1967

Water Resources Data for Colorado

Part 2. Water Quality Records

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of Colorado
and with other agencies

United States Department of the Interior
Geological Survey - Water Resources Division

Water Resources Data for Colorado 1967

Part 2: Water Quality Records

Prepared in cooperation with

Colorado Water Conservation Board
Bureau of Reclamation, U. S. Department of the Interior

Copies of this report may be obtained from
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Denver Federal Center
Denver, Colorado 80225

Water resources records, 1967, for Colorado are in the following reports of the U.S. Geological Survey:

1. Water Resources Data for Colorado
   Part 1: Surface Water Records

2. Water Resources Data for Colorado
   Part 2: Water Quality Records

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[*Symbols after station name designate type of data: c, chemical; t, water temperature; s, sediment*]

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Water Resources Data for Colorado, 1967

Part 2: Water Quality Records

INTRODUCTION

Water-resources investigations of the U.S. Geological Survey include the collection of water quality data on the chemical and physical characteristics of surface- and ground-water supplies of the Nation. These water quality data for surface waters in Colorado for the 1967 water year are presented in this report. Data for a few water quality stations in bordering States and selected data on the chemical quality of ground water in Colorado are also included. The data were collected by the Water Resources Division of the U.S. Geological Survey under the direction of E. A. Moulder, district chief, Water Resources Division.

Water quality information is presented for chemical quality, fluvial sediment, and water temperatures. The chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium-adsorption-ratio, specific conductance, and pH. Fluvial sediment information is given for suspended-sediment discharges and concentrations and for particle size distribution of suspended sediment and bed material. Water temperature data represent once-daily observations except for stations where a continuous temperature recorder furnishes information from which daily minimums and maximums are obtained.

The Geological Survey has published an annual series of water-supply papers, "Quality of Surface Waters of the United States," from 1941 through 1963 which contain the chemical quality, temperature, and fluvial sediment data of the water. Each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records for Colorado are contained in Parts 5-6, 7-8, and 9-14 of the water-supply paper series. (See table, p. 15.) These publications are available in most public libraries. Beginning with the 1964 water year, water quality records for surface and ground water obtained by the Geological Survey were published in a new series of annual releases on a state boundary basis. This report is primarily for local and immediate use, and its distribution is limited. The records pertaining to surface waters will be published in the Geological Survey water-supply papers at 5-year intervals.

WATER QUALITY RECORDS IN COLORADO, 1967

COOPERATION

Most data in this report were obtained as part of the Federal Program of the U.S. Geological Survey or in cooperation with the Bureau of Reclamation, U. S. Department of the Interior. Investigations of some ground water and surface water were made under cooperative agreement between the U.S. Geological Survey and the Colorado Water Conservation Board, F. L. Sparks, director.

Five of the records published in this report were furnished by the following U.S. Geological Survey districts: Utah district, two stations; New Mexico district, one station; Nebraska district, one station; and Wyoming district, one station.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms and abbreviations of water-quality and hydrologic data as used in the text and tabular data of this report, are as follows:

Acre-foot (ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or 325,851 gallons.

Cfs-days is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It equals 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons.

Cubic feet per second (cfs) is a unit expressing rates of discharge. One cubic foot per second is equal to the discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Discharge, in its simplest concept, means outflow; therefore, the use of this term is not restricted as to course or location. In this report it represents the total fluids measured in the stream.

Daily mean discharge is the mean discharge for one day.

Mean daily discharge is the arithmetic mean discharge for the same day during a specific period of years.

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

Instantaneous discharge (at time of sampling). If the discharge at the time of sampling is reported instead of the daily mean, the heading of the discharge column is "Discharge (cfs)."

DEFINITION OF TERMS AND ABBREVIATIONS

Drainage area is that area, in a specified location, measured in a horizontal plane, which is enclosed by a drainage divide.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Equivalents per million (epm) is a unit for expressing the concentration of chemical constituents in solution in terms of the interracting values of the electrically charged particles, or ions. One equivalent per million of a positively charged ion will react with one equivalent per million of a negatively charged ion. Parts per million is converted to equivalents per million by multiplying by the reciprocal of the combining weight of the ion. (See table below.)

Conversion factors: Parts per million to equivalents per million

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})	0.11119	Hydroxide (OH^{-1})	0.05880
Arsenic (As^{+3})	.04004	Iodide (I^{-1})	.00788
Barium (Ba^{+2})	.01456	Iron (Fe^{+3})	.05372
Beryllium (Be^{+2})	.22192	Lead (Pb^{+2})	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})	.14411
Bromide (Br^{-1})	.01251	Magnesium (Mg^{+2})	.08226
Cadmium (Cd^{+2})	.01779	Manganese (Mn^{+2})	.03640
Calcium (Ca^{+2})	.04990	Nickel (Ni^{+2})	.03406
Carbonate (CO_3^{-2})	.03333	Nitrate (NO_3^{-1})	.01613
Chloride (Cl^{-1})	.02821	Phosphate (PO_4^{-3})	.03159
Chromium (Cr^{+6})	.11539	Potassium (K^{+1})	.02557
Cobalt (Co^{+2})	.03394	Sodium (Na^{+1})	.04350
Copper (Cu^{+2})	.03148	Strontium (Sr^{+2})	.02282
Fluoride (F^{-1})	.05264	Sulfate (SO_4^{-2})	.02082
Hydrogen (H^{+1})	.99209	Zinc (Zn^{+2})	.03060

Gage height is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Hardness of water is the property of water attributable to the presence of alkaline earths and is expressed as equivalent calcium carbonate ($CaCO_3$). Hardness is a physical-chemical characteristic, not a substance.

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

Particle size is the diameter, in millimeters (mm) of suspended sediment or bed material determined by sieve and sedimentation methods.

Particle size classification agrees closely with recommendations made by the American Geophysical Union Subcommittee on sediment terminology (Lane and others, 1947, p. 937). The classification is as follows:

Clay:	Smaller than 0.004 mm.
Silt:	Between 0.004 and 0.062 mm.
Sand:	Between 0.062 and 2.0 mm.
Gravel:	Between 2.0 and 64.0 mm.

The particle size distributions given in this report are not necessarily representative of the particle sizes of sediment in transport in the natural stream. Most of the organic matter is removed and the sample is subjected to mechanical and chemical dispersion before analysis of the silt and clay.

Parts per million (ppm) is a unit for expressing the concentration of chemical constituents by weight, usually as grams of constituents per million grams of solution. In the laboratory the results are expressed in weights of solutes in a given volume of water. To express the results in parts per million, the data must be converted. For most waters, this conversion is made by assuming that a liter of water weighs 1 kilogram; thus milligrams per liter is equivalent to parts per million. Parts per million, for suspended sediment, is computed as 1 million times the ratio of the weight of sediment to the weight of the mixture of water and sediment.

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

DEFINITION OF TERMS AND ABBREVIATIONS

Sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that is discharged in a given time.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks and is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimeter at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. The following general relations are applicable:

Specific conductance x (0.65 ± 0.05) = ppm dissolved solids;

$$\frac{\text{Specific conductance}}{100} = \frac{\text{total epm}}{2}$$

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reaction with soil and is an index of sodium or alkali hazard to the soil. This ratio should be known especially for water used for irrigating farmland.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff." Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the location of the thermograph.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in parts per million by 0.00136.

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

Water year in Geological Survey reports dealing with surface water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1967, is called the "1967 water year."

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

STATION NUMBERS AND WELL NUMBERS

A station number has been assigned as an added means of identification for each stream location where regular measurements of streamflow and determinations of water quality have been made. The numbers have been assigned in the same downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is made between surface water gaging stations and water quality record stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

The complete 8-digit number for each station, such as 06-7540.00, includes the part number "6" plus a six-digit station number. In this report, the nonessential zeros are not shown. For example, the complete number 06-7540.00 appears as 6-7540, just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

The well numbers used in this report indicate their location. The numbering system, which is illustrated on page 8, is based on the U. S. Bureau of Land Management's system of land subdivision. The number shows

the location of the well or test hole by quadrant, township, range, section, and position within the section. The capital letter at the beginning of the location number indicates the quadrant in which the well is located. Four quadrants are formed by the intersection of the base line and the principal meridian--A indicates the northeast quadrant, B the northwest, C the southwest, and D the southeast. The first numeral indicates the township, the second the range, and the third the section in which the well is located. Lowercase letters following the section number locate the well within the section. The first letter denotes the quarter section, the second the quarter-quarter section, the third the quarter-quarter-quarter section, and the fourth the quarter-quarter-quarter-quarter section. The letters are assigned within the section in a counterclockwise direction beginning with (a) in the northeast quarter of the section. Letters are assigned within each quarter section, quarter-quarter section, and quarter-quarter-quarter section in the same manner. Where two or more locations are within the smallest subdivision, consecutive numbers beginning with 2 are added to the letters in the order in which the wells or test holes were inventoried. For example, C4-68-15daaa2 indicates a well in the northeast quarter of the northeast quarter of the northeast quarter of the southeast quarter of sec.15, T.4 S., R.68 W., and shows that this is the second well inventoried in the quarter-quarter-quarter-quarter section. The capital letter C indicates the township is south of the base line and that the range is west of the principal meridian.

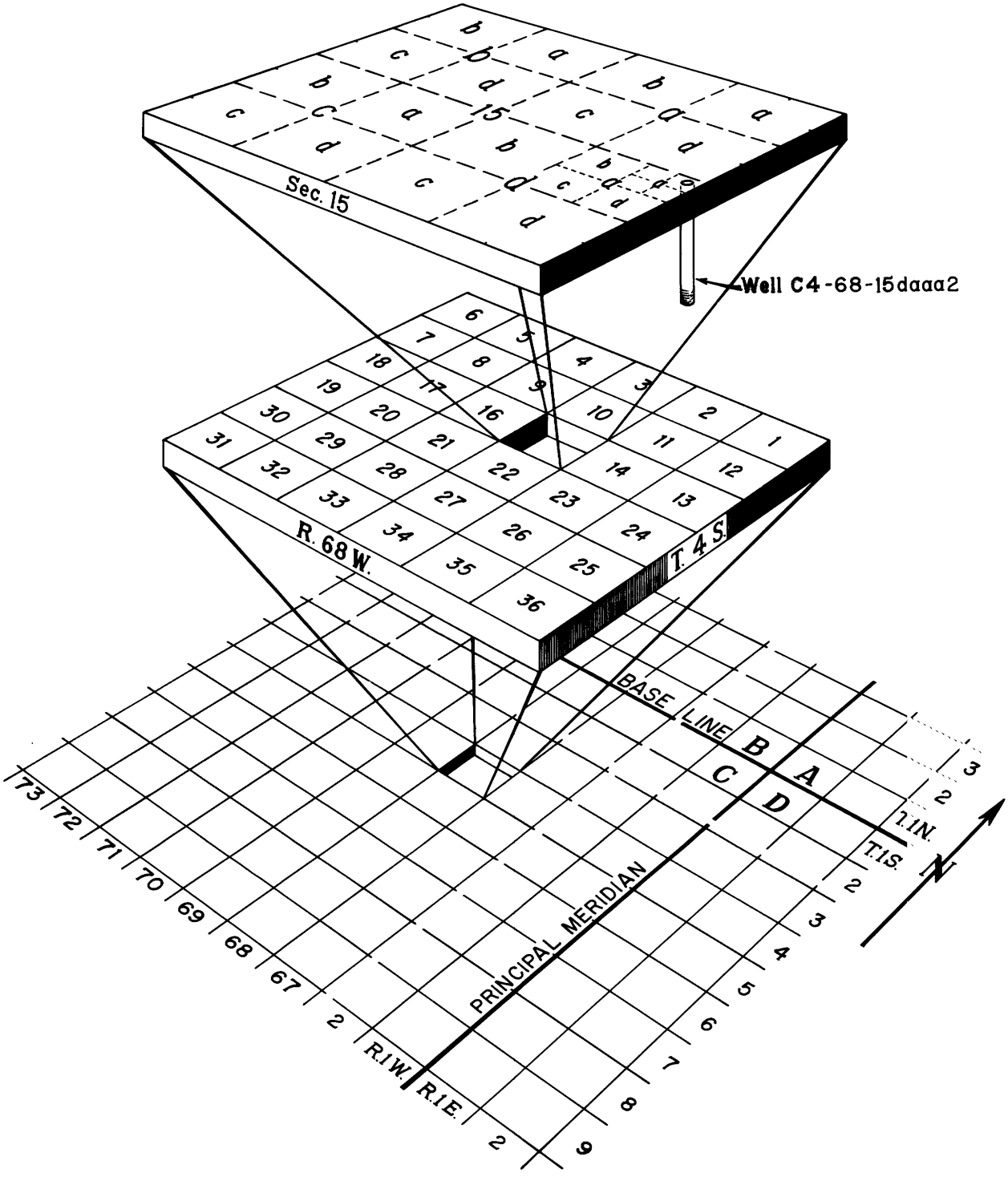

Figure 1.--System of numbering wells in Colorado.

COLLECTION AND EXAMINATION OF SAMPLES

Samples of surface water ordinarily were obtained at or near gaging stations because water-discharge data are essential for computation and interpretation of water-quality records. Samples taken daily were taken by local observers trained and supervised by personnel of the Geological Survey. Samples taken less frequently than daily generally were taken by Geological Survey personnel or by personnel of cooperating agencies. The map on page 10 shows the locations of the surface-water stations sampled in 1967.

Samples of ground water were taken at or near the points of well discharge. Data on the quality of ground water were collected at least once during the year. The areas in which these wells are located are shown on the map on page 11.

Solutes

The methods of collecting water samples and of compositing daily samples prior to laboratory analysis are described in a manual by Rainwater and Thatcher (1960). No single method of compositing of daily samples is applicable for all water-quality stations; the method used depends on the type of water problem being studied at the station. Generally, only samples having similar dissolved-solids content, indicated by measurements of conductivity, are included in any given composite. At sites where water-quality data were collected less frequently than daily, the data may represent conditions only at the time of sampling. For such sites, however, observations obtained over a period of years show relations that are useful in predicting the long-term water-quality characteristics.

Temperature

Water temperatures were measured at most of the water-quality stations. For daily stations, the water temperatures were taken at about the same time each day in order that the data would be relatively unaffected by diurnal variations in water temperature. Most large swiftly flowing streams probably have a small diurnal variation in water temperature, whereas sluggish or shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. The thermometers used for determining the water temperature were accurate to plus or minus 0.5°F.

At stations where thermographs are located, the records consist of maximum and minimum temperatures for each day and the monthly averages of maximum daily and minimum daily temperatures.

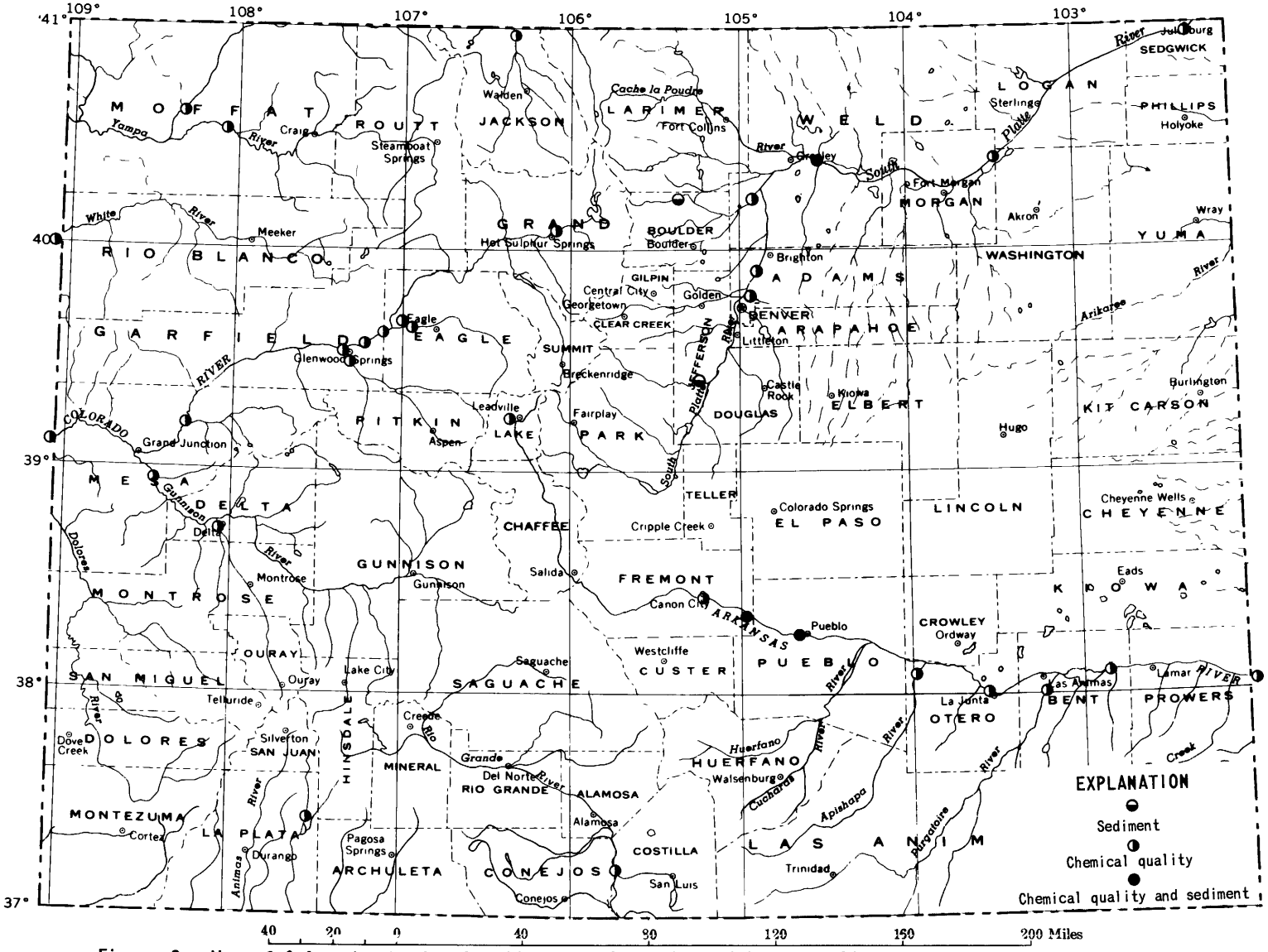

Figure 2.—Map of Colorado showing locations of sites where data on quality of surface water were obtained during the water year. Water-temperature data were obtained daily at some of these sites.

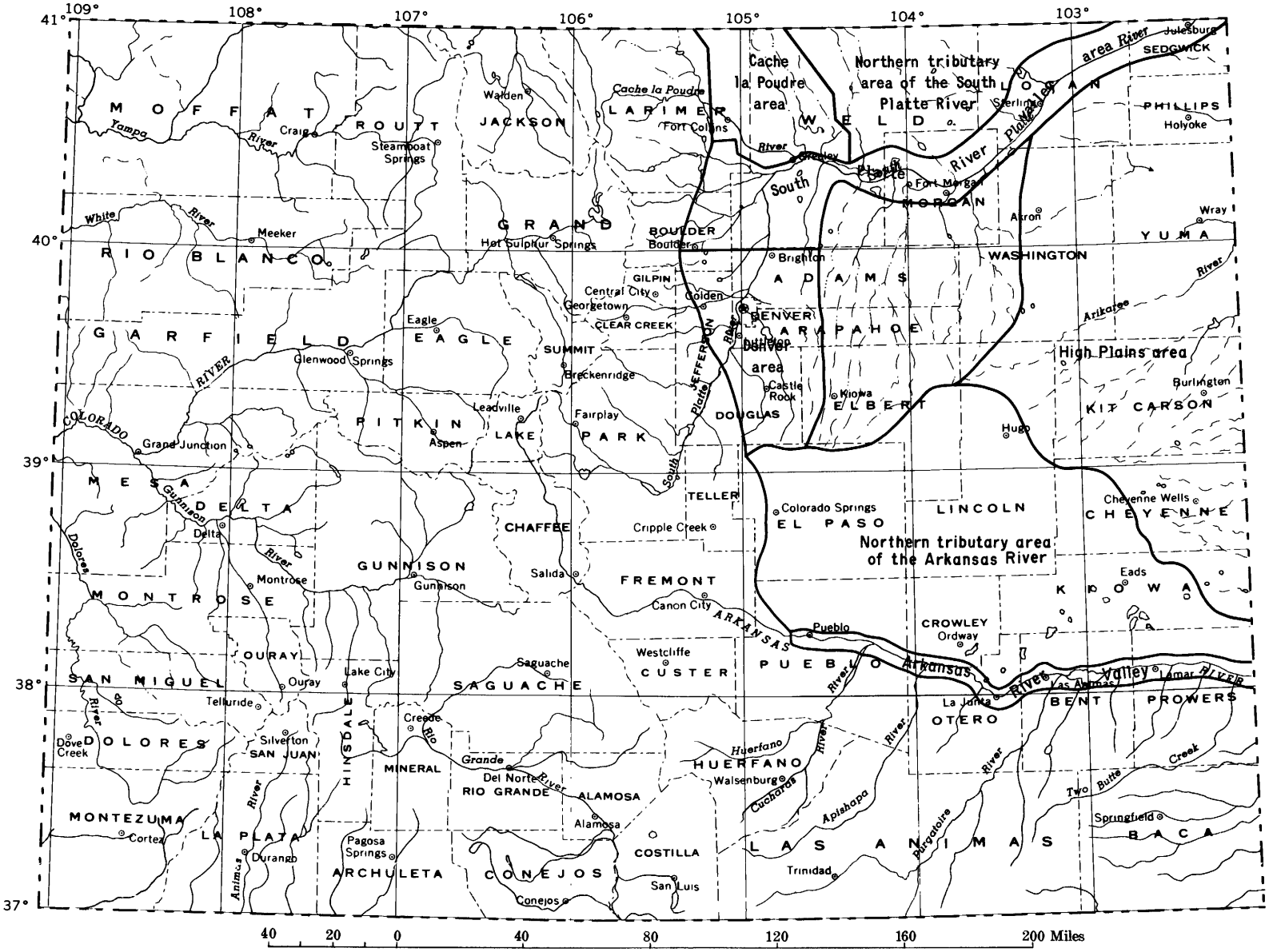

Figure 3.—Map of Colorado showing areas where data were obtained on the chemical quality of ground water.

Sediment

Suspended-sediment samples generally were collected periodically with depth-integrating cable-suspended or hand samplers at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

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

IRRIGATION NETWORK STATIONS

Irrigation network stations are water-quality stations located at or near certain streamflow gaging stations west of the main stem of the Mississippi River. The chemical-quality data collected at these stations are used to evaluate the chemical quality of surface waters used for irrigation and the changes resulting from the drainage of irrigated lands.

Irrigation network stations published in this report are identified under the station name by "Irrigation network station" set in parentheses.

Over 100 Irrigation network stations were selected in 1952 by the Subcommittee on Hydrology, Interagency Committee on Water Resources (now Committee on Hydrology, Water Resources Council). (Of these, approximately 77 currently are in operation.) Prior to water year 1966, chemical-quality data for irrigation was published in the annual water-supply paper series, "Quality of Surface Waters for Irrigation, Western States." Beginning with the 1966 water year, the Irrigation network data will be published at 5-year intervals in the water-supply paper series entitled, "Quality of Surface Waters of the United States."

SELECTED REFERENCES

The following publications are available for background information on the methods for collecting, analyzing and evaluating the chemical and physical properties of surface waters:

Clarke, F. W., 1924, The composition of the river and lake waters of the United States: U.S. Geol. Survey Prof. Paper 135, 199 p.

Colby, B. R., 1963, Fluvial sediments--a summary of source, transportation, deposition, and measurements of sediment discharge: U.S. Geol. Survey Bull. 1181-A, 47 p.

Colby, B. R., and Hubbell, D. W., 1961, Simplified methods for computing total sediment discharge with the modified Einstein procedure: U.S. Geol. Survey Water-Supply Paper 1593, 17 p.

Collins, W. D., and Howard, C. S., 1928, Quality of water of Colorado River in 1925-26: U.S. Geol. Survey Water-Supply Paper 596-B, p. 33-43.

Gregg, D. O., and others, 1961, Public Water Supplies of Colorado (1959-60): Colorado State Univ. Agr. Expt. Sta., Gen. Ser. 757, 128 p.

Hem, John D., 1959, Study and interpretation of the chemical characteristics of natural water: U.S. Geol. Survey Water-Supply Paper 1473, 269 p.

Howard, C. S., 1955, Quality of water of the Colorado River, 1925-40: U.S. Geol. Survey open-file rept., 103 p.

Iorns, W. V., and others, 1964, Water resources of the Upper Colorado River Basin--basic data: U.S. Geol. Survey Prof. Paper 442, 1,036 p., 4 pls., 1 fig.

_____1965, Water resources of the Upper Colorado River Basin--technical report: U.S. Geol. Survey Prof. Paper 441, 370 p., 9 pls., 147 figs.

Lane, E. W., and others, 1947, Report of Subcommittee on terminology: Am. Geophys. Union Trans., v. 28, p. 937.

Langbein, W. B., and Iseri, K. T., 1960, General introduction and hydrologic definitions: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.

McGuinness, C. L., 1963, The role of ground water in the national water situation: U.S. Geol. Survey Water-Supply Paper 1800, 1,121 p.

Meinzer, O. E., 1923, The occurrence of ground water in the United States: U.S. Geol. Survey Water-Supply Paper 489, 321 p.

_____1923, Outline of ground-water hydrology, with definitions: U.S. Geol. Survey Water-Supply Paper 494, 71 p.

Rainwater, F. H., and Thatcher, L. L., 1960, Methods for collection and analysis of water samples: U.S. Geol. Survey Water-Supply Paper 1454, 301 p.

Stabler, Herman, 1911, Some stream waters of the Western United States: U.S. Geol. Survey Water-Supply Paper 274, 188 p.

U. S. Inter-Agency Committee on Water Resources, A study of methods used in measurement and analysis of sediment loads in streams:

Report 11, 1957, The development and calibration of visual accumulation tube: St. Anthony Falls Hydraulic Lab., Minneapolis, Minn., 109 p., 43 figs.
Report 12, 1957, Some fundamentals of particle-size analysis: Washington, U. S. Govt. Printing Office, 55 p., 9 figs.
Report AA, 1959, Federal Inter-agency sedimentation instruments and reports: St. Anthony Falls Hydraulic Lab., Minneapolis, Minn., 41 p., 27 figs.
Report 13, 1961, The single-stage sampler for suspended sediment: Washington, U. S. Govt. Printing Office, 105 p., 51 figs.
Report 14, 1963, Determinations of fluvial sediment discharge: Washington, U. S. Govt. Printing Office, 151 p., 70 figs.

WATER-SUPPLY PAPERS

The table below shows the annual series of Water-Supply Papers that give information on quality of surface waters in Colorado. Data for the Missouri River basin are given in parts 5-6; for the Arkansas River and Rio Grande basins, in parts 7-8; and for the Colorado River basin, in parts 9-14.

Water-supply paper numbers and parts, water years 1941-65

Report year	Parts 1-14 (1941-47)	Parts 5-6	Parts 7-8	Parts 9-14	Irrigation (1951-63) a
1941	942	--	--	--	--
1942	950	--	--	--	--
1943	970	--	--	--	--
1944	1022	--	--	--	--
1945	1030	--	--	--	--
1946	1050	--	--	--	--
1947	1102	--	--	--	--
1948	--	b1132	c1133	--	--
1949	--	b1162	c1163	--	--
1950	--	1187	1188	1189	--
1951	--	1198	1199	1200	1264
1952	--	1251	1252	1253	1362
1953	--	1291	1292	1293	1380
1954	--	1351	1352	1353	1430
1955	--	1401	1402	1403	1465
1956	--	1451	1452	1453	1485
1957	--	1521	1522	1523	1524
1958	--	1572	1573	1574	1575
1959	--	1643	1644	1645	1699
1960	--	1743	d1744	1745	d1746
1961	--	1883	1884	1885	d1886
1962	--	1943	1944	1945	1946
1963	--	1949	1950	1951	1952
1964	--	d1956	d1957	de1958	d1960
1965	--	d1963	d1964	de1965	d1967

a Annual series, "Quality of Surface Waters for Irrigation, Western States."
b Includes parts 1-6.
c Includes parts 7-14.
d In preparation.
e Parts 9-11 only.

WATER QUALITY RECORDS

PART 6. MISSOURI RIVER BASIN

PLATTE RIVER BASIN

6-6200. NORTH PLATTE RIVER NEAR NORTHGATE, COLO.

