020	--	49	--	72	--	92	97	100		SPWCM	
Sept. 22.....	4:30 p. m.	7, 880		11, 200	2, 860	--	60	--	77	--	95	98	100		SPWCM	
Sept. 23.....	9:15 a. m.	9, 670		4, 220	3, 800	--	47	--	68	--	85	94	99	100		SPWCM
Sept. 23.....	9:45 a. m.	9, 900		21, 600	4, 130	--	66	--	90	--	97	99	100		SPWCM	
Sept. 25.....	4:00 p. m.	9, 360		27, 500	3, 760	--	67	--	92	--	97	99	100		SPWCM	

PARIA RIVER BASIN

PARIA RIVER AT LEES FERRY, ARIZ.

LOCATION.--At gaging station half a mile upstream from mouth and one mile northwest of Lees Ferry, Coconino County.

DRAINAGE AREA.--1,570 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to February 1950.

Sediment records: October 1947 to September 1952.

EXTREMES, 1951-52.--Sediment concentrations: Maximum daily, 411,000 ppm Aug. 27;

maximum observed, 646,000 ppm Aug. 27; minimum daily, 12 ppm Oct. 20-28.

Sediment loads: Maximum daily, 910,000 tons Aug. 27; minimum daily, 0.2 ton Oct.

20-28, June 29, 30, July 2.

EXTREMES, 1947-52.--Sediment concentrations: Maximum daily, 411,000 ppm Aug. 27, 1952; minimum daily, 1 ppm June 1-10, 1950.

Sediment loads: Maximum daily, 910,000 tons Aug. 27, 1952; minimum daily, less than 0.05 ton on many days.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Suspended sediment, water year October 1951 to September 1952

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-----	21	30,500	1,730	8.3	180	4.0	25	800	54
2-----	16	24,500	1,060	6.7	62	1.1	24	1,550	100
3-----	11	18,000	535	7.5	39	.8	23	1,400	87
4-----	8.3	7,300	164	5.8	22		22	1,000	59
5-----	7.1	1,100	21	7.9			39	6,240	s 1,930
6-----	5.4	303	4.4	8.8			66	28,300	s 6,110
7-----	5.4	160	2.3	7.9			22	16,800	998
8-----	6.2	90	1.5	8.8			4.9	8,600	114
9-----	6.2			9.2	17	.4	4.0	5,700	62
10-----	5.4			11			7.5	2,700	55
11-----	5.4			9.6			6.2	1,200	20
12-----	5.1			9.6			6.2	750	13
13-----	4.9			14			8.3	456	10
14-----	5.8			14			17	940	43
15-----	5.8	31	.5	9.6			13	376	13
16-----	6.2			9.2			11	368	11
17-----	6.7			7.5	29	.7	14	173	6.5
18-----	6.2			5.4			18	450	22
19-----	5.4			8.8			18	200	9.7
20-----	5.1			16	65	2.8	16	500	22
21-----	5.1			19	170	8.7	7.5	210	4.3
22-----	5.1			21	420	24	11	430	13
23-----	5.1			23	1,000	62	14	294	11
24-----	5.1	12	.2	39	5,920	s 709	17	450	21
25-----	5.4			33	1,050	94	22	580	34
26-----	6.2			23	1,500	93	22	258	15
27-----	6.2			19	2,000	103	25	617	s 52
28-----	8.3			24	780	51	24	420	27
29-----	13	58	2.0	29	600	47	40	8,940	s 2,440
30-----	13	230	8.1	27	528	38	490	57,600	s 95,300
31-----	22	3,930	s 340	--	--	--	276	51,200	s 46,500
Total--	243.1	--	3,875.6	442.6	--	1,246.6	1,313.6	--	154,156.5

s Computed by subdividing day.

PARIA RIVER BASIN--Continued

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	52	20,600	s 3,080	30	1,800	146	112	15,700	s 5,500
2-----	11	4,400	131	35	1,710	162	147	26,200	s 11,400
3-----	6.5	1,970	35	44	2,690	320	56	19,800	s 3,150
4-----	12	1,250	40	33	3,850	343	30	6,500	526
5-----	12	1,200	39	37	3,760	s 397	28	2,600	197
6-----	8.6	980	23	31	3,740	313	28	2,510	190
7-----	10	810	22	32	2,600	225	30	3,210	260
8-----	19	800	41	30	2,300	a 190	28	2,000	151
9-----	15	750	30	31	2,000	167	30	1,350	109
10-----	8.2	449	10	32	1,900	164	66	16,500	s 4,680
11-----	19	509	26	32	1,800	156	55	32,100	4,940
12-----	29	750	59	31	1,900	159	37	16,800	1,680
13-----	29	650	a 51	37	2,250	225	26	4,200	295
14-----	23	528	33	22	2,300	a 140	30	2,250	182
15-----	21	500	28	16	2,500	108	23	2,900	180
16-----	22	517	31	22	1,600	95	26	1,480	104
17-----	22	302	18	24	1,600	104	35	2,490	235
18-----	33	4,800	s 538	30	1,600	130	26	3,410	239
19-----	56	6,880	s 1,720	34	900	83	24	3,560	227
20-----	106	23,200	s 8,060	18	800	39	27	3,000	219
21-----	49	25,900	s 3,830	19	800	41	35	6,780	639
22-----	36	8,220	s 741	24	900	58	20	12,200	659
23-----	37	3,730	s 396	27	1,000	73	16	5,890	254
24-----	30	3,960	s 361	24	1,100	71	16	2,800	121
25-----	45	4,080	s 537	20	1,000	54	37	8,330	1,680
26-----	120	25,500	s 8,780	16	1,400	60	61	29,700	s 5,280
27-----	88	15,300	s 3,600	21	1,100	67	70	30,300	s 6,030
28-----	51	10,700	s 1,600	24	1,000	65	76	33,000	s 7,660
29-----	34	5,600	514	68	5,420	s 1,420	88	39,500	s 11,400
30-----	27	2,240	163	--	--	--	103	52,600	s 16,200
31-----	28	1,840	139	--	--	--	130	53,600	s 20,600
Total--	1,059.3	--	34,676	844	--	5,575	1,516	--	104,967
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-----	124	59,800	s 21,500	24	8,200	531	4.3	66	0.8
2-----	78	47,800	s 10,400	18	3,240	157	4.3	45	5
3-----	71	24,800	s 5,510	19	1,600	82	11	4,200	125
4-----	69	30,000	5,590	14	7,300	a 280	68	36,300	s 8,360
5-----	72	34,000	6,850	11	8,200	244	33	69,500	6,420
6-----	74	32,800	6,800	7.8	2,550	54	23	41,900	2,700
7-----	70	32,600	6,390	6.2	1,750	29	13	13,300	467
8-----	75	30,400	6,160	5.2	950	13	9.4	15,200	386
9-----	63	32,300	5,700	5.2	636	8.9	5.8	16,000	251
10-----	36	17,600	1,710	4.9	322	4.3	4.1	4,000	44
11-----	32	8,350	721	4.6	239	3.0	3.9	379	4.0
12-----	29	3,650	286	4.6	187	2.3	3.9	223	2.3
13-----	24	2,600	168	4.3	80	.9	3.7	103	1.0
14-----	24	1,730	112	4.1	83	.9	3.7		
15-----	26	3,600	253	4.3	41	.5	3.7		
16-----	25	4,700	a 320	4.9	43	.6	3.2		
17-----	22	5,010	298	4.9	26	.3	3.7		
18-----	20	4,200	227	12	8,340	s 444	3.7	32	.3
19-----	20	3,700	200	15	6,750	273	3.5		
20-----	23	5,150	320	7.8	1,900	40	3.7		
21-----	32	6,520	563	5.5	878	13	3.7	246	2.5
22-----	40	7,400	799	5.2	749	11	3.7	200	2.0
23-----	24	7,550	489	4.6	277	3.4	3.5	40	.4
24-----	19	5,050	259	4.6	500	6.2	3.7	58	.6
25-----	18	2,900	141	4.6	237	2.9	3.7	37	.4
26-----	17	2,100	96	4.6	209	2.6	3.7	46	.5
27-----	23	2,750	171	4.6	66	.8	4.3	84	1.0
28-----	101	31,200	s 11,400	4.6	71	.9	3.9	27	.3
29-----	93	33,400	8,700	4.3	66	.8	3.5	24	.2
30-----	38	20,200	2,070	4.1	49	.5	3.2	21	.2
31-----	--	--	--	4.1	58	.6	--	--	--
Total--	1,382	--	104,203	232.6	--	2,211.4	249.5	--	18,771.8

s Computed by subdividing day.

a Computed from estimated concentration graph.

PARIA RIVER BASIN--Continued

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	3.7	37	0.4	16	41,000	1,840	16	16,500	713
2-----	3.5	17	.2	10	34,200	958	14	4,250	161
3-----	3.5	46	.4	7.4	29,000	579	13	1,140	40
4-----	3.5	38	.4	5.8	9,000	141	13	500	18
5-----	4.1	23	.3	5.2	888	12	10	241	6.5
6-----	12	10,800	s 2,550	4.6	320	4.0	7.0	193	3.6
7-----	44	71,600	s13,800	4.6	394	4.9	6.6	114	2.0
8-----	15	35,500	s 1,660	4.9	191	2.5	6.2	108	1.8
9-----	11	19,100	s 940	25	65,800	s 5,340	6.6	100	1.8
10-----	26	51,900	s 3,950	17	63,500	3,020	7.0	128	2.4
11-----	14	41,200	1,620	9.0	48,600	1,220	14	800	30
12-----	9.0	36,000	a 910	4.9	20,500	271	7.9	397	8.5
13-----	4.9	22,800	302	4.9	7,900	105	6.6	204	3.6
14-----	4.1	22,500	249	4.6	1,480	18	5.6	123	1.9
15-----	3.9	15,200	160	3.9	648	6.8	5.2	73	1.0
16-----	3.9	5,440	57	4.9	500	a 7	5.6	52	.8
17-----	3.9	923	9.7	9.9	17,000	454	5.8	77	1.2
18-----	3.9	434	4.6	10	55,000	1,540	7.9	162	3.5
19-----	3.9	336	3.5	11	38,600	s 1,140	6.6	61	1.1
20-----	3.5	218	2.1	7.4	9,800	196	11	550	s 25
21-----	3.5	226	2.1	33	144,000	14,300	26	22,600	s 1,980
22-----	3.7	141	1.4	57	155,000	s 28,100	324	179,000	s 259,000
23-----	4.1	95	1.1	23	117,000	s 7,950	46	108,000	s 14,600
24-----	4.1	64	.9	19	67,000	3,560	22	64,000	s 3,940
25-----	4.3	80	.9	14	44,000	1,720	19	36,000	1,920
26-----	4.1	81	.9	90	101,000	s 67,800	17	14,000	643
27-----	80	135,000	s46,900	465	411,000	s910,000	16	1,640	71
28-----	16	130,000	6,030	48	131,000	s20,700	16	532	23
29-----	103	141,000	s74,700	36	62,100	s 6,640	16	266	11
30-----	88	62,300	s25,400	31	21,400	1,790	15	176	7.1
31-----	31	28,500	2,390	22	23,400	1,390	--	--	--
Total-	523.1	--	181,846.9	1,009.0	--	1,080,809.2	692.4	--	283,221.8

Total discharge for year (cfs-days) 9,507.2
 Total load for year (tons) 1,975,360.8

s Computed by subdividing day.

a Computed from estimated concentration graph.

LITTLE COLORADO RIVER BASIN
LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.

LOCATION --At gaging station at highway bridge in Woodruff, Navajo County, 3½ miles downstream from Silver Creek.

DRAINAGE AREA --8,100 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: June 1950 to September 1952.

Water temperatures: June 1950 to September 1952.

Sediment records: June 1950 to September 1952.

EXTREMES, 1951-52. --Dissolved solids: Maximum, 676 ppm June 3; minimum, 132 ppm Mar. 21-31, Apr. 1.

Hardness: Maximum, 256 ppm Feb. 11-20; minimum, 40 ppm July 29-30.

Specific conductance: Maximum observed 857, 130 micromhos June 3; minimum observed, 166 micromhos Mar. 30.

Water temperatures: Maximum observed 85° F. Dec. 9, Jan. 6.

Sediment concentrations: Maximum daily, 555, 200 ppm June 3; minimum observed, 90, 000 ppm April 28; minimum daily, no flow on several days.

EXTREMES, 1950-52. --Dissolved solids: Maximum, 676 ppm June 3; minimum, 132 ppm Mar. 21-31, Apr. 1, 1952.

Hardness: Maximum, 256 ppm Feb. 11-20, 1952; minimum, 40 ppm July 29-30, 1952.

Specific conductance: Maximum observed 857, 130 micromhos June 3, 1952; minimum observed, 166 micromhos Mar. 30, 1952.

Water temperatures: Maximum observed 85° F. Aug. 3, 1952; minimum observed, 33° F. Dec. 31, 1950, Dec. 9, 1951, Jan. 6, 1952.

Sediment concentrations: Maximum daily, 66, 400 ppm Aug. 4, 1951; minimum daily, 0 ton on many days.

Sediment loads: Maximum daily, 409, 000 tons Aug. 28, 1951; minimum daily, 0 ton 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 Albuquerque, N. Mex. Records of discharge for water year October 1951 to September 1952 given in WSP 1243. Flow affected by ice Dec. 9-18, 21, 22.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)
														Parts per million	Tons per acre-foot	Calcium	Non-carbonate		
Oct. 1-10, 1951 ...	35.4	17	--	33	15	49	29	156	0	75	30	--	1.5	298	0.41	154	26	42	500
Oct. 11-20 ...	1.86	21	--	43	16	32	32	178	0	64	22	--	.9	287	.39	174	27	29	461
Oct. 21-31 ...	2.05	24	--	46	19	33	199	0	67	22	22	--	.4	309	.42	1.71	30	27	491
Nov. 1-10 ...	2.11	19	--	48	21	29	204	0	68	22	22	--	.4	306	.42	1.75	26	40	501
Nov. 11-20 ...	4.96	20	--	47	21	29	224	0	67	22	22	--	.6	306	.42	4.10	37	24	502
Nov. 21-30 ...	4.12	25	--	47	23	29	202	0	61	21	21	--	.6	316	.43	3.52	212	30	499
Dec. 1-10 ...	3.80	19	--	46	21	29	204	0	66	21	21	--	.5	302	.41	2.94	34	24	517
Dec. 11-20 ...	4.96	24	0.01	52	25	28	4.4	233	8	60	15	0.3	.2	336	.46	4.50	28	20	536
Dec. 21-31, 1952 ...	88.1	24	.02	50	25	21	4.0	228	8	14	18	3	1.3	339	.46	72.3	26	17	495
Jan. 1-10, 1952 ...	89.1	24	.07	29	7.9	3.7	4.0	113	0	14	8	2	1.3	339	.46	105	10	7	231
Jan. 11-20 ...	1,304	20	.07	24	8.2	19	3.8	131	0	15	7.2	3	1.2	355	.21	56.0	10	32	242
Jan. 21-30 ...	151	16	.03	26	8.0	11	4.6	131	0	18	7.5	3	1.6	321	.15	84.8	82	0	253
Jan. 30-31, Feb. 1-10 ...	15.7	22	.02	62	24	21	5.0	272	5	45	16	2	2.0	336	.46	14.2	22	15	547
Feb. 11-20 ...	14.9	23	--	60	26	27	278	8	46	18	16	--	1.3	346	.47	256	16	17	570
Feb. 21-30 ...	14.0	20	--	54	26	24	257	5	46	16	--	--	.7	319	.43	242	22	19	533
Mar. 1-10 ...	17.7	25	--	49	24	26	248	5	39	14	--	--	.4	304	.41	221	10	17	500
Mar. 11-20 ...	104	32	--	28	8.7	9.9	131	0	13	4.0	--	--	1.0	162	.22	45.5	106	0	237
Mar. 21-31, Apr. 1 ...	131	25	--	23	8.4	7.8	104	0	11	3.0	--	--	.8	132	.18	46.7	84	0	184

Apr. 2-9, 1952	39.2	18	--	30	9.8	12	137	0	19	6.0	--	1.2	--	163	.22	17.3	116	3	19	.5	288	7.8
Apr. 10-20	24.7	19	--	38	14	18	172	0	32	11	--	1.1	--	218	.30	14.5	152	12	20	.6	358	7.9
Apr. 21-23, 25-27, 30	22.0	22	--	52	9.0	58	193	0	52	21	--	.8	--	290	.39	17.2	117	0	52	2.3	487	7.9
Apr. 23-24, 28-29	88.2	18	--	23	5.5	172	198	10	126	103	--	.8	--	585	.75	132	80	0	82	8.4	921	--
May 1-10	30.1	22	--	34	9.8	16	149	0	23	9.0	--	1.1	--	188	.28	15.3	133	4	21	.8	301	8.0
May 11-20	4.14	23	--	49	17.8	25	200	7	45	16	--	1.0	--	281	.36	3.14	192	17	22	.8	455	--
May 21-31	2.55	20	--	51	19	27	212	7	52	17	--	.9	--	286	.41	2.05	205	20	22	.8	491	8.3
June 1-2, 4-10	11.0	19	--	34	13	78	198	12	65	42	--	.8	--	360	.49	10.7	138	0	55	2.9	597	8.4
June 8	174	17	--	18	1.7	228	223	5	182	115	--	.8	--	876	.92	318	122	0	90	14	1,130	8.3
June 11-17	69	20	--	40	15	63	195	10	55	28	--	.7	--	313	.43	58	182	0	48	1.7	571	8.4
June 24, 26-30	40	18	--	39	16	63	199	10	74	30	--	1.3	--	349	.47	38	184	0	48	2.1	571	8.0
July 1-5	12.3	24	--	40	14	54	202	0	74	22	--	.5	--	338	.45	10.9	158	0	43	1.9	531	8.0
July 6-10	189	30	--	21	5.2	50	144	0	43	13	--	.5	--	236	.32	120	74	0	59	2.5	349	8.2
July 11-20	4.25	32	--	44	16.2	27	179	8	50	16	--	.9	--	282	.40	3.31	176	16	25	.9	442	--
July 21-28	18.8	32	--	44	19	29	206	0	52	20	--	.8	--	288	.41	15.1	188	19	25	.9	472	8.2
July 29-30	84.5	22	--	12	2.6	157	239	11	95	48	--	.5	--	466	.53	108	40	0	89	11	748	--
July 31	90	30	--	14	7.6	103	207	19	55	22	--	.9	--	354	.48	88.0	66	0	77	5.5	561	--
Aug. 1-5, 7-10	29.8	25	--	23	6.2	63	188	0	54	18	--	2.5	--	275	.37	22.1	83	0	62	3.0	433	8.1
Aug. 6	13	32	--	10	4.6	172	202	11	115	80	--	2.7	--	556	.72	18.5	44	0	89	11	848	--
Aug. 11-20	161	20	--	35	9.0	39	154	0	60	14	--	1.5	--	254	.35	110	124	0	40	1.5	426	8.0
Aug. 21-26, 30-31	33.9	18	--	44	8.6	28	134	0	61	9.5	--	1.4	--	228	.31	20.9	146	36	23	.7	360	7.6
Aug. 27-29	120	17	--	52	8.1	44	148	0	119	10	--	.3	--	323	.44	105	163	42	37	1.5	497	7.8
Sept. 1-10	5.30	24	--	46	10	41	171	0	74	19	--	.8	--	299	.41	4.28	166	16	36	1.4	472	8.0
Sept. 11-20	3.88	28	--	50	21	38	219	0	55	19	--	.3	--	305	.41	3.20	212	32	20	.7	494	8.0
Sept. 21-30	284	28	--	27	6.8	60	170	0	56	20	--	.4	--	282	.38	216	96	0	58	2.7	429	8.0
Weighted average	77.3	22	--	28	7.7	32	143	--	32	12	--	1.1	--	205	.028	42.8	102	0	40	1.4	324	--

a No flow June 18-23, 25.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature reading, generally between 11 a. m. and 6 p. m. 7

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

a Observation made before 11 a. m.

b Observation made after 6 p. m.

LITTLE COLORADO RIVER BASIN

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LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	19	1,500	77	2.2			2.5		
2-----	243	35,100	s 26,900	1.8			3.0		
3-----	52	20,400	s 3,060	1.6			3.0		
4-----	18	5,500	287	1.6			3.5		
5-----	7.2	500	9.7	1.6			4.0		
6-----	4.0	236	2.5	1.6	35	0.2	4.0	44	0.4
7-----	3.0	116	.9	2.5			4.0		
8-----	2.5	88	.6	3.5			4.0		
9-----	2.5	77	.5	2.5			4		
10-----	2.5	51	.3	2.2			4		
11-----	2.5	67	.5	4.0			4		
12-----	1.6	63	.3	5.2			4		
13-----	1.3			5.8			5		
14-----	1.3			5.8			5		
15-----	1.6			5.2			5		
16-----	2.2	45	.2	4.6	39	.5	5	33	.4
17-----	1.6			4.6			5		
18-----	1.6			4.6			5		
19-----	1.6			4.6			5.8		
20-----	1.3			5.2			5.8		
21-----	1.3	48	.2	5.2			6		
22-----	1.3			4.6			6		
23-----	1.3			4.6			6.5		
24-----	1.3			4.6			6.5		
25-----	1.3			4.6			7.2		
26-----	3.0	45	.3	4.6	31	.3	7.2	57	1.1
27-----	3.5			4.0			7.9		
28-----	3.0			3.5			7.2		
29-----	2.2			3.0			7.2		
30-----	1.8			2.5			7.2		
31-----	2.5			--	--	--	815	8,220	s 36,100
Total-	392.8	--	30,324.4	111.9	--	10.0	969.5	--	36,119.0
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-----	300	2,510	2,030	17			14		
2-----	140	950	359	17			16		
3-----	75	800	162	16			17		
4-----	61	808	133	15			18		
5-----	58	845	132	14			18		
6-----	55	764	113	14	21	0.9	18	18	0.8
7-----	51	768	106	14			17		
8-----	51	806	111	14			16		
9-----	51	602	83	14			16		
10-----	49	546	72	15			16		
11-----	48	544	71	15			17		
12-----	26	576	40	16			29		
13-----	92	1,950	s 6,910	15			58		
14-----	1,640	11,100	s 67,400	14			55		
15-----	290	9,300	s 7,350	14	17	.7	52	380	56
16-----	114	7,900	2,430	16			55		
17-----	67	4,100	742	16			154		
18-----	2,410	6,700	s 92,400	15			144		
19-----	6,850	14,100		14			140		
20-----	1,500	7,180	s 33,000	14			174	466	219
21-----	450	2,720	s 3,440	14			219	508	300
22-----	216	1,300	758	14			190	386	198
23-----	156	860	362	14	9	.3	129	215	75
24-----	129	790	275	14			112	224	68
25-----	101	750	205	14			108	229	67
26-----	43	670	78	14			91	239	59
27-----	30	350	28	14			69	219	41
28-----	27	165	12	14	10	.4	149	288	116
29-----	23	69	4.3	14			144	311	121
30-----	20	36	1.8	--			131	220	78
31-----	18	--	--	--			118	166	53
Total-	15,141	--	480,809.9	425	--	19.2	2,504	--	2,186.0

s Computed by subdividing day.

COLORADO RIVER BASIN

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	112	143	43	67	2,300	416	1.3	58	0.2
2-----	82	192	43	56	880	133	6.6	742	s 191
3-----	59	141	22	51	440	61	174	55,200	s28,300
4-----	46	197	24	43	300	35	39	30,000	s3,340
5-----	37	227	23	23	150	9.3	18	10,000	486
6-----	33	179	16	15	115	4.7	11	290	8.6
7-----	25	166	11	13	87	3.1	6.8	107	2.0
8-----	17	98	4.5	12	117	3.8	6.3	61	1.0
9-----	15	260	11	11	50	1.5	5.4	63	.9
10-----	14	1,430	54	10	139	3.8	4.9	62	.8
11-----	13	740	26	9			3	115	.9
12-----	11	520	15	7			2	86	.5
13-----	30	640	52	4			1	65	.2
14-----	41	500	55	2	53	.7	.5	70	.1
15-----	43	429	50	1			.2	57	(t)
16-----	37	294	29	7			.1	40	(t)
17-----	28	143	11	5			.1	49	(t)
18-----	21	100	5.7	2.5			0	--	0
19-----	17	58	2.7	1.7			0	--	0
20-----	17	79	3.6	2.2			0	--	0
21-----	15	72	2.9	2.4	58	.4	0	--	0
22-----	14	131	5.0	2.8			0	--	0
23-----	22	459	27	2.8			0	--	0
24-----	17	10,700	491	2.2			.1	25	(t)
25-----	10	3,400	92	2.8			0	--	0
26-----	9.2	128	3.2	3.0			.1	34	(t)
27-----	25	1,630	s 145	3.4			.6	81	.1
28-----	226	53,500	s47,800	3.7	84	.6	1.5	73	.3
29-----	88	35,600	s8,970	2.8			1.1	61	.2
30-----	59	13,000	2,070	1.1			.6	29	(t)
31-----	--	--	--	1.0			--	--	--
Total--	1,183.2	--	80,207.6	370.4	--	683.1	284.2	--	32,332.9
	July			August			September		
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1-----	0.4	76	0.1	21	15,000	850	9.2	170	4.2
2-----	.4	38	(t)	8.2	460	10.2	4.9	121	1.6
3-----	.4	26	(t)	4.9	93	1.2	4.9	116	1.5
4-----	.4	45	(t)	4.0	70	.8	3.7	89	.9
5-----	60	11,300	s4,030	12	483	s 19	3.7	65	.6
6-----	773	34,500	s97,400	13	7,680	s299	13	296	s 21
7-----	84	18,000	s4,310	29	6,700	525	5.4	320	a 4.7
8-----	24	6,000	389	12	3,100	100	3.0	160	1.3
9-----	12	590	19	146	15,000	s7,690	2.8	117	.9
10-----	52	4,770	s791	31	3,750	s426	2.4	117	.8
11-----	17	1,100	50	14	500	19	2.4	132	.9
12-----	10	164	4.4	12	82	2.7	3.7	163	1.6
13-----	5	145	2.0	101	25,400	s8,560	2.8	93	.7
14-----	3	99	.8	40	15,400	s1,710	3.7	94	.9
15-----	2	76	.4	24	6,000	389	4.4	123	1.5
16-----	2	70	.4	40	6,520	s2,140	5.8	108	1.7
17-----	1	93	.3	283	29,300	s27,400	4.9	115	1.5
18-----	1	85	.2	149	30,000	s15,300	4.0	98	1.1
19-----	1	93	.3	56	9,500	1,440	3.7	143	1.4
20-----	.5	92	.1	889	26,500	s84,700	3.4	130	1.2
21-----	5	91	.1	90	14,000	3,400	29	2,920	s 471
22-----	3.7	94	.9	30	3,000	243	1,860	35,000	s219,000
23-----	5.8	93	1.5	35	525	s 54	767	28,700	s75,800
24-----	3.4	79	.7	23	440	27	80	15,000	3,240
25-----	4.4	103	1.2	25	221	s17	25	8,000	540
26-----	4.4	125	1.5	12	220	7.1	16	1,800	78
27-----	87	2,080	s775	81	9,510	s7,040	16	140	6.0
28-----	61	1,380	s274	131	18,600	s12,700	18	190	9.2
29-----	118	43,200	s21,900	148	6,530	s5,830	18	190	9.2
30-----	51	49,000	7,000	45	3,500	425	15	45	1.8
31-----	90	47,800	s14,600	11	464		--	--	--
Total--	1,458.3	--	151,553.0	2,520.1	--	181,339.0	2,935.8	--	299,205.2
Total discharge for year (cfs-days).....									28,296.2
Total load for year (tons).....									1,274,789.3

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

LITTLE COLORADO RIVER BASIN--Continued
LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (° F)	Suspended sediment											Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 2, 1951.....	1:30 p.m.	298		41,800	3,810	66	75	85	90	98	99	99	100			SPWCM
Dec. 31.....	10:30 a.m.	2,280		21,800	6,790	--	32	--	56	--	79	89	96		99	SPWCM
Dec. 31.....	3:00 p.m.	1,520		9,960	2,820	--	31	--	57	--	76	86	93		98	SPWCM
Jan. 14, 1952...	9:30 a.m.	1,500		7,460	1,830	--	25	--	56	--	76	86	94		98	SPWCM
Jan. 14.....	2:00 p.m.	749		6,930	6,130	--	8	--	51	--	89	94	97		99	SPWCM
Jan. 14.....	4:30 p.m.	587		5,560	2,610	--	18	--	49	--	90	94	98		99	SPWCM
Jan. 18.....	3:30 p.m.	1,460		16,400	1,820	--	28	--	48	--	59	78	95		99	SPWCM
Jan. 18.....	5:30 p.m.	5,150		16,200	3,350	28	33	41	47	61	76	90	98		100	SPWCM
Jan. 18.....	5:30 p.m.	5,150		16,200	3,800	8	20	32	43	58	76	90	98		100	SPN
Jan. 18.....	5:30 p.m.	5,150		16,200	3,420	30	36	44	53	65	76	90	98		100	SBWCM
Jan. 18.....	5:30 p.m.	9,940		15,100	2,520	--	11	--	37	--	68	91	99		99	SPWCM
Jan. 19.....	3:00 p.m.	5,850		14,000	3,800	--	18	--	35	--	56	78	98		100	SPWCM
Jan. 19.....	5:30 p.m.	4,760		15,500	4,960	--	17	--	32	--	68	69	94		99	SPWCM
Jan. 20.....	8:00 a.m.	1,560		7,560	2,010	--	20	--	38	--	56	73	87		94	SPWCM
Mar. 17.....	10:30 a.m.	133		544	512	--	70	--	--	--	83	87	96		100	SPWCM
Apr. 2.....	9:50 a.m.	95		117	260	--	79	--	--	--	97	99	99		100	SPWCM
Apr. 28.....	10:30 a.m.	438		88,700	7,880	48	59	69	81	86	97	99	99		100	SPWCM
Apr. 28.....	10:30 a.m.	438		88,700	8,330	1	2	3	44	87	97	99	99		100	SPN
May 29.....	6:00 p.m.	2.4		104	--	--	--	--	--	--	91	93	98		100	S
June 1.....	6:30 p.m.	8		58	--	--	--	--	--	--	87	93	98		100	S
June 2.....	6:00 p.m.	9.2		123	--	--	--	--	--	--	84	80	97		98	S
June 3.....	10:30 a.m.	277		65,300	3,070	--	77	--	95	--	100	--	--		--	SPWCM
June 3.....	10:30 a.m.	277		65,300	4,370	--	4	--	94	--	100	--	--		--	SPN
June 3.....	10:30 a.m.	277		65,300	10,700	64	72	86	94	98	100	--	--		--	SBWCM
July 6.....	8:00 a.m.	2,190		48,400	6,000	--	58	--	81	--	92	95	99		100	SPWCM
July 10.....	6:00 p.m.	25		3,330	4,140	--	95	--	99	--	100	--	--		--	SPWCM
July 28.....	6:00 p.m.	156		70,000	5,190	--	79	--	96	--	100	--	--		--	SPWCM

LITTLE COLORADO RIVER BASIN--Continued
LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952--Continued
(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	Water discharge (cfs)	Water temperature (° F)	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. 5, 1952	12:15 p. m.	2.4		371	1,010	55	64	75	85	89	91	97	99		100		SBWCM
Aug. 9	7:30 p. m.	99		14,300	4,400	--	79	--	98	--	100	--	--		--		SPWCM
Aug. 13	11:00 a. m.	309		39,900	5,680	--	69	--	92	--	100	--	--		--		SPWCM
Aug. 13	11:00 a. m.	309		39,900	4,560	--	11	--	91	--	100	--	--		--		SPN
Aug. 13	11:00 a. m.	309		39,900	2,770	55	70	74	80	84	100	--	--		--		SBWCM
Aug. 13	7:00 p. m.	129		24,500	5,590	--	77	--	98	--	100	--	--		--		SPWCM
Aug. 17	6:30 a. m.	387		41,400	4,500	--	69	--	91	--	100	--	--		--		SPWCM
Aug. 20	8:30 a. m.	2,390		36,300	4,000	--	44	--	75	--	89	92	97	99	100		SPWCM
Aug. 20	2:00 p. m.	605		24,700	3,120	--	67	--	91	--	99	99	100		--		SPWCM
Aug. 21	5:30 p. m.	67		10,800	2,960	--	92	--	93	--	100	--	--		--		SPWCM
Aug. 28	6:30 a. m.	144		32,100	3,910	--	79	--	100	--	--	--	--		--		SPWCM
Sept. 7	5:30 p. m.	4.4		--	--	--	--	--	--	--	92	95	97		100		S
Sept. 22	9:00 a. m.	901		33,200	4,690	--	64	--	82	--	97	99	100		--		SPWCM
Sept. 22	2:00 p. m.	1,070		52,400	3,940	--	64	--	83	--	96	99	100		--		SPWCM
Sept. 22	5:30 p. m.	4,140		44,900	5,340	--	46	--	71	--	89	93	98		100		SPWCM
Sept. 30	5:00 p. m.	16		46	--	--	--	--	--	--	100	--	--		--		S

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT CAMERON, ARIZ.

LOCATION --At bridge on U.S. Highway 89 at Cameron, Coconino County, 12 miles upstream from gaging station which is 9.5 miles downstream from Moenkopi Wash. DRAINAGE AREA --26,500 square miles, approximately (above gaging station). RECORDS AVAILABLE --Chemical analyses: October 1950 to September 1952.

Water temperatures: October 1952 to September 1953.

REMARKS --Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for station near Cameron (below Moenkopi Wash) for water year October 1951 to September 1952 given in WSP 1243. Appreciable inflow between sampling site and gaging station during periods of storm runoff from Moenkopi Wash and several small arroyos.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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-lidum	So-dium adsorp-tion ratio	Specific conduct-ance (micro-mhos at 25°C)	pH
															Parts per mil-lion	Tons per acre-foot	Calcium	Non-carbon-ate				
Oct. 1-3, 6-9, 1951 a	23	0.06	43	8.6	218	323	0	174	116	2.0	1.6	0.30	724	0.98	143	0	77	7.9	1,200	7.7		
Jan. 1-10, 1952	13	.02	31	4.7	88	153	5.2	53	74	.9	1.6	.10	346	.47	97	0	65	3.9	602	7.9		
Jan. 11-13, 17-20	12	.02	30	5.9	96	168	6.6	51	93	.5	1.8	.08	380	.52	100	0	66	4.2	689	7.9		
Jan. 21-24, 26-27	15	.04	32	3.4	93	8.8	8.4	54	88	4	2.1	1.15	370	.50	94	0	68	4.2	632	--		
Feb. 4-6, 7-10	12	.02	32	5.7	91	8.4	11.4	0	47	116	3	4	2.0	369	.50	104	0	64	3.9	687	7.9	
Feb. 11-16, 19-20	12	.02	34	5.7	97	8.2	10.0	5	51	128	2	3	.07	380	.53	108	18	64	4.1	423	--	
Feb. 21-23, 25-29	15	.02	46	10	141	106	8	70	213	2	4	.05	566	.77	156	56	64	4.9	1,020	--		
Mar. 1-10	21	.14	89	19	217	174	4.3	201	288	4	4.6	.13	930	1.26	300	188	61	5.4	1,580	7.6		
Mar. 11, 15, 16, 18	12	.08	51	11	147	3.1	136	0	80	204	3	2.3	21	578	.79	172	60	64	4.9	1,040	7.7	
Mar. 23-26, 28-29	15	.18	47	11	99	3.5	161	0	39	102	4	3	.0	453	.62	162	30	56	3.4	774	7.7	
Mar. 31, Apr. 1-6, 8-10	15	.10	24	3.9	97	2.5	136	0	38	82	3	1.1	45	268	.36	76	0	65	3.3	464	7.9	
Apr. 11-20	16	.20	19	3.9	73	2.0	118	0	38	61	3	9	.19	271	.37	62	0	71	4.0	469	7.9	
Apr. 21-30	19	.05	29	5.5	81	2.5	167	0	45	87	3	5	3.0	325	.44	95	0	64	3.6	542	7.6	
May 1-9	17	.05	22	4.0	79	2.4	159	0	37	52	4	2.2	20	294	.40	72	0	70	4.1	501	7.9	
May 11-14, 17, 20-23	14	.06	31	5.2	88	2.6	116	0	35	112	3	1.8	.09	346	.47	89	4	65	3.8	628	7.8	
July 8-10	24	.02	56	12	264	4.1	305	0	225	190	3	1.2	64	927	1.26	189	0	75	8.4	1,510	7.8	
Aug. 1, 3, 9-10	22	.30	30	7.5	252	3.0	299	0	172	168	1.0	1.6	.58	794	1.08	106	0	83	11	1,300	7.9	
Aug. 21-23, 27-28	19	--	41	9.7	202	--	302	0	147	128	8	.5	--	697	.95	142	0	75	7.4	1,150	7.8	
Sept. 7	17	--	22	2.8	213	--	240	0	151	122	1.2	1.1	--	648	.88	66	0	87	11	1,080	--	
Sept. 20-22	20	--	9.0	3.8	126	--	209	5	72	40	4	.5	--	379	.52	38	0	88	8.9	603	--	
Sept. 24, 27	23	--	30	6.7	195	27	275	0	138	110	4	1.0	--	639	.87	102	0	81	8.4	1,030	7.9	

a No flow at gaging station Oct. 18-30, Nov. 7-23, Dec. 10-14, May 28-June 7, June 18-July 7, July 18-24, Sept. 14-16.

COLORADO RIVER BASIN

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT CAMERON, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 [Temperature measurement, generally after 4 p.m.]

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

a Observation made between 10 a.m. and 4 p.m.

b Observation made before 10 a.m.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.

LOCATION.--At gaging station at Kaibab Bridge, a quarter of a mile upstream from Bright Angel Creek, 11 miles by trail northeast of Grand Canyon, Coconino County, 26 miles downstream from Little Colorado River, and 267 miles upstream from Hoover Dam.

DRAINAGE AREA.--137,800 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1925 to November 1942, September 1943 to September 1952.

Water temperatures: October 1936 to October 1942, September 1943 to September 1952.

Sediment records: October 1936 to October 1942, September 1943 to September 1952.

EXTREMES: 1931-52.--Dissolved solids: Maximum, 1,490 ppm (sum) Sept. 28-29; minimum, 326 ppm June 11-20.

Hardness: Maximum, 760 ppm Sept. 28-29; minimum, 218 ppm June 21-30.

Specific conductance: Maximum observed, 2,730 micromhos Sept. 28; minimum observed, 416 micromhos June 19.

Water temperatures: Maximum observed, 53.7° F. Jan. 21; minimum observed, 34.1° F. several days during January.

Sediment concentrations: Maximum, 1,341 ppm Jan. 21; minimum, 290 ppm Dec. 18.

Sediment loads: Maximum daily, 3,260,000 tons May 8; minimum daily, 1,934 tons Dec. 18.

EXTREMES: 1925-52.--Dissolved solids: Maximum, 1,800 ppm Sept. 28-29; minimum, 326 ppm June 11-20, 1942.

Hardness: Maximum, 792 ppm Sept. 1-10, 1940; minimum, 127 ppm June 11-17, 1926; minimum observed, 341 micromhos Sept. 6, 1940; minimum observed, 341 micromhos June 15, 1942.

Specific conductance (1937-52): Maximum observed, 2,900 micromhos Sept. 6, 1940; minimum freezing point on several days during winter months.

Water temperatures (1936-52): Maximum daily, 58° F. July 17, 1944; minimum freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 138,000 ppm Sept. 13, 1927; minimum daily, 100 ppm on many days.

Sediment loads: Maximum daily, 27,600,000 tons Sept. 13, 1927; minimum daily, 497 tons July 22, 1934.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids are residues on evaporation. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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 adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	Col- or	
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, mg./ liter	Non- carbon- ate					
Oct. 1-10, 1951..	6,947	12	0.07	160	47	179	5.6	248	560	143	0.3	3.1	--	1,300	1.77	24,380	592	390	39	1,760	7.5	10	
Oct. 11-20.....	6,988	13	.13	154	51	176	6.6	256	534	145	.2	4.1	0.23	1,250	1.70	23,590	594	384	39	1,720	7.4	10	
Oct. 21-31.....	6,805	13	.08	130	47	176	6.0	250	480	142	.3	3.2	--	1,150	1.56	21,130	518	313	42	1,620	7.4	10	
Nov. 1-10.....	9,205	14	.38	162	48	175	5.8	248	577	117	.2	4.2	--	1,260	1.71	31,320	602	398	38	1,840	7.5	20	
Nov. 11-20.....	7,216	14	.04	137	54	166	4.4	256	487	135	.3	4.5	.31	1,160	1.58	22,600	564	354	39	1,610	7.5	10	
Nov. 21-26.....	7,152	14	.05	129	49	162	4.8	250	460	138	.3	4.0	--	1,120	1.52	21,630	524	318	40	1,580	7.6	10	
Dec. 1-3, 8-10..	7,112	12	.04	124	44	180	2.4	268	438	138	.3	3.3	--	1,100	1.50	21,120	490	271	44	1,530	7.7	10	
Dec. 11-20.....	4,765	13	.04	122	47	191	2.4	252	444	172	.3	5.1	.20	1,160	1.58	14,920	498	292	45	1,670	7.8	10	
Dec. 21, 24-28..	5,138	14	.04	138	54	196	2.0	272	492	192	.3	6.5	--	1,300	1.77	18,030	566	344	43	1,840	7.8	25	
Jan. 1-10, 1952..	10,230	12	.04	101	31	145	7.2	326	329	116	.3	4.3	--	877	1.19	24,220	380	194	45	3.2	1,310	7.9	15
Jan. 11-20.....	6,678	12	.04	124	51	177	4.4	248	465	148	.3	4.5	.17	1,130	1.64	20,370	519	316	42	3.4	1,500	7.9	5
Jan. 21-31.....	11,790	12	.05	98	32	150	6.9	244	319	120	.2	4.2	--	891	1.21	28,360	371	171	46	3.4	1,290	7.5	10
Feb. 1-10.....	7,487	13	.04	108	38	157	7.3	228	375	135	.2	3.6	--	990	1.35	20,010	428	238	44	3.3	1,420	7.5	10
Feb. 11-20.....	6,801	12	.09	118	45	163	6.2	258	398	152	.3	5.3	.15	1,070	1.46	19,650	480	288	42	3.2	1,530	7.3	5
Feb. 21-29.....	6,326	14	.08	114	47	170	5.6	236	409	180	.3	5.5	--	1,080	1.47	18,450	478	284	43	3.4	1,550	7.5	5
Mar. 1, 3, 9-10.	6,202	15	.06	109	49	169	5.2	232	415	156	.3	5.6	--	1,080	1.47	18,090	474	284	43	3.4	1,540	7.5	5

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (Residue at 180° C)			Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day							
																						Calcium, magnesium	Non-carbonate
Mar. 11-20, 1952	7,174	13	0.06	116	47	169	7.8	240	419	159	0.3	5.5	0.08	1,100	1.50	21,310	483	286	43	1,570	7.4	5	
Mar. 21-22, 24-25																							
28-29, 31.....																							
Apr. 1-9.....	7,766	13	.09	115	44	161	6.3	236	398	156	.3	4.8	--	1,040	1.41	21,810	468	274	42	1,480	7.4	5	
Apr. 10-20.....	19,130	14	.04	111	35	137	5.9	257	355	93	.4	5.6	--	907	1.23	46,850	421	210	41	1,330	7.7	10	
Apr. 21-30.....	33,850	13	.03	93	29	97	4.7	225	276	56	.4	5.5	1.4	708	.96	64,710	351	166	37	1,040	7.8	15	
May 1-10.....	56,930	14	.18	76	22	59	5.2	231	154	33	.4	3.4	--	493	.67	75,780	280	90	31	749	7.7	15	
May 11-20.....	86,710	14	.48	66	17	36	5.1	215	108	19	.3	2.5	--	388	.53	90,840	234	58	25	597	7.7	15	
May 21-31.....	97,160	17	.28	72	16	28	5.4	252	77	17	.3	2.5	.06	370	.50	97,080	246	39	19	574	7.5	20	
June 1-10.....	64,870	16	.19	70	17	34	4.8	232	95	23	.2	1.9	--	386	.52	87,610	244	54	23	600	7.7	20	
June 11-20.....	88,940	15	.27	67	16	31	4.3	216	96	18	.2	1.6	--	367	.50	88,130	233	56	22	568	7.7	30	
June 21-30.....	111,800	17	.30	69	13	21	4.1	226	66	14	.2	1.2	.11	326	.44	98,410	226	40	16	511	7.4	10	
July 1-10.....	61,550	14	.17	66	13	28	5.7	218	75	20	.2	4.9	--	332	.45	95,170	218	40	21	524	7.3	10	
July 11-20.....	38,700	14	.37	70	17	42	5.8	224	109	29	.2	.6	--	402	.55	42,000	244	61	27	634	7.3	10	
July 21-28.....	25,740	16	.17	74	20	65	5.8	222	165	40	.2	2.3	.11	504	.69	35,030	266	84	34	761	7.5	10	
July 29-31, Aug. 1-10.....	13,420	13	--	65	26	81		206	221	67	.2	2.7	--	a 597	.61	21,630	319	150	36	925	7.6	--	
Aug. 11-20.....	14,460	14	.09	111	32	102	7.9	248	295	82	.2	5.6	--	777	1.06	30,340	408	206	35	1,160	7.5	10	
Aug. 21-31.....	12,840	16	.06	123	36	120	7.1	270	355	94	.3	3.3	.21	899	1.22	31,170	463	242	36	1,310	7.3	10	
Sept. 1-10.....	17,830	17	.13	133	39	137	7.1	276	375	93	.5	4.0	--	942	1.26	32,610	492	244	34	1,360	7.3	10	
Sept. 11-20.....	17,425	15	.10	121	43	137	8.1	253	461	95	.5	6.5	--	1,060	1.37	34,470	556	324	34	1,510	7.4	10	
Sept. 21-27.....	11,570	15	.07	116	37	146	7.6	264	379	120	.5	3.8	.20	969	1.32	19,450	479	262	38	1,430	7.3	10	
Sept. 28-29.....	8,995	13	--	222	50	130		244	758	126	--	7.1	--	a 1,490	2.03	36,190	760	560	35	1,400	7.6	10	
Weighted average	b 26,420	15	0.22	84	23	64	5.3	233	178	46	0.3	2.9	--	547	0.74	39,020	304	113	31	816	--	--	

a Sum of determined constituents.

b Represents 98 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

[Once-daily temperature measurement generally between 6 a. m. and 11 a. m.]

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

a Observation made between 11 a. m. and 6 p. m.

b Observation made after 6 p. m.

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	7,680	2,600	53,900	12,200	12,100	399,000	7,240	931	18,200
2-----	10,800	17,000	s 597,000	11,600	9,050	283,000	6,980	1,190	22,400
3-----	9,890	17,400	s 487,000	11,800	10,200	a 325,000	6,710	879	15,900
4-----	6,830	21,800	a 406,000	9,830	11,600	a 308,000	6,350	700	a 12,000
5-----	5,910	20,000	a 319,000	8,440	9,900	226,000	6,390	1,000	a 17,300
6-----	5,680	18,400	282,000	7,900	7,050	150,000	6,730	1,050	19,100
7-----	5,490	10,500	156,000	7,750	4,950	104,000	7,600	1,000	20,500
8-----	5,840	6,800	107,000	7,580	5,870	120,000	7,220	1,550	30,200
9-----	5,750	4,530	70,300	7,510	5,900	120,000	7,320	1,150	22,700
10-----	5,600	3,300	49,900	7,440	4,600	a 92,400	7,200	1,430	27,800
11-----	5,680	2,400	36,600	7,540	3,050	a 62,100	7,010	954	18,100
12-----	6,430	2,160	37,500	7,380	2,150	42,800	6,590	776	13,800
13-----	7,570	2,520	51,500	7,160	1,550	a 30,000	5,960	700	a 11,300
14-----	8,260	3,400	75,600	7,090	1,230	23,500	5,180	669	9,360
15-----	7,640	2,120	43,700	7,110	1,180	22,700	4,540	473	5,800
16-----	7,090	1,680	32,200	7,020	1,050	19,900	4,120	400	a 4,450
17-----	6,950	1,590	29,600	7,280	1,030	20,200	3,780	356	3,630
18-----	6,990	1,600	30,200	7,380	1,070	21,300	3,380	318	2,900
19-----	6,740	2,240	40,600	7,160	957	18,500	3,290	465	4,130
20-----	6,530	2,600	45,800	7,040	1,000	19,000	3,800	403	4,130
21-----	6,390	3,600	62,100	7,150	888	17,100	4,430	398	4,780
22-----	6,290	4,300	73,000	7,160	860	16,600	4,780	400	a 5,180
23-----	6,150	4,300	71,400	7,120	1,040	20,000	4,990	400	a 5,390
24-----	6,000	3,250	52,600	6,810	776	14,300	5,260	363	5,160
25-----	6,110	2,050	33,800	6,970	753	14,200	5,420	403	5,900
26-----	6,070	1,500	24,600	7,700	780	16,200	5,360	379	5,480
27-----	6,070	1,640	26,900	6,900	1,050	a 19,600	5,180	361	5,050
28-----	6,250	1,260	21,300	6,620	800	a 14,300	5,180	374	5,230
29-----	6,870	1,020	18,900	6,830	810	15,900	5,640	600	a 9,140
30-----	8,260	2,100	46,800	7,270	775	15,200	6,870	1,500	a 27,800
31-----	10,400	5,800	s 170,000	--	--	--	7,640	4,600	a 94,900
Total-	214,210	--	3,553,600	234,740	--	2,569,800	178,140	--	457,670
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-----	8,210	5,640	a 125,000	9,580	2,600	67,300	6,200	560	9,370
2-----	18,300	28,400	s 1,530,000	8,610	2,590	60,200	6,040	581	9,470
3-----	13,700	15,800	s 592,000	7,740	1,600	33,400	6,080	529	8,680
4-----	14,100	11,200	426,000	7,280	1,020	a 20,000	6,070	852	14,000
5-----	12,000	9,720	315,000	7,020	700	13,300	6,150	850	a 14,100
6-----	9,340	6,400	a 161,000	6,910	730	13,600	6,530	870	a 15,300
7-----	7,640	4,120	85,000	6,900	920	17,100	6,590	879	15,600
8-----	6,700	3,400	61,500	6,880	860	16,000	6,450	870	a 15,200
9-----	6,350	2,190	37,500	6,910	780	14,600	6,320	869	14,800
10-----	5,940	2,060	33,000	7,040	680	12,900	6,210	782	13,100
11-----	5,740	1,200	18,600	6,980	630	11,900	6,210	1,290	21,600
12-----	4,900	900	11,900	6,900	880	16,400	6,350	1,230	21,100
13-----	4,360	750	a 8,830	6,700	540	9,770	6,620	1,200	21,400
14-----	4,440	800	9,590	6,460	880	15,300	7,390	979	19,500
15-----	4,660	538	6,770	6,700	770	13,900	8,080	1,300	28,400
16-----	5,120	2,690	s 41,800	6,970	820	15,400	8,280	1,920	42,900
17-----	6,200	4,600	77,000	7,080	860	16,400	7,890	1,980	42,100
18-----	7,020	3,300	62,500	6,980	910	17,100	7,180	2,950	57,200
19-----	7,540	2,850	58,000	6,690	830	15,000	6,880	3,270	60,700
20-----	16,800	11,100	s 747,000	6,550	665	11,800	6,870	2,240	41,500
21-----	32,600	34,100	s 3,130,000	6,570	600	14,200	7,340	1,970	39,000
22-----	15,900	20,200	s 896,000	6,430	686	11,900	7,780	1,780	37,400
23-----	11,700	12,400	s 395,000	6,460	904	15,800	7,960	2,520	54,200
24-----	10,000	10,300	278,000	6,430	643	11,200	8,260	2,850	63,600
25-----	9,300	7,600	191,000	6,340	560	9,590	7,930	4,270	91,400
26-----	8,560	5,400	a 125,000	6,200	537	8,990	7,740	3,640	76,100
27-----	8,020	4,200	a 90,900	6,070	626	10,300	7,460	2,830	57,000
28-----	7,870	3,200	68,000	6,180	968	16,200	7,210	2,300	44,800
29-----	7,870	2,500	53,100	6,250	874	14,700	7,150	2,030	39,200
30-----	8,390	2,200	49,800	--	--	--	7,280	1,560	30,700
31-----	9,510	2,600	66,800	--	--	--	8,690	2,410	56,500
Total-	298,780	--	8,751,590	199,810	--	524,250	219,180	--	1,075,920

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	11,000	8,300	187,000	78,100	13,500	2,850,000	65,400	3,720	657,000
2-----	12,400	8,480	284,000	73,500	11,500	2,280,000	69,700	3,780	711,000
3-----	16,300	10,700	a 471,000	69,100	9,100	1,700,000	74,200	4,190	839,000
4-----	17,600	11,400	542,000	69,100	7,890	1,470,000	80,100	4,900	1,060,000
5-----	17,900	11,200	541,000	73,500	8,350	1,660,000	82,900	5,710	1,280,000
6-----	20,400	13,200	727,000	84,200	9,600	2,180,000	91,200	5,430	1,340,000
7-----	23,700	15,900	1,020,000	95,600	10,600	2,740,000	102,000	6,150	1,690,000
8-----	26,500	15,600	1,120,000	105,000	11,500	3,260,000	104,000	5,570	1,560,000
9-----	26,400	14,100	1,010,000	110,000	10,500	3,120,000	107,000	5,010	1,450,000
10-----	28,400	14,800	1,130,000	109,000	9,950	2,930,000	113,000	5,080	1,550,000
11-----	29,600	13,500	1,080,000	107,000	7,950	2,300,000	117,000	5,250	1,660,000
12-----	37,000	16,500	1,650,000	105,000	7,400	2,100,000	120,000	5,100	1,650,000
13-----	36,100	16,400	1,600,000	100,000	6,380	1,720,000	120,000	4,490	1,450,000
14-----	34,000	15,400	1,410,000	94,600	6,250	1,600,000	121,000	4,380	1,430,000
15-----	31,700	14,900	1,280,000	93,400	6,360	1,800,000	119,000	4,340	1,390,000
16-----	30,000	13,400	1,090,000	91,900	6,030	1,500,000	114,000	4,130	1,270,000
17-----	30,200	12,200	995,000	93,400	6,270	1,580,000	109,000	3,990	1,170,000
18-----	33,200	11,500	1,030,000	97,100	6,590	1,730,000	105,000	3,540	1,000,000
19-----	38,000	11,500	1,180,000	97,100	6,120	1,600,000	102,000	3,510	967,000
20-----	44,200	11,900	1,420,000	91,900	5,820	a 1,390,000	91,200	2,900	714,000
21-----	48,000	12,500	1,620,000	83,500	4,820	1,090,000	81,400	3,100	681,000
22-----	49,900	12,600	1,700,000	77,400	4,480	936,000	74,800	3,230	652,000
23-----	53,000	12,400	1,770,000	71,600	5,360	1,040,000	71,600	2,310	447,000
24-----	54,100	11,400	1,670,000	68,500	4,010	742,000	67,900	2,090	383,000
25-----	55,700	10,400	1,560,000	65,400	4,170	a 736,000	61,900	2,650	443,000
26-----	56,300	9,300	1,410,000	61,300	4,380	725,000	57,900	2,200	344,000
27-----	57,400	9,400	1,460,000	57,400	3,480	539,000	54,100	2,920	427,000
28-----	60,200	9,300	1,510,000	54,600	4,100	604,000	51,000	2,350	324,000
29-----	63,700	10,100	1,740,000	55,700	3,640	547,000	48,900	1,780	232,000
30-----	71,000	9,950	1,910,000	57,400	3,310	513,000	46,000	2,000	248,000
31-----	--	--	--	60,800	4,080	670,000	--	--	--
Total-	1,113,900	--	\$6,117,000	2,552,300	--	49,452,000	2,623,100	--	29,019,000
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-----	44,600	1,780	214,000	15,900	2,650	114,000	13,700	10,100	374,000
2-----	42,300	1,980	226,000	16,400	4,450	197,000	13,700	8,380	310,000
3-----	41,400	1,430	160,000	16,200	5,800	254,000	13,900	8,150	306,000
4-----	40,600	1,590	174,000	15,700	5,950	a 252,000	13,300	7,750	278,000
5-----	39,300	1,500	159,000	15,100	6,350	259,000	12,800	7,150	a 247,000
6-----	37,200	1,380	139,000	14,800	4,700	188,000	11,800	6,200	a 198,000
7-----	34,400	1,370	127,000	14,800	4,000	160,000	10,800	5,140	150,000
8-----	34,400	1,710	159,000	14,000	3,150	119,000	9,880	4,800	128,000
9-----	35,600	2,220	213,000	13,300	2,900	104,000	9,390	6,180	157,000
10-----	37,200	3,350	336,000	13,000	2,020	70,900	8,930	5,800	140,000
11-----	35,600	3,150	303,000	11,800	2,150	68,500	8,680	5,050	118,000
12-----	32,400	2,600	227,000	11,400	2,200	87,700	8,210	3,180	70,500
13-----	30,200	2,750	224,000	11,000	2,500	74,200	7,820	3,600	76,000
14-----	27,700	2,500	187,000	11,500	1,500	46,600	7,660	2,900	60,000
15-----	25,900	1,850	129,000	11,600	1,820	58,000	7,330	2,050	40,600
16-----	24,100	1,800	117,000	12,400	2,150	72,000	7,210	1,600	31,100
17-----	22,300	1,420	a 85,500	16,500	1,900	84,600	7,080	1,220	23,300
18-----	21,000	1,480	83,900	15,500	2,400	100,000	6,850	795	14,700
19-----	19,700	930	49,500	13,400	2,750	99,500	6,660	600	10,800
20-----	18,500	890	44,500	13,100	6,400	226,000	6,850	600	11,100
21-----	17,400	708	33,300	13,100	4,600	163,000	12,900	16,600	s 923,000
22-----	16,400	533	23,600	12,600	2,650	90,200	12,000	22,600	s 749,000
23-----	15,900	470	20,200	12,200	4,720	155,000	10,100	10,500	286,000
24-----	15,200	460	18,900	11,500	5,350	166,000	12,300	13,200	s 445,000
25-----	14,200	532	20,400	11,300	4,780	146,000	14,300	18,200	s 711,000
26-----	13,700	430	15,900	11,400	3,250	100,000	10,200	9,850	s 274,000
27-----	13,200	380	13,500	13,700	4,000	148,000	9,220	17,400	453,000
28-----	12,600	400	13,600	14,400	3,220	125,000	8,930	23,900	576,000
29-----	12,200	1,400	46,100	14,100	9,180	349,000	9,060	11,800	289,000
30-----	12,400	580	19,400	14,000	7,700	291,000	8,740	6,400	151,000
31-----	14,200	1,650	63,300	14,000	10,300	389,000	--	--	--
Total-	801,800	--	\$645,600	419,900	--	4,737,200	300,300	--	7,581,100

Total discharge for year (cfs-days) 9,156,160
 Total load for year (tons) 148,484,730

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (° F)	Suspended sediment											Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 6, 1951.....	9:20 a.m.	5,710		19,100	4,700	--	84	--	97	--	100	--	--	--	--	SPWCM
8:30 a.m.	7,160		1,490	3,420	52	60	73	86	95	100	--	--	--	--	--	BWCM
Oct. 16.....	9:00 a.m.	6,000		3,370	5,310	--	85	--	97	--	99	--	--	--	--	SPWCM
Oct. 24.....	8:30 a.m.	12,600		11,600	2,470	--	52	--	74	--	93	97	99	100	100	SPWCM
Nov. 1.....	7,600		5,380	1,810	--	78	--	98	--	99	100	99	100	100	100	SPWCM
8:40 a.m.	8,600		5,380	1,810	--	78	--	98	--	99	100	99	100	100	100	SPWCM
Nov. 8.....	7,260		613	1,680	--	58	--	79	--	--	94	98	99	100	100	SPWCM
8:20 a.m.																SPWCM
Dec. 2.....	7,010		1,050			59	--	83	--	98	99	100	--	--	--	SPWCM
9:50 a.m.						68	70	75	88	94	98	100	--	--	--	SBWCM
8:45 a.m.	3,860		304			--	--	--	--	--	95	98	99	100	100	S
Dec. 17.....	5,440		280													SPWCM
Dec. 26.....																SPWCM
Jan. 2, 1952.....	1:30 p.m.	21,300		29,400	3,210	28	30	43	55	71	76	95	100	--	--	SPWCM
Jan. 2.....	1:30 p.m.	21,300		29,400	3,040	0	3	18	55	68	76	95	100	--	--	SPN
Jan. 2.....	1:30 p.m.	21,300		29,400	3,320	29	38	46	53	65	76	95	100	--	--	SBWCM
Jan. 2.....	1:30 p.m.	21,300		29,400	3,000	2	4	9	30	73	76	95	100	--	--	SBN
Jan. 4.....	14,900		10,600	3,320	--	50	--	--	66	--	85	96	100	--	--	SPWCM
Jan. 18.....	7,020		3,130	3,970	--	67	--	83	--	99	99	100	100	100	100	SPWCM
Jan. 21.....	39,600		36,000	2,940	23	35	38	42	50	58	81	98	98	100	100	SPWCM
Jan. 21.....	39,600		36,000	2,770	27	31	35	40	49	58	81	98	98	100	100	SBWCM
Feb. 9.....	6,850		--	--	1,600	53	62	70	78	88	91	96	98	99	99	SPWCM
8:45 a.m.	7,050		965		1,800	52	64	71	78	86	91	98	100	100	100	SBWCM
8:30 a.m.	6,140		962		1,950	57	67	77	86	91	95	99	100	100	99	SBWCM
Mar. 10.....	6,250		1,130		2,830	--	54	--	59	--	94	95	99	99	99	SPWCM
8:40 a.m.	6,260		2,260		5,160	--	65	--	81	--	93	98	99	100	100	SPWCM
Apr. 6.....	20,800		12,500		4,890	--	39	--	55	--	74	89	100	--	--	SPWCM
Apr. 8.....	28,900		16,400		5,420	--	27	--	42	--	63	84	99	100	100	SPWCM
Apr. 12.....	37,400		17,600		5,630	--	21	--	34	--	53	72	97	100	100	SPWCM
Apr. 17.....	30,200		11,400		4,120	--	33	--	50	--	65	82	97	100	100	SPWCM
Apr. 23.....	53,600		12,100		6,620	--	33	--	37	--	54	78	95	100	100	SPWCM
Apr. 28.....	60,200		8,860		3,110	--	24	--	37	--	59	76	94	100	100	SPWCM

May 7, 1952.....	9:40 a. m.	95,600	a, 9,430	3,270	--	12	--	20	--	37	57	88	99	SPWCM
May 7.....	9:40 a. m.	95,600	b, 10,200	3,560	--	11	--	19	--	34	52	80	99	SPWCM
May 21.....	9:00 a. m.	84,200	c, 4,600	5,380	--	15	--	23	--	43	61	86	99	SPWCM
June 6.....	9:00 a. m.	89,000	c, 5,520	4,900	--	13	--	19	--	35	62	89	99	SPWCM
June 12.....	7:30 a. m.	130,000	4,060	2,120	--	15	--	20	--	33	52	85	99	SPWCM
June 28.....	11:00 a. m.	51,000	2,180	--	--	--	--	--	--	44	65	89	98	S
July 9.....	8:30 a. m.	34,800	1,540	2,780	--	28	--	43	--	63	82	95	100	SPWCM
July 19.....	10:00 a. m.	20,000	999	--	--	--	--	--	--	76	95	98	100	S
July 28.....	8:45 a. m.	12,700	458	--	--	--	--	--	--	89	95	98	99	S
Aug. 11.....	8:40 a. m.	11,900	2,020	3,430	--	75	--	91	--	99	100	--	--	SPWCM
Aug. 28.....	8:30 a. m.	11,200	2,790	7,150	--	77	--	96	--	100	--	--	--	SPWCM
Sept. 11.....	8:45 a. m.	8,710	5,140	5,250	--	74	--	97	--	100	--	--	--	SPWCM
Sept. 22.....	10:30 a. m.	11,200	20,700	3,420	--	58	--	79	--	98	100	--	--	SPWCM

a Upper half of vertical.

b Lower half of vertical.

c Upper 20 feet of flow.