LOCATION.--Lat 40°56'10", long 106°20'21", at gaging station at bridge on State Highway 125, 0.8 mile upstream from Camp Creek, 4.2 miles northwest of Northgate, Jackson County, and 4.4 miles south of Colorado-Wyoming State line.
DRAINAGE AREA.--1,431 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1967.
Water temperatures: October 1965 to September 1966.
REMARKS.--Daily samples for chemical analysis composited by discharge.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C) Parts per million	Dissolved solids Tons per acre-foot	Dissolved solids Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Hardness as $CaCO_3$ Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 1-23, 1966...	A104	11	--	38	7.7	18	1.4	149	0	39	2.1	0.6	0.1	0.06	192	0.26	53.8	126	3	0.7	310	7.6
Oct. 24-31.....	A95	9.7	--	36	9.4	20	1.6	154	0	37	2.1	.6	.3	.17	194	.26	49.7	128	1	.8	326	7.7
Nov. 1.....	112	9.4	0.05	40	9.1	24	1.8	159	0	44	7.1	.6	.0	.02	214	.29	64.6	138	7	.9	346	8.0
Dec. 8.....	A66	12	.26	34	9.4	16	1.6	143	0	29	3.5	.4	.1	.06	178	.24	31.6	122	4	.6	308	7.8
Jan. 9, 1967.....	A60	14	.18	36	10	18	1.8	165	0	29	1.4	.7	.0	.00	206	.28	33.3	132	0	.7	336	7.4
Feb. 14.....	A80	14	.33	34	10	16	2.0	153	0	27	1.4	.6	.3	.04	190	.26	41.0	126	0	.6	310	7.9
Mar. 9.....	A100	15	.29	34	12	16	2.6	159	0	28	4.6	.5	.1	.02	188	.26	50.7	134	3	.6	312	7.4
Apr. 7.....	806	12	.44	26	12	19	2.4	127	0	46	4.6	.4	.7	.02	190	.26	413	116	12	.8	291	7.4
May 11.....	628	9.2	.16	23	6.2	15	2.0	90	0	44	2.5	.5	.6	.09	168	.23	285	83	9	.7	235	7.6
May 29.....	1130	12	.23	21	5.6	16	1.4	103	0	27	2.8	.5	.5	.03	164	.22	500	76	0	.8	230	7.6
June 30.....	1610	12	.15	36	6.6	15	2.0	158	0	14	.4	.4	.3	.08	188	.26	817	116	0	.6	291	7.5
July 26.....	579	10	.16	28	6.4	11	1.9	123	0	16	.0	.5	.4	.02	140	.19	219	98	0	.5	230	7.6
Aug. 30.....	148	7.4	.12	30	7.1	13	1.2	134	0	23	2.5	.5	.1	.10	170	.23	67.8	105	0	.6	262	7.7
Analysis of additional sample																						
Oct. 6, 1966.....	148	9.1	0.13	37	10	19	2.0	156	0	41	7.4	0.7	0.5	0.04	204	0.28	81.5	135	7	0.7	331	7.9

A Daily mean discharge.

PLATTE RIVER BASIN--Continued

6-7142. BURLINGTON DITCH BELOW HEADGATE, AT DENVER, COLO.

LOCATION.--Lat 39°48'02", long 104°57'32", at York Street Bridge in Denver, Denver County, about 0.7 mile below headgate, and about 1 mile upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: June 1962 to September 1967 (discontinued).
REMARKS.--Records of discharge for water year October 1966 to September 1967 furnished by State engineer of Colorado.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C): Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 26, 1966.....	62	11	0.02	91	18	94	6.7	266	0	184	67	1.4	3.3	0.38	639	0.87	107	304	86	2.4	977	7.3
Nov. 25.....	85	13	.03	88	17	82	5.5	248	0	172	65	1.4	15	.26	580	.79	133	288	85	2.1	916	7.3
Dec. 28.....	73	14	.02	83	23	91	5.4	240	0	181	70	1.5	20	.28	620	.84	122	302	105	2.3	937	7.4
Jan. 25, 1967.....	91	15	.02	75	19	80	5.4	218	0	160	64	1.3	20	.32	550	.75	135	265	86	2.1	857	7.5
Feb. 22.....	137	18	.26	56	17	137	13	460	0	.8	128	1.9	.8	.50	651	.89	241	208	0	4.1	1180	7.9
Mar. 31.....	45	14	.02	103	20	109	6.8	218	0	220	95	1.4	22	.08	719	.98	87.3	340	161	2.6	1100	7.6
Apr. 29.....	27	12	.00	76	12	69	5.2	200	0	143	50	1.3	16	.22	493	.67	35.8	240	76	1.9	764	7.7
May 16.....	48	15	.04	67	20	72	5.2	204	0	144	57	1.2	14	.11	519	.71	67.2	251	84	2.0	807	7.7
June 16.....	574	10	.01	41	7.5	32	3.2	120	0	68	26	.9	4.0	.08	268	.36	415	133	35	1.2	414	7.5
July 24.....	78	17	.03	63	14	74	5.4	189	0	134	54	1.3	7.9	.32	490	.67	103	214	59	2.2	740	7.1
Aug. 23.....	48	9.6	.03	53	12	48	2.9	158	0	84	44	1.6	7.2	.11	349	.47	45.1	182	52	1.5	573	7.2
Sept. 19.....	30	11	.02	52	20	62	5.4	193	0	117	49	1.2	2.9	.22	428	.58	34.6	212	54	1.9	676	7.0

PLATTE RIVER BASIN--Continued

6-7205. SOUTH PLATTE RIVER AT HENDERSON, COLO.

LOCATION.--Lat 39°55'19", long 104°52'05", at bridge on State Highway 22, 1,200 feet downstream from gaging station, and 0.2 mile west of Henderson, Adams County.
DRAINAGE AREA.--4,713 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1955 to September 1957, June 1962 to September 1967.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 26, 1966.....	162	13	0.08	67	25	132	11	324	0	193	106	1.4	0.5	0.56	726	0.99	318	270	4	3.5	1200	7.3
Nov. 25.....	145	14	.11	80	17	122	11	316	0	194	90	1.3	.1	.31	688	.94	269	270	11	3.2	1160	7.2
Dec. 28.....	152	16	.09	70	25	147	12	316	0	184	140	1.7	.7	.46	743	1.01	305	278	19	3.8	1260	7.3
Jan. 25, 1967.....	145	16	.06	82	19	148	12	248	0	193	139	1.5	26	.39	775	1.05	303	284	81	3.8	1290	7.6
Feb. 22.....	229	17	.06	75	24	147	14	342	0	177	137	1.7	.5	.50	775	1.05	479	284	3	3.8	1300	7.9
Mar. 31.....	116	18	.04	82	16	140	13	356	0	183	126	1.5	.6	.44	728	.99	228	270	0	3.7	1270	7.2
Apr. 29.....	152	15	.06	78	19	125	9.3	260	0	191	108	1.4	.5	.35	696	.95	286	272	59	3.3	1130	7.1
May 16.....	108	25	.06	69	25	127	10	208	0	201	117	1.5	6.9	.33	750	1.02	219	276	105	3.3	1190	7.1
June 16.....	354	15	.02	63	14	96	7.4	169	0	180	64	1.0	12	.25	562	.76	537	212	73	2.8	845	7.3
July 24.....	282	15	.01	75	15	86	5.6	186	0	173	64	1.1	16	.23	572	.78	436	247	94	2.4	860	7.1
Aug. 23.....	269	15	.04	67	15	89	6.0	178	0	154	75	1.8	25	.22	535	.73	389	228	82	2.6	843	7.2
Sept. 19.....	196	15	.03	72	22	105	7.8	242	0	180	86	1.5	2.7	.33	627	.85	332	270	71	2.8	972	7.2

6-7310. ST. VRAIN CREEK AT MOUTH, NEAR PLATTEVILLE, COLO.

LOCATION.--Lat 40°15'29", long 104°52'45", at gaging station at bridge on county road, 1.3 miles upstream from mouth, and 4 miles northwest of Platteville, Weld County.
DRAINAGE AREA.--976 square miles.
RECORDS AVAILABLE.--Chemical analyses: September 1965 to September 1967.
REMARKS.--Values reported for dissolved solids less than 1,000 ppm are residues at 180°C, and values more than 1,000 ppm are calculated from the determined constituents unless otherwise noted.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 19, 1966.....	93	9.2	0.02	124	80	142	8.2	362	0	566	36	1.2	14	0.33	1160	1.58	291	640	343	2.4	1600	7.6
Nov. 25.....	74	10	.03	136	95	165	8.3	412	0	700	34	1.3	12	.28	1360	1.85	272	730	392	2.7	1820	7.7
Dec. 28.....	85	11	.05	128	112	172	9.3	450	0	749	35	1.5	.2	.31	1440	1.96	330	780	411	2.7	1870	7.5
Jan. 25, 1967.....	89	11	.02	130	81	137	8.9	400	0	583	37	1.1	11	.28	1200	1.63	288	658	330	2.3	1630	7.9
Feb. 28.....	65	8.7	.02	118	89	153	5.0	340	0	648	40	1.3	6.9	.31	1240	1.69	218	660	381	2.6	1690	7.5
Mar. 31.....	50	.4	.00	127	106	189	4.9	294	43	779	42	1.4	6.1	.33	1440	1.96	194	750	437	3.0	1910	8.7
Apr. 25.....	93	6.9	.01	130	98	184	5.3	340	0	757	37	1.3	11	.29	1400	1.90	352	725	446	3.0	1820	7.8
May 16.....	60	7.7	.02	109	87	133	4.7	310	0	593	38	1.2	7.4	.23	1130	1.54	183	630	376	2.3	1630	7.7
June 16.....	1780	9.8	.03	68	31	57	9.9	211	0	241	14	.9	1.8	.15	561	.76	2700	298	125	1.4	799	7.4
July 25.....	223	9.5	.03	80	58	98	3.6	218	0	442	17	1.0	5.7	.18	898	1.22	541	438	259	2.0	1150	7.5
Aug. 23.....	232	7.5	.03	112	92	144	4.0	264	0	694	35	1.6	6.8	.23	1230	1.67	770	660	443	2.4	1590	7.6
Sept. 19.....	167	11	.02	106	78	126	5.0	292	0	575	30	1.5	11	.26	1090	1.48	491	586	346	2.3	1470	7.7

PLATTE RIVER BASIN--Continued

6-7540. SOUTH PLATTE RIVER NEAR KERSEY, COLO.

LOCATION.--Lat 40°24'44", long 104°33'46", at gaging station at bridge on State Highway 37, 1.9 miles north of railroad in Kersey, Weld County, and 2.5 miles downstream from Cache la Poudre River.
DRAINAGE AREA.--9,598 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1953, August 1954 to August 1957, June 1962 to September 1967.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 (calculated): Parts per million	Dissolved solids (calculated): Tons per acre-foot	Dissolved solids (calculated): Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 19, 1966.....	635	11	0.00	141	72	148	8.7	332	0	560	66	1.1	20	0.32	1190	1.62	2040	648	376	2.5	1670	7.6
Nov. 25.....	528	14	.02	140	66	148	10	356	0	541	72	1.2	10	.31	1180	1.60	1680	620	328	2.6	1640	7.4
Dec. 28.....	A494	14	.06	142	62	147	10	352	0	531	72	1.2	17	.28	1170	1.59	1560	610	321	2.6	1610	7.4
Jan. 27, 1967.....	540	15	.02	131	63	143	9.4	346	0	502	77	1.2	11	.34	1120	1.52	1630	586	302	2.6	1600	7.9
Feb. 28.....	482	13	.03	138	61	147	8.1	356	0	540	75	1.3	.5	.31	1160	1.58	1510	596	304	2.6	1620	7.4
Mar. 31.....	310	9.8	.00	156	76	168	7.5	344	0	652	76	1.2	19	.31	1330	1.81	1110	700	418	2.8	1810	7.8
Apr. 25.....	162	13	.00	164	76	157	7.2	340	0	696	53	1.1	16	.24	1350	1.84	590	720	441	2.5	1730	7.7
May 16.....	187	1.0	.02	104	82	121	8.5	304	0	562	37	1.1	8.8	.18	1070	1.46	540	599	350	2.2	1550	7.8
June 16.....	1520	12	.03	100	53	113	7.7	256	0	427	50	1.1	10	.24	B967	1.32	3970	465	255	2.3	1270	8.0
July 25.....	390	13	.02	119	55	106	5.3	266	0	491	36	1.1	8.2	.23	966	1.31	1020	526	308	2.0	1330	7.5
Aug. 23.....	286	12	.03	144	80	127	5.4	298	0	635	38	1.5	10	.22	1200	1.63	927	690	446	2.1	1550	7.6
Sept. 19.....	422	13	.00	143	77	138	6.1	318	0	640	45	1.3	8.5	.29	1230	1.67	1400	672	411	2.3	1640	7.7

A Daily mean discharge.
B Residue at 180°C.

6-7540. SOUTH PLATTE RIVER NEAR KERSEY, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1966 to September 1967
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 19, 1966	1500	55		635	111	190	--	--				--	--	--	--			
Nov. 8	1430	46		365	55	54	--	--				83	99	100	--			V
Nov. 25	1330	47		528	107	152	--	--				--	--	--	--			
Dec. 9	1415	38		558	85	130	--	--				--	--	--	--			
Dec. 28	1325	34		D 494	144	192	--	--				--	--	--	--			
Jan. 11, 1967	1310	37		528	148	211	--	--				--	--	--	--			
Jan. 25	1315	38		546	244	360	--	--				--	--	--	--			
Feb. 2	1530	38		534	184	265	--	--				--	--	--	--			
Feb. 28	1630	51		482	147	191	--	--				--	--	--	--			
Mar. 21	1415	56		450	114	138	--	--				--	--	--	--			
Mar. 31	1300	54		310	123	103	--	--				--	--	--	--			
Apr. 11	1400	68		100	101	27.3	--	--				--	--	--	--			
Apr. 25	1550	55		162	71	31	--	--				--	--	--	--			
May 16	1400	67		187	65	33	--	--				--	--	--	--			
June 16	1215	64		1520	940	3860	51	56		73		88	93	98	100			VPWC
July 1	0930	68		3380	614	5600	15	17				35	41	53	90	100		VPWC
July 25	1225	77		390	144	152	--	--				--	--	--	--			
Aug. 11	0905	66		187	88	44	--	--				--	--	--	--			
Aug. 23	1045	67		286	155	120	--	--				--	--	--	--			
Sept. 7	1015	64		291	108	84.8	--	--				--	--	--	--			
Sept. 19	1545	64		422	129	147	--	--				--	--	--	--			

D Daily mean discharge.

PLATTE RIVER BASIN--Continued

6-7600. SOUTH PLATTE RIVER AT BALZAC, COLO.

LOCATION.--Lat 40°24'24", long 103°27'58", at gaging station just upstream from highway bridge at Balzac siding, Morgan County, 2.8 miles northeast of Union, and 7.0 miles downstream from Beaver Creek.
DRAINAGE AREA.--16,852 square miles.
RECORDS AVAILABLE.--Chemical analyses: January 1950 to September 1951, August 1954 to September 1957, June 1962 to September 1967.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 (calculated)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 19, 1966.....	23	12	0.00	168	70	158	10	324	0	675	66	1.0	8.8	0.27	1330	1.81	82.5	708	442	2.6	1800	7.9
Nov. 25.....	9.4	11	.01	168	67	165	9.9	276	0	743	66	.9	.0	.23	1370	1.86	34.7	695	469	2.7	1800	8.0
Dec. 28.....	A9.6	12	.01	162	72	166	9.3	318	0	756	62	1.3	.5	.21	1420	1.93	36.7	750	489	2.6	1840	7.9
Jan. 25, 1967.....	A10	13	.00	175	65	155	8.8	312	0	718	62	.8	1.1	.25	1350	1.84	36.5	705	449	2.5	1790	7.8
Feb. 28.....	7.7	8.4	.07	150	65	156	9.3	214	0	728	62	.8	.1	.21	1280	1.74	26.5	640	464	2.7	1690	8.1
Mar. 31.....	215	14	.00	200	66	173	9.4	344	0	757	70	.9	6.9	.25	1470	2.00	853	770	488	2.7	1910	7.9
Apr. 25.....	120	14	.00	202	72	182	10	326	0	789	65	.8	5.0	.21	1500	2.04	486	800	533	2.8	1900	8.1
May 16.....	113	15	.02	192	73	170	11	304	0	827	61	.9	3.1	.19	1500	2.04	458	782	533	2.6	1920	7.8
June 16.....	24	14	.03	187	59	154	8.8	315	0	720	60	1.0	.0	.22	1360	1.85	88.0	710	452	2.5	1760	7.8
July 25.....	142	15	.03	165	54	133	8.9	290	0	625	52	1.0	2.3	.22	1200	1.63	460	634	396	2.3	1600	7.9
Aug. 23.....	116	14	.03	186	77	175	9.6	300	0	801	68	1.4	3.6	.24	1480	2.01	464	780	534	2.7	1890	7.7
Sept. 19.....	28	13	.01	156	66	163	9.9	246	0	697	62	1.3	.3	.26	1290	1.75	97.5	660	457	2.8	1750	7.5

A Daily mean discharge.

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.
(Irrigation network station)

LOCATION.--Lat 40°56'46", long 102°15'15", at gaging station at bridge on U.S. Highway 385, 0.9 mile southeast of Julesburg, Sedgwick County, 3 miles upstream from Colorado-Nebraska State line, and 8 miles downstream from Lodgepole Creek.
DRAINAGE AREA.--23,138 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1967.
Water temperatures: October 1945 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 1,650 ppm Jan. 1-31; minimum, 921 ppm July 1-21.
Hardness: Maximum, 832 ppm Nov. 16 to Dec. 31; minimum, 456 ppm July 1-21.
Specific conductance: Maximum daily, 2,280 micromhos May 28; minimum daily, 1,050 micromhos June 19.
Water temperatures: Maximum, 62°F Aug. 6, 14, 16; minimum, freezing point Jan. 6, 8, Feb. 3, 15.
EXTREMES, 1945-67.--Dissolved solids: Maximum, 1,660 ppm Apr. 13, 1955; minimum, 429 ppm June 16, 1956.
Hardness: Maximum, 860 ppm Dec. 1, 1960; minimum, 173 ppm Mar. 1-12, 1947.
Specific conductance: Maximum daily, 3,000 micromhos Dec. 28, 30, 1962; minimum daily, 617 micromhos Aug. 19, 1953.
Water temperatures: Maximum (1946-49, 1950-67), 93°F July 28, Aug. 1, 1953, July 7, 18, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Daily samples for chemical analysis collected from channel no. 2. Values reported for sodium (Na) are determined by analysis and do not include potassium (K). Daily samples for chemical analysis composited by equal volume. Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1-Nov. 15, 1966.	136	--	--	--	--	215	--	254	0	--	--	--	--	--	1600	2.18	588	717	509	3.5	2020	8.1	--
Nov. 16-Dec. 31.	235	32	0.01	230	63	198	20	356	0	830	75	0.7	4.0	0.31	A1630	2.22	1030	832	540	3.0	2140	7.7	4
Jan. 1-31, 1967.	237	--	--	--	--	205	--	336	0	--	--	--	--	--	1650	2.24	1060	786	512	3.2	2080	7.9	--
Feb. 1-28.....	229	--	--	--	--	209	--	322	0	--	--	--	--	--	1600	2.18	969	781	517	3.3	2070	6.1	--
Mar. 1-31.....	132	30	.00	204	50	200	15	307	0	772	72	.7	3.6	.28	A1500	2.04	535	716	464	3.3	1960	7.7	5
Apr. 1-30.....	41.3	--	--	--	--	191	--	291	0	--	--	--	--	--	1540	2.09	172	749	510	3.0	1980	7.9	--
May 1-31.....	82.9	--	--	--	--	210	--	284	0	--	--	--	--	--	1560	2.12	349	734	501	3.4	1960	7.6	--
June 1-30.....	1526	21	.00	140	41	135	15	246	0	535	50	.7	3.6	.21	A1060	1.44	4370	518	316	2.6	1510	7.6	--
July 1-21.....	1969	--	--	--	--	109	--	220	0	--	--	--	--	--	921	1.25	4900	456	276	2.2	1250	7.7	--
July 22-31.....	211	--	--	--	--	154	--	279	0	--	--	--	--	--	1310	1.76	746	635	406	2.7	1690	7.6	--
Aug. 1-31.....	48.5	--	--	--	--	172	--	280	0	--	--	--	--	--	1460	1.99	191	710	480	2.6	1640	7.5	--
Sept. 1-30.....	39.9	30	.00	195	56	182	17	280	0	758	70	.7	2.5	.27	A1450	1.97	156	717	487	3.0	1930	7.4	10
Weighted average.....	--	--	--	--	--	149	--	260	--	--	--	--	--	--	1190	1.61	1150	561	367	2.7	1600	7.7	--
Time weighted average.....	358	--	--	--	--	187	--	292	--	--	--	--	--	--	1480	--	--	712	473	3.0	1910	7.7	--
Tons per day..	--	--	--	--	--	144	--	252	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A Calculated from determined constituents.

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Additional analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 (calculated)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate				
Channel 2																							
Sept. 28, 1967..	32	29	0.02	202	54	168	16	289	0	765	70	0.7	1.2	0.25	1450	1.97	125	726	489	2.7	1910	7.5	
Channel 4																							
Sept. 28, 1967..	9.0	29	0.03	190	58	189	20	274	0	820	74	0.7	2.1	0.29	1520	2.07	38.8	712	487	3.1	2020	7.3	

Additional determinations, in parts per million

Date of collection	Time	Discharge (cfs)	Ortho phosphate as PO_4	Total chromium (Cr)	Copper (Cu)	Zinc (Zn)	Cadmium (Cd)
Channel 2							
Sept. 28, 1967.	0830	32	0.16	0.00	0.02	0.02	0.00
Channel 4							
Sept. 28, 1967.	0845	9.0	0.20	0.00	0.00	0.05	0.00

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....				2180	2040	1980	2010	1990	2100	1130	1750	1930
2.....				2120	2020	1960	2010	2000	1360	1160	1780	--
3.....				2150	1960	1960	1920	1990	1500	1160	1800	--
4.....				2110	2050	1950	1920	2000	1600	1210	1800	--
5.....				2100	2060	1950	1930	1990	1520	1240	1780	1940
6.....				1990	2020	1960	1950	1890	1810	1180	1800	1940
7.....				2060	2050	1990	1950	1930	1830	1130	1750	1940
8.....				2140	2070	1860	1950	1790	1640	1160	1500	1940
9.....				2140	2060	1990	1960	1870	1190	1230	1780	1950
10.....				2120	2050	1970	1950	1810	1640	1370	1810	1950
11.....				2170	2010	1970	1980	1870	1650	1400	1820	1910
12.....				2100	2070	1970	1950	1950	1590	1080	1830	1930
13.....				2020	2050	1980	1930	1930	1570	1120	1820	1950
14.....				2030	2060	1980	1960	1900	1840	1170	1800	1950
15.....				2030	2060	2010	1960	1900	1800	1230	1840	1930
16.....				2040	2040	1960	1980	1940	1950	1220	1800	1940
17.....				2060	2080	2020	1930	1930	2090	1360	1860	1920
18.....				2170	2060	2020	1990	1870	2060	1450	1870	1930
19.....				2180	2040	2010	1990	1950	1050	1480	1890	1940
20.....				2120	2020	1970	1980	1890	1680	1340	1870	1940
21.....				2060	2010	1970	1960	2000	1680	1460	1890	2000
22.....				2020	2070	1960	1960	1910	1290	1610	1860	1990
23.....				1920	2060	1980	--	2090	1090	1640	1900	1950
24.....				1980	2070	1960	--	2160	1450	1640	1900	1940
25.....				1960	2070	1910	--	2160	1240	1670	1870	1950
26.....				2110	2070	1910	--	2120	1130	1690	1900	1900
27.....				2070	2040	1940	--	1850	1150	1700	1910	1950
28.....				2010	2010	1950	--	2280	1080	1700	1910	1950
29.....				2060	--	1940	--	2210	1100	1750	1900	1940
30.....				2060	--	1910	--	2160	1140	1890	1920	1980
31.....				2060	--	1890	--	2260	--	1770	1930	--
Average				2080	2050	1960	--	1990	1530	1400	1830	1940

PLATTE RIVER BASIN--Continued

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
November	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January	38	39	33	38	38	32	34	32	40	36	36	36	33	35	36	36	34	34	34	33	36	35	37	35	35	34	38	34	38	37	39	35
February	39	33	32	37	40	34	38	35	36	37	44	40	34	44	32	33	41	39	40	33	35	41	34	35	39	45	43	42	--	--	--	37
March	47	45	40	40	38	40	34	33	38	52	48	46	44	38	34	36	38	49	43	41	46	63	48	47	44	54	52	55	60	56	39	44
April	37	53	43	46	61	47	45	48	59	52	47	52	52	48	49	59	66	46	49	60	45	43	--	--	--	--	--	--	--	--	--	--
May	48	38	45	35	48	46	62	52	57	61	46	48	47	57	52	72	50	58	56	50	70	64	64	72	65	61	53	59	57	55	52	54
June	49	56	63	62	65	66	67	69	60	63	63	70	65	65	64	70	65	71	67	69	66	66	63	57	61	63	68	70	66	70	--	64
July	72	70	70	69	65	69	73	74	75	74	75	71	71	75	72	71	71	70	71	72	74	77	72	70	68	65	67	65	67	68	67	70
August	68	67	65	62	64	82	67	69	63	75	63	72	68	82	62	82	63	61	59	70	60	71	64	64	72	61	61	69	65	62	51	66
September	62	--	--	--	66	57	62	60	61	64	81	62	53	55	57	57	58	65	60	62	57	58	57	52	77	57	49	57	54	60	--	60

Periodic determinations of suspended-sediment discharge and particle size, water year October 1966 to September 1967
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
6-7070. NORTH FORK SOUTH PLATTE RIVER AT SOUTH PLATTE (lat 39°24'30", long 105°10'30")																		
Oct. 26, 1966	1530	44		77	3	0.6												
Nov. 11	1415	35		80	9	2												
Nov. 26	1100	32		D 40	2	.2												
Dec. 13	1430	33		77	1	.2												
Dec. 31	1110	32		E 60	11	1.8												
Jan. 13, 1967	1445	33		E 70	17	3.2												
Jan. 28	1045	33		E 70	3	.6												
Feb. 14	1430	--		E 74	10	2.0												
Mar. 4	1050	33		E 72	30	5.8												
Mar. 18	1100	43		101	12	3.3												
Apr. 4	1500	51		189	33	17												
Apr. 18	1415	52		189	10	5.1												
May 2	1330	42		139	5	2												
May 24	1145	55		259	48	34												
June 17	0955	56		238	25	16												
July 1	1410	68		200	18	9.7												
July 24	1030	62		290	78	61												
Aug. 14	0915	56		331	26	23												
Aug. 25	1300	55		277	13	9.7												
Sept. 6	1000	52		286	17	13												
Sept. 23	1100	--		250	12	8.1												
6-7240. ST. VRAIN CREEK AT LYONS (lat 40°13'05", long 105°15'34")																		
Oct. 19, 1966	1710	51		14	2	0.1												
Nov. 8	1545	40		15	7	.3												
Nov. 25	1520	43		15	20	.8												
Dec. 9	1530	35		5.9	6	.1												
Dec. 28	1530	33		8.0	4	.1												
Jan. 11, 1967	1530	--		5.6	7	.1												
Jan. 25	1500	34		9.5	4	.1												
Feb. 7	1430	40		15	5	.2												
Feb. 28	1800	46		7.1	5	.1												
Mar. 21	1545	54		10	6	.2												
Mar. 31	1500	53		9.5	10	.2												
Apr. 11	1520	66		12	7	.2												
Apr. 25	1730	48		24	21	1.4												
May 16	1550	60		50	18	2.4												
June 16	1450	52		546	132	195	26	32				66	76	89	99	100		VPWC
July 1	1105	58		594	30	48												
July 25	1450	75		280	16	12												
Aug. 11	1030	63		118	9	3												
Aug. 23	1300	69		75	73	15												
Sept. 7	1245	63		101	15	4.1												
Sept. 19	1750	55		103	21	5.8												

D Daily mean discharge.
E Estimated.

PART 7. LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN

7-0830. HALFMOON CREEK NEAR MALTA, COLO.
(Hydrologic bench-mark station)

LOCATION.--Lat 39°10'20", long 106°23'20", at gaging station, 1.4 miles upstream from culvert, 3.3 miles upstream from mouth, and 4.3 miles southwest of Malta, Lake County.
DRAINAGE AREA.--23.6 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1966 to September 1967.
Water temperatures: May to September 1967.
EXTREMES, May to September 1967.--Water temperatures: Maximum, 61°F July 29, 30.

Chemical analyses, in parts per million, November 1966 to September 1967

Date of collection	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 180°C): Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
July 8, 1965.....	196	3.1	0.23	5.6	1.7	1.4	0.5	28	0	1.9	0.9	0.0	0.0	0.01	A29	0.04	15.3	21	0	0.1	51	7.2
Sept. 22.....	20	4.6	.15	8.8	2.9	.7	.4	40	0	3.5	1.1	.1	.0	.02	55	.07	2.95	34	1	.0	77	7.4
May 19, 1966.....	25	3.7	.16	6.7	2.5	1.0	.4	30	0	4.2	.1	.1	.5	.02	A34	.05	2.28	27	2	.1	59	7.1
Nov. 8.....	6.4	5.9	--	11	3.5	1.8	.7	51	0	3.6	.3	.1	.0	.00	52	.07	.88	41	0	.1	93	7.2
Dec. 14.....	4.6	5.8	--	11	4.9	1.7	.7	52	0	8.3	1.5	.1	.3	.03	60	.08	.73	48	5	.1	96	7.3
Jan. 11, 1967.....	3.5	6.5	--	11	3.8	2.0	.7	52	0	3.9	.3	.1	.1	.03	53	.07	.50	44	1	.1	95	7.3
Feb. 14.....	B2.9	6.3	--	11	4.3	2.0	.9	54	0	7.8	.5	.1	.7	.02	51	.07	.38	46	1	.1	97	7.4
Mar. 14.....	2.7	6.3	--	11	3.9	1.6	.5	51	0	7.4	1.0	.2	.4	.00	49	.07	.34	44	2	.1	97	7.3
Apr. 21.....	7.5	5.7	--	12	2.7	2.1	.8	48	0	7.0	1.0	.2	.0	.03	54	.07	1.08	41	1	.1	88	7.3
May 3.....	11	5.7	--	7.6	5.1	1.4	.4	45	0	5.4	.5	.1	.3	.00	53	.07	1.56	40	3	.1	84	7.1
May 23.....	84	3.3	--	.0	5.8	.6	.5	26	0	5.5	1.0	.2	.3	.02	30	.04	6.79	24	2	.0	49	6.7
May 31.....	47	3.6	--	8.0	3.2	.6	.1	34	0	5.0	1.0	.1	.1	.02	35	.05	4.43	33	5	.0	61	7.0
July 5.....	73	3.1	--	7.2	4.4	.9	.1	30	0	4.5	1.3	.1	.0	.01	27	.04	5.31	28	3	.1	51	7.0
Aug. 7.....	23	3.8	--	8.0	4.6	.6	.1	40	0	6.2	1.1	.2	.2	.01	40	.05	2.47	39	6	.0	72	6.7
Sept. 11.....	21	4.1	--	7.2	5.1	.9	.6	44	0	6.8	1.2	.2	.2	.01	50	.07	2.82	39	2	.1	80	7.3

A Calculated from determined constituents.
B Daily mean discharge.

Temperature (°F) of water, May to September 1967

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
May																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	51	48	44	40	--	--	--	--	42	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	38	38	38	38	--	--	--	--	39	--
June																																
Maximum	51	45	50	40	44	46	48	46	49	43	47	44	43	47	48	50	52	54	46	45	48	52	52	53	51	51	52	52	54	56	--	49
Minimum	38	39	37	38	37	38	36	37	36	36	38	38	37	38	40	40	41	40	41	41	40	41	40	40	41	40	40	40	40	41	--	39
July																																
Maximum	55	56	55	56	56	52	51	56	55	51	50	56	58	52	50	53	53	58	54	54	56	54	55	55	57	--	59	60	61	61	60	55
Minimum	42	42	42	43	43	42	44	45	43	43	44	46	43	46	46	46	46	45	44	44	45	46	48	46	46	--	47	49	51	52	50	45
August																																
Maximum	59	57	55	60	58	55	58	56	52	54	50	49	50	50	44	52	52	46	50	46	50	47	52	51	49	48	--	--	--	--	--	52
Minimum	52	46	46	48	45	46	48	47	48	46	42	36	35	36	35	34	35	35	36	35	34	35	35	37	38	41	--	--	--	--	--	40
September																																
Maximum	--	--	--	--	--	--	--	--	--	--	52	48	51	48	55	51	52	47	51	53	55	53	57	55	51	50	55	55	54	54	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	46	42	38	37	41	40	40	39	40	38	39	40	42	42	42	45	42	40	41	41	--	--

7-0960. ARKANSAS RIVER AT CANON CITY, COLO.

LOCATION.--Lat 38°26'02", long 105°15'24", at gaging station, 800 feet upstream from Sand Creek, 0.7 mile downstream from Grape Creek, and 0.7 mile upstream from First Street Bridge in Canon City, Fremont County.
DRAINAGE AREA.--3,117 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1967.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium (Na).

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 160°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 21, 1966.....	232					16		164	0	42	8.3				219	0.30	137	154	19	0.6	355	7.4
Nov. 18.....	264					19		164	0	40	9.5				210	.29	150	148	14	.7	361	7.3
Dec. 16.....	280					13		160	0	36	9.0				198	.27	150	156	25	.5	340	7.8
Jan. 26, 1967.....	272					15		152	0	36	8.5				201	.27	148	144	19	.5	336	7.7
Feb. 25.....	276					15		150	0	36	8.5				196	.27	146	140	17	.6	328	7.8
Mar. 27.....	210					18		152	0	51	13				221	.30	125	156	31	.6	360	7.6
Apr. 21.....	145					16		138	0	40	11				194	.26	76.0	136	23	.6	328	7.8
May 20.....	1280					7.4		126	0	33	3.2				179	.24	619	126	23	.3	220	7.1
June 19.....	1010					4.5		64	0	24	2.6				117	.16	319	88	19	.2	191	7.2
July 26.....	604					12		190	0	126	6.0				364	.50	594	269	113	.3	544	7.2
Aug. 24.....	403					13		150	0	28	5.3				196	.27	213	132	9	.5	307	7.4
Sept. 21.....	520					9.5		134	0	25	7.0				160	.22	225	125	15	.4	272	7.2

7-0992. ARKANSAS RIVER NEAR PORTLAND, COLO.

LOCATION.--Lat 38°20'16", long 104°56'24", at gaging station, 1.2 miles downstream from Willow Spring Creek, and 5.3 miles southeast of Portland, Fremont County.
DRAINAGE AREA.--4,280 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1964 to September 1967.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 21, 1966.....	300	10		82	29	35	3.3	200	0	212	12	0.8	2.3	0.08	502	0.68	407	322	158	0.8	717	7.9
Nov. 18.....	285	14		83	25	40	3.4	202	0	213	14	.9	1.3	.04	505	.69	389	311	145	1.0	729	7.6
Dec. 16.....	282	14		80	26	34	2.7	194	0	216	11	1.2	2.7	.05	485	.66	369	308	149	.8	696	8.0
Jan. 26, 1967.....	262	14		67	30	32	2.5	188	0	188	12	.7	2.7	.08	460	.63	325	292	138	.8	675	8.0
Feb. 25.....	248	13		71	25	32	2.6	178	0	188	12	.8	2.4	.00	450	.61	301	280	134	.8	657	8.1
Mar. 27.....	160	11		91	30	42	3.5	200	0	257	18	.8	1.4	.08	564	.77	244	352	188	1.0	802	7.9
Apr. 21.....	128	11		95	32	52	3.5	194	0	299	18	.8	.8	.08	627	.85	217	368	209	1.2	850	8.1
May 20.....	1010	13		47	15	17	2.5	126	0	102	2.7	.5	3.3	.01	273	.37	744	178	75	.6	392	7.3
June 19.....	1260	9.7		39	9.5	14	2.0	108	0	76	1.3	.5	.7	.05	214	.29	728	137	48	.5	335	7.5
July 27.....	1030	12		63	12	17	2.2	142	0	116	6.6	1.2	1.2	.04	302	.41	840	206	89	.5	462	7.3
Aug. 24.....	456	13		74	20	27	2.2	174	0	165	9.5	1.1	.8	.05	401	.55	494	268	125	.7	601	7.5
Sept. 21.....	766	12		54	19	22	2.1	155	0	128	6.6	.9	.9	.03	327	.44	676	213	86	.7	502	7.3

7-0992. ARKANSAS RIVER NEAR PORTLAND, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1966 to September 1967
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 8, 1966	1120	61		270	170	124	--	--		--		26	47	89	100	--	--	V
Oct. 21	1340	55		300	217	176	--	--		--		36	58	93	100	--	--	V
Nov. 5	0915	40		276	180	134	--	--		--		28	44	96	100	--	--	V
Nov. 18	1530	48		285	157	121	--	--		--		20	37	85	100	--	--	V
Dec. 3	1100	37		270	136	99.1	--	--		--		--	--	--	--	--	--	
Dec. 16	1530	41		282	212	161	30	34		--		53	62	96	100	--	--	VPWC
Dec. 29	1045	33		279	143	108	--	--		--		40	60	95	100	--	--	V
Jan. 14, 1967	1100	35		265	164	117	--	--		--		--	--	--	--	--	--	
Jan. 26	1045	36		262	127	89.8	--	--		--		--	--	--	--	--	--	
Feb. 11	1045	36		260	177	124	--	--		--		--	--	--	--	--	--	
Feb. 25	1345	45		248	725	485	--	--		--		--	--	--	--	--	--	
Mar. 11	1100	49		212	125	71.6	--	--		--		--	--	--	--	--	--	
Mar. 27	1145	54		160	92	40	--	--		--		--	--	--	--	--	--	
Apr. 7	0845	47		152	212	87.0	--	--		--		--	--	--	--	--	--	
Apr. 21	1845	60		128	1180	408	--	--		--		--	--	--	--	--	--	
May 6	1045	55		152	85	35	--	--		--		--	--	--	--	--	--	
May 20	1645	62		1010	2900	7910	11	11		18		46	69	88	98	100	--	VPWC
May 29	1230	61		1720	1570	7290	7	8		12		28	48	82	99	100	--	VPWC
June 19	1130	69		1260	616	2100	8	12		20		34	45	64	82	86	93	VPWC
July 5	1030	70		1180	1020	3250	2	2		--		8	11	21	64	84	96	VPWC
July 26	1100	76		962	1150	2990	25	26		39		63	79	92	98	100	--	VPWC
Aug. 10	0820	--		1300	1320	4630	14	16		24		51	67	86	97	100	--	VPWC
Aug. 24	0900	64		456	200	246	9	11		--		29	39	62	98	100	--	VPWC
Sept. 14	1030	60		898	190	461	9	10		--		28	40	69	100	--	--	VPWC
Sept. 21	1200	62		766	828	1710	3	3		--		8	11	23	81	100	--	VPWC

ARKANSAS RIVER BASIN--Continued

7-0994. ARKANSAS RIVER ABOVE PUEBLO, COLO.

LOCATION (revised).--Lat 38°16'17", long 104°43'06", at gaging station, 450 feet downstream from headgate of West Pueblo ditch, 0.4 mile downstream from Rock Canyon Barrier Dam, and 7 miles west of Pueblo, Pueblo County.
DRAINAGE AREA.--4,670 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1967.
REMARKS.--Prior to Mar. 23, sampling site 730 feet upstream.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 21, 1966.....	263	9.7		90	30	41	3.5	202	0	244	13	0.8	2.0	0.08	560	0.76	398	348	182	1.0	791	8.0
Nov. 18.....	196	12		90	27	45	3.5	200	0	251	14	1.0	1.0	.06	549	.75	291	336	172	1.1	793	7.8
Dec. 16.....	311	14		80	26	39	3.1	194	0	225	12	1.3	2.3	.09	499	.68	419	308	149	1.0	720	8.1
Jan. 26, 1967.....	259	14		67	37	37	2.8	192	0	230	11	.7	3.6	.06	522	.71	365	320	163	.9	744	7.9
Feb. 25.....	220	13		82	28	38	2.9	182	0	233	14	.7	2.9	.01	521	.71	309	318	169	.9	742	8.1
Mar. 27.....	89	12		97	34	50	4.0	200	0	301	18	.8	1.9	.07	634	.86	152	380	216	1.1	888	7.9
Apr. 22.....	54	9.4		93	46	72	3.7	158	0	412	19	.7	.8	.10	769	1.05	112	420	290	1.5	1020	7.7
May 20.....	1060	16		58	17	19	2.6	156	0	106	3.3	.6	4.3	.04	322	.44	922	212	84	.6	427	7.3
June 19.....	1120	9.7		47	9.5	15	2.0	127	0	80	1.1	.6	.3	.03	240	.33	726	157	53	.5	368	7.2
July 26.....	694	13		66	15	17	3.5	144	0	130	6.5	1.1	1.8	.04	346	.47	648	226	108	.5	490	7.3
Aug. 24.....	292	13		74	21	31	2.4	174	0	175	10	1.2	1.3	.07	432	.59	341	272	129	.8	631	7.6
Sept. 21.....	562	12		53	21	24	2.3	157	0	137	7.9	.8	1.1	.04	346	.47	525	221	92	.7	524	7.4

7-0994. ARKANSAS RIVER ABOVE PUEBLO, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1966 to September 1967
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 8, 1966	1300	66		152	21	8.6	--	--		--		--	--	--	--	--		
Oct. 21	1510	56		263	54	38	--	--		--		--	--	--	--	--		
Nov. 5	1030	41		179	70	34	--	--		--		--	--	--	--	--		
Nov. 18	1700	48		196	37	20	--	--		--		--	--	--	--	--		
Dec. 3	1215	36		187	56	28	--	--		--		--	--	--	--	--		
Dec. 16	1645	40		311	176	148	32	33		--		73	98	100	--	--		VPWC
Dec. 29	1215	34		D 220	395	230	--	--		--		19	50	100	--	--		V
Jan. 14, 1967	1230	32		287	168	130	--	--		--		--	--	--	--	--		
Jan. 26	1215	36		259	111	77.6	--	--		--		--	--	--	--	--		
Feb. 11	1200	39		211	111	63.2	--	--		--		--	--	--	--	--		
Feb. 25	1115	40		220	108	64.2	--	--		--		--	--	--	--	--		
Mar. 11	1215	53		137	96	36	--	--		--		--	--	--	--	--		
Mar. 27	1300	59		89	95	23	--	--		--		--	--	--	--	--		
Apr. 7	0950	50		68	82	15	--	--		--		--	--	--	--	--		
Apr. 22	1600	63		54	60	8.7	--	--		--		--	--	--	--	--		
May 6	1200	62		89	75	18	--	--		--		--	--	--	--	--		
May 20	1445	61		1060	4500	12900	10	13		21		51	83	100	--	--		VPWC
May 29	1430	63		1580	1060	4520	18	21		32		65	84	96	100	--		VPWC
June 19	1330	69		1120	1340	4050	9	13		20		32	46	80	99	100		VPWC
July 5	1305	75		980	553	1460	9	12		--		30	43	77	100	--		VPWC
July 26	1520	73		662	3230	5770	21	25		37		59	76	94	100	--		VPWC
Aug. 10	1200	66		1030	1500	4170	13	13		24		53	69	88	100	--		VPWC
Aug. 24	1030	70		292	136	107	--	--		--		--	--	--	--	--		
Sept. 14	0720	55		D 600	597	967	11	11		--		32	46	75	97	100		VPWC
Sept. 21	1400	65		562	310	470	9	10		--		30	44	76	98	100		VPWC

D Daily mean discharge.

7-1195. APISHAPA RIVER NEAR FOWLER, COLO.

LOCATION.--Lat 38°05'28", long 103°58'52", at gaging station at county highway bridge, 4 miles southeast of Fowler, Otero County, and 5.4 miles upstream from mouth.
DRAINAGE AREA.--1,125 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965, October 1966 to September 1967.
Water temperatures: October 1966 to September 1967.
EXTREMES, 1966-67.--Specific conductance: Maximum daily, 2,960 micromhos May 20; minimum daily, 650 micromhos July 16.
Water temperatures: Maximum, 88°F Aug. 7; minimum, 33°F Dec. 25-29.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium (Na).

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 21, 1966.....	14					92		200	0	635	28				1140	1.55	43.0	664	500	1.6	1400	7.7
Nov. 19.....	20					102		216	0	636	30				1140	1.55	61.5	660	483	1.7	1400	7.8
Dec. 17.....	15					84		220	0	598	28				1100	1.50	44.5	660	480	1.4	1380	7.3
Jan. 27, 1967.....	48					68		224	0	519	31				1070	1.46	139	620	436	1.2	1330	7.4
Feb. 25.....	2.0					135		322	0	1500	48				2550	3.47	13.7	1600	1340	1.5	2660	7.8
Mar. 28.....	1.8					157		256	0	1260	42				2160	2.94	10.5	1240	1030	1.9	2330	7.5
Apr. 22.....	2.0					183		244	0	1660	50				2560	3.48	13.7	1600	1400	2.0	2630	7.6
May 19.....	.80					218		260	0	1860	52				2970	4.04	64.1	1750	1540	2.3	2970	7.6
June 20.....	8.1					90		144	0	787	19				1320	1.80	28.8	768	650	1.4	1540	7.5
July 27.....	21					80		196	0	506	24				966	1.31	54.7	548	387	1.5	1210	7.4
Aug. 24.....	4.2					129		244	0	966	34				1710	2.33	19.3	972	772	1.8	1930	8.0
Sept. 21.....	7.6					98		208	0	713	28				1290	1.75	26.5	740	569	1.6	1550	7.5

7-1195. APISHAPA RIVER NEAR FOWLER, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	--	1490	1540	1720	2170	2490	2890	2730	1150	2300	1220	2600
2.....	--	1510	1490	1720	2150	2500	2880	2710	1840	2180	1430	1370
3.....	--	1490	1550	1430	1550	2300	2880	2540	1840	1210	1450	1340
4.....	1750	1460	1390	1440	1540	2290	2830	2540	2160	1170	1240	2390
5.....	2310	1500	1510	1680	1560	2680	2820	2310	2170	1450	1230	2400
6.....	2120	2150	1600	1690	1560	2710	2780	2310	1070	1450	1770	2100
7.....	2190	1430	1550	2240	1370	2760	2750	2810	1050	1030	1770	2080
8.....	2220	1410	1520	2260	1370	2760	2800	2820	1060	1010	1230	2440
9.....	2660	1490	1440	2100	1450	2200	2820	2780	838	2230	1220	2470
10.....	1930	1410	1340	2160	1440	2450	2820	2740	818	2260	1360	1840
11.....	1880	1420	2030	1500	1670	2210	2920	2760	1720	744	1370	1830
12.....	2010	1420	2690	1480	1660	2840	2890	2790	1750	686	973	1810
13.....	2430	1440	1360	1930	1610	2860	2400	2750	1270	1780	990	1810
14.....	1520	1440	1450	1940	1600	2890	2380	2820	1250	1830	1140	1720
15.....	1490	1460	1360	2120	1600	2890	2060	2660	1060	686	1140	1720
16.....	1430	1480	1480	2130	1620	2540	2860	2690	1060	650	1220	1640
17.....	1540	1460	1450	1370	1840	2540	2860	2660	1060	1190	1210	1640
18.....	1640	1600	1410	1340	1850	2730	2830	2700	1510	986	2120	1740
19.....	1410	1450	1550	1310	1610	2840	2830	2950	1560	973	2150	1750
20.....	1500	1980	1470	1330	1600	2860	2770	2960	1120	1200	1040	1350
21.....	1550	1440	1640	1350	1690	2040	2780	2910	1100	898	990	1340
22.....	1410	1550	1550	1660	1700	2020	2630	2910	780	898	1790	1290
23.....	1440	1620	2470	1660	1750	2810	2630	1320	1090	757	1820	1290
24.....	1370	1590	2500	1460	1750	2840	2830	1290	1100	751	2310	1090
25.....	1300	1550	2500	1460	2700	2610	2830	1230	725	900	1970	1090
26.....	1400	1550	1210	1350	2710	2630	2850	1220	708	912	1930	1340
27.....	1520	1470	1280	1390	2840	2780	2850	1710	840	1940	2640	1340
28.....	1520	1460	1280	1390	2840	2780	2910	1720	852	1450	2660	1120
29.....	1490	1450	2140	1350	--	2730	2800	1370	1000	1220	2510	1110
30.....	1770	1450	2110	1680	--	2710	2800	1370	1010	1220	2510	1150
31.....	1510	--	2160	1990	--	2850	--	1130	--	1220	2590	--
Average	1730	1520	1680	1670	1810	2620	2770	2330	1220	1260	1640	1670

ARKANSAS RIVER BASIN--Continued

7-1195. APISHAPA RIVER NEAR FOWLER, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

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

7-1220. ARKANSAS RIVER NEAR LA JUNTA, COLO.

LOCATION.--Lat 38°00'40", long 103°35'18", at diversion of Fort Lyon Canal, 0.5 mile above headgate, and approximately 3 miles west of La Junta, Otero County.
DRAINAGE AREA.--12,210 square miles upstream from gaging station at La Junta.
RECORDS AVAILABLE.--Chemical analyses: January 1964 to September 1967.
Water temperatures: October 1966 to September 1967.
EXTREMES, 1966-67.--Specific conductance: Maximum daily, 2,590 micromhos May 1; minimum daily, 767 micromhos June 26, 27.
Water temperatures: Maximum, 82°F Aug. 28; minimum, freezing point on many days during December to March.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium (Na). Discharges obtained by adding daily mean flow in the Fort Lyon Canal to daily mean flow in the Arkansas River at La Junta.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 22, 1966.....	272					97		244	0	637	36				1260	1.71	925	704	504	1.6	1570	7.5
Nov. 18.....	249					141		256	0	758	40				1390	1.89	934	750	540	2.2	1700	7.6
Dec. 17.....	391					125		236	0	635	33				1110	1.51	1170	630	436	2.2	1410	7.5
Jan. 27, 1967.....	455					112		228	0	593	35				1100	1.50	1350	610	423	2.0	1410	7.6
Feb. 25.....	193					154		256	0	840	46				1580	2.15	823	815	605	2.3	1850	7.5
Mar. 28.....	122					201		278	0	1070	61				1960	2.67	646	990	762	2.8	2250	7.4
Apr. 22.....	122					198		280	0	1100	53				1920	2.61	632	1020	790	2.7	2180	7.7
May 20.....	110					160		262	0	989	52				1850	2.52	549	970	755	2.2	2090	7.4
June 20.....	706					64		162	0	362	20				723	.98	1380	398	265	1.4	969	7.5
July 27.....	835					70		234	0	358	19				777	1.06	1750	440	248	1.5	1030	7.5
Aug. 25.....	188					153		232	0	798	41				1540	2.09	782	746	556	2.4	1720	7.6
Sept. 22.....	440					86		194	0	472	26				915	1.24	1090	500	341	1.7	1180	7.4

7-1220. ARKANSAS RIVER NEAR LA JUNTA, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1660	1670	1660	2110	1530	1680	2370	2590	1280	824	1130	1250
2.....	1760	1640	1710	1900	1540	1760	2340	2460	1320	801	1170	1260
3.....	1850	1620	1640	1810	1490	1850	2350	2520	1450	848	1170	1180
4.....	1950	1700	1550	1830	1590	1810	2450	2520	1490	835	1370	1220
5.....	1890	1700	1630	1800	1610	1860	2470	2370	1610	793	1080	1700
6.....	1960	1740	1620	1790	1610	1790	2560	2270	1420	928	1390	1360
7.....	1820	1730	1600	1820	1500	1690	2580	2270	1430	826	1400	1350
8.....	--	1760	1620	1860	1470	1770	--	2360	--	986	1140	1360
9.....	1810	1770	1510	1960	1400	1740	2410	2380	--	993	1140	1340
10.....	1760	1770	1500	1990	1490	1900	2390	2560	1050	986	1080	1330
11.....	1710	1730	1490	2060	1570	1870	2340	2490	1040	1240	963	1350
12.....	1900	1720	1490	2080	1630	1950	2400	2550	993	1160	966	1340
13.....	1690	1650	1480	1860	1750	1940	2390	2310	787	1070	1020	1380
14.....	1680	1700	1500	1580	1830	1880	2300	2400	811	983	1100	1350
15.....	1890	1700	1390	1570	1670	1850	1620	2290	900	--	1050	--
16.....	1690	1770	1370	1410	1640	1900	1880	2200	837	1240	1160	--
17.....	1570	1670	1410	1380	1740	1980	1970	2170	886	1140	1280	--
18.....	1530	1700	1430	1380	1690	1860	1950	2020	1160	1070	1280	1140
19.....	1530	1720	1450	1400	1740	1960	2020	2030	816	1040	1300	1160
20.....	1540	1690	1480	1440	1750	2040	2080	2150	895	1030	2230	1150
21.....	1590	1630	1480	1380	1910	1990	2160	2210	848	1030	1480	1160
22.....	1570	1630	1430	1380	1670	2020	--	2170	829	1040	1560	1300
23.....	1590	1620	1430	1390	1720	1990	2240	1410	945	1070	1700	1300
24.....	1570	1670	1380	1380	1770	--	2170	1550	939	1080	1680	1320
25.....	1460	1660	1470	1380	1880	--	2320	--	895	1060	1590	1320
26.....	1460	1580	1580	1410	1870	2330	2360	--	767	1050	1630	1490
27.....	1530	1580	1480	1420	2000	2250	2350	955	767	1050	--	1360
28.....	1560	1640	1640	1460	1830	2210	2360	958	792	1140	1750	1340
29.....	1560	1640	1780	1440	--	2320	2580	900	811	1140	1750	1340
30.....	1580	1670	1900	1610	--	2260	2510	1140	859	1140	1730	1340
31.....	1620	--	1990	1570	--	2390	--	1240	--	1140	1280	--
Average	1680	1680	1550	1640	1670	1960	2280	2050	1020	1020	1350	1310

ARKANSAS RIVER BASIN--Continued

7-1220. ARKANSAS RIVER NEAR LA JUNTA, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

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

7-1285. PURGATOIRE RIVER NEAR LAS ANIMAS, COLO.

LOCATION.--Lat 38°02'02", long 103°12'00", at gaging station at bridge on State Highway 101, 2.3 miles southwest of courthouse in Las Animas, Bent County, and 4.5 miles upstream from mouth.
DRAINAGE AREA.--3,503 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965, October 1966 to September 1967.
Water temperatures: October 1966 to September 1967.
EXTREMES, 1966-67.--Specific conductance: Maximum daily, 5,470 micromhos Apr. 2; minimum daily, 721 micromhos June 24.
Water temperatures: Maximum, 85°F July 22, 25, 28; minimum, freezing point on several days during December to March.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium (Na).

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 22, 1966.....	34					438		252	0	1860	70				2950	4.01	271	1290	1080	5.3	3230	8.0
Nov. 19.....	23					510		248	0	2350	70				3560	4.84	221	1640	1440	5.5	3740	7.8
Dec. 17.....	18					526		272	0	2500	70				3810	5.18	185	1780	1560	5.4	3920	7.9
Jan. 26, 1967.....	36					450		264	0	2090	76				3250	4.42	316	1520	1300	5.0	3490	7.9
Feb. 24.....	9.5					356		280	0	1700	81				2920	3.97	74.8	1340	1110	4.2	3220	8.0
Mar. 27.....	4.7					698		256	0	2830	115				4220	5.74	53.5	1800	1590	7.2	4410	7.7
Apr. 21.....	3.7					514		320	0	2350	148				4170	5.67	41.6	1800	1540	5.3	4290	7.9
May 19.....	3.1					721		308	0	3050	135				4850	6.60	40.5	2050	1800	6.9	4870	7.7
June 20.....	459					89		256	0	541	5.6				1020	1.39	1260	588	378	1.6	1280	7.4
July 27.....	578					77		234	0	510	3.1				960	1.31	1500	560	368	1.4	1220	7.4
Aug. 24.....	A22					411		280	0	1800	88				3070	4.18	182	1340	1110	4.9	3330	7.7
Sept. 22.....	54					163		200	0	884	34				1550	2.11	226	778	614	2.5	1850	7.3

A Daily mean discharge.

7-1285. PURGATOIRE RIVER NEAR LAS ANIMAS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1360	2860	4050	4560	3950	4070	5270	4990	3070	1430	1990	1080
2.....	1680	2950	3980	3630	3750	4060	5470	4700	2720	2070	2220	1300
3.....	1960	3090	4150	3660	3650	4200	4950	4430	2640	2610	2500	1290
4.....	2190	3340	4020	3640	3630	4200	4920	4400	2580	3010	967	1630
5.....	2280	3560	3950	3490	3860	4190	4650	4400	2490	1210	987	1650
6.....	2420	3390	4020	3430	3090	4070	4560	4390	2960	956	1180	1890
7.....	2470	3190	3960	3660	2910	4250	4270	4560	3410	1080	1170	2070
8.....	2520	3280	3950	3880	2760	4160	4460	4710	3490	2000	1210	2280
9.....	2820	3320	3980	3980	3140	4150	4520	4680	4110	1310	1340	1210
10.....	2990	3340	4020	3920	2900	4080	4800	5020	3420	1230	795	1190
11.....	3230	3600	4200	3910	3020	4220	5200	4730	3720	1110	936	1540
12.....	3300	3670	4050	3730	3390	4280	4870	4460	3970	983	1160	2440
13.....	3410	3720	4050	3910	3370	4190	4650	4160	4420	853	1090	2760
14.....	3550	3770	4010	4010	3510	4360	4580	4040	3920	1040	1210	2690
15.....	3430	3750	3980	3880	2890	4680	4510	4290	4040	1510	1620	2930
16.....	3320	3750	3980	3800	3180	5100	4560	4930	890	1920	1630	3090
17.....	2960	3690	3950	3570	3300	4580	4480	5030	1180	1190	1980	3150
18.....	2990	3720	3940	3450	3230	4370	4260	4960	1370	1050	1980	2280
19.....	3020	3750	3940	3610	3890	4290	4330	4840	1580	947	2300	2250
20.....	2950	3790	3990	3540	3200	4220	4460	4510	1250	947	2600	1470
21.....	3190	3780	4010	3520	2960	4260	4150	4280	1130	1150	2620	1880
22.....	3240	3800	4010	3560	2750	4200	4190	4300	1130	1820	2980	1940
23.....	3380	3810	4120	3390	3180	4260	4260	4390	734	2100	3130	2050
24.....	3250	3810	4290	3360	3390	4770	4790	4350	721	2500	3260	2050
25.....	3380	3810	4430	3450	3550	4540	4790	4390	915	2950	3650	2240
26.....	3370	3810	4470	3650	3770	4330	4710	4330	1140	1460	3580	2550
27.....	3360	3110	4430	3800	3920	4370	4650	1500	1620	1040	3550	3380
28.....	2960	3430	4370	3820	4030	4550	4710	2320	2060	1390	3550	2890
29.....	2890	3850	4430	3800	--	4590	4580	1890	1090	1380	3520	3430
30.....	2950	3960	4570	3830	--	4970	4700	1980	986	1640	1410	3450
31.....	3000	--	4470	3900	--	4540	--	2430	--	1710	1320	--
Average	2900	3560	4120	3720	3360	4360	4640	4140	2290	1540	2050	2200

ARKANSAS RIVER BASIN--Continued

7-1285. PURGATOIRE RIVER NEAR LAS ANIMAS, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

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

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.
(Irrigation network station)

LOCATION.--Lat 38°05'02", long 102°55'10", at gaging station, 1.1 miles upstream from Caddoa Creek, 1.7 miles downstream from John Martin Dam, Bent County, and 2.9 miles southeast of Hasty.
DRAINAGE AREA.--18,917 square miles, of which 785 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: August 1942 to August 1943, October 1945 to July 1949, January 1951 to September 1967.
Water temperatures: January 1951 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 4,090 ppm Dec. 27-31; minimum, 1,210 ppm Oct. 1-16.
Hardness: Maximum, 1,800 ppm Dec. 27-31; minimum, 585 ppm Oct. 1-16.
Specific conductance: Maximum daily, 4,590 micromhos Dec. 29; minimum daily, 1,450 micromhos Oct. 1.
Water temperatures: Maximum, 76°F Aug. 6; minimum, freezing point Dec. 23.
EXTREMES, 1951-67.--Dissolved solids: Maximum, 4,530 ppm Feb. 1-3, 1965; minimum, 296 ppm June 18, 1965.
Hardness: Maximum, 1,910 ppm Aug. 8, 1955; minimum, 224 ppm July 6, 1960, June 18, 1965.
Specific conductance: Maximum daily, 5,180 micromhos Apr. 21, 1955; minimum daily, 476 micromhos June 18, 1965.
Water temperatures: Maximum, 85°F Aug. 6, 1951; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na).