BRIGHT ANGEL CREEK BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN BRIGHT ANGEL CREEK BASIN IN ARIZONA

Chemical analyses, in parts per million, April to August 1952

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)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
														Parts per million	Tons per acre-foot	Calcium, mg-nesium	Non-carbonate				
BRIGHT ANGEL CREEK NEAR GRAND CANYON																					
Apr. 16, 1952.....	110	8.0		42	21	4.9		186		7.4	5.2		0.4		203	0.28	168	16	5	0.2	314
Aug. 4.....	23.4							223		14	3						191	84			347

VIRGIN RIVER BASIN
VIRGIN RIVER AT VIRGIN, UTAH

LOCATION --At gaging station, 1½ miles southwest of Virgin, Washington County, and about 2 miles downstream from North Creek.

DRAINAGE AREA --34 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1950 to September 1952.

WATER TEMPERATURES --October 1950 to September 1952.

EXTREMES 1951-52 --Dissolved solids: Maximum daily 2,820 microns; minimum 580 ppm Aug. 21-31; minimum 245 ppm May 1-10.

Specific conductance: Maximum daily 2,820 microns; minimum 160 microns July 24; minimum daily, 383 microns May 7.

Water temperatures: Maximum observed 87°F July 26; minimum observed 47°F July 26; freezing point 32°F during December to January.

EXTREMES 1950-51 --Dissolved solids: Maximum 940 ppm Aug. 23-24, 1951; minimum 295 ppm May 1-10, 1952.

Specific conductance: Maximum daily 2,820 microns; minimum 160 microns July 24, 1952; minimum daily 383 microns May 7, 1952.

Water temperatures: Maximum observed 88°F July 18, 28-30, 1952; minimum observed 48°F July 18, 28-30, 1952; minimum observed freezing point on several days during winter months.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Boiron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent non-dissolved	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH or Col.
														Parts per million	Tons per acre-foot	Calcium, mg./nestum	Non-carbonate				
Oct. 1-10, 1951	79.6	15		83	31	59		207	190	66		1.7	--	584	0.79	334	165	23	1.4	875	8.0
Oct. 11-20	81.4	13		87	33	56		215	187	65		1.5	--	586	80	329	176	26	1.3	879	8.1
Oct. 21-31	109				--	--	--	--	--	--	--	--	--	534	73	157	--	--	--	831	--
Nov. 1-10	106				--	--	--	--	--	--	--	--	--	537	73	154	--	--	--	841	--
Nov. 11-20	108	13		81	35	45		234	163	58		1.5	--	536	73	158	164	22	1.1	824	7.7
Nov. 21-30	129				--	--	--	--	--	--	--	--	--	508	.69	177	--	--	--	803	--
Dec. 1-10	121				--	--	--	--	--	--	--	--	--	532	.72	174	--	--	--	837	--
Dec. 11-20	123	12		77	34	51		236	152	64		1.8	--	522	.71	173	138	25	1.2	821	8.0
Dec. 21-31	419				--	--	--	--	--	--	--	--	--	527	.72	596	--	--	--	767	--
Jan. 1-10, 1952	125				--	--	--	--	--	--	--	--	--	579	.79	185	--	--	--	888	--
Jan. 11-20	172	12		80	28	59		220	175	58		1.7	0.10	542	.74	252	138	29	1.4	826	7.9
Jan. 21-31	165				--	--	--	--	--	--	--	--	--	527	.72	235	--	--	--	802	--
Feb. 1-10	151				--	--	--	--	--	--	--	--	--	504	.69	205	--	--	--	788	--
Feb. 11-20	144	12		78	33	46		232	149	59		1.7	--	517	.70	201	140	23	1.1	795	8.0
Feb. 21-29	140				--	--	--	--	--	--	--	--	--	520	.71	197	--	--	--	802	--
Mar. 1-10	186				--	--	--	--	--	--	--	--	--	502	.68	252	--	--	--	721	--
Mar. 11-20	191	11		79	30	60		216	161	52		1.9	--	578	.79	298	144	29	1.5	849	7.8
Mar. 21-31	253				--	--	--	--	--	--	--	--	--	522	.71	357	--	--	--	777	--
Apr. 1-10	536				--	--	--	--	--	--	--	--	--	380	.52	550	--	--	--	574	--
Apr. 11-20	537	8.0		62	24	14		186	90	18		2.9	.07	336	.46	378	253	11	.4	531	7.7
Apr. 21-30	1,522	8.6		53	17	12		184	60	10		3.4	--	298	.39	268	264	11	.4	435	7.9
May 1-10	1,522	8.6		54	14	12		182	47	10		3.7	--	252	.33	1,046	160	12	.4	399	7.9
May 11-20	842			54	14	13		193	44	10		2.3	--	252	.33	642	192	13	.4	414	7.7
May 21-31	680				--	--	--	--	--	--	--	--	--	264	.36	470	--	--	--	437	--

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT VIRGIN, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180° C)			Hardness as CaCO ₃		Per cent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
June 1-10, 1952...	428	13			62	18	29	205	84	25		1.0	--	344	0.47	398	228	60	22	0.8	543	7.6	--
June 11-20.....	176	13			63	24	37	209	105	39		1.4	--	401	.55	191	255	84	24	1.0	648	7.5	--
June 21-30.....	129	11			59	27	51	200	128	50		1.0	--	441	.60	154	258	94	30	1.4	707	7.6	--
July 1-10.....	122	13			69	27	49	204	145	50		.9	--	477	.95	157	283	116	27	1.3	752	7.7	--
July 11-20.....	94.7	13			76	29	49	220	150	55		1.2	0.11	509	.69	130	308	128	26	1.2	792	7.5	--
July 21-23, 26-31	111	13			78	29	51	216	159	57		1.2	--	520	.71	156	314	136	26	1.2	806	7.6	--
July 24.....	123	16			--	--	--	199	1,600	69		2.4	--	--	--	--	1,750	1,590	--	--	2,820	--	--
July 25.....	86.0	13			--	--	--	193	481	61		.6	--	--	--	--	590	422	--	--	1,322	--	--
Aug. 1-10.....	82.7	13			80	31	55	209	183	99		1.4	--	550	.75	123	327	156	27	1.3	849	7.6	--
Aug. 11-20.....	76.3	13			76	31	54	208	167	63		1.4	--	521	.71	110	317	146	27	1.3	818	7.9	--
Aug. 21-31.....	115	--			--	--	--	--	--	--		--	--	590	.60	183	--	--	--	--	907	--	--
Sept. 1-10.....	76.5	--			--	--	--	--	--	--		--	--	536	.73	111	--	--	--	--	831	--	--
Sept. 11-20.....	79.8	12			76	33	60	210	186	67		1.6	--	533	.73	119	330	136	26	1.4	836	8.0	--
Sept. 21-30.....	104	--			--	--	--	--	--	--		--	--	560	.79	183	--	--	--	--	865	--	--
Weighted average	b 281	--			--	--	--	--	--	--		--	--	378	0.51	287	--	--	--	--	591	--	--

a Not included for computation of weighted averages.

b Represents 99.8 percent of runoff for water year October 1951 to September 1952.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT VIRGIN, UTAH.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

VIRGIN RIVER BASIN--Continued
WASHINGTON FIELDS CANAL NEAR WASHINGTON, UTAH

LOCATION --At gaging station, about 1½ miles southeast of Washington, Washington County.
RECORDS AVAILABLE --Chemical analyses: October 1950 to September 1952.
REMARKS --Values reported for dissolved solids are sums of determined constituents. No records of discharge available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Bo-ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per-centage of sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col-or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 1, 9, 25, 30, 1951		24		185	59	348		238	564	480		2.2	0.89	1,780	2.42		704	509	52	2,700	7.9	--	
Nov. 6, 13, 19, 27		19		144	52	246		268	399	335		2.8	--	1,330	1.81		574	356	48	2,120	7.8	--	
Dec. 3, 12, 19, 26, 28, 8, 8		18		141	49	215		280	362	292		3.1	--	1,220	1.66		554	324	46	1,890	7.6	--	
Jan. 7, 14, 22, 29, 1952		8.8		98	20	93		168	264	82		1.6	--	650	.88		326	169	38	2.3	905	--	--
		17		141	45	197		272	352	265		3.0	43	1,150	1.56		537	314	44	3.7	1,770	7.8	--
Feb. 4, 11, 18, 25		16		131	45	207		278	321	282		3.4	--	1,140	1.55		512	284	47	4.0	1,810	7.6	--
Mar. 4, 10, 20, 27, 31		15		110	38	180		272	300	202		1.2	--	980	1.33		430	208	48	3.8	1,510	7.8	--
		10		82	25	72		200	175	82		2.2	--	547	.74		308	144	34	1.8	870	--	--
Apr. 7, 14, 22, 28		11		73	21	42		206	110	52		2.3	--	413	.56		268	100	25	1.1	681	7.9	20
May 5, 13, 23, 30		11		71	17	40		205	85	53		2.6	--	381	.52		247	79	26	1.1	649	7.6	10
June 2, 9, 16, 23, 30		13		94	27	84		244	151	120		3.0	--	612	.83		346	146	35	2.0	1,030	--	--
June 9, 17, 24, 30		19		110	37	173		264	256	224		4.1	--	953	1.30		426	210	47	3.7	1,530	8.0	--
June 23, 30		19		142	48	273		248	388	380		3.9	--	1,380	1.88		552	349	52	5.1	2,250	--	--
July 1, 11, 18, 25		21		166	57	330		275	475	455		4.3	.59	1,640	2.23		648	423	52	5.6	2,630	7.5	--
July 25, 31		20		662	78	336		242	1,820	430		3.3	--	3,470	4.72		1,970	1,770	27	3.3	4,260	--	--
Aug. 2, 7, 16, 22, 29, 30		26		211	76	355		264	596	545		6.8	--	1,950	2.65		939	622	48	5.3	2,980	7.7	--
Sept. 5, 15, 19, 26		26		187	76	413		246	581	615		4.8	--	2,020	2.75		779	578	54	6.4	3,200	7.7	--

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

VIRGIN RIVER BASIN--Continued

SANTA CLARA RIVER ABOVE WINSOR DAM, NEAR SANTA CLARA, UTAH

LOCATION.--At gaging station 2 miles upstream from Winsor Dam, 2 1/2 miles downstream from Magotsu Creek, and 9 miles north-west of Santa Clara, Washington County.
DRAINAGE AREA.--338 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1952.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.
(rev.)

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 (residue at 180° C)			Hardness as CaCO ₃		Per-centage of sodium	Specific conductance (micro-mhos at 25° C)	pH	Col- or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate					
Oct. 9, 25, 30, 1951	11.0	35		51	20	16		208	35	26		0.2	0.20	281	0.38	8.35	209	38	14	0.5	430	8.0	--
Nov. 6, 14, 19, 28	11.8	34		58	20	7.1		210	32	26		.1	--	285	.39	9.08	226	54	6	.2	455	7.7	--
Dec. 3, 13, 21, ...	12.7	34		61	20	22		248	37	28		.8	--	328	.45	11.2	234	31	17	.6	515	7.8	--
Jan. 2, 7, 14, 21, 28, 1952	12.1	32		57	19	23		238	35	26		1.1	.08	317	.43	10.4	220	25	18	.7	494	7.8	--
Feb. 4, 11, 19, 25	15.2	32		62	19	21		240	37	30		1.3	--	328	.45	13.5	232	36	17	.6	524	7.8	--
Mar. 4, 10, 17, 20, 31	75.0	32		54	17	14		212	27	23		1.3	--	a.273	.37	55.3	204	31	13	.4	437	8.0	--
Apr. 6, 15, 23, 28	192	22		39	12	9.4		171	14	9		.9	--	189	.26	98.0	147	7	12	.3	318	7.6	20
May 12, 20, 31, ...	76.7	20		32	11	8.7		132	19	11		.9	--	172	.23	35.6	125	17	13	.3	282	7.8	20
June 9, 16, 23, 30	39.5	27		33	11	16		146	20	13		.7	--	206	.28	22.0	128	6	21	.6	316	7.6	--
July 11, 18, 25, ...	26.0	29		33	12	15		151	21	14		.7	--	a.199	.27	14.0	132	8	20	.6	320	8.0	--
Aug. 1, 7, 16, 22, 29	22.6	32		37	15	15		166	24	18		.6	--	223	.30	13.6	154	18	18	.5	349	7.8	--
Sept. 4, 12, 19, 28	19.8	31		42	15	17		188	24	17		.7	--	239	.33	12.8	166	12	18	.6	375	8.0	--

a Sum of determined constituents.

VIRGIN RIVER BASIN--Continued
SANTA CLARA RIVER AT ST. GEORGE, UTAH

LOCATION --At gaging station half a mile above mouth and 2 miles south of St. George, Washington County.

LOCATIONS AVAILABLE --Chemical analyses: October 1950 to September, 1952.

REMARKS --Values reported for dissolved constituents. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)		Hardness as CaCO ₃		Percent sodium	Sulfate-adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
Oct. 25, 29, 1951	0.9	36		299	74	103		346	863	66		0.2	0.42	1,610	2.19	1,050	767	18	1.4	2,000	7.8	--
Nov. 5, 13, 19...	2.4	36		406	107	125		432	1,200	66		0.0	--	2,170	2.95	1,450	1,100	16	1.4	2,940	7.7	--
Nov. 27, 1951	2.9	19		163	43	32		296	374	43		0.9	--	843	1.15	384	341	16	0.9	1,180	7.6	--
Dec. 3, 12, 19...	145.2	17		322	49	44		246	1,040	23		0.3	--	1,700	10.3	1,270	1,060	13	0.3	1,240	7.7	--
Dec. 31, 1951	75.0	21		435	42	23		212	156	17		2.7	--	438	6.0	312	138	14	0.6	1,910	--	--
Jan. 7, 14, 21, 28, 1952	14.0	31		152	43	38		298	324	40		1.6	16	776	1.06	556	312	13	0.7	1,100	7.9	--
Feb. 4, 12, 18, 28, 1952	10.4	32		165	44	59		323	375	46		1.7	--	822	1.20	592	328	13	1.1	1,230	7.7	--
Mar. 3, 1952	15.0	17		172	50	62		333	412	47		1.8	--	926	1.26	634	362	18	1.1	1,250	7.9	--
Mar. 10, 18, 24, 1952	28.7	16		99	32	37		272	177	36		1.8	--	533	7.2	378	156	18	0.8	807	7.9	--
Mar. 31, 1952	210	21		65	13	16		191	71	13		2.5	--	206	4.0	216	59	14	0.5	433	--	--
Apr. 1, 7, 14, 22, 28, 1952	166	21		60	15	14		195	68	12		1.2	--	282	3.8	211	60	12	0.4	455	7.8	20
May 5, 1952	76.0	--		--	--	--		162	67	14		--	--	--	--	202	70	--	--	420	7.4	--
May 13, 21, 31, 1952	34.7	22		103	29	34		219	223	26		1.0	--	546	51.2	376	197	16	0.8	813	7.7	20
June 9, 1952	37.0	27		90	24	23		217	157	21		1.2	--	450	61	323	145	13	1.5	666	--	--
June 17, 1952	3.8	45		372	108	91		426	1,060	83		1.2	--	1,970	2.68	1,370	1,020	13	1.1	2,440	--	--
June 25, 30, 1952	4.2	38		256	80	63		362	696	59		0.6	--	1,370	1.86	968	671	12	0.9	1,780	7.6	--
July 11, 18, 26, 1952	3.0	44		348	111	64		395	1,030	79		0.9	46	1,890	2.57	1,330	1,000	12	1.0	2,340	7.5	--
July 29, 1952	17.0	22		145	41	63		252	378	43		8.1	--	824	1.12	530	324	20	1.2	1,180	--	--
Aug. 2, 16, 22, 29, 1952	27.0	43		394	128	69		406	1,130	88		1.0	--	2,040	2.77	936	1,150	9	0.8	1,490	7.7	--
Sept. 5, 1952	1.8	52		328	130	140		338	1,200	93		0.6	--	2,110	2.87	1,350	1,060	18	1.7	2,440	--	--
Sept. 15, 21, 25, 1952	13.1	18		264	73	34		318	675	49		1.8	--	1,270	1.73	988	698	7	0.5	1,660	7.8	--

VIRGIN RIVER BASIN--Continued
VIRGIN RIVER NEAR ST. GEORGE, UTAH

LOCATION --At gaging station 8 miles southwest of St. George, Washington County.

RECORDS AVAILABLE--Chemical analyses: October 1950 to September 1952.

REMARKS--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in NSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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)	Bo- ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per- cent so- dium ad- sorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./neq.	Non-carbonate					
Oct. 1, 29, 1951..	95.5	20		397	67	301		220	1,140	390		2.8	0.81	2,430	3.30	827	1,270	1,090	34	3.7	3,150	7.6	--
Nov. 6, 13, 19, 27.	83.8	20		237	73	299		258	733	400		3.3	--	1,890	2.57	479	892	680	42	4.4	2,760	7.7	--
Dec. 4, 12, 18, ..	137	37		212	64	222		268	568	326		4.3	--	1,570	2.14	581	792	572	38	3.4	2,350	7.6	--
Dec. 30,	3,260	7.2		124	22	33		162	284	30		.6	--	581	.79	5,150	400	268	15	.7	909	--	--
Jan. 1, 7, 21, 28, 1952	226	36		206	49	163		252	502	240		3.1	.36	1,320	1.80	805	716	509	33	2.7	1,960	7.8	--
Feb. 4, 11, 18, 25.	156	18		170	55	233		264	489	303		2.9	--	1,400	1.90	590	650	434	44	4.0	2,120	7.6	--
Mar. 3, 17, 24, ..	269	15		126	56	165		262	356	222		7.1	--	1,080	1.47	784	545	330	40	3.1	1,780	7.6	--
Mar. 31,	866	14		127	28	30		178	244	68		2.3	--	601	.82	1,600	432	286	13	.6	927	--	--
Apr. 9, 14, 22, ..	1,103	13		96	27	52		206	186	70		2.2	--	548	.75	1,630	350	182	24	1.2	883	7.5	10
May 1, 5, 13, 21, ..	1,619	8.2		70	19	43		203	109	45		1.8	--	396	.54	1,730	252	86	27	1.2	688	7.6	10
May 31,	430	--		--	--	--		220	201	127		--	--	--	--	--	426	246	--	--	1,110	7.5	--
June 9,	252	--		136	36	125		248	296	172		6.2	--	913	1.24	621	488	284	36	2.4	1,450	--	--
June 17, 24,	22.0	23		190	69	288		218	639	388		4.6	--	1,700	2.31	101	758	579	45	4.5	2,580	7.5	--
June 30,	4.1	35		232	90	324		208	777	475		3.7	--	2,030	2.76	22.5	949	778	43	4.6	3,080	--	--
July 10,	2.3	32		261	109	425		170	1,020	580		3.6	--	2,510	3.41	15.6	1,100	960	46	5.6	3,610	--	--
Aug. 26,	130	22		651	90	249		288	1,780	315		3.7	--	3,250	4.42	1,140	1,990	1,760	21	2.4	3,820	--	--
Sept. 25,	31.0	29		398	103	368		229	1,260	490		5.8	--	2,760	3.79	234	1,420	1,250	36	4.2	3,590	--	--

1,197	Apr. 1-10, 1952.....	121	37	83	234	295	110	2.6	23	789	1.07	2,050	454	292	31	1.3	1,170	7.9
1,961	Apr. 11-20.....	185	51	106	284	355	110	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
1,855	Apr. 21-30.....	1,855	106	284	355	110	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5		
1,978	May 1-10.....	1,978	106	284	355	110	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5		
971	May 11-20.....	971	29	76	214	236	91	1.8	662	90	1,740	388	213	30	1.7	933	7.8	
576	May 21-31.....	576	29	76	214	236	91	1.8	662	90	1,740	388	213	30	1.7	933	7.8	
381	June 1-3, 5-9.....	381	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
1,090	June 4.....	1,090	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
238	June 10.....	238	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
108	June 11-20.....	108	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
82.1	June 21-30.....	82.1	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
82.0	July 1-10.....	82.0	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
82.6	July 11-20.....	82.6	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
81.2	July 21-31.....	81.2	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
79.4	Aug. 1-10.....	79.4	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
87.0	Aug. 11-20.....	87.0	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
106	Aug. 21-31.....	106	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
66.7	Sept. 1-10.....	66.7	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
66.2	Sept. 11-20.....	66.2	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
156	Sept. 21-30.....	156	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	
377	Weighted average	377	101	260	296	945	355	2.0	2,130	2.90	627	1,160	921	33	3.3	2,890	7.5	

COLORADO RIVER BASIN

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement, generally between 7:00 a. m. and 10:00 a. m./

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

a Observation made between 10 a. m. and 7 p. m.

VIRGIN RIVER BASIN

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VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952

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-----	124	5,790	1,940	150	1,550	628	180	1,880	812
2-----	103	2,660	740	144	1,870	649	165	2,520	1,120
3-----	97	1,610	422	148	1,600	639	182	1,970	862
4-----	93	1,400	352	142	1,310	502	185	1,930	860
5-----	96	1,100	285	141	1,290	491	169	2,200	1,000
6-----	97	1,220	a320	139	1,270	477	243	7,700	s5,430
7-----	90	1,340	327	142	1,680	636	209	3,800	2,140
8-----	90	1,050	255	142	1,680	644	180	2,000	972
9-----	92	678	168	137	1,780	658	165	1,560	695
10-----	90	612	149	135	1,500	547	171	1,510	697
11-----	89	694	167	139	922	346	177	1,830	875
12-----	87	578	136	142	1,260	483	186	1,970	989
13-----	89	531	128	142	1,660	636	204	2,880	1,590
14-----	93	483	121	148	1,710	683	220	3,500	2,080
15-----	92	841	209	144	1,450	564	202	2,790	1,520
16-----	96	816	212	137	1,520	562	191	1,750	902
17-----	93	521	131	137	1,670	618	186	1,960	984
18-----	94	568	144	137	1,020	377	188	1,700	863
19-----	97	779	204	135	960	350	183	1,920	1,000
20-----	100	727	196	142	1,050	403	213	3,450	1,980
21-----	102	698	192	141	870	331	195	2,640	1,390
22-----	99	761	203	152	1,350	554	184	1,600	795
23-----	100	810	219	162	1,490	652	193	1,630	849
24-----	99	754	202	177	3,010	1,440	197	2,060	1,100
25-----	101	1,200	327	175	4,010	1,890	202	2,820	1,540
26-----	147	6,160	s3,250	173	2,530	1,180	200	2,210	1,190
27-----	226	8,600	5,250	158	2,150	917	200	2,300	1,240
28-----	184	3,750	1,860	160	2,270	981	202	2,660	1,450
29-----	169	2,590	1,180	167	2,760	1,240	211	3,200	1,820
30-----	154	2,340	973	167	2,280	1,030	3,000	35,200	s479,000
31-----	154	2,000	832	--	--	--	1,750	32,900	s193,000
Total-	3,437	--	21,094	4,455	--	21,108	10,283	--	710,745
	January			February			March		
1-----	487	9,370	s12,400	218	2,340	1,380	238	3,400	s4,320
2-----	373	4,200	4,230	230	2,930	1,820	548	13,000	19,200
3-----	356	3,270	3,140	226	2,840	1,730	356	5,000	4,810
4-----	363	2,330	2,280	216	2,460	1,430	282	3,800	2,890
5-----	383	3,400	3,520	213	2,430	1,400	285	3,500	2,690
6-----	353	2,630	2,510	206	2,580	1,450	280	2,600	1,970
7-----	343	1,860	1,720	211	2,320	1,320	282	2,600	1,880
8-----	350	1,850	1,750	211	2,700	1,540	271	2,020	1,480
9-----	337	1,800	1,640	213	2,650	1,520	300	3,070	2,490
10-----	337	2,970	2,700	208	2,260	1,270	271	3,090	2,260
11-----	330	1,260	1,120	206	2,120	1,180	575	8,090	s14,700
12-----	227	1,280	1,130	202	2,150	1,170	408	6,450	7,110
13-----	340	1,130	1,040	204	2,080	1,150	359	4,900	4,750
14-----	346	2,030	1,900	190	2,440	1,250	376	5,000	5,080
15-----	330	1,740	1,550	183	1,520	751	350	4,500	4,250
16-----	321	1,850	1,600	183	1,520	751	401	5,500	5,950
17-----	337	1,900	1,730	183	1,770	875	480	7,980	s10,300
18-----	395	2,170	s2,370	181	1,530	748	390	5,700	6,000
19-----	1,050	29,800	s91,700	186	2,130	1,070	370	3,500	3,500
20-----	401	13,900	s15,400	164	1,280	567	427	3,760	s4,420
21-----	280	4,900	3,700	164	1,190	527	363	3,020	3,120
22-----	252	3,470	2,360	168	1,340	608	340	2,500	2,300
23-----	228	3,050	1,860	177	1,940	927	324	2,510	2,200
24-----	223	2,540	1,530	166	1,810	567	330	2,160	1,820
25-----	236	2,150	1,370	166	1,210	542	346	2,840	2,650
26-----	365	9,020	s9,140	158	1,290	550	514	6,630	s10,300
27-----	294	5,140	4,080	158	1,130	482	750	12,300	s26,800
28-----	249	3,500	2,350	160	1,010	436	722	10,800	s21,900
29-----	236	2,720	1,730	170	1,250	574	791	11,700	s27,100
30-----	236	2,880	1,840	--	--	--	897	13,300	s34,000
31-----	218	2,600	1,530	--	--	--	1,160	13,400	s44,600
Total-	10,676	--	186,950	5,523	--	29,605	12,803	--	287,040

s Computed by subdividing day.

a Computed from estimated concentration graph.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Suspended sediment, water year October 1951 to September 1952--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-----	1,130	14,200	≤45,500	1,600	9,630	≤42,400	376	2,120	2,150
2-----	827	10,900	24,300	1,890	12,500	≤66,400	343	2,000	1,850
3-----	937	9,360	≤24,600	2,170	12,900	≤76,600	384	2,400	≤2,970
4-----	970	9,140	≤34,000	2,400	14,600	≤95,200	1,090	9,350	≤30,100
5-----	1,140	10,800	≤35,100	2,320	14,400	≤89,700	562	4,350	6,600
6-----	1,380	11,600	≤45,500	2,180	11,300	≤66,600	443	2,890	3,440
7-----	1,640	13,700	≤64,400	2,120	9,620	≤55,200	359	3,580	3,470
8-----	1,810	14,700	≤75,100	1,970	9,380	≤50,900	308	2,320	1,920
9-----	1,270	11,800	≤40,600	1,710	8,980	≤41,700	274	2,390	1,770
10-----	869	12,000	28,200	1,420	8,150	≤31,400	236	2,000	1,270
11-----	865	9,430	≤22,400	1,300	7,290	≤26,300	190	1,590	816
12-----	889	9,680	≤23,400	1,310	7,080	≤25,900	162	1,400	612
13-----	630	7,000	11,900	1,170	6,780	≤21,900	136	1,050	386
14-----	756	9,500	≤20,300	1,160	6,520	≤21,300	116	900	282
15-----	900	11,000	≤27,100	1,130	6,260	≤19,700	109	605	178
16-----	851	10,000	23,000	942	5,750	14,600	89	554	133
17-----	983	13,200	≤35,500	774	4,250	8,880	76	420	86
18-----	1,220	13,900	≤46,700	676	4,390	7,990	74	380	76
19-----	1,220	11,100	36,600	635	3,720	6,380	70	400	76
20-----	1,300	10,400	36,500	615	3,980	6,610	65	247	43
21-----	1,380	10,300	38,400	818	4,460	≤10,200	62	276	46
22-----	1,380	9,500	35,400	815	4,600	10,100	62	321	54
23-----	1,430	10,400	≤40,600	572	3,720	5,750	62	299	50
24-----	1,510	9,800	≤40,000	562	3,300	5,010	62	273	46
25-----	1,730	11,500	≤53,700	562	3,500	5,310	62	291	49
26-----	1,830	11,400	≤57,300	535	3,150	4,550	62	367	61
27-----	2,650	15,600	≤119,000	544	3,050	4,480	62	250	42
28-----	3,230	18,700	183,000	518	3,200	4,480	62	292	49
29-----	1,850	15,300	76,400	501	3,130	4,230	63	296	50
30-----	1,560	12,100	51,000	488	3,000	3,950	62	228	38
31-----	--	--	--	416	2,800	3,140	--	--	--
Total--	40,137	--	1,365,500	35,823	--	836,860	6,081	--	58,713
	July			August			September		
1-----	62	380	64	114	6,500	2,000	76	1,330	273
2-----	62	437	73	84	2,600	590	70	494	93
3-----	62	463	78	79	1,150	245	68	564	104
4-----	63	462	79	72	507	99	68	468	84
5-----	63	491	84	71	446	85	66	439	78
6-----	61	680	104	93	3,950	≤1,160	65	582	102
7-----	61	430	71	75	3,350	678	65	720	126
8-----	62	434	73	70	950	180	63	400	68
9-----	62	491	82	68	1,380	253	63	420	71
10-----	62	375	63	68	650	119	63	542	92
11-----	62	400	67	68	410	75	65	336	59
12-----	62	451	75	67	405	73	65	380	67
13-----	63	468	80	67	400	72	65	513	90
14-----	62	372	62	67	344	62	65	428	75
15-----	63	422	72	67	332	60	65	517	91
16-----	63	459	78	67	452	82	65	507	89
17-----	63	465	82	67	243	44	66	528	94
18-----	63	480	82	66	257	46	66	393	70
19-----	63	482	84	67	254	46	68	491	90
20-----	62	431	72	67	300	≤54	72	425	83
21-----	66	380	68	67	318	57	258	36,300	≤47,000
22-----	67	473	86	67	251	45	433	55,600	≤74,600
23-----	66	563	100	77	3,970	≤935	184	14,800	≤7,530
24-----	65	550	97	72	3,000	583	143	4,800	1,850
25-----	65	600	105	68	447	82	116	3,080	965
26-----	67	530	96	190	23,700	≤15,400	94	4,200	1,070
27-----	66	519	92	134	20,000	7,240	86	1,300	302
28-----	67	652	118	139	18,200	≤7,500	82	868	182
29-----	67	558	101	144	18,400	≤7,380	77	910	189
30-----	153	4,260	≤2,490	118	14,700	4,680	82	1,000	221
31-----	144	4,580	≤1,730	90	6,330	1,540	--	--	--
Total--	2,139	--	6,608	2,630	--	51,475	2,884	--	136,818

Total discharge for year (cfs-days) 137,871

Total load for year (tons) 3,655,106

s Computed by subdividing day.

a Computed from estimated concentrations graph.

VIRGIN RIVER BASIN--Continued
VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1951 to September 1952
(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	Water discharge (cfs)	Water temperature (° F)	Suspended sediment											Methods of analysis		
				Concentration of sample (ppm)	Concentration of suspension analysed (ppm)	Percent finer than indicated size, in millimeters											
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Oct. 27, 1951 ...	8:30 a. m.	257		8,760	2,280	--	34	--	64	--	84	89	95		100	--	SP/CM S
Oct. 31	8:00 a. m.	150		1,550	2,360	--	--	--	--	--	70	78	93		99	--	SP/CM S
Nov. 11	8:00 a. m.	141		737	1,190	27	33	47	55	63	68	74	94		98	--	SP/CM S
Nov. 30	7:30 a. m.	162		2,890	2,310	29	34	38	48	59	71	82			98	--	SPN
Nov. 30	7:30 a. m.	162		2,890	1,720	9	12	16	21	48	59	71	82		98	--	SPN
Dec. 10	8:00 a. m.	169		1,180	1,890	--	27	--	31	--	53	54	93		100	--	SP/CM S
Dec. 30	8:30 a. m.	337		11,900	4,240	--	18	--	21	--	61	86	93		100	--	SP/CM S
Dec. 30	1:00 p. m.	3,210		42,800	1,560	17	19	26	32	44	54	76	93		99	--	SP/CM S
Dec. 30	1:00 p. m.	3,210		42,800	3,240	7	8	12	17	23	34	46	93		99	--	SP/CM S
Dec. 30	3:00 p. m.	3,210		42,800	1,740	6	12	18	30	46	54	76	93		--	--	SPN
Dec. 30	3:00 p. m.	4,960		46,400	5,730	--	17	--	25	--	49	67	82		100	--	SP/CM S
Dec. 31	9:00 a. m.	1,960		34,700	3,650	--	27	--	43	--	60	74	93		100	--	SP/CM S
Dec. 31	1:00 p. m.	1,140		23,900	3,610	--	27	--	44	--	71	83	96		100	--	SP/CM S
Jan. 10, 1952	8:30 a. m.	330		1,660	1,440	--	17	--	23	--	33	44	72		99	--	SP/CM S
Jan. 18	8:00 a. m.	1,360		24,800	3,530	--	20	--	32	--	51	70	90		99	--	SP/CM S
Jan. 18	10:30 a. m.	1,360		22,500	3,320	--	31	--	46	--	63	81	93		99	--	SP/CM S
Jan. 19	1:30 p. m.	1,260		41,000	4,680	7	18	50	57	71	78	84	94		99	--	SP/CM S
Jan. 19	1:00 p. m.	1,260		41,000	4,630	2	3	8	59	70	76	84	94		99	--	SPN
Jan. 19	1:00 p. m.	1,260		41,000	1,230	--	--	--	--	--	76	84	94		99	--	SPN
Jan. 19	1:00 p. m.	1,260		41,000	1,350	33	42	52	62	70	76	84	94		99	--	SP/CM S
Jan. 19	5:00 p. m.	981		33,500	6,980	--	39	--	77	--	80	89	96		100	--	SP/CM S
Jan. 31	8:00 a. m.	223		3,100	1,240	--	10	--	13	--	26	33	52		72	--	SP/CM S
Feb. 10	8:00 a. m.	206		2,430	2,220	19	22	24	26	30	42	67	86		100	--	SP/CM S
Feb. 20	10:00 a. m.	151		1,380	1,490	33	35	38	41	43	52	76	91		99	--	SP/CM S
Mar. 3	8:00 a. m.	350		4,700	2,570	--	19	--	27	--	41	73	90		99	--	SP/CM S
Mar. 10	8:00 a. m.	274		3,110	--	--	--	--	--	--	35	62	81		98	--	S
Mar. 20	10:00 a. m.	366		3,050	2,850	20	23	28	31	35	42	66	92		100	--	SP/CM S
Mar. 31	8:00 a. m.	803		14,500	3,750	--	25	--	40	--	57	70	91		98	--	SP/CM S
Mar. 31	12:00 a. m.	1,750		19,500	2,750	--	20	--	30	--	49	67	91		100	--	SP/CM S
Mar. 31	12:00 m.	1,750		19,500	2,930	--	9	--	29	--	49	67	91		100	--	SPN

COLORADO RIVER MAIN STEM--Continued

LAKE MEAD NEAR BOULDER CITY, NEV.

Chemical analyses, in parts per million, water year October 1951 to September 1952

The miles given below represent distances measured along the Colorado River downstream from the gaging station at Lees Ferry, Ariz. A resistance thermometer was used in measuring the temperature of the water.

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (microhms at 25°C)
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EMERY FALLS, MILE 275.8

Sept. 10, 1952	5	1,189	77.5		139	44	133	a 201	512	85				1,460
Sept. 10	25	1,169	77.5					201						1,460
Sept. 10	29	1,165	78.1					342						1,490

PIERCE FERRY BAY, MILE 279

Oct. 1, 1951	5	1,159	79	9.9	86	27	85	144	280	70	2.1	631	326	956
Nov. 2	5	1,155	58	10	121	45	153	216	453	134	4.8	1,040	487	1,550
Nov. 5	5	1,152	46	11	122	47	152	239	428	139	5.0	1,010	498	1,500
Dec. 2, 1952	5	1,148	32					262						1,680
Jan. 2	5	1,144	44					238						1,350
Feb. 3	5	1,147	44					262						1,520
Mar. 3	5	1,137	50					318						1,640
Apr. 10	5	1,131	64					202						954
May 5	5	1,142	65											
May 28	5	1,165	68	9.6	40	18	30	132	98	20	1.8	282	174	456
July 2	5	1,193	--	12	38	13	24	113	77	20	1.5	241	148	402

AT LINE OF DEMARCATION BETWEEN TURBID AND CLEAR WATER, MILE 281

Apr. 1, 1952	0	1,134	58	12	106	40	156	233	374	131	2.8	937	429	1,390
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GRAND WASH, MILE 248.7

Apr. 1, 1952	5	1,129	60.4	11	93	31	97	171	301	81	2.4	701	380	1,040
Apr. 1	50	1,084	53.7	12	--	--	--	172		--	--	--	--	
Apr. 1	100	1,034	51.6	--	96	34	123	195	329	100	3.2	781	380	1,040
Apr. 1	122	1,012	51.6	11	--	--	--	193		--	--	--	--	1,160
Apr. 1	125	1,009	52.1	11	--	--	--	258		--	--	--	--	1,270
Sept. 10	5	1,189	82.2	--	--	--	--	148		--	--	--	--	882
Sept. 10	50	1,144	80.6	12	78	29	84	138	260	67	1.7	610	314	956

a Includes equivalent of 9 parts per million of carbonate (CO₃).

COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (microhms at 25°C)
GRAND WASH, MILE 248.7--Continued														
Sept. 10, 1952	100	1,094	77.8	--	--	--	--	164	--	--	--	--	--	984
Sept. 10	150	1,044	75.4	23	62	20	58	154	169	40	3.7	452	236	699
Sept. 10	185	1,009	64.2	--	--	--	--	385	--	--	--	--	--	1,150
ICEBERG CANYON, MILE 287.5														
Apr. 1, 1952	5	1,129	60.3	11	90	29	96	167	289	79	2.2	678	344	1,010
Apr. 1	50	1,084	53.4	--	--	--	--	166	--	--	--	--	--	1,000
Apr. 1	100	1,034	53.4	11	98	35	122	195	337	100	3.0	802	398	1,180
Apr. 1	145	989	53.4	--	--	--	--	198	--	--	--	--	--	1,210
Apr. 1	147	987	53.9	--	--	--	--	583	--	--	--	--	--	1,340
Sept. 10	5	1,189	82.9	--	--	26	71	148	223	58	--	--	282	850
Sept. 10	50	1,144	80.5	--	--	--	--	157	--	--	--	--	--	1,020
Sept. 10	100	1,094	74.5	12	90	30	98	169	305	73	2.7	694	348	1,070
Sept. 10	150	1,044	63.8	--	--	--	--	b 188	--	--	--	--	--	915
Sept. 10	175	1,019	63.0	--	82	27	74	176	249	52	--	--	316	948
Sept. 10	195	999	63.0	--	--	--	--	166	--	--	--	--	--	991
Sept. 10	205	989	55.2	--	--	--	--	331	--	--	--	--	--	1,090
SANDY POINT, MILE 293.5														
Apr. 1, 1952	5	1,120	57.3	--	--	--	--	166	--	--	--	--	--	1,000
Apr. 1	50	1,074	53.4	--	--	--	--	164	--	--	--	--	--	833
Apr. 1	100	1,034	52.8	11	90	29	95	168	280	77	2.2	677	344	921
Apr. 1	150	984	52.8	--	--	--	--	183	--	--	--	--	--	1,160
Apr. 1	210	924	52.8	--	--	--	--	195	--	--	--	--	--	1,180
Apr. 1	213	921	53.2	17	116	41	135	309	337	104	2.7	905	456	1,320
Sept. 11	5	1,189	80.5	--	--	--	--	152	--	--	--	--	--	890
Sept. 11	50	1,144	80.2	12	74	26	79	152	243	61	--	570	292	901
Sept. 11	100	1,094	68.6	11	51	17	39	132	132	28	--	341	197	558
Sept. 11	150	1,044	62.3	--	--	--	--	142	--	--	--	--	--	646
Sept. 11	200	994	56.5	--	--	--	--	125	--	--	--	--	--	828

b Includes equivalent of 8 parts per million of carbonate (CO₃).

VIRGIN CANYON, MILE 305.5												
Sept. 11, 1952	260	934	53.6	--	--	--	--	--	--	--	--	920
Sept. 11	262	932	54.0	--	--	--	--	--	--	--	--	1,130
OVERTON ARM OF LAKE AT LINE OF DEMARCATION BETWEEN TURBID AND CLEAR WATER, 27 MILES ABOVE MOUTH OF VIRGIN RIVER												
Apr. 1, 1952	5	1,129	57.8	--	--	--	--	--	--	--	--	861
Apr. 1	50	1,084	53.0	11	88	28	84	161	270	73	635	334
Apr. 1	100	1,034	52.7	--	--	--	--	162	--	--	--	987
Apr. 1	150	984	52.7	12	86	29	99	166	286	79	676	334
Apr. 1	200	934	52.4	--	--	--	--	181	--	--	--	1,000
Apr. 1	250	884	52.2	11	98	35	104	187	303	102	748	1,100
Apr. 1	288	846	52.0	--	--	--	--	186	--	--	--	388
Apr. 1	289	845	52.8	17	110	38	125	288	310	100	844	1,180
Sept. 9	5	1,189	84.0	17	56	20	47	133	155	38	398	1,250
Sept. 9	50	1,144	79.8	--	--	--	--	172	--	--	--	637
Sept. 9	100	1,094	66.4	10	46	15	26	123	98	21	278	994
Sept. 9	150	1,044	62.3	--	--	--	--	151	--	--	--	463
Sept. 9	200	994	55.6	11	80	29	81	166	253	67	--	714
Sept. 9	250	944	53.3	--	--	--	--	187	--	--	--	318
Sept. 9	300	894	52.9	--	82	28	--	c 183	287	--	--	946
Sept. 9	347	847	52.7	--	--	--	--	172	--	--	--	380
Sept. 9	350	844	53.8	--	--	--	--	402	--	--	--	1,060
OVERTON ARM OF LAKE OPPOSITE SALT MINE, 22 MILES ABOVE MOUTH OF VIRGIN RIVER												
Apr. 2, 1952	0	1,134	61	13	140	38	100	184	382	123	889	1,320
Sept. 11	2	1,192	84	10	83	28	84	186	262	66	619	975
c Includes equivalent of 7 parts per million of carbonate (CO ₃).												
Apr. 2, 1952	0	1,134	67	12	98	31	101	183	319	86	732	1,080
Sept. 11	0	1,194	82	--	64	21	48	145	172	38	--	682

COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued														
Date of collection	Depth (feet)	Elevation (feet)	Temperature (° F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (microhms at 25° C)
OVERTON ARM OF LAKE OPPOSITE CALICO SALT MINE, 15 MILES ABOVE MOUTH OF VIRGIN RIVER														
Apr. 2, 1952	0	1,134	67	12	96	31	95	165	308	82	2.1	707	367	1,040
Sept. 11	0	1,194	80	11	56	19	48	136	155	33	2.6	392	218	633
OVERTON ARM OF LAKE, 9.3 MILES ABOVE MOUTH OF VIRGIN RIVER (LOWER VIRGIN NARROWS)														
Apr. 2, 1952	5	1,129	56.7	10	86	29	92	164	279	76	1.5	654	334	983
Apr. 2	50	1,084	53.4	10	84	30	88	160	275	74	2.1	642	333	972
Apr. 2	100	1,034	52.2	--	--	--	--	160	--	--	--	--	--	972
Apr. 2	150	984	52.2	--	--	--	--	160	--	--	--	--	--	992
Apr. 2	200	934	52.0	12	90	33	83	162	285	78	2.5	663	360	1,000
Apr. 2	232	902	52.0	--	--	--	--	172	--	--	--	--	--	1,050
Apr. 2	235	899	52.6	15	88	35	96	173	293	87	3.4	703	364	1,050
Sept. 11	5	1,189	81.4	--	--	--	--	134	--	--	--	--	--	802
Sept. 11	50	1,144	80.1	14	56	18	40	135	146	30	--	372	218	602
Sept. 11	100	1,094	71.4	--	--	--	--	140	--	--	--	--	--	619
Sept. 11	150	1,044	63.2	--	--	--	--	146	--	--	--	--	--	664
Sept. 11	200	994	55.1	--	--	--	--	147	--	--	--	--	--	760
Sept. 11	250	944	53.7	11	69	23	58	148	195	48	1.6	478	266	766
Sept. 11	295	899	53.7	--	--	--	--	176	--	--	--	--	--	1,060
Sept. 11	297	897	53.6	--	--	--	--	162	--	--	--	--	--	901
BOULDER CANYON, MILE 334														
Mar. 31, 1952	5	1,129	58.5	11	86	30	91	163	278	79	1.5	657	338	1,000
Mar. 31	50	1,084	55.3	--	--	--	--	167	--	--	--	--	--	985
Mar. 31	100	1,034	53.1	--	--	--	--	160	--	--	--	--	--	985
Mar. 31	150	984	52.7	--	--	--	--	158	--	--	--	--	--	980
Mar. 31	200	934	52.5	11	87	30	88	d 163	279	75	1.5	652	340	991
Mar. 31	250	884	52.3	--	--	--	--	173	--	--	--	--	--	1,060
Mar. 31	300	834	51.9	--	--	--	--	175	--	--	--	--	--	1,060
Mar. 31	350	784	51.8	11	89	32	106	179	297	89	2.5	715	354	1,060
Mar. 31	374	760	51.8	--	--	--	--	178	--	--	--	--	--	1,080
Mar. 31	375	759	52.1	16	93	33	129	226	323	86	1.2	792	364	1,120

d Includes equivalent of 9.8 parts per million of carbonate (CO₃).

COLORADO RIVER MAIN STEM

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NEAR INTAKE TOWERS, MILE 354.7													
Sept. 12, 1952	5	1,189	80.8	--	--	--	--	--	--	138	--	--	673
Sept. 13	50	1,144	77.6	--	--	--	--	--	--	142	--	--	634
Sept. 12	100	1,094	69.6	56	17	34	--	26	--	210	--	--	555
Sept. 13	150	1,044	62.6	--	--	--	--	--	--	145	--	--	647
Sept. 12	200	984	54.7	--	--	--	--	--	--	168	--	--	984
Sept. 13	250	944	52.9	12	29	85	--	72	--	170	648	--	1,010
Sept. 12	300	884	52.7	--	--	--	--	--	--	148	--	--	733
Sept. 13	350	884	52.4	--	--	--	--	--	--	151	--	--	843
Sept. 12	400	784	52.2	--	--	--	--	--	--	168	--	--	939
Sept. 13	430	764	52.2	--	--	--	--	--	--	164	--	--	929
Sept. 12	434	760	52.5	--	--	--	--	--	--	340	--	--	1,280
Oct. 31, 1951	5	1,155	70.0	--	--	--	--	--	--	146	--	--	907
Oct. 31	50	1,110	69.9	12	28	83	--	70	--	146	597	--	898
Oct. 31	100	1,080	69.7	--	--	--	--	--	--	146	--	--	895
Oct. 31	150	1,010	61.8	--	--	--	--	--	--	162	--	--	935
Oct. 31	200	960	56.9	--	--	--	--	--	--	164	--	--	954
Oct. 31	250	910	54.2	--	--	--	--	--	--	166	--	--	975
Oct. 31	300	860	53.6	--	--	--	--	--	--	164	--	--	986
Oct. 31	350	810	53.6	--	--	--	--	--	--	172	--	--	986
Oct. 31	400	760	53.6	--	--	--	--	--	--	174	--	--	986
Oct. 31	428	732	53.6	--	--	--	--	--	--	170	--	--	989
Oct. 31	431	729	53.6	18	33	101	--	80	2.1	225	708	--	1,080
Nov. 29	5	1,152	83.0	--	--	--	--	--	--	159	--	--	905
Nov. 29	50	1,107	83.0	--	--	--	--	--	--	159	606	--	898
Nov. 29	100	1,071	83.0	--	--	--	--	--	--	159	--	--	898
Nov. 29	150	1,037	83.0	--	--	--	--	--	--	159	--	--	919
Nov. 29	200	987	81.9	--	--	--	--	--	--	164	630	--	967
Nov. 29	250	937	81.5	11	28	83	--	72	1.1	273	340	--	970
Nov. 29	300	887	81.5	--	--	--	--	--	--	164	--	--	986
Nov. 29	350	837	81.5	--	--	--	--	--	--	168	--	--	986
Nov. 29	400	787	81.5	--	--	--	--	--	--	172	--	--	982
Nov. 29	435	732	81.5	--	--	--	--	--	--	174	--	--	1,040
Nov. 29	438	729	81.5	16	31	95	--	78	1.6	200	688	--	1,010
Nov. 29	438	729	81.5	--	--	--	--	--	--	276	357	--	1,040

COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued														
Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (microhmhos at 25°C)
NEAR INTAKE TOWERS, MILE 354.7--Continued														
Dec. 8, 1951	5	1,151	55.5	--	--	--	--	155	--	--	--	--	--	940
Dec. 8	50	1,106	55.5	--	--	--	--	155	--	--	--	--	--	930
Dec. 8	100	1,058	55.5	11	80	27	85	154	260	69	1.3	609	310	926
Dec. 8	150	1,008	55.5	--	--	--	--	154	--	--	--	--	--	927
Dec. 8	200	958	55.0	--	--	--	--	158	--	--	--	--	--	949
Dec. 8	250	906	54.6	--	--	--	--	162	--	--	--	--	--	972
Dec. 8	300	856	54.3	--	--	--	--	164	--	--	--	--	--	994
Dec. 8	350	806	53.8	11	82	29	98	171	275	77	1.8	658	324	994
Dec. 8	400	756	53.8	--	--	--	--	175	--	--	--	--	--	994
Dec. 8	421	735	53.8	--	--	--	--	178	--	--	--	--	--	994
Dec. 8	423	733	54.5	--	--	--	--	192	--	--	--	--	--	1,020
Jan. 30, 1952	5	1,144	53.9	--	--	--	--	158	--	--	--	--	--	969
Jan. 30	50	1,099	53.9	--	--	--	--	159	--	--	--	--	--	962
Jan. 30	100	1,049	53.9	--	--	--	--	157	--	--	--	--	--	956
Jan. 30	150	999	53.9	11	83	30	88	158	272	78	--	640	330	949
Jan. 30	200	949	53.9	--	--	--	--	160	--	--	--	--	--	975
Jan. 30	250	899	53.9	--	--	--	--	158	--	--	--	--	--	961
Jan. 30	300	849	53.9	--	--	--	--	176	--	--	--	--	--	1,060
Jan. 30	350	799	53.9	--	--	--	--	175	--	--	--	--	--	1,050
Jan. 30	400	749	53.6	12	91	30	104	171	302	84	3.7	711	350	1,060
Jan. 30	418	731	53.6	--	--	--	--	174	--	--	--	--	--	1,050
Jan. 30	420	729	53.9	--	--	--	--	186	--	--	--	--	--	1,090
Feb. 29	5	1,137	53.8	--	84	28	92	160	272	78	--	633	324	986
Feb. 29	50	1,092	53.5	--	--	--	--	160	--	--	--	--	--	980
Feb. 29	100	1,042	53.5	--	--	--	--	160	--	--	--	--	--	972
Feb. 29	150	992	53.5	--	--	--	--	163	--	--	--	--	--	970
Feb. 29	200	942	53.2	--	--	--	--	164	--	--	--	--	--	978
Feb. 29	250	892	51.8	10	90	30	98	172	291	83	--	687	348	1,050
Feb. 29	300	842	51.8	11	91	28	83	162	273	75	1.4	642	342	974
Feb. 29	350	792	51.8	--	--	--	--	166	--	--	--	--	--	1,020
Feb. 29	400	742	51.8	--	--	--	--	166	--	--	--	--	--	1,000
Feb. 29	410	732	51.6	--	--	--	--	174	--	--	--	--	--	1,040
Feb. 29	413	729	52.1	--	--	--	--	176	--	--	--	--	--	1,060

Mar. 27, 1952	5	1,130	55.6	10	85	31	89	163	280	76	1.8	653	340	994
Mar. 27	50	1,085	53.8	--	--	--	--	167	--	--	--	--	--	980
Mar. 27	100	1,035	53.1	--	--	--	--	162	--	--	--	--	--	981
Mar. 27	150	985	52.8	12	84	31	89	159	279	77	1.5	652	337	988
Mar. 27	200	935	52.2	--	--	--	--	164	--	--	--	--	--	1,010
Mar. 27	250	885	51.8	11	88	30	95	166	284	82	2.4	674	343	1,040
Mar. 27	300	835	51.8	--	--	--	--	173	--	--	--	--	--	1,050
Mar. 27	350	785	51.8	11	86	31	98	170	285	83	2.0	680	342	1,020
Mar. 27	405	730	51.8	--	--	--	--	175	--	--	--	--	--	1,070
Mar. 27	406	729	51.8	16	96	34	101	237	271	85	5.0	725	380	1,120
Apr. 30	5	1,137	61.0	--	--	--	--	163	--	--	--	--	--	984
Apr. 30	50	1,092	59.5	--	--	--	--	162	--	--	--	--	--	988
Apr. 30	100	1,042	54.5	9.9	82	31	91	160	278	76	1.8	650	332	985
Apr. 30	150	992	53.7	--	--	--	--	162	--	--	--	--	--	1,050
Apr. 30	200	942	52.2	--	--	--	--	166	--	--	--	--	--	1,060
Apr. 30	250	892	51.9	--	--	--	--	171	--	--	--	--	--	1,080
Apr. 30	300	842	51.8	--	--	--	--	173	--	--	--	--	--	1,060
Apr. 30	350	792	51.8	13	82	30	129	172	333	85	2.4	759	328	1,060
Apr. 30	410	732	51.8	--	--	--	--	175	--	--	--	--	--	1,060
Apr. 30	412	730	52.3	--	--	--	--	183	--	--	--	--	--	1,070
May 27	5	1,164	77.0	9.3	83	32	95	158	285	77	1.0	670	338	1,030
May 27	50	1,119	66.9	--	--	--	--	e166	--	--	--	--	--	1,020
May 27	100	1,068	59.4	--	--	--	--	155	--	--	--	--	--	1,020
May 27	150	1,018	55.4	9.3	86	31	92	163	286	78	1.6	664	342	1,010
May 27	200	968	53.1	--	--	--	--	162	--	--	--	--	--	1,020
May 27	250	918	52.1	10	88	31	84	165	288	80	1.6	675	347	1,040
May 27	300	869	51.9	--	--	--	--	161	--	--	--	--	--	1,030
May 27	350	819	51.9	--	--	--	--	178	--	--	--	--	--	1,030
May 27	400	769	51.7	11	98	33	89	175	292	88	2.1	689	360	1,080
May 27	430	730	51.7	--	--	--	--	172	--	--	--	--	--	1,080
May 27	440	729	52.3	--	--	--	--	179	--	--	--	--	--	1,100

e Includes equivalent of 9 parts per million of carbonate (CO₃)

COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued														
Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (microhmhos at 25°C)
NEAR INTAKE TOWERS, MILE 354.7--Continued														
June 26, 1952	5	1,192	72.4	11	76	26	95	153	272	66	1.5	623	286	900
June 26	50	1,147	71.4	11	76	26	91	154	263	66	1.4	610	286	931
June 26	100	1,097	66.0	11	74	25	80	156	239	59	1.8	567	288	877
June 26	150	1,047	60.2	10	85	28	92	164	279	72	1.8	649	327	1,000
June 26	200	997	53.9	--	--	--	--	159	--	--	--	--	--	956
June 26	250	947	52.7	12	79	27	93	160	269	69	1.7	630	308	956
June 26	300	897	52.1	12	87	29	99	169	287	79	1.9	678	336	1,050
June 26	350	847	52.0	--	--	--	--	172	--	--	--	--	--	1,070
June 26	400	797	51.8	11	87	30	109	168	291	96	2.0	709	340	1,050
June 26	450	747	51.8	12	79	27	92	160	265	70	1.9	626	308	971
June 26	465	732	51.8	10	88	30	103	176	290	84	2.4	694	343	1,080
June 26	468	729	52.0	--	--	--	--	292	--	--	--	--	--	1,160
Aug. 5	5	1,195	79.4	--	--	--	--	138	--	--	--	--	--	780
Aug. 5	50	1,150	75.1	11	66	23	65	144	205	46	1.5	490	259	780
Aug. 5	100	1,100	70.6	--	--	--	--	151	--	--	--	--	--	730
Aug. 5	150	1,050	64.2	--	--	--	--	160	--	--	--	--	--	812
Aug. 5	200	1,000	53.4	--	--	--	--	163	--	--	--	--	--	1,020
Aug. 5	250	950	52.9	--	--	--	--	167	--	--	--	--	--	972
Aug. 5	300	900	52.2	--	--	--	--	170	--	--	--	--	--	1,010
Aug. 5	350	850	52.2	12	88	29	94	168	281	77	2.2	697	338	1,040
Aug. 5	400	800	51.9	--	--	--	--	168	--	--	--	--	--	1,020
Aug. 5	450	750	51.9	--	--	--	--	156	--	--	--	--	--	882
Aug. 5	469	731	51.9	--	--	--	--	171	--	--	--	--	--	1,020
Aug. 5	470	730	51.9	--	--	--	--	214	--	--	--	--	--	1,080
Aug. 29	5	1,192	81.4	--	--	--	--	136	--	--	--	--	--	740
Aug. 29	50	1,146	80.2	11	64	22	60	137	196	45	1.3	497	250	733
Aug. 29	100	1,096	70.5	--	--	--	--	141	--	--	--	--	--	703
Aug. 29	150	1,046	63.4	--	--	--	--	142	--	--	--	--	--	757
Aug. 29	200	996	53.4	--	--	--	--	160	--	--	--	--	--	970
Aug. 29	250	946	52.5	11	72	24	109	162	272	70	1.7	628	278	978
Aug. 29	300	896	52.2	--	--	--	--	146	--	--	--	--	--	808
Aug. 29	350	846	52.0	11	84	28	54	149	228	57	1.4	537	324	848
Aug. 29	400	796	51.9	--	--	--	--	166	--	--	--	--	--	966

Aug. 30, 1982	450	746	51.9	--	--	--	--	--	--	--	--	--	--	--	--	793
Aug. 30	461	752	51.9	--	--	--	--	--	--	--	--	--	--	--	--	1,030
Aug. 28	467	729	52.5	--	--	--	--	--	--	--	--	--	--	--	--	1,972
Sept. 30	5	1,195	79.4	--	--	--	--	--	--	--	--	--	--	--	--	728
Sept. 30	50	1,140	79.4	--	--	--	--	--	--	--	--	--	--	--	--	734
Sept. 30	100	1,090	71.5	13	62	21	51	39	175	138	138	1.4	430	241	694	808
Sept. 30	150	1,040	62.7	--	--	--	--	--	--	150	150	--	--	--	--	808
Sept. 30	200	990	53.8	19	86	29	83	269	71	161	161	2.2	638	334	987	823
Sept. 30	250	940	52.7	--	--	--	--	--	--	142	142	--	--	--	--	823
Sept. 30	300	890	52.1	10	72	24	64	213	53	147	147	1.2	510	278	803	803
Sept. 30	350	840	52.1	10	78	26	74	241	60	165	165	--	565	302	903	903
Sept. 30	400	790	52.1	--	--	--	--	--	--	162	162	--	--	--	--	994
Sept. 30	450	740	51.8	--	--	--	--	--	--	182	182	--	--	--	--	1,080
Sept. 30	462	728	52.6	--	--	--	--	--	--	207	207	--	--	--	--	1,010

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

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER BELOW HOOVER DAM, ARIZ.-NEV.

LOCATION --At Hoover Dam, state line between Mohave County, Arizona, and Clark County, Nevada, about 1 mile upstream from gaging station.
DRAINAGE AREA --167,800 square miles.

RECORDS AVAILABLE --Chemical analyses: November 1939 to September 1952.

Water temperatures: October 1941 to September 1952.

EXTREMES, 1951-52 --Dissolved solids: Maximum, 706 ppm Mar. 3-7, 10; minimum, 524 ppm Sept. 11-12, 15-19.

Hardness: Maximum, 344 ppm Dec. 3-7, 10; June 2-6, 9-10; minimum, 268 ppm Sept. 11-12, 15-19.

Specific conductance: Maximum daily, 1,070 microhms Mar. 11, 31, Apr. 22; minimum daily, 804 microhms Sept. 30.

Water temperatures: Maximum observed, 66°F Aug. 15, Sept. 11, 19, 29; minimum observed, 53°F Apr. 3, 7, 8, 10-11, 14, 16-17, 28, May 16, June 9.

EXTREMES, 1939-52 --Dissolved solids (1939-44, 1945-52): Maximum, 824 ppm Mar. 1-10, 1941; minimum, 524 ppm Sept. 11-12, 15-19, 1952.

Hardness (1939-44, 1950-52): Maximum, 426 ppm Jan. 21-31, 1941; minimum, 268 ppm Sept. 11-12, 15-19, 1952.

Specific conductance: Maximum daily, 1,250 microhms Mar. 2, 1941; minimum daily, 804 microhms Sept. 30, 1952.

Water temperatures (1941-52): Maximum observed, 69°F Sept. 27, 1945; minimum observed, 50°F Mar. 23, 28, 30, 1949.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (residue at 180°C)			Hardness as CaCO ₃			Percent sodium in hardness	Specific conductance (microhms at 25°C)	pH	Color
													Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate	Sodium				
Oct. 1-5, 9-10, 1951	13,780	13	--	86	30	89	89	189	276	73	--	2.3	681	0.93	25,340	338	300	36	2.1	980	7.7	--
Oct. 11-12, 15-19	14,380	12	--	86	28	92	92	188	276	73	--	2.1	684	.93	25,320	330	192	38	2.2	978	7.8	--
Oct. 22-26, 29-31	13,000	14	--	88	29	85	85	166	273	72	--	1.7	679	.92	25,430	348	202	35	2.2	978	7.9	--
Nov. 1-2, 6-9, ...	14,360	--	--	87	30	92	--	--	--	--	--	--	680	.92	25,470	340	--	37	2.2	968	--	--
Nov. 13-16, 19-20	16,970	--	--	87	30	92	--	--	--	--	--	--	681	.93	30,470	340	--	37	2.2	968	--	--
Nov. 21, 23, 26-30	16,460	--	--	87	30	92	--	--	--	--	--	--	681	.93	30,320	340	--	37	2.2	961	--	--
Dec. 3-7, 10, ...	15,880	--	--	87	31	92	--	--	--	--	--	--	674	.92	28,900	344	--	37	2.2	972	--	--
Dec. 11-14, 17-20	15,400	--	--	86	31	92	--	--	--	--	--	--	686	.91	27,710	340	--	37	2.2	960	--	--
Dec. 21, 26-29	15,140	--	--	85	27	90	4.4	159	--	--	--	--	659	.90	25,940	313	182	38	2.2	987	7.3	--
Jan. 2-5, 7-10, 1952	15,010	--	--	84	25	90	4.4	159	--	--	--	--	652	.89	28,180	312	182	38	2.2	968	7.6	--
Jan. 11, 14-18, ...	19,670	13	0.04	83	28	90	4.5	160	272	72	0.2	1.8	688	.91	35,480	322	191	37	2.2	972	7.3	10
Jan. 21-25, 28-31	21,140	--	--	84	28	90	4.5	160	--	--	--	--	688	.91	38,130	316	166	38	2.2	977	7.7	--
Feb. 1, 5-8, ...	21,280	--	--	86	27	92	4.8	166	--	--	--	--	676	.92	38,840	326	190	38	2.2	991	7.7	--
Feb. 11-15, 18-20	22,880	--	--	89	25	94	--	--	--	--	--	--	687	.93	42,400	325	--	39	2.3	1,010	--	--
Feb. 21, 25-29, ...	24,170	--	--	89	25	94	--	--	--	--	--	--	699	.95	45,620	325	--	39	2.3	1,020	--	--
Mar. 3-7, 10, ...	24,000	--	--	90	25	96	--	--	--	--	--	--	706	.96	45,750	328	--	39	2.3	1,030	--	--
Mar. 11-14, 17-20	23,440	13	--	84	28	103	103	166	289	77	--	2.3	683	.93	43,230	324	188	41	2.5	1,050	7.7	8
Mar. 21, 24-28, 31	22,630	9.7	--	86	28	103	103	167	292	76	--	2.7	688	.94	42,410	330	192	40	2.5	1,050	7.7	8
Apr. 1-4, 7-10, ...	23,140	9.3	--	87	28	105	105	170	293	80	--	2.6	684	.93	42,730	332	192	41	2.5	1,050	7.8	8
Apr. 11, 14-18, ...	24,450	12	.06	87	30	100	4.1	170	291	81	3	2.1	700	.95	46,210	340	201	39	2.4	1,050	8.0	5
Apr. 21-25, 28-30	26,360	10	--	88	28	103	103	168	295	79	--	2.0	691	.94	49,180	334	197	40	2.4	1,050	7.8	8

May 1-2, 5-9, 1952	26,640	9.7	--	37	28	103	187	222	80	--	2.4	--	693	.94	49,950	332	195	40	2.5	1,050	8.0	8
May 12-16, 19-20	28,090	9.8	--	86	28	104	187	283	90	--	2.0	--	684	.93	53,720	330	182	41	2.5	1,040	8.0	8
May 21-23, 26-29	27,200	11	--	86	29	98	186	285	79	--	2.6	--	692	.94	50,820	334	186	39	2.3	1,050	8.2	--
June 2-6, 9-10	26,290	11	--	90	29	91	187	281	78	--	2.2	--	695	.95	49,330	344	206	37	2.1	1,050	7.7	--
June 11-13, 16-20	27,780	14	--	85	29	92	183	277	76	--	2.5	--	685	.90	49,880	331	198	38	2.2	1,010	7.8	--
June 23-27, 30	27,630	15	--	76	28	90	185	263	64	--	2.3	--	647	.88	41,280	304	170	39	2.3	983	7.6	--
July 1-3, 7-10	22,900	11	--	80	26	86	159	253	69	--	2.5	--	618	.84	38,210	306	176	38	2.1	941	7.7	--
July 11, 14-18	22,870	12	.03	76	25	80	4.2	248	65	2	1.7	.12	603	.82	37,230	292	163	37	2.0	917	7.5	15
July 21-25, 28-31	22,780	--	--	77	28	77	--	--	--	--	--	--	605	.82	37,210	307	--	35	1.9	923	--	--
Aug. 1, 4-8	22,870	--	--	75	27	73	--	--	--	--	--	--	585	.80	36,120	298	--	35	1.8	894	--	--
Aug. 11-15, 18-20	23,060	--	--	73	26	73	--	--	--	--	--	--	571	.78	35,550	289	--	35	1.9	872	--	--
Aug. 21-22, 25-29	23,740	--	--	74	26	74	--	--	--	--	--	--	571	.78	36,600	292	--	36	1.9	875	--	--
Sept. 2-5, 8-10	24,940	--	--	72	25	72	--	--	--	--	--	--	561	.76	37,780	282	--	36	1.9	852	--	--
Sept. 11-12, 15-19	25,170	--	--	68	24	71	--	--	--	--	--	--	524	.71	35,610	268	--	37	1.9	810	--	--
Sept. 22-25, 27, 29-30	23,590	--	--	70	24	69	--	--	--	--	--	--	528	.72	33,630	273	--	35	1.8	812	--	--
Weighted average	a 21,600	--	--	83	27	90	--	--	--	--	--	--	652	0.89	38,020	318	--	38	2.2	974	--	--

a Represents 75 percent of runoff for water year October 1951 to September 1952.