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C): Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 1-16, 1966...	249					149		152	0	707	34				1210	1.65	813	585	460	2.7	1510	7.6
Oct. 17-Nov. 1....	260					159		156	0	734	35				1260	1.71	885	595	467	2.8	1560	7.6
Nov. 2.....	17					342		224	0	1330	74				2070	2.82	95.0	930	746	4.9	2400	7.8
Nov. 3-18.....	24.6					230		204	0	988	52				1670	2.27	111	770	603	3.6	2000	7.8
Nov. 19-30.....	25.2					234		224	0	1070	58				1900	2.58	129	870	686	3.5	2230	7.9
Dec. 1-13.....	16.3					238		228	0	1050	60				1830	2.49	80.5	848	661	3.6	2200	8.0
Dec. 14-26.....	5.7	14		303	153	404	7.3	320	0	1780	118	0.8	1.0	0.51	A2940	4.00	45.2	1380	1120	4.7	3540	8.0
Dec. 27-31.....	3.9					447		304	0	2220	150				4090	5.56	43.0	1800	1550	4.6	4350	8.0
Jan. 1-11, 1967...	3.5					468		354	0	1990	132				3550	4.83	33.5	1530	1240	5.2	3840	8.0
Jan. 12-31.....	3.9					442		382	0	1840	129				3330	4.53	35.0	1450	1140	5.1	3650	8.0
Feb. 1-20.....	4.2					489		380	0	1910	130				3360	4.57	38.0	1420	1110	5.6	3670	7.9
Feb. 21-28.....	22.8					252		270	0	1100	64				1950	2.65	120	910	688	3.6	2290	7.9
Mar. 1-7.....	21.7					248		210	0	1060	60				1810	2.46	106	820	648	3.8	2130	7.8
Mar. 8-9.....	9.6					315		258	0	1320	78				2240	3.05	58.0	1010	798	4.3	2560	7.7
Mar. 10-31.....	21.2					239		208	0	1070	60				1860	2.53	106	850	679	3.6	2180	7.5
Apr. 1-10.....	1168					200		176	0	877	42				1480	2.01	4670	682	538	3.3	1760	8.0
Apr. 11-20.....	1192					195		176	0	883	43				1500	2.04	4830	700	556	3.2	1790	7.7
Apr. 21-30.....	1092					184		180	0	895	44				1540	2.09	4540	740	592	2.9	1820	7.6
May 1-10.....	1015					198		174	0	896	46				1550	2.11	4250	710	567	3.2	1860	7.8
May 11-20.....	869					193		182	0	905	48				1620	2.20	3800	740	591	3.1	1910	7.7
May 21-31.....	596					191		204	0	948	50				1690	2.30	2720	810	643	2.9	1970	7.7
June 1-5.....	25.9					352		288	0	1530	97				2780	3.78	194	1200	964	4.4	3080	7.8
June 6-15.....	232					203		182	0	948	50				1710	2.33	1070	765	616	3.2	1980	7.7
June 16.....	90					273		226	0	1260	69				2300	3.13	559	1000	815	3.8	2540	7.8
June 17-22.....	133					177		182	0	905	41				1640	2.23	589	765	616	2.8	1940	7.9
June 23-25.....	13.6					382		266	0	1700	122				3160	4.30	116	1330	1110	4.6	3350	7.6
June 26-30.....	138					191		202	0	1020	52				1950	2.65	727	885	719	2.8	2120	7.7
July 1-25.....	424					185		168	0	900	43				1610	2.19	1840	732	594	3.0	1860	7.5
July 26-31.....	726					181		152	0	868	39				1520	2.07	2980	690	565	3.0	1780	7.2
Aug. 1-11.....	1095					187		166	0	853	38				1460	1.99	4320	670	534	3.1	1740	7.8
Aug. 12-31.....	863					183		138	0	834	37				1400	1.90	3260	636	523	3.2	1680	7.3
Sept. 1-11.....	664					169		152	0	825	38				1450	1.97	2600	670	545	2.8	1720	7.4

A Calculated from determined constituents.

ARKANSAS RIVER BASIN--Continued

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Sept. 12-20, 1967.	465					175		140	0	856	39				1470	2.00	1850	680	565	2.9	1750	8.0
Sept. 21-30.....	510					176		144	0	863	40				1500	2.04	2070	690	572	2.9	1780	7.7
Weighted average	--					187		167	--	874	42				1510	2.05	1510	699	562	3.1	1790	7.6
Time-weighted average.....	370					250		217	--	1120	63				1960	--	--	887	709	3.6	2270	7.7
Tons per day....	--					187		167	--	873	42				--	--	--	--	--	--	--	--

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1450	1500	2060	3710	3820	2080	1760	1850	2990	1920	1720	1730
2.....	1470	2400	2020	3450	3820	2110	1770	1860	3190	1950	1750	1720
3.....	1470	2100	2010	3940	3540	2140	1760	1850	3130	1930	1760	1730
4.....	1480	2040	1980	3830	3610	2200	1750	1850	2750	1900	1730	1720
5.....	1500	2030	1970	3470	3860	2120	1750	1870	3290	1870	1750	1720
6.....	1500	2030	1970	4130	3990	2080	1770	1860	1990	1870	1740	1720
7.....	1520	2010	2190	4150	4090	2120	1770	1880	1990	1880	1720	1710
8.....	1500	1990	2240	4120	3800	2490	1770	1890	1990	1870	1720	1700
9.....	1560	1980	2290	3850	3520	2630	1770	1900	1990	1840	1720	1730
10.....	1560	1990	2360	3720	3680	2120	1750	1880	1980	1870	1700	1730
11.....	1500	2000	2440	3930	3600	2150	1780	1900	1970	1850	1730	1730
12.....	1510	1980	2410	3550	3540	2170	1780	1890	1980	1850	1680	1740
13.....	1530	1980	2660	3490	3530	2250	1780	1890	1960	1830	1680	1740
14.....	1530	1950	3000	3590	3710	2180	1770	1900	1970	1860	1670	1740
15.....	1540	1950	3340	3540	3580	2150	1740	1890	1940	1850	1680	1750
16.....	1510	1950	3520	3600	3590	2140	1770	1900	2540	1850	1660	1770
17.....	1620	1970	3410	3850	3460	2250	1790	1900	1970	1810	1680	1750
18.....	1660	1960	3800	3570	3480	2150	1790	1900	1960	1880	1680	1740
19.....	1800	2130	3420	3640	3720	2150	1800	1910	1710	1820	1700	1750
20.....	1780	2170	3270	3610	3580	2150	1780	1910	1990	1860	1660	1750
21.....	1520	2190	3380	3590	2670	2160	1800	1930	1980	1840	1680	1770
22.....	1550	2250	3590	3640	2550	2150	1780	1910	1990	1820	1660	1760
23.....	1590	2250	3770	3750	2500	2170	1800	1930	2900	1800	1660	1760
24.....	1500	2270	3770	3700	2320	2210	1790	1930	3470	1800	1670	1760
25.....	1490	2270	3840	3680	2110	2170	1820	1940	3670	2010	1660	1760
26.....	1510	2240	3690	3670	2080	2190	1820	1940	2510	1800	1660	1760
27.....	1500	2240	4180	3640	2050	2150	1820	1940	2210	1770	1670	1770
28.....	1500	2210	4260	3530	2080	2170	1820	1780	1970	1760	1670	1780
29.....	1500	2200	4590	3660	--	2190	1840	1960	1950	1760	1660	1800
30.....	1500	2160	4470	3690	--	2230	1840	1960	1970	1760	1670	1820
31.....	1500	--	4310	4030	--	2340	--	2480	--	1750	1670	--
Average	1540	2080	3100	3720	3280	2190	1780	1920	2330	1850	1690	1750

ARKANSAS RIVER BASIN--Continued

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	62	63	63	63	62	62	61	61	60	60	60	61	61	60	57	57	55	54	53	53	54	53	53	53	53	54	54	54	53	54	53	57
November	52	--	49	47	47	48	47	47	43	44	44	45	45	45	47	46	46	46	44	44	44	45	45	46	67	46	42	46	45	46	--	46
December	47	40	40	42	44	45	44	44	40	40	46	44	41	41	40	36	36	39	38	43	45	43	32	37	35	38	39	39	39	40	42	41
January	41	43	43	42	42	42	40	38	38	37	42	43	41	45	43	45	42	42	39	41	45	46	45	45	44	38	38	39	43	42	45	42
February	47	--	38	41	45	38	41	38	37	40	42	39	--	49	42	38	39	39	42	43	37	40	40	40	39	40	39	39	--	--	--	40
March	42	41	41	41	41	37	35	36	40	41	41	43	42	42	43	43	41	40	44	45	45	45	46	47	46	48	47	48	51	50	47	43
April	47	48	48	48	49	50	50	50	51	51	51	53	53	52	53	54	54	52	54	54	54	54	54	54	54	55	54	55	55	55	--	52
May	54	54	54	53	53	53	53	53	54	54	55	55	54	54	54	--	55	55	55	56	56	56	57	58	68	69	61	58	60	60	57	56
June	57	57	61	61	63	63	61	61	61	62	62	63	63	64	66	67	67	67	62	64	65	66	65	60	62	67	65	67	68	68	--	64
July	68	68	68	68	69	69	69	--	71	72	73	72	72	72	72	72	72	72	72	73	73	72	73	74	74	74	74	74	74	74	74	72
August	74	74	74	74	74	76	75	75	75	75	74	73	73	73	73	73	73	73	73	73	72	71	72	72	72	72	72	72	72	71	72	73
September	68	72	68	68	68	68	68	67	66	67	67	67	67	66	66	--	66	66	66	66	66	66	65	65	--	65	64	64	64	63	--	66

7-1375. ARKANSAS RIVER NEAR COOLIDGE, KANS.

LOCATION.--Lat 38°01'34", long 102°00'41", at gaging station at bridge, 1 mile south of Coolidge, Hamilton County, and 1.9 miles downstream from Colorado-Kansas State line.
DRAINAGE AREA.--25,410 square miles, of which 1,708 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1967.
Water temperatures: October 1964 to September 1967.
EXTREMES, 1966-67.--Specific conductance: Maximum daily, 4,810 micromhos Mar. 8; minimum daily, 784 micromhos July 27.
Water temperatures: Maximum, 94°F July 9; minimum, freezing point on many days during November to March.
EXTREMES, 1964-67.--Specific conductance: Maximum daily, 4,970 micromhos Dec. 17, 1964; minimum daily, 454 micromhos June 18, 1965.
Water temperatures: Maximum, 94°F July 9, 1967; minimum, freezing point on many days during winter months.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium (Na).

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 22, 1966.....	160					574		260	0	2180	132				3460	4.71	1490	1420	1210	6.6	3840	8.1
Nov. 19.....	93					628		202	0	2360	158				3890	5.29	977	1480	1310	7.1	4320	7.8
Dec. 17.....	110					504		268	0	2220	160				4050	5.51	1200	1660	1440	5.4	4430	7.8
Jan. 26, 1967.....	130					582		292	0	2370	148				3880	5.28	1360	1650	1410	6.2	4190	7.9
Feb. 24.....	103					604		294	0	2420	168				4140	5.63	1150	1680	1440	6.4	4470	8.0
Mar. 27.....	71					730		236	0	2720	185				4130	5.62	792	1700	1510	7.7	4470	7.7
Apr. 22.....	448					279		196	0	1210	62				1990	2.71	2410	900	739	4.0	2280	7.7
May 20.....	422					293		200	0	1340	77				2270	3.09	2590	1030	866	4.0	2570	7.5
June 20.....	340					273		204	0	1110	75				1980	2.69	1820	835	668	4.1	2320	7.6
July 26.....	380					142		162	0	669	34				1200	1.63	1230	568	435	2.6	1470	7.6
Aug. 24.....	265					322		208	0	1390	86				2390	3.25	1710	1040	869	4.3	2710	7.8
Sept. 22.....	269					358		220	0	1510	93				2620	3.56	1900	1100	920	4.7	2920	7.6

7-1375. ARKANSAS RIVER NEAR COOLIDGE, KANS.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	2480	3720	2520	4540	4260	4420	4590	2380	1010	3920	2830	2340
2.....	--	3900	4560	4520	4310	4430	4580	2360	2310	3980	2240	2320
3.....	2750	4010	1890	4430	4230	4430	--	2420	2880	4050	2120	2290
4.....	2810	4010	--	3690	4180	4410	2320	2420	3340	4090	2120	2450
5.....	3090	4150	2440	4300	3590	4350	2180	2400	3400	1170	2150	2370
6.....	2910	4100	1690	4290	4310	4300	2240	2270	3590	2980	2180	2390
7.....	3280	4180	2520	3200	2570	4080	2140	2340	3720	3240	1900	2450
8.....	3370	3920	3140	4620	4480	4810	2160	2410	3690	3450	1810	2480
9.....	3410	4030	1720	4600	4340	4370	2160	2560	3400	3810	1820	2710
10.....	3560	3970	1050	4490	4430	4430	2120	2570	3610	3770	2130	2800
11.....	3520	4110	2570	4370	4330	4410	2120	2500	2870	1740	2230	2010
12.....	3770	4120	1400	4200	4310	4470	2130	2480	3620	1910	2150	2630
13.....	3900	4100	3410	4230	4150	4430	2220	2490	3630	3170	2190	2790
14.....	3950	4160	4340	4170	4310	4430	2200	2430	3880	3580	2220	2840
15.....	3840	4210	4070	--	4310	4430	2130	2470	3910	2810	2200	2820
16.....	3670	4230	2750	4160	4230	4410	2200	2470	2760	2780	2280	2830
17.....	3200	4330	4130	3650	3650	4450	2240	2490	2440	3250	2230	2850
18.....	3080	4360	--	4330	4150	4450	2230	2530	1260	3520	2420	2960
19.....	3390	4310	1760	4460	4310	4430	2250	2580	2520	806	2530	2980
20.....	3870	4320	1590	4330	4370	4430	2220	2560	2400	1250	1580	3040
21.....	3690	4260	2110	4290	4510	4450	2310	2570	--	1980	2360	3010
22.....	3800	4240	2760	4270	4480	4440	2370	2800	2410	2700	2400	2950
23.....	3240	4330	1550	4100	4430	4440	2300	2720	3220	3200	2640	2940
24.....	3210	4330	1170	4110	4410	4440	2340	2760	3500	3400	2870	2920
25.....	3860	4310	2460	4240	4410	4490	2310	2710	3760	1180	2540	3070
26.....	3840	--	2200	4220	4440	4470	2280	2700	3740	1220	2480	2790
27.....	3930	4330	2010	4210	4430	4460	2320	2650	4000	784	2460	2580
28.....	3820	4370	1830	4240	4420	4470	2340	2650	4020	1360	2500	2550
29.....	4060	4340	2220	4310	--	4510	2420	2830	3180	2160	2480	2540
30.....	3990	4320	2750	4280	--	4530	2460	2830	3820	2540	2360	2670
31.....	3960	--	2110	4250	--	4580	--	2570	--	2890	2210	--
Average	3510	4170	2440	4240	4230	4440	2410	2550	3170	2670	2280	2680

ARKANSAS RIVER BASIN--Continued

7-1375. ARKANSAS RIVER NEAR COOLIDGE, KANS.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

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

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN

Chemical analyses, in parts per million

Date of collection	Discharge (cfs)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Zinc (Zn)
ARKANSAS RIVER AT CLIMAX (lat 39°21'25", long 106°10'25")																								
July 7, 1965...	40	43	2.0	0.05	0.01	4.8	1.0	0.5	0.3	18	0	2.3	0.9	0.1	0.2	0.01	38	16	1	6	0.1	38	6.8	0.03
Sept. 20.....	4.3	40	2.8	.40	.13	9.6	2.2	.7	.3	32	0	7.4	.9	.2	.2	.03	54	33	7	4	.1	76	7.3	.25
May 17, 1966...	7.1	40	3.3	.25	.21	8.7	1.8	.8	.6	26	0	8.1	.4	.3	.5	.03	31	29	8	6	.1	64	7.0	.11
ARKANSAS RIVER BELOW CLIMAX (lat 39°19'46", long 106°13'04")																								
July 7, 1965...	80	47	3.7	1.5	0.33	14	3.4	1.3	0.6	11	0	34	1.1	3.5	0.5	0.01	61	48	39	6	0.1	119	6.8	0.49
Sept. 20.....	12	42	5.2	.28	.64	23	5.4	2.6	.9	31	0	49	1.9	4.4	.7	.01	105	80	55	7	.1	188	7.0	.41
May 17, 1966...	32	45	4.6	.11	.27	17	5.1	2.5	1.2	39	0	30	1.9	1.7	1.0	.02	81	63	31	8	.1	143	7.3	.09
ARKANSAS RIVER AT BRIDGE ON STATE HIGHWAY 91, NEAR LEADVILLE (lat 39°17'07", long 106°16'47")																								
July 7, 1965...	156	50	4.0	0.45	0.18	16	5.1	1.2	0.6	40	0	25	1.4	2.0	0.1	0.00	70	60	27	4	0.1	134	7.4	0.16
Sept. 21.....	28	42	5.0	.18	.24	23	8.5	1.8	.7	79	0	27	1.7	1.5	.1	.02	103	92	27	4	.1	194	7.4	.11
Mar. 7, 1966...	5.0	32	5.1	.13	.07	26	11	2.5	.3	106	0	27	1.3	.4	.1	.02	132	111	24	5	.1	228	7.6	.02
May 17.....	41	50	4.7	.18	.11	21	7.8	2.4	1.0	63	0	28	2.2	1.2	1.0	.03	92	84	32	6	.1	176	7.2	.04
Sept. 13.....	14	47	5.1	.37	.12	42	.5	1.9	.5	92	0	34	1.5	1.3	.1	.01	126	108	33	4	.1	223	8.0	.06
June 5, 1967...	129	46	4.0	.12	.14	13	5.6	1.7	1.0	35	0	28	1.2	1.8	.5	.02	79	56	27	6	.1	132	6.8	.02
7-0792. LEADVILLE DRAIN AT LEADVILLE (lat 39°16'28", long 106°17'18")																								
July 7, 1965...	A0.5	45	9.8	1.0	7.2	107	42	6.2	1.3	119	0	372	2.4	0.3	0.1	0.04	641	438	341	3	0.1	850	7.3	14
Sept. 21.....	A3	45	8.7	.67	4.2	91	36	3.6	1.1	125	0	291	2.7	.2	1.1	.02	526	376	274	2	.1	745	7.1	7.4
Mar. 7, 1966...	A1.5	45	9.2	1.4	4.4	112	49	4.9	.5	135	0	362	1.8	.2	1.3	.01	662	483	372	2	.1	873	7.1	6.7
May 17.....	A3	46	9.2	1.5	6.1	105	67	4.7	1.6	127	0	420	3.2	.1	1.9	.03	702	539	435	2	.1	917	7.0	10
Sept. 13.....	A2.5	46	9.2	.03	3.8	103	47	2.9	1.0	133	0	323	1.4	.2	.1	.00	594	450	341	1	.1	803	7.2	4.6
Jan. 18, 1967..	A3.5	45	9.6	.84	4.1	120	46	4.8	1.7	139	0	395	1.1	.1	1.5	.03	682	490	376	2	.1	892	7.0	6.2
June 6.....	A1.6	45	10	.36	6.2	120	60	4.7	1.8	130	0	464	2.2	.7	1.6	.02	764	546	439	2	.1	954	6.8	12
EVANS GULCH NEAR LEADVILLE (lat 39°16'07", long 106°17'46")																								
July 7, 1965...	A15	50	2.9	0.40	0.02	15	7.3	1.2	0.4	72	0	11	1.2	0.2	0.2	0.01	73	68	9	4	0.1	142	7.7	0.21
Sept. 21.....	A1	45	4.2	.15	.02	23	11	.4	.5	105	0	15	1.1	.1	.0	.01	101	103	17	1	.0	199	7.7	.20
ARKANSAS RIVER AT BRIDGE ON U.S. HIGHWAY 24, NEAR LEADVILLE (lat 39°16'21", long 106°18'21")																								
July 7, 1965..	174	53	4.0	0.72	0.29	18	6.6	2.4	0.6	50	0	31	1.2	1.8	0.1	0.01	90	71	30	7	0.1	162	7.4	0.38
Sept. 21.....	29	44	5.7	.60	.70	33	13	2.2	.7	87	0	62	2.1	1.2	.0	.02	162	135	64	3	.1	280	7.3	.75
Mar. 7, 1966...	13	38	6.5	.10	1.0	53	24	3.2	.4	115	0	129	1.3	.3	.6	.01	298	229	135	3	.1	456	7.6	2.0
May 17.....	50	50	5.1	.28	.46	28	11	2.6	1.0	69	0	54	2.2	1.1	1.1	.02	138	116	59	5	.1	240	7.3	.57
Sept. 13.....	19	54	5.3	.03	.73	42	16	1.9	.7	101	0	91	1.7	1.0	.4	.00	216	172	89	2	.1	352	7.5	.70
Jan. 18, 1967..	9.9	35	7.2	.05	.94	57	24	3.1	1.4	122	0	149	.8	.2	.8	.02	312	240	140	3	.1	470	7.8	1.7
June 6.....	183	44	4.1	.04	.20	11	8.3	1.4	.9	38	0	30	1.2	1.5	.5	.01	85	62	31	5	.1	142	6.8	.21

A Estimated discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN--Continued

Chemical analyses, in parts per million--Continued

Date of collection	Discharge (cfs)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Zinc (Zn)
TENNESSEE CREEK NEAR LEADVILLE (lat 39°15'51", long 106°20'26")																								
July 8, 1965...	182	47	3.9	0.44	0.05	4.4	1.2	1.4	0.4	20	0	1.6	1.0	0.0	0.2	0.02	B25	16	0	16	0.2	41	7.2	0.09
Sept. 21.....	20	43	6.7	.24	.04	7.2	2.2	1.5	.6	30	0	4.3	1.1	.1	.1	.02	54	27	2	10	.1	65	7.1	.06
Mar. 8, 1966...	7.3	32	11	.22	.03	9.2	3.5	3.0	.2	45	0	8.2	1.0	.2	.1	.02	68	37	0	15	.2	90	7.0	.02
May 18.....	80	42	5.3	.28	.06	4.2	1.8	1.4	.4	17	0	6.0	.5	.1	.4	.03	B29	18	4	14	.1	43	6.9	.09
ARKANSAS RIVER AT MALTA (lat 39°13'23", long 106°21'21")																								
July 8, 1965...	356	48	4.4	0.37	0.13	13	4.1	3.3	0.5	44	0	17	1.1	1.0	0.2	0.01	65	49	13	13	0.2	120	7.3	0.23
Sept. 21.....	49	42	6.2	.07	.29	23	8.5	1.7	.5	70	0	36	1.4	.6	.1	.02	111	93	36	4	.1	199	7.4	.29
Mar. 8, 1966...	20	32	7.6	.22	.36	38	15	3.0	.3	89	0	82	1.5	.3	.4	.01	206	155	82	4	.1	325	7.3	.53
May 18.....	130	45	5.3	.24	.13	15	5.5	1.9	.7	42	0	27	.4	.5	.4	.03	74	60	26	6	.1	132	7.2	.20
Sept. 13.....	20	53	6.4	.15	.23	34	15	2.3	.7	93	0	66	1.5	.7	.0	.01	169	144	68	3	.1	286	7.6	.21
Jan. 18, 1967..	10	32	7.9	.06	.37	42	17	2.9	1.3	99	0	96	.8	.2	.3	.01	219	172	91	4	.1	351	7.3	.61
June 6.....	373	45	4.6	.13	.12	9.2	5.1	1.3	.7	31	0	20	1.2	.8	.3	.02	64	44	19	6	.1	101	7.2	.18
CALIFORNIA GULCH ABOVE LEADVILLE (lat 39°13'53", long 106°14'26")																								
May 19, 1966...	A1	66		10	44																			75
CALIFORNIA GULCH AT LEADVILLE (lat 39°14'12", long 106°16'46")																								
May 19, 1966 C.	A3		16	25	18	156	89	4.9	3.3	0	0	756	1.7	0.5	0.4	0.03	1110	755	755	1	0.1	1290	3.1	34
Jan. 19, 1967..	A3	57	11	.08	4.9	80	30	3.0	2.7	44	0	293	.3	.8	.1	.03	482	325	289	2	.1	644	7.0	7.1
7-0818. CALIFORNIA GULCH AT MALTA (lat 39°13'22", long 106°21'12")																								
July 8, 1965 D.	7.7	54	14	--	20	84	41	5.0	1.7	0	0	565	4.6	0.4	0.6	0.03	868	378	378	2	0.1	1120	3.3	62
Sept. 21.....	2.2	47	13	0.82	19	106	45	19	5.2	0	0	559	14	.4	3.0	.09	870	450	450	7	.4	1080	4.5	39
Mar. 8, 1966...	3.7	34	12	13	11	120	58	15	5.1	29	0	556	9.2	.4	.6	.03	794	537	513	6	.3	1070	6.2	18
May 18.....	4.3	56	12	1.9	10	95	58	12	4.7	17	0	463	8.6	.5	.7	.14	700	478	464	5	.2	942	5.9	16
Sept. 13.....	3.6	63	14	.17	7.0	93	46	21	4.4	34	0	385	9.3	.8	25	.19	654	420	392	10	.4	862	6.6	6.7
Jan. 18, 1967..	5.8	33	13	.12	4.4	74	28	11	3.8	68	0	270	4.6	.7	.7	.12	460	300	244	7	.3	671	6.5	6.6
June 6.....	6.8	53	10	.13	4.8	51	28	6.9	2.6	32	0	244	3.8	.9	13	.05	374	243	217	6	.2	529	6.4	12
LAKE FORK BELOW TURQUOISE LAKE (lat 39°15'12", long 106°22'17")																								
July 8, 1965...	256	57	3.1	0.66	0.02	3.2	0.5	3.2	0.4	17	0	2.5	1.2	0.1	0.2	0.02	B23	10	0	40	0.4	39	6.9	0.07
Sept. 21.....	48	50	2.3	.36	.02	2.7	.6	1.0	.4	10	0	2.5	.4	.1	.1	.03	B16	9	0	18	.1	26	6.2	.02
Mar. 8, 1966...	7.6	38	2.1	.52	.08	3.2	1.2	1.5	.1	12	0	4.7	.9	.2	.4	.03	B21	13	3	20	.2	33	6.7	.02
May 18.....	44	46	2.1	.29	.02	3.0	1.1	1.4	.3	12	0	4.6	.5	.2	.2	.03	B20	12	2	20	.2	32	6.8	.00

A Estimated discharge.
B Calculated from determined constituents.
C Also hydrogen (H), 0.9 ppm.
D Also hydrogen (H), 0.55 ppm.

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN--Continued

Chemical analyses, in parts per million--Continued

Date of collection	Discharge (cfs)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Zinc (Zn)
7-0837. ARKANSAS RIVER NEAR MALTA (lat 39°10'05", long 106°19'25")																								
July 8, 1965...	854	56	4.8	0.35	0.29	11	4.1	1.3	0.5	37	0	15	1.3	0.5	0.2	0.03	58	45	15	6	0.1	101	7.2	0.51
Sept. 22.....	183	40	7.2	.24	.49	20	6.8	2.8	.5	62	0	29	2.1	.4	.1	.01	97	77	26	7	.1	171	7.4	.74
Mar. 9, 1966...	66	32	9.2	.09	.93	30	12	6.4	.3	69	0	71	3.9	.3	1.1	.03	184	123	66	10	.3	280	7.2	1.6
May 18.....	240	55	6.0	.15	.28	14	4.9	2.7	.8	38	0	27	.6	.3	.4	.04	B77	55	24	9	.2	129	7.1	.34
Sept. 14.....	81	50	8.9	.55	.49	28	10	3.4	.9	83	0	48	2.4	.4	.8	.01	143	110	42	6	.1	242	7.4	.62
Jan. 18, 1967..	E58	32	11	.14	.65	30	11	5.6	1.4	78	0	68	1.5	.3	1.8	.02	172	120	56	9	.2	276	7.1	1.0
June 7.....	673	46	4.5	.11	.15	6.4	6.1	1.8	.7	29	0	18	1.2	.6	.5	.02	60	41	17	9	.1	97	6.7	.29
7-0845. LAKE CREEK ABOVE TWIN LAKES RESERVOIR (lat 39°03'45", long 106°24'20")																								
July 8, 1965...	970	46	3.7	0.31	0.07	7.6	0.7	2.9	0.5	26	0	6.6	0.9	0.1	0.1	0.02	B37	22	1	22	0.3	62	7.1	0.06
Sept. 22.....	125	35	4.5	.33	.02	12	1.7	1.1	.3	25	0	19	1.0	.3	.1	.02	49	38	18	6	.1	90	7.0	.03
May 18, 1966...	462	46	4.2	.28	.04	8.3	1.4	1.2	.4	24	0	10	.1	.1	.3	.02	B38	26	7	9	.1	63	7.2	.01
LAKE CREEK BELOW TWIN LAKES RESERVOIR (lat 39°04'41", long 106°17'57")																								
July 8, 1965...	898	57	4.6	0.40	0.05	11	1.2	4.2	0.5	35	0	13	1.2	0.2	0.2	0.00	53	32	3	22	0.3	89	7.3	0.04
Sept. 22.....	62	50	4.4	.28	.01	9.6	1.2	.9	.6	25	0	9.9	.6	.1	.1	.02	B40	29	8	6	.1	73	6.6	.02
Mar. 8, 1966...	A15	36	5.1	.11	.01	12	1.6	1.9	.2	30	0	17	.9	.3	.1	.02	B54	37	12	10	.1	88	7.1	.00
May 18.....	172	51	4.4	.08	.01	10	2.2	1.4	.4	25	0	17	.2	.2	.1	.02	B48	34	13	8	.1	77	7.0	.02
7-0860. ARKANSAS RIVER AT GRANITE (lat 39°02'38", long 106°15'55")																								
July 8, 1965...	2120	56	4.8	0.67	0.14	10	2.9	3.1	0.6	39	0	14	1.8	0.4	0.1	0.01	54	38	6	15	0.2	99	7.2	0.27
Sept. 22.....	292	40	7.0	.22	.38	17	5.6	2.5	.7	57	0	25	1.9	.4	.2	.00	88	66	19	8	.1	152	7.1	.64
Mar. 8, 1966...	100	32	9.2	.15	.68	28	10	6.5	.4	71	0	58	3.9	.3	1.7	.03	163	112	54	11	.3	257	7.2	.90
May 18.....	475	53	5.7	.12	.17	13	4.0	2.2	.6	36	0	22	.2	.3	.4	.03	61	49	19	9	.1	113	7.5	.25
Sept. 14.....	140	49	7.6	.11	.29	21	6.3	3.0	.6	65	0	33	1.9	.3	.6	.05	109	78	25	8	.1	182	7.3	.38
Jan. 19, 1967..	A80	32	11	.09	.54	29	11	6.2	1.4	86	0	60	1.4	.3	1.9	.03	170	117	46	10	.2	267	7.1	1.1
June 6.....	1300	53	4.8	.04	.11	10	3.6	2.0	.7	32	0	15	1.5	.3	.2	.02	60	40	14	10	.1	97	6.8	.20
7-0872. ARKANSAS RIVER AT BUENA VISTA (lat 38°50'55", long 106°07'25")																								
Mar. 8, 1966...	116	37	9.1	0.22	0.39	26	7.8	4.9	0.4	67	0	47	1.8	0.3	1.2	0.02	140	96	41	10	0.2	218	7.2	0.65
May 18.....	562	52	5.8	.33	.15	14	3.5	2.5	.7	39	0	20	.2	.3	.1	.02	63	50	18	10	.2	116	7.3	.14
Sept. 14.....	220	52	7.3	.24	.07	20	4.6	2.7	.6	61	0	27	1.5	.3	.1	.02	92	70	20	8	.1	158	7.4	.20
Jan. 19, 1967..	96	32	11	.04	.25	30	7.1	5.8	1.4	80	0	48	1.6	.3	2.3	.00	147	103	37	11	.2	238	7.3	.62
June 6.....	1700	53	4.8	.04	.10	8.0	5.1	2.0	.7	33	0	14	1.4	.5	.2	.03	60	41	14	9	.1	99	6.7	.18

A Estimated discharge.
B Calculated from determined constituents.
E Daily mean discharge.

SPECTROGRAPHIC ANALYSES OF HEAVY METALS IN SOLUTION, ARKANSAS RIVER BASIN

(Concentrations in micrograms per liter)

Date	Aluminum (Al)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Germanium (Ge)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Rubidium (Rb)	Strontium (Sr)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
7-0792. LEADVILLE DRAIN AT LEADVILLE (lat 39°16'28", long 106°17'18")																				
7- 7-65	21	--	<1.3	<0.67	<3.3	<3.3	7.0	<3.3	<0.67	980	<3.3	--	9,000	<0.67	8.7	--	--	8.7	8.0	18,500
3- 7-66	89	--	<1.1	<.56	<2.8	<2.8	7.8	50	<.56	444	<2.8	--	3,000	<.56	8.9	--	--	3.1	2.1	30,000
5-17-66	37	--	<1.3	<.67	<3.3	<3.3	11	<3.3	<.67	880	213	--	15,200	<.67	9.3	--	--	<1.3	.8	17,600
9- 3-66	9	90	<7	--	--	<15	<15	7	--	1,600	<7	4	4,000	<4	17	<5	140	<15	<20	6,200
1-18-67	20	75	<4	--	--	<15	<20	<4	--	1,600	<20	2	3,800	<8	<15	<2	170	<15	<20	6,400
6- 6-67	24	75	<.5	--	--	<.9	<5	2	--	1,500	<5	3	5,000	<2	4	<3	180	<6	<6	12,000
ARKANSAS RIVER AT BRIDGE ON U.S. HIGHWAY 24, NEAR LEADVILLE (lat 39°16'21", long 106°18'21")																				
9-21-65	52	--	<1.0	<0.50	<2.5	<2.5	<5.5	<2.5	<0.50	142	6.0	--	487	16	14	--	--	<1.0	<0.50	1,950
3- 7-66	35	--	<1.1	<.56	<2.8	<2.8	3.6	11	<.56	28	<2.8	--	206	4.3	2.6	--	--	1.8	<.56	5,200
5-17-66	75	--	<1.0	<.50	<2.5	<2.5	<2.5	15	<.50	27	10	--	600	42	2.1	--	--	<1.0	<.50	500
9-13-66	40	120	<3	--	--	<6	<6	2	--	13	<3	3	850	15	<6	3	110	<6	<8	840
1-18-67	13	110	<2	--	--	<8	<10	<2	--	30	<10	2	1,300	<4	<8	<2	120	<8	<10	2,100
6- 6-67	100	60	<.07	--	--	<.2	<.6	13	--	60	2	1	200	16	1	2	60	<1	<1	300
TENNESSEE CREEK NEAR LEADVILLE (lat 39°15'51", long 106°20'26")																				
9-21-66	<2.5		<1.0	<0.50	<2.5	<2.5	<2.5	<2.5	<0.50	550	7.0		<2.5	<0.50	2.2			<1.0	<0.50	10
ARKANSAS RIVER AT MALTA (lat 39°13'23", long 106°21'21")																				
7- 8-65	37	--	<1.3	<0.67	<3.3	<3.3	<3.3	15	<0.67	27	<3.3	--	120	4.9	1.0	--	--	<1.3	<0.67	140
9-21-65	22	--	<1.0	<.50	<2.5	<2.5	<2.5	<2.5	<.50	190	<2.5	--	68	7.0	1.2	--	--	<1.0	<.50	480
3- 8-66	40	--	<1.1	<.56	<2.8	<2.8	<2.8	13	<.56	42	<2.8	--	51	2.4	2.2	--	--	3.1	<.56	367
5-18-66	30	--	<1.0	<.50	<2.5	<2.5	<2.5	<2.5	<.50	38	<2.5	--	195	13	1.9	--	--	1.2	<.50	120
1-18-67	13	100	<2	--	--	<6	<8	<2	--	30	<8	2	460	<3	<6	<0.9	110	<6	<8	690
6- 6-67	70	40	.04	--	--	<.1	<.5	8	--	70	<.5	1	85	8	.6	1	40	<1	<1	200
CALIFORNIA GULCH AT LEADVILLE (lat 39°14'12", long 106°16'46")																				
1-19-67	20	35	<3			<10	<13	<3		20	<13	15	5,400	<5	13	8	160	<10	<13	7,500
7-0818. CALIFORNIA GULCH AT MALTA (lat 39°13'22", long 106°21'12")																				
7- 8-65	3,300	--	<1.3	<0.67	<3.3	57	35	7,000	<0.67	34,000	170	--	340,000	<0.67	67	--	--	6.7	3.7	230,000
9-21-65	<2.5	--	<1.0	<.50	<2.5	<2.5	72	1,450	<.50	1,650	<2.5	--	>8,500	<.50	69	--	--	<1.0	19	>40,000
3- 8-66	250	--	<1.1	<.56	<2.8	<2.8	29	183	<.56	1,330	133	--	667	<.56	23	--	--	5.6	4.0	32,200
5-18-66	53	--	<1.3	<3.3	<3.3	<3.3	27	<3.3	<.67	2,300	<3.3	--	>20,800	<.67	29	--	--	8.7	11	88,000
9-13-66	12	45	<7	--	--	<15	16	12	--	75	<7	14	8,000	9	25	10	170	<15	<18	6,600
1-18-67	55	35	<3	--	--	<10	<13	4	--	75	<13	11	4,800	9	11	8	150	<10	<13	6,700
6- 6-67	20	40	<.3	--	--	<.5	3	6	--	20	<3	8	5,000	3	8	4	130	<3	<3	11,000
7-0837. ARKANSAS RIVER NEAR MALTA (lat 39°10'05", long 106°19'25")																				
7- 8-65	24	--	<1.3	<0.67	<3.3	<3.3	<3.3	22	<0.67	100	<3.3	--	253	2.4	1.0	--	--	<1.3	<0.67	800
9-22-65	11	--	<1.0	<.50	<2.5	<2.5	<2.5	<2.5	<.50	140	<2.5	--	32	<.50	12	--	--	<1.0	<.50	1,950
3- 9-66	14	--	<1.1	<.56	<2.8	<2.8	4.3	<2.8	<.56	78	<2.8	--	167	<.56	4.7	--	--	<1.1	<.56	3,440

SPECTROGRAPHIC ANALYSES OF HEAVY METALS IN SOLUTION, ARKANSAS RIVER BASIN--Continued

(Concentrations in micrograms per liter)

Date	Aluminum (Al)	Barium (Ba)	Beryl-lium (Be)	Bis-muth (Bi)	Cad-mium (Cd)	Chro-mium (Cr)	Cobalt (Co)	Copper (Cu)	Germa-nium (Ge)	Iron (Fe)	Lead (Pb)	Lith-ium (Li)	Manganese (Mn)	Molyb-denum (Mo)	Nickel (Ni)	Rubid-ium (Rb)	Stron-tium (Sr)	Tita-nium (Ti)	Vana-dium (V)	Zinc (Zn)
7-0837. ARKANSAS RIVER NEAR MALTA--Continued																				
5-18-66	33	--	<1.0	<0.50	<2.5	<2.5	<2.5	11	<0.50	70	<2.5	--	500	4.8	1.9	--	--	<1.0	<0.50	345
9-14-66	17	90	<2	--	--	<5	<5	1	--	30	3	9	600	3	4	2	90	<5	<6	830
1-18-67	10	50	<2	--	--	<5	<6	<2	--	25	<6	9	600	<3	<5	1	96	<5	<6	1,200
6- 7-67	35	35	<.05	--	--	.1	<.5	4	--	70	<.5	2	110	3	.5	1	40	<1	<1	300
7-0860. ARKANSAS RIVER AT GRANITE (lat 39°02'38", long 106°15'55")																				
1-19-67	5	55	<2			6	<6	<2		10	30	7	400	<3	<5	0.7	100	<5	<6	1,100
6- 6-67	45	40	<.05			.3	<.5	4		70	2	2	70	3	<.7	1	70	<1	<1	200
7-0872. ARKANSAS RIVER AT BUENA VISTA (lat 38°50'55", long 106°07'25")																				
1-19-67	12	45	<1			<4	<5	1		8	<5	5	270	3	<4	<0.6	130	<4	<5	640
6- 6-67	45	35	<.05			<.1	<.5	3		55	2	1	55	4	.5	1	80	<1	<1	200

RIO GRANDE BASIN

8-2492. RIO GRANDE ABOVE CULEBRA CREEK, NEAR LOBATOS, COLO.

LOCATION.--Lat 37°16'00", long 105°44'00", 0.5 mile southeast of La Sauses, 7 miles upstream from Culebra Creek, and 14 miles upstream from gaging station which is 10 miles east of Lobatos, Canejos County.
DRAINAGE AREA.--7,700 square miles, approximately, upstream from gaging station (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1967.
Water temperatures: July 1964 to January 1966.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). This station was converted from daily to a monthly in February 1966. The daily mean discharge listed is that reported for the gaging station near Lobatos, Colo.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 (calculated)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 20, 1966....	115	30	--	35	6.2	35	--	148	0	51	8.7	0.6	0.1	--	240			113	0	1.4	367	7.3
Nov. 22.....	410	26	--	30	5.4	19	--	99	0	47	5.0	.2	.1	--	182			97	16	.8	278	7.1
Dec. 11.....	242	28	--	33	5.7	24	--	101	0	60	8.8	.2	.9	--	211			106	23	1.0	302	7.5
Jan. 24, 1967....	240	35	--	31	4.0	17	--	108	0	32	4.8	.3	2.7	--	180			94	6	.8	261	7.0
Feb. 23.....	305	31	--	40	6.1	14	--	133	0	36	5.1	.1	.6	--	198			125	16	.5	311	7.3
Mar. 29.....	142	32	--	55	11	56	--	148	0	148	20	.5	.7	--	396			184	62	1.8	599	7.4
Apr. 24.....	65	29	--	64	12	70	--	152	0	194	23	.7	.6	--	468			210	86	2.1	688	7.5
May 17.....	60	30	--	59	13	48	--	144	0	159	13	.5	.2	--	394			200	82	1.5	579	7.5
June 22.....	664	26	0.02	38	7.5	35	5.0	122	0	86	12	.4	.3	0.06	270			126	26	1.4	424	6.9
July 22.....	230	29	--	53	11	57	--	171	0	129	18	.7	1.3	--	383			179	39	1.9	584	7.5
Aug. 17.....	808	23	--	27	5.2	19	--	85	0	50	5.5	.2	.6	--	172			89	20	.9	266	7.4
Sept. 24.....	82	26	.00	47	9.4	39	5.1	148	0	97	12	.5	.0	.09	309			156	34	1.4	464	7.0

COLORADO RIVER MAIN STEM

9-0345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.

LOCATION.--Lat 40°04'27", long 106°06'24", at bridge at Hot Sulphur Springs, Grand County, 1 mile downstream from gaging station, and 3.5 miles upstream from Beaver Creek.
DRAINAGE AREA.--625 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: April 1947 to September 1967.
Water temperatures: April 1949 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 167 ppm Jan. 25-28; minimum, 54 ppm Jan. 7-8.
Hardness: Maximum, 98 ppm Feb. 12-16; minimum, 28 ppm Jan. 7-8.
Specific conductance: Maximum daily, 254 micromhos Jan. 28; minimum daily, 58 micromhos Jan. 12.
Water temperatures: Maximum, 72°F July 20; minimum, freezing point on many days during November to March.
EXTREMES, 1947-67.--Dissolved solids (1947-50, 1952-67): Maximum, 167 ppm Jan. 25-28, 1967; minimum, 38 ppm June 21-30, 1947.
Hardness (1947-50, 1952-67): Maximum, 98 ppm Feb. 12-16, 1967; minimum, 20 ppm June 21-30, 1947.
Specific conductance: Maximum daily, 254 micromhos Jan. 28, 1967; minimum daily, 48 micromhos June 27, 1947.
Water temperatures (1949-67): Maximum, 75°F Aug. 8, 1957, July 6, 11, 14, 21, 1966; minimum, freezing point on many days during winter months.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium (Na).

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 1-15, 1966...	70.2					8.9		86	0	6.8	1.2				86	0.12	16.2	60	0	0.5	153	7.6
Oct. 16-31.....	70.1					9.5		86	0	8.2	1.2				84	.11	15.8	60	0	.5	148	7.5
Nov. 1-30.....	64.0					9.5		73	0	10	1.7				97	.13	16.7	52	0	.6	145	7.8
Dec. 1-8.....	62.5					11		77	0	8.9	2.5				88	.12	14.8	52	0	.7	131	7.6
Dec. 9-31.....	63.0					11		62	0	11	2.2				96	.13	16.2	58	0	.6	146	7.6
Jan. 1-6, 1967....	60.0					13		87	0	12	3.2				105	.14	17.0	60	0	.7	162	7.7
Jan. 7-8.....	55.0					5.2		39	0	5.0	1.5				54	.07	8.00	28	0	.4	66	8.1
Jan. 9-10.....	55.0					14		65	0	11	3.2				104	.14	15.5	55	0	.8	160	7.4
Jan. 11-17.....	52.9					8.6		52	0	8.5	2.3				68	.09	9.70	36	0	.6	98	7.8
Jan. 18-24.....	54.9					12		83	0	11	2.6				107	.15	15.8	57	0	.7	160	7.6
Jan. 25-28.....	55.0					16		129	0	18	4.5				167	.23	24.7	96	0	.7	250	7.4
Jan. 29-31.....	56.7					13		84	0	10	3.8				106	.14	16.1	56	0	.8	161	7.6
Feb. 1-11.....	55.5					6.6		90	0	3.6	3.7				108	.15	16.1	64	0	.5	169	7.5
Feb. 12-16.....	55.6					14		130	0	14	5.0				162	.22	24.2	98	0	.6	250	7.5
Feb. 17-28.....	55.0					11		84	0	12	2.4				98	.13	14.5	60	0	.6	153	7.4
Mar. 1-22.....	72.9					7.8		88	0	12	3.0				113	.15	22.2	72	0	.4	160	7.7
Mar. 23-31.....	149					8.6		82	0	11	2.9				107	.15	43.0	64	0	.5	153	7.4
Apr. 1-3.....	176					8.9		86	0	12	3.0				121	.16	57.5	68	0	.5	162	7.5
Apr. 4-18.....	252					9.8		78	0	10	2.8				109	.15	74.1	57	0	.6	145	7.6
Apr. 19-27.....	198					5.8		74	0	12	2.5				103	.14	55.0	64	3	.3	137	7.5
Apr. 28-30.....	236					3.8		68	0	8.8	2.4				97	.13	61.7	60	4	.2	123	7.7
May 1-8.....	229					5.0		64	0	7.6	1.7				80	.11	49.5	52	0	.3	119	7.6
May 9-21.....	321					5.1		52	0	5.6	1.9				72	.10	62.3	40	0	.3	98	7.4
May 22-26.....	518					5.4		46	0	4.3	2.5				63	.09	86.0	34	0	.4	83	7.2
May 27-31.....	564					3.5		52	0	4.7	1.5				72	.10	110	42	0	.2	96	7.0
June 1-10.....	442					5.8		58	0	4.7	1.5				85	.12	101	42	0	.4	107	7.4
June 11-19.....	426					6.3		77	0	4.5	1.3				102	.14	117	56	0	.4	135	7.7
June 20-30.....	681					3.7		60	0	2.9	1.4				86	.12	158	46	0	.2	107	7.5
July 1-15.....	533					5.6		62	0	5.0	1.5				83	.11	127	46	0	.4	111	6.9
July 16-31.....	342					6.1		74	0	5.0	1.0				90	.12	83.0	54	0	.4	130	7.2
Aug. 1-17.....	130					8.6		88	0	6.0	1.6				101	.14	35.5	62	0	.5	151	7.2
Aug. 18-31.....	99.6					7.0		80	0	5.5	1.4				100	.14	26.8	58	0	.4	143	7.2

COLORADO RIVER MAIN STEM--Continued

9-0345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Sept. 1-11, 1967..	69.7					7.8		84	0	6.3	1.1				89	0.12	16.7	60	0	0.4	145	7.1
Sept. 12-20.....	80.9					7.9		83	0	6.3	1.1				90	.12	19.6	59	0	.4	145	7.2
Sept. 21-30.....	69.6					8.1		83	0	6.8	1.1				88	.12	16.5	59	0	.5	147	7.9
Weighted average	--					6.6		69	--	6.4	1.8				90	0.12	44.0	52	0	0.4	125	7.3
Time-weighted average.....	181					8.3		78	--	8.1	2.0				96	--	--	57	0	0.5	141	7.4
Tons per day....	--					3.2		34	--	3.1	0.9				--	--	--	--	--	--	--	--

9-0345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	156	148	149	177	160	145	160	133	108	94	145	151
2.....	154	148	145	173	158	164	160	115	96	95	154	150
3.....	156	147	111	172	247	144	165	119	96	98	150	150
4.....	158	148	95	173	162	145	137	119	96	108	154	143
5.....	153	153	87	160	160	163	134	121	101	110	150	144
6.....	155	148	117	120	160	160	136	117	103	108	152	140
7.....	151	148	162	62	160	164	150	122	--	112	147	145
8.....	152	148	133	70	161	165	145	114	107	117	152	146
9.....	154	148	154	158	159	163	144	104	119	118	151	138
10.....	151	143	119	162	160	162	144	100	120	115	138	144
11.....	150	142	122	78	158	145	130	96	129	114	145	—
12.....	142	148	117	58	247	161	140	95	130	114	148	--
13.....	149	142	154	102	252	146	151	97	--	110	144	141
14.....	148	148	167	158	250	162	137	106	--	109	150	155
15.....	149	148	129	63	245	164	150	98	--	119	147	145
16.....	149	141	116	69	247	165	151	100	143	126	143	145
17.....	149	145	160	109	149	163	150	100	143	126	150	146
18.....	150	150	167	159	144	165	147	90	138	127	140	142
19.....	150	142	147	163	144	164	135	90	127	127	139	137
20.....	151	150	134	161	144	165	127	96	115	125	145	143
21.....	148	147	138	142	144	162	131	95	108	92	138	145
22.....	149	142	133	162	146	145	135	77	90	122	140	148
23.....	148	142	128	161	145	146	134	82	138	124	140	145
24.....	144	141	147	161	145	148	137	83	139	--	140	146
25.....	144	115	129	243	165	148	134	87	95	134	137	142
26.....	144	158	111	243	166	160	138	77	94	141	141	148
27.....	142	126	140	252	170	152	136	90	90	141	145	146
28.....	148	151	93	254	149	161	127	93	97	148	143	147
29.....	150	125	126	163	--	146	122	90	103	140	137	140
30.....	149	126	169	160	--	160	120	92	95	126	136	151
31.....	149	--	174	160	--	146	--	107	--	136	142	--
Average	149	143	134	149	174	156	140	100	112	119	144	145

COLORADO RIVER MAIN STEM--Continued

9-0345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	59	59	62	62	63	64	58	52	54	55	52	52	45	46	45	48	47	46	45	46	46	45	46	45	44	44	43	45	44	42	41	50
November	41	41	38	36	38	36	38	38	36	32	34	38	33	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	--	34
December	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March	32	32	33	32	33	33	33	34	34	--	34	33	32	33	38	38	38	34	36	38	36	38	38	38	36	35	38	40	37	39	40	36
April	42	42	43	44	42	45	45	46	45	48	47	43	43	45	45	42	50	52	46	44	40	39	43	45	42	49	51	53	53	37	--	45
May	40	48	43	46	43	43	52	54	53	48	49	51	46	44	54	50	55	48	50	58	56	56	60	56	55	55	55	51	53	52	56	51
June	56	57	58	56	57	56	--	58	56	57	54	55	--	--	--	62	62	59	57	57	60	62	57	58	57	58	60	55	61	62	--	58
July	63	62	61	62	63	62	60	65	67	65	65	66	64	57	60	59	62	67	65	72	70	62	60	--	68	67	65	67	67	67	67	64
August	68	69	65	67	67	67	67	70	66	65	67	67	66	65	63	64	62	62	62	62	60	62	62	67	63	65	65	65	59	57	57	64
September	57	63	64	63	60	57	57	62	57	57	--	--	56	57	57	57	59	47	--	47	52	60	62	62	62	60	57	56	58	56	--	58

EAGLE RIVER BASIN

9-0690. EAGLE RIVER AT GYPSUM, COLO.

LOCATION.--Lat 39°39'00", long 106°57'06", at bridge at Gypsum, Eagle County, about 400 feet upstream from Gypsum Creek, about 520 feet upstream from bridge on U.S. Highways 6 and 24, and about 550 feet upstream from gaging station.
DRAINAGE AREA.--844 square miles.
RECORDS AVAILABLE.--Chemical analyses: April 1947 to September 1967.
Water temperatures: April 1949 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 743 ppm Aug. 24-31; minimum, 125 ppm June 1-13.
Hardness: Maximum, 428 ppm Dec. 1-31; minimum, 100 ppm June 1-13.
Specific conductance: Maximum daily, 1,200 micromhos Sept. 7; minimum daily, 189 micromhos May 27.
Water temperatures: Maximum, 65°F July 26; minimum, freezing point on many days during December to February.
EXTREMES, 1947-67.--Dissolved solids: Maximum, 1,370 ppm Aug. 11, 12, 1952; minimum, 102 ppm May 26-31, 1961.
Hardness (1947-50, 1957-67): Maximum, 600 ppm Dec. 7-9, 1964; minimum, 70 ppm June 23, 1957.
Specific conductance: Maximum daily, 1,850 micromhos Aug. 6, 1949; minimum daily, 155 micromhos May 23, 1958.
Water temperatures (1949-67): Maximum, 76°F Aug. 24, 1949; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Maximum observed during water year: Dissolved solids, 773 ppm Aug. 30. Records of discharge are given for Eagle River below Gypsum, Colo.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C): Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 1-13, 1966...	181					74		172	10	288	80				697	0.95	341	410	252	1.6	1030	8.4
Oct. 14-31.....	232					65		184	0	272	72				655	.89	410	394	243	1.4	987	7.8
Nov. 1-11.....	203					77		190	0	299	80				710	.97	389	412	256	1.7	1050	8.0
Nov. 12-30.....	189					76		182	0	286	74				674	.92	344	386	237	1.7	1010	7.9
Dec. 1-31.....	169					65		188	0	304	70				708	.96	323	428	274	1.4	1020	7.8
Jan. 1-16, 1967...	160					63		184	0	291	70				695	.95	300	416	265	1.3	973	7.9
Jan. 17.....	140					59		164	0	242	58				576	.78	218	340	206	1.4	818	7.9
Jan. 18-31.....	152					68		176	0	288	74				678	.92	278	400	256	1.5	973	7.9
Feb. 1-16.....	152					70		176	0	289	88				693	.94	284	416	272	1.5	1020	7.7
Feb. 17-28.....	150					69		176	0	284	78				666	.91	270	400	256	1.5	980	7.8
Mar. 1-11.....	167					58		168	0	279	72				674	.92	304	404	266	1.3	977	7.9
Mar. 12-26.....	202					59		156	0	265	62				591	.80	322	364	236	1.3	864	8.0
Mar. 27-31.....	222					44		144	0	202	45				475	.65	285	296	178	1.1	712	8.0
Apr. 1-5.....	246					34		144	0	183	35				456	.62	303	284	166	.9	685	7.5
Apr. 6-16.....	331					28		126	0	133	29				355	.48	317	222	119	.8	527	7.6
Apr. 17-30.....	316					30		122	0	127	30				352	.48	300	210	110	.9	514	7.5
May 1-3.....	339					21		114	0	96	27				281	.38	257	186	92	.7	445	7.5
May 4-9.....	268					30		130	0	124	36				348	.47	252	222	115	.9	544	7.5
May 10-18.....	451					18		118	0	80	20				257	.35	313	168	71	.6	390	7.4
May 19-24.....	1221					6.0		118	0	38	6.3				171	.23	564	132	35	.2	276	7.2
May 25-31.....	1827					8.3		84	0	33	11				134	.18	661	101	32	.4	215	7.2
June 1-13.....	1775					7.4		84	0	37	6.0				125	.17	599	100	31	.3	219	7.7
June 14-30.....	1632					6.2		80	0	49	9.1				145	.20	639	116	50	.2	264	7.1
July 1-9.....	1173					11		84	0	60	17				188	.26	595	132	63	.4	329	7.3
July 10-19.....	804					30		112	0	104	38				288	.39	625	188	96	1.0	483	7.6
July 20-25.....	538					41		130	0	126	60				390	.53	567	232	125	1.2	635	7.8
July 26-31.....	367					43		142	0	114	86				473	.64	469	264	147	1.2	769	7.9
Aug. 1-12.....	303					80		160	0	191	98				561	.76	459	294	163	2.0	876	7.5
Aug. 13-23.....	238					90		148	0	225	119				628	.85	404	328	207	2.2	1020	7.8
Aug. 24-31.....	201					103		186	0	253	136				743	1.01	403	384	231	2.3	1140	7.9

9-0690. EAGLE RIVER AT GYPSUM, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C) Parts per million	Dissolved solids Tons per acre-foot	Dissolved solids Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Hardness as $CaCO_3$ Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Sept. 1-12, 1967..	226					88		178	0	235	122				708	0.96	432	372	226	2.0	1080	8.0
Sept. 13-14.....	335					56		142	0	174	72				495	.67	448	278	162	1.5	764	7.4
Sept. 15-30.....	280					76		172	0	233	102				659	.90	498	362	221	1.7	997	7.5
Weighted average	--					31		119	--	123	38				337	0.45	397	212	114	0.8	526	7.4
Time-weighted average.....	436					54		153	--	209	64				532	--	--	315	189	1.3	798	7.6
Tons per day....	--					37		141	--	145	44				--	--	--	--	--	--	--	--

Analyses of additional samples

Dec. 1, 1966.....	A178	8.5		120	31	47	2.6	188	0	272	66	0.3	1.2	0.04	661	0.90	318	426	272	1.0	965	7.9
Mar. 1, 1967.....	A144	11		98	43	53	3.1	178	0	260	78	.3	.6	.03	688	.94	267	420	274	1.1	1000	7.7
May 22.....	A1270	6.7		45	7.8	4.8	.9	126	0	36	5.5	.2	.2	.06	187	.25	641	144	41	.2	283	7.2
Aug. 30.....	A195	9.1		113	29	95	3.5	190	0	253	145	.5	.8	.03	773	1.05	407	400	244	2.1	1140	7.7

A Discharge at time of sampling.