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER BELOW HOOVER DAM, ARIZ.-NEV.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

[illegible]

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR TOPOCK, ARIZ.

LOCATION.--Temperature recorder at gaging station in Mohave Canyon, 3 miles downstream from Topock, Mohave County, 39.5 miles upstream from Parker Dam, and 49 miles downstream from Davis Dam.

DRAINAGE AREA.--172,300 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: July to September 1952.

REMARKS.--Recorder equipped with thermograph June 17, 1952. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

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																			68	68	74	74	75	74
2																			69	68	74	74	75	74
3																			70	69	74	74	75	75
4																			70	70	74	74	75	73
5																			70	69	74	73	73	73
6																			70	70	73	73	74	73
7																			70	70	74	73	73	73
8																			70	68	74	73	73	73
9																			70	67	73	73	73	73
10																			71	70	73	73	73	70
11																			71	71	73	73	70	69
12																			71	70	73	73	70	68
13																			70	70	73	73	71	70
14																			70	70	73	73	71	70
15																			70	70	74	73	72	71
16																			71	71	74	72	73	72
17																			71	71	72	72	73	73
18																			68	68	71	73	73	73
19																			66	66	71	74	74	71
20																			66	65	71	74	74	70
21																			66	66	72	74	74	71
22																			67	66	72	74	74	73
23																			67	66	71	75	74	73
24																			66	65	72	71	75	73
25																			66	65	71	75	73	73
26																			66	65	71	75	73	74
27																			64	64	72	71	73	73
28																			65	64	72	72	73	72
29																			65	64	72	74	74	72
30																			66	65	73	73	74	71
31																			66	67	74	73	75	70
Average																			71	70	74	73	73	72

VIRGIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN VIRGIN RIVER BASIN IN UTAH

Chemical analyses, in parts per million, December 1951 to April 1952

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)	Dissolved solids			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			

FORT PIERCE WASH NEAR ST. GEORGE																						
Dec. 5, 1951.....				136	43	212	212	242		361	285		2.5		1,160	1.58		516	318	47	4.1	1,840
Apr. 28, 1952.....	12			436	90	69	69	162		1,370	34				2,090	2.84		1,460	1,330	9	.8	2,350

GILA RIVER BASIN

GILA RIVER AT KELVIN, ARIZ.

LOCATION.--Just above mouth of Mineral Creek, and 1,200 feet upstream from gaging station at Kelvin, Pinal County, 17 miles downstream from San Pedro River, and 9 1/2 miles upstream from Ashurst-Hayden Dam.

DRAINAGE AREA 18,011 square miles at gaging station, of which 5,125 square miles are below Coolidge Dam (revised).

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

EXTREMES 1952.--Dissolved solids: 1,760 ppm Oct. 21-30; minimum 365 ppm Jan. 13-14, 18-20.

Hardness: Maximum 1,060 ppm Oct. 21-30; minimum 186 ppm Jan. 13-14, 18-20.

Specific conductance: Maximum observed 47.5 mhos/cm Oct. 21-22; minimum observed 4.07 mhos/cm Jan. 20.

Water temperatures: Maximum observed 47°F Aug. 23-26; minimum observed 46°F Feb. 15, Mar. 10.

EXTREMES 1950-52.--Dissolved solids: Maximum 1,760 ppm Oct. 21-30, 1951; minimum, 343 ppm Aug. 26-28, 1951.

Hardness: Maximum 1,070 ppm June 1-10, 1951; minimum 180 ppm Sept. 6-12, 1951.

Specific conductance: Maximum observed 2,520 micromhos/cm Oct. 21-22, 1951; minimum observed 407 micromhos/cm Jan. 20, 1952.

Water temperatures: Maximum observed 94°F July 30, 1951; minimum observed 41°F Dec. 15, 25, 1950.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1951 to September 1952 given in WSP 1243. No appreciable inflow from Mineral Creek, between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)			Hardness as CaCO ₃		Per-cent so-lidum	So-lidum ad-sorp-tion ratio	Specific conduct-ance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mag-nesium	Non-carbon-ate			
Oct. 1-10, 1951	5.89	35	0.01	230	55	188	6.8	249	0	617	260	1.0	0.5	0.44	1,520	2.07	24.2	800	596	34	2.9	2,170
Oct. 11-20	3.38	35	.01	264	77	156	5.2	300	0	795	225	.8	.8	.10	1,730	2.35	15.7	1,040	799	25	2.1	2,380
Oct. 21-30	3.52	37	.01	306	73	154	4.6	302	0	810	220	.8	.6	.30	1,760	2.39	16.7	1,060	818	24	2.1	2,380
Oct. 31, Nov. 1-10	28.9	26	.05	109	26	144	6.2	247	0	240	165	1.0	2.1	.25	841	1.14	67.9	379	176	43	3.2	1,350
Nov. 11-20	106	23	.01	72	18	138	5.4	210	0	141	165	1.0	2.5	.23	667	.91	191	254	82	53	3.7	1,120
Nov. 21-30	109	25	.01	81	21	143	8.8	200	9	162	182	1.1	1.2	.22	732	1.00	215	266	106	51	3.7	1,230
Dec. 1-5	70.8	27	.01	94	23	145	8.2	233	0	208	181	1.0	1.5	.08	802	1.09	153	226	135	48	3.5	1,260
Dec. 6-7	87.3	32	.02	63	15	127	7.5	239	0	283	200	1.4	1.0	.2	460	1.53	199	218	22	43	2.2	1,355
Dec. 8-20	43.4	31	.01	123	31	182	7.8	266	5	261	225	1.2	1.0	.16	1,020	1.59	119	478	214	47	3.1	1,630
Dec. 21-30	36.4	31	.01	137	33	196	8.8	241	0	252	226	1.4	1.2	.16	1,140	1.55	119	478	214	47	3.1	1,750
Dec. 31	1,936.4	26	.01	62	17	79	9.8	241	0	116	55	1.4	1.2	.16	471	.84	330	274	27	43	2.3	641
Jan. 1-12, 1952	1,927.7	34	.01	40	34	168	9.4	270	7	339	212	1.4	1.2	.21	1,051	1.50	275	440	218	45	3.7	1,680
Jan. 13-14, 18-20	1,617.7	31	.04	55	12	43	5.2	144	5	95	44	6	2.6	2.1	1,365	5.0	1,590	196	158	33	1.4	570
Jan. 15-17, 21-22	73.6	31	.01	100	22	98	7.4	231	0	191	112	.8	1.2	.21	670	.91	418	342	153	37	2.3	1,050
Jan. 23-31	25.1	31	.01	137	32	156	6.8	265	15	288	185	1.0	2.1	.24	984	1.34	201	564	322	41	3.1	1,530
Feb. 1-6	48.2	28	.01	133	35	179	6.6	234	11	344	209	1.0	1.3	.21	1,060	1.44	138	476	266	45	3.6	1,660
Feb. 7-10	43.2	30	.02	136	36	183	8.8	255	11	346	207	1.3	.3	.23	1,080	1.47	126	488	280	44	3.6	1,670
Feb. 11-21	42.6	30	.01	134	35	184	9.0	278	0	339	212	1.2	.3	.23	1,080	1.47	124	478	250	45	3.7	1,670
Feb. 22-29	150	29	.01	78	20	114	5.5	191	0	137	157	.9	2.2	.22	638	.87	258	276	120	47	3.0	1,080

GILA RIVER BASIN--Continued

GILA RIVER AT KELVIN, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952.--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 (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH		
															Parts per million	Tons per acre-foot	Calcium, mg-nestum	Non-carbonate					
Mar. 1, 6-10, 1952 ..	226	31	0.01	92	23	120	6.0	216	0	162	167	0.9	2.1	0.09	710	0.97	433	324	147	44	2.9	1,180	7.9
Mar. 2-5.....	451	27	.04	66	14	62	4.2	192	0	93	69	.8	2.7	--	434	.59	528	222	64	37	1.8	700	7.9
Mar. 11-20.....	386	29	.03	87	22	118	5.8	224	0	163	147	1.0	2.2	--	685	.93	718	308	124	45	2.9	1,110	8.0
Mar. 21-31.....	352	27	.01	74	19	119	5.3	180	0	112	179	.8	2.4	.24	628	.85	597	262	115	49	3.2	1,070	8.0
Apr. 1-10.....	440	25	.01	64	17	112	5.0	168	0	98	167	.6	2.9	.17	575	.78	683	230	92	51	3.2	994	7.6
Apr. 11-30.....	555	26	.01	58	14	98	4.4	162	0	85	144	.6	2.2	.17	513	.70	767	202	70	51	3.0	882	7.8
Apr. 21-30.....	389	25	.01	58	15	92	4.6	164	0	93	126	.6	1.9	.19	497	.68	522	206	72	49	2.8	856	7.8
May 1-10.....	244	27	.01	61	15	96	5.0	168	0	96	132	.6	1.6	.14	517	.70	341	214	76	49	2.8	891	7.9
May 11-30.....	254	26	.01	56	15	90	4.8	164	0	85	125	.6	1.7	.19	485	.66	333	201	66	49	2.8	831	7.8
May 21-31.....	342	26	.01	52	14	88	4.5	167	0	74	120	.5	1.4	.15	457	.62	422	186	53	50	2.8	786	7.8
June 1-10.....	499	29	.01	55	14	90	4.5	168	0	71	129	.6	2.0	.13	478	.65	644	194	57	49	2.8	826	7.9
June 11-20.....	528	25	.01	55	15	94	4.4	166	0	67	136	.7	1.0	.06	490	.65	654	198	62	50	2.9	839	7.8
June 21-30.....	690	26	.01	54	14	95	4.4	165	0	70	140	.7	.8	.08	486	.66	905	192	57	51	3.0	849	7.8
July 1-10.....	632	24	.01	57	15	98	4.9	170	0	76	142	.7	.9	.04	503	.68	926	204	64	50	3.0	882	7.8
July 11-20.....	845	25	.02	58	16	102	5.8	178	0	73	147	.6	.6	.16	516	.70	1,180	210	64	50	3.1	889	7.6
July 21-31.....	1,010	27	.08	65	16	102	5.4	215	0	67	142	.7	2.0	.17	533	.72	1,450	228	92	49	2.9	920	7.6
Aug. 1-10.....	919	25	.05	68	16	104	5.8	215	0	75	147	.7	1.2	.22	549	.75	1,360	236	60	48	3.0	951	7.6
Aug. 11-30.....	1,038	27	.08	76	15	96	6.3	252	0	76	125	.7	1.4	.14	547	.74	1,580	251	44	45	2.6	925	7.7
Aug. 21-31.....	807	23	.01	67	14	112	6.3	196	0	98	143	.8	1.9	.22	563	.77	1,250	224	64	51	3.2	965	7.8
Sept. 1-10.....	682	19	.01	57	17	130	6.2	180	0	94	174	.8	2.9	.16	590	.90	1,080	212	64	56	3.9	1,030	7.7
Sept. 11-20.....	437	22	.01	68	23	132	7.0	198	0	118	214	.8	3.6	.23	705	.96	870	264	102	55	4.1	1,210	7.7
Sept. 21-30.....	225	25	.01	90	26	180	8.1	237	0	107	246	.9	3.1	.28	893	1.17	524	332	138	53	4.3	1,450	7.7
Weighted average ...	378	26	0.03	66	17	104	5.6	193	--	98	141	0.7	1.8	0.16	555	0.75	566	234	76	48	3.0	942	--

GILA RIVER BASIN--Continued

GILA RIVER AT KELVIN, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 / Once-daily temperature measurements, generally after 4 p. m. /

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

a Observation made before 10 a. m.

b Observation made between 10 a. m. and 4 p. m.

GILA RIVER BASIN--Continued

SALT RIVER AT STEWART MOUNTAIN DAM, ARIZ.

LOCATION.--Just below dam, 3½ miles above gaging station below Stewart Mountain Dam, which is 6 miles upstream from Verde River, Maricopa County. DRAINAGE AREA.--6,230 square miles, (revised), approximately.

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 976 ppm Oct. 11-20; minimum 548 ppm Sept. 11-20.

Hardness: Maximum, 224 ppm Sept. 21-30; minimum 166 ppm Oct. 11-20; minimum 548 ppm Sept. 11-20.

Specific conductance: Maximum observed, 1,770 microhos Nov. 5; minimum observed, 917 microhos Sept. 15.

Water temperatures: Maximum observed, 79°F on several days during October and September; minimum observed, 50°F Jan. 24 and Feb. 14.

EXTREMES, 1950-52.--Dissolved solids: Maximum, 1,300 ppm Aug. 21-28, 1951; minimum, 548 ppm Sept. 11-20, 1952.

Hardness: Maximum, 256 ppm Aug. 21-28, 1951; minimum, 151 ppm Aug. 29-31, Sept. 1-10, 1951.

Specific conductance: Maximum observed, 2,490 microhos Aug. 20, 1951; minimum observed, 917 microhos Sept. 15, 1952.

Water temperatures: Maximum observed, 84°F Aug. 24, 26-27, 1951; minimum observed, 49°F Feb. 14, 1951.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1951 to September 1952 given in WSP 1243. No inflow between sampling point and gaging station except during periods of heavy rainfall.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Parts per million	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhm-cm at 25°C)	Color
															Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1951	8.71	27	0.01	51	19	249	8.4	152	59	400	0.4	2.1	0.23	942	1.28	22.2	205	80	72	1,660	7.6	7
Oct. 11-20	2.95	27	0.01	53	20	268	8.0	154	63	430	4	2.1	.22	976	1.33	7.77	214	88	73	1,750	7.8	7
Oct. 21-31	1.82	18	0.01	53	20	261	8.4	152	58	426	4	1.6	.16	956	1.30	4.70	214	90	73	1,730	7.7	7
Nov. 1-10	1.31	12	0.01	54	20	259	8.8	155	63	420	4	1.8	.18	944	1.28	3.34	216	90	71	1,720	7.8	7
Nov. 11-20	.97	11	0.01	48	18	258	8.4	152	62	410	4	.9	.20	928	1.26	2.43	194	70	73	1,700	7.6	7
Nov. 21-30	1.91	21	0.01	47	19	257	9.2	159	60	405	4	1.8	.20	923	1.26	4.76	196	65	73	1,650	7.9	5
Dec. 1-10	1.92	13	0.01	49	18	249	7.8	153	60	395	4	1.4	.22	891	1.21	4.62	196	71	72	1,620	7.8	5
Dec. 11-20	1.18	8.2	0.01	54	19	234	10	153	62	386	5	2.0	.26	859	1.17	274	212	87	69	1,600	7.7	6
Dec. 21-31	7.90	7.0	0.01	52	18	238	10	150	63	384	5	1.5	.27	860	1.17	1,700	204	80	71	1,590	7.8	7
Jan. 1-10, 1952	4.39	9.1	0.01	52	18	234	10	152	61	382	5	2.0	.31	858	1.17	10.2	204	79	70	1,560	7.8	6
Jan. 11-20	2.68	10	0.02	52	17	237	10	154	56	385	5	1.7	.16	851	1.16	6.16	200	74	71	1,570	7.6	5
Jan. 21-31	2.08	13	0.03	51	17	235	11	157	59	385	5	1.6	.20	842	1.15	4.73	197	66	71	1,550	7.6	5
Feb. 1-10	1.26	15	0.01	51	19	224	7.3	150	57	360	4	1.5	.22	834	1.13	2.84	205	74	69	1,530	--	5
Feb. 11-20	1.14	20	0.02	51	19	216	7.2	161	59	346	5	1.5	.16	815	1.11	2.51	205	73	69	1,470	7.8	5
Feb. 21-29	2.97	14	0.02	50	18	204	7.1	159	56	328	5	1.3	.15	769	1.05	6.17	199	68	68	1,400	7.9	10
Mar. 1-10	2.94	14	0.02	48	17	190	6.8	166	56	302	5	1.4	.24	715	.97	5.68	190	62	68	1,300	7.8	5
Mar. 11-20	4.63	16	0.02	48	17	188	6.5	158	56	300	4	1.8	.15	721	.98	9.01	190	60	67	1,300	7.8	5
Mar. 21-31	3.96	15	0.04	51	15	190	6.5	159	55	298	4	2.1	.07	721	.98	7.71	188	58	68	1,310	7.8	5
Apr. 1-10	3.24	15	0.03	51	15	188	6.3	158	54	300	5	1.9	.06	718	.98	6.28	188	59	68	1,300	7.7	5
Apr. 11-20	3.39	16	0.01	50	16	187	6.4	158	54	294	4	2.3	.21	718	.98	6.57	191	62	67	1,290	7.8	4
Apr. 21-30	3.83	16	0.01	51	15	187	6.3	158	55	288	4	2.2	.18	703	.96	7.27	186	59	67	1,290	7.8	4

a Includes equivalent of 5 parts per million (CO₂)

May 1-10, 1952 ...	2.11	18	.01	50	15	192	6.3	192	55	200	.5	1.9	.16	707	.96	4.03	186	54	88	6.1	1,310	7.9	4
May 11-20	548	18	.01	49	15	192	6.4	158	54	200	.5	2.1	.19	714	.97	1,080	184	54	88	6.2	1,390	7.7	4
May 21-31	180	17	.01	50	15	189	6.4	161	53	200	.5	2.1	.20	717	.98	348	186	54	88	6.0	1,280	7.8	3
June 1-10	400	18	.01	49	15	182	6.5	160	52	232	.5	1.8	.09	686	.93	7.41	184	53	87	5.6	1,280	7.7	6
June 11-20	386	24	.01	48	14	166	6.1	160	49	240	.5	3.6	.10	650	.88		178	46	85	5.1	1,130	7.7	6
June 21-30	252	22	.02	46	13	140	5.8	152	48	216	.5	2.9	.07	599	.81	408	168	44	83	4.7	1,040	7.8	6
July 1-10	741	21	.01	45	13	136	5.7	148	47	206	.5	2.9	.06	566	.77	1,130	166	44	83	4.6	1,000	7.7	6
July 11-20	1,201	20	.01	48	13	138	5.0	148	49	214	.4	2.4	.17	582	.79	1,890	174	52	82	4.6	1,030	7.4	5
July 21-31	1,169	17	.00	48	13	144	5.6	152	50	222	.3	2.4	.15	593	.81	1,870	174	49	83	4.8	1,050	7.6	10
Aug. 1-10	1,126	18	.01	49	12	142	5.6	153	47	220	.3	2.4	.17	581	.79	1,770	176	50	83	4.7	1,050	7.5	6
Aug. 11-20	1,516	15	.00	48	13	128	5.5	150	49	218	.4	2.5	.16	581	.79	2,380	174	50	82	4.6	1,030	7.6	12
Aug. 21-31	1,419	17	.00	48	13	126	5.4	154	49	212	.3	2.3	.10	574	.78	2,200	174	48	82	4.5	1,020	7.6	9
Sept. 1-10	1,445	20	.01	48	13	134	5.4	154	48	204	.4	2.0	.17	565	.77	2,200	174	48	82	4.4	1,020	7.6	5
Sept. 11-20	1,460	21	.01	45	13	130	5.0	148	48	196	.5	2.6	.15	548	.75	2,160	166	44	82	4.4	988	7.7	7
Sept. 21-30	1,48	30	.01	60	18	147	5.8	230	54	212	1.1	8.7	.18	668	.91	267	224	35	58	4.3	1,150	7.4	7
Weighted average	362	18	0.01	48	14	150	5.6	153	50	233	0.4	2.4	0.15	611	0.81	597	178	52	64	4.9	1,090	--	--

COLORADO RIVER BASIN

GILA RIVER BASIN--Continued

SALT RIVER AT STEWART MOUNTAIN DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 [Once-daily temperature measurement generally between 8:30 a.m. and 9 a.m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	70	62	57	55	55	--	58	--	61	65	66
2	79	71	62	54	55	55	--	58	57	61	65	67
3	79	69	62	55	55	52	58	59	59	61	65	67
4	79	a 69	62	54	54	54	58	59	58	62	65	67
5	79	69	61	53	54	54	58	60	58	61	66	67
6	78	69	61	53	54	55	59	60	58	62	66	67
7	77	69	59	54	55	55	59	61	58	62	66	67
8	77	68	58	54	55	56	58	60	59	61	66	67
9	78	68	59	54	54	55	58	61	59	62	66	67
10	78	68	56	54	55	55	58	61	60	62	65	67
11	77	68	58	54	55	54	57	61	60	62	65	67
12	77	68	58	58	54	53	57	57	60	64	65	67
13	77	67	59	58	54	52	57	57	60	64	65	67
14	a 78	67	59	53	50	52	57	57	60	64	65	68
15	75	67	59	53	54	52	58	58	60	64	65	67
16	75	67	59	53	54	55	58	58	60	65	65	68
17	77	67	57	51	54	54	58	58	60	65	65	70
18	75	65	57	55	54	54	58	58	62	65	65	73
19	76	63	59	55	54	55	59	58	60	65	65	74
20	76	65	57	54	54	52	58	58	60	65	65	76
21	76	64	57	55	55	56	57	57	61	65	66	76
22	76	64	55	55	55	55	57	57	62	65	66	76
23	76	65	57	56	55	55	57	57	62	65	65	78
24	75	64	56	50	55	55	59	58	68	65	65	79
25	74	62	57	55	55	55	59	60	68	65	65	79
26	71	61	57	54	55	55	59	60	64	65	65	79
27	70	62	57	55	55	55	59	60	62	65	65	76
28	b 72	62	57	54	55	57	57	60	62	65	65	77
29	72	62	57	55	59	57	58	60	62	65	65	77
30	72	62	56	55	--	57	58	61	62	65	66	76
31	70	--	55	55	--	58	--	61	--	65	66	--
Average	76	66	58	54	55	55	58	59	61	64	65	71

a Observation made at 1 p.m.

b Observation made at 11 a.m.

GILA RIVER BASIN--Continued
VERDE RIVER BELOW BARTLETT DAM, ARIZ.

LOCATION --At gaging station 2 1/4 miles downstream from Bartlett Dam, Maricopa County, and 3 1/2 miles upstream from Camp Creek.

DRAINAGE AREA --6188 square miles (revised).

RECORDS AVAILABLE --Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

EXTREMES 1951-52 --Dissolved solids: Maximum, 408 ppm Nov. 21-30; minimum, 158 ppm Jan. 11-20.

Hardness: Maximum, 282 ppm Dec. 11-20; minimum, 108 ppm Jan. 11-20.

Specific conductance: Maximum observed, 673 microhms Dec. 20; minimum observed, 234 microhms Jan. 13-15.

Water temperatures: Maximum observed, 79°F Aug. 6; minimum observed, 41°F Jan. 30.

EXTREMES 1950-52 --Dissolved solids: Maximum, 450 ppm July 11-20, 1951; minimum, 158 ppm Jan. 11-20, 1952.

Hardness: Maximum, 282 ppm Dec. 11-20, 1951; minimum, 108 ppm Jan. 11-20, 1952.

Specific conductance: Maximum observed, 725 microhms June 28, 1951; minimum observed, 234 microhms Jan. 13, 15, 1952.

Water temperatures: Maximum observed, 90°F July 18, Aug. 14, 1951; minimum observed, 41°F Jan. 30, 1952.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carb. sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 100°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhms at 25°C)	pH	Color			
														Parts per million	Tons per acre-foot	Calcium	Non-carbonate							
Oct. 1-10, 1951	561	23	0.05	45	22	22	6.2	206	6	49	15	0.6	2.2	0.12	288	0.39	436	203	24	19	0.7	480	--	22
Oct. 11-20	617	20	.02	50	27	29	6.0	251	0	65	22	.4	2.2	.09	339	.46	565	236	30	21	.8	592	8.1	12
Oct. 21-31	486	29	.03	51	30	34	5.8	249	10	71	24	.4	1.9	.20	372	.51	488	250	30	22	.9	600	--	11
Nov. 1-10	283	25	.01	49	31	35	4.4	268	0	72	23	.4	1.6	.19	377	.51	288	250	30	23	1.0	611	7.9	10
Nov. 11-20	313	24	.01	52	33	32	4.2	259	11	75	25	.4	1.2	.26	366	.54	335	285	34	20	.9	627	--	10
Nov. 21-30	253	26	.01	50	35	39	4.8	282	6	76	26	.3	1.3	.27	408	.55	279	269	28	24	1.0	655	--	5
Dec. 1-10	229	23	.01	52	36	36	5.4	280	7	77	26	.4	1.0	.28	390	.53	241	278	36	22	.9	642	--	3
Dec. 11-20	253	20	.01	54	36	37	6.0	276	11	78	26	.4	1.2	.22	394	.54	269	282	38	22	1.0	653	--	4
Dec. 21-31	131	18	.02	53	36	37	6.4	290	6	75	26	.3	1.5	.28	393	.53	139	280	32	22	1.0	655	--	3
Jan. 1-3, 1952	155	20	.02	46	26	23	--	246	0	49	19	--	1.5	--	308	.42	129	222	20	18	.7	518	7.6	--
Jan. 4-10	113	16	.02	38	11	9.4	6.0	157	0	19	9.2	5	2.2	1.1	196	.27	59.8	140	12	12	.3	297	7.5	--
Jan. 11-20	126	15	.03	27	10	7.2	7.0	124	0	17	6	5	1.6	--	158	21	53.8	108	7	12	.3	240	7.5	30
Jan. 21-31	141	15	.03	31	11	9.1	7.4	135	0	23	10	5	1.2	.20	177	.24	67.4	122	12	14	.4	274	7.5	20
Feb. 1-10	363	17	.08	29	13	10	2.2	141	0	21	6.5	.4	1.1	.17	180	.24	176	126	10	14	.4	286	7.8	40
Feb. 11-20	451	15	.07	28	12	10	2.2	132	0	21	6.8	4	1.1	.05	171	.23	208	120	12	15	.4	274	7.9	40
Feb. 21-29	1,034	15	.06	28	12	10	2.2	136	0	20	6.8	4	1.3	.08	173	24	483	120	8	15	.4	274	7.9	40
Mar. 1-10	636	19	.05	28	12	10	2.3	137	0	20	6.5	4	1.1	.19	177	.24	304	120	7	15	.4	274	7.8	40
Mar. 11-20	309	17	.05	30	12	11	2.3	143	0	21	7.3	4	1.4	.07	182	25	152	124	8	16	.4	268	7.7	30
Mar. 21-31	1,678	15	.13	30	12	12	2.1	144	0	21	7.0	.2	1.1	.15	188	.26	852	124	6	17	.5	263	6.8	30
Apr. 1-10	2,752	16	.04	31	13	12	2.1	149	0	24	8.2	.2	.6	.20	194	.26	1,440	131	9	16	.5	303	7.6	20
Apr. 11-20	1,986	18	.10	31	14	14	2.1	160	0	25	8.0	.2	.7	.13	200	.27	1,070	135	4	18	.5	312	7.8	20

GILA RIVER BASIN--Continued
VERDE RIVER BELOW BARTLETT DAM, ARIZ--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 100°C)			Hardness as CaCO ₃		Percent sodium ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate					
Apr. 21-30, 1952	1,049	20	0.16	33	14	14	2.1	160	0	25	8.8	0.2	0.7	0.28	204	0.28	578	140	9	18	0.5	323	7.7	20
May 1-10,	1,197	17	.05	30	14	13	1.9	152	0	24	8.8	.2	.7	.14	194	.26	627	132	8	17	.5	308	7.7	20
May 11-20,	502	20	.06	29	13	12	2.0	146	0	21	7.0	.3	.6	.09	181	.25	245	126	6	17	.5	284	7.8	10
May 21-31,	1,383	20	.08	28	12	12	1.9	140	0	19	7.2	.3	.3	.09	176	.24	657	120	5	18	.5	273	7.7	15
June 1-10,	1,262	21	.09	28	11	12	1.9	137	0	18	6.5	.3	.9	.07	175	.24	598	115	2	18	.5	287	7.7	16
June 11-20,	1,839	19	.10	27	11	12	2.0	138	0	18	7.0	.3	.8	.10	172	.23	854	112	0	18	.5	265	7.7	16
June 21-30,	2,084	19	.06	31	13	14	2.3	157	0	21	8.5	.3	.5	.07	193	.26	1,090	131	2	19	.5	304	7.8	16
July 1-10,	1,241	18	.02	33	15	12	2.2	165	0	22	8.0	.2	.9	.17	202	.27	877	144	9	15	.4	325	7.6	10
July 11-20,	1,073	20	.02	33	15	13	2.3	166	0	23	8.5	.2	1.4	.17	203	.28	594	144	8	16	.5	334	7.7	7
July 21-31,	1,048	24	.01	34	15	13	2.3	172	0	25	9.0	.2	.8	.16	213	.29	603	146	6	16	.5	340	7.5	6
Aug. 1-10,	1,356	23	.00	37	16	16	2.5	181	0	27	12	.2	.9	.08	231	.31	846	158	10	18	.6	363	7.8	12
Aug. 11-20,	1,680	19	.01	41	19	19	2.8	204	0	34	14	.2	.9	.17	264	.36	470	180	14	18	.6	415	7.7	7
Aug. 21-31,	375	19	.01	45	22	22	3.2	223	0	42	17	.2	1.4	.19	282	.38	788	203	20	19	.7	466	7.8	8
Sept. 1-10,	1,037	16	.01	46	24	26	3.5	234	0	51	17	.2	1.4	.19	299	.41	837	214	22	21	.8	504	7.8	8
Sept. 11-20,	378	20	.01	43	27	30	3.5	226	0	65	22	.3	1.3	.20	326	.44	533	218	34	23	.9	530	7.7	6
Sept. 21-30,	846	16	.01	38	25	27	3.3	202	0	61	20	.3	1.0	.18	294	.40	672	198	32	22	.8	482	7.8	5
Weighted average	833	21	0.06	34	16	16	2.7	171	--	30	11	0.3	0.9	0.15	221	0.30	497	151	11	18	0.6	351	--	--

a Computed as sum of dissolved constituents.

GILA RIVER BASIN--Continued

VERDE RIVER BELOW BARTLETT DAM, ARIZ.--Continued

Temperature (°F) of water, water October 1951 to September 1952

/Once-daily temperature measurement generally made between 6 a. m. and 9 a. m./

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

a Observation made between 9:30 a. m. and 10 a. m.

b Observation made between 2 p. m. and 3 p. m.

GILA RIVER BASIN--Continued

AGUA FRIA RIVER BELOW LAKE PLEASANT DAM, ARIZ.

LOCATION.--At water-stage recorder on canal 1½ miles downstream from Lake Pleasant Dam on Agua Fria River, 19 miles north of Marinette, Maricopa County, and 23 miles upstream from New River.

DRAINAGE AREA.--1,460 square miles, approximately (above Lake Pleasant Dam).

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 288 ppm Jan. 21-28; minimum, 168 ppm Jan. 29-31, Feb. 1-10.

Hardness: Maximum, 181 ppm Jan. 21-28; minimum, 108 ppm June 21-30.

Specific conductance: Maximum observed, 487 micromhos Jan. 23; minimum observed, 241 micromhos Jan. 29.

Water temperatures: Maximum observed, 47° F May 6-7, 11; minimum observed, 41° F on several days during January and February.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Values shown as extremes relate to canal samples only. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Samples collected from canal when there was flow, otherwise from Lake Pleasant at headgates, and are those for which no discharge is shown. Records of discharge furnished by Surface Water Branch, Tucson District for water year October 1951 to September 1952.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 5, 12, 19, 26, 1951	--	--	--	30	6.7	14	--	--	--	--	--	--	--	177	0.24	--	102	--	23	0.6	247	--	--
Nov. 2, 9, 16, 23, 30	--	--	--	29	6.3	11	--	--	--	--	--	--	--	156	.20	--	98	--	20	.5	224	--	--
Dec. 7, 14, 21, 28	--	--	--	32	7.3	11	--	--	--	--	--	--	--	169	.23	--	110	--	18	.5	251	--	--
Jan. 4, 11, 18, 1952	--	--	--	32	6.7	11	--	--	--	--	--	--	--	168	.23	--	108	--	18	.5	255	--	--
Jan. 21-28	28.6	25	0.03	46	16	27	7.6	209	35	26	0.3	1.0	0.11	288	.36	22.2	181	10	23	.9	461	7.4	10
Jan. 29-31, Feb. 1-10	7.38	19	.05	32	7.8	8.8	3.6	129	18	6.5	.3	.6	.04	168	.23	3.35	112	6	14	.4	253	7.7	20
Feb. 11-20	10.8	26	.04	36	9.3	15	4.4	150	21	12	.3	.9	.11	206	.38	6.01	126	0	20	.6	305	7.7	20
Feb. 21-26	38.7	36	.04	39	12	25	4.4	178	29	18	.4	1.7	.20	295	.48	27.7	147	0	26	.9	384	7.7	20
Mar. 1-10	38.2	24	.08	33	9.5	13	5.0	142	23	10	.4	1.6	.08	202	.27	20.8	122	5	18	.5	298	7.5	30
Mar. 11-20	28.6	19	.10	32	9.4	12	5.2	133	21	11	.3	1.6	.06	196	.25	14.4	118	10	17	.5	279	7.6	40
Mar. 21-31	15.9	23	.13	33	9.8	13	5.4	142	19	12	.3	1.6	.07	198	.27	8.50	123	6	18	.5	288	7.3	30
Apr. 1-10	41.3	22	.07	34	11	14	4.6	154	23	12	.3	1.5	.09	204	.28	22.7	130	4	18	.5	304	7.4	30
Apr. 11-20	20.3	16	.04	30	9.5	16	3.1	137	22	10	.4	1.4	.00	189	.26	10.4	114	2	23	.7	289	7.8	22
Apr. 21-30	25.7	11	.02	31	9.8	17	2.9	143	22	9.8	.4	1.4	.10	187	.25	13.0	116	1	23	.7	306	7.8	22
May 1-10	12.6	12	.04	33	9.7	17	3.0	149	22	9.2	.4	1.8	.13	193	.26	6.57	122	0	23	.7	313	7.6	22
May 11-20	28.4	17	.03	34	9.8	18	3.3	154	23	11	.4	1.5	.08	203	.28	15.6	126	0	23	.7	319	7.7	17
May 21-31	89.0	23	.03	32	9.6	17	3.3	142	24	11	.4	1.6	.10	199	.27	47.8	120	3	23	.7	302	7.9	17

June 1-10, 1952...	103	22	.01	30	8.5	14	3.2	128	23	8.5	4	1.4	.08	180	.24	50.1	110	5	21	.6	273	8.1	18
June 11-20	129	18	.02	30	8.3	15	3.3	128	23	8.2	4	2.0	.08	177	.24	61.6	109	4	22	.6	271	8.0	18
June 21-30	171	20	.03	30	8.2	14	3.3	128	22	8.2	4	2.7	.08	179	.24	82.6	108	4	21	.6	272	7.9	19
July 1-10	219	24	.01	31	8.2	12	3.2	134	22	6.0	3	1.5	.17	188	.26	111	111	1	18	.5	273	7.6	20
July 11-20	250	27	.01	31	8.4	12	3.2	132	22	7.0	3	1.5	.14	191	.26	129	112	4	18	.5	277	7.6	15
July 21-31	285	20	.01	31	8.1	12	3.2	134	21	6.5	3	1.1	.14	180	.24	143	111	1	18	.5	275	7.7	20
Aug. 1-10	310	22	.01	33	8.3	12	3.3	136	21	7.0	2	1.1	.17	186	.25	156	116	5	18	.5	282	7.7	17
Aug. 11-20	310	20	.01	33	8.2	11	3.2	136	20	6.5	3	.8	.16	182	.25	152	116	4	17	.4	276	7.8	20
Aug. 21-31	247	23	.02	34	9.2	11	3.1	142	21	7.0	4	.8	.10	185	.25	123	123	6	16	.4	284	7.6	20
Sept. 1-10	276	17	.03	34	9.4	11	3.2	144	20	7.5	3	.9	.09	186	.25	138	124	6	16	.4	286	7.7	20
Sept. 11-20	175	17	.01	35	9.3	11	3.1	148	19	8.3	3	1.0	.08	190	.26	88.6	126	4	16	.4	290	7.6	15
Sept. 21-30	51.6	24	.02	36	9.4	12	3.3	154	19	7.2	3	2.7	.08	199	.27	27.7	128	2	16	.5	302	7.3	15
Weighted average	a 117	21	0.02	33	8.8	13	3.3	138	20	7.8	0.3	1.3	0.12	188	0.26	41.3	118	6	19	0.5	284	--	--

a Average for 254 days of flow.

COLORADO RIVER BASIN

GILA RIVER BASIN--Continued

AGUA FRIA RIVER BELOW LAKE PLEASANT DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

a Observation made at 10 a. m.

GILA RIVER BASIN--Continued
GILA RIVER BELOW GILLESPIE DAM, ARIZ.

LOCATION.--About 1 mile below gaging station on Gila Bend Canal which is 200 feet below Gillespie Dam, Maricopa County, and 8 miles downstream from Hassayampa Dam. Gila Bend Canal diverts from left bank and Enterprise Canal diverts from right bank at Gillespie Dam.

RECORDS AVAILABLE.--Chemical and physical data from 1950 to September 1952.

WATER TEMPERATURES.--Chemical and physical data from 1950 to September 1952.

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Chemical analyses, in parts per million, water year October 1951 to September 1952

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		Permeability	Soil absorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per foot	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1951...	60.7	46	0.01	444	192	1,550	11	382	1,300	2,560	2.4	35	3.3	6,330	8.61	1,040	1,900	1,580	64	15	9,860	7.6	7
Oct. 11-20, 1951...	56.5	37	0.01	449	200	1,570	11	390	1,310	2,650	2.2	34	3.3	6,450	8.77	984	1,940	1,620	64	15	10,000	7.6	7
Oct. 21-31, 1951...	67.1	31	0.02	436	189	1,560	6.0	409	1,240	2,520	2.2	28	3.4	6,210	8.45	1,130	1,860	1,530	64	16	9,630	7.7	7
Nov. 1, 1951...	381	11	--	86	29	179	6.8	142	171	305	4	6.5	4.8	865	1.18	880	334	217	53	4.3	1,510	7.4	--
Nov. 2-3, 1951...	149	18	--	208	78	574	8.8	234	479	970	6	13	--	2,460	3.35	980	824	632	60	8.7	4,080	7.6	17
Nov. 4-10, 1951...	77.6	31	0.01	420	181	1,400	11	408	1,150	2,330	2.0	37	3.0	5,760	7.83	1,210	1,760	1,460	63	14	8,920	7.7	7
Nov. 11-20, 1951...	61.5	31	0.01	450	188	1,570	7.6	451	1,240	2,570	2.4	35	3.1	6,320	8.60	1,050	1,900	1,530	64	16	9,800	7.6	3
Nov. 21-30, 1951...	71.3	28	0.02	432	191	1,470	7.0	408	1,220	2,420	2.2	28	2.8	6,000	8.16	1,160	1,860	1,530	63	15	9,220	7.7	5
Dec. 1-10, 1951...	68.2	30	0.02	432	188	1,480	8.4	408	1,210	2,440	2.2	31	2.7	6,020	8.19	1,110	1,850	1,520	63	15	9,250	7.7	3
Dec. 11-20, 1951...	66.3	32	0.02	428	187	1,500	9.2	425	1,220	2,430	2.2	29	2.7	6,050	8.23	1,080	1,840	1,490	64	15	9,270	7.6	5
Dec. 21-31, 1951...	70.6	32	0.02	426	184	1,450	7.0	419	1,180	2,370	2.2	31	2.6	5,890	8.01	1,120	1,820	1,480	63	15	9,040	7.5	7
Jan. 3-4, 1952...	144	18	0.02	104	39	234	7.2	153	254	375	6	6.9	6.5	1,110	1.51	432	420	284	54	5.0	1,910	7.8	7
Jan. 5, 1952...	110	19	--	166	68	461	6.4	220	430	765	1.1	12	--	2,040	2.77	606	684	513	59	7.6	3,420	7.7	--
Jan. 6-10, 1952...	105	29	0.02	348	144	1,100	7.2	364	917	1,800	1.8	27	2.4	4,560	2.79	1,260	1,400	1,160	62	13	7,110	7.8	10
Jan. 11-16, 20...	108	38	0.02	408	176	1,400	8.0	414	1,170	2,260	2.0	17	2.8	5,700	7.75	1,060	1,400	1,400	63	15	8,680	7.6	10
Jan. 17, 1952...	341	21	--	150	31	769	311	179	308	500	1.2	6.7	8.0	1,410	1.92	1,280	902	386	57	6.1	2,410	7.4	--
Jan. 18-19, 1952...	142	31	--	272	110	769	8.0	309	573	1,410	1.6	16	--	3,340	4.54	1,260	1,300	878	59	5.9	5,530	7.7	20
Jan. 21-22, 1952...	460	25	0.03	88	25	155	155	176	245	325	2.6	2.6	2.6	22	1.91	1,068	726	346	31	5.8	1,500	7.7	5
Jan. 23-24, 1952...	208	26	--	184	65	316	7.4	227	464	860	1.2	10	8.6	2,060	2.60	1,560	1,400	1,110	62	12	2,800	7.5	--
Jan. 25-31, 1952...	133	34	0.02	330	141	1,050	7.4	b 353	626	1,780	1.4	11	1.6	4,360	5.92	1,560	1,400	1,110	62	12	6,960	--	--

a Includes equivalent of 8 parts per million of carbonate (CO₃).

b Includes equivalent of 22 parts per million of carbonate (CO₃).

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Samples from canal are believed to be representative of total flow passing Gillespie Dam, including spill and amounts diverted into Gila Bend and Enterprise Canals. Record of separate and combined discharge for the river and canals for water year October 1951 to September 1952 given in WSP 1243.

GILA RIVER BASIN--Continued
GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Feb. 1-10, 1952...	97.4	37	0.01	402	175	1,350	11	414	1,130	2,240	2.2	22	2.7	5,570	7.58	1,460	1,720	1,380	63	14	8,470	7.7	10
Feb. 11-20	84.8	34	0.01	410	177	1,350	11	403	1,150	2,290	2.2	23	2.6	5,650	7.68	1,290	1,760	1,420	62	14	8,670	7.8	8
Feb. 21-29	81.6	30	0.01	412	177	1,370	12	283	1,140	2,350	2.2	21	2.7	5,710	7.77	1,260	1,760	1,430	63	14	8,920	7.8	8
Mar. 1-10	76.9	33	0.01	418	177	1,410	11	458	1,170	2,360	2.2	22	2.7	5,810	7.90	1,210	1,770	1,420	63	15	8,880	7.5	8
Mar. 11-20	105	31	0.01	358	155	1,240	10	374	1,010	2,030	2.0	21	2.4	5,040	6.85	1,430	1,770	1,220	64	14	7,710	7.6	15
Mar. 21-31	80.2	32	0.01	406	177	1,430	11	410	1,170	2,350	2.2	25	2.9	5,810	7.90	1,260	1,740	1,400	64	15	8,650	7.8	9
Apr. 1-10	77.2	29	0.01	410	178	1,440	12	408	1,210	2,370	2.4	21	2.9	5,870	7.98	1,220	1,760	1,420	64	15	8,760	7.8	7
Apr. 11-20	86.1	34	0.00	366	164	1,400	11	391	1,120	2,190	2.2	27	2.3	5,510	7.49	1,310	1,890	1,270	66	15	8,510	7.7	5
Apr. 21-30	79.0	40	0.00	370	164	1,430	11	403	1,150	2,210	2.0	27	2.3	5,600	7.62	1,190	1,600	1,270	66	16	8,880	7.7	5
May 1-10	87.1	38	0.01	382	182	1,390	11	372	1,100	2,210	1.8	34	2.0	5,520	7.51	1,000	1,640	1,340	65	15	8,360	7.5	4
May 11-20	95.7	36	0.01	378	185	1,390	11	373	1,130	2,200	1.8	32	2.0	5,530	7.52	832	1,620	1,320	65	15	8,340	7.6	3
May 21-31	49.5	31	0.03	362	157	1,360	11	354	1,080	2,140	1.8	28	1.8	5,340	7.26	714	1,550	1,360	65	15	8,140	7.5	3
June 1-10	44.5	32	0.01	366	187	1,430	11	385	1,170	2,270	1.8	31	1.8	5,640	7.67	678	1,600	1,320	66	16	8,540	7.5	3
June 11-20	38.1	35	0.01	380	182	1,520	12	368	1,160	2,310	2.6	15	2.7	5,720	7.76	678	1,450	1,370	69	17	8,520	7.3	46
June 21-30	37.7	33	0.02	360	186	1,460	12	352	1,160	2,430	2.4	31	3.0	5,560	7.51	538	1,500	1,270	69	18	8,450	7.3	46
July 1-10	28.6	33	0.01	384	186	1,360	11	348	1,160	2,100	2.4	29	2.4	5,740	7.63	412	1,550	1,360	66	18	8,170	7.1	15
July 11-20	34.6	33	0.01	384	186	1,360	11	348	1,160	2,100	2.4	29	2.4	5,740	7.63	412	1,550	1,360	66	18	8,170	7.1	15
July 21-27, 29	40.1	28	0.01	344	145	1,380	12	312	1,130	2,090	2.4	27	2.4	5,290	7.19	573	1,470	1,210	67	15	8,130	7.5	10
July 28, 30-31	106	19	0.01	368	29	284	8.5	191	244	400	9	11	47	1,190	1.62	341	358	202	63	6.5	2,020	7.7	30
Aug. 1	70	25	0.01	227	87	850	11	300	693	1,270	1.6	21	2.0	3,330	4.53	629	924	678	66	12	5,260	7.9	15
Aug. 2-10	32.2	33	0.01	356	152	1,360	12	348	1,130	2,100	2.2	28	2.4	5,340	7.26	464	1,510	1,230	66	15	8,040	7.8	7
Aug. 11-15	28.2	33	0.02	372	157	1,420	12	401	1,130	2,100	2.2	27	3.0	5,540	7.53	422	1,570	1,240	66	16	8,320	7.4	35
Aug. 16-17	114	26	--	64	16	124	8.4	137	102	198	--	11	--	616	1.84	190	236	114	53	3.6	1,090	7.7	45
Aug. 18-21	159	28	0.02	96	28	304	8.1	243	269	394	9	7.9	--	1,250	1.70	537	354	166	64	7.0	2,110	7.9	30
Aug. 22-31	52.2	32	0.01	344	134	1,180	12	405	986	1,870	1.8	24	2.6	4,760	6.50	674	1,410	1,080	64	14	7,340	7.4	29
Sept. 1-10	34.2	32	0.01	356	154	1,360	11	330	1,170	2,080	2.2	36	2.7	5,360	7.29	495	1,520	1,250	66	15	8,070	7.7	5
Sept. 11-20	30.3	32	0.01	366	184	1,420	11	335	1,190	2,200	2.4	31	3.2	5,560	7.59	456	1,590	1,310	66	15	8,660	7.6	5
Sept. 21-30	29.0	30	0.02	366	160	1,430	11	325	1,200	2,210	2.4	35	3.1	5,600	7.62	438	1,570	1,300	66	16	8,580	7.6	5
Weighted average	71.1	31	0.01	363	149	1,220	9.8	355	1,000	1,980	1.9	24	2.4	4,940	6.72	948	1,490	1,200	64	14	7,620	--	--

GILA RIVER BASIN--Continued

GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /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	75	62	55	53	a 54	60	65	70	a 78	76	82	80
2	75	60	55	51	55	58	65	70	73	76	81	80
3	73	60	53	50	55	55	65	74	75	76	83	80
4	70	56	57	48	55	55	65	70	74	75	83	80
5	68	--	58	47	55	55	66	75	73	77	83	82
6	70	60	50	47	55	56	68	75	74	a 80	84	80
7	67	60	53	50	a 55	57	69	75	a 75	80	83	81
8	70	57	50	50	56	60	69	75	75	80	85	80
9	70	b 65	50	50	54	60	69	75	75	83	83	81
10	70	66	48	50	55	57	69	73	75	82	80	77
11	70	b 69	50	51	55	55	67	75	72	80	81	72
12	68	64	54	50	55	58	67	70	74	75	81	66
13	68	60	a 50	53	55	57	68	73	72	a 60	84	65
14	65	60	50	54	51	56	71	74	75	75	82	68
15	64	60	53	52	51	57	67	74	75	77	82	68
16	62	60	50	51	52	58	66	70	70	72	81	75
17	64	60	50	52	52	57	67	73	75	80	83	76
18	65	60	50	54	51	56	66	72	80	80	80	78
19	65	57	53	54	54	58	68	--	60	84	82	80
20	65	65	53	51	53	58	67	--	75	79	83	80
21	67	60	47	51	53	56	67	73	75	78	81	78
22	65	60	45	52	53	58	65	73	75	79	82	76
23	61	60	46	52	55	58	65	73	80	75	80	75
24	61	60	50	53	55	58	65	74	80	83	80	74
25	a 67	58	55	52	54	59	67	74	75	82	82	73
26	63	57	54	50	55	60	67	--	75	85	81	70
27	60	57	54	53	55	60	65	--	74	87	81	70
28	60	57	55	52	55	65	65	a 77	73	88	60	70
29	62	57	56	52	60	65	65	a 77	75	80	60	70
30	67	57	57	54	--	65	65	a 75	74	80	80	70
31	63	--	57	53	--	65	--	72	--	78	80	--
Average	66	60	52	51	54	58	67	73	75	79	82	75

a Observation made between 10 a. m. and 12 m.

b Observation made between 1 p. m. and 2:30 p. m.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT YUMA, ARIZ.

LOCATION --At gaging station 1,800 feet downstream from highway bridge at Yuma, Yuma County, half a mile upstream from Yuma Main Canal wasteway, 4 miles downstream from Gila River, 7 miles upstream from boundary between California and Mexico and 19 miles downstream from Imperial Dam.
 DRAINAGE AREA --242,900 square miles, approximately including all closed basins entirely within the drainage boundary.
 RECORDS AVAILABLE --Chemical analyses: September 1928 to September 1928, October 1942 to February 1943, June 1947 to July 1952.
 EXTREMES --See Yuma Main Canal below Colorado River Siphon at Yuma, Ariz.
 REMARKS --Records of discharge for water year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, October 1951 to July 1952

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 adsorption ratio	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Calcium magnesium		
Oct. 8, 1951	2,930							165		280	95		--	--			346	211	1,110
Nov. 6	3,920							169		277	91		--	--			340	202	1,090
Dec. 11	4,190							170		281	94		--	--			350	210	1,120
Jan. 10, 1952	9,900							166		271	84		--	--			328	192	1,060
Mar. 10	16,000							167		271	82		--	--			326	199	1,040
Apr. 8	12,000							170		271	86		--	--			328	204	1,070
Apr. 11	12,200							171		265	89		--	--			336	196	1,060
May 12	13,800							172		267	91		--	--			--	--	1,090
June 9	12,900							175		300	87		1.4	--			--	--	1,100
July 18	7,620	13						172		298	89		.8	--			--	--	1,090

DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM

YUMA MAIN CANAL BELOW COLORADO RIVER SIPHON, AT YUMA, ARIZONA.

LOCATION.--At gaging station on Yuma Main Canal below Colorado River siphon at Yuma, Yuma County, on Arizona side of river, 3 miles downstream from Siphon drop power plant.

RECORDS AVAILABLE.--Chemical analyses: September 1926 to September 1928, October 1942 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 736 ppm May Sept. 22-24, 26, 29-30.

Hardness: Maximum, 347 ppm Dec. 11-14, 17-20; minimum, 308 ppm Sept. 22-24, 26, 29-30.

Specific conductance: Maximum daily, 1,110 microhos on Sept. 22-24, 26, 29-30; minimum daily, 951 microhos Sept. 29-30.

EXTREMES, 1943-52.--Dissolved solids: Maximum, 760 ppm Apr. 21-26, May 30-31, 1947; minimum, 562 ppm Dec. 12-16, 19-20, 1949.

Hardness: Maximum, 372 ppm June 1-3, 1944; minimum, 276 ppm Dec. 12-16, 19-20, 1949.

Specific conductance: Maximum daily, 1,150 microhos on several days in May and June, 1944 and June 1947; minimum daily, 828 microhos Nov. 21, 1949.

Siphon conduits collected prior to February 1943 were from gaging station on the Colorado River at Yuma. Values reported for dissolved solids are residues

REMARKS.--Samples collected prior to February 1943 were from gaging station on the Colorado River at Yuma. Values reported for dissolved solids are residues

can be used for comparison. Records of specific conductance of daily samples available in district office at Albuquerque, New Mexico. Records of discharge for water

year October 1951 to September 1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate magnesium					
Oct. 1-5, 8-10, 1951	721	18	18	81	30	102	4.5	166	287	88		0.8	--	700	0.95	1,360	326	190	40	2.5	1,050	--	--
Oct. 11-12, 15-19	658	18	18	82	31	102	4.6	170	286	88		0.8	0.28	712	.97	1,260	332	192	40	2.4	1,050	--	--
Oct. 23-26, 28-31	546	14	84	30	102	4.5	170	288	281	87		0.8	--	705	.96	1,040	333	194	40	2.4	1,050	--	--
Nov. 1-2, 5-9	418	14	84	30	102	4.6	170	291	288	88		0.8	--	707	.96	798	333	194	40	2.4	1,050	--	--
Nov. 11-12, 19-20	412	14	83	30	102	4.5	172	293	289	89		0.9	.30	711	.97	791	330	190	40	2.4	1,060	--	--
Nov. 21-23, 28-30	398	16	86	30	106	4.6	174	285	285	88		0.9	--	719	.98	773	338	196	40	2.5	1,030	--	--
Dec. 3-7, 10	280	13	87	30	106	4.2	186	281	281	86		0.8	--	719	.98	544	340	188	40	2.5	1,060	--	--
Dec. 11-14, 17-20	258	12	88	31	103	4.2	184	280	280	86		0.8	--	716	.97	499	347	186	39	2.4	1,060	--	--
Dec. 21, 24, 26-28																							
Jan. 2-4, 7-10, 1952	164	13	87	30	102	4.6	176	284	284	86		0.9	--	719	.98	318	340	186	39	2.4	1,060	--	--
Jan. 11-14, 18	302	16	86	30	--	4.2	168	278	84	84		0.9	--	699	.95	570	338	200	38	2.3	1,040	--	--
Jan. 11, 14-18	273	13	83	29	100	4.1	169	284	82	82		1.7	.11	703	.96	518	326	186	40	2.4	1,040	7.6	7.6
Jan. 21-25, 27-31	267	13	84	28	97	4.0	168	280	280	77		1.7	--	694	.94	500	324	187	39	2.3	1,010	7.7	7.7
Feb. 1, 4-8	468	15	86	28	100	4.1	172	286	81			1.6	--	714	.97	902	330	188	39	2.4	1,030	7.8	7.8
Feb. 11-15, 18-20	410	13	85	28	100	4.0	173	285	83			1.4	--	711	.97	787	327	185	40	2.4	1,030	7.8	7.8
Feb. 21, 25-26, 28-29																							
Mar. 3-7, 10	488	12	86	28	97	4.0	170	284	80			1.1	--	700	.95	941	330	190	39	2.3	1,020	7.9	7.9
Mar. 11-14, 17-20	484	13	88	28	99	4.2	168	284	80			1.6	--	688	.94	889	334	197	39	2.3	1,040	--	--
Mar. 21, 24-28, 31	510	14	85	27	96	4.3	166	272	79			1.6	.13	671	.91	924	323	187	39	2.3	1,000	--	--
Apr. 1-4, 7-10	494	13	82	26	95	4.3	166	270	79			1.6	--	667	.91	890	312	176	39	2.3	1,000	--	--
Apr. 11-14, 16-18	565	11	84	27	99	4.3	170	279	80			1.6	--	687	.93	1,050	320	181	40	2.4	1,030	--	--
Apr. 21-25, 28-30	670	13	86	28	101	4.6	174	289	87			1.6	.19	722	.98	1,310	334	191	39	2.4	1,080	--	--
Apr. 21-25, 28-30	458	14	87	28	102	4.6	175	296	88			1.6	--	735	1.00	909	336	192	39	2.4	1,100	--	--

DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM--Continued
YUMA MAIN CANAL BELOW COLORADO RIVER SIPHON, AT YUMA, ARIZ.--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 (residue at 180° C)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
May 1-2, 5-9, 1952	486	12		87	29	103	4.6	173	290	88		1.7	--	731	0.99	336	194	40	2.4	1,100	--	--
May 12-16, 19-20	495	13		86	29	102	4.6	176	285	88		1.7	--	734	1.00	338	194	39	2.4	1,110	--	--
May 21-23, 26-29	724	12		88	30	103	4.6	175	292	88		1.8	--	736	1.00	343	200	39	2.4	1,110	--	--
June 2-6, 9-10	731	12		90	29	107	4.6	174	288	90		1.6	--	730	.99	344	201	40	2.5	1,110	--	--
June 11-13, 16-20	731	14		90	29	108	4.8	175	288	89		1.9	--	733	1.00	344	200	40	2.5	1,100	--	--
June 23-27, 30	704	13		90	29	108	4.7	172	302	88		1.9	--	727	.99	344	202	40	2.5	1,110	--	--
July 1-3, 7-10	623	13		85	28	107	4.7	162	288	87		2.2	--	719	.98	327	194	41	2.6	1,090	--	--
July 11, 14-18	638	13		86	29	107	4.7	168	295	87		1.7	0.09	719	.98	334	196	41	2.5	1,080	--	--
July 21-25, 28-31	753	15		84	30	102	4.7	164	285	84		1.0	.17	702	.95	333	198	40	2.4	1,060	--	--
Aug. 1, 4-8	664	14		83	30	100	4.4	163	283	82		1.0	--	692	.94	330	197	39	2.4	1,040	--	--
Aug. 11-15, 18-20	754	23		85	29	96	4.4	166	272	82		1.1	--	683	.93	331	195	38	2.3	1,030	--	--
Aug. 21-23, 25-29	849	16		82	28	93	4.2	162	266	79		1.2	--	665	.90	320	187	38	2.3	1,010	--	--
Sept. 1-5, 8-10	665	16		81	29	91	4.2	163	261	76		1.2	--	652	.89	321	188	38	2.2	982	--	--
Sept. 11-12, 15-19	822	16		78	28	92	4.1	156	261	76		1.1	--	643	.87	310	182	39	2.3	974	--	--
Sept. 22-24, 26, 29-30	712	13		79	27	89	3.9	160	255	74		1.2	--	630	.86	308	177	38	2.2	954	--	--
Weighted average	a 549	14		85	29	100	4.4	169	283	84		1.4	--	700	0.95	331	192	39	2.4	1,080	--	--

a. Represents 71 percent of runoff for water year October 1951 to September 1952.

PART 10. THE GREAT BASIN

SEVIER LAKE BASIN

SEVIER RIVER NEAR LYNNDYL, UTAH

LOCATION --At bridge on State Highway 125, 1½ miles upstream from gaging station which is 3½ miles southwest of Lynndyl, Millard County.

DRAINAGE AREA --4,270 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES, 1951-52 --Dissolved solids: Maximum, 2,830 ppm April 21-28; minimum 864 ppm March 29-31.

Hardness: Maximum, 1,050 ppm Apr. 21-28; minimum, 424 ppm Mar. 29-31.

Specific conductance: Maximum daily, 4,620 micromhos Apr. 21; minimum daily, 1,340 micromhos Mar. 30.

Water temperatures: Maximum observed, 81°F Aug. 3; minimum observed, 33°F on many days during December to February.

EXTREMES, March 1951-September 1952 --Dissolved solids: Maximum, 2,830 ppm Apr. 21-28, 1952; minimum, 864 ppm Mar. 29-31, 1952.

Hardness: Maximum, 1,050 ppm Apr. 21-28, 1952; minimum, 424 ppm Mar. 29-31, 1952.

Specific conductance: Maximum daily, 4,620 micromhos Apr. 21, 1952; minimum daily, 1,340 micromhos Mar. 30, 1952.

Water temperatures: Maximum observed, 81°F Aug. 3, 1952.