9-0690. EAGLE RIVER AT GYPSUM, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1080	1030	972	990	976	985	770	451	242	268	874	1130
2.....	1100	1040	984	987	942	947	738	399	228	272	859	908
3.....	974	1070	981	963	1080	936	562	484	230	287	854	1030
4.....	971	1060	966	997	1010	930	704	520	199	321	880	1070
5.....	1120	1040	972	984	1080	947	654	547	205	318	900	1130
6.....	987	1060	907	963	1080	970	568	570	196	350	940	1160
7.....	965	1080	1050	981	1030	985	553	543	204	386	947	1200
8.....	1050	1040	887	1020	991	1000	490	556	194	373	839	1180
9.....	1020	1030	966	1060	1080	1050	551	526	201	362	886	911
10.....	981	1020	1140	997	1000	970	503	416	198	427	832	1180
11.....	1040	1030	1160	966	982	944	491	361	232	460	806	981
12.....	1060	997	1010	966	928	880	499	390	250	465	863	1010
13.....	1060	1000	1000	954	956	915	499	378	264	456	991	708
14.....	962	1000	1060	954	931	936	502	360	297	496	958	820
15.....	962	993	1020	951	950	933	525	354	301	513	1000	903
16.....	959	997	1040	945	1080	947	556	416	312	473	961	960
17.....	950	981	1020	818	934	930	487	430	290	497	1010	1050
18.....	933	987	997	1030	1000	884	518	409	278	494	1050	1030
19.....	947	987	1050	997	910	780	519	317	230	530	1010	997
20.....	981	1010	1010	975	991	791	487	297	237	573	1010	1040
21.....	990	1010	1100	948	988	814	452	285	229	617	1040	955
22.....	981	990	1010	972	985	831	483	246	242	643	1040	978
23.....	971	1000	1010	951	988	767	507	263	234	659	1030	1010
24.....	1010	990	1050	954	931	839	537	235	222	660	1070	991
25.....	1010	1030	991	951	985	721	558	208	225	636	1070	1040
26.....	1010	1040	1010	969	961	839	598	210	242	693	1130	1000
27.....	1010	1030	981	951	979	708	574	189	257	720	1150	946
28.....	997	1060	1010	951	988	719	587	209	264	746	1150	960
29.....	1000	1030	1000	963	--	729	516	213	293	787	1180	1020
30.....	1040	978	1020	960	--	685	426	220	290	831	1140	1030
31.....	1040	--	978	940	--	692	--	216	--	838	1130	--
Average	1010	1020	1010	968	990	871	547	361	242	521	987	1010

EAGLE RIVER BASIN--Continued

9-0690. EAGLE RIVER AT GYPSUM, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	47	47	46	47	48	49	52	49	53	44	43	44	43	40	41	42	40	41	42	43	41	41	44	42	41	42	43	42	47	46	44	44
November	42	41	43	40	41	42	41	40	44	43	40	41	42	42	41	40	42	45	45	45	45	38	41	42	40	37	38	37	38	41	--	41
December	41	40	41	42	38	37	35	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	34	32	33	34	32	32	33	34	32	32	32	33	34	33	33	32
February	34	33	33	33	34	32	32	32	33	33	33	33	32	32	32	33	32	32	33	32	32	32	33	32	33	34	32	34	--	--	--	33
March	41	35	39	40	39	38	35	37	36	37	39	39	40	39	42	41	41	42	41	42	40	41	41	42	40	41	40	41	42	37	41	40
April	40	42	42	43	42	41	46	46	45	46	45	46	45	46	45	45	44	45	44	40	39	40	44	45	49	51	50	49	46	48	--	45
May	48	47	50	46	45	46	47	48	48	49	51	51	52	54	53	55	53	56	53	49	50	49	46	45	47	46	46	45	45	50	49	49
June	48	47	40	50	46	49	51	49	50	50	49	46	48	53	52	52	52	50	50	50	48	50	50	49	52	54	55	54	52	47	--	50
July	53	54	54	55	56	54	55	56	56	53	53	55	56	56	57	57	56	54	56	54	57	56	61	57	57	65	57	54	54	57	60	56
August	59	60	54	53	59	60	60	57	58	56	56	59	57	56	54	59	55	56	54	60	56	57	59	58	59	58	60	60	49	62	54	57
September	50	51	52	53	54	56	52	62	62	60	61	56	57	53	53	49	52	52	52	50	53	52	50	53	54	54	58	46	47	48	--	53

COLORADO RIVER MAIN STEM

9-0711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.
(Irrigation network station)

LOCATION.--Lat 39°34'12", long 107°13'34", at Shoshone powerplant, 6 miles upstream from Glenwood Springs, Garfield County, and 6.5 miles upstream from Roaring Fork River.
DRAINAGE AREA.--4,560 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1941 to September 1967.
Water temperatures: May 1949 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 1,030 ppm Sept. 26; minimum, 173 ppm June 1-10.
Hardness: Maximum, 628 ppm Sept. 26; minimum, 116 ppm June 1-10.
Specific conductance: Maximum daily, 1,320 micromhos Sept. 26; minimum daily, 243 micromhos May 26.
Water temperatures: Maximum, 68°F July 27; minimum, freezing point on many days during December, January, and March.
EXTREMES, 1941-67.--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 micromhos Aug. 10, 1947; minimum daily, 153 micromhos May 24, 1948.
Water temperatures (1949-67): Maximum, 71°F July 31, 1954, Aug. 19, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Discharges obtained by subtracting the daily mean flow in Roaring Fork River at Glenwood Springs from the daily mean flow in Colorado River below Glenwood Springs.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-16, 1966...	1261					64		140	0	107	87				423	0.58	1440	210	95	1.9	694	7.8
Oct. 17-31.....	1077					63		148	0	114	93				464	.63	1350	234	113	1.8	750	7.7
Nov. 1-12.....	930					76		154	0	133	100				499	.68	1250	240	114	2.1	798	7.9
Nov. 13-25.....	929					76		152	0	130	96				481	.65	1210	230	105	2.2	780	7.8
Nov. 26-30.....	847					77		152	0	126	102				488	.66	1120	232	107	2.2	790	7.7
Dec. 1-9.....	863					77		152	0	130	102				476	.65	1110	236	111	2.2	797	7.9
Dec. 10-23.....	618					115		160	6	154	160				635	.86	1060	276	135	3.0	1060	8.3
Dec. 24-31.....	712					93		156	0	126	130				533	.72	1020	240	112	2.6	896	8.2
Jan. 1-8, 1967....	723					82		140	0	112	118				485	.66	947	220	105	2.4	817	8.1
Jan. 9-11.....	701					101		158	0	127	144				561	.76	1060	244	114	2.8	939	7.9
Jan. 12-31.....	851					78		138	0	106	110				472	.64	1080	208	95	2.4	779	7.9
Feb. 1-14.....	796					84		140	0	107	114				461	.63	991	204	89	2.6	782	8.0
Feb. 15-28.....	827					79		132	0	103	112				453	.62	1010	202	94	2.4	770	8.0
Mar. 1-17.....	918					74		136	0	128	102				466	.63	1160	228	116	2.1	774	7.9
Mar. 18-31.....	1312					63		136	0	120	74				412	.56	1460	204	92	1.9	667	7.6
Apr. 1-6.....	1440					52		134	0	86	68				360	.49	1400	182	72	1.7	599	7.8
Apr. 7-14.....	1889					40		122	0	69	50				292	.40	1490	156	56	1.4	485	7.7
Apr. 15-30.....	1552					54		124	0	74	74				338	.46	1420	166	64	1.8	575	7.5
May 1-2.....	1690					54		116	0	88	61				295	.40	1350	156	61	1.9	506	7.4
May 3-8.....	1184					65		128	0	90	87				382	.52	1220	180	75	2.1	639	7.6
May 9-19.....	1858					47		124	0	67	62				309	.42	1550	156	54	1.6	515	7.7
May 20-22.....	3290					26		116	0	56	30				231	.31	2050	140	45	1.0	369	7.6
May 23-31.....	5826					14		108	0	36	18				180	.24	2830	120	31	.6	292	7.5
June 1-10.....	4928					18		104	0	41	20				173	.24	2300	116	31	.7	305	7.4
June 11-30.....	3828					24		107	0	61	28				227	.31	2350	139	51	.9	377	7.5
July 1-15.....	2555					37		129	0	77	45				299	.41	2060	169	63	1.2	488	7.6
July 16-21.....	2072					53		148	0	133	62				423	.58	2370	232	111	1.5	667	7.7
July 22-29.....	2002					50		132	0	96	63				362	.49	1960	189	81	1.6	593	7.7
July 30-31.....	1550					65		140	0	100	85				409	.56	1710	198	83	2.0	671	7.5
Aug. 1-15.....	1494					65		140	0	107	84				443	.60	1790	204	89	2.0	695	7.8

COLORADO RIVER MAIN STEM--Continued

9-0711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 16-31, 1967..	1433					64		122	0	92	84				401	0.55	1550	176	76	2.1	647	7.2
Sept. 1-15.....	1507					69		123	0	112	84				382	.52	1550	186	85	2.2	640	8.1
Sept. 16-25.....	1273					77		142	0	128	98				450	.61	1550	220	104	2.3	745	7.4
Sept. 26.....	1250					97		142	0	568	92				1030	1.40	3480	628	512	1.7	1320	7.7
Sept. 27-30.....	1281					76		146	0	128	97				453	.62	1570	224	104	2.2	746	7.5
Weighted average	--					50		126	--	87	65				344	0.46	1500	177	73	1.6	566	7.6
Time-weighted average.....	1622					64		135	--	103	84				408	--	--	199	88	1.9	672	7.7
Tons per day....	--					218		554	--	381	283				--	--	--	--	--	--	--	--

Analyses of additional samples

Dec. 1, 1966.....	932	9.7		63	17	66	2.5	146	0	109	93	0.4	0.5	0.05	455	0.62	1140	228	108	1.9	754	7.7
Mar. 1, 1967.....	840	9.6		51	20	70	2.9	134	0	120	103	.5	.2	.03	446	.61	1010	202	92	2.1	744	7.6
May 22.....	3780	9.4		42	11	22	2.1	135	0	49	28	.3	.3	.06	237	.32	2420	152	41	.8	391	7.3
Aug. 31.....	1520	8.5		48	12	55	2.6	121	0	85	78	.4	.5	.01	374	.51	1530	170	71	1.8	608	7.3

9-0711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	689	804	757	--	757	786	639	500	312	399	681	618
2.....	--	796	776	816	777	771	639	511	317	418	685	608
3.....	652	797	776	817	795	752	615	588	307	424	734	622
4.....	613	814	761	845	--	737	588	616	287	--	713	632
5.....	649	--	972	802	--	733	549	660	288	456	706	635
6.....	682	801	738	763	812	797	545	682	287	471	685	643
7.....	682	807	738	809	759	772	515	646	286	503	678	641
8.....	680	803	784	852	811	816	493	629	288	501	655	638
9.....	--	784	780	987	820	759	499	549	299	471	640	--
10.....	715	784	1200	955	776	742	486	528	312	503	674	668
11.....	723	791	--	875	--	709	454	463	349	561	670	613
12.....	724	786	1090	822	739	881	421	457	365	563	694	662
13.....	745	770	984	812	779	767	472	622	387	562	709	601
14.....	718	770	1030	755	718	721	515	452	409	592	717	610
15.....	--	776	1060	754	771	746	550	481	417	382	730	634
16.....	729	787	981	767	749	742	547	521	419	763	669	675
17.....	791	780	1050	794	786	783	572	539	410	610	641	697
18.....	761	778	1070	840	762	641	564	492	410	653	641	746
19.....	755	772	1070	840	722	683	580	538	366	631	658	715
20.....	754	772	1050	820	783	640	531	390	353	639	--	752
21.....	762	784	1040	--	795	685	511	366	329	681	653	729
22.....	733	781	1030	732	804	694	526	351	356	588	651	659
23.....	--	777	975	744	784	721	570	303	341	--	647	784
24.....	731	775	948	754	752	728	592	274	330	558	639	804
25.....	732	775	--	762	720	--	604	249	328	569	645	774
26.....	735	800	--	793	732	652	604	243	352	591	641	1320
27.....	738	783	894	756	749	658	616	249	367	590	641	757
28.....	--	820	848	778	764	641	620	268	375	608	657	740
29.....	--	777	887	749	--	666	601	273	397	620	646	742
30.....	770	770	--	747	--	613	517	293	399	665	618	725
31.....	797	--	884	739	--	624	--	288	--	677	628	--
Average	722	786	932	802	768	722	551	452	348	560	668	704

COLORADO RIVER MAIN STEM--Continued

9-0711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	54	--	50	50	50	51	51	54	--	50	49	49	49	47	--	45	43	42	42	42	42	43	--	41	42	42	42	--	--	42	42	46
November	40	38	38	40	--	40	39	41	36	38	38	38	38	38	38	39	40	39	38	39	39	40	40	40	39	37	34	33	35	36	--	38
December	38	40	42	41	41	36	35	33	33	34	--	34	32	32	32	32	32	32	32	32	32	32	32	32	--	--	32	33	33	--	32	34
January	--	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32	33	33	32	32	--	33	33	33	33	33	33	33	34	34	34	33
February	34	34	34	--	--	34	34	33	33	33	--	35	35	35	34	35	34	34	34	33	33	33	33	33	33	35	33	33	--	--	--	34
March	34	34	34	34	34	34	32	33	33	33	33	34	34	35	34	35	37	39	45	42	44	43	43	43	--	42	44	40	42	40	40	37
April	40	40	44	46	46	47	48	47	47	46	48	46	42	44	46	46	45	47	49	46	48	46	45	44	45	48	50	52	53	46	--	46
May	42	42	45	45	49	49	52	54	53	54	54	52	51	44	49	51	53	54	54	53	53	50	54	54	54	50	51	50	49	48	51	50
June	51	53	53	54	54	53	52	52	52	52	52	52	51	53	53	54	56	56	54	54	55	56	56	56	58	56	57	56	56	60	--	54
July	61	62	60	--	61	62	63	63	64	63	62	65	65	66	65	65	62	61	62	65	65	66	--	66	66	67	68	66	63	64	66	64
August	66	66	63	67	66	66	64	63	63	64	63	59	64	65	61	61	61	62	62	--	58	59	61	61	61	63	61	63	62	61	59	62
September	58	58	59	60	62	62	61	61	--	59	58	57	54	53	53	56	56	53	53	53	56	56	58	62	58	58	56	55	54	54	--	57

ROARING FORK RIVER BASIN

9-0850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.

LOCATION.--Lat 39°32'37", long 107°19'44", at gaging station at Glenwood Springs, Garfield County, 2,100 feet upstream from mouth.
DRAINAGE AREA (revised).--1,451 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1958 to August 1961, May 1962 to September 1967 (discontinued).
Water temperatures: May 1962 to September 1967 (discontinued).
EXTREMES, 1966-67.--Dissolved solids: Maximum, 483 ppm Nov. 1-14; minimum, 143 ppm May 23-27.
Hardness: Maximum, 306 ppm Oct. 1-31; minimum, 98 ppm June 4-10.
Specific conductance: Maximum daily, 870 micromhos Oct. 1; minimum daily, 203 micromhos May 25.
Water temperatures: Maximum, 70°F Aug. 1; minimum, freezing point on several days during December to January.
EXTREMES, 1962-67.--Dissolved solids: Maximum, 509 ppm Sept. 1-30, 1966; minimum, 124 ppm July 1-13, 1965.
Hardness: Maximum, 320 ppm Oct. 1-13, 1963; minimum, 93 ppm July 1-13, 1965.
Specific conductance: Maximum daily, 870 micromhos Oct. 1, 1966; minimum daily, 189 micromhos May 26, 1964.
Water temperatures: Maximum, 72°F July 30, 1966; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Maximum observed during water year: Hardness, 320 ppm Feb. 28. Minimum observed during water year: Dissolved solids, 135 ppm June 8.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1966...	500					41		198	0	153	54				476	0.65	643	306	145	1.0	732	7.8
Nov. 1-14.....	484					44		190	0	164	46				483	.66	631	296	140	1.1	716	7.8
Nov. 15-30.....	465					40		182	0	163	46				476	.65	598	296	147	1.0	718	7.9
Dec. 1-5.....	447					38		180	0	164	49				463	.63	559	304	156	.9	725	7.6
Dec. 6-8.....	653					33		164	0	145	38				405	.55	714	268	133	.9	624	7.5
Dec. 9-31.....	422					42		184	0	168	46				475	.65	541	300	149	1.1	721	7.7
Jan. 1-18, 1967...	396					37		180	0	163	41				454	.62	485	294	146	.9	701	7.7
Jan. 19.....	358					25		122	0	117	26				304	.41	294	204	104	.8	498	7.9
Jan. 20-31.....	354					35		166	0	159	39				436	.59	417	280	144	.9	678	7.9
Feb. 1-14.....	338					37		148	0	163	40				435	.59	397	268	147	1.0	664	8.0
Feb. 15-28.....	341					36		148	0	160	38				423	.58	389	264	143	1.0	647	8.1
Mar. 1-17.....	382					33		168	0	162	33				433	.59	447	280	142	.9	651	7.7
Mar. 18-31.....	457					29		150	6	141	25				382	.52	471	252	119	.8	579	8.4
Apr. 1-7.....	507					18		152	0	115	21				344	.47	471	234	109	.5	526	7.9
Apr. 8-30.....	603					19		140	0	96	20				294	.40	479	202	87	.6	461	7.9
May 1-9.....	346					31		144	0	126	36				358	.49	334	232	114	.9	557	7.5
May 10-17.....	853					16		128	0	84	18				256	.35	590	184	79	.5	407	7.5
May 18-22.....	2266					8.0		108	0	58	8.7				185	.25	1130	144	55	.3	300	7.4
May 23-27.....	4866					3.4		88	0	39	5.1				143	.19	1880	112	40	.1	230	7.3
May 28-31.....	3272					13		100	0	58	9.4				174	.24	1540	128	46	.5	284	7.6
June 1-3.....	2913					11		92	0	48	8.2				193	.26	1520	114	39	.4	266	7.3
June 4-10.....	4656					6.9		82	0	36	6.0				161	.22	2020	96	31	.3	219	7.5
June 11-17.....	3130					9.9		98	0	48	9.1				196	.27	1660	122	42	.4	271	7.5
June 18-30.....	4219					8.5		88	0	39	7.0				176	.24	2000	104	32	.4	239	7.4
July 1-8.....	3099					8.0		95	0	46	8.2				180	.24	1510	120	42	.3	275	7.5
July 9-19.....	2203					11		114	0	60	12				218	.30	1300	148	55	.4	342	7.8
July 20-25.....	1588					17		128	0	75	17				258	.35	1110	169	64	.6	400	8.0
July 26-31.....	1113					22		144	0	91	24				310	.42	932	199	81	.7	478	8.2
Aug. 1-14.....	885					28		162	0	106	31				347	.47	829	226	93	.8	545	8.0
Aug. 15-31.....	559					43		190	0	134	52				447	.61	675	274	118	1.1	694	7.4

9-0850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Sept. 1-15, 1967..	597					46		191	0	150	50				438	0.60	706	282	125	1.2	684	7.6
Sept. 16-30.....	670					44		182	0	147	48				427	.58	772	274	125	1.2	662	7.8
Weighted average	--					19		125	--	83	20				273	0.37	763	177	74	0.6	412	7.6
Time-weighted average.....	1036					30		157	--	126	34				375	--	--	241	112	0.8	574	7.7
Tons per day....	--					53		350	--	233	57				--	--	--	--	--	--	--	--

Analyses of additional samples

Nov. 29, 1966.....	A466	10		92	19	37	1.7	188	0	154	48	0.5	1.0	0.04	466	0.63	586	308	154	0.9	723	7.8
Feb. 28, 1967.....	A333	11		71	35	28	2.9	204	0	166	34	.4	.2	.04	468	.64	421	320	153	.7	701	7.4
June 8.....	A5250	5.4		30	5.8	4.4	.2	84	0	31	5.0	.2	.2	.04	135	.18	1910	100	31	.2	207	7.2
Aug. 23.....	A513	10		82	18	42	1.8	192	0	139	55	.5	.3	.02	459	.62	636	280	123	1.1	713	7.7

A Discharge at time of sampling.

9-0850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	870	714	710	690	640	638	569	436	292	247	496	649
2.....	784	736	722	694	679	644	551	526	262	269	515	683
3.....	827	723	717	726	676	653	549	527	245	267	542	718
4.....	778	721	723	687	662	662	522	562	221	272	542	699
5.....	778	723	728	689	659	681	501	598	219	277	576	717
6.....	762	722	649	654	676	696	490	604	223	280	576	737
7.....	744	722	557	711	632	638	484	616	220	292	576	733
8.....	741	712	666	776	680	670	465	613	218	292	508	700
9.....	740	689	714	778	678	631	440	532	220	316	489	716
10.....	746	697	813	698	622	615	443	403	217	316	513	673
11.....	752	690	733	663	638	628	430	403	242	345	520	683
12.....	731	688	725	660	658	648	430	390	242	347	545	631
13.....	731	709	725	677	658	649	428	362	261	344	588	605
14.....	690	701	729	662	620	650	459	446	287	362	580	637
15.....	703	692	709	673	613	653	459	446	298	341	650	659
16.....	699	684	736	676	626	637	471	399	301	343	605	670
17.....	691	687	734	730	648	615	470	398	289	337	602	684
18.....	693	687	737	694	636	595	466	338	234	340	654	688
19.....	705	714	696	498	634	589	440	302	232	362	657	648
20.....	700	712	691	691	628	587	414	294	230	387	664	632
21.....	695	695	704	680	630	585	425	258	228	394	677	656
22.....	700	696	696	670	667	588	450	254	231	411	693	658
23.....	709	706	735	672	684	584	470	228	229	387	699	662
24.....	705	734	804	664	626	567	468	209	229	395	739	669
25.....	714	730	686	658	638	556	479	203	235	420	743	663
26.....	713	723	681	676	630	558	489	226	237	440	719	647
27.....	714	754	684	655	628	555	495	231	247	452	726	628
28.....	714	753	725	639	648	565	466	290	245	459	719	657
29.....	714	720	708	667	--	568	421	278	263	472	739	665
30.....	729	699	708	648	--	547	427	278	254	503	714	676
31.....	713	--	684	644	--	570	--	278	--	506	650	--
Average	731	711	710	677	646	613	469	384	245	360	619	671

ROARING FORK RIVER BASIN--Continued

9-0850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	58	56	54	58	56	56	56	56	55	54	52	54	50	49	48	50	48	48	48	50	50	50	49	49	50	50	48	50	50	50	48	52
November	46	44	46	46	44	46	46	43	42	40	44	44	44	43	44	46	44	46	45	44	46	46	46	46	44	40	42	41	40	43	--	44
December	43	43	45	42	40	37	40	38	33	32	34	33	33	32	34	32	33	33	32	33	33	33	32	32	33	32	33	34	33	34	33	35
January	33	33	33	33	32	32	32	33	33	35	33	33	33	33	34	35	33	33	34	32	34	36	38	36	35	34	38	38	39	41	39	35
February	40	38	36	37	36	36	37	34	35	35	37	38	39	40	38	37	35	40	36	38	36	38	39	40	42	40	43	43	--	--	--	38
March	44	47	45	45	40	39	41	41	45	46	47	45	43	44	44	48	51	49	49	50	52	51	50	51	48	47	46	48	48	43	46	46
April	50	54	55	51	52	54	53	51	50	50	49	48	43	47	51	50	51	51	56	45	49	48	48	49	48	55	58	59	55	48	--	51
May	49	49	50	48	51	55	59	62	61	58	55	56	49	51	54	59	60	56	53	57	36	57	52	53	51	51	53	52	51	50	52	53
June	54	53	54	53	51	54	52	52	54	51	51	52	53	55	57	59	57	57	56	53	59	54	57	58	57	57	59	54	60	61	--	55
July	59	61	60	64	64	61	60	63	62	61	62	66	66	63	61	58	59	63	65	67	68	65	65	64	67	68	66	68	68	68	66	64
August	70	69	62	68	68	67	64	64	64	66	66	66	67	66	66	65	64	62	64	65	64	66	68	66	65	64	65	64	66	66	64	66
September	64	66	65	64	66	65	64	63	62	64	62	60	59	60	59	58	59	57	58	59	63	62	63	61	59	59	60	59	60	58	--	61

9-0955. COLORADO RIVER NEAR CAMEO, COLO.

LOCATION.--Lat 39°11'20", long 108°16'56", at Grand Valley project diversion dam, 3.7 miles upstream from Cameo, Mesa County, 0.4 mile upstream from Plateau Creek, and 5.9 miles downstream from gaging station.
DRAINAGE AREA.--8,050 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1933 to September 1967.
Water temperatures: April 1949 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 956 ppm Dec. 13-26; minimum, 216 ppm June 1-13.
Hardness: Maximum, 348 ppm Dec. 13-26; minimum, 131 ppm May 22-31.
Specific conductance: Maximum daily, 1,650 micromhos Dec. 18, 19; minimum daily, 330 micromhos May 26, 27.
Water temperatures: Maximum, 71°F Aug. 2, 3; minimum, freezing point on many days during December to February.
EXTREMES, 1933-67.--Dissolved solids (1933-43, 1950-67): Maximum, 1,080 ppm Sept. 22, 1962; minimum, 143 ppm June 11-20, 1935.
Hardness (1933-35, 1957-67): Maximum, 474 ppm Sept. 22, 1962; minimum, 98 ppm June 21-30, 1935.
Specific conductance (1941-67): Maximum daily, 1,860 micromhos June 16, 1964; minimum daily, 244 micromhos July 2, 1947, July 3, 1957.
Water temperatures (1949-67): Maximum, 76°F Aug. 16, 1962; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 1-31, 1966...	1764					144		184	0	173	195				723	0.98	3440	294	143	3.7	1190	7.7
Nov. 1-15.....	1596					171		154	0	192	218				751	1.02	3240	262	136	4.6	1320	8.2
Nov. 16-30.....	1525					184		188	0	188	228				805	1.09	3310	272	118	4.9	1330	7.8
Dec. 1-6.....	1548					184		206	0	223	180				801	1.09	3350	256	87	5.0	1290	8.1
Dec. 7-12.....	1622					193		192	0	236	245				898	1.22	3930	328	171	4.6	1470	8.0
Dec. 13-26.....	1234					206		200	0	231	278				956	1.30	3190	348	184	4.8	1580	8.0
Dec. 27-31.....	1336					187		176	0	203	252				862	1.17	3110	304	160	4.7	1440	8.0
Jan. 1-24, 1967...	1379					177		192	0	188	235				834	1.13	3110	300	143	4.4	1350	8.1
Jan. 25-31.....	1449					165		176	0	179	215				772	1.05	3020	276	132	4.3	1260	8.0
Feb. 1.....	1480					172		176	0	194	215				788	1.07	3150	276	132	4.5	1250	8.0
Feb. 2-18.....	1284					172		186	0	184	225				811	1.10	2810	288	135	4.4	1320	8.2
Feb. 19-28.....	1388					156		174	0	172	200				734	1.00	2750	264	121	4.2	1190	8.0
Mar. 1-9.....	1480					164		180	0	181	218				765	1.04	3060	288	140	4.2	1270	7.8
Mar. 10-26.....	1744					134		176	0	169	172				675	.92	3180	272	128	3.5	1110	7.8
Mar. 27-31.....	2064					117		160	0	149	150				595	.81	3320	244	113	3.3	983	8.0
Apr. 1-6.....	2113					114		166	0	143	138				588	.80	3350	232	96	3.3	935	7.5
Apr. 7-24.....	2512					95		142	0	113	120				502	.68	3400	196	80	3.0	808	7.6
Apr. 25-30.....	1908					124		172	0	121	148				557	.76	2870	206	65	3.8	914	7.5
May 1-11.....	1903					141		157	0	128	190				627	.85	3220	223	94	4.1	1070	7.5
May 12-21.....	3577					75		138	0	83	96				400	.54	3860	172	59	2.5	683	7.3
May 22-31.....	10890					29		123	0	44	33				225	.31	6620	131	30	1.1	381	7.4
June 1-13.....	9890					27		116	0	46	37				216	.29	5770	136	41	1.0	387	7.5
June 14-18.....	7270					40		128	0	68	50				277	.38	5440	160	55	1.4	485	7.2
June 19-26.....	9581					30		116	0	54	36				223	.30	5770	136	41	1.1	403	7.4
June 27-30.....	8008					26		136	0	48	45				269	.37	5820	168	56	.9	477	7.4
July 1-11.....	6124					44		118	0	67	57				311	.42	5140	150	53	1.6	498	7.4
July 12-27.....	4195					68		143	0	106	87				445	.61	5040	202	85	2.1	707	7.4
July 28-31.....	2808					89		152	0	115	119				518	.70	3930	218	93	2.6	833	7.9
Aug. 1-15.....	2446					112		167	0	150	142				584	.79	3860	249	112	3.1	937	7.5
Aug. 16-31.....	2015					137		164	0	151	182				638	.87	3470	251	116	3.8	1060	7.7
Sept. 1-6.....	2077					120		160	0	141	160				625	.85	3500	242	111	3.4	1030	7.6
Sept. 7-9.....	1993					141		178	0	251	165				817	1.11	4400	334	188	3.4	1240	7.8

COLORADO RIVER MAIN STEM--Continued

9-0955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C) Parts per million	Dissolved solids Tons per acre-foot	Dissolved solids Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Hardness as $CaCO_3$ Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Sept. 10-16, 1967.	2347					111		166	0	149	145				614	0.84	3890	254	118	3.0	1010	7.4
Sept. 17-30.....	2028					124		174	0	162	165				666	.91	3650	274	131	3.3	1100	7.7
Weighted average	--					89		147	--	111	115				477	0.64	3750	205	84	2.5	792	7.5
Time-weighted average.....	2917					127		165	--	149	164				630	--	--	246	111	3.4	1040	7.7
Tons per day....	--					698		1160	--	874	902				--	--	--	--	--	--	--	--

Analyses of additional samples

Nov. 17, 1966.....	A1590	9.1		81	28	161	4.7	196	0	168	245	0.7	3.5	0.06	794	1.08	3410	318	157	3.9	1320	7.6
Mar. 2, 1967.....	A1340	14		61	30	155	4.4	176	0	171	208	.4	2.2	.03	755	1.03	2730	276	132	4.1	1250	7.7
June 1.....	A8420	7.2		38	12	32	2.0	114	0	51	41	.2	.8	.03	240	.33	5460	147	54	1.2	413	7.2

A Discharge at time of sampling.

9-0955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1210	1240	1340	1350	1250	1220	949	904	417	453	914	1060
2.....	1230	1310	1270	1360	1320	1240	950	850	410	431	934	1040
3.....	1220	1380	1240	1350	1320	1210	944	1120	407	464	929	1020
4.....	1220	1380	1290	1370	1320	1210	941	1140	406	470	1030	1020
5.....	1180	1360	1270	1350	1320	1280	899	1010	388	487	1030	1020
6.....	1190	1350	1290	1360	1320	1290	894	1120	359	495	1000	1030
7.....	1180	1350	1480	1300	1320	1260	793	1130	361	501	1010	1230
8.....	1160	1320	1480	1350	1300	1290	791	1130	349	543	997	1240
9.....	1160	1330	1490	1360	1300	1290	801	1150	362	530	997	1250
10.....	1170	1350	1490	1370	1300	1160	801	1130	362	529	910	1040
11.....	1160	1270	1410	1370	1290	1160	804	1000	361	559	894	1030
12.....	1200	1270	1470	1350	1300	1160	807	680	399	612	933	1070
13.....	1180	1270	1560	1380	1310	1150	788	665	422	636	942	978
14.....	1170	1270	1570	1350	1330	1160	780	667	461	639	971	971
15.....	1170	1270	1560	1340	1330	1160	779	664	485	671	1000	972
16.....	1130	1340	1560	1340	1320	1160	782	776	489	695	1040	975
17.....	1130	1340	1550	1340	1330	1120	784	768	489	699	1060	1040
18.....	1130	1340	1650	1340	1320	1120	853	769	490	726	1010	1040
19.....	1170	1330	1650	1340	1220	1110	866	647	412	661	1010	1100
20.....	1190	1290	1610	1350	1220	1020	866	641	413	681	1010	1100
21.....	1180	1290	1640	1350	1150	1010	747	521	455	714	1010	1060
22.....	1200	1290	1570	1350	1220	1010	752	461	395	762	1020	1070
23.....	1210	1370	1570	1350	1220	1070	807	437	389	793	1040	1060
24.....	1200	1370	1570	1340	1170	1070	846	387	384	737	1060	1100
25.....	1210	1370	1580	1250	1180	1070	913	352	369	747	1050	1120
26.....	1210	1370	1580	1250	1180	1070	911	330	383	725	1090	1170
27.....	1210	1370	1500	1250	1140	1010	902	330	515	762	1090	1120
28.....	1260	1340	1440	1250	1150	1000	914	352	456	793	1090	1070
29.....	1260	1340	1460	1250	--	1010	908	341	478	818	1120	1070
30.....	1260	1340	1400	1250	--	950	908	372	453	839	1090	1070
31.....	1260	--	1400	1250	--	950	--	393	--	871	1110	--
Average	1190	1330	1480	1330	1270	1130	849	717	417	646	1010	1070

9-0955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	58	55	55	53	54	55	55	52	52	54	54	53	54	42	47	46	46	46	45	46	46	46	46	46	46	46	46	45	45	45	45	49
November	44	43	43	43	44	44	44	42	40	40	42	42	42	42	42	42	42	42	42	42	43	43	40	40	40	39	37	40	40	40	--	42
December	40	42	42	42	42	42	42	40	39	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	35
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February	32	32	32	32	32	32	32	32	32	32	32	34	34	34	35	36	36	36	35	35	35	35	36	38	38	39	39	39	--	--	--	34
March	41	40	42	42	40	38	38	36	37	37	37	40	37	40	41	41	41	41	41	41	41	41	41	42	42	42	44	45	46	48	48	41
April	48	48	48	48	49	49	49	49	49	49	51	51	51	50	49	49	46	47	49	47	49	47	45	46	47	47	47	47	46	46	--	48
May	46	47	48	48	50	50	50	50	55	59	56	51	51	51	51	52	56	56	56	56	55	56	55	54	55	53	52	52	52	51	52	52
June	51	53	54	54	55	55	54	53	53	53	53	54	54	54	55	56	57	57	59	57	56	56	56	56	56	57	56	--	--	58	--	55
July	62	61	64	62	63	64	65	65	66	66	66	65	67	68	68	66	65	64	59	62	62	70	68	70	70	70	69	69	68	69	70	66
August	70	71	71	70	70	69	68	68	68	68	67	67	66	67	68	69	66	66	66	65	65	65	65	65	65	67	68	69	66	67	67	67
September	64	64	65	65	66	65	65	67	65	65	64	63	56	58	58	59	58	58	57	56	57	56	60	62	58	60	61	58	58	56	--	61

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.
(Irrigation network station)

LOCATION.--Lat 38°59', long 108°27', at gaging station at bridge on State Highway 141, 0.4 mile downstream from Whitewater Creek, 0.5 mile south of Whitewater, and 8 miles southeast of Grand Junction, Mesa County.
DRAINAGE AREA (revised).--7,928 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1931 to September 1967.
Water temperatures: April 1949 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 1,790 ppm Aug. 19-31; minimum, 428 ppm May 23-26.
Hardness: Maximum, 912 ppm Aug. 19-31; minimum, 244 ppm May 23-26.
Specific conductance: Maximum daily, 2,220 micromhos Nov. 11; minimum daily, 545 micromhos May 24.
Water temperatures: Maximum, 75°F Aug. 4; minimum, freezing point on many days during December to February.
EXTREMES, 1931-67.--Dissolved solids: Maximum, 2,820 ppm Sept. 11-20, 1934; minimum, 203 ppm May 11-20, 1944, May 22-26, 1964.
Hardness (1931-35, 1943-67): Maximum, 1,370 ppm Sept. 1-20, 1934; minimum, 130 ppm May 22-26, 1964.
Specific conductance (1941-67): Maximum daily, 2,730 micromhos Sept. 10, 1956; minimum daily, 280 micromhos May 23, 1948.
Water temperatures (1949-67): Maximum, 86°F Aug. 13, 1958; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-14, 1966...	1088					175		248	0	924	18				1500	2.04	4410	810	607	2.7	1780	7.8
Oct. 15-20.....	1394					123		244	0	726	15				1250	1.70	4700	710	510	2.0	1540	7.8
Oct. 21-31.....	843					151		266	0	953	20				1690	2.30	3850	910	692	2.2	1970	7.9
Nov. 1-13.....	776					205		270	0	1050	25				1780	2.42	3730	905	683	3.0	2030	8.0
Nov. 14-30.....	745					172		268	0	931	22				1680	2.28	3380	845	625	2.6	1930	7.9
Dec. 1-7.....	1070					175		168	0	857	22				1460	1.99	4220	680	542	2.9	1790	7.9
Dec. 8-10.....	1623					89		180	0	438	12				833	1.13	3650	428	280	1.9	1070	7.5
Dec. 11-31.....	734					140		248	0	731	21				1360	1.85	2700	690	487	2.3	1660	7.7
Jan. 1-12, 1967...	652					138		266	0	694	20				1310	1.78	2310	668	450	2.3	1590	8.1
Jan. 13-31.....	836					125		236	0	605	18				1140	1.55	2570	578	384	2.3	1420	8.1
Feb. 1-12.....	750					134		232	4	680	21				1230	1.67	2490	642	445	2.3	1490	8.3
Feb. 13-28.....	759					124		216	4	609	20				1170	1.59	2400	576	392	2.2	1440	8.3
Mar. 1-12.....	829					127		216	0	589	18				1070	1.46	2390	540	363	2.4	1360	7.8
Mar. 13-22.....	917					113		196	0	511	12				921	1.25	2280	464	303	2.3	1200	7.7
Mar. 23-31.....	1364					76		168	0	329	17				634	.86	2330	338	200	1.8	874	7.8
Apr. 1-3.....	1310					76		174	0	344	12				656	.89	2320	352	209	1.8	898	8.1
Apr. 4-8.....	1604					43		164	0	241	12				564	.77	2440	308	173	1.1	792	8.1
Apr. 9-14.....	1698					42		142	0	203	10				448	.61	2050	252	135	1.2	652	8.1
Apr. 15-30.....	1326					54		152	0	267	12				548	.75	1960	302	177	1.4	774	8.1
May 1-3.....	1181					64		156	0	349	11				699	.95	2230	368	240	1.5	898	7.8
May 4-10.....	1047					100		174	0	510	14				943	1.28	2670	476	333	2.0	1170	8.2
May 11-18.....	1765					64		154	0	347	9.3				657	.89	3130	360	234	1.5	862	7.7
May 19-22.....	3002					50		148	0	254	7.1				517	.70	4190	288	167	1.3	700	7.5
May 23-26.....	4098					37		140	0	195	5.4				428	.58	4740	244	129	1.0	593	7.6
May 27-31.....	3768					60		136	0	308	7.6				591	.60	6010	312	200	1.5	782	7.7
June 1-5.....	2736					72		170	0	397	10				755	1.03	5580	410	271	1.5	983	7.6
June 6-10.....	3662					47		142	0	296	6.0				563	.77	5570	322	206	1.1	768	7.7
June 11-14.....	2312					73		160	0	413	15				778	1.06	4860	424	293	1.5	1010	7.6
June 15-30.....	2206					77		176	0	455	12				849	1.15	5060	468	324	1.5	1080	7.7
July 1-7.....	808					132		192	0	686	18				1150	1.56	2510	610	453	2.3	1430	7.7
July 8-18.....	1022					161		212	0	827	21				1400	1.90	3860	714	540	2.6	1670	7.8
July 19-23.....	1252					131		224	0	686	16				1190	1.62	4020	636	452	2.3	1460	7.8
July 24-31.....	868					154		226	0	822	18				1400	1.90	3280	732	547	2.5	1660	7.8

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 1-7, 1967....	903					164		226	0	890	20				1500	2.04	3660	782	597	2.6	1750	7.7
Aug. 8-9.....	2505					149		224	0	698	18				1280	1.74	8660	612	428	2.6	1480	7.9
Aug. 10-15.....	1533					123		234	0	655	15				1160	1.58	4800	628	436	2.1	1420	7.8
Aug. 16-18.....	741					165		220	0	869	18				1450	1.97	2900	752	572	2.6	1710	7.9
Aug. 19-31.....	541					209		228	0	1100	24				1790	2.43	2610	912	725	3.0	2010	7.9
Sept. 1-13.....	882					174		232	0	952	22				1640	2.23	3910	834	644	2.6	1860	7.8
Sept. 14-30.....	1402					132		236	0	708	14				1260	1.71	4770	662	468	2.2	1500	7.8
Weighted average	--					108		198	--	567	15				1030	1.39	3400	539	377	2.0	1270	7.8
Time-weighted average.....	1225					126		213	--	659	17				1180	--	--	611	435	2.2	1430	7.8
Tons per day....	--					357		654	--	1880	49				--	--	--	--	--	--	--	--

Analyses of additional samples

Nov. 18, 1966.....	A771	14		188	85	154	7.2	272	0	933	20	0.9	8.2	0.17	B1540	2.09	3210	820	597	2.3	1910	7.9
Mar. 3, 1967.....	A1030	13		87	74	107	4.4	218	0	549	16	.7	4.5	.09	B963	1.31	2680	520	341	2.0	1310	7.7
June 13.....	A2350	13		120	36	68	2.9	176	0	412	11	1.2	3.1	.10	816	1.11	5180	450	306	1.4	1050	7.4
Aug. 11.....	A1750	16		168	55	95	4.8	234	0	642	12	1.1	5.0	.14	B1110	1.51	5240	645	453	1.6	1420	7.4

A Discharge at time of sampling.
B Calculated from determined constituents.

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1800	1980	1880	1750	1440	1450	872	847	974	1340	1790	2070
2.....	1820	1970	1800	1680	1570	1400	930	878	968	1380	1950	1940
3.....	1790	2010	1820	1620	1560	1350	892	969	1050	1340	1640	1860
4.....	1790	2030	1780	1550	1520	1330	817	1060	984	1390	1650	1690
5.....	1790	2050	1770	1540	1520	1250	829	1090	914	1430	1720	1810
6.....	1680	2030	1800	1510	1490	1270	761	1170	793	1520	1730	1990
7.....	1590	2020	1680	1470	1500	1270	760	1250	699	1540	1750	1940
8.....	1740	2050	942	1520	1450	1260	740	1290	768	1640	1440	2080
9.....	1820	2020	1020	1590	1470	1410	656	1250	767	1660	1530	1810
10.....	1830	2140	1240	1610	1400	1410	605	1030	788	1570	1220	1830
11.....	1830	2220	1420	1620	1530	1380	639	776	844	1590	1440	1820
12.....	1810	2080	1560	1550	1470	1330	679	768	997	1640	1480	1680
13.....	1810	2020	1650	1450	1440	1280	635	787	1060	1640	1420	1710
14.....	1800	1970	1600	1380	1440	1240	656	780	1150	1580	1450	1560
15.....	1690	1940	1630	1360	1440	1250	779	836	1220	1630	1460	1520
16.....	1610	1970	1660	1360	1470	1270	779	924	1240	1710	1700	1530
17.....	1590	1970	1680	1410	1440	1260	766	1020	1260	1700	1710	1530
18.....	1310	1930	1670	1430	1460	1250	773	946	1240	1880	1730	1530
19.....	1350	1930	1690	1420	1420	1150	762	775	1200	1500	1890	1520
20.....	1670	1930	1670	1420	1430	1080	681	693	1120	1380	1950	1530
21.....	1900	1920	1480	1410	1400	1050	629	658	1000	1390	1950	1520
22.....	1980	1940	1650	1390	1380	1040	674	639	955	1490	1950	1440
23.....	1990	1940	1690	1390	1370	938	699	584	914	1480	1980	1420
24.....	1990	1930	1660	1430	1440	881	737	545	892	1580	1970	1420
25.....	1940	1920	1640	1450	1430	801	764	547	892	1590	2040	1410
26.....	1970	1920	1650	1440	1460	909	784	590	943	1530	2040	1400
27.....	1950	1940	1720	1470	1420	840	842	700	993	1610	2030	1390
28.....	1960	1960	1720	1450	1440	838	882	647	1060	1680	2070	1530
29.....	1960	1950	1700	1420	--	889	831	789	1140	1770	2060	1530
30.....	1950	1950	1720	1410	--	818	842	828	1250	1790	2070	1600
31.....	1990	--	1770	1410	--	860	--	899	--	--	2060	--
Average	1800	1990	1620	1480	1460	1150	756	856	1000	1570	1770	1650

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	52	59	58	59	58	52	57	55	56	55	56	55	55	53	46	47	46	48	46	47	49	48	48	47	47	48	48	47	49	50	48	51
November	46	44	44	42	44	44	46	46	46	40	45	44	44	44	45	45	45	44	44	43	45	45	45	43	41	40	39	43	40	42	--	44
December	42	42	44	45	45	45	45	40	35	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	35
January	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32	32	32	34	33	32	33	32	32	33	34	33	32	32
February	34	36	36	35	35	38	35	32	35	34	35	36	37	40	36	36	35	36	36	36	35	35	36	37	38	41	41	41	--	--	--	36
March	43	45	44	44	44	35	38	36	37	47	45	45	45	45	42	45	48	50	50	47	47	47	47	47	44	46	47	45	48	47	40	45
April	44	48	48	49	50	50	49	47	49	44	47	50	45	45	47	49	47	50	50	49	45	44	47	48	48	46	50	52	51	47	--	48
May	43	45	45	48	50	50	50	58	58	58	55	54	56	56	51	58	58	60	59	55	58	59	60	58	58	57	57	56	55	59	56	55
June	50	51	60	60	61	58	58	59	59	61	60	60	57	57	58	60	61	65	65	61	68	63	64	63	63	65	65	66	64	61	--	61
July	69	68	70	70	72	70	70	69	71	72	71	69	70	72	73	72	70	67	68	70	71	70	71	72	73	73	72	72	71	72	--	71
August	72	72	72	75	73	74	72	70	71	68	69	68	71	69	70	71	72	70	70	71	70	68	69	70	71	71	70	70	68	68	69	70
September	64	67	70	69	68	70	70	70	67	66	65	65	58	58	58	58	59	60	58	58	58	60	61	62	64	62	60	60	60	61	--	63

COLORADO RIVER MAIN STEM

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE

LOCATION.--Lat 39°09', long 108°57', at Westwater, Grand County, Utah, 9.5 miles downstream from gaging station, and about 4 miles downstream from Colorado-Utah State line.
DRAINAGE AREA.--17,900 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--chemical analyses: May 1962 to September 1967.
Water temperatures: May 1962 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 1,530 ppm Aug. 29-31; minimum, 344 ppm May 24-27.
Hardness: Maximum, 735 ppm Aug. 29-31; minimum, 220 ppm May 24-27.
Specific conductance: Maximum daily, 2,170 micromhos Sept. 1; minimum daily, 537 micromhos May 28.
Water temperatures: Maximum, 78°F on several days during July and August; minimum, freezing point on several days during January.
EXTREMES, 1962-67.--Dissolved solids: Maximum, 2,610 ppm Jan. 3-5, 1965; minimum, 243 ppm June 14-30, 1965.
Hardness: Maximum, 1,080 ppm Jan. 3-5, 1965; minimum, 150 ppm June 14-30, 1965.
Specific conductance: Maximum daily, 3,680 micromhos Mar. 19, 1965; minimum daily, 357 micromhos June 22, 1965.
Water temperatures: Maximum, 82°F July 30, 1966; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Records of discharge are given for Colorado River near Colorado-Utah State line.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1966..	2845					163		232	0	605	132				1310	1.78	10060	652	462	2.8	1750	7.8
Nov. 1-Dec. 17...	2751					200		230	0	598	155				1320	1.80	9800	594	405	3.6	1810	8.1
Dec. 18-31.....	2089					201		204	0	567	170				1270	1.73	7160	560	393	3.7	1730	7.7
Jan. 1-31, 1967..	2254					130		216	0	385	152				1110	1.51	6760	510	333	2.5	1570	7.8
Feb. 1-28.....	2368					183		206	0	449	160				1070	1.46	6840	464	295	3.7	1540	7.9
Mar. 1-31.....	2815					147		188	0	361	125				884	1.20	6720	388	234	3.2	1290	7.8
Apr. 1-27.....	3251					99		164	0	288	86				712	.97	6250	340	206	2.3	1030	7.5
Apr. 28-30.....	2200					123		168	0	437	92				951	1.29	5650	456	318	2.5	1290	7.7
May 1-2.....	2570					117		166	0	346	99				816	1.11	5660	382	246	2.6	1160	7.8
May 3-11.....	2141					154		186	0	598	104				1240	1.69	7170	586	433	2.8	1610	7.9
May 12-23.....	5580					73		163	0	241	60				558	.76	8410	310	176	1.8	876	8.1
May 24-27.....	16280					35		169	0	118	25				344	.47	15120	220	81	1.0	554	7.7
May 28-30.....	15070					45		143	0	151	32				400	.54	16280	222	105	1.3	595	7.7
May 31.....	12200					73		140	0	221	46				498	.68	16400	250	135	2.0	709	7.8
June 1-12.....	12910					32		134	0	167	38				430	.58	14990	268	158	.9	637	7.5
June 13-21.....	10040					66		146	0	230	46				534	.73	14480	280	160	1.7	775	7.7
June 22-30.....	10960					55		134	0	177	41				454	.62	13430	232	122	1.6	668	7.7
July 1-6.....	6740					72		144	0	231	64				564	.77	10260	292	174	1.8	833	7.7

COLORADO RIVER MAIN STEM--Continued

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
July 7-13, 1967..	5167					83		164	0	307	72				723	0.98	10090	376	241	1.9	1020	7.7
July 14-31.....	4253					118		192	0	417	92				936	1.27	10750	464	307	2.4	1270	7.8
Aug. 1-9.....	3073					151		214	0	601	105				1260	1.71	10450	620	444	2.6	1630	7.8
Aug. 29-31.....	1748					187		202	0	741	145				1530	2.08	7220	735	569	3.0	1940	7.8
Sept. 1-12.....	2485					176		220	0	714	130				1490	2.03	10000	724	544	2.8	1870	7.8
Sept. 13-30.....	3218					142		220	0	557	105				1210	1.65	10510	600	420	2.5	1560	7.8
Weighted average.....	--					111		181	--	368	92				853	1.16	9100	419	270	2.3	1190	7.7
Time-weighted average.....	3952					140		197	--	453	116				1040	--	--	492	330	2.7	1420	7.8
Tons per day...	--					1190		1930	--	3930	981				--	--	--	--	--	--	--	--
Analyses of additional samples (instantaneous discharges shown)																						
Nov. 29, 1966....	2280	10		146	60	181	5.8	232	0	578	153	0.5	8.3	0.10	1280	1.74	7880	610	420	3.2	1780	7.7
May 4, 1967.....	2230	9.2		105	40	111	4.3	170	0	388	92	.8	5.3	.08	867	1.18	5220	426	287	2.3	1230	7.3
Aug. 1.....	2490	10		144	54	130	4.4	196	0	516	105	.7	5.6	.10	1170	1.59	7870	580	419	2.4	1550	7.4

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1910	1940	--	1600	1620	1430	1110	1150	718	826	1510	2170
2.....	1900	1940	--	1710	1590	1410	1110	1160	734	853	1600	1960
3.....	1930	1830	--	1610	1580	1430	1140	1550	714	815	1600	1900
4.....	1960	1870	--	1620	1570	1420	1160	1550	714	823	1650	1860
5.....	1750	1880	--	1580	1580	1420	1140	1550	629	817	1470	1770
6.....	1790	1880	--	1680	1560	1410	1080	1650	578	821	1500	1770
7.....	1660	1920	--	1600	1480	1410	959	1680	573	1010	1830	1890
8.....	1660	1920	--	1600	1540	1420	1070	1660	592	1180	1850	1780
9.....	1670	1810	--	1560	1540	1420	965	1670	577	971	1610	1860
10.....	1750	2020	--	1610	1550	1410	902	1670	571	812	1610	1810
11.....	1740	1800	--	1530	1540	1410	904	1430	575	1010	1370	1780
12.....	1760	1790	--	1530	1550	1420	901	1000	634	1050	1640	1790
13.....	1740	1830	--	1540	1540	1420	904	990	757	1050	1590	1640
14.....	1740	1810	--	1530	1540	1410	900	1000	770	1320	1560	1660
15.....	1730	1710	--	1540	1510	1410	1010	973	767	1240	1630	1530
16.....	1590	1710	--	1540	1520	1420	1000	963	808	1160	1790	1440
17.....	1580	1770	--	1520	1510	1370	1010	826	817	1280	1770	1520
18.....	1580	1840	--	1520	1520	1230	1050	826	822	1150	1780	1590
19.....	1570	1710	--	1530	1500	1230	1050	830	740	1260	1620	1540
20.....	1580	1720	--	1530	1520	1240	1070	833	738	1180	1810	1580
21.....	1590	1750	--	1530	1530	1230	990	742	707	1200	1810	1600
22.....	1810	1740	--	1530	1530	1160	981	738	643	1190	1920	1560
23.....	1830	1710	--	1540	1530	1160	1000	719	604	1230	1930	1550
24.....	1810	1710	--	1540	1530	1150	987	555	602	1270	1920	1560
25.....	1780	1700	--	1510	1530	1080	1100	552	600	1270	1920	1560
26.....	1770	1690	--	1530	1540	1070	1100	556	604	1240	1980	1570
27.....	1790	1690	--	1510	1530	1070	1100	546	710	1270	1990	1570
28.....	1790	1810	--	1490	1540	1070	1290	537	734	1350	1990	1610
29.....	1780	1810	--	1470	--	1080	1290	622	737	1340	1990	1600
30.....	1800	1810	--	1490	--	1090	1290	626	739	1390	1970	1660
31.....	1920	--	--	1490	--	1080	--	709	--	1440	2070	--
Average	1750	1800	--	1550	1540	1290	1050	1030	683	1120	1750	1690

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October.....	63	60	61	61	61	61	59	60	58	59	58	60	58	55	62	56	55	52	49	48	51	49	48	48	50	51	50	51	48	50	50	54
November.....	47	49	44	45	43	45	44	43	44	43	44	45	43	44	44	46	46	47	43	40	45	44	41	38	38	40	39	40	41	40	--	43
December.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January.....	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	32	33	33	33	33	34	34	32	32	34	35	35	35	35	35	36	33
February.....	34	34	34	34	34	35	36	36	35	35	--	35	35	35	35	36	36	38	38	39	39	40	40	42	42	43	43	44	--	--	--	37
March.....	42	42	42	42	43	43	43	44	44	44	44	45	45	45	45	45	46	46	48	50	52	53	53	53	53	53	52	52	50	48	50	47
April.....	51	52	52	53	53	54	54	54	54	54	54	53	51	51	52	53	53	53	51	50	51	52	52	52	53	54	53	51	50	60	--	52
May.....	52	53	52	53	53	54	55	56	58	60	59	59	58	58	58	58	58	59	59	60	61	63	64	64	64	64	63	62	60	58	58	58
June.....	59	60	62	62	63	63	63	62	62	60	60	59	59	60	60	61	62	64	64	64	65	65	65	65	64	64	62	62	64	65	--	62
July.....	67	68	69	69	70	70	70	70	70	70	71	72	72	72	73	72	72	72	74	74	74	75	75	76	77	77	78	78	78	78	78	72
August.....	78	77	73	73	74	73	77	73	75	75	73	74	74	74	74	74	74	74	75	75	76	77	76	75	75	70	70	70	68	68	69	73
September.....	68	68	69	68	67	67	67	67	67	67	65	62	59	57	57	57	60	59	58	58	58	66	66	57	62	59	58	55	59	58	--	62

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.

LOCATION.--Lat 40°32'20", long 108°05'18", at county bridge, 1 mile north of Maybell, Moffat County, and about 3.5 miles downstream from gaging station.
DRAINAGE AREA.--3,410 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1967.
Water temperatures: November 1950 to September 1967.
Sediment records: December 1950 to May 1958.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 437 ppm Sept. 2-5; minimum, 103 ppm July 1-5.
Hardness: Maximum, 208 ppm Sept. 2-5; minimum, 48 ppm June 1-9.
Specific conductance: Maximum daily, 724 micromhos Sept. 4; minimum daily, 115 micromhos June 5.
Water temperatures: Maximum, 75°F Aug. 4; minimum, freezing point Dec. 26.
EXTREMES, 1950-67.--Dissolved solids: Maximum, 545 ppm Sept. 21-30, 1956; minimum, 64 ppm June 13, 1964.
Hardness: Maximum, 271 ppm Dec. 27-31, 1962; minimum, 43 ppm June 1-21, 1959.
Specific conductance: Maximum daily, 947 micromhos Sept. 24, 1955; minimum daily, 94 micromhos June 14, 1959.
Water temperatures: Maximum, 85°F Aug. 5, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 1-31, 1966...	268					49		202	0	90	22				332	0.45	240	184	18	1.6	546	7.9
Nov. 1-30.....	218					52		200	0	98	24				338	.46	199	188	24	1.6	556	8.1
Dec. 1-31.....	206					53		200	0	100	23				339	.46	189	186	22	1.7	560	8.1
Jan. 1-31, 1967...	192					54		200	0	101	24				347	.47	180	166	22	1.7	561	8.2
Feb. 1-28.....	228					54		182	0	116	23				353	.48	217	186	37	1.7	565	7.9
Mar. 1-13.....	375					63		182	0	151	24				398	.54	403	204	55	1.9	614	7.7
Mar. 14-31.....	918					47		160	0	150	14				378	.51	937	204	73	1.4	569	7.7
Apr. 1-3.....	1157					28		154	0	105	8.5				309	.42	965	186	60	.9	474	8.0
Apr. 4-6.....	1620					20		134	0	66	7.5				227	.31	993	146	36	.7	358	7.7
Apr. 7-12.....	1812					17		110	0	43	6.5				170	.23	832	106	16	.7	268	7.9
Apr. 13-30.....	1410					18		120	0	50	7.0				186	.25	708	122	24	.7	300	7.8
May 1-5.....	1822					9.9		124	0	46	5.8				205	.28	1010	136	34	.4	296	7.6
May 6-13.....	2588					12		108	0	31	3.8				176	.24	1230	100	11	.5	234	7.4
May 14-23.....	3465					3.9		78	0	20	2.5				134	.18	1250	80	16	.2	162	7.5
May 24-31.....	7688					5.8		74	0	20	2.3				123	.17	2550	72	11	.3	157	7.3
June 1-9.....	6222					9.0		58	0	16	2.4				104	.14	1750	48	0	.6	124	7.3
June 10-17.....	4701					9.2		64	0	20	3.2				130	.18	1650	58	5	.5	146	7.2
June 18-30.....	5041					7.4		56	0	16	2.4				115	.16	1570	50	4	.5	128	7.4
July 1-5.....	3286					7.0		63	0	14	3.5				103	.14	914	56	4	.4	147	7.7
July 6-10.....	2626					10		89	0	22	4.4				137	.19	971	80	7	.5	205	7.7
July 11-31.....	1199					26		127	0	47	13				210	.29	680	114	9	1.1	337	8.0
Aug. 1-13.....	487					38		156	0	63	19				258	.35	339	138	10	1.4	421	7.5
Aug. 14-18.....	352					51		170	4	79	26				308	.42	293	154	7	1.8	498	8.3
Aug. 19-31.....	206					57		188	0	109	25				368	.50	205	180	26	1.8	575	7.5
Sept. 1.....	184					49		152	0	89	21				230	.31	114	140	15	1.8	404	8.0
Sept. 2-5.....	202					83		212	0	160	34				437	.59	238	208	34	2.5	695	7.6
Sept. 6-30.....	245					43		161	0	78	19				247	.34	163	146	14	1.5	428	7.3
Weighted average	--					17		96	--	39	6.6				171	0.23	578	93	14	0.7	242	7.5
Time-weighted average.....	1253					39		156	--	80	17				277	--	--	151	23	1.3	439	7.7
Tons per day....	--					56		325	--	132	22				--	--	--	--	--	--	--	--