REMARKS --Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1244.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate size				
Oct. 1-10, 1951...	65.1	18	0.05	90	100	330	9.2	304	398	605	0.2	0.8	--	1,600	2.18	636	386	53	2,580	7.9	10
Oct. 11-20, 1951...	39.6	17	.05	102	109	340	10	304	443	545	.1	.7	0.47	1,720	2.34	702	454	51	2,740	8.0	5
Oct. 21-31, 1951...	28.7	21	.04	125	121	364	17	324	514	632	.2	1.9	--	1,980	2.71	810	544	51	3,170	7.9	5
Nov. 1-10, 1951...	50.5	20	.03	111	103	289	14	327	381	460	.2	2.9	--	1,370	2.14	700	432	47	2,530	7.9	10
Nov. 11-20, 1951...	48.2	17	.03	104	91	254	13	304	316	406	.2	2.2	.32	1,330	1.81	618	370	44	2,160	7.9	5
Nov. 21-30, 1951...	48.9	17	.03	104	99	268	14	311	360	456	.1	1.8	--	1,470	2.00	666	412	46	2,370	8.0	10
Dec. 1-10, 1951...	30.0	22	.04	140	139	430	14	382	562	685	.1	1.8	--	2,150	2.92	880	564	50	3,370	8.0	10
Dec. 11-20, 1951...	30.0	20	.03	134	117	401	8	385	505	640	.3	3.3	.47	2,060	2.72	816	528	51	3,110	7.9	8
Dec. 21-31, 1951...	30.0	20	.03	123	111	371	7.2	343	477	592	.2	3.9	--	1,880	2.58	702	485	51	2,930	7.9	5
Jan. 1-10, 1952...	30.0	20	.03	132	113	379	8.8	363	477	572	.2	3.1	.41	1,830	2.32	692	436	49	2,800	7.9	5
Jan. 11-20, 1952...	30.0	18	.03	118	98	310	8.0	325	409	505	.2	2.1	--	1,280	1.66	550	335	47	2,100	8.0	5
Jan. 21-30, 1952...	30.0	17	.04	109	79	237	4.8	263	303	370	.1	3.6	--	1,230	1.98	550	335	47	2,100	8.0	5
Jan. 31-24, 1952...	30.0	21	.05	140	148	480	7.5	338	658	765	.1	2.2	--	2,360	3.25	958	681	52	3,760	8.0	7
Feb. 1-10, 1952...	27.3	22	.05	146	147	510	7.5	342	656	795	.1	3.1	--	2,460	3.35	969	689	53	3,900	8.0	5
Feb. 11-20, 1952...	24.0	22	.05	131	138	452	7.5	350	613	720	.2	2.5	.29	2,280	3.10	944	657	51	3,100	7.9	5
Feb. 21-29, 1952...	23.2	21	.07	164	150	540	7.8	370	706	820	.2	3.9	--	2,600	3.54	1,030	723	53	4,000	7.6	5
Mar. 1-10, 1952...	23.0	23	.19	.08	160	148	522	8.6	350	670	.2	2.7	--	2,520	3.43	1,010	720	53	3,950	7.7	5
Mar. 11-22, 1952...	24.2	19	.07	155	135	457	8.2	346	594	740	.2	3.4	.34	2,280	3.10	942	658	51	3,580	7.8	5
Mar. 23-26, 1952...	32.6	16	.06	92	92	237	6.8	330	418	418	.3	4.3	--	1,310	1.78	608	414	46	2,160	7.7	10
Mar. 27, 1952...	42.0	15	.06	73	59	143	7.3	306	512	670	--	4.8	--	864	1.18	--	--	--	3,160	--	--
Mar. 29-31, 1952...	135	15	.06	73	59	143	7.3	194	224	242	.2	4.8	--	864	1.18	434	266	42	1,460	7.7	10

a Not included for computation of weighted average.

SEVIER LAKE BASIN--Continued
SEVIER RIVER NEAR LYNNDYL, UTAH--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (sum)			Hardness as CaCO ₃		Percent sodium	Boiling point ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Apr. 1, 1952 ^a	76.0	14	0.04	147	141	543	10	188	291	315	0.1	3.7	0.42	2,550	3.48	185	947	700	55	7.7	1,770	7.7	5
Apr. 2-10	28.8	20	0.04	132	138	487	8.3	301	698	845	0.1	1.4	0.42	2,550	3.17	127	897	653	54	7.1	3,680	7.7	5
Apr. 11-20	20.2	17	0.03	156	161	600	9.7	322	775	955	0.1	1.2	0.42	2,550	3.85	161	1,050	787	55	8.1	4,440	7.7	5
Apr. 21-28	21.1	17	0.03	156	161	600	9.7	322	775	955	0.1	1.2	0.42	2,550	3.85	161	1,050	787	55	8.1	4,440	7.7	5
Apr. 29-30	44.5	14	0.04	126	103	323	9.2	304	577	510	0.2	1.5	0.42	2,550	2.20	195	1,050	787	55	8.1	4,440	7.7	5
May 1-10	266	23	0.08	126	119	284	9.2	304	577	412	0.2	7.0	0.42	1,710	2.33	1,230	804	555	43	4.4	2,640	7.8	10
May 11-20	748	24	0.06	101	90	272	7.1	306	424	372	0.3	11	0.40	1,450	1.97	2,930	622	372	48	4.8	2,300	8.1	15
May 21-31	624	23	0.05	95	88	273	6.5	330	394	382	0.3	11	0.40	1,440	1.96	2,430	599	328	49	4.8	2,320	8.1	15
June 1-10	216	20	0.07	100	97	300	7.4	328	418	420	0.3	7.8	0.30	1,530	2.08	892	648	380	50	5.1	2,480	8.0	15
June 11-20	338	21	0.04	92	83	274	6.3	322	344	372	0.3	11	0.30	1,360	1.85	1,240	571	307	51	5.0	2,220	8.0	10
June 21-30	575	15	0.06	86	75	238	6.4	332	317	325	0.4	8.2	0.30	1,230	1.87	1,910	523	251	49	4.5	2,010	7.9	10
July 1-10	540	20	0.06	81	72	225	6.0	330	288	300	0.4	6.5	0.30	1,160	1.58	1,690	488	228	49	4.4	1,910	7.9	10
July 11-20	372	22	0.06	80	74	224	6.1	332	288	300	0.4	5.4	0.30	1,160	1.58	1,170	504	232	49	4.3	1,920	7.9	10
July 21-31	445	20	0.07	90	69	214	8.4	330	288	295	0.4	4.4	0.30	1,150	1.56	1,380	508	238	47	4.1	1,890	7.8	10
Aug. 1-10	215	20	0.06	82	73	214	6.5	334	273	298	0.4	4.4	0.32	1,140	1.55	662	504	231	48	4.1	1,870	7.9	10
Aug. 11-20	399	22	0.05	80	74	200	6.7	340	270	278	0.4	1.5	0.32	1,100	1.50	1,190	504	226	46	3.9	1,780	7.8	10
Aug. 21-31	363	22	0.05	78	73	202	7.7	320	271	282	0.4	3.6	0.32	1,100	1.50	1,080	494	232	47	3.9	1,760	7.9	10
Sept. 1-10	216	18	0.04	76	80	237	6.8	322	299	315	0.5	3.6	0.32	1,180	1.60	685	518	254	48	4.3	1,910	8.1	8
Sept. 11-20	223	19	0.04	78	83	237	7.1	341	306	330	0.2	4.1	0.37	1,240	1.69	747	536	256	49	4.5	1,990	7.9	10
Sept. 21-30	93.7	19	0.04	96	102	315	7.7	341	407	473	0.3	4.0	0.37	1,590	2.16	403	659	380	51	5.3	2,570	8.0	4
Weighted average	b 179	21	0.05	93	85	257	7.3	325	357	365	0.3	6.5	0.32	1,350	1.84	652	582	315	49	4.6	2,180	--	--

^a Not included for computation of weighted averages.

^b Represents 95.8 percent of runoff for water year October 1951 to September 1952.

SEVIER LAKE BASIN

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SEVIER LAKE BASIN--Continued

SEVIER RIVER NEAR LYNNDYL, UTAH--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

HUMBOLDT RIVER BASIN

HUMBOLDT RIVER NEAR RYE PATCH, NEV.

LOCATION.--Below Rye Patch Dam, 1,000 feet upstream from gaging station, and 2 miles northwest of Rye Patch, Pershing County.

DETAILED AREA.--13,700 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: December 1951 to September 1952.

Water temperatures: December 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 570 ppm June 1-10; minimum, 512 ppm Dec. 21-31.

Hardness: Maximum, 212 ppm Sept. 1-30; minimum, 171 ppm May 1-10.

Specific conductance: Maximum daily, 883 microhos May 17, 24; minimum daily, 784 Dec. 31, Sept. 10.

Water temperatures: Maximum observed, 76° F July 31, Aug. 1; minimum observed, 36° F on many days during December and January.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for gaging station near Rye Patch for water year October 1951 to September 1952 given in WSP 1244.

No appreciable inflow between gaging station and sampling point except during periods of local rains.

Chemical analyses, in parts per million, December 1951 to September 1952

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 at 180° C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (microhos at 25° C)	pH or
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
Dec. 11-20, 1951	2.1	47	0.04	45	17	106	14	301	72	67	0.8	0.4	0.43	517	0.70	2.93	182	0	53	3.4	798	7.9
Dec. 21-31	2.2	45	.05	44	17	110	15	316	69	67	.8	.4	--	512	.70	3.04	180	0	55	3.6	793	7.9
Jan. 1-10, 1952	2.2	47	.05	46	17	112	15	320	74	68	.7	.3	--	520	.71	3.09	186	0	54	3.6	802	8.1
Jan. 11-21	2.3	48	.02	46	17	101	14	322	68	67	.8	.5	.44	535	.73	3.32	186	0	52	3.2	810	7.7
Mar. 1-10	2.2	49	.01	44	18	107	14	320	70	74	.8	.3	.48	548	.75	3.26	184	0	54	3.4	831	7.9
Mar. 11-20	38.9	47	.02	42	18	109	14	318	70	75	.8	.5	.48	548	.74	3.26	178	0	55	3.5	827	8.0
Mar. 21-31	66.5	41	.02	43	17	107	14	314	70	74	.8	.5	--	538	.73	3.06	178	0	54	3.5	827	7.8
Apr. 1-10	101	40	.02	43	17	108	14	315	70	74	.8	.5	--	538	.73	3.06	180	0	55	3.8	833	7.8
Apr. 11-20	378	40	.02	43	17	111	15	315	73	78	.8	.3	--	544	.74	3.57	178	0	56	3.8	840	7.8
Apr. 21-30	1,186	42	.03	42	17	113	15	308	73	79	.8	.1	--	545	.74	1,670	175	0	56	3.7	838	7.9
May 1-10	2,709	42	.08	42	16	114	13	307	77	74	.9	.8	--	524	.71	3,960	171	0	57	3.8	863	8.0
May 11-20	4,444	43	.06	44	15	120	15	294	102	70	.8	.8	.53	560	.76	6,720	172	0	58	4.0	873	7.8
May 21-31	2,869	43	.08	45	15	114	16	324	87	62	.8	.8	--	581	.76	4,350	186	0	55	3.6	859	8.0
June 1-10	1,642	46	.08	46	15	119	17	305	102	67	.8	.9	--	570	.78	2,530	176	0	57	3.9	878	7.8
June 11-20	1,585	44	.07	50	15	114	17	320	96	64	.8	.9	.48	559	.76	2,360	188	0	54	3.6	862	7.9
June 21-30	1,308	48	.07	55	17	107	16	354	81	58	.9	1.8	--	564	.77	1,990	207	0	51	3.2	853	7.7
July 1-10	974	51	.07	53	17	107	16	356	76	56	.9	1.8	--	583	.77	1,490	202	0	51	3.3	852	7.9
July 11-20	666	48	.08	54	17	102	16	370	70	53	.7	1.8	--	557	.76	1,000	210	0	50	3.2	841	7.9
July 21-30	511	45	.08	54	17	106	15	368	66	53	.7	1.9	--	548	.74	753	204	0	50	3.1	830	7.9
Aug. 1-10	221	45	.08	54	17	102	14	368	65	54	.7	1.7	--	538	.73	321	204	0	50	3.1	819	8.0
Aug. 11-20	214	49	.08	54	18	98	15	361	65	58	.9	.8	.50	546	.74	443	206	0	48	2.9	820	7.7
Aug. 21-31	253	49	.02	53	19	100	18	360	65	55	1.0	.5	--	544	.74	518	210	0	49	3.0	820	8.0

Sept. 1-10, 1952 .	424	46	.03	54	19	98	16	362	66	56	.9	.6	--	540	.73	618	212	0	48	2.9	834	8.0	30
Sept. 11-20	87.4	44	.03	54	19	100	16	360	64	58	.8	.6	.53	544	.74	128	212	0	48	3.0	832	8.2	24
Sept. 21-30	81.0	48	.13	54	19	101	16	362	65	59	.9	.6	--	546	.74	119	212	0	49	3.0	836	8.1	23
Weighted average	87.6	44	0.04	48	16	113	15	321	86	66	0.8	0.9	--	563	0.75	1,190	186	0	54	3.6	858	--	--

a. Represents 99 percent of runoff for water year October 1951 to September 1952.

HUMBOLDT RIVER BASIN--Continued

HUMBOLDT RIVER NEAR RYE PATCH, NEV.--Continued

Temperature (°F) of water, December 1951 to September 1952

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

PYRAMID AND WINNEMUCCA LAKES BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN PYRAMID AND WINNEMUCCA LAKES BASIN IN CALIFORNIA
Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Instantaneous 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 adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Calcium magnesium	Non-carbonate				
LAKE TAHOE (SOUTH END) BI JOU																						
Oct. 17, 1951		12	0.00	8.8	2.4	5.7	1.7	40		2.3	2.0	0.0	7.7	0.06	60	0.08		32	0	28	101	6.9
May 19, 1952					5.6			52			1.0							32	0	26	93.2	7.7
Sept. 17					--	--		54			1.5							32	--	--	93.8	7.4
LAKE TAHOE (NORTH END) TAHOE VISTA																						
Oct. 17, 1951						6.0		37			2.2							33	2	28	103	6.7
May 19, 1952		12	0.00	9.6	2.4	6.0	1.8	54		2.3	1.2	0.0	0.1	0.01	62	0.08		34	0	27	97.5	7.7
Sept. 17					--	--		53			1.2							33	--	--	95.9	7.6
LAKE TAHOE (WEST SIDE) TAHOE CITY																						
Oct. 17, 1951						5.7		45			1.8							33	0	27	101	6.9
May 20, 1952		12	0.00	8.6	2.7	6.0	1.7	55		2.1	2.0	0.0	0.2	0.02	62	0.08		33	0	27	89.2	8.1
Sept. 17					--	--		55			1.7							33	--	--	94.1	7.6
TRUCKEE RIVER NEAR TRUCKEE																						
Oct. 17, 1951	42					6.5		43			2.5							41	6	25	122	6.8
May 20, 1952	2,220	13	0.00	8.1	1.8	4.2	1.3	44		2.2	1.2	0.0	0.2	0.03	54	0.07		28	0	24	71.2	8.0
Sept. 16	42				--	--		58			.9							40	--	--	108	7.9
TRUCKEE RIVER AT FARAD																						
Oct. 17, 1951	415					4.4		39			1.5							32	0	23	88.1	6.9
May 20, 1952	5,640	15	0.00	6.0	2.2	2.9	1.2	36		1.5	.6	0.1	0.4	0.02	48	0.07		24	0	20	61.6	7.2
Sept. 16	560				--	--		46			.4							29	--	--	75.1	7.6

HONEY LAKE BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN HONEY LAKE BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1961 to September 1962

Date of collection	Water 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 (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium magnesium	Non-carbonate			
Oct. 9, 1961.....	5.4	--	--	--	--	5.0	--	104	--	--	1.5	--	--	--	--	--	75	0	13	172	7.9
Nov. 14.....	14.2	--	--	--	--	7.1	--	96	--	--	2.9	--	--	--	--	--	70	0	19	165	7.3
May 13, 1962.....	980	16	0.00	5.9	2.2	1.5	0.5	42	1.2	1.2	--	0.0	0.2	0.08	44	0.06	24	0	12	55.6	7.5
July 24.....	2169	12	--	7.5	2.7	4.8	--	42	3.2	1.8	--	0	0.3	0.14	54	0.07	20	0	25	77.0	7.3
Sept. 11.....	14	--	--	--	--	--	--	100	--	--	0.8	--	--	--	--	--	75	--	--	185	7.6

a Mean daily discharge (cfs).

SUSAN RIVER NEAR SUSANVILLE

EAGLE LAKE BASIN

MISCELLANEOUS ANALYSES OF EAGLE LAKE IN CALIFORNIA

EAGLE LAKE NEAR SUSANVILLE

Date of collection	Water 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 (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium magnesium	Non-carbonate			
July 11, 1962.....	16	--	--	11	39	174	48	a 712	1.0	21	0.0	0.0	0.1	0.1	661	0.90	188	0	60	1,040	9.2
Sept. 10.....	21	--	--	28	37	144	17	b 620	1.6	18	--	--	4.0	0.17	576	0.78	232	0	56	940	8.1
Sept. 30.....	22	--	--	8.5	41	182	42	b 727	1.2	20	--	--	2.6	0.01	677	0.92	190	0	62	1,070	9.1

a Includes equivalent of 81 parts per million of carbonate (CO₃).b Includes equivalent of 90 parts per million of carbonate (CO₃).

PART 11. PACIFIC SLOPE BASINS IN CALIFORNIA

CARMEL RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN CARMEL RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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 (µm)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Calcium mg.	Non-carbonate mg.				

CARMEL RIVER NEAR CARMEL

Feb. 19, 1952																							
Mar. 17																							
Apr. 21																							
May 20	21	0.00																					
Sept. 19																							

CARMEL RIVER BASIN

SALINAS RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN SALINAS RIVER BASIN IN CALIFORNIA

SALINAS RIVER NEAR SPECKLES

Oct. 30, 1951	8.1					108		933			125						565	0	29		1,700	7.6
Nov. 26	11					108		910			119						565	0	27		1,750	7.5
Feb. 18, 1952	654					26		182			25						202	53	24		507	7.8
Apr. 22	403	24	0.0			34	2.7	217	112		32	0.3	0.9	0.10	5431	0.56	269	91	21		641	8.3
May 7	135	24				52	3.2	264	140		46	.2	2.0	.80	502	.68	312	96	26		792	8.0

a Residue at 180° C.

PAJARO RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN PAJARO RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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 adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Calcium, mg-nestum	Non-carbonate				
Feb. 19, 1952	381	--	--	--	--	45	--	a 220	--	--	42	--	--	--	--	--	--	272	92	26	688	8.4
Mar. 17	2,180	--	--	--	--	33	--	176	--	--	22	--	--	--	--	--	--	183	39	28	481	8.2
May 20	32	21	0.00	77	54	77	2.5	348	--	197	69	0.1	3.8	0.34	673	0.92	414	129	29	1,060	7.9	
June 4	17	50	--	93	68	112	3.8	411	--	261	98	.3	4.5	.64	893	1.21	512	174	32	1,460	7.9	
Sept. 19	4.9	--	--	--	--	--	--	598	--	--	138	--	--	--	--	--	535	--	--	1,600	8.1	

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

a includes equivalent of 8 parts per million of carbonate (CO₃).

PAJARO RIVER NEAR CHITTENDEN

SOQUEL CREEK BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN SOQUEL CREEK BASIN IN CALIFORNIA

SOQUEL CREEK AT SOQUEL

Date of collection	Water 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 (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		Parts per million	Tons per acre-foot	Calcium, mg-nestum	Non-carbonate			Calcium, mg-nestum	Non-carbonate																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

SAN LORENZO RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN SAN LORENZO RIVER BASIN IN CALIFORNIA
Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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 (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot	Calcium magnesium	Non-carbonate	

SAN LORENZO RIVER AT BIG TREES

Feb. 19, 1952	269					15		102			6.5						116	32	295
Mar. 18	1,010					12		82			10						95	28	249
May 19	77	25	0.00	37	7.5	15	2.0	117	42	18	16	0.1	0.3	0.07	203	0.28	123	27	330
Sept. 18	26					--		128		19							120	--	323

GUADALUPE RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN GUADALUPE RIVER BASIN IN CALIFORNIA
LOS GATOS CREEK AT LOS GATOS

Feb. 19, 1952	97					11		150			8.0						154	31	338
Mar. 18	730					8.0		101			5.5						106	23	235
May 19	33	17	0.00	37	15	10	1.4	164	33	9.0	0.2	1.8	0.09	205	0.28		134	20	340
Sept. 18	16					--		264		18							249	--	940

COYOTE CREEK BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN COYOTE CREEK BASIN IN CALIFORNIA
COYOTE CREEK NEAR MADRONE

Mar. 17, 1952	21					20		203			14						200	34	443
May 19	38					14		167	34	10	10	0.2	4.4	0.08	206	0.28	152	15	355
Sept. 19	54	10	0.00	33	17	--		125		6.2							111	--	268

ALAMEDA CREEK BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN ALAMEDA CREEK BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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 (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate	
Feb. 18, 1952	395					29		192			28					192	34	488
Mar. 18	1,580					14		134			12					124	14	303
May 19	15	5.5	0.00	68	40	66	3.4	309	139		59	0.2	0.7	0.74	534	334	81	879
Sept. 18	3.0					--		400			80					412	--	1,060

ALAMEDA CREEK NEAR NILES

KERN RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN KERN RIVER BASIN IN CALIFORNIA

KERN RIVER NEAR BAKERSFIELD

Date of collection	Water 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 (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate	
Oct. 9, 1951	260					32		96			22					88	0	299
Nov. 16	210					30		97			21					108	28	283
Feb. 14, 1952	520					17		86			7.5					60	0	191
May 12	6,550	12	0.00	8.0	1.5	6.2	1.6	40	4.8		2.0	0.2	0.6	0.21	57	26	0	825
Sept. 11	523					--		68			6.3					46	--	163

TULARE LAKE BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN TULARE LAKE BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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)	Dissolved solids (gum)		Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Calcium	Non-carbonate			

KANEH RIVER NEAR THREE RIVERS

Oct. 9, 1951	33	--	--	--	--	12	--	70	--	--	15	--	--	--	--	52	0	33	178	6.7
Nov. 16	48	--	--	--	--	7.7	--	73	--	--	7.8	--	--	--	--	53	0	24	146	7.1
Feb. 14, 1952	685	--	--	--	--	4.6	--	52	--	--	1.8	--	--	--	--	40	0	20	98.0	7.1
Mar. 18	1,080	27	--	16	2.4	6.8	1.5	68	7.5	2.5	0.1	0.5	0.02	98	0.13	50	0	22	128	8.1
Apr. 9	1,510	26	--	8.4	1.7	2.3	1.2	38	2.9	1.2	0	0.2	0.08	63	0.09	28	0	16	71.4	7.4
May 13	3,500	9.5	0.00	4.5	3	1.3	0.7	17	1.6	1.8	0	0.4	0.01	28	0.04	12	0	18	35.4	7.0
Sept. 11	138	--	--	--	--	--	--	56	--	--	2.5	--	--	--	--	37	--	--	105	7.8

KINGS RIVER ABOVE NORTH FORK

Nov. 16, 1951	141	--	--	--	--	4.2	--	28	--	--	3.2	--	--	--	--	21	0	30	68.8	6.5
Mar. 18, 1952	1,290	17	0.00	9.4	1.1	3.6	0.7	35	6.7	1.2	0.0	0.4	0.16	57	0.08	28	0	21	84.9	7.5
May 13	6,450	7.2	--	2.1	3	1.1	0.6	10	1.1	0.4	0	0.6	0.02	18	0.02	6	0	26	19.9	6.8
Sept. 12	498	--	--	--	--	--	--	21	--	--	3	--	--	--	--	14	--	--	43.2	7.3

KINGS RIVER AT PIEDRA

Oct. 9, 1951	144	--	--	--	--	5.0	--	35	--	--	5.5	--	--	--	--	27	0	29	92.0	6.5
Nov. 16	184	--	--	--	--	5	--	37	--	--	4.2	--	--	--	--	28	0	28	82.9	6.7
Feb. 14, 1952	1,400	--	--	--	--	4.5	--	41	--	--	2.1	--	--	--	--	31	0	24	79.7	7.6
Mar. 18	3,061	26	--	12	3.4	5.0	1.5	58	7.4	2.5	0.1	0.7	0.02	87	0.12	44	0	19	112	8.0
May 13	11,700	7.2	--	2.6	7	1.1	0.9	13	1.4	1.0	0	0	0.1	21	0.03	9	0	19	27.1	8.4
Sept. 12	492	--	--	--	--	--	--	30	--	--	5	--	--	--	--	21	--	--	57.8	7.7

KINGS RIVER AT PEOPLES WEIR (NEAR KINGSBURG)

Oct. 9, 1951	21	--	--	--	--	9.5	--	72	--	--	7.2	--	--	--	--	52	0	28	189	6.9
Nov. 16	116	--	--	--	--	8.6	--	63	--	--	7.8	--	--	--	--	45	0	29	142	6.6
Feb. 14, 1952	765	--	--	--	--	5.4	--	51	--	--	2.4	--	--	--	--	38	0	24	100	7.6
Mar. 19	2,885	--	--	--	--	5.7	--	59	--	--	2.0	--	--	--	--	40	0	22	74	6.9
May 12	5,565	5.7	0.00	3.2	0.5	1.6	1.0	13	1.9	0.8	0.0	0.3	0.06	22	0.03	40	0	24	37.8	7.5
Sept. 19	79	--	--	--	--	--	--	74	--	--	8	--	--	--	--	50	--	--	145	7.5

SAN JOAQUIN RIVER BASIN

SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.

LOCATION --At gaging station in El Pescadero Grant, at Durham Ferry highway bridge, 3 miles downstream from Stanislaus River and 3.4 miles northeast of Vernalis, San Joaquin County, California.

DRAINAGE AREA --14,010 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses, March 1951, to September 1952.

Water temperatures: March 1951 to September 1952: Maximum, 392 ppm Aug. 21-31; minimum, 54 ppm June 1-10.

EXTREMES, 1951-52 --Dissolved solids: Maximum, 392 ppm Aug. 21-31; minimum, 23 ppm June 1-10.

Hardness: Maximum, 162 ppm Aug. 21-31; minimum, 23 ppm June 1-10.

Specific conductance: Maximum daily, 700 micromhos Aug. 22; minimum observed, 39 $^{\circ}$ F Jan. 10.

Water temperatures: Maximum observed, 76 $^{\circ}$ F Aug. 3; minimum observed, 39 $^{\circ}$ F Jan. 10.

EXTREMES, March 1951-September 1952 --Dissolved solids: Maximum, 477 ppm Aug. 1-10, 1951; minimum, 54 ppm June 1-10, 1952.

Hardness: Maximum, 193 ppm Aug. 1-10, 1951; minimum, 23 ppm June 1-10, 1952.

Specific conductance: Maximum daily, 851 micromhos Aug. 3, 1951; minimum daily, 73.6 micromhos June 2, 4, 1952.

Water temperatures: Maximum observed, 78 $^{\circ}$ F July 19, 1951; minimum observed, 39 $^{\circ}$ F Jan. 10, 1952.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1951 to September 1952 given in WSP 1245.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	Coliform or pH	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg-per liter				Non-carbonate
Oct. 1-10, 1951	1,812	29	0.01	29	13	53	5.3	122	31	80	0.3	1.7	--	297	0.40	1,450	126	26	46	512	7.3
Oct. 11-20	1,861	24	.02	26	11	48	5.0	102	30	72	.3	1.8	0.15	262	.38	1,320	110	26	47	460	7.4
Oct. 21-31	1,890	26	.01	29	14	59	5.3	110	44	90	.3	1.7	--	318	.43	1,450	130	40	48	551	7.5
Nov. 1-10	1,595	27	.03	30	14	61	5.1	112	46	92	.2	1.9	--	330	.45	1,450	132	40	49	568	7.5
Nov. 11-20	1,659	27	.03	28	13	59	5.0	110	40	89	.2	2.0	.21	330	.45	1,450	124	34	50	534	7.6
Nov. 21-30	2,035	25	.02	25	12	50	3.6	102	37	77	.2	1.9	--	284	.40	1,620	112	28	48	473	7.6
Dec. 1-4	2,245	23	--	25	11	45	4.0	95	34	73	.2	.8	--	263	.36	1,590	108	30	46	454	7.4
Dec. 5-10	3,425	20	.08	17	8.3	29	2.4	80	14	41	.3	2.1	--	197	.27	1,820	77	11	44	299	7.4
Dec. 11-20	2,823	22	.05	19	9.1	33	3.0	85	27	47	.2	1.9	.14	208	.28	1,590	85	15	45	326	7.4
Dec. 21-31	3,588	19	.06	17	7.8	35	2.2	78	26	48	.3	2.5	--	203	.28	1,970	74	12	50	332	7.4
Jan. 2-4, 8-10, 1952	4,871	19	.08	15	6.1	25	1.6	75	19	27	.3	1.7	--	166	.23	2,180	63	1	46	251	7.4
Jan. 11-13	5,573	17	--	18	5.1	22	2.4	78	17	25	.3	2.5	.12	1,448	.20	2,230	66	2	41	236	7.5
Jan. 14-16	10,790	16	.29	11	6.5	14	2.5	87	12	11	.5	1.9	.08	130	.18	3,790	64	0	35	161	7.7
Jan. 16-20	12,770	18	.25	12	7.1	17	2.6	87	14	16	.4	1.9	--	141	.19	4,860	59	4	37	184	7.7
Jan. 21-31	13,150	18	.26	13	6.6	17	2.4	74	14	12	.4	1.7	--	134	.18	4,760	60	0	37	193	7.2
Feb. 1-10	10,499	17	.15	12	5.5	17	2.0	68	14	17	.4	2.2	.06	126	.17	3,570	53	0	40	190	7.3
Feb. 11-20	10,800	17	.08	11	5.0	15	1.9	59	12	17	.4	1.6	--	115	.16	3,350	48	0	39	175	7.4
Mar. 1-10	9,644	15	.08	12	5.4	18	1.9	62	13	20	.4	1.4	--	125	.17	3,250	52	1	42	193	7.4
Mar. 11-20	12,370	16	.10	13	6.2	16	1.9	66	14	18	.4	1.4	.07	129	.18	4,310	58	2	37	191	7.4
Mar. 21-31	18,730	17	.06	12	5.8	14	1.9	66	13	13	.3	1.4	--	115	.16	5,820	54	0	35	171	7.3

a Sum of determined constituents.

Apr. 1-10, 1952...	20,230	14	.11	10	4.7	11	1.6	53	10	10	.3	1.0	--	96	.13	5,240	44	1	34	.7	141	7.3	25
Apr. 11-20.....	20,180	14	.18	9.4	3.8	11	1.7	49	7.8	12	--	.7	.18	90	.12	4,900	39	0	37	.8	132	7.1	12
Apr. 21-30.....	20,200	13	.17	8.3	3.4	9.2	1.6	42	6.0	11	--	.6	--	80	.11	4,360	35	0	35	.7	118	7.0	12
May 1-10.....	24,290	12	.17	7.4	2.9	7.4	1.2	36	5.4	8.2	--	.6	--	67	.09	4,410	30	1	34	.6	96.1	7.1	12
May 11-20.....	27,390	11	.16	8.5	2.5	7.0	1.2	32	4.5	7.4	--	.6	.09	62	.08	4,590	28	0	35	.6	86.7	6.9	18
May 21-31.....	30,820	9.8	.14	6.1	2.3	6.2	1.1	29	4.1	6.9	--	.6	--	80	.08	4,990	25	1	34	.5	80.5	6.9	18
June 1-10.....	32,020	9.8	.13	5.6	2.3	6.0	1.0	28	3.8	6.7	--	.6	--	54	.07	4,670	23	0	35	.5	76.8	7.0	15
June 11-20.....	21,960	10	.13	6.4	2.5	8.2	1.3	33	5.4	9.5	--	.8	--	65	.06	3,860	26	0	39	.7	96.7	7.2	15
June 21-30.....	17,140	10	.16	7.3	3.1	11	1.1	37	7.0	14	--	.8	--	177	.10	3,560	31	1	42	.9	120	7.0	15
July 1-10.....	10,690	20	.16	--	--	--	--	51	16	--	--	1.3	--	123	.17	3,370	85	--	--	--	199	7.0	15
July 11-20.....	3,320	20	.11	20	6.5	40	2.2	82	26	56	--	1.3	--	214	.38	3,080	105	15	50	1.9	374	7.2	15
July 21-31.....	3,224	19	.07	24	11	56	2.6	100	33	74	--	1.8	.11	286	.36	2,340	103	23	50	2.1	466	7.2	10
Aug. 1-10.....	1,748	25	.04	33	15	68	3.7	135	44	105	.3	1.0	--	389	.50	1,740	144	34	50	2.5	650	7.3	10
Aug. 11-20.....	1,397	27	.05	34	16	68	4.1	144	44	104	.3	.9	--	364	.50	1,370	151	33	49	2.4	646	7.3	20
Aug. 21-31.....	1,378	27	.06	35	16	71	4.2	149	46	108	.3	.9	--	375	.51	1,400	154	32	49	2.5	681	7.3	10
Sept. 1-10.....	1,296	28	.05	37	17	71	3.4	152	45	108	.3	1.8	--	392	.53	1,370	162	36	48	2.4	668	7.3	10
Sept. 11-20.....	1,425	29	.02	36	17	70	3.5	148	43	100	.3	2.0	--	378	.51	1,450	160	38	48	2.4	641	7.4	10
Sept. 21-30.....	1,802	28	.03	30	14	57	3.5	134	34	83	.3	2.5	.16	320	.44	1,580	132	22	48	2.2	541	7.3	10
Sept. 31-30.....	1,633	29	.03	33	15	63	3.7	142	38	88	.3	2.9	--	348	.47	1,530	144	26	48	2.3	588	7.4	10
Weighted average	c 9,903	14	0.16	11	4.8	15	1.7	53	11	18	--	1.1	--	110	0.15	2,940	47	4	40	1.0	187	--	--

b Not included for computation of weighted averages.

c Represents 98 percent of runoff for water year October 1951 to September 1952.

PACIFIC SLOPE BASINS IN CALIFORNIA

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 Once-daily temperature measurement at approximately 7:30 a. m.

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

SAN JOAQUIN RIVER BASIN--Continued

STOCKTON DIVERTING CANAL AT STOCKTON, CALIF.

LOCATION.--Just upstream from bridge on Sanguinetti Lane, at north edge of Stockton, San Joaquin County, in Campo de Los Franceses Grant, and about 200 feet up-stream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: March 1951 to May 1952.

Water temperatures: March 1951 to May 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 167 ppm Apr. 21-23, May 9, 11-14; minimum, 88 ppm Jan. 13-14, 16-18.

Hardness: Maximum, 128 ppm Nov. 23; minimum, 44 ppm Jan. 13-14, 16-18.

Specific conductance: Maximum daily, 303 micromhos May 12; minimum daily, 83.6 micromhos Jan. 17.

Water temperatures: Maximum observed, 75°F Apr. 17; minimum observed, 40°F Dec. 21-22.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1951 to September 1952 are given in WSP 1245. Many days, including the entire month of October, reported no flow.

Chemical analyses, in parts per million, November 1951 to May 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color			
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.					Non-carbonate, mg./l.		
Nov. 23, 1951	188	--	--	30	13	9.0	1.8	112	21	10	--	0.4	--	162	0.22	82	128	36	13	0.3	243	7.2	--	
Nov. 24-26	33.0	--	--	24	9.7	7.3	2.0	93	18	9.0	--	1.1	--	156	.21	14	100	24	13	.3	211	7.1	--	
Dec. 3	970	--	--	23	8.3	5.9	1.8	--	13	9.0	--	1.5	--	106	.14	278	92	32	12	.3	171	--	--	
Dec. 4-10	1,240	--	--	12	5.5	4.6	2.4	44	9.9	5.0	--	1.4	--	108	.15	362	53	16	15	.3	116	6.8	--	
Dec. 6-10	537	--	--	15	6.6	5.0	1.8	62	13	7.8	--	1.8	--	109	.15	158	65	14	14	.3	148	7.0	--	
Dec. 11-20	105	18	0.00	18	7.4	6.3	1.6	61	13	17	0.0	2.0	0.25	131	.18	37	76	25	15	.3	181	6.7	10	
Dec. 21-26	28	17	.00	22	9.0	7.0	1.6	81	16	17	0.0	2.4	.49	146	.20	11	92	28	14	.3	214	6.9	10	
Dec. 29-31	3,730	--	--	13	4.2	4.0	1.6	44	6.8	8.0	--	1.4	--	108	.15	1,090	50	14	14	.2	106	6.9	--	
Jan. 1-10, 1952	680	18	.00	14	6.1	5.0	1.4	65	11	5.2	.2	1.9	.25	110	.15	202	60	7	15	.3	148	7.2	40	
Jan. 11-12, 15, 19-20	2,126	--	--	13	6.7	4.6	1.6	57	10	4.0	--	1.2	--	107	.15	614	60	13	14	.3	126	7.2	--	
Jan. 13-14, 16-18	3,972	--	--	9	4.8	3.4	1.4	44	6.3	3.0	--	1.1	--	88	.12	944	44	8	14	.2	92.2	7.2	--	
Jan. 22-26, 31	1,720	--	--	13	7.1	4.6	1.4	66	12	3.8	--	1.4	--	35	105	14	488	62	8	14	.3	147	7.5	--
Feb. 1-10	776	21	.00	14	6.3	5.0	1.4	67	11	5.0	0	.4	.90	102	.14	214	61	6	15	.3	147	6.8	10	
Feb. 11-20	369	18	--	16	7.3	5.9	2.4	70	13	11	0	.4	.37	117	.16	117	70	13	15	.3	173	6.7	10	
Feb. 21-29	718	19	--	14	7.0	4.6	1.4	59	11	9.2	--	.4	.37	103	.14	200	64	15	13	.2	148	6.7	15	
Mar. 1-10	127	15	--	14	5.8	5.4	1.8	60	10	8.0	--	.1	.40	108	.15	37	59	10	16	.3	146	6.6	50	
Mar. 11-20	1,578	18	--	13	5.8	5.4	1.9	63	9.6	4.8	.2	.4	.02	99	.13	422	56	5	17	.3	139	7.5	25	
Mar. 21-31	2,501	18	--	13	6.2	3.0	1.9	65	8.4	2.8	.2	.4	.05	93	.13	628	58	5	10	.2	136	7.2	10	
Apr. 1-10	505	21	--	14	6.8	4.2	2.2	67	9.2	8.8	--	.2	.06	108	.15	147	63	8	12	.2	163	7.0	15	
Apr. 11-20	505	17	.10	19	8.4	8.4	3.0	80	14	12	--	3.9	.08	128	.17	.3	82	16	18	.4	206	6.9	5	
Apr. 21-23; May 9, 11-14	.6	--	--	27	12	12	2.3	110	23	16	--	2.5	--	167	.23	.3	117	27	18	.5	267	7.3	--	
Weighted average	912	19	--	13	6.0	4.3	1.7	59	8.3	5.1	--	0.8	--	101	0.14	249	57	9	14	.2	132	--	--	

a Represents 90 percent of runoff for water year October 1951 to September 1952.

PACIFIC SLOPE BASINS IN CALIFORNIA

SAN JOAQUIN RIVER BASIN--Continued

STOCKTON DIVERTING CANAL AT STOCKTON, CALIF.--Continued

Temperature (°F) of water, november 1951 to May 1952

[Once-daily temperature measurement at approximately 5:00 p. m.]

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

SAN JOAQUIN RIVER BASIN--Continued
MOKELUNNE RIVER AT WOODBRIDGE, CALIF.

LOCATION.--At dam of Woodbridge Irrigation District, San Joaquin County, 0.4 mile upstream from bridge on which gaging station is located.

DRAINAGE AREA.--644 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 61 ppm Mar. 21-31; minimum, 30 ppm June 1-10, 11-20, 21-30, July 1-10, 11-20.

Hardness: Maximum, 31 ppm Mar. 11-20, 21-29; minimum, 12 ppm June 1-10.

Specific conductance: Maximum daily, 87.5 microhos Mar. 8; minimum observed, 40 F Feb. 21.

Water temperatures: Maximum observed, 70 F July 30, Aug. 2-3; minimum observed, 40 F Feb. 21.

EXTREMES, March 1951-September 1952.--Dissolved solids: Maximum, 61 ppm Mar. 21-31, 1952; minimum, 30 ppm June 1-10, 11-20, 21-30, July 1-10, 11-20, 1952.

Hardness: Maximum, 31 ppm Mar. 11-20, 21-29, 1952; minimum, 12 ppm June 1-10, 1952.

Specific conductance: Maximum daily, 87.5 microhos Mar. 8, 1952; minimum observed, 40 F Feb. 21, 1952.

Water temperatures: Maximum observed, 70 F July 30, Aug. 2-3, 1952; minimum observed, 40 F Feb. 21, 1952.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year 1951-1952 given in WSP 1243.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (residue at 180°C)		Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (microhos at 25°C)	pH	Color
													Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1951...	303	11	0.00	4.7	2.1	2.5	1.6	23	8.4	1.8	0.1	0.3	42	0.08	34	20	2	19	55.1	7.2	10
Oct. 11-20.....	339	11	.00	4.8	2.3	2.5	2.4	20	8.8	2.1	.1	.2	43	.08	39	21	5	18	57.1	7.1	10
Oct. 21-31.....	347	10	.00	5.3	2.9	2.3	2.6	22	7.8	2.0	.1	.4	43	.08	37	21	3	18	58.7	7.1	5
Nov. 1-10.....	416	9.7	.13	5.0	1.8	2.3	3.0	21	8.0	2.1	.1	.5	43	.08	48	20	3	17	57.5	7.1	5
Nov. 11-20.....	617	10	.15	5.6	2.1	2.3	3.0	22	7.7	2.1	.2	.7	45	.06	75	23	5	16	59.1	7.2	5
Dec. 1-10.....	978	11	.31	5.1	2.1	2.3	2.9	22	8.2	2.2	.4	.8	50	.07	132	21	3	17	59.2	7.2	40
Dec. 11-20.....	1,026	10	.12	5.0	1.4	2.6	3.4	24	5.1	2.4	.2	.3	39	.05	108	18	0	20	53.4	6.5	10
Dec. 21-31.....	1,760	10	.20	5.3	1.8	3.0	4.2	25	7.5	2.9	.4	.6	48	.07	98	21	0	20	53.5	6.8	20
Jan. 1-10, 1952...	1,342	11	.16	5.6	2.0	2.9	1.1	27	5.8	2.4	.1	.6	49	.07	178	22	0	21	58.6	7.0	20
Jan. 11-20.....	1,735	11	.18	5.8	2.1	3.2	1.3	25	7.7	2.5	.1	.7	54	.07	253	23	3	22	63.9	7.1	25
Jan. 21-31.....	1,702	12	.12	6.2	2.2	3.5	1.1	30	6.3	2.5	.1	.5	54	.07	248	24	0	23	65.2	7.1	20
Feb. 1-10.....	1,520	13	.17	6.3	2.2	3.4	1.1	31	5.4	2.3	.2	.4	57	.08	234	25	0	22	64.1	7.2	30
Feb. 11-20.....	1,211	14	.17	6.7	2.3	3.0	1.2	32	6.3	2.3	.2	.4	57	.08	186	26	0	19	66.7	7.3	28
Feb. 21-29.....	1,251	15	--	6.6	3.1	3.2	1.2	32	7.7	2.1	.2	.3	57	.08	193	29	3	18	70.2	7.1	25
Mar. 1-10.....	1,085	15	.13	6.8	3.2	3.1	1.1	32	8.2	2.2	.2	.4	59	.08	173	30	4	18	73.9	7.1	25
Mar. 11-20.....	1,622	15	.28	7.0	3.2	3.7	1.2	32	9.0	2.4	.2	.6	60	.08	263	31	4	20	76.8	7.1	20
Mar. 21-31.....	1,894	15	.21	7.4	3.1	3.9	1.6	36	9.1	2.4	.2	.6	61	.08	312	31	2	20	78.1	7.1	15

SAN JOAQUIN RIVER BASIN--Continued
MOKELUMNE RIVER AT WOODBRIDGE, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180°C)			Hardness as CaCO ₃		Percent sodium	Sodium-adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Apr. 1-10, 1952..	2,351	13	0.14	6.4	2.6	3.2	1.5	31	4.9	2.3	0.2	0.4	--	52	0.07	331	27	1	20	0.3	67.3	7.2	11
Apr. 11-20	2,412	14	.14	5.8	2.3	3.2	1.0	30	4.1	2.3	.2	.4	0.08	51	.07	332	24	0	22	.3	63.9	7.2	15
Apr. 21-30	3,814	13	.13	5.0	1.9	2.9	1.3	28	3.0	2.2	.1	.4	--	45	.06	463	20	0	22	.3	56.7	6.9	8
May 1-10	4,151	11	.11	4.2	1.3	2.5	1.0	21	2.3	1.8	.0	.3	--	37	.05	415	16	0	24	.3	44.5	6.7	10
May 11-20	3,597	11	.11	4.0	1.3	2.3	.9	21	2.5	1.8	.0	.4	.06	37	.05	356	15	0	23	.3	43.1	6.9	8
May 21-31	4,227	9.7	.09	3.5	1.1	2.2	.8	19	1.7	1.5	.0	.3	--	32	.04	365	13	0	25	.3	37.4	6.8	8
June 1-10	4,484	8.1	.08	3.2	1.0	1.8	.7	17	1.6	1.3	.0	.5	--	30	.04	363	12	0	23	.2	34.1	6.8	8
June 11-20	3,947	8.5	.08	3.2	1.5	1.9	1.4	16	2.6	1.2	.1	.3	.04	30	.04	247	14	0	21	.2	34.7	6.9	5
June 21-30	1,542	8.9	.06	3.6	1.5	1.6	.9	18	2.5	1.0	.1	.1	--	30	.04	109	13	0	18	.2	33.2	6.9	5
July 1-10	1,786	8.9	.03	4.2	1.1	1.8	.9	18	2.4	1.5	.1	.3	--	30	.04	96	12	0	19	.2	35.2	6.7	5
July 11-20	1,853	8.7	.06	3.6	1.4	1.8	.7	18	2.6	1.2	.1	.2	.03	30	.04	69	13	0	20	.2	33.9	6.7	5
July 21-31	192	8.7	.11	3.6	1.7	1.9	.9	16	6.0	1.6	.1	.6	--	34	.05	18	18	3	19	.2	42.5	6.6	5
Aug. 1-10	167	9.1	.12	3.6	1.4	1.7	.9	18	4.0	1.2	.1	.7	--	34	.05	15	15	0	19	.2	39.5	6.8	5
Aug. 11-20	115	8.5	.08	4.4	1.3	1.6	1.4	16	4.6	1.8	.2	.6	.02	35	.05	11	16	3	16	.2	40.0	6.7	5
Aug. 21-31	120	8.6	.09	4.4	1.4	1.6	1.2	14	8.3	1.4	.2	.2	--	36	.05	12	17	5	16	.2	42.8	6.5	5
Sept. 1-10	185	8.5	.04	4.0	1.1	1.6	1.1	16	4.1	1.3	.2	.4	--	34	.05	17	14	1	18	.2	36.9	6.7	5
Sept. 11-20	264	8.5	.03	3.6	1.4	1.6	1.1	16	4.1	1.6	.2	.6	.03	34	.05	24	15	2	18	.2	37.9	6.8	7
Sept. 21-30	263	8.7	.08	4.0	1.4	1.9	1.1	16	4.5	1.7	.2	.8	--	35	.05	25	16	3	19	.2	40.4	6.6	7
Weighted average	1,424	11	0.12	4.9	1.8	2.6	1.3	24	4.4	1.9	0.1	0.4	--	43	0.06	165	20	0	21	0.3	52.1	--	--

SAN JOAQUIN RIVER BASIN--Continued

MOKELUMNE RIVER AT WOODBRIDGE, CALIF.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement at approximately 7:30 a. m./

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

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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 adsorption ratio	Specific conductance (micro-mhos at 25°C)	Color
													Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate			

SAN JOAQUIN RIVER AT FRIANT

Oct. 10, 1951	574	--	--	--	--	3.8	--	15	--	3.0	--	--	--	--	--	8	0	52	38.8	6.2
Nov. 20	703	--	--	--	--	3.3	--	15	--	3.2	--	--	--	--	--	11	0	39	41.0	6.2
Feb. 14, 1952	3,989	--	--	--	--	3.7	--	20	--	2.8	--	--	--	--	--	15	0	35	49.9	6.7
Mar. 5	1,970	13	--	4.3	0.8	4.1	1.0	24	1.6	3.3	0.0	0.3	0.05	41	0.06	14	0	39	49.4	7.5
Mar. 18	3,076	13	--	4.7	1.3	4.1	1.7	25	2.5	3.5	0	0.4	0.23	43	0.06	17	0	33	55.0	7.1
May 7	7,940	13	--	2.6	7	2.4	7	18	1.1	3.8	0	2	0.2	30	0.04	9	0	34	32.4	7.3
May 14	7,940	10	0.00	2.7	3	2.3	7	14	1.2	6	1	4	0.07	25	0.03	8	0	36	30.1	7.1
Sept. 10	1,250	--	--	--	--	--	--	13	--	3	--	--	--	--	--	6	--	--	21.2	7.0

SAN JOAQUIN RIVER NEAR MENDOTA

Oct. 10, 1951	141	--	--	--	--	5.6	--	102	--	71	--	--	--	--	--	109	26	53	487	7.0
Nov. 20	158	--	--	--	--	5.0	--	30	--	3.8	--	--	--	--	--	17	0	39	62.8	6.6
Feb. 15, 1952	3,600	--	--	--	--	4.5	--	26	--	3.0	--	--	--	--	--	17	0	37	55.6	7.8
Mar. 19	4,890	15	--	7.1	1.5	6.8	1.3	38	4.0	3.5	0.1	0.4	0.03	58	0.08	24	0	37	76.8	7.6
May 14	7,200	9.5	0.00	2.9	1.0	3.3	1.8	19	1.5	1.5	0	0.3	0.03	30	0.04	11	0	37	38.2	7.0
Sept. 10	226	--	--	--	--	--	--	18	--	4	--	--	--	--	--	9	--	--	31.4	7.0

SAN JOAQUIN RIVER NEAR DOS PALOS

Oct. 10, 1951	7.7	--	--	--	--	4.4	--	81	--	53	--	--	--	--	--	87	20	52	374	6.9
Nov. 20	7.5	--	--	--	--	8.6	--	39	--	10	--	--	--	--	--	27	0	41	104	6.7
Feb. 15, 1952	3,630	--	--	--	--	4.3	--	23	--	3.5	--	--	--	--	--	17	0	35	55.5	6.6
Mar. 19	4,410	--	--	--	--	5.3	--	34	--	3.2	--	--	--	--	--	23	0	33	76.0	7.6
May 14	6,680	11	0.00	4.0	1.0	4.5	0.9	21	5.6	2.0	0.1	0.3	0.02	39	0.05	14	0	39	54.3	6.9
Sept. 10	3.5	--	--	--	--	--	--	32	--	5.2	--	--	--	--	--	21	--	--	96.2	7.0

MERCED RIVER AT EXCHEQUER DAM

Oct. 11, 1951	2.43	--	--	--	--	2.7	--	58	--	2.5	--	--	--	--	--	48	0	11	110	7.4
Nov. 19	2.53	--	--	--	--	4.0	--	74	--	4.2	--	--	--	--	--	64	4	12	146	7.0

a Mean daily discharge (cfs).

MERCED RIVER NEAR STEVINSON

Feb. 13, 1952	a 1,190	8.2	0.00	4.2	1.3	3.4	47	3.0	0.0	0.5	0.02	30	0.04	39	0	16	94.5	7.9
Mar. 13	a 1,190				0.7	3.0	43	2.8						40	5	14	92.4	7.9
May 15	a 7,920					1.8	22	2.1						16	0	19	42.9	7.5
Sept. 18	a 1,190				--	--	18	.3						11	--	--	30.5	7.1

SAN JOAQUIN RIVER NEAR GRAYSON

Oct. 10, 1951	152					41	126	39						80	0	53	357	7.7
Nov. 20	193					45	140	37						83	0	54	385	7.1
Feb. 18, 1952	1,290					19.7	58	10						53	3	29	144	7.9
Mar. 17	2,480					12	49	16						39	0	40	141	7.4
May 16	6,800	9.7	0.00	6.4	1.2	2.7	28	3.3	0.0	0.4	0.00	41	0.06	21	0	21	58.8	6.6
Sept. 19	6,298						89	17						55	--	--	214	7.4

TUOLUMNE RIVER AT LA GRANGE

Oct. 11, 1951	480					120	168	169						212	74	55	1,020	7.8
Nov. 21	430					138	170	185						235	96	56	1,090	7.3
Feb. 18, 1952	5,800					18	66	20						56	2	41	206	7.9
Mar. 14	3,770					30	81	35						74	9	47	307	7.8
May 16	12,000	13	0.00	7.2	2.4	7.6	35	5.8	6.0	0.0	0.8	0.06	61	28	0	36	95.2	7.4
Sept. 18	860					--	140	79						130	--	--	592	7.3

Oct. 11, 1951	1,605					2.4	15	2.0						13	0	28	38.6	6.1
Nov. 19	1,110					3.0	18	1.5						14	0	32	39.7	7.6
Feb. 13, 1952	2,500					2.5	36	1.6						30	0	15	71.4	7.7
Mar. 13	3,470					2.1	34	10						30	2	13	154	7.6
May 16	10,120	6.9	0.00	2.2	1.1	1.3	15	1.3	0.0	0.6	0.01	22	0.03	10	0	21	26.6	7.2
Sept. 18	1,760					--	14	.2						8	--	--	27.9	6.7

a Mean daily discharge (cfs).

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Water 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)		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	Color	pH
													Parts per million	Tons per acre-foot					

TUOLUMNE RIVER AT HICKMAN

Oct. 10, 1951	778	--	--	--	--	10	--	31	--	22	--	--	--	--	40	--	135	7.1	
Nov. 19	720	--	--	--	--	11	--	36	--	20	--	--	--	--	41	--	132	6.7	
Feb. 13, 1952	1,715	--	--	--	--	4.8	--	43	--	5.4	--	--	--	--	23	--	95.5	7.5	
Mar. 13	889	--	--	--	--	4.1	--	38	--	4.0	--	--	--	--	21	--	81.6	7.9	
Mar. 20	6,500	14	--	7.4	4.8	3.1	0.8	44	4.5	4.5	0.0	0.3	62	0.08	17	--	87.8	8.0	
May 15	7,120	7.6	0.00	2.8	1.2	1.6	.7	17	1.2	.6	.0	.4	24	.03	21	--	32.3	7.2	
Sept. 18	314	--	--	--	--	--	--	44	--	54	--	--	--	--	--	--	265	7.0	

TUOLUMNE RIVER AT TUOLUMNE CITY

Oct. 11, 1951	974	--	--	--	--	31	--	70	--	58	--	--	--	--	48	--	321	7.0	
Nov. 21	889	--	--	--	--	30	--	66	--	58	--	--	--	--	47	--	315	6.9	
Feb. 18, 1952	2,230	--	--	--	--	13	--	53	--	25	--	--	--	--	35	--	181	7.9	
Mar. 14	4,050	--	--	--	--	8.9	--	46	--	15	--	--	--	--	4	--	128	7.7	
Mar. 20	6,850	16	--	8.3	4.2	6.0	0.8	44	5.5	7.4	0.0	0.2	70	0.10	25	--	107	8.0	
May 15	7,940	10	0.00	3.6	1.9	3.3	.9	20	1.4	5.4	.0	.6	38	.05	31	--	34.0	7.4	
Sept. 18	512	--	--	--	--	--	--	73	--	55	--	--	--	--	--	--	311	7.2	

SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE

Oct. 11, 1951	1,250	--	--	--	--	65	--	105	--	96	--	--	--	--	54	--	573	7.6	
Nov. 21	1,148	--	--	--	--	68	--	105	--	101	--	--	--	--	52	--	606	7.0	
Feb. 19, 1952	6,972	--	--	--	--	18	--	60	--	22	--	--	--	--	42	--	204	7.9	
Mar. 17	10,000	--	--	--	--	16	--	68	--	18	--	--	--	--	38	--	199	7.7	
Sept. 18	1,400	--	--	--	--	--	--	110	--	71	--	--	--	--	--	--	484	7.2	

STANISLAUS RIVER AT MOUTH

Oct. 12, 1951	398	--	--	--	--	8.6	--	95	--	5.2	--	--	--	--	20	--	191	7.7	
Nov. 21	270	--	--	--	--	13	--	119	--	9.0	--	--	--	--	24	--	236	6.9	

a. Mean daily discharge (cfs).

[illegible]

SAN JOAQUIN RIVER NEAR VERNALIS

Oct. 12, 1951.....	1,840	--	--	52	104	--	78	--	--	113	28	50	492	7.8		
Nov. 21.....	1,770	--	--	58	104	--	86	--	--	124	39	50	536	7.0		
Dec. 10.....	1,740	--	--	60	104	--	17	--	--	65	6	32	184	7.6		
Feb. 19, 1952.....	9,940	--	--	12	60	--	86	--	--	65	6	32	184	7.6		
Mar. 14.....	10,200	--	--	18	65	--	22	--	--	65	6	40	205	7.8		
Apr. 9.....	10,200	13	0.00	10	8.7	1.4	50	9.5	0.0	0.3	0.05	5	20	143	7.3	
May 18.....	28,800	11	0.00	8.8	3.4	9.4	1.8	36	10	1.1	.07	78	.11	136	6.6	
Sept. 18.....	1,950	--	--	--	--	--	--	62	--	--	--	6	35	35	443	7.3

CALAVERAS RIVER NEAR JENNY LIND

[illegible]

MOKELUMNE RIVER NEAR LANCHA PLANA

[illegible]

a Mean daily discharge (cfs).

b Residue at 180°C.

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952.—Continued

Date of collection	Water 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 (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
													Parts per million	Tons per acre-foot	Calcium, mg./l.	Non-carbonate					
MOKELUNNE RIVER AT WOODBRIDGE																					
Nov. 23, 1951	688					4.0		15		2.5						24	12	26	70.3	6.2	
Feb. 20, 1952	1,440					3.1		32		2.5						26	0	21	67.8	7.9	
Mar. 12	1,100					3.0		32		4.5						31	5	17	77.3	7.5	
May 21	4,400	12	0.00	3.6	1.2	1.5	0.8	19	1.3	.7	0.0	0.1	0.02	31	0.04	14	0	18	38.7	7.0	
Sept. 15	48					--		27		1.7						22	--	--	56.1	6.9	
SAN JOAQUIN RIVER AT ANTIOCH																					
Oct. 18, 1951						128		107		195						146	58	66	903	7.2	
Nov. 21						70		91		114						112	38	58	588	7.2	
Feb. 19, 1952						19		70		25						86	29	32	251	8.1	
Mar. 24						19		65		28						79	26	34	268	7.5	
May 21		12	0.00	8.0	3.2	7.1	1.2	38	7.0	8.2	0.0	0.4	0.05	66	0.09	33	2	31	106	7.2	
Sept. 18						--		92		76						93	--	--	443	7.2	

SACRAMENTO RIVER BASIN
SACRAMENTO RIVER AT DELTA, CALIF.

LOCATION --Temperature recorder at gaging station 0.2 mile downstream from Dog Creek, 0.6 mile southeast of Delta, Shasta County, and 2.8 miles south of Lake Colusa.

DRAINAGE AREA --427 square miles.

RECORDS AVAILABLE --June 1951 to September 1952.

EXTREMES, 1951-52 --Water temperatures: Maximum, 74°F July 29; minimum, 38°F Jan. 10-11, Mar. 14-15.

EXTREMES, June 1951-52 --Water temperatures: Maximum, 75°F Aug. 20, 1951; minimum, 38°F Jan. 10-11, Mar. 14-15, 1952.

REMARKS --Records of discharge for water year 1951-52 given in WSP 1245.

Day		Temperature (°F) of water, water year October 1951 to September 1952																								
		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	----	58	57	49	48	47	47	43	42	45	44	44	43	42	46	44	50	48	55	52	60	57	69	65	66	61
2	----	57	57	48	47	46	42	41	44	44	44	43	42	47	45	50	47	55	53	61	58	72	68	68	63	
3	----	58	56	48	47	46	45	41	41	46	44	42	42	48	45	50	48	57	54	64	61	72	68	69	65	
4	----	57	54	50	48	45	41	41	46	46	43	42	48	45	50	48	57	54	65	63	72	67	67	65	65	
5	----	56	54	50	48	46	41	41	46	45	43	42	48	46	50	47	57	56	65	63	71	66	67	64	64	
6	----	56	53	48	46	45	42	39	45	45	45	42	39	48	46	50	49	57	56	65	63	71	66	66	62	
7	----	56	54	48	48	45	44	40	40	45	45	43	39	46	46	50	49	59	56	66	63	71	66	66	61	
8	----	56	54	48	48	44	43	40	40	45	45	43	42	46	45	50	47	61	58	67	64	71	67	65	61	
9	----	56	54	48	48	43	42	40	40	45	45	44	43	47	46	51	47	61	54	69	66	70	66	64	62	
10	----	54	54	48	48	42	42	40	38	45	45	44	43	48	46	52	49	54	53	69	66	69	64	62	59	
11	----	55	54	48	47	43	42	39	38	45	45	43	41	49	46	52	49	54	53	68	67	70	65	59	57	
12	----	56	54	48	47	43	42	40	39	45	45	43	41	49	48	51	49	53	50	68	65	70	65	59	55	
13	----	55	53	47	47	43	43	40	40	45	44	42	41	48	48	51	49	53	51	68	66	70	65	62	57	
14	----	55	52	47	47	43	42	40	40	45	44	41	38	47	46	51	48	54	53	68	65	70	65	62	58	
15	----	56	54	47	45	42	42	41	40	45	45	45	39	38	46	45	51	48	55	51	69	66	70	65	63	58
16	----	54	52	45	44	42	42	41	41	45	45	43	39	49	47	52	49	58	55	70	67	69	64	64	59	
17	----	52	51	44	43	42	42	41	41	45	43	43	43	50	47	52	49	60	57	70	67	69	64	64	59	
18	----	51	50	43	43	42	42	41	41	43	43	43	42	50	47	52	49	60	58	71	68	68	63	64	60	
19	----	54	51	45	43	42	42	41	41	43	43	43	42	50	46	52	49	60	57	70	66	68	63	65	60	
20	----	53	52	45	45	42	41	41	41	43	43	43	41	49	45	51	49	60	59	70	65	67	62	65	61	
21	----	52	50	45	45	41	41	42	41	43	42	43	41	50	46	51	48	60	57	70	66	68	62	65	61	
22	----	50	50	45	44	41	41	42	42	42	42	43	42	50	47	52	49	59	58	70	66	69	64	65	62	
23	----	50	50	44	43	42	41	42	42	43	42	44	43	50	47	53	50	58	58	68	65	69	64	65	62	
24	----	50	50	43	42	43	42	42	42	42	42	43	43	46	44	50	47	54	50	59	68	63	68	64	65	
25	----	50	49	42	42	43	43	43	43	43	43	46	44	49	47	54	50	59	57	70	65	67	62	65	61	
26	----	49	48	43	42	43	43	44	43	44	43	45	43	51	48	54	51	60	57	71	66	66	62	61	60	
27	----	48	47	45	43	44	43	44	44	44	44	45	43	51	47	55	51	60	57	72	67	68	61	64	60	
28	----	50	48	46	45	45	44	44	44	44	44	46	44	51	48	55	52	57	54	73	68	65	60	64	60	
29	----	50	48	47	46	45	45	45	44	44	44	46	44	49	47	54	52	54	53	74	69	64	60	64	60	
30	----	50	48	47	47	45	45	45	45	45	45	48	44	49	48	55	52	57	53	73	68	65	60	63	60	
31	----	50	48	47	45	43	43	43	45	45	45	48	44	49	48	55	52	57	53	73	68	65	60	63	60	
Average		53	52	46	46	44	43	42	41	44	44	44	43	42	49	46	52	49	57	55	68	65	69	64	64	60

SACRAMENTO RIVER BASIN--Continued

PIT RIVER NEAR MONTGOMERY CREEK, CALIF.

LOCATION.--Temperature recorder at gaging station 1 mile upstream from Cow Canyon Creek and 3.5 miles west of town of Montgomery Creek, Shasta County.

DRAINAGE AREA, 5,170 square miles, approximately, excluding Goose Lake Basin.

RECORDS AVAILABLE.--June 1951 to September 1952. 78°F Aug. 17; minimum, 41°F, Jan. 6-7, 11-12.

EXTREMES.--June 1951 to September 1952.--Maximum, 80°F July 22, 1951; minimum, 41°F Jan. 6-7, 11-12, 1952.

REMARKS.--Records of discharge for water year 1951-52 given in WSF 1245.

Temperature (°F) of water, water year October 1951 to September 1952

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
1	61	51	52	43	48	43	42	46	44	47	52	51	56	61
2	61	52	48	43	47	42	42	46	44	47	46	52	51	56
3	61	52	48	43	47	42	42	46	44	47	46	52	51	56
4	61	52	48	43	47	42	42	46	44	47	46	52	51	56
5	59	58	52	50	47	42	42	46	48	47	55	53	56	64
6	59	58	52	50	47	42	42	46	48	47	55	53	56	64
7	63	57	52	50	47	46	42	41	45	44	48	47	57	65
8	63	57	52	48	46	45	42	41	44	48	47	58	56	64
9	58	57	52	47	45	44	42	44	49	47	56	54	53	63
10	58	57	52	47	45	44	42	44	49	47	56	54	53	63
11	58	58	51	50	45	45	42	41	44	49	48	55	53	57
12	58	56	51	50	45	45	42	41	44	49	48	55	54	57
13	58	56	51	50	45	45	42	41	44	49	48	55	55	58
14	58	56	51	51	44	44	43	42	45	44	49	47	56	54
15	58	57	51	49	44	44	42	45	45	48	47	56	54	59
16	57	56	50	48	44	44	43	42	45	45	49	48	55	53
17	57	55	50	47	44	44	43	42	45	45	49	48	55	53
18	56	55	48	47	44	44	43	42	45	45	48	47	56	53
19	57	55	49	48	44	44	43	42	45	45	48	47	56	54
20	57	55	49	48	44	44	43	42	45	45	48	47	56	54
21	56	54	48	44	44	44	43	42	45	44	48	47	57	54
22	55	54	48	47	45	44	43	42	45	44	48	47	56	53
23	55	54	47	46	45	45	43	43	44	48	47	58	56	61
24	55	54	47	46	45	44	44	43	45	44	49	48	56	61
25	55	53	47	46	45	45	44	44	48	47	55	53	56	61
26	55	53	47	45	44	45	44	46	45	49	47	58	56	61
27	54	52	47	45	45	46	45	47	46	51	48	58	55	63
28	55	53	47	46	45	46	45	47	46	51	50	58	57	63
29	54	52	48	47	46	45	46	47	48	51	50	58	55	63
30	53	52	48	46	45	44	46	46	47	51	49	57	56	63
31	53	52	48	46	45	44	46	46	47	51	49	57	56	63
Average	57	56	50	48	45	45	43	43	45	45	49	48	56	54

SACRAMENTO RIVER BASIN--Continued
SQUAW CREEK ABOVE SHASTA LAKE, CALIF.

LOCATION.--Temperature recorder at gaging station, 0.5 mile upstream from Salt Creek, about 2 miles upstream from Shasta Lake, and 10 miles west of town of Montgomery Creek, Shasta County.
DRAINAGE AREA.--65.3 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1951 to September 1952.
EXTREMES, 1951-52.--Water temperatures: Maximum, 75°F July 29-30; minimum, 42°F Jan. 10-14, Mar. 14.
EXTREMES, June 1951 to September 1952.--Water temperatures: Maximum, 75°F July 29-30, 1952; minimum, 42°F Jan. 10-14, Mar. 14, 1952.
REMARKS.--Records of discharge for water year October 1951 to September 1952 given in MSP 1245.

Temperature (°F) of water, water year October 1951 to September 1952

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	61	61	51	51	53	53	48	47	47	47	47	48	47	50	48			59	72	69	64	83	63	
2	61	60	51	51	53	52	47	47	47	47	47	48	47	46	51	50			64	61	72	69	65	
3	60	59	51	51	52	51	47	46	48	48	48	48	48	52	50				67	63	72	69	66	
4	60	58	51	51	52	51	46	48	48	48	48	48	48	53	50				68	65	72	68	66	
5	58	56	51	51	52	51	46	48	48	48	48	48	48	53	51	63	61	68	65	72	68	66	65	
6																								
7	57	57	51	51	51	50	46	43	48	48	48	48	43	53	51	66	65	70	67	65	63	83	63	
8	57	57	51	51	51	48	43	43	48	48	48	48	43	52	52	64	60	69	65	71	68	64	63	
9	57	57	51	51	51	48	43	43	48	48	48	48	46	52	50	66	62	70	67	71	69	63	62	
10	57	57	51	51	51	48	43	43	48	48	48	48	46	51	49	65	60	71	69	71	67	62	62	
11	57	57	51	51	51	47	46	43	42	48	48	48	48	52	50	80	59	71	68	69	66	62	61	
12	57	57	51	50	48	47	42	42	42	48	48	48	48	53	50	59	59	70	68	69	67	61	59	
13	57	56	51	50	48	47	42	42	42	48	47	46	45	53	53	59	57	70	67	69	67	59	57	
14	57	56	50	50	47	46	43	42	47	47	47	46	45	52	52	58	57	71	67	69	67	59	59	
15	57	56	50	49	46	46	43	43	47	47	47	44	41	52	49	59	57	72	68	69	67	60	59	
16																								
17	56	55	48	47	46	46	44	44	47	47	47	44	41	53	50	61	58	73	69	69	67	61	60	
18	55	55	47	46	46	46	44	44	47	46	47	46	45	55	52	62	59	73	70	68	66	61	61	
19	55	55	47	46	46	46	44	44	46	46	46	46	46	55	53	63	60	73	68	67	65	62	61	
20	55	55	47	46	46	46	45	44	46	46	46	46	46	53	50	63	61	71	67	66	65	63	62	
21																								
22	53	53	47	46	47	46	45	45	46	48	47	46	46	54	50	63	60	70	68	66	65	63	62	
23	53	53	47	46	47	47	45	45	46	48	48	47	47	55	52	63	61	70	68	66	65	63	63	
24	53	53	46	46	48	47	45	45	47	48	50	48	--	--	--	81	81	70	67	67	66	63	63	
25	53	52	46	46	48	48	46	45	47	46	52	48	--	--	--	81	61	69	66	67	65	64	63	
26	52	51	47	46	50	48	47	46	47	47	52	49	--	--	--	82	60	70	67	66	65	64	63	
27	52	51	48	47	51	50	47	47	47	47	52	49	--	--	--	81	59	70	68	66	65	64	63	
28	51	51	49	51	51	47	47	47	47	48	47	52	50	--	--	81	60	72	69	65	63	63	62	
29	51	51	52	51	51	47	47	47	47	48	47	52	50	--	--	80	59	74	70	63	62	63	62	
30	51	51	53	52	51	49	47	47	--	--	51	50	--	--	--	59	58	75	71	62	62	63	62	
31	51	51	--	--	49	48	47	47	--	--	--	--	--	--	--	60	57	75	72	63	62	62	--	
Average	56	55	50	49	48	45	45	45	47	47	48	46	--	--	--	61	59	70	67	68	66	63	62	

SACRAMENTO RIVER BASIN--Continued

MCCLOUD RIVER ABOVE SHASTA LAKE, CALIF.

LOCATION.--Temperature recorder at gaging station just upstream from Shasta Lake, 0.3 mile downstream from Bollibokka Creek, and 11.5 miles east of La Moine, Shasta County.
 DRAINAGE AREA.--606 square miles.
 RECORDS AVAILABLE.--June 1951 to September 1952.
 EXTREMES, 1951-52.--Water temperatures: Maximum, 54°F July 18-19, 30-31; minimum, 40°F Jan. 10-12, 14, Mar. 15.
 EXTREMES, June 1951 to September 1952.--Water temperatures: 54°F July 11, 18, 19, 30, 31, 1951 and July 18-19, 30-31, 1952; minimum, 40°F Jan. 10-12, 14, Mar. 15, 1952.
 REMARKS.--Records of discharge for water year 1951-52 given in WSP 1245.

Day	Temperature (°F) of water, water year October 1951 to September 1952											
	October	November	December	January	February	March	April	May	June	July	August	September
	max	min	max	min	max	min	max	min	max	min	max	min
1	50	48	45	45	42	41	44	44	46	46	53	51
2	49	49	45	45	42	41	44	44	46	45	50	49
3	49	49	45	45	42	41	44	44	46	45	50	50
4	49	49	45	45	42	41	44	44	46	45	51	50
5	49	48	45	45	42	41	44	44	46	45	51	50
6	48	48	45	45	42	41	44	44	46	45	51	50
7	48	48	45	45	42	41	44	44	46	45	51	50
8	48	48	45	45	42	41	44	44	46	45	51	50
9	48	48	45	45	42	41	44	44	46	45	51	50
10	48	48	45	45	42	41	44	44	46	45	51	50
11	49	48	45	45	42	41	44	44	46	45	51	50
12	49	48	45	45	42	41	44	44	46	45	51	50
13	49	48	45	45	42	41	44	44	46	45	51	50
14	47	47	45	45	42	41	44	44	46	45	51	50
15	48	47	45	45	42	41	44	44	46	45	51	50
16	48	47	45	45	42	41	44	44	46	45	51	50
17	47	47	44	44	42	41	44	44	46	45	51	50
18	47	47	44	44	42	41	44	44	46	45	51	50
19	47	47	44	44	42	41	44	44	46	45	51	50
20	47	47	44	44	42	41	44	44	46	45	51	50
21	47	46	44	44	41	41	42	42	43	43	51	49
22	46	46	44	44	43	43	41	42	42	42	51	49
23	46	46	44	44	43	43	43	43	42	42	51	49
24	46	46	43	43	43	43	41	44	46	45	51	49
25	46	46	43	43	43	43	42	44	46	45	51	49
26	46	46	43	43	44	43	42	44	43	43	51	49
27	46	46	44	44	44	44	43	44	44	44	51	49
28	46	46	45	45	44	44	44	44	44	44	51	49
29	46	46	45	45	44	44	44	44	44	44	51	49
30	46	46	46	46	45	45	44	44	44	44	51	49
31	46	45	--	--	43	42	44	44	--	--	51	--
Average	47	47	45	44	43	42	41	44	43	46	51	50

SACRAMENTO RIVER BASIN--Continued
SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.

LOCATION.--At gaging station, Yolo-Sutter County line, just upstream from Southern Pacific Railroad bridge at Knights Landing, and 13.1 miles upstream from Feather River.

RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 226 ppm Sept. 1-10; minimum, 91 ppm Apr. 11-20.

Hardness: Maximum, 114 ppm Sept. 1-10; minimum, 44 ppm Jan. 26-27.

Specific conductance: Maximum daily, 447 microhos Sept. 9; minimum daily, 99.1 microhos Mar. 17.

Water temperatures: Maximum observed, 78°F July 23; minimum observed, 42°F Jan. 3, 9-11.

EXTREMES, March 1951-September 1952.--Dissolved solids: Maximum, 226 ppm Sept. 1-10, 1952; minimum, 91 ppm Apr. 11-20, 1952.

Hardness: Maximum, 114 ppm Sept. 1-10, 1952; minimum 44 ppm Jan. 26-27, 1952.

Specific conductance: Maximum daily, 447 microhos Sept. 9, 1952; minimum daily, 99.1 microhos Mar. 17, 1952.

Water temperatures: Maximum observed, 78°F July 23, 1952; minimum observed, 42°F Jan. 3, 9-11, 1952.

REMARKS: Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1951 to September 1952 given in WSP 1245.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhmhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate						
Oct. 1-10, 1951.....	5,936	27	0.03	13	7.5	10	4.2	87	9.4	6.6	0.1	0.5	--	117	0.16	1,880	63	0	24	0.5	169	7.4	5	
Oct. 11-20.....	3,504	28	.02	13	7.4	11	4.3	91	10	7.1	.1	.4	0.13	122	.17	1,810	67	0	23	.6	176	7.6	7	
Oct. 21-31.....	6,595	28	.04	14	7.4	12	4.3	87	12	7.5	.1	.5	--	119	.16	2,120	63	0	28	.7	174	7.4	10	
Nov. 1-10.....	6,158	29	.03	14	7.9	13	4.3	91	13	8.8	.1	.4	--	126	.17	2,080	67	0	29	.7	187	7.7	10	
Nov. 11-20.....	6,138	29	.04	14	7.7	12	4.2	89	12	8.8	.1	.4	.13	123	.17	2,040	67	0	27	.6	178	7.8	8	
Nov. 21-30.....	6,697	26	.06	13	7.5	15	2.4	81	16	12	.3	.8	--	136	.19	3,240	63	0	33	.8	190	7.9	30	
Dec. 1-10.....	18,040	21	.15	10	5.5	7.8	1.8	57	14	6.6	.3	.8	--	111	.15	5,410	48	1	25	.5	132	7.5	50	
Dec. 11-20.....	9,483	26	.12	16	9.4	17	2.6	95	24	14	.3	.7	.31	157	.21	4,920	79	1	31	.8	226	7.6	30	
Dec. 21-31.....	13,010	26	.09	16	9.1	15	2.2	93	18	12	.3	.8	--	149	.20	5,230	77	1	29	.7	215	7.6	20	
Jan. 1-10, 1952.....	21,370	23	.08	12	6.0	8.7	1.9	69	11	6.5	.3	.8	--	111	.15	6,400	55	0	25	.5	151	7.3	30	
Jan. 11-20.....	22,550	20	.19	11	6.9	8.8	1.5	64	11	6.1	.4	.7	.07	117	.16	7,120	56	3	25	.5	139	7.7	15	
Jan. 21-25, 28-31.....	21,880	20	.12	14	7.7	10	1.5	74	14	7.3	.4	.8	--	122	.17	7,210	67	6	24	.5	168	7.7	15	
Jan. 26-27a.....	22,800	--	--	--	--	--	--	50	8.4	--	--	--	--	--	--	--	44	3	--	--	--	110	7.6	--
Feb. 1-10.....	22,410	21	.27	12	6.8	7.4	1.3	71	11	5.0	.3	.7	--	105	.14	6,350	58	0	21	.4	147	7.4	20	
Feb. 11-20.....	22,550	21	.17	12	6.2	7.0	1.2	71	8.5	3.8	.3	.5	.07	97	.13	5,910	55	0	21	.4	137	7.4	15	
Feb. 21-29.....	21,860	22	.18	12	6.2	7.0	1.2	72	8.8	4.2	.3	.5	--	98	.13	5,780	55	0	20	.4	141	7.5	15	
Mar. 1-10.....	20,710	22	.22	13	6.6	7.1	1.3	74	8.9	4.1	.3	.7	--	103	.14	5,760	60	0	21	.4	145	7.5	15	
Mar. 11-20.....	21,530	21	.26	12	6.9	7.1	1.1	73	9.3	4.0	.3	.6	.08	102	.14	5,930	58	0	21	.4	140	7.7	25	
Mar. 21-31.....	21,250	22	.11	14	7.4	7.6	1.0	78	11	4.0	.2	.6	--	109	.15	6,250	65	2	20	.4	159	7.5	10	
Apr. 1-10.....	19,600	22	.19	14	6.6	6.7	1.0	76	10	3.5	.2	.2	--	102	.14	5,400	62	0	19	.4	151	7.3	10	
Apr. 11-20.....	20,470	22	.15	11	5.6	6.7	1.0	67	8.2	3.0	.2	.3	.07	91	.12	5,030	50	0	22	.4	129	7.3	10	
Apr. 21-30.....	19,780	22	.15	11	5.6	7.0	1.0	65	8.5	3.1	.2	.3	--	92	.13	4,910	50	0	23	.4	129	7.4	10	

a Not included for computation of weighted averages.

SACRAMENTO RIVER BASIN--Continued
SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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)	Parts per million	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
May 1-10, 1952...	19,080	21	0.05	11	7.3	8.5	1.3	78	9.6	7.0	0.1	0.3	96	0.13	4,950	57	0	0.5	137	7.2	5	
May 11-20.....	17,190	20	.04	11	7.0	8.5	1.3	70	11	6.6	.1	.6	100	.14	4,640	56	0	.5	145	7.2	5	
May 21-31.....	14,020	20	.02	12	7.8	7.0	1.3	72	11	5.2	.1	.8	103	.14	3,900	62	3	.5	150	7.1	5	
June 1-10.....	10,620	23	.02	14	10	12	1.0	90	16	7.6	.1	.9	118	.16	3,380	76	2	.25	.6	180	7.3	5
June 11-20.....	9,790	21	.03	16	12	20	1.5	106	26	13	.1	.9	156	.21	4,120	89	2	.32	.9	250	7.2	10
June 21-30.....	8,790	24	.04	15	11	25	1.5	108	26	16	.1	.9	171	.23	4,060	83	0	.39	1.2	271	7.5	10
July 1-10.....	9,070	24	.03	14	9.6	21	1.5	101	21	13	.1	.8	151	.21	3,700	74	0	.37	1.1	240	7.6	10
July 11-20.....	7,430	24	.04	15	10	22	1.4	103	22	13	.1	.8	153	.21	3,170	79	0	.37	1.1	250	7.8	5
July 21-31.....	6,718	23	.04	15	11	22	1.4	108	23	14	.1	.7	160	.22	2,900	83	0	.36	1.1	257	7.7	5
Aug. 1-10.....	7,420	23	.07	15	10	22	1.6	108	22	14	.1	.7	159	.22	3,190	79	0	.37	1.1	257	7.6	10
Aug. 11-20.....	7,850	22	.08	16	12	25	1.5	124	25	16	.1	.7	175	.24	3,710	89	0	.37	1.2	286	7.6	20
Aug. 21-31.....	8,095	21	.11	17	13	29	1.4	132	28	17	.3	.6	186	.25	4,070	96	0	.39	1.3	309	7.5	12
Sept. 1-10.....	8,240	19	.09	21	15	39	1.5	157	36	22	.3	.8	226	.31	5,030	114	0	.42	1.6	377	7.3	15
Sept. 11-20.....	9,534	22	.15	16	11	22	1.5	118	20	13	.3	.5	159	.22	4,090	85	0	.35	1.0	254	7.4	15
Sept. 21-30.....	8,439	24	.13	16	11	19	1.5	111	18	11	.3	.6	152	.21	3,460	85	0	.32	.9	238	7.4	13
Weighted average	b 13,470	22	0.12	13	7.8	12	1.6	82	14	7.5	0.2	0.6	120	0.16	4,380	84	0	.26	0.6	175	--	--

b Represents 98 percent of runoff for water year October 1951 to September 1952.

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 (Once-daily temperature measurement at 10:00 a. m.)

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

SACRAMENTO RIVER BASIN--Continued
FEATHER RIVER AT NICOLAUS, CALIF.

LOCATION --At gaging station at Nicolaus, Sutter County, 0.4 mile downstream from highway bridge, and 1.6 miles downstream from Bear River.
RECORDS AVAILABLE --Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES 1951-52 --Dissolved solids: Maximum, 88 ppm Aug. 21-31; minimum, 45 ppm June 1-3, 8, 10.

Hardness: Maximum, 58 ppm Oct. 1-10, 11-20, Nov. 21-30; minimum, 22 ppm June 1-3, 8, 10, 10.

Specific conductance: Maximum daily, 143 microhos Oct. 6; minimum daily, 50.0 microhos May 28.

Water temperatures: Maximum observed, 76°F July 29; minimum observed, 39°F Jan. 3, 5.

EXTREMES, March 1951-September 1952 --Dissolved solids: Maximum, 111 ppm Aug. 1-10, 1951; minimum, 45 ppm June 1-3, 8, 10, 1952.

Hardness: Maximum, 74 ppm Aug. 11-20, 1951; minimum, 22 ppm June 1-3, 8, 10, 1952.

Specific conductance: Maximum daily, 189 microhos Aug. 17, 1951; minimum daily, 50.0 microhos May 28, 1952.

Water temperatures: Maximum observed, 79°F July 18-19, 1951; minimum observed, 39°F Jan. 3, 5, 1952.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1951 to September 1952 given in WSP 1245.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or Col.		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg-nestum	Non-carbonate					
Oct. 1-10, 1951...	2,273	16	0.00	13	6.2	5.4	2.6	78	5.4	2.5	0.1	0.7	--	85	0.12	522	58	0	16	0.3	136	7.3	5
Oct. 11-20.....	2,398	15	.00	13	6.1	5.2	2.4	78	5.4	2.2	0.1	0.8	0.11	84	.11	544	58	0	16	.3	132	7.1	10
Oct. 21-31.....	2,832	16	.00	12	5.9	5.2	2.9	72	6.4	2.8	1	.7	--	83	.11	657	54	0	16	.3	129	7.3	10
Nov. 1-10.....	2,721	16	.04	12	5.6	4.7	2.1	71	5.1	2.2	.3	.3	--	85	.12	624	53	0	15	.3	126	7.0	10
Nov. 11-20.....	4,309	12	.05	10	4.5	4.0	1.1	58	6.2	2.5	.3	.3	1.7	76	.10	884	43	0	16	.3	106	7.3	20
Nov. 21-30.....	5,814	14	.10	12	6.7	4.0	1.9	66	8.0	3.4	.3	.5	--	86	.12	1,350	58	3	14	.3	118	7.2	30
Dec. 1-10.....	21,300	13	.09	8.8	4.2	3.0	1.8	46	7.2	4.9	.3	.7	--	76	.10	4,370	39	2	14	.2	93.1	7.1	50
Dec. 11-20.....	6,951	16	.10	8.8	4.2	3.6	1.8	58	6.9	2.6	.3	.4	1.4	79	.11	1,480	39	0	16	.3	104	7.3	30
Dec. 21-31.....	20,770	14	.10	10	4.9	3.1	1.8	52	6.0	2.6	.3	.3	--	73	.10	4,090	45	2	12	.2	90.2	7.6	30
Jan. 1-10, 1952..	14,470	15	.10	8.2	3.6	3.2	1.9	46	5.5	2.1	.3	.4	--	71	.10	2,770	35	0	16	.2	87.2	7.2	40
Jan. 11-20.....	29,900	13	.11	7.9	3.5	3.3	1.1	43	5.4	2.3	.2	.02	.66	66	.09	5,330	34	0	17	.2	82.2	7.2	40
Jan. 21-31.....	28,690	15	.06	8.4	4.1	3.5	1.0	47	5.3	2.1	.1	.6	--	70	.10	5,420	38	0	16	.2	89.0	7.3	20
Feb. 1-10.....	41,510	13	.04	7.5	3.7	2.8	1.2	45	4.4	1.7	.1	.3	--	58	.08	6,500	34	0	15	.2	77.8	7.4	20
Feb. 11-20.....	22,990	14	.05	8.4	3.7	3.3	.8	45	4.4	2.1	.1	.2	.02	64	.09	3,970	36	0	16	.2	84.0	7.5	10
Feb. 21-29.....	19,870	16	.09	8.3	4.5	3.4	.8	48	5.3	1.8	.2	.4	--	63	.09	3,380	39	0	16	.2	88.0	7.2	20
Mar. 1-10.....	20,010	15	.12	9.0	4.8	3.6	.9	50	5.6	2.0	.2	.4	--	66	.09	3,570	42	1	15	.2	91.1	7.1	23
Mar. 11-20.....	22,660	15	.15	8.7	4.9	3.7	.9	50	5.8	1.9	.2	.4	.03	68	.09	4,160	42	1	16	.2	91.8	7.2	25
Mar. 21-31.....	19,860	16	.06	8.6	4.7	4.2	.7	52	6.4	1.9	.1	.2	--	70	.10	3,750	41	0	18	.3	98.4	7.2	10
Apr. 1-10.....	39,900	17	.06	7.8	4.0	4.2	.8	49	4.7	1.4	.1	.2	--	67	.09	7,200	36	0	20	.3	86.3	7.1	10
Apr. 11-20.....	40,920	17	.13	6.8	3.9	3.8	.8	42	4.0	1.4	.1	.3	.06	62	.08	6,850	33	0	20	.3	77.0	7.2	10
Apr. 21-30.....	47,190	15	.16	6.4	3.3	2.8	.8	37	3.0	1.0	.1	.3	--	56	.08	7,140	30	0	17	.2	67.6	7.2	10

May 1-10, 1952 ..	41,550	13	.03	6.4	3.5	2.4	.9	38	2.7	1.4	.1	.9	--	50	.07	5,620	30	0	14	.2	61.5	8.9	10
May 11-20	35,390	13	.07	6.0	3.2	2.2	.9	36	2.9	1.8	.1	.8	.03	49	.07	4,660	28	0	14	.2	58.5	8.8	10
May 21-31	32,910	13	.06	5.4	2.4	2.9	.8	31	3.9	1.0	.1	.5	--	47	.06	4,180	23	0	21	.3	56.9	8.9	15
June 1-3, 8, 10 ..	26,780	12	.10	5.5	2.0	2.3	.3	30	2.4	.8	.1	.5	--	45	.06	3,950	22	0	18	.3	55.9	7.5	15
June 11-20	18,020	13	.09	5.9	2.0	2.3	.8	35	2.3	1.2	.1	.5	.10	46	.07	2,690	25	0	17	.2	61.9	7.1	15
June 21-30	12,670	13	.09	6.2	2.0	2.0	.6	37	2.4	1.2	.1	.5	--	50	.07	1,710	27	0	17	.2	64.8	7.3	15
July 1-10	9,004	14	.07	7.1	2.3	2.0	.6	40	3.0	1.3	.1	.6	--	57	.07	1,310	31	0	15	.2	73.4	7.2	15
July 11-20	5,019	15	.06	8.2	4.1	5.5	1.0	50	3.7	2.0	.10	.6	.07	63	.09	854	37	0	18	.2	87.3	7.4	10
July 21-31	2,343	16	.09	8.4	5.1	4.2	1.5	58	4.0	3.0	.10	.6	--	74	.10	468	42	0	17	.3	111	7.3	20
Aug. 1-10	1,657	17	.13	12	5.5	4.5	1.5	64	5.3	3.1	.10	.9	--	81	.11	362	53	0	15	.3	117	7.5	25
Aug. 11-20	1,288	16	.08	11	6.2	5.1	1.4	70	4.9	3.2	.10	.7	.10	83	.11	289	53	0	17	.3	128	7.5	15
Aug. 21-31	1,323	18	.07	12	6.2	5.0	1.4	66	5.0	4.0	.1	.4	--	88	.12	314	55	1	16	.3	126	7.4	7
Sept. 1-10	1,395	16	.05	12	5.9	5.0	1.5	70	4.8	5.0	.1	.6	--	85	.12	320	54	0	16	.3	124	7.2	5
Sept. 11-20	1,868	17	.06	12	5.6	4.6	1.5	72	5.1	3.1	.1	.6	.04	84	.11	424	53	0	15	.3	125	7.2	7
Sept. 21-30	2,451	16	.02	12	5.5	4.7	1.5	68	4.4	2.8	.2	.5	--	81	.11	536	53	0	16	.3	120	7.3	7
Weighted average	b16,670	14	0.08	7.6	3.8	3.2	1.0	44	4.5	1.8	0.1	0.5	--	62	0.08	2,790	36	0	16	0.2	79.8	--	--

a Sum of determined constituents.

b Represents 98 percent of runoff for water year October 1951 to September 1952.

SACRAMENTO RIVER BASIN--Continued

FEATHER RIVER AT NICOLAUS, CALIF.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 [Once-daily temperature measurement at 7 a. m.]

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

SACRAMENTO RIVER BASIN--Continued
AMERICAN RIVER AT FAIR OAKS, CALIF.

LOCATION --At highway bridge at gaging station at Fair Oaks, Sacramento County, 10 miles downstream from South Fork.

DRAINAGE AREA, 1,921 square miles.

RECORDS AVAILABLE.--Chemical analyses: January to December 1906. March 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 67 ppm Jan. 11-20; minimum, 29 ppm June 1-10.

Hardness: Maximum, 36 ppm March 1-10; minimum, 15 ppm May 1-10.

Specific conductance: Maximum, 411-20102 micromhos daily, 29.1 micromhos June 3.

Water temperatures: Maximum, 80°F July 28; minimum, 40°F Jan. 3, 4, 10.

EXTREMES, March 1951-September 1952.--Dissolved solids: Maximum, 69 ppm Aug. 21-31, 1951; minimum, 29 ppm June 1-10, 1952.

Hardness: Maximum, 41 ppm Aug. 1-Sept. 10, 1951; minimum, 15 ppm May 1-10, 1952.

Specific conductance: Maximum daily, 112 micromhos Aug. 23, 1951; minimum daily, 29.1 micromhos June 3, 1952.

Water temperatures: Maximum observed, 80°F July 28, Aug. 4, 1952; minimum observed, 40°F Jan. 3, 4, 10, 1952.

REMARKS.--Values reported for dissolved solids are residues on filter. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1951 to September 1952 given in WSP 1245.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180° C)		Hardness as CaCO ₃		Percent sodium in hardness	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate						
Oct. 1-10, 1951...	444	11	0.02	8.8	3.2	3.6	1.4	39	4.8	4.0	0.3	0.1	--	58	0.08	70	35	3	18	0.3	84.2	7.2	20
Oct. 11-20	505	11	.02	7.9	2.8	3.1	1.6	36	5.8	3.2	.1	.3	0.08	54	.07	74	31	2	17	.2	79.1	7.1	20
Oct. 21-31	1,072	11	.04	8.4	3.1	3.0	1.2	37	5.2	3.6	.1	.3	--	58	.08	168	34	3	16	.2	82.3	7.1	10
Nov. 1-10	740	11	.02	7.9	3.1	2.9	1.2	38	4.7	3.4	.1	.1	--	53	.07	106	32	1	16	.2	77.1	7.2	10
Nov. 11-20	2,120	11	.04	8.8	3.1	3.6	1.7	34	8.6	3.6	.2	.0	.08	57	.08	326	35	7	18	.3	75.5	7.2	10
Nov. 21-30	2,842	13	.05	7.9	3.1	2.4	2.9	--	4.8	--	.2	.8	.08	61	.08	468	32	--	13	.2	80.6	7.3	20
Dec. 1-10	7,193	13	.08	7.0	2.9	2.0	2.7	30	6.0	4.0	.4	.5	--	53	.07	1,030	29	5	12	.2	69.1	7.3	20
Dec. 11-20	2,059	14	.04	7.3	2.2	2.7	3.0	35	5.3	3.4	.3	.4	--	53	.07	295	31	6	12	.2	71.0	7.4	10
Dec. 21-31	6,911	13	.04	6.4	2.9	2.5	1.0	35	4.2	2.0	.3	.5	--	56	.08	1,040	28	0	16	.2	71.5	7.1	20
Jan. 1-10, 1952...	4,024	14	.04	7.2	3.0	2.7	1.6	38	4.7	2.5	.2	.3	--	59	.08	641	30	0	15	.2	76.5	7.1	20
Jan. 11-20	13,190	15	.08	7.0	3.5	3.9	1.9	42	5.4	2.9	.3	.6	.07	67	.09	2,390	32	0	20	.3	79.0	7.2	30
Jan. 21-31	9,830	14	.03	7.1	3.5	2.4	1.2	40	5.2	2.0	.3	.6	--	59	.08	1,970	32	0	13	.2	78.4	7.3	20
Feb. 1-10	12,480	14	.03	6.8	2.8	2.1	1.2	35	3.9	1.8	.3	.7	--	53	.07	1,790	28	0	13	.2	69.3	7.4	15
Feb. 11-20	8,716	14	.03	6.2	2.8	2.4	1.4	--	4.0	--	.3	.4	--	56	.08	1,320	27	--	15	.2	72.4	7.1	15
Feb. 21-31	7,781	15	.05	6.8	3.2	2.5	1.3	37	4.6	3.4	.3	.1	--	59	.08	1,240	30	0	15	.2	77.8	7.2	25
Mar. 1-10	6,783	15	.04	6.5	3.1	2.8	1.5	37	4.7	1.9	.3	.6	--	56	.08	1,030	29	0	17	.2	73.2	7.0	25
Mar. 11-20	9,191	16	.06	7.4	4.2	3.2	.7	--	5.3	--	.1	.7	--	64	.09	1,580	36	--	16	.2	89.1	7.6	7
Mar. 21-31	8,479	15	.05	7.0	3.5	3.0	.7	38	4.3	2.0	.1	.5	--	56	.08	1,280	32	1	17	.2	74.4	7.5	4
Apr. 1-10	12,070	12	.03	5.2	2.1	2.3	1.1	26	2.4	3.1	.1	.4	--	42	.06	1,370	22	0	18	.2	54.6	7.1	4
Apr. 11-20	12,240	12	.04	4.6	1.8	2.0	.8	24	2.1	1.4	.1	.3	.08	38	.05	1,260	19	0	18	.2	47.3	7.2	5
Apr. 21-30	16,930	11	.15	4.2	1.5	1.7	.5	22	2.4	.8	.2	.2	--	35	.05	1,900	17	0	18	.2	41.5	7.1	5

SACRAMENTO RIVER BASIN--Continued
AMERICAN RIVER AT FAIR OAKS, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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 so- dium ad- sorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Col- or	
														Parts per million	Tons per acre-mil-	Tons per day	Calcium, mg./nestum	Non-carbonate					
May 1-10, 1952.....	16,490	11	0.11	4.0	1.2	1.7	0.5	20	2.2	1.1	0.2	0.2	--	34	0.05	1,510	15	0	19	0.2	39.8	7.0	5
May 11-20.....	18,550	9.9	.02	4.8	2.5	1.4	.5	22	2.1	2.4	.1	.8	0.02	33	.04	1,650	22	4	12	.1	38.2	6.9	5
May 21-31.....	19,440	8.9	.02	5.0	2.1	1.2	.7	20	2.1	3.1	.1	.8	--	31	.04	1,630	21	5	11	.1	36.0	6.8	5
June 1-10.....	16,550	8.9	.08	5.0	2.0	1.0	.8	22	1.8	.8	.1	.7	--	29	.04	1,300	21	3	9	.1	30.9	6.7	10
June 11-20.....	9,359	9.4	.02	4.0	1.5	2.5	.7	24	2.2	1.0	.2	.2	.05	34	.05	859	16	0	24	.3	34.0	6.9	7
June 21-30.....	7,387	10	.02	4.2	1.5	1.6	.6	20	1.8	.9	.2	.3	--	32	.04	638	17	0	17	.2	35.6	6.9	10
July 1-10.....	5,889	9.6	.01	3.9	1.6	1.6	.9	20	1.7	1.1	.2	.6	--	34	.05	542	16	0	17	.2	37.3	6.7	15
July 11-20.....	3,791	10	.04	5.0	1.7	1.7	1.1	24	2.8	1.2	.2	.6	.03	40	.05	409	20	0	15	.2	42.0	6.7	15
July 21-31.....	2,119	11	.02	5.7	1.9	2.0	1.4	28	2.5	1.8	.2	.5	--	42	.06	240	22	0	15	.2	49.4	6.9	15
Aug. 1-10.....	1,427	12	.05	6.0	2.1	2.2	.9	30	2.8	1.9	.1	.5	--	44	.06	170	24	0	16	.2	56.4	7.0	8
Aug. 11-20.....	798	13	.05	8.2	2.5	3.0	.9	38	3.5	2.9	.1	.5	.05	54	.07	116	31	0	17	.2	73.8	7.1	8
Aug. 21-31.....	587	12	.05	8.4	2.7	3.3	1.4	39	3.7	3.4	.1	.5	--	55	.07	84	32	0	17	.3	78.0	7.0	8
Sept. 1-10.....	471	12	.04	8.5	2.8	3.3	1.4	40	3.9	3.3	.1	.5	--	55	.07	70	33	0	17	.3	77.8	7.1	12
Sept. 11-20.....	566	12	.04	8.5	2.8	3.4	1.4	40	4.6	3.6	.1	.5	.05	56	.08	86	33	0	18	.3	80.8	7.2	12
Sept. 21-30.....	542	11	.04	7.8	2.6	3.4	1.4	38	3.8	3.4	.1	.5	--	53	.07	78	30	0	19	.3	77.0	7.0	8
Weighted average	6,929	12	0.05	5.6	2.4	2.1	1.0	28	3.3	2.0	0.2	0.5	--	45	0.06	642	24	1	15	0.2	55.3	--	--

SACRAMENTO RIVER BASIN--Continued

AMERICAN RIVER AT FAIR OAKS, CALIF.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

SACRAMENTO RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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 (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH		
															Parts per million	Tons per acre-foot						
																					Calcium, magnesium, sodium	Tons per day
SACRAMENTO RIVER AT DELTA																						
Feb. 18, 1952	2,250					3.0		46			1.4						38	0	15	82.3	7.4	
Mar. 11	1,580					3.4		50			2.5						40	0	16	90.2	7.3	
May 12	2,790	15	0.00	3.6	6.1	1.9	0.3	43			2.0	.7	0.0	0.6	0.04	51	0.07	34	0	11	72.7	7.4
PIT RIVER NEAR CANBY																						
Oct. 10, 1951	60					28		156			7.0						85	0	42	288	7.3	
Nov. 14	99					26		121			6.8						68	0	45	238	7.2	
May 13, 1952	970	28	0.00	14	4.4	9.1	2.3	83		4.9	1.2	0.0	0.6	0.03	106	0.14	53	0	26	439	7.6	
Sept. 11	58					--		125			1.1						71	--	--	222	7.4	
BURNLEY CREEK NEAR BURNLEY																						
Oct. 10, 1951						4.6		68			1.0						46	0	18	115	7.6	
Nov. 15						5.4		60			1.5						42	0	21	105	7.0	
May 13, 1952		16	0.00	4.1	1.4	1.4	0.5	24		0.7	.4	0.0	0.0	0.02	36	0.05	16	0	15	38.7	7.3	
Sept. 11						--		72			.5						47	--	--	114	7.1	
SACRAMENTO RIVER NEAR REDDING																						
Oct. 13, 1951	6,350	22		11	4.1	6.0	0.4	62		4.5	2.0	0.0	0.0	0.07	80	0.11	44	0	23	112	7.7	
Feb. 19, 1952	14,400	--		--	--	6.0	--	62		--	2.4	--	--	--	--	--	46	0	22	116	7.4	
Mar. 17	11,420	--		--	--	6.3	--	50		--	2.2	--	--	--	--	--	47	0	23	118	7.3	
May 19	12,850	19	0.00	10	4.1	5.5	1.1	58		6.1	1.3	.0	.4	.02	76	.10	42	0	21	110	7.6	
COTTONWOOD CREEK NEAR COTTONWOOD																						
Oct. 10, 1951	73					11		106			7.5						81	0	23	210	7.9	
Nov. 15	122					15		118			17						110	14	23	268	7.2	
Feb. 13, 1952	1,890					6.6		123			3.8						107	6	12	233	7.8	
Mar. 11	1,560					8.2		129			4.8						116	10	13	254	8.2	
May 13	972	16	0.00	20	8.0	5.4	0.8	90	10	3.0	0.0	0.0	0.5	0.04	108	0.15	83	9	14	182	7.8	
Sept. 10	76					--		71			.6						50	--	--	137	7.1	

SACRAMENTO RIVER NEAR HAMILTON CITY

Oct. 11, 1951	5,220				6.0		66	3.8				50	0	31		134	7.3
Nov. 19, 1951	4,996				11		72	5.8				96	0	30		153	6.1
Feb. 14, 1952	33,740				6.2		65	2.8				53	0	20		129	6.1
Mar. 12, 1952	18,460				6.4		51	3.0				94	0	19		140	7.6
May 14, 1952	19,600	20	0.00	10	4.6	5.2	1.0	6.8	0.0	0.1	0.00	79	0.11			109	7.6
Sept. 10, 1952	17,680				--	--		1.3				43	--	--		111	7.5

STONY CREEK NEAR HAMILTON CITY

Feb. 14, 1953	1,620				9.9		119	9.8				107	10	17		251	7.7
Mar. 12, 1953	1,060				12		139	14				128	14	17		300	8.3
May 14, 1953	398	10	0.00	28	9.5	8.5	0.7	15	9.2	0.0	0.6	144	0.20		6	252	8.1

SACRAMENTO RIVER AT KNIGHTS LANDING

Nov. 19, 1951	a5,660	--	--	--	--	12	--	--	7.0	--	--	--	--	0	29	175	7.1
Feb. 21, 1952	a22,200	--	--	--	--	8.7	--	--	6.0	--	--	--	--	0	24	169	7.9
Mar. 19, 1952	a21,800	--	--	--	--	7.0	--	--	3.8	--	--	--	--	2	21	137	7.8
Apr. 10, 1952	a19,400	20	0.00	12	6.8	6.8	1.3	74	10	3.0	0.0	0.3	0.06	58	0	152	7.9
May 16, 1952	a17,300	21	.00	12	5.0	8.0	1.1	65	10	3.8	.0	.4	.07	50	0	138	7.5
Sept. 22, 1952	a9,100	--	--	--	--	--	--	107	--	10	--	--	--	--	--	231	7.8

SACRAMENTO SLOUGH NEAR KNIGHTS LANDING

Nov. 19, 1951	a229				41		268	46				214	0	29		567	7.5
Feb. 21, 1952	21,800				8.1		71	9.0				60	2	23		187	7.6
Mar. 19, 1952	21,800				5.0		53	3.2				44	1	20		106	7.3
May 16, 1952	17,300	27	0.00	32	21	45	1.6	165	21	96	0.1	316	0.43	32	37	567	7.4
Sept. 22, 1952	1,097				--	--	219	30				106	--	--		404	7.7

a. Mean daily discharge (cfs).

b. Residue at 180°C.

SACRAMENTO RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Water 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 (sun)		Hardness as CaCO ₃	Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)
															Parts per million	Tons per acre-foot				

INDIAN CREEK NEAR CRESCENT MILLS

Oct. 9, 1951.....	49				7.7			99			3.2						73	0	18	186	7.6
Nov. 14.....	189				9.5			84			4.8						64	0	24	164	8.8
May 12, 1952.....	3,960	19	0.00	6.8	2.2	2.7	1.1	37		1.6		0.0	0.1	0.04		52	28	0	18	64.2	8.9
Sept. 11.....	66				--	--	--	110			2.0						78	--	--	194	7.3

FEATHER RIVER NEAR OROVILLE

Oct. 9, 1951.....	2,420	--			--	5.4	--	68		--	2.5	--	--	--	--	--	52	0	18	139	7.4
Nov. 14.....	2,740	--			--	6.5	--	52		--	3.1	--	--	--	--	--	43	0	26	112	6.8
Feb. 13, 1952.....	12,000	14		8.4	3.9	3.9	0.6	50		2.6		0.0	0.5	0.30		60	27	0	18	86.9	7.5
Mar. 12.....	10,500	--	0.00	--	3.7	--	--	53		--	1.3	--	--	--	--	--	41	0	16	96.0	7.9
May 12.....	24,500	15		5.4	2.5	1.9	.8	23		1.2		.0	.2	.03		44	24	0	14	56.6	7.1
Sept. 12.....	2,550	--		--	--	--	--	62		--	.5	--	--	--	--	--	43	--	--	102	7.4

YUBA RIVER NEAR SMARTSVILLE

Oct. 9, 1951.....	674	--			--	4.0	--	68		--	2.0	--	--	--	--	--	57	2	13	131	7.5
Nov. 13.....	681	--			--	5.7	--	60		--	3.8	--	--	--	--	--	56	7	18	130	7.1
Feb. 13, 1952.....	1,454	15		6.4	2.4	2.6	0.8	32		3.3	1.5	0.0	0.1	0.39		48	26	0	17	62.2	7.1
Mar. 12.....	4,005	--	0.00	--	--	2.1	--	38		--	1.5	--	--	--	--	--	31	0	13	73.1	7.7
May 12.....	922	11		5.4	1.6	1.1	.4	25		2.2	.4	.0	.1	.02		34	20	0	10	47.2	7.4
Sept. 12.....	730	--		--	--	--	--	57		--	.6	--	--	--	--	--	46	--	--	104	7.4

YUBA RIVER AT MARYSVILLE

Oct. 9, 1951.....	a 473	--	--	4.4	--	66	--	2.2	--	--	--	--	--	--	58	4	14	132	7.1
Nov. 13.....	a 732	--	--	6.0	--	56	--	4.0	--	--	--	--	--	--	58	10	15	140	6.6
Feb. 13, 1952.....	a 6,990	14	0.4	3.3	2.3	34	0.4	4.1	1.1	0.1	0.6	0.15	49	0.07	29	1	14	64.7	7.3
Mar. 13.....	a 5,710	--	--	2.1	--	39	--	1.2	--	--	--	--	--	--	34	2	12	76.0	7.7
Mar. 21.....	a 6,100	14	--	3.2	2.6	40	--	4.5	2.2	0	.1	.02	55	.07	33	0	16	46.3	8.1
May 12.....	a 13,900	11	0.00	1.6	1.2	24	.5	3.2	.9	.1	.2	.02	36	.05	20	1	11	49.9	6.8
Sept. 16.....	a 498	--	--	--	--	36	--	--	.9	--	--	--	--	--	43	--	--	103	7.6

BEAR RIVER NEAR WHEATLAND

Feb. 21, 1952.....	5,060	14	--	7.3	4.1	2.5	1.8	6.8	2.0	0.1	0.3	0.01	58	0.08	35	4	13	80.6	7.8
Mar. 13.....	1,650	--	--	2.7	--	48	--	2.5	--	--	--	--	--	--	43	4	12	101	7.6
Mar. 21.....	4,730	13	--	9.1	3.9	3.4	.8	7.3	3.0	.1	.1	.03	82	.08	39	3	16	95.7	7.7
May 16.....	515	10	0.00	6.0	2.7	2.0	.5	6.8	1.0	.0	.1	.02	43	.06	26	2	14	63.2	7.1

FEATHER RIVER AT NICOLAUS

Nov. 19, 1951.....	3,900	--	--	--	5.7	--	--	--	2.5	0.1	--	--	--	--	47	0	21	116	7.1
Feb. 21, 1952.....	a 26,200	14	--	7.9	3.7	3.4	0.6	4.4	1.8	0.1	0.6	0.15	58	0.08	35	0	17	89.8	7.3
Mar. 13.....	a 17,600	--	--	--	3.7	--	--	--	1.5	--	--	--	--	--	41	0	16	98.4	7.7
Apr. 10.....	48,900	16	0.0	7.2	3.2	2.0	1.0	2.9	.3	0	.4	.03	b 65	.09	32	0	12	76.5	7.4
May 16.....	34,000	15	.00	6.0	2.2	2.0	.6	2.2	.8	0	.3	.03	45	.06	24	0	15	56.6	7.5
Sept. 17.....	1,950	--	--	--	--	--	--	--	2.3	--	--	--	--	--	55	--	--	125	7.5

a Mean daily discharge (cfs).

b Residue at 180°C.

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Water 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 (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25° C)	
															Parts per million	Tons per acre-foot	Calcium	Non-carbonate			
AMERICAN RIVER AT SACRAMENTO (AT "H" STREET BRIDGE)																					
Oct. 8, 1951.....	541					4.9		43			5.8						38	3	22	105	7.3
November.....	--					4.0		34			3.0						30	2	22	79.8	6.9
Feb. 21, 1952.....	9,980					2.6		36			1.5						31	2	15	74.3	7.4
Mar. 14.....	5,800					4.1		41			3.5						37	3	19	64.7	7.8
May 22.....	19,600	7.8	0.06	4.4	0.7	1.2	0.7	18		3.1		0.0	0.3	0.01	28	0.04	14	0	15	37.3	6.6
Sept. 23.....	583					--		39			3.0						32	--	--	82.9	7.2
SACRAMENTO RIVER AT SACRAMENTO (TOWER BRIDGE)																					
Oct. 18, 1951.....	9,010					9.0		71			7.5						64	6	23	179	7.0
Nov. 21.....	17,770					12		71			8.0						60	2	30	173	7.0
Feb. 21, 1952.....	69,390					6.0		62			4.1						50	0	21	124	8.0
Mar. 11.....	86,250					7.6		70			9.0						58	1	22	152	7.8
May 22.....	87,300	15	0.06	6.8	3.4	3.8	0.9	39		5.4	1.3	0.0	0.6	0.04	56	0.08	31	0	20	82.5	7.1
Sept. 23.....	12,100					--		111			11						80	--	--	241	7.5
CLEAR LAKE (NORTH END) CLEAR LAKE OAKS																					
Oct. 21, 1951.....						13		191			8.2						155	0	16	345	8.2
Nov. 16.....						16		196			9.0						158	0	15	356	7.5
Mar. 11, 1952.....						18		180			7.0						122	0	16	270	8.4
May 15.....		12	0.06	21	15	9.7	2.1	144		12	4.5	0.0	2.6	0.76	150	0.20	114	0	15	263	7.3
Sept. 16.....						--		166			6.2						131	--	--	289	8.3
a Mean daily discharge (cfs).																					

a Mean daily discharge (cfs).

CLEAR LAKE (WEST SIDE) LAKEPORT

[illegible]

CACHE CREEK NEAR LOWER LAKE

Oct. 12, 1951.....	a3.5	15	204	8.5	---	---	---	181	14	364	7.6	
Feb. 14, 1952.....	a2.490	---	187	9.0	---	---	---	150	0	340	8.0	
Mar. 11.....	a4.81	---	177	8.5	---	---	---	144	0	317	8.2	
May 14.....	7.4	0.00	24	12	1.5	1.0	1.63	0.22	130	0	293	7.8
June 13.....	a5.64	2.3	165	6.2	0.1	2.4	1.0	0.22	130	0	293	7.8
June 14.....	a2.85	1.8	164	11	6.0	1.5	1.1	0.23	128	0	289	7.6
July 10.....	a2.49	2.2	166	7.0	1.0	1.3	1.1	0.23	128	0	285	8.1
Sept. 16.....	a3.04	---	177	5.0	---	---	---	135	---	302	8.4	

NORTH FORK CACHE CREEK NEAR LOWER LAKE

[illegible]

a Mean daily discharge (cfs):

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

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Water 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 (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
														Parts per million	Tons per acre-foot					
CACHE CREEK NEAR CAPAY																				
Dec. 27, 1951	6,190	--	--	--	--	11	2.6	101	--	9.5	--	--	0.15	--	--	83	0	22	210	7.7
Feb. 3, 1952	7,720	14	--	22	17	14	--	149	17	9.8	0.0	0.9	.67	171	0.23	125	3	19	289	8.4
Feb. 15	3,720	--	--	--	--	17	--	199	--	13	--	--	--	--	--	163	0	18	377	7.9
Mar. 19	4,900	--	--	--	--	15	--	165	--	12	--	--	--	--	--	137	2	19	317	8.0
Apr. 3	1,050	12	--	28	28	23	1.4	226	28	22	0	.6	.99	254	.35	185	0	21	450	8.5
May 9	698	12	0.00	32	25	24	2.5	226	24	23	1	1.0	1.3	256	.35	183	0	22	450	8.0
June 18	531	9.9	--	27	21	26	2.2	200	16	20	.2	1.5	1.3	224	.30	154	0	27	388	7.9
July 3	454	11	--	28	21	25	2.3	199	16	22	.1	.9	1.8	226	.31	156	0	25	389	7.8
PUTAH CREEK NEAR WINTERS																				
Dec. 27, 1951	8,090	--	--	--	--	5.0	--	73	--	3.2	--	--	0.07	--	--	67	7	14	146	7.0
Feb. 15, 1952	920	--	--	--	--	13	--	270	--	8.2	--	--	--	--	--	240	18	11	470	8.0
Mar. 10	736	--	--	--	--	14	--	c257	--	16	--	--	--	--	--	230	19	12	480	8.5
Mar. 9	440	24	--	27	55	17	1.2	334	39	12	0.0	0.1	.35	340	0.46	204	20	11	579	7.9
Apr. 9	189	27	0.00	30	61	18	1.3	375	41	12	0	3	.56	376	.51	326	18	11	624	8.3
May 9	37	25	--	37	61	25	2.1	416	38	19	0	2.5	.65	414	.56	344	2	14	691	8.1
June 18	42	24	--	33	63	23	1.5	409	32	18	0	7	1.0	398	.54	342	6	13	664	8.3
Sept. 9	4.8	--	--	--	--	--	--	d430	--	27	--	--	1.1	--	--	362	--	--	760	8.5
SACRAMENTO RIVER NEAR RIO VISTA																				
Oct. 18, 1951	--	--	--	--	--	14	--	90	--	14	--	--	--	--	--	75	2	29	220	7.2
Nov. 21	--	--	--	--	--	12	--	69	--	8.0	--	--	--	--	--	57	0	31	163	6.9
Feb. 20, 1952	--	--	--	--	--	7.6	--	70	--	6.5	--	--	--	--	--	58	1	22	149	7.9
Mar. 24	--	--	--	--	--	13	--	100	--	14	--	--	--	--	--	89	7	24	239	7.8
May 21	--	14	0.00	9.2	5.1	6.8	0.9	45	8.6	5.5	0.0	0.8	0.06	73	0.10	44	7	25	122	7.7
Sept. 18	--	--	--	--	--	--	--	164	--	15	--	--	--	--	--	122	--	--	326	7.2

a Mean daily discharge (cfs).

c Includes equivalent of 11 parts per million of carbonate (CO₃).

d Includes equivalent of 16 parts per million of carbonate (CO₃).

PACIFIC SLOPE BASINS IN CALIFORNIA

NAPA RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN NAPA RIVER BASIN IN CALIFORNIA
Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water discharge (cfs)	Silica (SiO ₂) (Fe)	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)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Calcium, mg./neestum	Non-carbonate			
Feb. 10, 1952	142					10		76			7.8					65	3	25	179	7.7
Feb. 14	140					11		85			7.8					74	4	24	194	7.2
May 15	18	39	0.00	22	11	15	2.5	119	15		13	0.2	6.1	0.46		100	3	24	275	7.5
Sept. 9	1.2				--	--		198			9.2					162	--	--	385	7.6

NAPA RIVER NEAR ST. HELENA

Date of collection	Water discharge (cfs)	Silica (SiO ₂) (Fe)	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)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Calcium, mg./neestum	Non-carbonate			
Feb. 10, 1952	142					10		76			7.8					65	3	25	179	7.7
Feb. 14	140					11		85			7.8					74	4	24	194	7.2
May 15	18	39	0.00	22	11	15	2.5	119	15		13	0.2	6.1	0.46		100	3	24	275	7.5
Sept. 9	1.2				--	--		198			9.2					162	--	--	385	7.6

RUSSIAN RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN RUSSIAN RIVER BASIN IN CALIFORNIA
EAST FORK RUSSIAN RIVER AT POTTER VALLEY

Date of collection	Water discharge (cfs)	Silica (SiO ₂) (Fe)	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)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
														Calcium, mg./neestum	Non-carbonate						
Oct. 9, 1951.....	--					6.0		100			4.2					82	0	14	187	7.1	
Nov. 13	--					7.7		109			5.0					89	0	16	201	7.6	
Nov. 13	a 306					3.1		49			1.8					42	2	14	94.7	7.0	
Feb. 11, 1952	--					3.0		61			2.0					50	0	12	112	7.9	
Mar. 6	--					3.0		61			2.0					50	0	12	112	7.9	
May 19	a 170	15	0.00	15	3.9	3.7	0.6	66		6.3	2.5	0.2	0.2	0.19	74	0.10	54	0	13	124	7.0
May 19	--					3.7		88			2.6					72	--	--	159	7.4	
Sept. 15.....	--					--		--			--					--	--	--	--	--	

EAST FORK RUSSIAN RIVER NEAR CALPELLA

Date of collection	Water discharge (cfs)	Silica (SiO ₂) (Fe)	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)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
														Calcium, mg./neestum	Non-carbonate						
Oct. 9, 1951.....	311					5.7		100				4.2				82	0	13	192	6.9	
Nov. 14.....	245					6.0		112				5.5				92	0	16	207	7.7	
Feb. 11, 1952.....	848					4.3		70				3.2				81	4	13	136	7.1	
Mar. 6.....	844					5.4		72				3.2				82	3	16	143	7.8	
May 19.....	270	17	0.00	16	5.6	4.5	0.7	78		7.5	3.0	0.0	0.0	0.27	92	0.13	63	0	13	143	7.3
Sept. 15.....	277				--	--		92			.7					72	--	--	165	7.7	

a Mean daily discharge (cfs).

RUSSIAN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN RUSSIAN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952.--Continued

Date of collection	Water 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)	Boiron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium absorption ratio	Specific conductance (micro-mhos at 25° C)	
															Parts per million	Tons per acre-foot				
RUSSIAN RIVER AT UKIAH																				
Oct. 9, 1951					6.5			106			6.0						87	0	14	202
Nov. 14					7.7			115			5.8						94	0	15	212
Feb. 11, 1952					4.6			61			3.0						52	2	16	121
Mar. 6					6.4			108			4.5						93	4	13	6.9
May 19		21	0.00	17	7.3		0.5	90		8.4		0.0	0.3	0.29	107	0.15	72	0	14	7.8
Sept. 15					--			95			2.7						75	--	--	167
																				7.5
RUSSIAN RIVER NEAR HOPLAND																				
Oct. 9, 1951	161					6.0		110			5.2						80	0	13	208
Nov. 14	273					8.0		110			3.5						92	2	14	213
Feb. 11, 1952	2,580					5.0		75			3.5						64	3	14	7.5
Mar. 6	2,576					5.4		72			3.5						63	4	16	146
May 19	2,572	17	0.00	18	7.0	6.1	0.9	98		8.6		0.0	0.4	0.29	108	0.15	74	1	15	7.4
Sept. 15	214				--			98			3.0						79	--	--	186
																				7.6
																				179
																				7.4
RUSSIAN RIVER NEAR HEALDSBURG																				
Oct. 9, 1951	188				10			150			7.0						121	0	15	272
Nov. 13	436				8.0			140			5.2						122	8	13	258
Feb. 11, 1952	2,930				6.4			116			4.5						98	4	12	7.9
Mar. 6	3,290				6.4			107			5.2						92	4	13	7.8
May 19	516	23	0.00	22	13	8.1	0.9	133		11		0.2	0.6	0.65	150	0.20	108	0	14	202
Sept. 15	189				--			139			5.0						111	--	--	8.1
																				8.2
																				241
																				8.2
																				242
																				7.9

RUSSIAN RIVER AT GUERNEVILLE

Oct. 9, 1951.....	172			10		156		7.2				131	2	14		290	7.1
Nov. 12.....	2,230			19		131		8.2				134	0	17		278	7.4
Nov. 11, 1952.....	3,890			7		129		4.5				109	5	14		273	7.7
Mar. 6.....	3,680			8.3		123		7.0				109	7	14		277	8.0
May 19.....	602	20	0.00	14	8.9	1.2	149	13	7.3	0.2	0.6	162	0	14		285	7.5
Sept. 16.....	136			--	--	--	149		5.3			118	--	--		280	7.8

EEL RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN EEL RIVER BASIN IN CALIFORNIA

EEL RIVER NEAR MCCANN

Oct. 10, 1951.....						133		7.0				129	20	11		288	7.5
Nov. 14.....						72		5.0				70	11	14		157	7.4
Feb. 4, 1952.....						65		1.8				56	3	13		120	7.5
Mar. 5.....						75		2.0				66	5	11		144	7.9
May 14.....	4,040					65		7.0				52	2	6		119	7.6
May 20.....		7.4	0.00	15	4.4	1.8		0.8		0.2	0.14	69	2	2		117	7.5
Sept. 16.....		11	.00	14	4.6	2.6		9.7	1.3	.0	.1	75	54	9		280	8.0
						132		5.3				120	--	--			

SOUTH FORK EEL RIVER NEAR MIRANDA

Oct. 10, 1951.....	57					127		8.2				108	4	14		248	7.2
Nov. 14.....	720					62		5.0				54	3	19		130	7.3
Feb. 4, 1952.....	9,340					48		2.8				39	0	19		95.3	7.1
Mar. 6.....	1,970					63		5.4				32	0	18		129	8.0
May 20.....	378	20	0.00	16	6.3	0.6		6.4	0.2	0.0	0.11	100	0	17		160	7.5
Sept. 16.....	47					134		6.9				105	--	--		239	8.0

EEL RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN EEL RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Water 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)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro-mhos at 25°C)
														Parts per million	Tons per acre-foot	Calcium-magnesium	Non-carbonate		
Oct. 10, 1951.....	240					7.7		142			8.0					124	8	12	281
Nov. 14.....	4,700					7.3		70			8.0					68	10	19	168
Feb. 4, 1952.....	44,700					3.7		65			2.5					55	2	13	119
Mar. 5.....	9,390					6.0		98			4.5					84	4	13	193
May 20.....	4,140	8.9	0.00	19	5.1	3.0	0.8	83	5.0		1.9	0.0	0.4	85	0.12	68	0	9	151
Sept. 16.....	100					--		156			9.4					131	--	--	301

EEL RIVER AT SCOTIA

KLAMATH RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN KLAMATH RIVER BASIN IN CALIFORNIA

KLAMATH RIVER NEAR COPCO

Oct. 8, 1951.....		--			--	15	--	61		--	4.2	--	--	--	--	53	0	38	185
Nov. 6.....		--			--	28	--	97		--	6.8	--	--	--	--	55	0	39	213
Feb. 6, 1952.....		--			--	18	--	78		--	6.0	--	--	--	--	62	0	39	213
Mar. 18.....	30			13	8.5	17	2.6	79	34		4.8	0.1	5.0	154	0.21	66	3	34	232
May 6.....	24		0.00	12	5.6	11	2.0	93	24		2.0	--	1.2	113	.15	53	1	30	166
Sept. 3.....		--		--	--	--	--	79		--	1.2	--	--	--	--	54	--	--	207

KLAMATH RIVER AT SOMESEAR

Oct. 13, 1951.....	2,360					12		99			6.0					70	0	27	205
Nov. 18.....	3,510					14		87			5.5					67	0	31	180
Feb. 7, 1952.....	22,900					4.8		79			2.8					66	1	14	147
May 21.....	23,200	22	0.00	9.2	4.6	4.8	0.9	53	8.4		2.2	0.0	0.3	78	0.11	42	0	20	104
Sept. 17.....	3,700				--	--	--	102			5.0					72	--	--	218

TRINITY RIVER AT LEWISTON

Feb. 21, 1952.....	2,110					2.5				57		1.5								45	0	11		96.9	7.5
Mar. 12.....	1,910					2.6				62		1.5								51	0	10		105	7.6
May 18.....	7,650	11	0.00	3.2	5.8	.7				40	1.3	.8	0.0	0.4	0.06	44	0.06			32	0	4		95.6	7.3

TRINITY RIVER NEAR HOOPA

Oct. 13, 1951.....	760					4.6				104		7.5								94	9	10		205	7.1
Nov. 18.....	1,840					4.2				82		5.2								73	6	11		157	7.0
Feb. 4, 1952.....	36,600					2.5				78		1.5								67	3	8		135	8.0
May 21.....	14,600	17	0.00	8.0	4.9	1.7				47	4.0	2.0	0.0	0.3	0.07	62	0.08			40	2	8		94.0	7.2
Sept. 17.....	588					--				109		5.8								93	--	--		199	7.9

KLAMATH RIVER NEAR KLAMATH

Nov. 15, 1951.....	18,300					4.9				36		4.8								30	0	26		70.3	6.8
Feb. 6, 1952.....	69,200					3.1				66		1.8								50	2	11		121	7.7
Mar. 5.....	30,400					4.5				56		5.5								57	3	15		156	7.7
May 22.....	37,800	18	0.00	8.8	4.6	3.2				52	6.1	1.5	0.0	0.1	0.02	69	0.09			41	0	14		97.7	7.2
Sept. 17.....	4,460					--				98		4.5								75	--	--		198	8.0

KLAMATH RIVER BASIN

TRINITY RIVER AT LEWISTON, CALIF.

LOCATION --Temperature recorder at gaging station at highway bridge at Lewiston, Trinity County, 0.8 mile downstream from Deadwood Creek.
 DRAINAGE AREA --724 square miles.
 RECORDS AVAILABLE --Water temperatures: September 1951 to September 1952.
 EXTREMES, 1951-52 --Water temperatures: Maximum 73° F Sept. 3; minimum 33° F Jan. 10-26.
 REMARKS --Records of discharge for water years 1950-51 and 1951-52 given in WSP 1215 and 1245, respectively.

Temperature (° F) of water, September 1951 to September 1952

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

SMITH RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN SMITH RIVER BASIN IN CALIFORNIA
Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Water 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)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium ion	Sodium ion adsorption ratio	Specific conductance (micro-mhos at 25° C)	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
SMITH RIVER NEAR CRESCENT CITY																						
Oct. 14, 1951.....	1,030					2.0		66			3.5						57	3	7		121	6.7
Nov. 15.....	6,790					2.0		52			2.8						42	0	10		86.1	7.0
Feb. 6, 1952.....	10,500					1.5		41			2.5						35	1	8		72.9	7.4
Mar. 5.....	4,760					1.0		46			4.5						39	1	5		92.8	7.8
May 22.....	2,230	16	0.00	5.2	5.6	1.2	0.1	44		2.7	2.0	0.0	0.0	0.05	55	0.07	36	0	7		75.0	7.4
Sept. 18.....	260					--		79			2.3						69	--	--		136	7.6

PART 12. PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN
PACIFIC SLOPE BASINS NORTH OF COLUMBIA RIVER

WILLAPA RIVER BASIN

WILLAPA RIVER AT LEBAM, WASH.

LOCATION.---Temperature recorder at gaging station half a mile west of Lebam, Pacific County, and 1 mile upstream from Walker Creek.
DRAINAGE AREA.---41.4 square miles.
RECORDS AVAILABLE.---Water temperatures: March to September 1952.
REMARKS.---No temperature record Oct. 1 to Mar. 18, Aug. 13-26, Sept. 13-25. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

Temperature (°F) of water, for the period March 1952 to September 1952
Continuous water-stage recorder with temperature attachment?

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
1									47	43	49	47	56	53
2									47	45	50	45	58	55
3									49	45	50	47	58	57
4									52	46	50	45	58	57
5									53	47	49	45	58	57
6									53	49	50	47	57	55
7									49	44	50	47	57	55
8									49	44	50	49	59	57
9									51	45	52	47	59	57
10									52	46	54	51	57	55
11									51	49	54	53	55	52
12									51	47	54	51	52	50
13									51	50	54	53	55	52
14									52	49	53	51	55	55
15									53	48	54	51	55	55
16									53	48	59	52	55	55
17									55	49	61	56	58	55
18									55	51	61	57	59	58
19									44	42	55	50	59	56
20									44	42	53	47	57	55
21									46	41	53	48	55	53
22									47	41	53	48	57	53
23									47	45	54	48	59	55
24									47	46	54	50	59	55
25									49	47	53	50	58	56
26									49	47	53	52	59	55
27									50	47	53	52	61	57
28									50	47	53	49	61	57
29									47	45	49	45	57	55
30									46	45	49	47	55	52
31									45	43	--	--	54	54
Average									52	48	55	52	57	56

NISQUALLY RIVER BASIN
NISQUALLY RIVER NEAR NATIONAL WASH.

LOCATION.--Temperature recorder at gaging station 100 feet downstream from railroad bridge, 1 mile west of National, Pierce County, 2½ miles west of Ashford, and 3 miles upstream from Mineral Creek.

DRAINAGE AREA.--133 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to July 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 61°F July 9, 1952; minimum, 34°F Jan. 2-9, 12-23, 1952.

REMARKS.--No temperature record July 16 to Sept. 30. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

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	50	50	42	41	41	41	36	35	39	38	38	35	43	39	44	40	58	44	52	46				
2	50	50	42	40	41	41	35	34	39	39	38	38	42	40	46	39	56	44	56	55				
3	50	50	43	42	41	40	34	34	39	38	39	37	44	40	48	41	50	45	59	56				
4	50	50	43	43	40	39	34	34	39	38	39	37	50	40	48	40	52	46	54	47				
5	50	50	43	43	39	39	34	34	--	--	38	36	50	41	43	39	46	46	53	45				
6	51	50	43	43	39	38	34	34	40	38	41	36	44	39	47	42	48	45	57	43				
7	52	51	43	43	38	37	34	34	40	38	42	35	44	38	48	41	55	44	59	45				
8	53	52	44	43	38	37	34	34	40	37	42	36	45	37	46	43	56	44	60	48				
9	53	53	44	44	38	37	36	34	41	38	41	39	47	39	52	42	56	44	61	48				
10	53	53	44	44	39	38	35	35	41	39	39	37	48	39	50	43	49	44	60	47				
11	53	52	44	43	39	39	35	35	40	38	40	36	44	41	47	43	45	44	59	47				
12	53	52	43	42	39	39	35	34	39	37	41	37	47	40	50	42	51	44	57	47				
13	52	50	43	42	39	38	34	34	38	36	40	38	43	42	46	42	52	44	57	48				
14	52	50	42	42	38	37	34	34	39	38	41	38	45	41	46	41	48	46	55	49				
15	51	49	42	42	38	38	34	34	39	38	43	37	48	40	45	42	50	46	55	50				
16	50	49	42	41	38	38	34	34	39	37	44	36	49	41	53	42	48	47	--	--				
17	49	48	41	40	38	37	34	34	37	36	40	38	50	41	50	42	59	47	--	--				
18	48	47	41	40	37	37	34	34	37	35	39	36	49	41	50	42	60	47	--	--				
19	48	47	41	41	37	37	34	34	37	36	39	36	43	41	46	43	57	46	--	--				
20	48	47	41	41	37	37	34	34	37	36	41	36	48	40	43	42	51	47	--	--				
21	47	46	41	41	37	37	34	34	38	35	44	35	50	40	46	43	49	46	--	--				
22	46	45	41	41	38	37	34	34	37	35	45	35	47	42	52	43	52	45	--	--				
23	45	44	41	40	38	37	35	34	39	36	42	39	50	40	53	43	56	44	--	--				
24	44	44	40	39	37	36	35	35	39	36	43	41	49	41	54	43	51	46	--	--				
25	44	44	40	39	36	36	36	36	38	38	43	41	50	42	51	44	50	47	--	--				
26	44	44	41	40	36	36	37	36	39	38	45	41	47	42	54	43	53	47	--	--				
27	44	44	41	41	37	36	39	37	40	38	46	39	43	41	55	44	53	48	--	--				
28	44	44	41	41	37	36	39	37	40	38	42	40	43	40	50	44	50	46	--	--				
29	44	44	41	41	37	37	41	39	39	36	40	39	43	38	48	43	49	47	--	--				
30	44	43	41	41	37	37	39	38	--	--	40	38	44	42	51	42	51	46	--	--				
31	43	42	--	--	37	36	38	38	--	--	42	38	--	--	47	45	--	--	--	--				
Average	49	46	42	41	38	36	35	35	39	37	41	37	46	40	49	42	52	46	--	--				

Temperature (°F) of water, October 1951 to July 1952
Continuous water-stage recorder with temperature attachment

NISQUALLY RIVER BASIN--Continued
MINERAL CREEK NEAR MINERAL, WASH.--Continued

LOCATION.--Temperature recorder at gaging station, three-eighths of a mile downstream from railroad bridge, 1 mile upstream from mouth, and 2½ miles northeast of Mineral, Lewis County.
DRAINAGE AREA.--74.3 square miles (revised).
RECORDS AVAILABLE.--Water temperatures: August 1951 to September 1952.
EXTREMES, 1951-52.--Water temperatures: Maximum, 70°F July 14, Aug. 3, 4, 9-13, 1952; minimum, 36°F Jan. 2-5, 17, 18, 23, Feb. 21, 22, 1952.
REMARKS.--Records of discharge for water year October 1951 to September 1952.

Temperature (°F) of water, water year October 1951 to September 1952
/Continuous water-stage recorder with temperature attachment/

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	53	52	42	41	42	42	38	37	40	40	40	37	42	39	46	42	52	47	59	51	68	56	66	55
2	52	49	45	42	41	41	37	36	40	40	41	38	41	40	46	41	58	47	63	50	68	55	63	
3	52	49	45	42	41	41	36	36	40	40	41	39	43	40	49	42	53	49	65	52	70	57	65	
4	52	49	45	43	41	40	36	36	40	40	40	38	47	40	49	42	57	50	58	54	70	59	64	
5	50	47	44	42	40	40	37	36	40	40	40	37	47	41	46	42	53	51	62	52	69	58	56	
6	54	50	44	43	40	40	37	37	41	40	42	38	44	41	47	43	55	50	64	50	67	59	57	
7	55	49	44	44	40	39	37	37	40	40	43	37	44	40	48	43	60	49	66	51	62	58	54	
8	56	49	45	44	39	39	37	37	41	39	42	38	44	40	46	45	61	49	68	53	67	59	58	
9	54	49	45	44	39	39	37	37	41	39	41	40	46	40	52	44	61	50	69	56	70	59	53	
10	53	49	44	44	39	39	37	37	41	40	40	39	47	41	51	45	54	50	69	57	70	59	52	
11	52	51	44	44	39	39	37	37	40	39	40	38	44	42	50	46	53	49	69	57	70	58	50	
12	51	50	44	44	39	39	37	37	39	38	41	38	46	41	52	45	56	48	67	58	70	59	51	
13	52	50	44	43	39	39	37	37	38	37	40	39	44	43	48	45	55	47	69	57	70	58	50	
14	50	48	43	43	39	39	37	37	40	38	42	39	45	42	48	44	50	49	70	57	69	59	51	
15	48	46	43	42	39	39	37	37	40	39	44	38	47	41	46	45	51	49	69	57	62	59	50	
16	48	47	42	41	39	39	37	37	39	38	43	38	47	42	55	44	50	49	68	56	66	58	50	
17	46	45	41	41	39	39	37	36	38	37	40	38	48	42	53	46	60	49	67	56	67	58	50	
18	47	46	42	41	39	38	37	36	38	37	41	37	49	43	52	46	63	50	67	56	61	57	52	
19	48	47	42	42	39	38	37	37	38	37	41	38	44	42	49	46	62	51	68	56	60	66	54	
20	47	46	42	42	39	39	37	37	38	37	41	38	47	41	47	46	55	52	61	57	63	54	54	
21	46	45	42	42	39	39	37	37	38	36	44	38	49	41	48	45	54	51	63	55	61	55	53	
22	45	44	42	42	39	39	37	37	38	36	44	37	48	43	54	45	61	49	60	55	61	58	52	
23	45	45	42	41	39	39	37	36	40	39	42	40	48	42	55	49	51	48	60	56	63	57	53	
24	46	45	41	40	39	39	37	36	39	38	41	41	48	43	55	49	52	50	62	58	58	56	53	
25	46	45	41	40	39	39	37	37	40	39	41	41	48	44	55	47	55	51	67	53	59	55	54	
26	46	45	42	41	38	38	37	37	40	39	43	40	47	44	57	46	63	52	68	55	61	55	55	
27	45	44	42	42	38	38	37	37	42	39	44	40	45	43	58	47	56	53	68	54	65	55	51	
28	45	44	42	41	39	39	38	38	41	39	41	40	44	41	54	49	55	52	68	55	65	55	50	
29	45	45	41	41	39	38	38	38	41	39	40	39	43	40	51	47	53	52	68	56	60	56	53	
30	45	43	42	41	38	38	37	37	40	39	44	43	44	43	54	46	54	51	69	56	64	53	50	
31	43	42	--	--	38	38	40	38	--	--	41	38	--	--	49	47	--	--	68	56	64	54	--	
Average	49	47	43	42	39	39	37	37	40	38	41	39	46	42	51	45	56	50	66	55	65	57	61	53

DUWAMISH RIVER BASIN

GREEN RIVER NEAR PALMER, WASH.

LOCATION.--At City of Tacoma Green River Pipe Line bridge about $\frac{1}{2}$ mile below the headworks dam and 2 miles below gaging station which is $2\frac{1}{2}$ miles downstream from North Fork and 4 miles southeast of Palmer, King County.

DRAINAGE AREA.--230 square miles (revised) at gaging station.

RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1952.

Sediment records: August 1950 to September 1952.

EXTREMES, 1950-51.--Water temperatures: Maximum observed, 59°F Sept. 17; minimum, freezing point Mar. 8-10.

EXTREMES, 1951-52.--Water temperatures: Maximum observed, 57°F July 13; minimum, freezing point Jan. 1-5.

REMARKS. --Records of discharge for period August 1950 to September 1950 given in WSP 1182. Records of discharge for water year October 1950 to September 1951 given in WSP 1216. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

Temperature (°F) of water, August to September 1952

Once-daily temperature measurement generally about 9 a. m.

[illegible]

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Temperature (°F) of water, water year October 1950 to September 1951
 /Once-daily temperature measurement, generally about 9 a. m./

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

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement, generally about 9 a. m./

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

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Suspended sediment, August to September 1950

Month	Water Discharge (cfs-days)	Suspended Sediment (tons)
Aug. 11-31, 1950	5,771	49
September.....	6,309	25
Aug. 11 to Sept. 30....	12,080	74

Water year October 1950 to September 1951

October	27,911	910
November	64,720	5,920
December	70,610	3,950
January	49,700	618
February	73,200	42,570
March	30,340	440
April	53,060	716
May	53,380	2,020
June	22,373	220
July	7,464	40
August	4,525	18
September	4,343	11
Total	461,626	57,433

Water year October 1951 to September 1952

October	21,940	261
November	33,355	81
December	31,778	259
January	16,279	233
February	40,692	3,707
March	28,423	498
April	55,090	753
May	50,990	374
June	21,455	125
July	12,287	41
August	5,619	22
September	4,292	16
Total	322,200	6,370

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Particle-size analyses of suspended sediment, October 1950 to February 1952
(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)

Suspended sediment																
Date of collection	Time	Water discharge (cfs)	Water temperature (° F)	Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										Methods of analysis
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Oct. 10, 1950.....	8:30 a. m.	3,020		92	3,400	11	20	32	58		82	93	97			SDWCM
Oct. 10.....	4:00 p. m.	4,850		58	2,250	12	23	36	60		81	91	98			SDWCM
Oct. 10.....	10:00 p. m.	4,030		17	634	12	20	42	68		85	--	--			SDWCM
Nov. 3.....	9:00 a. m.	2,100		12	433	21	33	50	72		91	--	--			SDWCM
Nov. 3.....	1:00 p. m.	2,200		10	316	27	29	30	70		86	95	99			SDWCM
Nov. 22.....	9:30 a. m.	5,900		124	4,670	10	21	32	65		83	95	98			SDWCM
Nov. 22.....	8:30 p. m.	8,000		102	3,810	10	18	33	61		84	94	99			SDWCM
Nov. 23.....	2:30 a. m.	6,430		53	1,720	9	18	35	70		85	96	100			SDWCM
Feb. 9, 1951.....	10:45 p. m.	14,000		666	--	--	--	--	--		49	66	83		94	S
Feb. 10.....	12,000	328		328	--	--	--	--	--		55	76	92		98	S
May 11, 12.....	4:30 a. m.	3,700		51	--	--	--	--	--		68	70	74		82	S
Dec. 21.....	10:00 p. m.	1,800		26	--	--	--	--	--		63	82	92		96	S
Jan. 30, 1952.....	12:30 p. m.	1,300		25	--	--	--	--	--		68	83	92		97	S
Jan. 31.....	3:30 a. m.	2,300		33	--	--	--	--	--		65	90	97		98	S
Feb. 4.....	12:00 p. m.	5,200		--	--	--	--	--	--		56	77	89		97	S

DUWAMISH RIVER BASIN--Continued
GREEN RIVER NEAR AUBURN, WASH.

LOCATION.--Temperature recorder at gaging station 1½ miles east of Auburn, King County, and 2 miles downstream from Big Soos Creek. DRAINAGE AREA.--382 square miles, revised (excludes 4 square miles in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935). RECORDS AVAILABLE.--Water temperatures: March to June 1952. REMARKS.--No temperature record Oct. 1 to Mar. 19, July 1 to Sept. 30. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

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																								
2																								
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28																								
29																								
30																								
31																								
Average																								

Temperature (°F) of water, March to June 1952

/Continuous water-stage recorder with temperature attachment.7

STILLAGUAMISH RIVER BASIN

JIM CREEK NEAR ARLINGTON, WASH.

LOCATION --Temperature recorder at gaging station, 1 mile upstream from mouth and 3 miles southeast of Arlington, Snohomish County.

DRAINAGE AREA --48.9 square miles.

RECORDS AVAILABLE --Water temperatures: October 1951 to September 1952.

EXTREMES, 1951-52 --Water temperatures: Maximum 66°F June 24-26, 1952; minimum 33°F Dec. 31, 1951, Jan. 1, 3, 1952.

REMARKS --No temperature record July 1 to Sept. 24. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

Temperature (°F) of water, water year October 1951 to September 1952

Continuous water-stage recorder with temperature attachment

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	58	57	44	42	44	43	34	33	42	41	42	38	43	40	48	43	59	48					--	--
2	57	56	45	42	43	43	35	34	42	41	41	38	43	41	51	44	62	51					--	--
3	57	54	46	45	43	42	34	33	42	41	40	42	41	51	46	57	52	40					--	--
4	56	53	47	46	42	42	36	34	42	42	41	51	48	43	51	45	54	51					--	--
5	55	52	46	45	42	42	37	36	42	41	42	40	47	43	51	42	53	49					--	--
6	55	55	46	46	42	41	37	36	43	41	44	41	45	41	51	46	80	51					--	--
7	58	53	47	46	41	40	37	37	43	43	39	46	40	54	45	81	50	51					--	--
8	59	54	47	46	40	40	37	37	44	43	42	43	40	47	39	50	48	53	51				--	--
9	59	55	47	46	40	40	37	37	44	43	41	49	41	54	45	81	52	41					--	--
10	58	55	47	47	42	40	37	37	44	43	41	49	41	50	46	58	53	51					--	--
11	59	57	47	46	42	42	37	37	43	41	42	41	47	45	51	46	53	51					--	--
12	58	54	46	45	42	42	38	37	40	37	42	41	47	44	54	46	54	50					--	--
13	58	55	46	45	42	42	38	37	40	38	42	41	47	44	53	46	52	53					--	--
14	58	51	45	44	39	38	37	36	40	40	42	40	45	45	48	46	52	46					--	--
15	51	51	44	43	40	39	37	37	41	40	45	41	49	43	51	45	59	54					--	--
16	52	50	43	42	40	40	37	36	41	39	43	39	50	43	57	46	54	51					--	--
17	50	49	43	42	40	40	38	38	40	38	43	41	52	44	54	48	53	50					--	--
18	50	49	45	43	40	40	39	38	40	39	42	41	49	45	53	48	55	54					--	--
19	51	50	45	44	40	39	39	39	39	38	42	39	47	45	50	48	55	56					--	--
20	50	49	45	43	39	38	39	39	40	38	43	41	51	42	49	46	61	57					--	--
21	49	49	44	43	39	38	39	38	39	37	45	39	52	44	48	46	59	56					--	--
22	49	48	43	42	39	39	38	38	40	37	45	39	51	45	53	46	60	55					--	--
23	48	47	42	40	39	37	38	36	40	37	43	43	53	43	56	47	65	54					--	--
24	50	48	40	39	37	37	37	37	42	39	43	41	51	45	58	48	66	57					--	--
25	49	48	43	40	37	36	39	38	41	40	42	42	49	44	58	49	68	59					59	55
26	48	47	44	43	36	35	40	39	41	39	43	42	47	45	61	49	66	59					57	56
27	46	46	44	43	38	36	40	40	43	41	46	43	46	43	60	49	62	59					57	56
28	49	47	44	43	38	38	40	39	41	38	45	41	47	43	56	51	59	56					59	55
29	49	48	44	43	39	37	42	40	42	40	41	41	49	43	52	47	58	56					57	55
30	48	43	40	37	36	42	40	--	--	--	41	41	48	45	55	47	53	56					56	56
31	48	44	40	37	33	33	41	40	--	--	43	40	--	--	52	50	--	--					--	--
Average	53	51	45	44	40	39	38	37	41	40	43	41	48	43	53	46	60	53					--	--

STILLAGUAMISH RIVER BASIN--Continued
NORTH FORK STILLAGUAMISH RIVER NEAR DARRINGTON, WASH.

LOCATION.--Temperature recorder at gaging station at county bridge, 5 miles west of Darrington, Snohomish County.
DRAINAGE AREA.--39.1 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1952 to September 1952.
EXTREMES, 1952.--Water temperatures: Maximum, 63°F Aug. 10-12, 1952.
REMARKS.--No temperature record Oct. 1 to Mar. 4, 10, 11. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

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
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29																								
30																								
31																								
Average																								

Temperature (°F) of water, March to September 1952

/Continuous water-stage recorder with temperature attachment/

SKAGIT RIVER BASIN
CASCADE RIVER AT MARBLEMOUNT, WASH.

LOCATION --Temperature recorder at gaging station 2 miles east of Marblemount, Skagit County, and 2½ miles upstream from mouth.
DRAINAGE AREA 180 square miles approximately.
RECORDS AVAILABLE --Water temperatures from July 9, 11-14, 29-31, Aug. 2-5, 9-13, 1952.
EXTREMES 1952 --Water temperatures: Maximum 57°F July 9, 11-14, 29-31, Aug. 2-5, 9-13, 1952.
REMARKS --No temperature record Oct. 1 to May 8. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

Temperature (°F) of water, May to September 1952

[Continuous water-stage recorder with temperature attachment]

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
1											50	47	50	48
2											51	47	51	48
3											50	48	55	49
4											48	47	53	50
5											48	46	51	49
6											51	47	53	47
7											51	47	54	49
8											52	47	57	51
9											51	47	57	51
10											47	44	50	47
11											45	44	47	46
12											47	44	47	46
13											45	43	50	45
14											43	43	51	47
15											48	43	50	48
16											50	45	48	47
17											48	45	53	47
18											48	45	53	48
19											46	46	53	49
20											46	45	51	49
21											46	45	51	49
22											46	45	49	48
23											48	45	49	48
24											50	46	52	47
25											50	46	51	48
26											50	46	53	49
27											50	45	54	50
28											50	46	53	50
29											49	47	50	48
30											47	46	49	48
31											49	45	48	48
Average											50	48	54	51

UPPER COLUMBIA RIVER BASIN

COLUMBIA RIVER MAIN STEM

COLUMBIA RIVER AT INTERNATIONAL BOUNDARY

LOCATION --At cableway 2.2 miles downstream from International gaging station, which is 0.5 mile downstream from Pend Oreille River, and about 10 miles upstream from Northport, Stevens County, Wash.

DRAINAGE AREA --59,700 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: February 1910-January 1911, November 1951 to September 1952.

Water temperatures: November 1951 to September 1952.

EXTREMES 1951-52 --Dissolved solids: Maximum, 107 ppm Feb. 21-29; minimum, 80 ppm Aug. 11-20.

Hardness: Maximum, 88 ppm Feb. 11-20, Mar. 1-7, 9-10; minimum, 63 ppm July 11-17, 18-20.

Specific conductance: Maximum daily, 180 micromhos Apr. 6; minimum daily, 132 micromhos Aug. 14.

Water temperatures: Maximum observed, 63°F Aug. 4, 10, 11, 24; minimum observed, 32°F Jan. 2, 11.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oregon. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

Chemical analyses, in parts per million, November 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (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 dissol- um ratio	Specific conduct- ance (micro- mhos at 25°C)	Col- or pH		
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbon- ate					
Nov. 15-30, 1951	47,330	7.5	0.02	23	4.9	1.8	3.0	80	15	0.5	0.2	0.6	--	101	0.14	12,910	78	12	5	0.1	160	7.4	5
Nov. 21-30	45,860	7.4	.01	23	5.4	1.6	3.8	81	16	1.0	.1	1.3	0.08	97	.13	12,010	80	13	4	.1	161	7.8	5
Dec. 1-10	52,820	9.3	.01	22	5.1	1.9	3.5	82	15	.8	.2	.5	--	97	.13	13,830	76	9	5	.1	162	7.8	5
Dec. 11-20	43,480	7.7	.01	22	5.2	2.2	3.7	81	16	1.5	.3	.7	.09	98	.13	11,500	76	10	6	.1	167	6.9	10
Dec. 21-31	37,350	7.1	.01	23	5.2	1.9	3.0	84	16	1.1	.3	.3	--	100	.14	10,080	79	10	5	.1	169	7.1	10
Jan. 1-10, 1952	35,710	7.5	.01	24	5.2	2.0	2.6	84	17	1.0	.3	.3	--	100	.14	9,640	81	12	5	.1	170	7.3	5
Jan. 11-20	38,610	7.2	.02	25	5.5	2.4	.9	84	18	.8	.2	1.0	.03	105	.14	10,950	85	16	6	.1	173	7.8	5
Jan. 21-24, 26, 29	41,950	7.1	.03	24	5.5	2.3	.8	83	17	1.0	.2	.8	--	102	.14	11,550	82	14	6	.1	168	7.8	5
Feb. 1-10	38,330	7.4	.02	25	5.6	2.2	.7	84	18	.9	.2	.8	--	105	.14	10,870	85	17	5	.1	171	7.8	5
Feb. 11-20	40,630	7.9	.02	26	6.2	2.4	.9	87	18	.8	.2	.5	.02	104	.14	11,410	88	17	6	.1	174	7.7	5
Feb. 21-28	40,660	8.3	.02	25	6.0	2.3	1.1	89	19	.9	.3	.5	--	107	.15	11,750	87	14	5	.1	177	7.6	8
Mar. 1-10	39,180	7.3	.01	25	6.1	2.1	1.0	88	19	.7	.2	.5	--	105	.14	11,110	88	15	5	.1	176	7.7	5
Mar. 11-20	38,120	6.8	.02	25	6.0	2.1	.9	88	19	.8	.2	.5	.03	105	.14	10,810	87	15	5	.1	175	7.7	5
Mar. 21-31	39,230	7.9	.02	24	5.9	2.0	.9	85	19	.8	.3	.5	--	104	.14	11,010	84	14	5	.1	171	7.6	10
Apr. 1-10	43,890	8.8	.03	24	5.7	2.6	1.0	86	17	.8	.1	.7	--	102	.14	12,090	83	13	6	.1	174	7.2	12
Apr. 11-20	80,280	9.8	.02	23	5.8	2.6	1.0	82	16	.9	.1	1.1	--	102	.14	16,500	81	14	6	.1	168	7.4	12
Apr. 21-30	110,200	9.0	.02	21	5.0	2.2	1.0	77	13	.6	.1	.6	.06	90	.12	26,780	73	10	6	.1	150	7.4	12
May 1-10	171,200	7.8	.03	21	4.8	2.1	.9	77	12	.9	.1	1.1	--	92	.13	42,330	72	9	6	.1	153	7.6	7
May 11-20	207,900	7.4	.02	20	4.8	1.9	.8	76	11	.8	.1	1.0	.02	87	.12	48,840	70	7	6	.1	147	7.9	7
May 21-31	286,800	7.0	.02	20	4.7	2.0	.8	76	13	.7	.1	1.0	--	85	.12	65,920	70	7	6	.1	146	7.5	7

June 1-10, 1952.	273,700	6.4	.03	20	5.1	1.6	.9	74	12	.7	.1	.9	--	85	.12	62,810	71	10	5	.1	147	7.5	7
June 11-20.....	247,700	7.2	.03	20	4.7	1.7	.9	74	11	1.2	.2	.8	.01	85	.12	56,850	69	9	5	.1	143	7.5	5
June 21-30.....	212,300	6.4	.02	19	4.6	1.5	.9	72	11	.6	.2	.8	--	84	.11	48,150	66	7	5	.1	140	7.3	5
July 1-10.....	217,800	6.5	.01	19	4.6	1.4	.8	72	11	.8	.2	.8	--	84	.11	49,400	66	7	4	.1	140	7.5	5
July 11-20.....	183,700	6.0	.05	18	4.5	1.3	.8	72	11	.8	.2	.7	.00	83	.11	41,170	63	4	4	.1	138	7.3	5
July 21-31.....	148,000	5.4	.01	21	4.6	1.3	.8	70	12	1.0	.2	.6	--	82	.11	32,770	71	14	4	.1	137	7.4	5
Aug. 1-10.....	119,200	6.0	.01	20	4.8	1.4	1.0	72	12	.9	.1	.8	--	82	.11	26,390	70	11	4	.1	139	7.3	5
Aug. 11-20.....	93,670	5.9	.01	19	4.6	1.2	.7	70	13	1.8	.1	.6	.06	80	.11	20,230	66	9	4	.1	136	7.3	5
Aug. 21-31.....	78,140	5.3	.11	20	4.7	1.3	.7	72	13	1.5	.1	.6	--	84	.11	17,720	69	10	4	.1	143	7.2	5
Sept. 1-10.....	58,080	4.9	.02	20	4.6	1.4	.8	74	13	1.6	.3	.7	--	84	.11	13,170	66	8	4	.1	154	7.4	8
Sept. 11-20.....	55,010	4.8	.02	21	4.7	1.4	.6	77	13	.5	.3	.9	.05	85	.12	12,620	72	9	4	.1	151	7.4	5
Sept. 21-30.....	53,010	7.0	.03	22	4.9	1.6	1.1	80	15	.5	.3	.7	--	91	.12	13,020	75	10	4	.1	154	7.3	5
Weighted average	a 101,900	6.9	0.02	21	4.9	1.7	1.0	76	13	0.9	0.2	0.8	--	88	0.12	24,210	73	10	5	0.1	149	--	--

a Represents 91 percent of runoff for water year October 1951 to September 1952.

PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT INTERNATIONAL BOUNDARY--Continued

Temperature (°F) of water, November 1951 to September 1952

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

COLUMBIA RIVER MAIN STEM--Continued
COLUMBIA RIVER AT GRAND COULEE DAM, WASH.

LOCATION.--At Grand Coulee Dam, Grant-Okanogan County line, 2,500 feet upstream from gaging station, which is 14 miles upstream from Nespelom River.
DRAINAGE AREA.--74,100 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1952.
Water temperatures: November 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 110 ppm Apr. 1-10, 11-20; minimum, 80 ppm Sept. 1-10, 11-20.
Specific conductance: Maximum daily, 183 micromhos Apr. 13, 21; minimum daily, 128 micromhos May 31.
Water temperature: Maximum observed, 64° F on several days during October; minimum observed, 35° F Mar. 3-4.
EXTREMES, 1950-52.--Dissolved solids: Maximum, 110 ppm Apr. 1-10, 11-20, 1952; minimum, 80 ppm Sept. 1-10, 11-20, 1952.
Specific conductance: Maximum daily, 183 micromhos Apr. 13, 21, 1952; minimum daily, 128 micromhos May 31, 1952.
Water temperatures: Maximum observed, 65° F Aug. 19, 1951; minimum observed, 35° F Mar. 3-4, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oregon. Records of discharge for water year October 1951 to September 1952 given in WSP 1246.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (residue at 180° C)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
													Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate					
Oct. 1-10, 1951 ..	77,830	6.4	0.01	20	4.9	1.5		77	12	1.1	0.1	0.5	85	0.12	17,860	70	7	4	0.1	144	7.2	10
Oct. 11-20	74,350	5.5	.01	21	5.0	1.7	3.4	78	13	1.2	.1	.5	85	.12	17,060	73	9	5	.1	146	7.2	10
Oct. 21-31	70,850	5.3	.01	21	5.1	1.7	3.2	81	13	1.1		.3	86	.12	16,450	73	7	5	.1	147	7.4	5
Nov. 1-10	64,440	6.7	.01	21	5.2	1.7	3.4	79	13	1.0	.1	.3	88	.12	15,310	74	9	5	.1	147	7.6	5
Nov. 11-20	59,590	6.3	.03	21	5.2	1.8	1.8	80	12	1.9	.2	.4	94	.13	15,120	74	8	5	.1	150	7.2	5
Nov. 21-30	58,090	6.8	.01	20	5.9	1.8		79	12	1.5	.2	.5	96	.13	15,060	74	9	5	.1	150	7.2	5
Dec. 1-10	64,010												95	.13	16,420					152	7.4	--
Dec. 11-20	63,240	7.0	.01	20	5.9		4.3	80	13	2.9		.4	97	.13	16,560	74	9	11	.2	152	7.4	5
Dec. 21-31	56,080												94	.13	14,230					155	--	--
Jan. 1-10, 1952 ..	70,100												104	.14	19,680					158	--	--
Jan. 11-20	89,340	6.9		22	5.4		2.0	81	13	.8		.6	98	.13	17,970	77	11	5	.1	157	7.1	5
Jan. 21-31	70,450												95	.13	18,070					156	--	--
Feb. 1-10	58,830												98	.13	15,570					164	--	--
Feb. 11-20	64,180	7.9		23	6.2		1.9	85	15	.9		.7	101	.14	17,500	83	13	5	.1	164	7.2	--
Feb. 21-29	87,770												100	.14	18,300					164	--	--
Mar. 1-10	73,190												103	.14	20,350					169	--	--
Mar. 11-20	73,390	7.9		23	5.9			86	16	1.0		.7	105	.14	20,810	82	11	8	.2	168	7.3	--
Mar. 21-31	75,850												107	.15	21,860					172	--	--

COLUMBIA RIVER MAIN STEM--Continued
COLUMBIA RIVER AT GRAND COULEE DAM, WASH.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonates (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	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate					
Apr. 1-10, 1952...	74,990	--	--	--	--	--	--	--	--	--	--	--	--	110	0.15	22,270	--	--	--	--	178	--	--
Apr. 11-20	73,540	10	--	24	5.7	4.5	--	88	18	1.0	--	1.2	--	110	.15	21,840	83	11	11	0.2	181	7.7	--
Apr. 21-30	72,900	--	--	20	6.4	7.7	--	86	19	1.1	--	1.5	--	108	.15	21,260	76	6	18	.4	181	7.2	15
May 1-10	185,200	--	--	23	5.5	4.1	--	83	17	1.5	--	1.3	--	105	.14	52,500	80	12	10	.2	170	7.5	8
May 11-20	287,500	9.1	--	19	4.4	2.8	--	70	12	.9	--	.7	--	91	.12	65,720	66	8	9	.2	143	7.6	--
May 21-31	324,700	--	--	18	4.3	2.7	--	69	12	.9	--	.8	--	83	.11	72,770	65	9	8	.1	136	7.6	10
June 1-10	279,700	8.7	--	19	4.5	3.1	--	75	9.1	.9	--	.6	--	83	.11	62,680	66	4	9	.2	136	7.3	--
June 11-20	260,300	7.6	--	18	4.5	5.4	--	77	10	.8	--	.6	--	82	.11	57,630	63	0	16	.3	138	7.3	--
June 21-30	230,500	7.6	--	18	4.6	4.3	--	74	11	.5	--	.5	--	83	.11	51,660	64	3	13	.2	140	7.3	--
July 1-10	235,000	6.8	--	18	4.8	2.9	--	73	9.3	.6	--	.6	--	82	.11	52,030	65	5	9	.2	139	7.2	--
July 11-20	192,300	6.6	--	18	4.9	2.4	--	71	9.5	1.0	--	1.0	0.06	82	.11	42,580	65	7	7	.1	139	7.4	--
July 21-31	152,300	--	--	--	--	--	--	--	--	--	--	--	--	84	.11	34,940	--	--	--	--	131	--	--
Aug. 1-10	139,800	--	--	--	--	--	--	--	--	--	--	--	--	84	.11	27,540	--	--	--	--	139	--	--
Aug. 11-20	84,100	6.7	--	20	4.7	1.1	--	71	11	.9	--	.9	--	82	.11	20,660	69	11	4	.1	139	7.5	--
Aug. 21-31	85,620	--	--	--	--	--	--	--	--	--	--	--	--	82	.11	18,960	--	--	--	--	138	--	--
Sept. 1-10	62,980	5.9	--	20	4.6	.9	--	72	10	.6	--	.6	--	80	.11	13,580	69	10	3	.0	140	7.3	--
Sept. 11-20	57,870	5.9	--	19	4.5	2.8	--	72	11	.8	--	.4	--	80	.11	12,500	66	7	8	.1	139	7.4	--
Sept. 21-30	55,370	6.2	--	20	4.5	1.4	--	71	11	.8	--	.8	--	81	.11	12,110	63	10	4	.1	140	7.5	--
Weighted average	112,400	--	--	--	--	--	--	--	--	--	--	--	--	90	0.12	27,310	--	--	--	--	148	--	--

* Sum of determined constituents.

COLUMBIA RIVER MAIN STEM

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COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT GRAND COULEE DAM, WASH.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 [Once-daily temperature measurement at approximately 10:00 a. m.]

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

COLUMBIA RIVER MAIN STEM--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN COLUMBIA RIVER BASIN IN WASHINGTON

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 (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		
Nov. 15, 1951		6.3		23	5.5			80		17	2.5	0.2	0.3					80	14		156
June 5, 1952		5.2						77										70	7		142

COLUMBIA RIVER AT NORTHPORT

PART 13. SNAKE RIVER BASIN

SNAKE RIVER MAIN STEM

SNAKE RIVER AT KING HILL, IDAHO

LOCATION --At county highway bridge about 400 yards downstream from gaging station, which is 300 feet east of railroad station at King Hill, Elmore County, and 20 miles downstream from Big Wood (Walad) River.

DRAINAGE AREA --35,800 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: March 1951 to September 1952.

Water temperatures: March 1951 to September 1952.

EXTREMES, 1951-52 --Dissolved solids: Maximum, 359 ppm Sept. 1-10; minimum, 252 ppm May 1-10.

Hardness: Maximum, 209 ppm Feb. 11-20; minimum, 166 ppm May 1-10.

Specific conductance: Maximum daily, 557 micromhos Sept. 29; minimum daily, 394 micromhos May 7, 1951.

Water temperatures: Maximum observed, 68°F on several days during June to Aug; minimum observed, 41°F Jan. 3-6, Feb. 15.

EXTREMES, March 1951-September 1952 --Dissolved solids: Maximum, 359 ppm Sept. 1-10, 1952; minimum, 252 ppm May 1-10, 1952.

Hardness: Maximum, 210 ppm Sept. 11-20, 1951; minimum, 166 ppm May 1-10, 1952.

Specific conductance: Maximum daily, 564 micromhos Aug. 21, 1951; minimum daily, 394 micromhos May 7, 1952.

Water temperatures: Maximum observed, 69°F on several days during July and August 1951.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oregon. Records of discharge for water year October 1951 to September 1952 given in WSP 1247.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate					
																							Calcium	Non-carbonate
Oct. 1-10, 1951...	12,680	36	0.03	47	21	34	6.8	224	59	26	0.5	3.1	--	336	0.46	11,500	204	20	26	1.0	526	7.7	5
Oct. 11-20.....	13,910	33	0.01	48	20	32	6.2	226	57	26	0.5	2.6	0.19	324	0.44	12,170	202	17	25	1.0	507	7.7	8
Oct. 21-31.....	13,000	32	0.01	48	20	33	6.4	222	57	26	0.6	2.8	--	326	0.44	11,440	202	20	25	1.0	519	7.9	5
Nov. 1-10.....	12,970	37	0.04	48	20	33	5.1	218	57	26	0.6	3.8	--	329	0.45	11,520	202	24	26	1.0	523	7.8	5
Nov. 11-20.....	12,550	37	0.05	49	20	32	5.1	218	57	26	0.5	4.1	17	331	0.45	11,220	204	26	25	1.0	519	7.9	5
Nov. 21-30.....	13,020	37	0.04	49	20	32	5.3	218	55	26	0.6	3.9	--	326	0.44	11,460	204	26	25	1.0	515	7.8	5
Dec. 1-10.....	11,910	36	0.01	48	20	33	5.6	217	58	26	0.6	3.9	--	331	0.45	10,640	202	24	25	1.0	514	7.9	5
Dec. 11-20.....	12,550	36	0.02	50	20	33	5.6	219	57	26	0.6	3.6	16	329	0.45	11,150	207	28	25	1.0	515	8.0	5
Dec. 21-31.....	12,700	35	0.02	50	20	32	5.4	217	58	26	0.6	3.0	--	328	0.45	11,250	207	29	25	1.0	511	8.0	5
Jan. 1-10, 1952..	12,350	34	0.03	49	20	32	4.5	218	54	26	0.5	3.6	--	334	0.45	11,140	204	26	25	1.0	519	7.9	5
Jan. 11-20.....	12,920	35	0.02	49	19	30	4.5	215	52	26	0.6	3.9	12	327	0.44	11,410	200	24	24	0.9	512	7.9	5
Jan. 21-31.....	14,130	30	0.02	49	19	30	4.4	211	50	26	0.5	3.0	--	323	0.44	12,320	200	28	24	0.9	504	7.9	5
Feb. 1-10.....	17,030	30	0.05	48	18	28	4.5	210	49	25	0.7	3.0	--	312	0.42	14,350	194	22	23	0.9	483	8.0	5
Feb. 11-20.....	17,730	30	0.03	51	20	27	3.4	214	51	26	0.6	2.8	10	317	0.43	15,180	209	34	22	0.8	497	8.0	5
Feb. 21-29.....	17,760	29	0.02	52	19	27	3.6	218	51	26	0.7	2.5	--	322	0.44	15,440	208	29	22	0.8	498	8.0	7
Mar. 1-10.....	17,810	29	0.03	50	20	30	3.6	216	52	26	0.6	2.7	--	316	0.43	15,200	207	30	24	0.9	495	8.0	7
Mar. 11-20.....	18,780	28	0.03	50	20	26	3.6	214	49	24	0.7	2.2	10	310	0.42	15,720	207	32	21	0.8	481	8.0	5
Mar. 21-31.....	20,400	27	0.04	47	17	26	4.2	200	47	22	0.7	2.2	--	292	0.40	16,060	190	26	23	0.8	454	7.6	5

SNAKE RIVER MAIN STEM--Continued
SNAKE RIVER AT KING HILL, IDAHO--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952.--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 (residue at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium					Non-carbonate
Apr. 1-10, 1952..	20,920	27	0.07	44	16	25	4.0	192	45	22	0.7	1.8	--	278	0.38	15,700	176	18	0.8	441	7.5	5
Apr. 11-20	21,750	27	.09	44	17	25	4.1	192	44	22	.7	1.9	0.09	278	.38	16,330	180	22	.8	439	7.8	5
Apr. 21-22, 29-30	21,650	26	.08	44	15	23	3.5	183	40	20	--	3.2	--	269	.37	15,720	171	21	.8	424	7.9	5
May 1-10	22,200	28	.07	40	16	22	3.6	174	39	20	.5	2.4	--	252	.34	15,100	166	23	.7	405	7.9	5
May 11-20	17,230	27	.06	41	16	23	3.5	180	40	20	.5	2.6	.11	282	.36	12,190	168	21	.8	418	7.9	5
May 21-31	13,770	29	.08	43	17	26	3.9	194	46	23	.5	2.4	--	282	.38	10,480	177	18	.9	448	8.1	5
June 1-10	13,820	26	.05	42	17	25	3.6	186	43	20	.5	2.3	--	270	.37	10,070	175	22	.8	436	8.0	5
June 11-20	16,190	25	.08	43	18	24	3.8	194	41	20	.4	2.4	.10	270	.37	11,800	173	14	.8	436	7.8	0
June 21-30	12,820	32	.08	44	18	28	3.9	208	48	23	.5	2.9	--	304	.41	10,520	184	13	.8	479	7.8	0
July 1-10	11,680	28	.06	42	17	26	4.0	204	42	21	.5	2.9	--	286	.38	9,020	175	6	.9	459	7.8	0
July 11-20	8,170	37	.14	44	20	33	5.2	218	44	26	.4	4.1	.10	327	.44	7,210	192	13	27	512	7.9	0
July 21-31	8,301	36	.14	43	20	34	5.0	217	57	27	.5	2.8	--	333	.45	7,460	190	12	27	522	7.9	0
Aug. 1-10	8,619	39	.05	45	21	35	4.6	220	55	29	.6	3.7	--	336	.46	7,820	199	18	27	529	7.7	5
Aug. 11-20	8,513	41	.04	46	21	35	4.7	227	57	29	.7	3.4	.05	342	.47	7,860	202	20	27	537	8.0	5
Aug. 21-31	8,543	41	.04	46	22	35	4.7	234	56	28	.6	3.5	--	342	.47	7,889	206	14	26	537	8.0	5
Sept. 1-10	8,935	37	.02	46	21	36	4.7	224	58	27	.5	3.3	--	359	.49	8,660	202	18	27	546	8.0	7
Sept. 11-20	9,374	33	.02	46	21	37	4.6	224	59	28	.5	2.9	.08	341	.46	8,630	202	18	28	546	8.1	7
Sept. 21-30	8,245	35	.02	46	22	38	4.7	227	59	27	.6	2.8	--	342	.47	8,540	206	20	28	551	8.2	5
Weighted average	a. 13,900	31	0.05	46	19	29	4.5	208	50	24	0.6	2.9	--	309	0.42	11,600	193	23	0.8	486	--	--

a Represents 97 percent of runoff for water year October 1951 to September 1952.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER AT KING HILL, IDAHO.--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement at approximately 11:45 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	50	50	43	45	43	49	58	63	65	68	62
2	80	49	48	42	45	44	49	59	64	64	68	62
3	59	50	47	41	45	43	49	59	65	65	68	64
4	57	50	47	41	45	43	50	59	66	67	68	64
5	58	50	47	41	45	44	51	59	66	67	68	64
6	58	50	47	41	45	44	52	59	67	65	67	63
7	58	51	45	42	45	44	52	58	66	65	67	64
8	59	52	44	43	44	45	50	57	67	65	67	63
9	59	52	43	43	43	--	50	57	68	66	67	63
10	59	53	42	43	44	--	51	58	65	67	67	63
11	59	52	43	44	44	44	52	58	65	67	67	63
12	57	51	45	45	43	45	53	59	63	65	67	61
13	58	51	44	46	43	45	53	60	63	66	68	60
14	57	51	44	45	42	44	52	60	65	67	67	60
15	57	50	44	46	41	43	51	57	62	67	67	60
16	56	48	46	45	42	44	53	58	62	67	65	60
17	55	47	45	42	42	45	54	59	63	66	--	62
18	54	47	44	42	44	46	55	60	65	65	--	62
19	55	47	45	42	42	46	54	61	65	65	65	62
20	55	48	44	43	42	46	53	60	65	65	64	63
21	53	49	45	43	43	46	54	59	63	65	65	62
22	54	49	46	43	42	46	55	59	64	65	65	63
23	53	49	44	44	42	45	--	60	64	66	65	63
24	52	49	44	45	43	46	--	63	63	67	66	62
25	54	47	42	45	42	47	--	63	63	67	65	62
26	54	48	44	46	43	48	--	63	64	67	64	63
27	53	48	45	46	43	48	--	63	62	68	64	63
28	53	49	46	45	43	49	--	65	65	68	63	61
29	53	50	47	44	43	49	57	62	64	68	64	61
30	53	50	46	43	--	49	57	62	64	68	63	61
31	51	--	44	45	--	49	--	--	--	68	62	--
Average	56	50	45	44	42	46	--	60	64	66	66	62

BOISE RIVER BASIN

BOISE RIVER AT NOTUS, IDAHO

LOCATION --At steel highway bridge, 360 yards downstream from gaging station which is a quarter of a mile southeast of Notus, Canyon County, and 7 miles north-
west of Caldwell.

DRAINAGE AREA --3,820 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses, January 1939 to January 1950 to September 1952.

Water temperatures: November 1950 to September 1952.

Sediment records: January 1939 to June 1940.

EXTREMES 1951-52 --Dissolved solids: Maximum, 481 ppm Aug. 11-20; minimum, 77 ppm May 1-10.

Hardness: Maximum, 190 ppm Nov. 11-20; minimum, 36 ppm Apr. 21-30, May 1-10, 11-20.

Specific conductance: Maximum daily, 802 micromhos Aug. 20; minimum daily, 81.7 micromhos Apr. 27.

Water temperatures: Maximum observed, 85°F July 10; minimum observed, 35°F Jan. 18.

EXTREMES 1939-40, 1950-52 --Dissolved solids: Maximum, 914 ppm Aug. 21-31, 1939; minimum, 77 ppm May 1-10, 1952.

Hardness: Maximum, 284 ppm July 21-31, 1939; minimum, 94 ppm Apr. 21-30, May 1-10, 11-20, 1952.

Specific conductance: Maximum daily, 1,390 micromhos Aug. 21-31, 1939; minimum daily, 81.7 micromhos Apr. 27, 1952.

Water temperatures (1950-52): Maximum observed, 85°F on several days during summer months; minimum observed, 35°F Jan. 18, 1952.

Sediment loads (1939-40): Maximum, 8,000 tons Apr. 2, 1939; evaporation, 0.3 ton Aug. 3, 1939.

REMARKS --Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1951 to September 1952 given in WSP 1247.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH or Col.		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nestum				Non-carbonate	
Oct. 1-10, 1951....	793	34	0.03	39	11	60	6.1	220	70	18	0.6	3.4	--	338	0.46	724	142	0	45	521	7.8	20
Oct. 11-20.....	975	37	.03	46	13	67	6.4	248	85	19	.5	2.9	0.24	388	.53	1,020	168	0	45	596	8.0	10
Oct. 21-31.....	908	36	.02	46	13	68	5.8	252	87	20	.4	3.1	--	395	.54	968	168	0	46	607	7.8	10
Nov. 1-10.....	776	37	.03	48	13	71	7.0	280	92	20	.4	3.1	--	410	.56	859	174	0	48	581	7.7	10
Nov. 11-20.....	632	41	.04	53	14	77	7.9	284	99	23	.4	1.4	.28	444	.60	768	180	0	48	624	7.7	10
Nov. 21-29.....	600	38	.07	50	14	70	5.3	265	92	20	.6	1.3	--	420	.57	680	162	0	45	584	7.4	12
Nov. 30, Dec. 1-11	1,039	33	.08	43	11	50	5.3	215	66	15	.5	1.9	--	330	.45	928	152	0	40	496	7.5	10
Dec. 12-20.....	1,821	26	.07	29	7.2	32	4.0	140	41	10	.5	2.7	.14	217	.30	1,070	102	0	39	328	7.4	10
Dec. 21, 26-31.....	2,758	20	.02	21	4.4	22	4.8	103	26	6.2	.3	3.1	--	156	.21	1,160	70	0	38	234	7.4	10
Dec. 22-24.....	1,486	35	.02	42	11	54	3.4	214	70	16	.6	3.5	--	348	.47	1,400	150	0	43	511	7.7	15
Jan. 1-10, 1952.....	3,592	17	.02	21	5.1	17	2.4	95	21	8	.3	2.2	--	136	.18	1,320	73	0	33	214	7.2	12
Jan. 11-20.....	3,599	17	.02	21	4.7	17	2.6	94	21	4.8	.3	2.4	.06	134	.18	1,300	72	0	33	206	7.3	8
Jan. 21-27.....	3,770	18	.02	22	4.4	17	2.9	98	21	5.0	.3	2.6	--	140	.19	1,430	73	0	33	217	7.3	8
Jan. 28-31.....	1,859	30	.05	39	11	50	4.8	192	66	14	--	5.8	--	308	.42	1,550	142	0	42	476	7.5	15
Feb. 1-7.....	1,426	29	.10	34	10	40	3.3	169	47	13	.5	3.5	--	265	.36	1,020	126	0	40	407	7.3	10
Feb. 8-10.....	4,010	24	.06	24	2.5	15	1.0	85	18	5	.4	3.2	--	123	.17	1,330	70	1	31	190	8.0	7
Feb. 11-20.....	4,315	18	.04	18	4.9	15	1.2	82	16	5.0	.4	2.4	.05	119	.16	1,290	65	0	33	184	7.5	5
Feb. 21-29.....	3,988	18	.04	17	5.0	15	1.2	82	17	4.5	.4	2.3	--	120	.16	1,290	63	0	34	185	7.6	7
Mar. 1-10.....	3,872	18	.04	19	4.9	16	1.2	84	19	5.5	.4	2.4	--	125	.17	1,310	68	0	33	191	7.5	5
Mar. 11-20.....	4,462	17	.08	17	3.8	15	1.5	80	17	3.8	.4	2.7	.09	122	.17	1,480	58	0	35	177	7.5	12
Mar. 21-31.....	6,169	18	.09	15	3.5	12	1.5	70	13	3.0	.4	2.8	--	110	.15	1,630	52	0	33	153	7.5	15

Apr. 1-10, 1952 ..	5,397	20	.15	14	3.9	13	1.5	68	15	3.2	.4	4.0	--	114	.16	1,660	51	0	35	.8	150	7.4	15
Apr. 11-20	7,373	18	.24	11	3.5	8.5	1.6	52	9.7	2.3	.4	3.0	.06	97	.13	1,830	42	0	30	.6	116	7.4	30
Apr. 21-30	6,754	16	.28	7.8	4.0	6.8	1.5	46	6.7	1.7	.3	1.4	--	84	.11	1,530	36	0	28	.5	94.3	7.4	30
May 1-10	5,799	16	.18	8.2	3.7	6.8	1.5	48	6.8	1.7	.3	1.4	--	77	.10	1,210	36	0	28	.5	103	7.4	15
May 11-20	6,444	15	.11	10	2.7	7.4	1.2	48	7.2	2.1	.3	1.7	.08	78	.11	1,360	36	0	30	.5	103	7.4	15
May 21-31	4,061	16	.09	12	2.7	10	1.6	60	11	3.0	.3	1.7	--	92	.13	1,010	41	0	34	.7	131	7.3	15
June 1-11	3,804	15	.09	12	3.5	11	1.6	61	12	3.2	.3	1.9	--	94	.13	965	44	0	34	.7	136	7.3	15
June 12-18	2,243	18	.06	15	4.3	18	2.3	84	20	5.0	.4	2.5	.07	131	.18	793	55	0	40	1.1	194	7.3	10
June 19-30	866	22	.06	23	6.8	31	2.9	128	35	9.5	.3	3.2	--	201	.27	524	85	0	43	1.5	304	7.8	10
July 1-9	592	25	.06	29	9.0	46	3.2	169	50	13	.4	2.9	--	283	.36	420	109	0	47	1.9	413	7.7	20
July 10-20	250	30	.06	38	12	70	4.2	221	83	22	.2	4.0	.16	400	.54	270	144	0	50	2.5	581	7.7	5
July 21-30	274	30	.11	37	10	85	4.5	214	74	20	.5	4.0	--	341	.46	232	133	0	50	2.4	540	7.8	10
July 31, Aug. 1-10	163	37	.06	42	14	88	5.0	264	99	29	.6	2.7	--	454	.62	200	162	0	53	3.0	691	7.8	20
Aug. 11-20	134	37	.08	48	15	95	4.6	278	111	31	.6	2.9	.10	481	.85	174	182	0	52	3.1	739	8.0	30
Aug. 21-31	126	38	.08	48	15	94	5.0	276	106	33	.6	3.1	--	477	.85	162	176	0	53	3.1	732	8.0	15
Sept. 1-10	373	35	.02	43	13	77	4.8	230	89	28	.5	2.6	--	417	.97	480	151	0	50	2.8	682	7.8	15
Sept. 11-20	790	34	.02	41	12	72	4.7	240	83	24	.5	3.3	.17	380	.53	332	181	0	50	2.8	692	7.8	15
Sept. 21-30	478	34	.02	42	14	77	4.7	236	92	24	.4	3.1	--	426	.58	550	162	0	50	2.8	650	7.9	15
Weighted average	2,525	20	0.10	18	5.0	19	2.2	90	22	5.5	0.4	2.4	--	142	0.19	968	65	0	38	1.0	206	--	--

SNAKE RIVER BASIN

BOISE RIVER BASIN--Continued

BOISE RIVER AT NOTUS, IDAHO,--Continued

Temperature (°F) of water, water year October 1951 to September 1952
 /Once-daily temperature measurement at 4:00 p. m./

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

Snake River Main Stem--Continued
Snake River near Clarkston, Wash.

LOCATION.--One mile downstream from gaging station, 1 mile upstream from Alpowa Creek, 8 miles downstream from Clarkston, Asotin County, and 133 miles from mouth of Snake River.

DATE OF ANALYSIS.--100,200 square miles, approximately (above gaging station).

RECORDS AVAILABLE.--Chemical analyses, November 1951 to September 1952.

WATER TEMPERATURE.--Maximum 152° F. (September 1952); minimum 28° F. (September 1952).

EXTREMES.--1951-52: Dissolved solids 21-30; maximum 283 ppm June 1-10; minimum 28 ppm June 1-10.

Hardness: Maximum 152 ppm Sept. 21-30; minimum 28 ppm June 1-10.

Specific conductance: Maximum daily 463 micromhos Nov. 14; minimum observed, 32 μ Jan. 14.

Water temperatures: Maximum observed 73° F. Aug. 8-11; minimum observed, 32° F. Jan. 14.

REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oregon. Records of discharge for gaging station near Clarkston for water year October 1951 to September 1952 available in WSP 1247.

No appreciable inflow between gaging station and sampling point except during periods of heavy local rains.

Chemical analyses, in parts per million, water year November 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or Col- or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium				Non-carbonate
Nov. 14, 16-7, 19-20, 1951	30,780	35	--	37	14	29	6.1	190	38	14	0.5	3.4	0.24	a 271	0.37	22,520	150	0	29	398	7.5
	31,620	30	--	34	12	27	5.1	168	40	15	.5	2.5	--	a 244	.33	20,830	134	5	29	372	7.8
	44,540	30	0.14	32	11	24	5.3	147	37	13	.5	2.7	--	.225	.31	27,080	125	5	28	344	7.6
	32,960	34	--	37	12	27	6.8	177	36	14	.4	3.2	.13	a 253	.35	22,960	142	0	28	385	7.0
Dec. 12-16, 17...	29,860	29	.02	34	11	26	6.4	151	40	16	.3	1.8	--	.231	.31	18,620	130	6	29	366	7.2
	31,610	27	.02	34	12	26	3.0	151	41	15	.5	2.8	.08	.236	.32	20,140	134	10	29	365	7.7
	33,460	27	.04	34	12	25	3.0	152	40	15	.5	3.0	--	.235	.32	21,230	134	10	28	361	7.8
	45,070	27	.20	29	11	22	3.2	132	34	12	.5	3.4	--	.212	.29	25,900	118	9	28	311	7.7
Jan. 1-10, 1952	36,820	27	.14	30	10	22	3.1	134	36	13	.5	3.0	.06	.215	.29	22,540	118	6	29	321	7.7
	37,240	26	.06	34	12	3.0	3.0	151	39	15	.5	2.7	--	.231	.31	23,230	134	10	27	354	7.8
	35,870	26	.04	35	12	25	3.2	155	40	16	.6	2.6	--	.240	.33	23,240	137	10	28	368	7.6
	46,610	25	.06	34	12	24	3.2	151	38	14	.5	2.8	.06	.236	.32	20,700	134	10	27	368	7.6
Mar. 11-20	75,750	25	.04	28	9.2	19	3.2	124	29	11	.5	3.5	--	.197	.27	40,290	108	6	27	395	7.6
	104,510	25	.04	22	7.5	15	2.7	100	22	8.0	.5	3.1	--	.180	.22	45,150	86	4	27	234	7.4
	146,100	24	.25	21	6.3	15	2.6	87	19	7.4	.5	2.5	.06	.162	.22	44,780	87	7	27	219	7.0
	194,500	23	.23	18	6.8	12	2.4	83	15	6.1	.5	1.7	--	.137	.19	71,940	73	5	26	186	7.3
Apr. 21-30	182,600	18	.16	18	5.8	10	1.8	75	13	5.4	.5	1.4	--	.123	.17	60,970	64	2	25	187	7.3
	194,700	19	.14	15	4.9	9.3	2.0	67	13	4.9	.4	1.7	.03	.113	.15	60,910	58	3	25	157	7.3
	183,300	16	.08	14	4.2	6.8	1.4	60	11	4.0	.4	.9	--	.096	.13	50,100	52	3	28	137	7.4
	155,500	15	.06	14	3.9	9.5	1.6	63	12	4.7	.4	1.1	--	.097	.13	40,720	51	0	28	144	7.4
May 21-31	104,940	20	.04	18	5.6	13	2.4	82	18	7.0	.4	1.6	.04	.128	.17	36,270	68	1	28	190	7.6
	84,330	19	.04	18	5.6	13	2.0	86	19	6.2	.4	.8	--	.127	.17	26,320	66	0	29	163	7.6

a Sum of determined constituents.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR CLARKSTON, WASH.--Continued

Chemical analyses, in parts per million, water year November 1951 to September 1952--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)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
July 1-10, 1952 ..	70,880	20	0.03	21	7.1	15	2.8	104	23	9.0	0.4	0.6	--	154	0.21	29,470	82	0	28	0.7	238	7.4	5
July 11-20	42,280	18	.04	21	6.6	16	2.8	100	24	8.5	.4	.9	0.07	149	.20	17,000	80	0	30	.8	232	7.4	10
July 21-31	30,310	20	.07	25	8.7	24	3.4	120	32	12	.5	.9	--	185	.25	15,140	98	0	34	1.0	291	7.6	10
Aug. 1-10	25,500	24	.04	30	11	27	4.4	150	38	13	.5	1.1	--	217	.30	14,940	120	0	32	1.1	348	7.4	5
Aug. 11-20	23,230	27	.03	32	12	29	4.0	165	39	14	.5	1.6	.08	237	.32	14,860	129	0	32	1.1	376	7.7	5
Aug. 21-31	21,140	32	.03	33	13	31	3.9	178	41	15	.5	1.5	--	254	.35	14,500	136	0	32	1.2	396	7.6	7
Sept. 1-10	21,600	27	.03	34	13	33	4.7	176	45	16	.5	1.6	--	265	.36	15,520	138	0	33	1.2	418	7.5	7
Sept. 11-20	23,070	34	.02	36	14	35	4.4	194	46	15	.5	1.8	.11	276	.38	17,100	147	0	33	1.3	432	7.5	7
Sept. 21-30	21,700	34	.04	38	14	34	3.9	203	44	15	.6	2.0	--	283	.38	16,580	152	0	32	1.2	442	7.8	5
Weighted average	b 71,700	22	0.11	22	7.5	16	2.6	100	22	8.3	0.5	1.8	--	157	0.21	30,390	86	4	28	0.8	231	--	--

b Represents 90 percent of runoff for water year October 1951 to September 1952.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR CLARKSTON, WASH.--Continued

Temperature (°F) of water, November 1951 to September 1952

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

SNAKE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN IN IDAHO

Chemical analyses, in parts per million, water year October 1951 to September 1952

CHEMICAL ANALYSES, IN PARTS PER MILLION, WATER YEAR OCTOBER 1951 TO SEPTEMBER 1952

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)	Dissolved solids			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
SNAKE RIVER NEAR BURLEY																						
Nov. 11, 1951		25		43	17	34		202		48	24		1.2	292	0.40		178	12	29	1.1	458	
June 1, 1952		16		38	13	18		166		30	14		.3	211	.29		148	12	21	.6	364	
SALMON FALLS CREEK NEAR BUEHL																						
Nov. 11, 1951		62		98	35	82		276		216	76		10	715	0.97		388	162	31	1.8	1,040	
June 2, 1952				83	23			191	16	164	55		6.1				302	119			840	
SNAKE RIVER BELOW THOUSAND SPRINGS NEAR HAGERMAN																						
Nov. 11, 1951		33		50	22	31		216		59	30		2.9	334	0.45		216	38	24	0.9	530	
June 2, 1952		25		43	16	25		184		45	20		1.9	266	.36		173	22	24	.8	438	

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LOCATION.--Temperature recorder at gaging station 1 mile upstream from mouth, 1 mile downstream from Cove power plant and 4 miles northwest of Culver, Jefferson County.

DRAINAGE AREA.--4,330 square miles, approximately.

RECORDS AVAILABLE.--Water temperature: July to September 1952.

REMARKS.--Records of discharge for 1950-51 water year given in MSP 1248.

Temperature ($^{\circ}\text{F}$) of water, July to September 1952[illegible]

DESCRUTES RIVER BASIN--Continued

METOLIUS RIVER NEAR GRANDVIEW, OREG.

LOCATION.--Temperature recorder at gaging station on right bank, at Montgomery ranch 8 miles northwest of Grandview, Jefferson County.
 DRAINAGE AREA.--324 square miles.
 RECORDS AVAILABLE.--Water temperatures: July to September 1952.
 EXTREMES.--Water temperatures: Maximum, 51°F several days in July and August.
 REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Temperature (°F) of water, July to September 1952

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																								
2																					50	46	48	45
3																					50	46	49	45
4																					50	46	50	48
5																					50	46	48	48
6																					50	46	48	48
7																					50	46	48	45
8																					50	46	48	45
9																					50	46	47	45
10																					51	46	46	44
11																					51	46	47	44
12																					50	46	47	45
13																					51	46	47	44
14																					51	46	47	44
15																					50	46	47	44
16																					51	46	47	45
17																					51	46	50	48
18																					51	46	50	48
19																					51	46	50	48
20																					51	46	50	48
21																					50	45	50	48
22																					51	45	50	48
23																					51	46	50	48
24																					50	45	50	48
25																					50	45	49	45
26																					51	46	49	45
27																					51	46	48	46
28																					51	46	48	46
29																					51	46	48	46
30																					51	46	48	46
31																					51	46	49	45
Average																					50	46	48	45

DESCHUTES RIVER BASIN--Continued
DESCHUTES RIVER NEAR MADRAS, OREG.

LOCATION.--Temperature recorder at gaging station 1 mile downstream from Pelton dam site, 5 miles upstream from Shitike Creek and 7½ miles northwest of Madras, Jefferson County.
DRAINAGE AREA.--7,900 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: March to September, 1952.
EXTREMES, 1952.--Water temperatures: Maximum, 59°F July 3-6, 10.
REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

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													48	46	51	50	55	52	56	54	57	54	52	50
2													48	46	52	51	55	53	57	55	57	54	53	50
3													48	47	52	51	55	53	59	56	57	55	54	52
4													49	48	51	49	57	54	59	57	57	55	54	52
5													51	49	51	49	57	55	59	56	56	54	53	51
6													51	51	52	50	57	56	58	55	56	54	53	51
7													51	49	52	51	56	53	57	54	56	54	53	52
8													49	48	53	51	57	54	58	55	56	54	53	52
9													48	48	53	50	57	54	58	55	57	54	53	51
10													48	48	55	52	56	52	59	56	57	54	52	51
11													46	46	50	49	54	52	58	56	57	55	53	51
12													46	46	50	49	54	53	51	58	56	54	53	51
13													46	46	51	50	55	53	54	52	58	55	54	53
14													46	46	50	49	54	52	53	52	58	55	54	53
15													46	46	50	49	54	51	58	55	56	53	52	51
16													47	45	50	49	55	52	56	53	58	54	52	50
17													47	46	52	50	55	53	57	54	57	54	52	50
18													46	46	53	52	55	53	57	55	56	54	52	50
19													46	45	53	52	55	53	58	55	58	53	54	52
20													45	44	52	49	54	52	57	54	57	53	54	52
21													46	45	51	49	54	52	56	53	56	53	54	52
22													47	45	52	50	55	52	55	53	56	53	54	52
23													48	47	53	51	56	53	56	53	56	54	53	51
24													48	47	53	52	56	54	55	54	56	53	52	50
25													49	48	54	53	56	54	56	53	54	51	54	52
26													49	47	54	53	56	53	57	54	56	54	51	50
27													47	47	54	53	56	54	56	55	57	54	52	50
28													48	47	54	52	56	55	56	54	57	54	53	52
29													48	46	52	50	55	53	55	53	57	54	53	51
30													46	46	52	51	55	52	53	57	54	53	50	51
31													46	45	--	--	--	--	--	57	54	52	50	--
Average													51	50	54	52	56	53	57	54	55	53	54	52

DESCUTES RIVER BASIN

WARM SPRINGS RIVER AT HEHE MILL, NEAR WARM SPRINGS, OREG.

LOCATION.--Temperature recorder at gaging station at downstream side of highway bridge, one-fourth of a mile east of abandoned Hehe Mill, 10 miles south of Bear Springs ranger station and 18 miles northwest of Warm Springs, Jefferson County.

DRAINAGE AREA.--108 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum 59°F July 10; minimum, freezing point, Dec. 26, 27, Jan. 1-4.

EXTREMES, 1950-52.--Water temperatures: Maximum, 59°F July 5, 6, 25, 1950, July 17, 1951; July 10, 1952; minimum, freezing point Dec. 26, 27, 1951, Jan. 1-4, 1952.

REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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
1	48	47	40	38	41	41	34	32	39	39	38	37	42	53
2	48	47	40	38	41	41	34	32	39	39	38	37	42	53
3	48	47	40	38	41	41	34	32	39	39	38	37	42	53
4	48	47	40	38	41	41	34	32	39	39	38	37	42	53
5	48	47	40	38	41	41	34	32	39	39	38	37	42	53
6	48	47	40	38	41	41	34	32	39	39	38	37	42	53
7	48	47	40	38	41	41	34	32	39	39	38	37	42	53
8	48	47	40	38	41	41	34	32	39	39	38	37	42	53
9	48	47	40	38	41	41	34	32	39	39	38	37	42	53
10	48	47	40	38	41	41	34	32	39	39	38	37	42	53
11	48	47	40	38	41	41	34	32	39	39	38	37	42	53
12	48	47	40	38	41	41	34	32	39	39	38	37	42	53
13	48	47	40	38	41	41	34	32	39	39	38	37	42	53
14	48	47	40	38	41	41	34	32	39	39	38	37	42	53
15	48	47	40	38	41	41	34	32	39	39	38	37	42	53
16	48	47	40	38	41	41	34	32	39	39	38	37	42	53
17	48	47	40	38	41	41	34	32	39	39	38	37	42	53
18	48	47	40	38	41	41	34	32	39	39	38	37	42	53
19	48	47	40	38	41	41	34	32	39	39	38	37	42	53
20	48	47	40	38	41	41	34	32	39	39	38	37	42	53
21	48	47	40	38	41	41	34	32	39	39	38	37	42	53
22	48	47	40	38	41	41	34	32	39	39	38	37	42	53
23	48	47	40	38	41	41	34	32	39	39	38	37	42	53
24	48	47	40	38	41	41	34	32	39	39	38	37	42	53
25	48	47	40	38	41	41	34	32	39	39	38	37	42	53
26	48	47	40	38	41	41	34	32	39	39	38	37	42	53
27	48	47	40	38	41	41	34	32	39	39	38	37	42	53
28	48	47	40	38	41	41	34	32	39	39	38	37	42	53
29	48	47	40	38	41	41	34	32	39	39	38	37	42	53
30	48	47	40	38	41	41	34	32	39	39	38	37	42	53
31	48	47	40	38	41	41	34	32	39	39	38	37	42	53
Average	45	43	41	40	37	36	--	--	38	36	41	39	45	41

a Range in temperature 34°F to 37°F for period Jan. 7 to 14.

COLUMBIA RIVER MAIN STEM

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.

LOCATION.--At Maryhill Ferry about 2½ miles downstream from Rufus, Sherman County, and about 9 miles upstream from The Dalles gaging station, which is just upstream from Celilo Falls, 3 miles downstream from Deschutes River, and 11 miles east of The Dalles, Wasco County.

DRAINAGE AREA.--237,000 square miles (above gaging station near The Dalles).

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

EXTREMES, 1951-52.--Dissolved solids: Maximum, 147 ppm Mar. 11-20; minimum, 91 ppm June 11-20.

Hardness: Maximum, 99 ppm Mar. 21-31; minimum, 58 ppm May 1-10.

Specific conductance: Maximum daily, 242 microhos Feb. 27; minimum daily, 125 microhos May 1.

Water temperatures: Maximum observed, 75°F Aug. 3; minimum observed, 36°F Feb. 2; 87 ppm May 11-20, 1951.

EXTREMES, 1950-52.--Dissolved solids: Maximum, 147 ppm Mar. 11-20, 1951; minimum, 87 ppm May 11-20, 1951.

Hardness: Maximum, 99 ppm Mar. 21-31, 1952; minimum, 56 ppm May 1-10, 1951.

Specific conductance: Maximum daily, 242 microhos Feb. 27; minimum daily, 124 microhos May 26, 1951.

Water temperatures: Maximum observed, 75°F Aug. 3; minimum observed, 36°F Feb. 2, 1951.

REMARKS.--Records of discharge for gaging station near the Dalles, Ore., for water year October 1951 to September 1952 given in WSP 1248. These records include the inflow of the Deschutes River which on the average amounts to less than 5% of the annual runoff at the gaging station. No other appreciable inflow between Maryhill Ferry and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium					Non-carbonate	
Oct. 1-10, 1951 ..	116,800	13	0.03	24	7.1	8.9	3.2	100	22	4.4	0.3	1.1	--	129	0.18	40,880	89	7	17	0.4	211	8.0	5
Oct. 11-20	119,100	12	.02	24	6.8	8.4	3.2	98	20	4.4	3	.9	0.14	122	.17	39,230	88	8	17	.4	204	7.7	4
Oct. 21-31	128,700	10	.02	25	7.2	9.7	3.4	104	21	5.0	3	1.0	--	131	.18	45,520	92	7	18	.4	217	7.8	4
Nov. 1-10	116,800	13	.02	25	7.4	9.7	2.9	104	21	4.9	3	1.1	--	134	.18	42,160	93	8	18	.4	218	7.7	4
Nov. 11-20	112,800	13	.02	25	7.4	10	3.4	104	22	5.9	3	.9	.16	138	.19	42,030	93	8	18	.5	226	7.9	4
Nov. 21-30	105,800	13	.03	26	7.7	11	3.2	112	23	5.8	3	.5	--	144	.20	41,060	96	5	19	.5	231	7.8	5
Dec. 1-10	127,900	14	.02	25	7.4	9.6	2.1	105	19	5.5	2	1.1	--	139	.19	48,000	93	7	18	.4	217	7.1	10
Dec. 11-20	110,900	14	.02	24	7.9	9.5	2.1	101	19	5.8	2	1.1	.09	139	.19	41,820	92	10	18	.4	215	7.3	10
Jan. 30-31, Feb. 1-10, 1952 ..	141,600	15	.03	25	7.7	10	1.7	107	22	5.8	3	1.2	--	140	.19	53,520	94	6	18	.4	229	7.6	6
Feb. 11-20	125,100	17	.16	24	7.6	9.3	1.7	101	21	4.8	3	2.0	.07	140	.19	47,280	91	8	18	.4	217	7.8	17
Feb. 21-28	123,200	15	.04	25	7.7	9.3	1.8	103	22	5.3	3	1.3	--	141	.19	46,900	94	10	17	.4	228	7.7	15
Mar. 1-10	127,400	14	.06	28	8.0	9.3	1.8	108	22	5.7	3	.9	--	140	.19	48,160	98	11	17	.4	230	7.7	20
Mar. 11-20	135,200	15	.14	28	8.1	10	1.8	108	23	5.8	4	1.3	.09	147	.20	53,660	98	11	18	.4	234	7.7	15
Mar. 21-31	179,500	18	.10	28	8.3	8.4	2.8	103	21	5.5	5	2.1	--	141	.19	68,340	99	15	15	.4	218	7.3	30
Apr. 1-10	213,200	20	.19	20	8.4	7.0	2.2	90	15	5.0	5	2.2	--	128	.17	73,680	84	11	15	.3	184	7.5	30
Apr. 11-20	249,800	18	.18	18	6.3	7.4	2.2	85	13	4.0	4	1.1	.05	115	.16	77,560	71	1	18	.4	163	7.5	35
Apr. 21-30	301,400	18	.16	15	5.9	6.0	2.0	68	12	3.2	4	1.6	--	104	.14	84,630	62	6	17	.3	142	7.5	30

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--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 (residue at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day	Calcium					Non-carbonate	
May 1-10, 1952	361,900	16	0.08	15	5.0	4.2	1.5	64	10	3.0	0.4	0.8	--	92	0.13	89,900	58	6	13	0.2	131	7.5	15
May 11-20	482,300	13	.09	16	4.6	5.3	1.9	68	11	3.1	.3	1.1	0.06	93	.13	121,100	59	3	16	.3	143	7.3	25
May 21-31	540,800	10	.03	17	4.8	5.1	1.5	72	12	2.2	.2	.9	--	93	.13	135,700	62	3	15	.3	152	7.5	25
June 1-10	477,800	11	.03	18	4.6	5.1	1.7	73	12	1.6	.2	.9	--	93	.13	120,000	64	4	14	.3	150	7.3	25
June 11-20	408,500	9.6	.03	17	4.4	4.9	1.7	69	12	2.0	.2	1.1	.07	91	.12	100,400	60	4	15	.3	147	7.3	25
June 21-30	332,300	9.6	.03	18	4.5	4.7	1.8	76	12	2.0	.3	1.1	--	95	.13	85,230	63	1	13	.3	155	7.6	25
July 1-10	330,800	12	.02	19	5.1	5.2	1.2	84	12	3.5	.2	.8	--	97	.13	86,640	68	0	14	.3	160	7.4	5
July 11-20	283,400	12	.02	19	5.2	5.2	1.6	88	12	3.5	.2	.7	--	97	.13	68,960	69	0	14	.3	158	7.5	5
July 21-31	206,900	11	.02	20	5.5	6.1	1.9	88	15	4.5	.3	1.0	--	104	.14	58,100	72	0	15	.3	173	7.2	10
Aug. 1-10	165,000	11	.03	22	5.9	6.6	1.5	88	16	4.8	.3	.7	--	107	.15	47,870	79	7	15	.3	179	7.5	7
Aug. 11-20	138,000	9.3	.04	21	5.9	7.5	1.8	88	18	4.0	.2	1.0	.04	113	.15	42,100	77	5	17	.4	188	7.3	5
Aug. 21-31	125,000	8.5	.04	24	6.7	11	2.0	96	22	5.5	.2	1.0	--	132	.18	44,550	87	9	21	.5	217	7.2	5
Sept. 1-10	101,700	9.5	.05	24	7.3	12	1.7	100	24	6.0	.2	1.1	--	135	.18	37,070	90	8	22	.6	224	7.8	5
Sept. 11-20	95,030	8.3	.09	23	7.3	12	1.9	98	25	5.8	.2	1.0	.04	134	.18	34,360	87	7	23	.6	225	7.5	5
Sept. 21-30	91,230	8.1	.07	23	7.2	12	1.9	100	25	6.0	.2	.5	--	135	.18	33,250	87	5	23	.6	225	7.8	5
Weighted average	a 208,300	13	0.06	20	6.0	6.9	1.9	85	15	3.9	0.3	1.1	--	111	0.15	62,430	75	5	16	0.3	177	--	--

a Represents 94 percent of runoff for water year October 1951 to September 1952.

COLUMBIA RIVER MAIN STEM--Continued.

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG--Continued

Temperature (°F) of water, water year October 1951 to September 1952

/ Once-daily temperature measurement at approximately 4:00 p. m. /

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

KLICKITAT RIVER BASIN

KLICKITAT RIVER NEAR GLENWOOD, WASH.

LOCATION.--Temperature recorder, at gaging station, half a mile downstream from Dairy Creek, 5 miles north of Glenwood, Klickitat County, and 7 miles upstream from Trout Creek.

DRAINAGE AREA.--360 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 59°F July 10, 11, 1952; minimum, 33°F Dec. 4, 5, 7-10, 18, 23-28, 31, 1951, Jan. 1-8, 1952.

EXTREMES, 1950-51.--Water temperatures: Maximum, 59°F July 10, 11, 1952; minimum, freezing point on Jan. 21, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952.

Temperature (°F) of water, water year October 1951 to September 1952

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	49	40	38	36	38	33	33	33	38	33	37	36	38	37	41	38	49	45	52	48	55	53	52	49
2	49	40	38	36	38	33	33	33	38	33	37	36	40	38	41	38	41	47	53	48	56	51	52	49
3	49	40	38	36	38	33	33	33	38	33	37	36	41	38	42	39	50	48	55	50	57	52	54	50
4	48	46	40	37	33	33	33	33	38	33	36	41	38	42	39	51	49	54	51	58	53	52	49	52
5	47	45	40	38	35	33	33	33	37	37	38	42	39	41	39	51	49	52	49	57	53	53	50	
6	47	46	39	38	35	33	33	33	37	37	37	41	40	42	40	51	49	52	48	57	52	52	49	
7	47	47	40	39	35	33	33	33	37	37	37	40	37	43	41	51	47	53	48	58	52	50	47	
8	47	47	40	40	33	33	33	33	38	37	38	37	39	44	43	53	49	55	50	57	53	49	47	
9	47	47	41	40	33	33	33	33	38	37	39	38	40	38	45	41	53	49	57	52	58	54	49	47
10	47	47	41	41	35	33	33	33	38	38	39	39	40	38	45	43	52	48	59	53	57	53	50	47
11	47	47	41	38	35	35	35	35	38	38	39	38	42	39	45	43	48	46	59	54	57	53	49	47
12	47	46	38	38	35	35	35	35	38	36	39	37	41	39	45	43	47	45	58	54	57	53	51	47
13	47	46	38	37	35	34	34	34	36	34	38	38	41	40	45	43	47	45	58	53	57	53	49	47
14	47	46	37	37	34	34	34	34	36	35	38	37	41	40	44	41	47	45	58	53	57	53	48	45
15	45	43	37	36	35	34	36	35	37	36	40	38	41	38	45	41	47	45	58	53	56	53	48	45
16	44	43	36	34	35	35	36	35	37	37	39	37	41	39	46	42	50	46	57	52	55	51	49	47
17	42	42	35	34	35	35	35	34	37	35	39	38	42	39	45	42	51	48	55	50	54	50	50	48
18	43	42	36	34	35	33	36	35	35	34	38	37	43	39	46	43	53	48	56	51	53	51	52	49
19	45	43	38	36	35	34	36	35	35	34	38	37	41	39	46	43	54	50	56	51	53	48	53	51
20	45	44	37	36	35	34	35	34	35	35	38	36	41	38	43	42	53	50	56	52	52	49	52	50
21	44	42	38	37	36	35	35	35	35	34	38	36	42	38	46	44	50	48	53	49	53	49	51	49
22	43	42	37	36	36	35	35	34	36	36	42	39	43	44	51	47	53	50	55	50	55	50	51	48
23	42	42	36	36	33	33	33	34	34	34	41	38	42	39	46	44	51	46	53	54	50	50	50	48
24	42	42	36	35	33	33	33	34	36	36	42	40	42	40	48	47	51	48	55	51	52	49	51	48
25	42	42	35	34	33	33	33	33	37	37	42	40	44	40	48	48	50	49	56	51	50	48	51	50
26	41	40	37	34	33	33	38	36	39	38	41	40	42	40	49	45	51	48	57	51	51	48	51	50
27	41	40	37	37	33	33	38	38	39	41	38	41	40	49	45	51	50	56	51	51	48	51	49	51
28	42	40	37	37	34	33	38	38	39	40	39	40	39	47	50	49	56	51	52	53	50	49	48	48
29	42	40	37	37	34	34	38	38	37	37	39	38	40	37	48	45	49	57	52	53	50	49	47	47
30	40	39	38	37	34	34	38	38	37	37	39	38	40	47	48	44	51	48	57	53	52	48	49	48
31	39	38	--	--	--	34	33	38	--	--	38	36	--	--	48	47	--	--	--	--	52	49	--	--
Average	45	44	38	37	35	34	35	35	37	36	39	37	41	39	45	43	50	48	56	51	55	51	51	48

KLICKITAT RIVER BASIN--Continued
KLICKITAT RIVER NEAR PITT, WASH.

LOCATION.--Temperature recorder at gaging station, 3½ miles south of Pitt, Klickitat County, 5 miles upstream from Silvius Creek, and 7 miles upstream from mouth at Lytle.
DRAINAGE AREA--1,290 square miles, approximately.
RECORDS AVAILABLE--Water temperatures: August 1950 to September 1952.
EXTREMES, 1950-52.--Water temperatures: Maximum, 86° F. July 10-23, 1951; minimum, 35° F. Jan. 4-8, 1952.
EXTREMES, 1950-52.--Water temperatures: Maximum, 66° F. July 10-23, 1951; minimum, 35° F. Jan. 28-31, Feb. 1, 2, 1951; Jan. 4-8, 1952.
REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (° F) of water, water year October 1951 to September 1952

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	59	57	41	41	43	43	36	36	39	38	43	41	43	40	46	43	53	50	56	52	52	59	60	55
2	58	56	43	41	43	42	38	38	39	38	42	40	46	43	46	43	53	52	58	54	53	59	58	56
3	58	56	43	41	42	42	38	38	39	38	42	40	46	43	46	43	53	52	58	54	53	59	58	56
4	58	51	44	43	42	41	38	38	39	38	42	41	46	44	47	44	53	51	57	53	57	58	57	57
5	54	51	44	43	41	40	35	35	39	38	42	41	47	46	46	43	58	55	59	54	53	59	60	57
6	55	51	43	42	40	39	35	35	39	38	42	41	47	46	47	45	57	54	58	53	63	58	58	56
7	55	52	45	43	39	38	35	35	39	38	43	40	48	42	47	45	56	53	59	53	63	58	57	54
8	58	51	46	45	38	37	38	35	39	38	43	41	44	40	50	47	58	53	61	55	63	59	55	53
9	54	50	45	45	37	37	37	36	40	39	43	43	45	41	49	46	57	55	63	57	65	59	56	52
10	54	51	46	45	37	37	38	37	40	39	44	43	48	42	50	48	58	53	65	59	65	61	57	53
11	53	52	46	45	38	37	38	36	40	40	44	42	47	44	50	49	54	51	65	60	63	58	57	53
12	52	50	44	43	38	38	38	38	40	39	43	41	47	44	50	48	52	49	65	61	64	59	58	55
13	53	51	43	43	38	38	38	38	39	37	43	41	47	47	50	49	54	50	65	60	64	59	56	53
14	52	50	43	43	38	38	38	37	39	38	43	42	48	45	49	47	53	50	65	59	63	59	54	51
15	50	47	43	42	39	38	37	37	40	39	45	43	47	45	49	46	52	49	64	60	62	59	55	51
16	48	46	42	40	39	39	37	37	40	39	45	42	47	45	51	48	54	49	63	59	61	57	56	52
17	48	46	40	40	39	39	37	37	39	38	44	43	48	46	50	49	56	52	61	57	62	56	57	53
18	46	46	39	39	39	39	37	37	38	37	44	43	48	47	51	49	58	53	62	57	62	58	53	54
19	46	46	40	39	39	39	37	37	38	38	44	43	48	44	50	48	60	55	62	57	60	58	59	55
20	47	46	41	40	38	38	39	38	39	38	44	41	45	41	48	47	59	55	62	56	60	55	58	55
21	46	45	42	41	39	38	38	38	39	38	44	41	47	43	50	47	56	52	61	57	60	56	58	55
22	45	45	42	42	39	38	38	38	39	38	47	45	47	45	50	48	56	52	61	54	62	57	57	54
23	45	45	42	40	39	38	37	36	40	39	48	45	47	45	51	49	57	52	63	58	62	57	56	53
24	45	44	40	40	38	38	36	36	41	40	48	46	48	46	52	50	59	53	62	58	60	54	57	54
25	45	43	40	40	38	38	36	36	41	41	48	45	48	47	53	51	57	53	63	57	58	53	58	54
26	42	42	40	40	38	36	40	38	43	41	46	43	49	46	52	49	56	52	63	58	59	54	57	55
27	42	42	40	40	38	36	40	40	43	42	45	41	47	45	53	50	58	54	63	57	59	54	57	54
28	43	42	41	40	38	36	40	39	42	42	44	42	45	43	53	51	55	53	64	58	59	54	56	53
29	44	43	42	41	38	36	40	39	43	41	42	40	44	42	53	51	55	52	64	59	61	56	55	52
30	44	43	42	41	38	36	40	40	40	40	44	41	45	43	51	49	56	51	65	59	59	55	55	53
31	41	41	--	--	36	36	40	39	--	--	43	41	--	--	53	51	--	--	54	80	59	55	--	--
Average	50	46	42	42	39	38	36	37	40	39	44	42	46	44	50	48	56	52	62	57	62	57	57	54

a Temperatures from Oct. 1 to Nov. 20, 1951 are considered poor, as thermograph was off several degrees at every visit by stream gagers.

HOOD RIVER BASIN

GREEN POINT CREEK BELOW NORTH FORK, NEAR DEE, OREG.

LOCATION.--Temperature recorder at gaging station three-quarters of a mile upstream from mouth, 1½ miles downstream from North Fork and 1½ miles west of Dee, Hood River County.
 DRAINAGE AREA.--20.0 square miles.
 RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1952.
 EXTREMES, 1951-52.--Water temperatures: Maximum, 60°F Aug. 10, 11; minimum, 34°F Jan. 3.
 EXTREMES, 1950-52.--Water temperatures: Maximum, 60°F Aug. 10, 11, 1952; minimum, 34°F Jan. 3, 1952.
 REMARKS.--Records of discharge for water year 1951-52 given in WSP 1246.

Temperature (°F) of water, water year October 1951 to September 1952

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	51	41	40	40	40	36	36	36	(a)	(a)	39	39	--	--	44	42	42	40	46	53	51	50	56	54
2	51	41	40	40	40	36	36	36	(a)	(a)	39	39	--	--	44	42	42	40	46	53	51	50	56	54
3	51	41	40	40	40	36	36	36	(a)	(a)	39	39	--	--	44	42	42	40	46	53	51	50	56	54
4	51	41	40	40	40	36	36	36	(a)	(a)	39	39	42	41	44	43	43	40	46	53	51	50	56	54
5	50	40	41	41	40	34	34	34	38	38	39	39	--	--	44	43	43	40	46	53	51	50	56	54
6	49	40	41	41	40	36	36	36	38	38	39	39	44	42	44	43	42	40	46	53	51	50	56	54
7	50	40	42	41	39	38	38	38	38	38	39	39	--	--	45	44	44	42	48	55	51	50	56	54
8	50	40	42	42	38	38	38	38	38	38	39	39	--	--	45	44	44	42	48	55	51	50	56	54
9	50	40	42	42	38	38	38	38	38	38	40	39	42	41	46	43	43	40	48	55	51	50	56	54
10	50	40	42	42	38	38	38	38	38	38	40	39	43	41	47	45	45	42	48	55	51	50	56	54
11	50	40	42	42	38	38	38	38	38	38	40	40	--	--	46	44	44	40	48	55	51	50	56	54
12	50	40	42	42	38	38	38	38	38	38	40	40	44	42	47	45	45	40	48	55	51	50	56	54
13	50	40	42	42	38	38	38	38	38	38	40	40	--	--	46	45	45	40	48	55	51	50	56	54
14	50	40	42	41	38	38	38	38	38	38	40	40	43	43	45	44	44	40	48	55	51	50	56	54
15	49	40	41	40	38	38	38	38	38	38	40	40	--	--	47	44	44	40	48	55	51	50	56	54
16	48	40	40	39	38	38	38	38	38	38	40	40	44	43	49	45	45	40	48	55	51	50	56	54
17	47	40	40	39	38	38	38	38	38	38	40	40	--	--	48	46	46	40	48	55	51	50	56	54
18	45	40	40	38	38	38	38	38	38	38	40	40	46	44	48	46	46	40	48	55	51	50	56	54
19	46	40	40	38	38	38	38	38	38	38	40	40	44	42	47	46	46	40	48	55	51	50	56	54
20	46	40	40	38	38	38	38	38	38	38	40	40	43	41	46	46	46	40	48	55	51	50	56	54
21	45	40	40	39	38	(a)	(a)	(a)	(a)	(a)	37	37	40	39	45	42	46	45	52	55	54	54	56	54
22	45	40	40	39	39	(a)	(a)	(a)	(a)	(a)	37	37	40	39	44	43	48	45	51	50	57	53	56	54
23	45	40	40	39	38	(a)	(a)	(a)	(a)	(a)	36	36	42	40	45	43	48	46	52	50	57	54	56	54
24	45	40	40	38	37	(a)	(a)	(a)	(a)	(a)	36	36	42	42	46	44	49	47	53	51	57	54	56	54
25	44	40	38	37	37	(a)	(a)	(a)	(a)	(a)	39	38	41	41	47	45	49	48	52	52	57	54	56	54
26	44	43	38	38	37	36	(a)	(a)	(a)	(a)	39	39	41	41	46	45	50	46	54	53	58	55	56	54
27	43	40	39	38	36	36	(a)	(a)	(a)	(a)	39	39	41	40	45	43	50	47	53	52	58	55	56	54
28	43	40	39	36	36	(a)	(a)	(a)	(a)	(a)	39	39	41	40	43	42	50	48	52	52	58	55	56	54
29	44	40	40	36	36	(a)	(a)	(a)	(a)	(a)	39	39	40	40	43	41	48	47	52	51	58	55	54	54
30	43	42	40	36	36	(a)	(a)	(a)	(a)	(a)	40	40	40	40	43	43	48	46	52	50	58	55	56	54
31	42	41	--	--	36	36	(a)	(a)	(a)	(a)	--	--	--	--	48	48	--	--	--	--	58	56	54	--
Average	47	47	41	40	38	38	--	--	38	38	40	40	--	--	47	45	45	42	50	57	54	58	55	53

a Range in temperature 36°F to 38°F for period Jan. 21 to Feb. 4.

SANDY RIVER BASIN

BULL RUN RIVER AT BULL RUN, OREG.

LOCATION.--Temperature recorder at gaging station 450 feet downstream from tailrace of Portland General Electric Co.'s power plant and 1.5 miles downstream from Little Sandy River.

DRAINAGE AREA.--136 square miles.

RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 66°F July 16, 1952; may have been higher during period of no record; minimum, 35°F several days during January, 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 66°F July 16, 1952; minimum 35°F Jan. 30, 31, Feb. 1, 1951 and several days during January, 1952.

REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	54	53	43	40	43	43	37	36	40	40	40	39	42	40	43	41	51	47	51	50	62	81	--	--
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	53	53	42	40	43	42	36	35	40	40	40	39	42	42	42	41	53	49	53	50	63	81	--	--
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	53	52	44	43	42	42	35	35	40	40	40	40	45	41	48	41	56	51	56	53	--	--	--	--
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	53	51	44	42	41	41	36	35	40	40	40	39	45	41	45	42	56	52	57	53	64	82	--	--
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	54	53	44	43	40	39	36	36	41	41	42	40	44	41	48	44	55	51	60	55	--	--	--	--
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	55	53	44	44	39	39	(a)	(a)	41	41	41	40	46	43	48	44	54	51	65	60	--	--	55	54
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	53	52	44	43	39	39	(a)	(a)	40	40	40	40	45	45	47	46	53	50	64	61	--	--	55	55
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	52	50	43	42	39	38	(a)	(a)	40	40	40	40	44	44	46	45	54	49	65	61	--	--	--	--
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	51	49	42	40	39	39	(a)	(a)	40	40	42	40	46	43	48	44	53	48	66	62	--	--	--	--
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	50	48	41	40	39	39	(a)	(a)	40	39	41	39	46	43	49	46	57	50	--	--	--	--	--	--
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	49	48	41	41	39	39	(a)	(a)	38	38	40	39	47	43	47	45	58	55	60	59	--	--	--	--
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	48	47	40	39	39	39	(a)	(a)	38	37	42	41	47	45	49	46	54	51	58	57	--	--	--	--
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	47	46	40	39	38	37	(a)	(a)	40	38	42	41	46	44	51	48	56	52	59	58	--	--	--	--
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	45	44	42	42	36	36	(a)	(a)	41	40	42	41	46	45	51	47	53	51	--	--	57	61	--	--
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	45	44	42	42	37	36	(a)	(a)	41	40	42	41	44	44	53	51	55	53	--	--	--	--	--	--
30	48	45	42	42	38	37	(a)	(a)	41	40	42	41	42	41	50	47	55	50	--	--	--	--	--	--
31	45	44	43	42	37	37	(a)	(a)	--	--	41	41	42	41	51	50	63	62	--	--	--	--	--	--
Average	44	42	--	--	37	37	(a)	(a)	--	--	41	40	--	--	51	46	--	--	62	61	--	--	--	--

a Range in temperature 35°F to 40°F for period Jan. 11-31.

WILLAMETTE RIVER BASIN

MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK, NEAR OAKRIDGE, OREG.

LOCATION.--Temperature recorder at gaging station, half a mile below Whitehead Creek, 4 miles below North Fork of Middle Fork Willamette River, and 7 miles northwest of Oakridge, Lane County.

DRAINAGE AREA: --924 square miles.

RECORDS AVAILABLE. --Water temperatures: September 1950 to April 1951. February to September 1952.

RECORDS AVAILABLE: --Water temperatures, September 1950 to April 1951, February to September 1952. EXTREMES, 1951-52. --Water temperatures: Maximum, 67°F Aug. 12; minimum, 38°F Feb. 20-23. Mar. 19. 20.

EXTREMES, 1950-52. ---Water temperatures: Maximum, 67°F Aug. 12, 1952: minimum, 35°F Jan. 29-31, Feb. 1, Mar. 3-7, 1951. Minimum, 0°F Aug. 12; maximum, 38°F Feb. 20-23, Mar. 15, 20.

REMARKS. --Records of discharge for water year 1950-51 given in WSP 1248.

Temperature ($^{\circ}\text{F}$) of water. February to September 1952

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									--	--	42	40	44	41	45	42	52	45	57	51	65	60	62	56
2									42	41	41	39	44	42	46	42	51	47	58	51	68	60	63	57
3									42	41	41	40	45	41	46	43	53	47	60	53	68	62	63	59
4									43	41	41	40	46	41	47	41	54	48	61	55	65	60	61	58
5									43	42	40	39	46	42	45	42	54	49	60	55	66	61	60	57
6									42	41	40	40	45	42	48	44	52	49	60	53	65	60	59	57
7									41	40	42	38	43	42	47	43	54	48	61	54	63	60	59	55
8									41	40	42	38	44	40	47	44	55	48	62	56	64	60	57	54
9									41	40	42	41	46	41	48	45	58	49	63	56	66	60	55	53
10									41	40	41	41	46	41	50	45	50	47	64	58	66	60	57	53
11									42	41	41	39	45	42	49	45	48	46	64	58	66	60	58	53
12									42	40	41	39	46	42	48	45	48	44	64	58	67	61	58	54
13									40	39	41	40	46	43	47	45	48	46	64	58	65	61	57	53
14									41	39	41	40	44	42	45	44	48	46	65	59	64	59	57	52
15									41	41	42	40	46	42	49	43	53	46	65	59	64	59	58	53
16									41	40	43	40	45	42	50	44	55	48	64	58	63	59	59	54
17									41	40	42	41	48	42	49	45	56	50	63	57	62	58	60	55
18									40	39	41	39	47	43	50	45	57	52	62	57	63	58	60	55
19									39	39	39	38	46	42	48	45	58	52	63	57	62	57	61	56
20									39	38	40	38	46	41	46	44	56	51	63	57	62	56	61	57
21									39	38	43	39	47	41	49	44	52	49	63	59	62	56	61	57
22									39	38	43	39	48	44	50	44	52	49	63	57	63	58	61	56
23									40	38	42	41	48	43	52	45	51	50	62	58	63	60	60	56
24									42	40	41	41	46	44	51	46	51	49	63	58	62	57	60	56
25									41	40	43	41	46	44	51	46	51	49	64	58	61	57	61	57
26									43	41	44	42	48	44	52	45	55	49	65	59	61	57	60	57
27									43	40	44	41	46	43	52	46	54	51	65	59	61	55	58	55
28									43	41	43	42	45	42	51	47	55	50	65	60	62	56	57	54
29									42	40	42	41	43	41	51	46	53	51	65	60	62	57	57	53
30									--	--	42	41	45	43	51	45	56	50	65	61	56	61	56	53
31									--	--	43	41	--	--	50	46	--	--	65	61	61	56	--	--
Average									41	40	42	40	46	42	49	44	53	48	63	57	64	59	59	55

WILLAMETTE RIVER BASIN--Continued
MIDDLE FORK WILLAMETTE RIVER AT LOWELL, OREG.

LOCATION.--Temperature recorder at gaging station, three-quarters of a mile south of Lowell, Lane County, and 4½ miles upstream from Lost Creek. DRAINAGE AREA.--994 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 70°F Aug. 3; minimum, 36°F Jan. 17-19, 21-23.

EXTREMES, 1950-52.--Water temperatures: Maximum, 72°F July 16, 1951; minimum, 35°F Jan. 29-31, Mar. 6, 1951.

REMARKS.--Records of discharge for water year 1951-52 published in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	57	57	47	46	47	47	41	40	41	41	40	40	43	42	47	46	54	49	64	57	63	64	60	
2	56	56	46	46	47	46	40	39	41	41	40	38	44	43	48	46	54	52	60	55	69	64	66	
3	56	55	46	46	46	39	39	41	41	40	39	45	43	49	47	56	52	62	58	70	66	68	63	
4	56	54	49	46	46	48	39	39	42	41	40	40	46	44	49	46	57	54	63	60	70	64	66	
5	56	53	49	47	46	45	39	39	42	42	40	39	47	45	49	47	57	55	63	59	69	64	62	
6	56	54	47	46	45	44	39	39	42	41	40	40	47	45	49	47	57	53	62	58	68	64	62	
7	56	54	49	47	44	43	39	39	41	40	42	40	45	44	50	49	57	52	64	59	69	64	61	
8	56	54	49	47	43	42	39	39	41	40	42	41	43	42	50	48	57	54	66	61	68	63	60	
9	56	54	49	48	42	41	39	39	41	40	42	42	43	43	50	46	57	54	66	63	69	63	57	
10	56	54	48	46	42	41	39	39	41	40	42	42	43	43	52	49	54	52	66	62	69	64	59	
11	54	53	48	48	42	42	39	39	41	41	42	41	46	44	52	50	52	50	66	62	69	64	60	
12	53	53	48	48	42	42	39	39	41	39	42	41	46	44	51	49	50	48	65	61	69	65	60	
13	53	53	48	48	42	42	39	39	39	38	42	41	46	45	50	49	51	50	67	62	69	64	60	
14	53	53	48	48	42	40	39	39	38	38	41	41	45	44	49	47	51	49	68	64	67	63	60	
15	53	52	48	47	40	39	39	38	39	39	42	41	46	44	51	47	55	49	68	64	65	63	61	
16	52	51	47	45	41	40	38	38	39	39	44	42	46	44	53	49	58	54	66	63	65	62	61	
17	51	50	45	44	41	41	38	36	39	39	44	41	49	46	53	50	60	56	65	61	65	61	62	
18	50	49	44	44	41	41	36	36	39	38	41	41	49	47	53	50	60	58	65	61	66	61	63	
19	50	49	46	44	41	41	38	36	38	38	41	40	48	46	53	49	60	57	65	61	65	61	64	
20	50	50	46	46	41	41	38	37	38	38	40	39	47	43	49	48	60	54	66	61	64	60	65	
21	50	49	47	46	41	41	37	36	38	37	44	40	48	45	51	48	54	53	65	62	65	60	65	
22	49	49	46	44	43	41	36	36	38	37	44	41	49	47	52	49	55	53	66	61	66	62	65	
23	48	48	43	43	43	42	36	36	36	37	43	42	49	47	54	50	54	54	65	61	65	63	64	
24	48	48	46	46	42	42	39	38	41	38	42	42	49	48	54	51	54	53	66	60	65	61	62	
25	48	46	45	45	42	40	39	39	41	40	43	42	48	46	54	51	54	52	67	62	62	59	64	
26	48	47	45	41	41	40	39	41	40	40	45	42	50	48	54	50	56	53	68	63	62	60	64	
27	48	47	45	45	41	41	40	40	41	40	45	42	50	47	55	52	56	54	68	64	63	59	62	
28	48	48	46	46	42	41	40	40	41	41	44	41	48	46	55	52	57	53	69	63	64	59	62	
29	47	47	46	46	42	42	41	40	41	40	43	42	46	44	53	51	57	54	69	64	64	60	59	
30	47	47	46	46	42	42	41	40	41	40	43	42	46	44	53	50	57	53	69	64	64	60	59	
31	47	46	--	--	--	--	41	41	--	--	--	--	42	--	--	53	50	--	--	64	64	--	--	
Average	52	51	47	46	43	42	39	39	40	39	42	41	47	45	51	49	56	53	66	61	66	62	62	59

WILLAMETTE RIVER BASIN--Continued

FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OREG.

LOCATION.--Temperature recorder at gaging station 1½ miles downstream from Winberry Creek and 2½ miles southeast of Fall Creek, Lane County.
 DRAINAGE AREA.--186 square miles.
 RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1952.
 EXTREMES, 1951-52.--Water temperatures: Maximum, 74°F Aug. 4; minimum, 38°F Jan. 17, 18, 21-23.
 EXTREMES, 1950-52.--Water temperatures: Maximum, 74°F Aug. 17, 18, 20, 21, 1950, July 17, 1951, Aug. 4, 1952; minimum, 34°F Jan. 30, 31, 1951.
 REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	59	58	47	46	49	47	43	40	44	44	42	41	45	43	49	46	59	52	58	53	70	67	65	61
2	58	57	46	46	48	47	40	39	44	44	41	40	45	45	49	46	60	55	59	54	71	66	67	62
3	57	55	47	46	47	46	40	39	44	44	42	41	46	44	52	47	61	55	62	56	73	69	68	64
4	56	55	49	47	47	46	41	40	44	44	42	41	48	45	51	46	64	57	64	58	74	70	66	63
5	55	53	48	47	47	46	41	40	44	44	42	41	49	46	49	47	64	61	64	59	73	69	64	62
6	56	53	48	46	46	45	41	41	44	43	42	41	49	47	51	48	64	59	63	56	71	67	63	62
7	57	54	49	48	45	44	41	41	43	43	42	41	48	46	53	49	62	58	67	57	71	67	63	61
8	57	55	49	47	44	43	41	41	43	42	42	41	47	44	51	48	65	58	69	61	70	63	62	59
9	56	55	48	47	43	42	41	41	43	42	43	42	49	45	51	46	65	60	71	64	71	66	60	57
10	56	55	48	47	42	42	41	41	43	42	43	42	49	46	54	49	60	57	71	65	72	68	60	57
11	55	55	46	48	42	42	41	41	43	43	43	42	49	47	54	51	58	53	70	65	71	68	60	56
12	55	54	48	48	42	42	42	42	43	41	42	42	49	46	53	51	54	50	70	64	72	68	60	56
13	55	54	48	48	42	42	42	42	43	41	40	42	49	46	53	51	54	51	71	64	71	68	60	56
14	55	54	48	48	42	42	41	42	42	41	40	42	46	47	51	50	54	51	73	67	69	67	61	57
15	54	52	48	46	42	41	42	41	42	42	42	42	50	46	54	48	57	50	72	66	68	65	62	59
16	52	51	46	45	42	41	40	42	41	40	42	41	44	42	49	47	57	50	60	52	66	67	64	61
17	51	49	45	44	43	43	40	38	41	41	44	42	52	47	57	53	63	56	69	64	66	63	62	59
18	50	49	46	44	43	43	39	38	41	40	42	41	52	49	59	54	65	58	68	63	66	62	63	60
19	51	49	46	46	43	43	40	39	40	40	42	41	51	46	57	54	66	60	68	63	66	62	64	61
20	51	51	47	46	43	43	40	39	40	40	42	41	40	49	44	54	53	59	68	64	67	62	65	62
21	50	47	46	43	43	43	39	38	40	39	44	41	51	45	56	51	59	56	68	65	66	61	65	62
22	51	50	46	44	45	43	38	38	40	39	44	41	51	48	58	51	59	55	68	63	68	63	65	62
23	51	50	44	42	45	45	39	38	41	40	43	42	52	47	60	53	60	59	67	64	67	65	65	63
24	51	50	42	42	45	44	41	39	42	41	44	43	51	49	61	54	58	56	67	63	66	62	65	62
25	50	49	43	42	44	43	42	41	42	42	44	44	50	49	61	55	57	56	69	63	63	60	65	63
26	49	48	46	43	43	43	42	42	43	42	46	44	54	49	61	54	58	56	70	65	63	61	65	63
27	48	48	46	44	44	43	42	42	43	43	46	45	52	49	63	56	58	56	70	66	64	60	63	62
28	48	48	47	46	44	44	42	42	43	43	46	45	49	46	62	57	60	56	70	66	65	61	62	60
29	48	46	46	47	44	44	43	42	43	42	45	44	48	45	60	54	57	52	70	66	65	62	61	58
30	48	47	48	48	44	44	43	42	43	43	44	44	48	45	60	54	56	52	71	67	64	61	60	57
31	47	47	---	---	43	43	44	43	---	---	44	44	---	---	59	54	---	---	71	68	65	61	---	---
Average	53	52	47	46	44	44	41	40	42	42	43	42	49	46	56	51	60	55	68	63	68	65	63	60

WILLAMETTE RIVER BASIN--Continued

LOOKOUT CREEK NEAR BLUE RIVER, OREG.

LOCATION.--Temperature recorder at gaging station, 0.4 mile upstream from mouth and 6 miles northeast of Blue River, Lane County, Post Office.
DRAINAGE AREA.--24.1 square miles.

RECORDS AVAILABLE.--August 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 64°F Aug. 2-4, 12; minimum, 36°F Jan. 20-23, Feb. 22, 23.
EXTREMES, 1950-52.--Water temperatures: Maximum, 64°F Aug. 2-4, 12, 1952; minimum, 33°F Mar. 3-6, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Day	Temperature (°F) of water, water year October 1951 to September 1952											
	October	November	December	January	February	March	April	May	June	July	August	September
	max	min	max	min	max	min	max	min	max	min	max	min
1	54	45	43	45	44	40	39	41	41	40	40	42
2	54	53	44	43	44	43	39	41	41	40	39	42
3	53	52	44	44	43	43	39	41	41	40	39	43
4	52	51	45	44	43	43	39	42	41	40	39	44
5	51	50	45	44	43	43	39	42	42	40	39	44
6	52	50	45	44	43	42	39	42	42	40	39	43
7	52	50	46	45	42	41	39	39	42	40	38	43
8	52	51	46	45	41	41	39	39	42	40	38	43
9	52	51	45	45	41	40	39	42	41	40	39	43
10	52	51	45	45	41	41	40	44	41	40	44	41
11	52	51	45	45	41	41	39	38	42	41	40	43
12	51	51	45	45	41	41	39	39	41	40	40	44
13	51	51	45	45	41	41	39	39	40	41	40	43
14	51	50	45	45	41	40	39	38	41	40	40	43
15	50	49	45	44	41	40	39	38	41	40	41	40
16	49	48	44	43	41	40	39	38	41	40	43	42
17	48	47	43	42	41	41	38	37	40	40	41	44
18	47	47	43	42	41	41	37	37	40	39	40	44
19	48	47	44	43	41	41	38	37	39	38	40	39
20	48	47	44	44	41	41	38	36	39	38	40	39
21	47	47	44	44	41	41	36	36	39	38	41	39
22	47	47	44	42	42	41	36	36	38	36	41	39
23	(4)	(4)	42	42	42	42	38	38	36	40	40	45
24	(4)	(4)	42	41	42	41	39	38	39	40	40	44
25	(4)	(4)	42	41	41	40	39	39	39	41	40	45
26	46	45	43	42	40	39	40	40	39	42	41	45
27	45	45	44	43	41	40	40	40	40	42	41	43
28	46	45	44	43	41	41	41	40	40	42	41	49
29	46	46	44	44	41	41	41	41	41	42	40	49
30	46	45	45	44	41	41	41	41	41	42	42	50
31	45	44	--	--	41	41	41	--	47	46	--	--
Average	50	49	44	43	42	41	39	38	40	40	41	40
							43	42	46	43	52	48
							60	55	61	57	57	54

a Range in temperature from 46°F to 47°F, Oct. 23-25.

WILLAMETTE RIVER BASIN--Continued

NORTH SANTIAM RIVER BELOW BOULDER CREEK NEAR DETROIT, OREG.

LOCATION:--Temperature recorder at gaging station, half a mile downstream from Boulder Creek and 3 miles southeast of Detroit, Marion County. DRAINAGE AREA.--216 square miles.

RECORDS AVAILABLE.--Water temperatures: April 1951 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Minimum, 33° F Jan. 2, 3.

EXTREMES, 1950-52.--Water temperatures: Maximum, 59° F July 18, 22-24, 27, Aug. 1, 1951; July 28, Aug. 1-3, 1952; may have been higher during period of missing record; minimum, 33° F Jan. 2, 3, 1952.

REMARKS:--Record of discharge for water year 1951-52 given in WSP 1288.

Temperature (°F) of water, water year October 1951 to September 1952

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	48	48	41	39	40	40	36	34	37	37	38	37	42	40	43	41	49	45	53	48	59	54	54	50
2	48	48	40	39	40	39	34	33	38	37	37	37	42	41	43	41	49	45	48	48	59	52	54	50
3	48	47	42	40	39	39	34	33	38	38	37	37	42	41	44	42	51	46	48	48	59	54	51	51
4	47	46	43	42	39	39	36	34	38	38	38	37	45	41	44	40	52	46	48	48	59	54	51	51
5	47	45	42	40	39	38	37	36	38	38	38	37	44	41	43	41	52	47	48	48	59	54	51	51
6	47	46	41	40	38	38	37	37	38	38	38	36	44	41	44	42	50	47	48	48	59	54	51	51
7	47	46	43	41	38	37	37	36	38	38	38	39	43	41	44	43	81	46	48	48	59	54	51	51
8	47	46	43	41	37	36	37	36	38	38	38	37	43	40	44	43	53	47	48	48	59	54	51	51
9	47	46	43	42	37	36	37	36	38	37	38	37	44	40	47	42	51	48	48	48	59	54	51	51
10	47	46	43	43	38	37	36	35	38	37	38	37	44	40	47	43	50	46	48	48	59	54	51	51
11	46	46	43	42	38	38	37	36	38	38	38	37	44	41	45	43	47	46	48	48	59	54	51	51
12	46	46	42	42	38	38	37	36	38	37	38	37	44	41	46	43	47	45	48	48	59	54	51	51
13	46	46	42	41	38	37	36	35	38	37	38	37	44	42	44	43	47	45	48	48	59	54	51	51
14	46	46	41	41	37	36	36	35	38	37	38	37	44	42	43	42	47	45	48	48	59	54	51	51
15	46	46	41	39	38	38	37	36	38	37	40	38	45	41	47	42	48	44	48	48	59	54	51	51
16	45	44	40	39	38	38	37	36	38	37	39	37	44	41	48	42	52	45	48	48	59	54	51	51
17	44	42	39	38	38	38	36	34	37	38	39	37	46	41	47	43	53	47	48	48	59	54	51	51
18	43	42	39	38	38	38	37	36	34	37	38	37	45	41	47	43	53	49	48	48	59	54	51	51
19	44	43	40	39	37	37	36	36	36	36	38	37	42	41	45	43	54	50	48	48	59	54	51	51
20	44	44	40	40	37	37	36	36	36	36	40	37	44	41	44	43	52	49	48	48	59	54	51	51
21	44	43	40	40	37	37	35	34	36	36	41	39	45	40	44	43	49	48	48	48	59	54	51	51
22	43	42	40	39	38	37	34	34	36	35	41	38	46	42	48	42	51	47	58	50	52	54	51	51
23	43	42	39	38	38	38	36	34	37	35	41	40	45	41	48	43	50	48	58	52	52	54	51	51
24	43	42	38	37	38	37	36	36	38	37	40	40	44	42	48	43	50	48	58	52	52	54	51	51
25	43	42	39	37	36	35	37	37	38	37	41	40	45	42	48	43	48	48	58	51	51	54	51	51
26	42	40	40	39	36	35	38	37	38	38	43	41	45	42	49	43	51	48	58	52	54	51	51	51
27	41	40	40	40	37	36	38	38	38	38	43	40	45	42	50	44	50	49	58	52	54	51	51	51
28	41	40	40	40	36	37	38	37	38	37	41	41	42	41	48	43	50	48	58	52	54	51	51	51
29	42	41	40	40	36	38	38	37	38	37	41	41	43	40	48	43	51	47	58	52	54	51	51	51
30	42	41	40	40	36	38	38	36	38	37	41	41	43	40	48	43	51	47	58	52	54	51	51	51
31	41	40	40	40	36	38	38	37	38	37	42	40	40	40	48	45	51	47	58	52	54	51	51	51
Average	45	44	41	40	38	37	37	36	38	37	39	36	44	41	46	43	50	47	55	50	54	49	50	48

WILLAMETTE RIVER BASIN--Continued

BREITENBUSH RIVER ABOVE CANYON CREEK NEAR DETROIT, OREG.

LOCATION.--Temperature recorder at gaging station, 600 feet upstream from mouth of Canyon Creek and 2 miles northeast of Detroit, Marion County.

DRAINAGE AREA.--106 square miles.

RECORDS AVAILABLE.--Water temperatures: December 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 58°F Aug. 4, 13, 14; minimum, 34°F Jan. 3, 4, 17, 18, 21-23.

EXTREMES, 1950-52.--Water temperatures: Maximum, 58°F July 17, 1951; Aug. 4, 13, 14, 1952; minimum, 33°F Mar. 3-7, 1951.

REMARKS.--Records of discharge for water year 1951-52 for Breitenbush River above French Creek, near Detroit, Oreg. in WSP 1248.

Day	Temperature (°F) of water, water year October 1951 to September 1952																							
	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	49	49	41	39	43	42	37	35	38	38	38	38	40	42	41	48	44	50	46	57	53	53	50	
2	49	49	40	39	43	43	35	34	39	38	38	38	40	42	41	47	45	51	46	56	52	54	51	
3	49	48	41	40	43	42	35	34	39	38	38	38	41	40	43	41	49	53	48	57	53	55	52	
4	48	47	42	41	42	42	36	35	39	38	38	38	41	40	43	40	51	48	53	48	56	54	52	
5	47	46	42	40	42	41	37	36	39	38	38	38	41	40	42	40	50	46	53	48	57	53	52	
6	47	46	41	40	41	41	38	37	39	38	38	38	41	40	43	42	48	46	52	48	57	52	51	
7	48	47	42	41	41	40	38	37	39	38	38	38	41	40	43	42	50	46	54	48	56	52	50	
8	48	47	42	42	40	39	37	37	39	38	38	38	40	39	43	42	51	46	55	49	56	52	51	
9	47	47	42	42	39	38	37	37	39	38	38	38	41	40	45	41	50	47	56	50	57	53	50	
10	47	47	42	42	38	37	37	36	39	38	38	38	42	40	45	42	49	46	56	51	57	53	50	
11	47	47	42	42	38	38	37	36	39	38	38	38	42	40	44	42	46	45	56	51	57	53	50	
12	47	47	42	42	38	38	36	36	39	38	38	38	42	40	44	42	46	44	56	51	57	53	50	
13	47	47	42	41	38	38	36	36	38	37	38	38	41	41	44	42	45	44	56	51	58	54	50	
14	47	47	41	41	38	37	36	36	38	37	38	38	41	41	42	42	45	44	57	51	58	54	50	
15	47	46	41	41	38	37	36	36	38	38	38	38	42	41	46	42	47	44	57	52	57	54	51	
16	46	45	41	41	38	38	36	36	38	38	38	38	42	40	47	42	50	44	56	51	56	53	51	
17	45	44	41	41	38	38	36	34	38	38	38	38	42	40	46	42	51	46	56	50	56	52	51	
18	44	43	41	41	38	38	35	34	38	37	38	38	43	41	47	43	51	47	55	50	54	51	48	
19	45	44	41	41	38	38	36	35	38	38	38	38	42	41	48	43	52	48	56	50	54	51	53	
20	45	45	42	41	38	38	36	35	36	36	36	36	42	40	43	43	48	47	56	50	53	50	53	
21	45	44	42	41	38	38	35	34	47	36	39	38	43	40	43	43	49	48	54	51	54	50	53	
22	44	44	42	42	39	38	34	34	37	35	39	38	43	41	47	42	48	46	55	50	53	51	52	
23	44	44	42	41	39	39	36	34	36	36	39	38	43	40	48	43	48	46	55	51	55	52	50	
24	44	44	41	40	39	37	36	36	38	36	39	38	42	41	48	43	48	47	55	51	53	52	50	
25	44	43	40	40	37	36	37	36	38	36	38	38	39	42	41	48	43	47	55	50	52	50	54	
26	43	42	40	36	36	37	37	37	39	38	41	39	44	41	48	43	50	46	56	51	54	50	53	
27	42	42	42	38	38	38	37	39	39	38	41	40	42	41	49	44	49	46	56	51	54	50	48	
28	42	42	42	38	38	38	38	38	38	38	40	40	41	41	47	44	48	47	57	51	53	50	49	
29	43	42	42	38	38	38	38	38	38	38	38	40	40	41	47	44	48	46	57	51	54	50	48	
30	43	41	42	38	37	38	38	38	38	38	38	40	41	41	47	44	48	45	57	52	53	50	46	
31	41	41	--	--	--	--	--	--	--	--	--	--	--	--	47	45	--	--	56	53	53	50	--	
Average	46	45	42	41	39	38	37	36	36	36	36	36	42	40	45	42	49	48	55	50	55	52	52	

WILLAMETTE RIVER BASIN--Continued

WILLAMETTE RIVER AT SALEM, OREG.

LOCATION.--at bridge on Oregon Highway 22, 300 feet downstream from gaging station at Salem, Marion County.
DRAINAGE AREA.--7,280 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August to December 1910, August 1911 to August 1912, February 1951 to September 1952.

Water temperatures: February 1951 to September 1952.

EXTREMES, 1951-52.--Dissolved Solids: Maximum, 64 ppm Sept. 21-30; minimum, 43 ppm Apr. 21-30.

Hardness: Maximum, 28 ppm Aug. 11-20; minimum, 16 ppm Dec. 1-10.

Specific conductance: Maximum daily, 52.7 micromhos Sept. 7; minimum daily, 36.8 micromhos, Feb. 5.

Specific temperatures: Maximum observed, 75.7 July 14-15, 30, Aug. 1, Sept. 1; minimum observed, 50.7 Feb. 20.

EXTREMES, 1951-52.--Sept. 1952: Maximum, 45 ppm July 11-21, Sept. 18-20, 24-26, 1951: minimum, 43 ppm April 21-30, 1952.

Hardness: Maximum, 28 ppm Aug. 11-20, 1951: minimum, 16 ppm Dec. 1-10, 1952.

Specific conductance: Maximum observed, 52.7 micromhos Sept. 7, 1952: minimum daily, 36.8 micromhos Feb. 5, 1952.

Specific temperatures: Maximum observed, 75.7 on many days during summer months.

REMARKS.--values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oregon. Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Chemical analyses, in parts per million, water year October 1951 to September 1952

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 at 180°C)		Hardness as CaCO ₃	Percent sodium carbonate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium					
Oct. 1-10, 1951.	12,500	16	0.07	5.1	2.1	3.6	1.8	28	3.2	2.2	0.3	0.5	--	56	0.08	1,900	0	25	61.1	7.0	20
Oct. 11-20.....	13,180	15	.09	5.1	2.1	3.4	1.4	28	2.1	2.0	3	0.6	0.06	53	.07	1,880	0	24	57.5	7.0	20
Oct. 21-31.....	27,150	15	.09	4.6	2.2	3.4	1.4	24	2.5	2.1	3	0.6	--	52	.07	5,220	1	23	53.1	6.9	40
Nov. 1-5, 8-10	11,440	16	.09	5.5	2.1	3.7	1.5	30	3.0	2.6	3	0.4	--	58	.08	1,790	0	25	62.2	7.0	40
Nov. 11-20.....	42,420	18	.08	4.8	2.3	3.3	1.4	28	2.8	2.2	3	0.4	0.08	53	.07	6,070	0	24	52.9	7.1	20
Nov. 21-30.....	32,130	18	.14	5.2	1.2	3.4	1.6	27	2.9	2.6	3	1.0	--	61	.08	5,290	0	27	56.2	7.2	30
Dec. 1-10.....	95,220	16	.11	4.4	1.2	3.0	1.3	23	2.5	2.4	4	1.0	--	58	.08	14,910	0	27	50.0	7.2	30
Dec. 11-18.....	33,540	17	.07	4.8	1.9	3.4	1.2	26	3.1	2.8	1	1.1	.02	53	.07	11,290	0	26	56.4	7.2	20
Jan. 7-15, 1952	36,020	17	.09	5.0	2.2	4.8	1.0	30	3.5	3.2	3	1.4	.05	56	.08	5,450	0	31	59.9	7.2	15
Feb. 4-29.....	51,970	16	.07	4.8	2.1	4.3	.9	28	3.0	2.6	3	1.0	.02	49	.07	6,880	0	30	52.1	7.7	15
Mar. 3-8, 10, 12-15, 24, 27-28, 31	34,010	16	.08	5.2	2.0	4.0	1.2	30	3.2	2.9	3	.8	.02	55	.07	5,050	0	28	57.6	7.7	10
Apr. 1-5, 7, 15-17	36,240	15	.06	5.1	2.1	2.9	.8	27	3.5	1.8	2	.5	.02	44	.06	4,310	0	22	47.9	6.8	10
Apr. 21-30.....	23,670	15	.04	5.1	1.8	4.8	1.0	30	2.8	2.0	0	.2	--	43	.06	3,330	0	33	45.9	7.0	10
May 1-10.....	22,460	16	.05	5.3	2.1	3.0	1.2	28	2.5	2.4	3	.6	--	48	.07	2,910	0	22	43.8	6.9	30
May 11-20.....	25,270	14	.04	5.1	1.8	2.4	1.0	24	2.8	2.1	2	.2	.03	44	.06	3,000	0	20	46.3	6.9	25
May 21-31.....	22,970	16	.07	4.3	1.5	3.0	.7	27	1.7	1.8	--	.3	--	44	.06	2,730	0	27	50.8	7.0	15
June 1-10.....	16,580	15	.06	4.5	1.7	3.2	.8	26	2.2	2.0	--	.3	--	49	.07	2,180	0	27	52.4	7.0	15
June 11-20.....	14,040	16	.05	4.7	1.7	3.3	.6	27	2.6	2.3	--	.4	--	50	.07	1,900	0	27	54.1	7.0	15
June 21-30.....	14,730	17	.07	4.6	2.0	3.3	.7	28	1.8	1.8	--	.4	--	47	.06	1,870	0	26	53.2	7.1	15

July 1-10, 1952.	18,950	17	.08	4.8	1.9	3.5	.7	29	2.1	2.2	--	.5	---	46	.06	2,350	20	0	27	.3	54.7	7.0	15
July 11-20.....	8,828	18	.07	5.3	2.1	5.9	.9	32	2.6	2.2	.1	.4	--	55	.07	1,310	22	0	36	.5	64.3	7.2	10
July 21-31	6,409	18	.06	6.0	2.3	4.9	1.6	34	3.2	3.4	.1	.4	--	61	.08	1,060	24	0	29	.4	72.5	7.0	20
Aug. 1-10.....	5,429	17	.03	6.2	2.2	4.8	1.7	34	2.7	4.0	.1	.5	--	63	.09	923	24	0	28	.4	76.2	6.9	20
Aug. 11-20.....	5,440	17	.05	7.1	2.5	5.6	1.3	35	3.5	3.8	.3	.7	.04	63	.09	925	28	0	29	.5	73.8	7.2	15
Aug. 21-31.....	5,160	16	.08	7.2	2.3	5.2	1.5	34	3.2	3.6	.2	.6	--	63	.08	850	27	0	28	.4	73.6	7.0	10
Sept. 1-10	5,031	16	.11	6.6	2.3	5.3	1.5	34	2.5	4.2	.4	.6	--	60	.08	815	26	0	28	.5	74.6	7.2	10
Sept. 11-20	5,301	16	.05	6.8	2.4	5.3	1.2	36	3.3	3.8	.3	.7	.05	61	.08	873	27	0	29	.4	73.1	7.2	10
Sept. 21-30	4,890	15	.08	6.8	2.3	5.3	1.1	32	3.3	4.0	.3	.8	.09	64	.09	845	26	0	29	.4	75.7	7.5	10
Weighted average	a24,740	16	0.08	4.9	1.9	3.7	1.1	27	2.8	2.5	0.3	0.7	--	52	0.07	3,470	20	0	27	0.4	54.0	--	--

a Represents 72 percent of runoff for water year October 1951 to September 1952.

WILLAMETTE RIVER BASIN--Continued

WILLAMETTE RIVER AT SALEM, OREG.--Continued

Temperature (°F) of water, water year October 1951 to September 1952

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

LEWIS RIVER BASIN

LEWIS RIVER AT ARIEL, WASH.

LOCATION.--Temperature recorder at gaging station, at Ariel, Cowlitz County, half a mile downstream from Ariel Dam and power plant, and 3 miles upstream from Cedar Creek.

DRAINAGE AREA.--731 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 30, 1952.

EXTREMES, 1951-52.--Water temperatures: Minimum, 39°F Jan. 11-31, Feb. 1-9, 1952.

EXTREMES, 1950-52.--Water temperatures: Maximum, 61°F Oct. 2-5, 1951; minimum, 37°F Feb. 6-16, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Day	October		November		December		January		February		March		April		May		June		July		August		September	
1	60	56	51	49	46	45	42	41	39	41	41	43	43											
2	61	60	51	49	46	45	41	41	39	39	41	41	43	43										
3	61	61	51	49	46	45	41	40	39	41	41	43	43											
4	61	61	51	49	46	45	40	40	39	39	41	41	43	43										
5	61	60	51	50	45	45	41	40	39	39	41	41	44	43										
6	60	59	50	50	45	45	41	41	39	39	41	41	45	43										
7	(A)	(A)	50	50	45	45	41	41	39	39	41	41	43	40										
8	(A)	(A)	50	49	45	45	41	41	40	39	41	41	43	42										
9	(A)	(A)	49	49	45	45	41	41	40	39	41	41	43	43										
10	(A)	(A)	49	49	45	45	41	40	41	40	41	41	43	43										
11	57	57	49	49	45	45	40	39	41	41	41	41	43	43										
12	57	57	49	49	45	45	40	39	41	41	41	41	44	43										
13	57	57	49	49	45	45	39	39	41	41	41	41	44	43										
14	57	57	49	49	45	44	39	39	41	41	41	41	44	44										
15	57	56	49	49	44	43	39	39	41	41	41	41	44	44										
16	56	56	49	48	43	43	40	39	41	41	41	41	44	44										
17	56	56	49	49	43	43	39	39	41	41	41	41	44	44										
18	56	56	49	49	43	42	39	39	41	41	41	41	44	44										
19	56	56	49	49	43	42	39	39	41	41	41	41	44	44										
20	56	55	49	49	43	42	40	39	41	41	41	41	44	44										
21	55	55	49	49	42	42	39	39	41	41	41	41	44	44										
22	55	55	49	47	43	42	39	39	41	41	41	41	44	44										
23	55	55	47	47	42	42	39	39	41	41	41	41	44	44										
24	55	55	47	47	42	42	39	39	41	41	41	41	44	44										
25	55	53	47	46	42	42	39	39	41	41	41	41	44	44										
26	53	52	47	47	42	42	40	39	41	41	41	41	44	44										
27	52	51	47	47	42	42	41	39	41	41	41	41	44	44										
28	51	51	47	46	42	42	39	39	41	41	41	41	44	44										
29	51	51	46	46	42	42	39	39	41	41	41	41	44	44										
30	51	50	46	46	42	42	39	39	41	41	41	41	44	44										
31	51	50	--	--	42	42	40	39	--	--	43	42	--	--										
Average	56	56	49	48	44	43	40	40	41	40	41	41	41	41	--	--								

a No temperature record.

b No temperature record Apr. 22-Sept. 30, 1952.

LEWIS RIVER BASIN--Continued

EAST FORK LEWIS RIVER NEAR HEISSON, WASH.

LOCATION.--Temperature recorder at gaging station, downstream from Basket Creek, 1½ miles northeast of Heisson, Clark County, and 20 miles upstream from mouth.

DRAINAGE AREA.--125 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 74°F Aug. 4, 1952; minimum, 35°F Jan. 3, 1952.

EXTREMES, 1950-52.--Water temperatures: Maximum, 74°F Aug. 4, 1952; minimum, 33°F Jan. 31, Feb. 1, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952, given in WSP 1248.

Day	Temperature (°F) of water, water year October 1951 to September 1952																							
	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	54	44	42	46	45	40	37	41	41	41	40	39	(a)	(a)	47	44	56	52	58	55	68	66	65	60
2	55	54	42	45	45	37	36	41	41	39	39	39	(a)	(a)	48	42	59	55	61	58	68	66	61	61
3	53	51	46	44	45	36	35	42	41	39	39	39	(a)	(a)	50	45	59	57	64	59	72	66	66	63
4	51	51	46	46	45	37	36	42	42	39	39	39	(a)	(a)	50	44	59	57	64	62	74	70	65	61
5	51	49	47	44	45	44	38	37	43	41	39	39	(a)	(a)	50	45	59	58	62	58	73	70	64	62
6	53	51	45	44	44	43	39	38	43	41	40	39	(a)	(a)	49	48	59	56	62	59	72	68	63	61
7	53	51	46	45	43	42	39	39	42	41	41	39	(a)	(a)	50	47	58	54	65	61	68	64	61	59
8	55	53	47	46	42	42	39	39	41	40	42	39	(a)	(a)	50	48	61	57	68	64	66	63	59	56
9	54	54	47	46	42	41	39	39	43	41	42	42	(a)	(a)	52	46	61	59	69	67	70	65	57	55
10	54	54	46	45	41	39	39	43	41	42	41	41	(a)	(a)	55	50	61	57	69	67	71	68	58	56
11	54	54	46	46	43	43	39	39	42	41	40	39	(a)	(a)	54	51	57	53	69	67	72	68	58	55
12	54	53	46	46	43	43	39	39	41	40	40	39	(a)	(a)	54	50	53	51	69	66	73	69	58	56
13	53	53	46	46	43	41	39	39	38	41	41	41	(a)	(a)	54	51	57	54	70	66	72	69	58	56
14	53	51	46	45	41	40	38	38	39	39	41	41	(a)	(a)	52	49	57	54	70	68	70	66	58	55
15	51	49	45	44	42	40	39	38	40	39	43	41	(a)	(a)	51	49	54	52	71	69	66	65	59	55
16	49	49	44	43	43	42	39	39	40	40	43	41	(a)	(a)	57	49	57	52	69	66	65	63	60	56
17	49	47	43	42	43	43	39	37	40	40	43	41	(a)	(a)	56	51	63	57	67	64	64	61	60	56
18	49	48	42	42	43	42	39	37	40	39	41	39	(a)	(a)	55	51	64	62	67	64	63	61	61	58
19	50	49	43	42	42	42	39	38	39	37	41	39	(a)	(a)	55	51	65	63	64	63	61	60	64	59
20	50	49	44	43	42	42	39	38	38	37	41	39	(a)	(a)	53	52	65	58	64	62	61	58	64	60
21	49	49	44	44	43	42	38	38	38	38	43	41	(a)	(a)	52	50	58	56	62	60	63	59	64	61
22	49	49	44	44	44	43	38	38	38	38	(a)	(a)	(a)	(a)	56	50	57	55	62	59	63	62	64	61
23	49	49	44	44	42	44	38	38	38	37	(a)	(a)	(a)	(a)	57	52	60	56	63	62	63	63	64	61
24	49	49	42	42	42	41	40	38	40	38	(a)	(a)	49	45	58	52	60	60	60	60	63	61	63	60
25	49	47	44	42	41	39	40	39	40	39	(a)	(a)	49	45	57	54	60	57	66	62	61	59	62	60
26	47	46	44	44	44	39	40	41	40	42	(a)	(a)	48	45	58	52	57	56	68	64	60	58	62	60
27	47	46	44	44	40	38	41	41	42	41	(a)	(a)	47	45	60	55	56	56	69	65	62	59	61	59
28	47	46	44	44	41	40	42	40	41	40	(a)	(a)	45	43	60	53	58	55	70	66	63	59	60	57
29	46	47	44	44	41	41	42	42	41	41	(a)	(a)	44	40	53	51	58	55	70	67	63	61	59	57
30	47	45	46	44	41	41	42	42	41	41	(a)	(a)	47	45	55	54	71	67	62	59	58	56	56	55
31	45	44	--	41	40	41	41	--	--	--	(a)	(a)	--	--	55	53	--	--	--	--	63	59	--	--
Average	51	50	45	44	43	42	39	39	41	40	--	--	--	--	54	50	59	56	66	63	66	63	61	58

a Recorder stopped; range in temperature from Mar. 22 to Apr. 23, 41°F to 50°F.

COWLITZ RIVER BASIN

CISPUS RIVER NEAR RANDLE, WASH.

LOCATION.--Temperature recorder at gaging station, 60 feet upstream from bridge to Tower Rock ranger station, 4 miles downstream from North Fork and 8 miles southeast of Randle, Lewis County.

DRAINAGE AREA.--323 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 61°F Aug. 4, 9, 10, 12, 1952; minimum, 35°F Jan. 1-3, 13, 14, 17, 1952.

EXTREMES, 1950-52.--Water temperatures: Maximum, 61°F Aug. 4, 9, 10, 15, 1952; minimum, 35°F Jan. 1-3, 13, 14, 17, 1952.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	50	50	41	40	43	42	37	35	(a)	(a)	40	39	42	40	43	41	49	45	51	48	39	51	57	50
2	50	50	42	40	42	41	35	38	(a)	(a)	39	38	42	41	44	41	41	40	44	41	40	51	57	50
3	50	49	42	41	42	41	36	38	(a)	(a)	41	39	44	41	45	42	46	42	46	40	49	52	57	51
4	50	49	43	41	43	41	37	39	(a)	(a)	40	37	40	40	46	42	49	47	54	51	61	54	55	49
5	49	47	43	42	41	40	37	37	(a)	(a)	41	39	47	42	43	41	49	47	54	49	60	53	52	50
6	49	47	43	42	41	40	37	37	(a)	(a)	41	39	47	42	43	41	49	47	54	48	60	53	52	50
7	52	49	44	43	40	39	38	37	(a)	(a)	41	39	45	42	45	43	49	47	54	48	60	53	52	49
8	53	49	45	44	40	39	38	38	(a)	(a)	42	39	43	39	46	43	51	47	57	47	60	53	52	49
9	53	49	45	44	39	39	39	37	(a)	(a)	41	41	45	40	47	43	52	48	57	50	58	54	50	49
10	51	49	45	44	41	39	37	37	(a)	(a)	41	41	45	41	47	44	50	46	59	53	61	53	53	47
11	50	49	45	43	41	41	37	37	(a)	(a)	41	40	44	42	45	43	47	45	59	53	60	53	52	46
12	49	49	43	40	41	40	37	36	(a)	(a)	41	39	45	41	47	43	47	45	59	54	61	53	53	49
13	51	49	41	40	41	39	36	35	(a)	(a)	41	40	43	42	45	44	47	45	60	53	60	53	53	47
14	49	47	42	41	39	39	37	35	(a)	(a)	41	40	44	42	44	43	46	46	60	53	60	54	53	46
15	47	47	42	41	39	39	38	37	(a)	(a)	42	39	45	41	47	43	46	46	59	53	55	53	53	46
16	47	46	41	40	40	39	38	37	(a)	(a)	43	39	45	41	48	43	48	46	58	53	58	52	52	47
17	46	44	41	40	40	40	37	35	(a)	(a)	41	40	46	42	47	43	53	47	58	51	56	52	54	47
18	46	45	41	41	40	39	38	37	(a)	(a)	41	39	46	42	47	44	54	46	58	51	54	52	56	48
19	47	46	42	41	39	39	38	37	(a)	(a)	41	39	43	41	46	44	54	49	59	52	57	50	56	49
20	47	45	43	42	39	39	38	37	(a)	(a)	42	39	45	41	44	43	50	48	54	52	57	50	56	50
21	45	45	42	42	39	39	38	37	(a)	(a)	44	40	46	41	44	43	49	47	55	50	56	50	55	49
22	45	44	43	42	39	39	38	37	(a)	(a)	44	39	46	42	47	43	49	47	55	50	56	51	55	49
23	44	44	42	40	39	38	37	36	(a)	(a)	43	41	45	41	47	44	52	48	55	51	57	52	55	49
24	45	44	40	39	38	37	36	35	(a)	(a)	42	42	46	43	49	44	50	47	57	51	52	51	54	49
25	44	43	41	40	37	37	36	35	(a)	(a)	42	41	46	43	48	45	49	48	59	50	51	50	55	49
26	44	43	41	41	37	37	36	35	(a)	(a)	41	40	45	43	49	44	54	48	59	51	56	49	53	50
27	44	43	42	41	39	39	38	37	(a)	(a)	43	40	43	43	49	45	51	49	59	51	58	50	54	50
28	45	43	42	42	39	39	38	37	(a)	(a)	41	39	42	41	47	46	50	48	60	52	57	50	52	48
29	45	44	42	42	39	38	37	36	(a)	(a)	41	40	42	40	46	44	48	48	60	52	55	50	52	47
30	44	42	43	42	38	38	37	36	(a)	(a)	41	40	43	42	47	44	50	48	60	52	56	49	53	47
31	42	41	--	--	38	37	36	35	(a)	(a)	41	40	--	--	47	45	--	--	58	52	56	49	--	--
Average	48	46	43	42	40	39	--	--	--	--	42	40	44	41	46	43	50	47	57	51	58	52	54	49

a Recorder stopped; range in temperature from Jan. 18 to Feb. 25, 37°F to 41°F.

COWLITZ RIVER BASIN--Continued
RAINY CREEK NEAR KOSMOS, WASH.

LOCATION.--Temperature recorder at gaging station at county bridge, 2 miles northeast of Kosmos, Lewis County.
DRAINAGE AREA.--17.5 square miles.

RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 67°F Aug. 12, 1952; minimum, 37°F Jan. 1, 2, 13, 17, 23, 1952.

EXTREMES, 1950-52.--Water temperatures: Maximum, 67°F Aug. 12, 1952; minimum, 36°F Jan. 28, 29, March 3, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	55	54	(a)	(a)	45	44	38	37	42	41	42	39	45	41	47	44	54	48	56	52	62	57	61	55
2	55	53	(a)	(a)	44	44	44	37	42	41	41	39	43	42	49	43	54	49	59	51	63	57	61	56
3	53	51	(a)	(a)	44	43	(b)	(b)	41	41	41	40	45	41	50	44	56	50	62	54	65	60	61	57
4	52	50	(a)	(a)	43	43	(b)	(b)	41	41	41	40	45	42	50	44	58	52	60	56	66	61	59	54
5	51	48	(a)	(a)	43	43	(b)	(b)	42	40	41	39	49	43	48	43	56	52	58	54	64	61	57	56
6	53	51	(a)	(a)	43	42	(b)	(b)	42	40	42	40	46	43	49	45	54	51	60	52	63	61	57	55
7	54	51	(a)	(a)	42	41	(b)	(b)	42	40	43	39	45	39	49	44	57	50	62	54	61	60	56	54
8	55	53	47	47	42	41	40	40	41	40	43	39	46	39	48	46	59	50	64	57	63	60	54	53
9	55	53	47	46	42	41	41	40	42	40	43	43	48	41	52	45	58	51	65	59	66	61	56	53
10	54	52	47	47	43	42	40	40	42	41	43	41	49	41	51	47	56	51	65	60	66	62	55	50
11	53	53	47	46	43	43	40	40	42	40	42	40	45	43	49	47	52	49	64	60	66	61	54	50
12	53	52	46	45	43	43	40	39	41	40	42	40	47	42	52	46	52	48	63	60	67	62	57	54
13	52	51	45	45	43	41	39	37	40	40	38	42	41	45	44	49	47	53	48	64	60	65	61	56
14	52	50	45	44	41	41	39	39	40	40	43	41	46	43	48	45	53	49	64	60	63	61	56	50
15	50	48	45	43	41	41	40	39	41	40	44	40	49	42	51	46	50	49	64	59	61	59	53	51
16	49	48	43	43	43	41	40	39	41	40	43	39	49	43	54	46	51	49	62	58	60	58	56	51
17	48	47	43	43	43	42	39	37	40	39	43	41	51	43	53	46	48	49	60	56	51	57	59	52
18	48	47	43	43	42	41	39	39	40	38	42	40	49	44	53	47	59	52	60	56	59	58	61	53
19	49	47	45	45	41	41	40	39	40	38	42	39	43	43	50	47	59	52	62	58	58	58	63	54
20	48	47	45	45	41	41	40	39	40	39	43	40	49	41	48	47	57	53	61	57	56	53	64	56
21	47	46	44	43	41	41	39	39	40	38	44	40	52	44	49	47	53	51	58	54	58	55	61	55
22	46	46	44	44	42	41	39	39	39	38	45	38	50	45	53	46	53	50	58	55	59	58	63	54
23	46	46	44	42	42	41	39	37	41	39	44	43	52	44	55	47	56	48	56	56	60	57	62	54
24	47	46	42	41	41	40	41	39	42	39	45	43	50	45	55	47	55	50	58	56	58	56	60	54
25	47	44	43	41	41	39	41	40	42	41	43	43	51	46	55	48	55	52	51	55	57	55	60	54
26	45	44	45	43	39	39	41	41	43	42	45	43	50	46	55	47	59	52	62	57	58	55	57	56
27	47	43	41	39	41	41	43	42	47	42	47	46	50	47	58	50	57	52	63	57	60	56	58	53
28	47	44	44	41	41	41	40	42	39	45	42	46	44	46	56	51	54	52	63	58	60	56	58	51
29	47	44	44	41	41	41	43	41	41	41	42	41	44	42	51	48	54	52	63	58	59	56	57	52
30	47	45	44	41	40	43	42	42	41	41	42	41	46	44	54	48	55	52	63	58	58	53	59	51
31	47	45	44	41	40	43	42	42	41	41	42	41	46	44	54	48	55	52	63	58	58	53	59	51
Average	51	49	--	--	42	41	40	39	41	40	43	41	48	43	51	46	55	50	61	57	61	58	59	53

a Recorder stopped; range in temperature from Oct. 27 to Nov. 7, 41°F to 47°F.

b Recorder stopped; range in temperature from Jan. 3-7, 37°F to 40°F.

COWLITZ RIVER BASIN--Continued
WEST FORK TILTON RIVER NEAR MORTON, WASH.

LOCATION.--Temperature recorder, at gaging station three-quarters of a mile above mouth and 4 miles northeast of Morton, Lewis County.
DRAINAGE AREA.--16.4 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1952.
EXTREMES, 1951-52.--Water temperatures: Maximum, 66°F Aug. 12, 1952; minimum, 34°F Jan. 13, 21, 23, 1952.
EXTREMES, 1950-52.--Water temperatures: Maximum, 66°F Aug. 12, 1952; minimum, 34°F Jan. 13, 21, 23, 1952.
REMARKS.--Records of discharge for water year October 1951 to September 1952.

Temperature (°F) of water, water year October 1951 to September 1952																								
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	(a)	(a)	42	41	44	43	35	35	39	38	37	41	40	42	41	49	46	51	50	61	57	57	53	54
2	(a)	(a)	42	41	43	42	35	35	40	39	38	37	41	40	44	41	53	46	55	48	61	57	58	54
3	(a)	(a)	44	44	42	42	35	35	40	40	38	37	41	40	44	42	50	48	58	51	63	59	59	56
4	(a)	(a)	49	49	44	42	42	36	35	40	39	37	44	40	43	41	50	49	55	53	64	61	57	53
5	(a)	(a)	49	48	44	42	42	36	36	40	39	38	37	44	42	44	41	49	54	51	63	60	55	54
6	(a)	(a)	49	49	45	44	42	41	36	36	40	40	38	37	43	41	44	43	49	48	--	62	59	55
7	(a)	(a)	50	49	45	45	41	40	36	35	40	40	39	37	41	39	45	43	53	48	58	51	59	58
8	(a)	(a)	51	50	45	45	40	40	36	35	40	40	39	37	42	39	44	44	53	48	60	62	57	52
9	(a)	(a)	51	51	45	45	40	40	36	36	40	40	39	39	43	40	48	43	54	48	62	65	59	53
10	(a)	(a)	51	51	45	45	40	40	36	36	40	40	39	37	44	41	47	45	51	48	63	67	65	59
11	(a)	(a)	51	51	45	45	40	40	36	36	40	39	38	37	43	42	46	45	48	47	63	69	65	59
12	(a)	(a)	51	51	45	45	40	40	36	35	39	39	38	44	41	47	44	49	46	63	69	66	60	
13	(a)	(a)	50	50	44	44	40	40	35	34	39	38	39	38	43	42	46	44	50	46	64	64	59	
14	(a)	(a)	50	48	44	44	40	39	35	39	39	40	39	43	42	45	43	49	47	64	58	63	59	
15	(a)	(a)	48	47	43	40	38	36	35	39	40	39	44	41	46	43	48	47	63	59	60	59	52	
16	(a)	(a)	47	46	43	40	39	36	36	39	39	40	39	44	41	49	44	48	47	61	58	59	57	
17	(a)	(a)	46	46	43	40	38	36	35	39	38	40	39	45	42	47	45	55	48	61	56	61	56	
18	(a)	(a)	46	46	43	40	38	35	35	39	37	39	39	44	42	47	45	57	50	60	56	58		
19	(a)	(a)	47	46	43	40	39	35	35	38	37	40	39	43	41	45	45	56	50	61	56	54		
20	(a)	(a)	47	46	43	40	39	35	35	37	36	40	39	44	41	45	45	53	51	60	57	56		
21	(a)	(a)	46	46	43	40	38	35	34	36	40	38	45	41	45	44	51	50	57	55	55	52	58	
22	(a)	(a)	46	45	43	40	39	35	35	37	35	40	38	45	43	48	44	50	49	56	55	56		
23	(a)	(a)	45	45	43	40	40	35	34	37	41	40	45	41	49	45	53	47	56	55	57	54		
24	(a)	(a)	45	45	41	40	40	39	36	35	38	37	41	40	45	43	50	45	52	49	56	54		
25	(a)	(a)	45	45	42	40	39	38	37	38	38	41	40	46	43	49	46	51	50	59	54	64		
26	(a)	(a)	45	44	42	42	37	37	37	38	38	42	40	43	51	45	55	50	61	56	53	52		
27	(a)	(a)	45	44	42	42	38	37	38	37	42	40	43	43	52	46	54	51	61	56	55	51		
28	(a)	(a)	45	45	42	42	38	38	38	38	37	41	40	43	41	49	47	51	61	57	56	52		
29	(a)	(a)	44	44	42	42	38	37	39	38	38	40	40	41	40	47	46	51	61	57	55	53		
30	(a)	(a)	44	43	42	37	37	39	37	--	--	40	39	43	41	49	45	51	60	62	57	55		
31	(a)	(a)	43	43	--	37	35	39	37	--	--	40	39	--	47	47	--	--	62	58	56	52		
Average	47	47	43	43	40	39	36	36	39	38	40	38	43	41	47	44	51	48	60	55	59	56	55	
a No temperature record.																								

a No temperature record.

COMLITZ RIVER BASIN--Continued

COMLITZ RIVER NEAR MAYFIELD, WASH.

LOCATION.--Temperature recorder at gaging station, 1 mile upstream from Mill Creek, 2 miles downstream from Winston Creek, and 2½ miles west of Mayfield, Lewis County.

DRAINAGE AREA.--1,400 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1952.

EXTREMES, 1931-52.--Water temperatures: Maximum, 67°F. Aug. 3, 9-13, 1952; minimum, 36°F. Jan. 2-5, 1952.

EXTREMES, 1930-52.--Water temperatures: Maximum, 67°F. Aug. 3, 9-13, 1952; minimum, 35°F. Jan. 29-31, Feb. 1, 2, 1951.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	55	54	42	41	44	43	39	37	42	41	42	41	44	43	46	46	50	48	54	51	65	62	82	80
2	54	54	41	41	44	44	37	36	42	42	41	41	44	44	48	45	54	50	57	52	64	62	83	81
3	54	52	43	41	44	44	36	42	41	41	41	41	46	44	49	46	54	52	60	54	66	63	84	81
4	52	52	44	43	44	43	36	42	41	41	41	41	49	45	49	47	53	51	60	57	66	64	82	80
5	52	51	44	43	43	42	37	36	42	42	41	41	50	48	49	47	53	51	57	55	67	64	80	59
6	52	52	43	43	42	42	38	37	43	42	41	41	50	47	48	46	51	50	58	54	65	63	59	57
7	54	52	45	43	42	41	38	38	43	43	42	41	47	44	49	47	53	49	60	55	63	62	57	57
8	56	54	45	45	41	40	38	38	43	43	43	41	45	43	49	49	55	51	62	57	64	61	57	55
9	56	54	45	45	40	40	38	38	43	43	43	43	47	44	51	47	55	52	63	59	67	64	58	55
10	55	54	45	45	41	40	38	38	44	43	43	43	48	45	52	50	54	51	64	60	67	65	57	56
11	54	54	45	45	41	41	38	38	43	42	43	41	48	47	52	50	51	49	64	60	67	65	58	56
12	54	53	45	45	41	41	38	38	42	42	42	42	48	46	50	48	50	48	63	60	67	65	59	57
13	53	53	45	43	41	41	38	38	42	41	42	42	48	47	50	49	51	48	64	61	67	64	58	57
14	53	52	43	43	41	40	38	38	41	41	43	42	47	46	49	48	51	50	64	61	66	63	58	57
15	52	50	43	43	40	40	38	38	41	41	43	43	48	48	46	50	48	64	60	63	62	58	57	57
16	50	49	43	42	41	40	38	38	41	41	43	43	48	47	51	48	50	49	63	60	62	61	59	57
17	49	48	42	41	41	41	38	38	41	41	43	43	50	47	51	49	55	50	62	59	61	61	59	57
18	48	48	41	41	41	41	38	38	41	41	43	42	49	48	49	48	58	54	62	59	61	61	60	58
19	48	48	41	41	41	41	38	38	40	40	42	42	48	45	49	48	55	52	62	60	61	59	61	59
20	48	48	42	41	41	41	38	38	40	40	42	42	48	46	46	58	54	62	60	59	59	63	61	59
21	48	48	43	43	41	41	38	38	40	40	42	42	48	45	46	48	54	51	60	58	60	59	62	61
22	46	46	43	43	41	41	38	38	40	40	43	43	49	47	49	48	52	51	58	58	61	61	62	60
23	46	46	43	43	41	40	38	38	40	40	43	43	49	47	49	48	52	51	58	58	61	61	61	60
24	46	46	43	43	41	40	38	38	41	40	43	43	49	47	49	48	52	51	58	58	61	61	61	60
25	45	45	42	42	39	39	40	38	41	40	43	43	49	47	49	48	52	51	58	58	61	61	61	60
26	45	44	43	42	39	37	40	40	41	41	46	46	49	47	52	49	55	52	63	60	58	57	59	59
27	44	44	43	43	37	37	40	40	42	41	47	46	47	48	53	49	55	54	64	62	60	58	59	59
28	46	46	43	43	39	37	40	40	42	42	46	46	49	44	52	49	54	52	64	63	62	60	59	58
29	46	46	43	43	39	39	41	40	42	42	46	46	44	44	49	48	52	51	65	62	62	60	59	56
30	45	45	43	43	39	38	42	41	41	41	44	44	45	44	49	48	52	51	65	63	61	60	56	56
31	45	42	43	43	39	39	41	41	41	41	43	42	44	44	49	48	52	51	65	63	61	60	56	56
Average	50	49	43	43	41	40	38	38	42	41	43	43	48	46	50	48	53	51	62	59	63	61	60	58

COWLITZ RIVER BASIN--Continued

TOUTLE RIVER NEAR SILVER LAKE, WASH.

LOCATION.---Temperature recorder at gaging station at highway bridge half a mile downstream from confluence of North and South Forks and 5 miles north-east of Silver Lake, Cowlitz County.

DRAINAGE AREA. --474 square miles.

RECORDS AVAILABLE. --Water temperatures: October 1950 to September 1952.

EXTREMES, 1951-52. --Water temperatures: Maximum, 72°F Aug. 4, 1952; minimum, 33°F Jan. 1-3, 1952.

EXTREMES, 1950-52. --Water temperatures: Maximum, 72°F Aug. 4, 1952; minimum, 33°F Jan. 1-3, 1952.

REMARKS. --Record of discharge for water year October 1951 to September 1952 given in WSP 1248.

Day			Temperature, (°F) of water, water year October 1951 to September 1952																							
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			
55	55	42	40	44	43	35	33	41	41	40	39	44	42	45	43	54	48	57	53	67	61	65	57			
55	53	43	41	43	33	33	33	41	41	40	39	45	43	48	43	57	50	61	52	69	61	64	59			
53	52	45	43	43	42	34	33	41	41	41	40	45	43	49	45	56	52	63	58	71	63	65	60			
52	51	46	42	42	35	34	41	41	41	41	40	49	43	50	44	56	52	61	57	72	65	63	57			
5	5	50	45	43	42	41	36	35	41	40	40	49	45	47	44	55	52	59	55	67	64	60	58			
6	51	45	43	41	41	37	36	42	41	42	40	49	45	48	45	55	53	61	53	65	62	58	56			
54	52	46	45	41	39	37	36	42	40	43	39	46	41	48	45	59	51	64	56	62	61	58	55			
55	52	48	45	39	39	37	36	40	39	43	40	45	41	47	47	60	53	66	59	68	60	56	55			
54	53	46	45	39	39	37	37	41	40	43	43	47	42	52	45	59	53	68	51	69	63	58	53			
53	52	46	45	39	38	38	38	41	40	43	41	49	43	49	47	53	68	61	71	64	58	52	52			
11	52	48	45	39	39	38	38	41	39	41	40	48	45	51	49	53	50	67	62	71	64	58	53			
12	53	52	45	45	39	38	36	38	41	41	48	44	51	47	54	49	54	69	66	62	71	64	58			
13	53	52	45	44	39	38	36	38	37	41	41	47	46	51	48	56	51	68	62	68	63	59	55			
14	53	50	44	43	38	38	36	38	38	43	41	47	45	49	47	54	53	69	63	65	61	58	52			
15	50	49	43	42	39	38	37	36	39	45	41	49	44	51	47	53	51	68	63	61	61	59	52			
16	50	48	42	41	39	39	37	36	39	44	42	49	45	55	47	52	51	65	62	63	59	58	54			
17	48	47	41	40	39	39	37	36	39	43	42	51	45	53	48	52	50	62	57	64	60	56	51			
18	49	48	42	41	39	39	37	36	38	37	42	50	46	53	49	53	52	65	60	61	60	56	51			
19	50	48	42	42	39	39	37	38	37	42	41	49	45	51	47	61	56	65	61	63	58	52	56			
20	49	48	43	42	39	38	36	37	37	42	41	49	43	48	47	60	55	64	60	62	55	63	57			
21	48	47	43	42	39	36	36	38	37	44	41	49	44	48	46	55	53	61	57	63	58	63	57			
22	47	47	42	42	39	38	36	38	38	45	41	50	45	53	46	55	52	60	58	61	61	62	56			
23	47	47	42	41	39	38	37	36	40	38	45	44	50	45	54	48	59	51	59	59	64	59	62			
24	47	46	41	40	38	37	38	41	40	44	44	49	46	55	49	58	55	63	57	60	58	60	57			
25	46	45	42	40	37	36	38	41	41	44	43	50	47	55	49	57	55	66	58	58	56	59	56			
26	45	44	43	42	36	36	40	38	41	44	43	49	47	55	48	59	54	66	61	60	55	59	57			
27	45	44	43	42	37	36	40	41	41	45	43	48	45	57	50	59	55	68	61	62	57	60	56			
28	46	45	43	43	38	37	40	39	41	40	45	43	45	55	50	56	54	69	61	64	58	54	59			
29	47	45	43	43	38	37	41	40	41	40	43	42	44	52	48	55	53	68	62	61	57	58	55			
30	45	43	42	43	37	36	41	40	--	--	43	42	47	44	52	47	55	53	69	62	62	60	55			
31	43	42	--	--	37	35	41	40	--	--	43	41	--	--	52	49	--	59	63	63	57	--	--			
Average			50	49	44	43	39	37	37	40	39	43	41	48	44	51	47	53	55	65	60	60	55			

COWLITZ RIVER BASIN--Continued

COWLITZ RIVER AT CASTLE ROCK, WASH.

LOCATION.--Temperature recorder at gaging station, at highway bridge in Castle Rock, Cowlitz County, 2½ miles downstream from Tontle River and 14 miles upstream from mouth.
 DRAINAGE AREA.--2,238 square miles.
 RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1952.
 EXTREMES, 1951-52.--Water temperatures: Maximum, 71°F Aug. 4, 10-12, 1952; minimum, 35°F Jan. 3, 4, 1952.
 EXTREMES, 1950-52.--Water temperatures: Maximum, 72°F Aug. 21, 1951; minimum, freezing point on Jan. 29, 30, 1951.
 REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

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	57	56	45	44	46	46	38	36	42	42	42	41	43	42	46	45	50	49	54	53	67	65	69	62
2	56	55	44	43	46	44	36	36	42	42	42	41	40	45	43	47	45	54	49	57	54	64	68	63
3	55	54	45	43	44	44	36	35	42	42	41	41	47	46	47	47	54	53	61	57	68	66	69	64
4	54	53	46	45	44	44	36	35	--	--	41	41	47	44	48	47	54	53	61	59	71	68	67	62
5	53	53	46	45	44	43	38	38	--	--	41	41	48	46	48	47	54	54	59	57	69	67	65	63
6	55	53	45	45	43	43	38	38	41	41	41	41	48	46	48	47	54	52	58	56	67	66	63	60
7	55	54	46	45	43	41	38	38	41	41	43	41	46	44	48	47	54	53	60	57	66	65	62	59
8	56	55	47	46	41	41	39	38	41	41	43	42	44	44	48	48	56	54	63	59	66	64	60	58
9	57	56	47	47	41	41	39	38	41	41	44	43	45	44	49	47	57	56	65	62	69	66	60	57
10	57	56	47	47	42	41	38	38	42	41	44	43	46	45	51	49	57	55	66	63	71	68	61	56
11	56	55	47	47	43	42	38	38	42	42	43	42	46	46	51	50	55	52	66	63	71	69	62	56
12	55	55	48	47	43	43	39	38	42	41	43	43	46	45	50	49	52	51	65	63	71	69	62	59
13	55	55	47	46	43	42	39	38	41	40	43	43	46	45	49	49	54	52	64	62	70	68	62	56
14	55	55	46	45	42	41	38	38	40	40	44	43	46	46	49	48	54	54	67	63	68	65	63	56
15	55	53	45	44	41	41	39	38	41	40	45	43	46	46	48	47	54	52	67	64	65	64	64	56
16	53	51	44	43	42	41	39	39	41	41	45	44	47	46	51	48	52	51	66	62	64	63	63	58
17	51	50	43	42	42	42	39	38	41	41	45	43	48	46	51	51	55	51	64	62	65	62	64	58
18	50	49	43	42	43	42	39	39	41	40	43	43	49	48	51	49	60	55	64	62	64	63	66	60
19	51	48	44	43	42	41	39	39	40	39	43	43	49	46	49	49	61	58	63	62	65	62	68	62
20	51	49	44	44	41	41	39	39	39	38	43	43	46	42	49	47	60	57	63	62	64	61	68	62
21	49	48	44	44	42	41	39	38	38	38	44	43	47	45	47	46	57	55	62	62	64	61	69	62
22	48	47	44	44	42	42	38	38	38	38	45	44	48	47	49	48	55	53	60	60	65	62	66	61
23	48	48	44	44	42	41	38	38	39	38	46	45	48	47	51	49	55	53	60	60	66	62	65	60
24	48	47	44	44	41	40	39	38	40	39	46	46	48	48	51	50	57	55	61	60	64	61	63	59
25	47	47	44	43	40	39	39	39	41	40	47	45	48	48	51	51	57	56	63	61	61	60	62	60
26	47	47	45	44	39	38	40	39	42	41	47	44	49	49	51	50	57	55	64	63	61	60	61	59
27	47	46	45	45	39	39	41	40	42	42	47	45	49	44	53	51	57	55	65	63	63	60	62	58
28	47	46	45	45	39	39	41	41	42	42	46	45	46	44	53	51	56	55	67	65	60	61	57	57
29	48	47	45	44	40	39	42	41	42	41	45	44	44	43	51	49	55	54	67	66	64	62	62	57
30	48	46	46	44	40	39	43	42	--	--	42	42	45	43	49	48	54	53	67	65	66	61	62	57
31	46	45	--	--	39	38	43	42	--	--	42	42	--	--	49	48	--	--	67	66	67	63	--	--
Average	52	51	45	44	42	41	39	38	41	40	44	43	47	45	49	48	55	54	63	61	66	64	64	59

COWLITZ RIVER BASIN--Continued
COWMAN RIVER NEAR KESLO, WASH.

LOCATION.--Temperature records at gaging station 3 miles downstream from Goble Creek, 3.8 miles southeast of Kelso, Cowlitz County, and 5½ miles upstream from mouth.

DRAINAGE AREA.--119 square miles.

RECORDS AVAILABLE.--July 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 81°F Aug. 4, 1952; minimum, 33°F Jan. 2, 3, 1952.

EXTREMES, 1950-52.--Water temperatures: Maximum, 81°F Aug. 4, 1952; minimum, 33°F Jan. 2, 3, 1952.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Day	Temperature (°F) of water, water year October 1951 to September 1952											
	October		November		December		January		February		March	
	max	min	max	min	max	min	max	min	max	min	max	min
1	57	56	43	38	47	45	35	34	(a)	(a)	42	41
2	---	---	56	54	40	39	45	45	34	33	(a)	41
3	---	---	54	53	44	40	45	45	35	33	(a)	41
4	---	---	53	51	46	44	45	45	37	35	(a)	41
5	---	---	53	49	46	42	45	43	38	37	(a)	41
6	---	---	55	52	43	42	43	43	38	38	(a)	43
7	---	---	56	52	47	43	41	41	(a)	(a)	43	40
8	---	---	56	51	47	46	41	41	(a)	(a)	43	41
9	---	---	52	53	47	45	41	40	(a)	(a)	43	43
10	---	---	54	52	46	45	41	40	(a)	(a)	43	43
11	---	---	54	53	46	46	42	41	(a)	(a)	43	43
12	---	---	54	53	46	46	43	42	(a)	(a)	43	42
13	---	---	55	53	46	46	42	40	(a)	(a)	41	39
14	---	---	54	51	46	45	40	39	(a)	(a)	41	41
15	---	---	51	49	45	43	41	39	(a)	(a)	42	41
16	---	---	51	49	43	41	42	41	(a)	(a)	42	41
17	---	---	49	46	42	41	42	41	(a)	(a)	41	40
18	---	---	49	47	43	42	42	41	(a)	(a)	40	39
19	---	---	51	49	44	43	42	41	(a)	(a)	40	39
20	---	---	51	49	44	44	41	41	(a)	(a)	39	39
21	---	---	49	47	44	44	43	41	(a)	(a)	39	38
22	---	---	48	48	44	42	41	(a)	(a)	(a)	39	38
23	---	---	49	48	42	41	(a)	(a)	41	39	43	39
24	---	---	49	48	41	41	(a)	(a)	42	41	44	43
25	---	---	46	45	43	41	(a)	(a)	43	42	45	44
26	---	---	47	45	46	43	(a)	(a)	43	43	45	44
27	---	---	45	43	45	45	(a)	(a)	43	42	46	43
28	---	---	46	44	45	45	(a)	(a)	42	40	46	43
29	---	---	47	46	45	45	(a)	(a)	43	42	43	43
30	---	---	47	43	47	45	39	38	(a)	(a)	43	43
31	---	---	43	41	---	---	38	35	(a)	(a)	43	41
Average	---	---	51	49	44	43	---	---	---	---	43	42

a. No temperature record.

ABERNETHY CREEK BASIN

ABERNETHY CREEK NEAR LONGVIEW, WASH.

LOCATION.--Temperature recorder at gaging station, 1 mile upstream from mouth and 11 miles northwest of Longview, Cowlitz County.
 DRAINAGE AREA.--20.3 square miles.
 RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1952.
 EXTREMES, 1951-52.--Water temperatures: Maximum 65°F Sept. 19, 1952; minimum, 37°F Dec. 30, 31, Jan. 1, 3, 22, 23, 1952.
 EXTREMES, 1950-52.--Water temperatures: Maximum, 68°F Aug. 19-21, 1950; minimum, 34°F Mar. 7, 1951.
 REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	55	55	(b)	(b)	(b)	(b)	38	37	42	42	42	40	45	42	48	43	54	46	(a)	(a)	62	56	62	55
2	55	55	(b)	(b)	(b)	(b)	39	38	42	42	41	39	46	44	50	42	58	50	(a)	(a)	62	55	62	57
3	55	53	(b)	(b)	(b)	(b)	38	37	42	42	41	41	47	43	50	43	55	53	(a)	(a)	64	56	63	59
4	53	52	(b)	(b)	(b)	(b)	39	38	42	42	41	41	50	42	48	41	58	54	(a)	(a)	64	58	59	53
5	53	50	(b)	(b)	(b)	(b)	39	38	42	42	41	40	51	44	50	43	56	54	(a)	(a)	59	57	57	54
6	54	53	(b)	(b)	(b)	(b)	40	39	43	42	42	40	48	44	50	45	56	52	(a)	(a)	59	56	57	55
7	55	52	(b)	(b)	(b)	(b)	40	39	43	42	44	40	49	44	49	46	57	51	(a)	(a)	58	56	56	53
8	56	51	(b)	(b)	(b)	(b)	40	39	43	42	43	40	49	41	50	48	59	50	(a)	(a)	62	56	55	53
9	55	53	(b)	(b)	(b)	(b)	40	39	43	42	43	43	51	42	52	45	57	51	(a)	(a)	63	58	55	51
10	54	52	47	46	(b)	(b)	39	39	43	42	43	42	52	44	55	50	54	51	(a)	(a)	62	57	56	49
11	54	54	47	47	(b)	(b)	40	39	43	42	43	41	49	47	52	50	52	49	(a)	(a)	63	57	56	50
12	54	54	(b)	(b)	(b)	(b)	40	40	42	40	42	41	50	44	53	49	53	49	(a)	(a)	63	56	57	53
13	53	53	(b)	(b)	(b)	(b)	40	40	41	40	42	42	49	47	53	50	55	49	(a)	(a)	59	57	57	50
14	53	51	(b)	(b)	(b)	(b)	40	40	41	41	44	42	50	47	54	50	53	51	(a)	(a)	57	57	57	51
15	51	50	(b)	(b)	(b)	(b)	40	40	41	41	46	42	52	43	55	49	52	51	(a)	(a)	56	55	58	51
16	50	48	(b)	(b)	(b)	(b)	40	39	41	40	45	42	52	44	59	49	53	51	(a)	(a)	56	54	60	56
17	48	47	(b)	(b)	(b)	(b)	39	39	41	40	44	42	54	49	59	52	58	52	(a)	(a)	56	53	61	55
18	49	48	(b)	(b)	(b)	(b)	40	39	40	40	43	42	54	47	52	53	61	54	(a)	(a)	55	53	63	56
19	51	49	(b)	(b)	(b)	(b)	40	40	42	40	43	41	50	47	55	52	58	54	(a)	(a)	55	50	65	60
20	50	48	(b)	(b)	(b)	(b)	40	38	39	38	43	41	51	41	53	52	55	53	(a)	(a)	55	49	64	59
21	48	48	(b)	(b)	(b)	(b)	39	38	39	38	44	40	52	43	53	50	53	52	(a)	(a)	57	51	62	57
22	46	47	(b)	(b)	(b)	(b)	38	37	39	38	45	40	51	44	57	50	55	51	(a)	(a)	57	55	62	55
23	46	48	(b)	(b)	(b)	(b)	38	37	39	38	44	43	52	42	57	50	55	49	(a)	(a)	58	53	59	56
24	(b)	(b)	(b)	(b)	(b)	(b)	40	38	41	40	45	44	51	46	57	50	58	53	(a)	(a)	58	54	60	57
25	(b)	(b)	(b)	(b)	(b)	(b)	40	40	41	41	47	45	52	46	56	50	55	51	(a)	(a)	55	53	51	59
26	(b)	(b)	(b)	(b)	(b)	(b)	40	40	42	41	48	44	52	48	58	49	57	52	(a)	(a)	55	52	58	56
27	(b)	(b)	(b)	(b)	(b)	(b)	41	40	42	40	47	41	50	47	60	51	54	53	(a)	(a)	57	52	59	56
28	(b)	(b)	(b)	(b)	(b)	(b)	41	40	43	40	45	43	48	43	55	52	54	53	(a)	(a)	57	50	58	53
29	(b)	(b)	(b)	(b)	(b)	(b)	41	40	42	41	44	42	43	41	53	50	53	52	(a)	(a)	56	51	55	52
30	(b)	(b)	(b)	(b)	(b)	(b)	37	40	--	--	44	42	44	40	53	47	53	52	(a)	(a)	61	55	56	56
31	(b)	(b)	(b)	(b)	37	37	42	40	--	--	43	41	--	--	52	49	--	--	(a)	(a)	61	57	--	--
Average	--	--	--	--	--	--	40	39	41	41	43	42	50	44	53	48	55	51	--	--	59	55	59	55

a No temperature record.

b Recorder stopped; range in temperature from Oct. 24 to Nov. 9, 46°F to 52°F.

Recorder stopped; range in temperature from Nov. 12 to Dec. 29, 40°F to 47°F.

CLATSKANIE RIVER BASIN

CLATSKANIE RIVER NEAR CLATSKANIE, OREG.

LOCATION.--Temperature recorder at gaging station, 2 miles downstream from Carcus Creek and 5½ miles southeast of Clatskanie, Columbia County. DRAINAGE AREA.--53.0 square miles (revised). RECORDS AVAILABLE.--Water temperatures: May, 1950 to September 1952. EXTREMES, 1951-52.--Water temperatures: Maximum, 72°F July 14; minimum, 35°F Jan. 3, 4. EXTREMES, 1950-52.--Water temperatures: Maximum, 75°F July 24, 1950; minimum 35°F Jan. 3, 4, 1952. REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Day	Temperature (°F) of water, water year October 1951 to September 1952																							
	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	57	56	42	39	48	47	35	36	42	42	41	39	46	42	52	48	59	53	60	55	66	60	65	56
2	58	56	43	40	48	46	36	36	42	42	41	39	46	44	53	46	63	54	63	64	69	60	65	58
3	57	55	45	43	48	46	36	35	43	42	41	39	44	52	48	55	58	56	57	71	60	65	59	
4	55	53	45	43	45	43	36	35	43	42	41	39	44	51	44	52	46	53	58	61	63	63	56	53
5	54	51	44	42	45	44	37	36	43	42	41	40	53	46	51	47	61	57	62	57	68	63	60	56
6	57	54	45	43	44	43	39	37	43	41	42	40	51	47	52	48	60	56	63	63	62	59	66	66
7	57	54	47	45	43	42	38	38	43	41	43	40	49	44	52	49	62	55	66	56	62	60	58	54
8	57	53	47	46	42	38	37	42	40	43	40	49	43	53	51	64	55	69	58	68	60	57	55	50
9	57	53	45	44	42	41	39	38	43	41	44	43	50	43	57	49	63	66	71	61	69	62	57	54
10	57	53	46	45	43	42	39	39	43	41	43	52	44	57	53	56	70	63	69	62	57	61	57	51
11	55	54	46	46	43	43	39	39	43	42	43	42	49	47	57	54	56	54	70	64	71	62	58	53
12	55	54	46	46	43	43	39	39	42	40	43	42	51	46	57	52	55	51	67	63	70	63	58	54
13	55	54	46	46	43	40	39	38	40	39	43	42	50	49	58	54	59	52	70	81	68	63	58	51
14	54	53	46	44	40	39	39	38	41	40	43	43	53	48	57	53	57	55	72	83	63	61	58	51
15	53	50	44	43	41	40	39	39	41	41	45	41	53	46	58	52	56	54	70	64	62	60	56	51
16	51	50	44	43	42	41	39	38	41	39	44	42	54	47	63	52	57	54	88	82	62	60	54	54
17	50	48	44	42	41	38	37	40	39	43	42	56	48	64	56	62	55	87	80	62	58	61	54	54
18	50	49	44	43	42	41	39	37	39	39	43	58	50	63	58	65	87	85	80	61	58	62	54	54
19	52	50	45	44	42	41	40	39	39	38	43	41	53	49	59	56	94	87	65	60	62	56	63	56
20	52	49	46	45	42	40	39	39	38	43	41	54	46	57	56	61	57	83	60	62	54	63	56	56
21	49	48	46	45	43	42	38	38	39	37	44	39	55	47	56	54	56	85	62	58	63	56	63	56
22	48	47	45	43	43	43	38	37	38	37	45	40	55	48	61	53	59	55	60	57	63	59	63	55
23	49	48	43	43	43	41	38	38	40	37	45	44	56	47	62	54	61	58	64	59	60	57	60	57
24	49	48	43	42	41	40	38	38	41	39	48	45	55	50	63	54	61	57	63	59	60	58	60	57
25	48	46	44	42	40	39	40	39	41	41	48	46	56	50	62	54	60	55	67	58	60	56	59	57
26	47	44	46	44	39	38	41	39	42	41	48	46	55	52	63	54	61	56	66	61	59	57	59	56
27	45	43	46	45	40	39	41	40	42	41	48	43	54	51	65	55	58	57	68	60	62	56	59	56
28	46	44	46	46	41	40	41	40	41	40	47	45	52	49	61	57	61	56	68	61	63	56	59	55
29	47	44	46	45	41	39	42	41	42	41	45	44	49	46	58	54	58	57	67	60	61	58	60	55
30	44	42	46	46	39	39	43	42	---	---	46	44	53	49	57	52	57	56	68	60	64	58	60	56
31	43	41	---	---	39	36	43	41	---	---	44	42	---	---	56	54	---	---	86	80	84	59	---	---
Average	52	50	45	44	42	41	39	38	41	40	44	42	52	47	58	52	60	55	66	59	65	59	60	55

ELOKOMIN RIVER BASIN

ELOKOMIN RIVER NEAR CATHLAMET, WASH.

LOCATION.--Temperature recorder at gaging station 125 feet upstream from railroad bridge, 2 miles northeast of Cathlamet, Wahkiakum County, and 4 miles upstream from mouth.

DRAINAGE AREA.--65.8 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum, 72°F July 8, 14, 1952; minimum, 35°F Jan. 3, 4, 1952.

EXTREMES, 1950-52.--Water temperatures: Maximum, 73°F June 29, 1951; minimum, 35°F Jan. 3, 4, 1952.

REMARKS.--Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	54	45	43	47	46	37	36	42	42	41	43	41	47	45	58	50	59	55	66	60	87	80		
2	54	54	44	43	48	45	37	37	42	42	41	40	44	43	47	44	60	52	62	58	61	67	63	
3	54	53	46	44	45	45	37	35	43	42	41	45	43	51	46	58	55	66	58	70	81	66	62	
4	53	51	47	46	45	45	37	35	43	43	42	42	49	43	48	45	59	55	82	58	70	84	59	
5	52	51	47	45	45	45	37	37	44	43	42	41	49	45	47	45	57	54	60	56	66	63	62	
6	54	52	47	45	45	42	37	37	44	44	43	41	49	46	49	47	57	53	64	54	63	61	59	
7	55	53	47	47	42	42	37	37	44	44	43	41	46	42	47	47	61	53	68	56	61	59	57	
8	55	53	47	47	42	41	37	37	44	43	44	41	45	42	51	47	62	53	72	60	67	60	58	
9	55	53	47	47	42	41	37	37	44	43	44	41	47	43	50	45	60	55	70	62	67	62	58	
10	54	53	47	47	43	42	37	37	44	43	44	43	48	43	54	49	58	54	68	62	67	63	59	
11	54	53	47	47	43	43	37	37	44	43	43	43	48	46	53	51	54	51	69	62	69	63	58	
12	54	54	47	43	42	38	37	43	41	43	43	47	45	53	49	54	49	66	62	67	63	59	57	
13	54	53	47	42	40	38	38	41	41	43	43	47	47	52	51	57	50	70	61	65	63	59	54	
14	53	51	47	46	41	40	39	38	41	41	43	42	47	46	51	50	55	53	72	63	63	61	60	
15	51	49	48	45	41	40	39	39	42	41	44	41	49	45	55	49	54	63	68	64	61	60	54	
16	49	49	45	43	42	41	39	39	42	42	43	41	49	45	59	51	54	52	64	62	63	60	62	
17	49	47	44	43	42	42	39	38	42	41	43	41	51	47	60	56	62	66	69	61	59	62	57	
18	49	48	44	43	42	41	38	38	41	41	41	51	47	50	55	64	57	61	58	61	57	63	59	
19	50	49	45	44	41	41	39	38	41	41	41	51	47	50	55	64	57	61	58	61	57	63	59	
20	50	49	45	41	41	39	38	41	40	42	41	49	44	55	52	60	57	60	59	62	55	68	61	
21	49	48	45	45	42	41	38	37	40	39	43	39	49	46	54	52	57	55	61	57	62	57	65	
22	48	47	45	44	42	42	37	37	39	39	43	40	50	46	58	51	62	54	59	57	61	60	64	
23	48	48	44	43	42	42	38	37	40	39	43	43	49	45	60	52	62	53	58	57	63	58	59	
24	48	48	43	43	42	40	38	38	42	40	44	43	50	48	60	54	62	55	63	57	61	57	60	
25	48	47	44	43	40	40	39	38	42	42	45	44	52	48	60	55	61	55	68	58	60	57	58	
26	47	46	45	44	40	40	40	40	43	42	45	44	51	50	61	53	61	56	66	61	59	57	58	
27	47	45	45	40	40	40	40	40	43	41	45	43	50	48	63	54	58	61	64	57	60	57	57	
28	48	46	45	45	40	40	40	40	42	41	45	44	48	46	58	54	60	56	67	61	65	58	60	
29	48	47	45	45	40	40	39	41	40	42	44	42	46	44	54	52	57	56	67	61	63	60	57	
30	47	45	47	45	40	39	41	41	40	42	44	42	46	44	54	52	57	56	67	61	63	60	57	
31	45	45	--	--	39	37	42	41	--	--	43	49	44	55	50	57	55	67	61	66	60	57	--	
Average	51	50	46	45	42	41	38	38	42	42	43	42	48	45	54	50	59	54	65	59	64	61	61	58

BIG CREEK BASIN

BIG CREEK NEAR KNAPPA, OREG.

LOCATION.--Temperature recorder at gaging station, 0.3 mile downstream from fish hatchery and 2½ miles south of Knappa, Clatsop County.
 DRAINAGE AREA.--31.9 square miles.
 RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1952.
 EXTREMES, 1951-52.--Water temperatures: Maximum, 60°F July 14, Aug. 4; minimum, 37°F Jan. 3, 4.
 EXTREMES, 1950-52.--Water temperatures: Maximum, 62°F Aug. 20, 21, 1951; minimum, 37°F Mar. 5-7, 1951; Jan. 3, 4, 1952.
 REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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	55	46	44	46	46	38	38	42	42	42	41	41	43	42	48	45					57	54	57	55
2	58	55	46	45	46	45	39	38	42	42	41	41	43	43	48	45					58	54	57	55
3	58	55	48	46	45	45	39	37	42	42	42	41	44	43	48	45					59	55	58	56
4	54	54	48	48	45	45	39	37	42	42	42	41	46	43	46	44					60	57	55	52
5	54	54	48	48	45	44	39	38	42	42	42	41	46	44	43	45					58	56	54	52
6	55	54	48	47	44	44	39	39	42	42	42	41	46	44	48	45					56	55	53	52
7	55	54	48	47	44	44	39	39	42	42	42	41	45	42	48	45					58	54	52	52
8	56	55	48	47	44	43	39	39	42	42	42	41	44	42	47	43					59	55	52	50
9	56	55	48	48	43	43	39	39	42	42	42	41	45	43	48	46					59	55	52	50
10	56	55	48	47	44	43	39	38	42	42	42	41	45	43	50	49					57	56	51	48
11	55	55	48	48	44	44	39	38	42	42	42	41	45	45	50	50					58	55	55	52
12	55	55	48	48	44	44	39	39	42	41	42	41	46	44	50	49					56	55	56	53
13	55	55	48	48	44	42	39	38	41	41	42	42	48	46	50	50					58	55	57	53
14	55	54	49	47	42	42	39	38	41	41	42	42	46	45	50	49					60	56	56	53
15	54	52	47	45	43	42	39	39	41	41	43	42	46	45	50	49					58	56	55	53
16	52	52	45	45	44	43	39	39	41	41	43	42	47	45	52	49					56	55	55	54
17	52	50	45	45	43	42	39	38	41	41	42	42	48	45	54	52					56	53	55	54
18	51	50	44	44	42	41	39	38	41	40	42	41	48	46	53	52					55	53	54	55
19	52	51	45	44	41	41	39	39	41	40	41	41	48	46	52	52					54	53	55	51
20	52	52	46	45	42	41	39	39	41	40	41	41	46	44	52	50					54	54	51	57
21	52	51	46	45	43	41	39	38	41	40	42	41	47	45	51	50					54	52	52	57
22	51	50	45	44	43	43	38	38	40	40	42	41	47	46	52	50					53	52	54	57
23	51	51	44	42	43	41	39	38	40	40	43	42	46	45	52	51					54	52	53	56
24	51	50	45	44	41	40	41	40	42	40	43	42	48	47	53	51					56	54	54	52
25	50	49	44	42	41	40	41	41	42	41	44	43	46	47	53	52					57	53	54	55
26	49	48	45	44	40	39	42	41	42	42	44	44	48	48	53	50					57	54	53	54
27	48	47	46	45	40	39	42	42	42	41	44	43	48	48	55	53					57	54	55	54
28	50	48	46	46	41	40	42	42	42	41	44	44	48	48	55	54					57	54	55	52
29	48	46	46	41	40	43	43	43	42	42	44	43	46	44	--	--					57	54	54	53
30	48	46	46	45	40	40	43	43	--	--	43	43	46	45	--	--					58	54	54	55
31	47	46	--	--	40	38	43	42	--	--	43	42	--	--	--	--					58	54	56	54
Average	53	52	47	46	43	42	40	39	42	41	42	42	46	45	50	49					56	54	54	53

GRAYS RIVER BASIN

WEST BRANCH GRAYS RIVER NEAR GRAYS RIVER, WASH.

LOCATION.---Temperature recorder at gaging station, 1 mile upstream from mouth and 3½ miles northeast of Grays River, Wahkiakum County.
DRAINAGE AREA.---16.3 square miles.

RECORDS AVAILABLE.---Water temperatures: June 1950 to September 1952.

EXTREMES, 1951-52.---Water temperatures: Maximum, 64°F Aug. 3, 1952; minimum, 36°F Feb. 20, 1952.

EXTREMES, 1950-52.---Water temperatures: Maximum, 65°F July 24, 25, 1950; June 29, 1951; minimum, 36°F Feb. 20, 1952.

REMARKS.---Records of discharge for water year October 1951 to September 1952 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
1	51	51	47	46	47	(a)	(a)	42	42	41	40	43	42	47	46	53	51	53	53	62	59	61	56	
2	51	51	46	45	48	47	(a)	42	42	40	40	43	43	48	45	55	51	56	51	63	59	61	59	
3	51	51	45	45	48	48	39	38	42	40	40	43	43	47	46	55	53	58	53	64	60	61	59	
4	51	51	45	45	(a)	(a)	39	38	42	40	40	45	43	48	45	53	52	57	55	63	60	60	57	
5	51	51	45	45	(a)	(a)	39	39	42	42	40	47	45	48	45	52	51	55	53	62	60	59	58	
6	51	51	45	45	(a)	(a)	39	39	43	42	41	40	46	45	49	47	51	51	57	52	60	59	58	
7	51	51	46	45	(a)	(a)	39	39	43	42	40	46	44	49	47	54	50	59	54	59	59	58	57	
8	51	51	46	46	(a)	(a)	39	39	43	42	42	41	46	44	49	48	55	51	61	55	61	59	58	
9	52	51	46	46	(a)	(a)	39	39	43	42	42	47	44	50	46	55	52	61	57	62	60	57	55	
10	52	52	46	46	(a)	(a)	39	39	43	42	42	41	48	45	51	48	53	52	60	57	62	60	56	
11	52	52	46	46	(a)	(a)	40	39	43	42	41	47	46	52	50	52	50	60	57	63	60	56	54	
12	52	52	46	46	(a)	(a)	40	40	42	41	42	41	47	46	52	48	52	49	59	57	62	60	57	
13	52	52	46	46	(a)	(a)	40	40	41	41	42	47	47	51	50	52	50	61	57	62	60	57	55	
14	52	51	46	46	(a)	(a)	40	40	41	41	43	42	47	46	50	49	52	51	62	58	60	60	58	
15	51	50	47	46	(a)	(a)	40	40	41	41	43	42	46	46	52	48	51	51	61	59	60	59	58	
16	50	49	47	47	(a)	(a)	40	40	41	40	43	41	48	46	56	50	51	51	60	57	60	59	58	
17	48	48	47	47	(a)	(a)	40	40	40	40	43	41	50	46	56	53	53	50	59	58	60	58	58	
18	48	48	47	47	(a)	(a)	40	40	40	39	41	41	51	48	56	54	55	52	59	57	59	58	59	
19	48	48	47	47	(a)	(a)	40	40	40	38	41	41	49	47	54	54	55	53	57	56	59	57	60	
20	48	48	47	46	(a)	(a)	40	39	38	36	41	41	50	46	54	52	55	53	57	56	59	57	60	
21	49	48	47	47	(a)	(a)	39	39	39	38	42	41	50	46	52	51	53	52	56	55	60	58	60	
22	50	49	47	46	(a)	(a)	40	39	39	43	41	48	46	54	50	53	51	56	55	59	59	59	58	
23	50	50	46	45	(a)	(a)	40	40	39	39	42	42	51	46	55	51	53	51	56	55	59	57	59	
24	51	50	45	45	(a)	(a)	40	39	40	39	43	42	50	48	56	52	53	52	57	55	59	58	58	
25	51	51	45	45	(a)	(a)	41	40	40	40	43	43	50	48	56	52	53	51	59	55	59	58	57	
26	51	51	45	45	(a)	(a)	41	41	40	40	43	43	51	49	55	51	54	53	59	57	58	57	57	
27	51	51	45	45	(a)	(a)	41	41	40	40	44	43	50	49	57	52	54	53	60	57	58	57	57	
28	51	50	48	45	(a)	(a)	41	41	41	41	40	44	43	47	53	53	53	53	60	57	59	56	57	
29	50	49	46	46	(a)	(a)	41	41	41	41	43	43	47	46	53	52	53	53	60	57	59	57	57	
30	49	48	47	46	(a)	(a)	42	41	--	--	43	43	47	46	53	52	53	53	61	57	59	57	58	
31	48	47	--	--	(a)	(a)	42	42	--	--	43	42	--	--	53	52	--	--	60	58	60	58	--	
Average	50	50	46	46	--	--	40	40	41	41	42	41	48	46	52	50	53	52	59	56	60	59	58	57

a Recorder stopped; range in temperature from Dec. 4 to Jan. 2, 38°F to 49°F.

YOUNGS RIVER BASIN

NORTH FORK KLANANINE RIVER NEAR OLNEY, OREG.

LOCATION.--Temperature recorder at gaging station half a mile downstream from Barth Falls, 2 miles upstream from North Fork of North Fork, and 4 miles southeast of Olney, Clatsop County.

DRAINAGE AREA.--14.0 square miles.

RECORDS AVAILABLE.--Water temperatures: May, 1950 to September 1952.

EXTREMES, 1951-52.--Water temperatures: Maximum 65°F July 14, Aug. 4; minimum, 37°F Dec. 31, Jan. 1, 3, 4.

EXTREMES, 1950-52.--Water temperatures: Maximum 65°F July 14, Aug. 4, 1952; minimum, 35°F Jan. 29-31, Mar. 9, 1951.

REMARKS.--Records of discharge for water year 1951-52 given in WSP 1248.

Temperature (°F) of water, water year October 1951 to September 1952

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
1	55	54	44	43	46	38	37	43	43	41	40	45	42	48
2	55	55	43	46	46	38	36	43	43	41	40	45	42	48
3	55	55	43	46	46	38	36	43	43	41	40	45	42	48
4	55	55	43	46	46	38	36	43	43	41	40	45	42	48
5	55	55	43	46	46	38	36	43	43	41	40	45	42	48
6	55	55	43	46	46	38	36	43	43	41	40	45	42	48
7	55	55	43	46	46	38	36	43	43	41	40	45	42	48
8	55	55	43	46	46	38	36	43	43	41	40	45	42	48
9	55	55	43	46	46	38	36	43	43	41	40	45	42	48
10	55	55	43	46	46	38	36	43	43	41	40	45	42	48
11	55	55	43	46	46	38	36	43	43	41	40	45	42	48
12	55	55	43	46	46	38	36	43	43	41	40	45	42	48
13	55	55	43	46	46	38	36	43	43	41	40	45	42	48
14	55	55	43	46	46	38	36	43	43	41	40	45	42	48
15	55	55	43	46	46	38	36	43	43	41	40	45	42	48
16	55	55	43	46	46	38	36	43	43	41	40	45	42	48
17	55	55	43	46	46	38	36	43	43	41	40	45	42	48
18	55	55	43	46	46	38	36	43	43	41	40	45	42	48
19	55	55	43	46	46	38	36	43	43	41	40	45	42	48
20	55	55	43	46	46	38	36	43	43	41	40	45	42	48
21	55	55	43	46	46	38	36	43	43	41	40	45	42	48
22	55	55	43	46	46	38	36	43	43	41	40	45	42	48
23	55	55	43	46	46	38	36	43	43	41	40	45	42	48
24	55	55	43	46	46	38	36	43	43	41	40	45	42	48
25	55	55	43	46	46	38	36	43	43	41	40	45	42	48
26	55	55	43	46	46	38	36	43	43	41	40	45	42	48
27	55	55	43	46	46	38	36	43	43	41	40	45	42	48
28	55	55	43	46	46	38	36	43	43	41	40	45	42	48
29	55	55	43	46	46	38	36	43	43	41	40	45	42	48
30	55	55	43	46	46	38	36	43	43	41	40	45	42	48
31	55	55	43	46	46	38	36	43	43	41	40	45	42	48
Average	52	51	46	45	43	42	--	42	41	44	42	49	45	52

a Range in temperature 38°F to 41°F for period Jan. 7-21.

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