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Additional analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Nov. 29, 1966.....	125	5.5		34	24	49	2.2	196	0	101	24	0.5	0.1	0.06	343	0.47	116	184	23	1.6	547	8.0
Feb. 28, 1967.....	299	12		44	20	50	3.1	184	0	128	22	.5	.7	.06	362	.49	292	194	43	1.6	575	7.7
May 23.....	5420	12		27	5.8	5.1	1.0	104	0	17	2.3	.2	.8	.02	138	.19	2020	92	6	.2	194	7.4
Aug. 29.....	157	1.3		32	17	47	2.5	171	0	77	28	.6	.2	.08	294	.40	125	150	9	1.7	492	7.6

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	539	550	560	--	551	579	517	303	118	132	402	404
2.....	533	549	542	550	547	559	461	303	124	144	402	662
3.....	535	552	555	--	547	606	445	294	130	145	361	690
4.....	561	551	553	554	550	606	394	297	117	149	435	724
5.....	535	553	551	--	549	672	388	297	115	149	459	680
6.....	539	548	--	554	549	673	292	254	118	182	470	483
7.....	538	555	554	--	553	587	271	256	120	183	482	380
8.....	531	547	--	--	551	605	268	218	123	218	366	372
9.....	535	550	554	557	553	646	263	221	125	206	482	373
10.....	533	555	--	569	553	590	268	220	135	208	495	374
11.....	533	554	--	569	553	596	267	221	137	269	367	374
12.....	567	559	557	568	553	598	266	221	142	273	348	375
13.....	541	556	--	568	565	631	291	221	146	332	359	425
14.....	539	553	553	569	563	585	291	164	146	354	494	425
15.....	529	569	--	--	563	559	290	142	145	345	498	522
16.....	536	572	555	571	562	574	287	142	153	340	498	430
17.....	546	569	--	--	561	602	292	151	152	354	491	424
18.....	543	574	--	553	562	617	292	152	130	354	490	421
19.....	559	528	555	--	563	614	305	153	119	191	584	396
20.....	537	528	--	553	565	620	302	145	127	353	588	488
21.....	542	586	552	554	579	506	312	151	122	347	540	516
22.....	542	573	--	554	578	616	306	151	127	364	501	407
23.....	542	534	554	--	578	508	302	184	116	364	587	403
24.....	544	534	--	555	578	616	303	148	125	360	588	524
25.....	552	532	--	--	582	510	303	150	118	364	581	415
26.....	550	529	552	555	581	508	297	160	122	363	588	413
27.....	552	524	--	555	581	507	296	138	124	380	584	410
28.....	550	530	557	552	578	521	296	149	135	361	582	410
29.....	557	534	--	549	--	524	296	135	135	244	580	411
30.....	551	528	548	556	--	522	294	146	125	349	586	418
31.....	549	--	--	--	--	604	--	149	--	357	584	--
Average	543	549	--	--	562	582	315	194	129	281	495	458

GREEN RIVER BASIN--Continued

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	70	70	50	70	51	50	69	70	48	69	69	48	49	69	69	48	69	48	69	69	46	68	65	45	65	46	65	67	45	47	67	60
November	42	64	62	41	40	39	39	48	49	38	47	47	36	40	36	43	45	36	38	43	37	35	40	37	39	36	41	35	35	39	--	42
December	34	37	35	37	34	--	34	--	34	--	--	34	--	34	--	34	--	--	34	--	34	--	34	--	--	32	--	34	--	34	--	--
January	--	34	--	34	--	34	--	--	34	34	34	34	34	34	--	34	--	34	--	34	34	34	--	34	--	34	34	34	34	34	--	--
February	34	34	34	34	34	33	34	33	34	34	34	34	34	33	34	34	34	34	34	33	34	35	35	34	35	35	35	38	--	--	--	34
March	34	39	36	35	36	34	35	35	37	35	35	36	36	34	38	42	38	44	43	38	44	41	40	43	43	41	44	40	43	41	43	39
April	43	41	42	51	51	47	49	41	47	41	47	41	47	41	40	41	40	43	47	41	48	41	41	47	48	40	46	41	40	47	--	44
May	40	45	41	47	40	46	44	55	59	55	50	53	52	50	60	59	60	60	54	63	53	63	62	63	52	59	53	53	54	62	59	54
June	50	59	59	55	57	52	51	59	53	53	49	53	54	53	59	51	60	61	60	61	62	61	62	62	63	61	63	65	62	63	--	58
July	64	69	67	62	68	68	64	68	69	63	62	69	61	63	67	63	63	70	65	74	70	65	65	70	67	72	70	69	68	70	69	67
August	70	69	72	75	69	68	67	68	67	70	67	70	69	70	69	70	70	70	70	71	70	70	71	70	70	65	69	70	69	71	68	69
September	71	69	69	70	70	70	67	65	70	67	69	65	60	69	67	64	64	57	57	55	55	64	57	57	62	56	64	63	55	54	--	63

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.

LOCATION.--Lat 40°36'27", long 108°20'11", at bridge on State Highway 318, about 6 miles upstream from gaging station, about 10 miles northeast of Lily, Moffat County, and 16 miles upstream from mouth.
DRAINAGE AREA.--3,730 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1967.
Water temperatures: December 1950 to September 1960, October 1961 to September 1967.
Sediment records: May 1958 to September 1964.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 1,600 ppm Aug. 29; minimum, 139 ppm May 25-31.
Hardness: Maximum, 732 ppm Aug. 29; minimum, 74 ppm June 8-12.
Specific conductance: Maximum daily, 2,030 micromhos Oct. 5; minimum daily, 152 micromhos June 11.
Water temperatures: Maximum, 83°F Aug. 6; minimum, freezing point on many days during October to March.
EXTREMES, 1950-67.--Dissolved solids (1950-51, 1952-67): Maximum, 2,330 ppm July 24, 1955; minimum, 108 ppm June 1-21, 1964.
Hardness (1950-51, 1952-67): Maximum, 1,340 ppm July 24, 1955; minimum, 64 ppm July 1-8, 10, 1957, June 1-14, 1958, Mar. 11, 1960.
Specific conductance (1950-51, 1952-67): Maximum daily, 3,150 micromhos Aug. 16, 1961; minimum daily, 135 micromhos June 10, 1958.
Water temperatures (1950-60, 1961-67): Maximum, 88°F July 17, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Records of discharge are given for Little Snake River near Lily, Colo.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
Oct. 2-14, 1966...	26.0					314		264	0	517	126				1180	1.60	82.7	250	33	8.6	1750	7.8
Oct. 15-22.....	111					186		232	12	204	68				650	.88	195	114	0	7.6	1020	8.4
Oct. 23-31.....	51.1					111		244	0	178	36				527	.72	72.6	196	0	3.5	813	7.9
Nov. 1-12.....	53.5					100		240	0	168	32				509	.69	73.5	200	3	3.1	763	7.8
Nov. 13-26.....	83.7					80		224	0	133	25				434	.59	98.0	184	0	2.6	650	8.1
Nov. 27-30.....	47.5					89		236	0	160	26				486	.66	62.2	204	10	2.7	729	7.9
Dec. 1-9.....	111					72		216	0	133	24				416	.57	125	192	15	2.3	654	7.9
Dec. 10-13.....	81.2					110		284	0	206	37				593	.81	130	260	27	3.0	901	8.1
Dec. 14-31.....	79.4					84		280	0	162	26				515	.70	110	252	22	2.3	781	8.2
Jan. 1-15, 1967...	62.3					73		246	0	132	22				443	.60	74.5	212	10	2.2	683	8.0
Jan. 16-24.....	60.6					85		242	0	153	25				473	.64	77.3	208	9	2.6	726	8.1
Jan. 25-31.....	67.9					62		210	0	103	18				362	.49	66.3	170	0	2.1	567	8.1
Feb. 1-15.....	67.0					57		212	0	97	16				352	.48	63.6	174	0	1.9	553	8.1
Feb. 16-28.....	95.8					59		208	0	98	18				348	.47	90.0	170	0	2.0	553	8.1
Mar. 1-2.....	160					46		150	0	70	17				254	.35	110	120	0	1.8	399	7.7
Mar. 3-16.....	292					77		174	0	110	27				355	.48	280	128	0	3.0	552	7.7
Mar. 17-31.....	412					60		176	0	128	16				364	.50	405	168	24	2.0	558	7.7
Apr. 1-7.....	373					44		190	0	105	12				339	.46	341	186	30	1.4	525	8.1
Apr. 8-13.....	585					29		164	0	65	7.0				258	.35	408	150	16	1.0	400	7.9
Apr. 14-21.....	640					23		150	0	52	6.0				222	.30	384	136	13	.9	349	7.9
Apr. 22-25.....	593					19		132	0	43	5.5				197	.27	315	120	12	.8	310	8.0
Apr. 26-30.....	424					26		152	0	54	8.0				229	.31	262	136	11	1.0	365	7.9
May 1-12.....	915					15		136	0	36	5.0				203	.28	502	124	12	.6	288	7.9
May 13-24.....	1625					9.2		108	0	22	3.2				157	.21	689	96	7	.4	217	7.7
May 25-31.....	3134					7.8		88	0	18	3.2				139	.19	1180	78	5	.4	175	7.7
June 1-7.....	2980					12		109	0	29	2.8				180	.24	1450	98	8	.5	226	7.3
June 8-12.....	2620					10		92	0	16	2.8				148	.20	1050	74	0	.5	177	7.4
June 13-18.....	2148					14		114	0	29	3.7				187	.25	1080	98	4	.6	238	7.4
June 19-30.....	1840					16		103	0	24	3.7				169	.23	840	80	0	.8	213	7.5
July 1-7.....	929					15		110	0	26	1.7				148	.20	371	86	0	.7	237	7.3
July 8-31.....	307					37		160	0	61	6.9				256	.35	212	124	0	1.4	395	7.2
Aug. 1-7.....	39.1					105		234	0	201	32				554	.75	58.5	218	26	3.1	832	7.7

GREEN RIVER BASIN--Continued

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 8, 1967.....	50					138		186	0	737	25				1330	1.81	180	656	503	2.3	1550	7.9
Aug. 9-11.....	104					91		203	0	250	30				611	.83	172	272	105	2.4	862	7.3
Aug. 12-22.....	23.2					162		263	0	290	52				747	1.02	46.7	238	22	4.6	1100	7.4
Aug. 29.....	17					192		192	0	896	42				1600	2.18	73.3	732	575	3.1	1840	7.6
Aug. 30.....	9.4					164		228	0	413	50				926	1.26	23.5	332	145	3.9	1260	7.9
Sept. 1.....	15					203		240	0	606	50				1070	1.46	43.2	456	259	4.1	1420	7.9
Sept. 20-21.....	316					256		312	0	333	105				910	1.24	776	194	0	8.0	1320	7.9
Sept. 22-30.....	106					85		192	0	126	25				367	.50	105	140	0	3.1	601	7.4
Weighted average	--					25		126	--	46	7.2				214	0.29	298	108	7	0.9	301	7.5
Time-weighted average.....	A479					74		194	--	132	24				408	--	--	169	14	2.4	612	7.7
Tons per day....	--					34		176	--	64	10				--	--	--	--	--	--	--	--

Analyses of additional samples

Nov. 29, 1966.....	B37.7	14		57	22	93	1.6	244	0	184	32	0.5	0.5	0.09	525	0.71	53.3	234	34	2.7	802	8.0
Feb. 28, 1967.....	B138	12		30	12	62	1.4	166	0	110	15	.6	.5	.06	318	.43	118	124	0	2.4	499	7.8
May 23.....	B2725	12		35	3.9	8.7	.8	132	0	16	2.5	.2	.4	.04	164	.22	1210	104	0	.4	233	7.3
Aug. 29.....	B16.1	13		104	34	201	6.8	246	0	539	64	.9	8.2	.12	C1090	1.48	47.3	398	196	4.4	1420	7.4

A Mean discharge based on 365 days; mean discharge for 339 days of chemical analyses, 515 cfs.
B Discharge at time of sampling.
C Calculated from determined constituents.

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	--	761	683	--	510	388	537	312	173	265	--	1420
2.....	--	743	664	673	534	410	521	261	--	204	--	--
3.....	1650	746	658	700	534	610	519	245	174	210	--	--
4.....	1440	744	631	681	--	575	528	266	175	211	766	--
5.....	2030	759	636	--	557	569	557	293	184	241	823	--
6.....	1730	782	622	641	584	571	533	316	338	--	843	--
7.....	1660	793	657	676	582	591	490	298	201	251	860	--
8.....	1650	732	655	--	601	549	429	309	171	319	1550	--
9.....	1610	--	--	696	--	515	382	303	--	339	836	--
10.....	1620	853	837	705	578	496	406	328	168	355	829	--
11.....	1670	786	928	--	--	498	405	265	152	471	922	--
12.....	1910	721	939	685	563	487	381	243	156	359	1300	--
13.....	1910	677	--	--	545	567	370	210	215	356	1200	--
14.....	1860	673	821	647	518	552	352	227	188	405	1050	--
15.....	--	--	786	672	508	516	342	209	342	360	1010	--
16.....	1260	656	776	714	--	584	333	--	192	384	1020	--
17.....	1050	654	766	721	555	--	339	220	177	438	1030	--
18.....	1010	--	800	772	546	566	329	229	196	446	1040	--
19.....	863	652	--	--	544	587	348	261	175	464	1050	--
20.....	876	636	824	766	559	--	340	207	158	--	1080	1580
21.....	--	649	804	--	578	614	348	184	174	--	1090	1070
22.....	975	--	760	--	585	658	297	186	180	--	1110	645
23.....	907	638	776	668	587	--	282	183	184	--	--	530
24.....	869	645	811	--	571	552	290	189	157	--	--	519
25.....	846	637	--	615	550	557	315	168	211	--	--	529
26.....	790	635	769	605	--	548	331	165	181	--	--	554
27.....	777	714	--	--	467	502	346	161	180	--	--	579
28.....	776	775	--	--	457	479	--	174	198	--	--	608
29.....	774	739	769	567	--	497	372	162	195	--	1840	681
30.....	769	670	--	528	--	478	377	161	297	--	1260	676
31.....	766	--	737	527	--	--	--	159	--	--	--	--
Average	1260	710	754	--	--	537	393	229	196	--	--	--

GREEN RIVER BASIN--Continued

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	--	52	63	62	59	59	61	61	57	56	56	41	42	--	34	45	46	49	49	--	32	49	49	53	50	52	51	52	49	32	50
November	42	47	44	39	44	45	42	33	--	32	32	42	44	42	--	48	46	--	40	42	50	49	--	39	34	33	32	32	33	36	--	40
December	39	40	39	37	41	32	32	32	--	32	32	32	--	32	32	32	32	32	--	32	32	32	32	32	--	32	--	--	32	--	32	--
January	--	32	32	32	--	32	32	--	32	32	--	32	--	32	32	32	32	32	--	32	--	--	32	--	32	32	--	--	32	32	32	--
February	32	32	32	--	32	32	32	32	--	32	--	32	32	32	32	--	32	32	32	32	32	32	32	32	32	--	32	32	--	--	--	32
March	32	32	32	32	32	33	32	33	32	38	42	43	42	37	39	44	--	49	43	--	41	49	--	51	50	44	46	52	43	39	--	40
April	40	51	53	50	52	53	50	49	51	52	53	51	48	52	52	48	53	52	50	46	46	47	46	47	49	52	52	--	48	43	--	50
May	47	51	50	52	52	61	54	62	59	55	52	50	51	49	49	--	59	60	58	59	60	65	65	65	60	55	53	57	56	56	55	56
June	58	--	56	57	59	68	57	59	--	59	60	58	55	56	57	69	64	66	67	62	62	63	61	66	65	64	70	64	70	69	--	62
July	70	74	69	73	74	--	69	78	73	70	66	74	80	71	73	74	72	72	75	--	--	--	--	--	--	--	--	--	--	--	--	--
August	--	--	--	81	78	83	72	75	76	77	79	73	74	76	75	80	77	79	80	68	55	78	--	--	--	--	--	--	65	75	--	--
September	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	51	52	51	52	60	62	65	46	49	62	48	--	--

9-3065. WHITE RIVER NEAR WATSON, UTAH

LOCATION.--Lat 39°59', long 109°11', at bridge on State Highway 45, 350 feet upstream from gaging station, about 1 mile 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 1967.
Water temperatures: December 1950 to September 1967.
EXTREMES, 1966-67.--Dissolved solids: Maximum, 1,760 ppm Aug. 8; minimum, 270 ppm June 1-12.
Hardness: Maximum, 742 ppm Aug. 8; minimum, 168 ppm June 1-12.
Specific conductance: Maximum daily, 2,360 micromhos Aug. 8; minimum daily, 373 micromhos June 10.
Water temperatures: Maximum, 79°F Aug. 8; minimum, freezing point on many days during winter months.
EXTREMES, 1950-67.--Dissolved solids (1950-54, 1955-67): Maximum, 2,380 ppm July 21, 1966; minimum, 209 ppm May 23-31, 1964.
Hardness (1954-67): Maximum, 1,410 ppm Aug. 4, 1955; minimum, 144 ppm Feb. 3, 1965.
Specific conductance: Maximum daily, 4,450 micromhos Aug. 4, 1955; minimum daily, 319 micromhos June 29, 1951.
Water temperatures: Maximum, 88°F Aug. 8, 1954; minimum, freezing point on many days during winter months.
REMARKS.--Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1966 to September 1967

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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-5, 1966...	551					108		204	14	284	80				778	1.06	1160	364	173	2.5	1120	8.5
Oct. 6-13.....	304					92		228	0	202	70				580	.79	476	296	109	2.3	908	8.0
Oct. 14.....	658					169		264	0	395	150				1030	1.40	1830	472	255	3.4	1450	7.9
Oct. 15-31.....	342					98		228	0	194	80				607	.83	561	288	101	2.5	931	8.1
Nov. 1-30.....	296					108		236	0	200	88				623	.85	498	290	96	2.8	980	8.1
Dec. 1.....	302					196		260	0	258	188				846	1.15	690	320	107	4.8	1320	8.2
Dec. 2-Feb. 27, 1967.....	302					100		246	0	182	84				639	.87	521	292	90	2.5	990	8.2
Feb. 28.....	520					117		220	0	226	78				574	.78	806	272	92	3.1	870	7.9
Mar. 1.....	500					100		204	0	164	84				554	.75	748	238	71	2.8	896	7.9
Mar. 2.....	500					111		184	0	249	83				658	.89	888	286	135	2.9	1020	8.1
Mar. 3-5.....	580					123		228	0	217	92				667	.91	1040	276	89	3.2	1030	7.9
Mar. 6-11.....	543					123		248	0	263	76				723	.98	1060	316	113	3.0	1080	8.2
Mar. 12-14.....	799					94		210	0	266	56				674	.92	1450	324	152	2.3	986	7.7
Mar. 15-31.....	357					115		244	0	237	84				687	.93	662	314	114	2.8	1050	8.0
Apr. 1-13.....	391					118		270	0	198	84				617	.84	651	290	69	3.0	967	8.1
Apr. 14-24.....	429					64		154	0	151	70				510	.69	591	242	116	1.8	801	8.0
Apr. 25-30.....	408					93		242	0	209	79				646	.88	712	326	127	2.2	983	8.0
May 1-2.....	510					94		248	0	205	78				654	.89	901	323	120	2.3	956	8.0
May 3-19.....	555					54		181	0	110	54				436	.59	653	222	74	1.6	680	7.8
May 20-30.....	2035					31		192	0	70					303	.41	1660	195	38	1.0	487	7.8
May 31.....	2160					46		192	0	148	42				454	.62	2650	270	113	1.2	697	7.7
June 1-12.....	2085					27		164	0	62	20				270	.37	1520	168	33	.9	421	7.9
June 13-14.....	1670					40		195	0	98	32				377	.51	1700	221	61	1.2	582	7.8
June 15.....	1660					72		250	0	167	57				538	.73	2410	302	97	1.8	823	7.9
June 16-19.....	1448					48		178	0	98	30				325	.44	1270	186	40	1.5	510	7.8

9-3065. WHITE RIVER NEAR WATSON, UTAH--Continued

Chemical analyses, in parts per million, water year October 1966 to September 1967--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 180°C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
June 20, 1967....	1500					75		282	8	155	88				712	0.97	2880	368	123	1.7	1030	8.3
June 21.....	2050					44		212	0	102	26				368	.50	2040	220	46	1.3	586	7.8
June 22-30.....	1330					33		157	0	75	24				291	.40	1040	169	40	1.1	456	7.8
July 1-7.....	741					42		160	0	95	38				333	.45	666	192	61	1.3	533	7.9
July 8-10.....	641					84		276	0	196	43				593	.81	1030	308	82	2.1	889	7.8
July 11-14.....	416					64		202	0	143	52				467	.64	525	248	82	1.8	724	8.0
July 15-19.....	511					87		260	0	199	56				605	.82	835	310	97	2.2	916	8.1
July 20-31.....	338					79		234	0	167	58				535	.73	488	276	84	2.1	827	8.0
Aug. 1-7.....	240					111		222	0	202	81				609	.83	395	266	84	3.0	935	8.2
Aug. 8.....	516					323		236	0	822	280				1760	2.39	2450	742	548	5.2	2360	7.6
Aug. 9-10.....	423					127		304	0	249	59				638	.87	729	314	65	3.1	1030	7.7
Aug. 11-31.....	257					118		226	0	217	92				579	.79	402	284	99	3.0	977	8.2
Sept. 1-10.....	213					112		236	0	218	92				662	.90	381	306	112	2.8	1010	7.9
Sept. 11-17.....	405					101		260	0	209	75				647	.88	707	316	103	2.5	987	7.9
Sept. 18-30.....	374					83		224	0	179	68				555	.75	560	286	102	2.1	858	7.9
Weighted average.....	--					72		209	--	148	56				490	0.66	706	249	77	1.9	760	7.9
Time-weighted average.....	533					91		226	--	181	73				576	--	--	277	92	2.3	894	8.0
Tons per day...	--					103		301	--	213	81				--	--	--	--	--	--	--	--
Analyses of additional samples (instantaneous discharges shown)																						
Nov. 28, 1966....	285	13		73	24	114	1.6	244	0	191	93	0.5	0.2	0.07	645	0.88	496	282	82	3.0	1010	8.0
Mar. 3, 1967.....	580	13		74	35	128	5.1	196	0	311	102	.5	1.2	.11	779	1.06	1220	328	167	3.1	1130	7.8
May 23.....	1540	15		63	15	28	2.0	204	0	70	25	.3	1.1	.05	335	.46	1390	216	49	.8	513	7.4
Aug. 28.....	147	11		65	35	119	2.8	228	0	234	108	.7	.1	.08	715	.97	284	306	119	3.0	1090	7.8

9-3065. WHITE RIVER NEAR WATSON, UTAH--Continued

Specific conductance (micromhos at 25°C), water year October 1966 to September 1967

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1040	954	1320	--	--	896	1020	771	481	476	858	1020
2.....	1040	960	973	--	--	1020	--	1140	403	--	925	1030
3.....	1070	929	990	--	--	1150	1020	679	400	506	940	--
4.....	1330	942	986	--	--	1070	1030	681	471	--	871	1100
5.....	1090	967	990	--	--	883	993	723	--	538	980	1010
6.....	899	--	--	--	--	1000	993	734	424	548	964	1020
7.....	894	976	944	--	--	958	961	796	400	591	993	997
8.....	888	1030	1000	--	--	1200	939	--	376	768	2360	987
9.....	902	--	1010	--	--	1140	964	787	394	1070	1030	987
10.....	899	--	--	--	--	1140	930	787	373	829	--	1000
11.....	910	990	--	--	--	1020	880	700	450	713	983	1060
12.....	910	1010	--	--	--	931	867	619	411	718	--	1020
13.....	896	948	--	--	--	--	950	567	592	718	--	993
14.....	1450	973	--	--	--	1040	795	544	573	748	801	965
15.....	--	--	--	--	--	1030	907	--	823	869	871	1020
16.....	926	986	--	--	--	1000	805	570	519	795	--	917
17.....	907	1030	--	--	--	1030	805	643	516	942	898	910
18.....	1000	986	--	--	--	1040	814	645	501	1010	874	891
19.....	918	990	--	--	--	1040	799	639	502	923	916	889
20.....	929	--	--	--	--	1080	824	528	1030	814	940	881
21.....	902	993	--	--	--	1060	774	--	586	806	925	889
22.....	--	967	--	--	--	1050	796	492	494	802	949	875
23.....	959	993	--	--	--	1070	714	524	500	814	983	838
24.....	901	--	--	--	--	1080	732	517	425	812	1060	831
25.....	901	960	--	--	--	1070	1090	426	--	827	977	823
26.....	899	970	--	--	--	--	840	435	416	866	1030	848
27.....	924	901	--	--	--	1090	798	522	450	824	1080	839
28.....	886	990	--	--	870	1030	821	--	--	803	1090	834
29.....	944	1060	--	--	--	1050	1160	437	--	822	1100	826
30.....	950	997	--	--	--	1040	1170	--	--	842	1100	847
31.....	940	--	--	--	--	1040	--	697	--	854	990	--
Average	969	979	--	--	--	1040	903	638	500	780	1020	936

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	53	54	52	53	52	52	53	57	54	55	53	50	52	45	--	44	41	43	43	44	44	--	48	45	45	46	46	45	45	43	43	48
November	42	40	39	39	38	--	40	42	--	--	36	45	41	42	--	40	41	40	40	--	42	40	39	--	33	33	32	32	35	35	--	38
December	32	37	37	37	39	--	36	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January.....	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February.....	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	32
March.....	33	34	35	34	33	34	32	34	34	33	34	34	--	35	33	33	35	38	35	40	42	43	45	45	47	--	45	45	45	39	39	37
April.....	40	--	42	49	48	46	48	48	45	45	46	50	47	47	48	46	45	48	48	47	42	44	45	45	44	42	45	44	45	44	--	45
May.....	45	45	45	46	48	48	50	--	54	56	56	48	50	50	--	52	56	55	56	55	--	58	59	59	59	58	58	--	50	--	54	52
June	54	55	55	58	--	52	54	52	52	54	55	56	54	54	54	56	56	60	60	56	60	59	60	60	--	60	64	--	--	--	--	56
July.....	65	--	70	--	68	68	65	68	68	70	70	66	68	68	70	70	70	68	68	70	70	70	72	72	71	72	72	69	70	70	73	69
August.....	73	73	73	70	71	--	72	79	60	--	68	--	--	67	65	--	72	72	74	74	65	68	66	66	68	66	68	70	64	68	66	69
September.....	62	62	--	70	65	60	--	68	66	67	64	59	54	54	56	58	58	58	56	56	55	58	56	58	62	60	58	58	57	56	--	59

SAN JUAN RIVER BASIN

9-3529. VALLECITO CREEK NEAR BAYFIELD, COLO.
(Hydrologic bench-mark station)

LOCATION.--Lat 37°28'39", long 107°32'35", at gaging station, 60 feet upstream from Fall Creek, 0.7 mile downstream from Bear Creek, 7 miles north of Vallecito Dam, and 18 miles north of Bayfield, La Plata County.
DRAINAGE AREA.--72.1 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1963 to September 1967.
Water temperatures: November 1962 to September 1967.
EXTREMES, 1966-67.--Water temperatures: Maximum, 58°F July 25, 28, Aug. 1; minimum, freezing point on several days during January.
EXTREMES, 1962-67.--Water temperatures: Maximum, 62°F July 21, 1963; minimum, freezing point on many days during winter months in 1962-66.
REMARKS.--Recorder stopped Sept. 1-30.

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 7, 1966.....	62.7	3.3		9.6	1.5	1.0	0.6	28	0	8.8	0.3	0.4	0.1	0.01	43	0.06	7.26	30	7	0.1	69	7.3
Nov. 7.....	19.6	--		--	--	--	--	37	0	--	--	--	--	--	--	--	--	38	7	--	80	7.2
Dec. 2.....	18.1	3.8		11	1.8	1.5	.7	36	0	10	.5	.2	.2	.00	43	.06	2.09	36	6	.1	83	7.2
Jan. 6, 1967.....	20.4	--		--	--	--	--	36	0	--	--	--	--	--	--	--	--	37	7	--	84	7.1
Feb. 3.....	16.5	--		--	--	--	--	44	0	--	--	--	--	--	--	--	--	44	7	--	88	7.3
Mar. 10.....	19.0	--		--	--	--	--	34	0	--	--	--	--	--	--	--	--	34	6	--	80	7.2
Mar. 29.....	52.0	--		--	--	--	--	34	0	--	--	--	--	--	--	--	--	36	6	--	73	7.1
May 11.....	432	--		--	--	--	--	23	0	--	--	--	--	--	--	--	--	28	9	--	54	7.2
May 19.....	787	--		--	--	--	--	20	0	--	--	--	--	--	--	--	--	22	5	--	42	7.0

9-3529. VALLECITO CREEK NEAR BAYFIELD, COLO.--Continued

Temperature (°F) of water, water year October 1966 to September 1967

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	49	49	47	47	47	48	45	44	44	44	44	43	43	40	38	38	39	39	38	39	39	38	38	38	38	38	38	38	38	38	38	41
Minimum	46	47	46	44	45	44	41	41	40	41	42	41	40	36	36	36	37	36	36	37	38	37	37	36	36	37	36	37	37	37	37	39
November																																
Maximum	38	36	36	36	36	35	37	36	34	34	34	35	35	34	35	35	36	36	35	35	36	36	37	37	37	36	34	34	35	35	--	36
Minimum	36	35	35	35	35	35	35	34	34	34	34	34	34	34	34	34	35	35	34	34	35	36	36	37	36	34	34	34	34	34	--	35
December																																
Maximum	35	36	36	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	34
Minimum	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	33	34
January																																
Maximum	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Minimum	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33
February																																
Maximum	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	--	--	--	33
Minimum	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	--	--	--	33
March																																
Maximum	34	34	34	34	34	34	34	34	34	35	36	36	36	36	36	36	37	36	36	36	38	38	38	38	38	38	38	38	38	36	36	36
Minimum	34	34	34	34	34	34	34	34	34	34	35	35	36	35	35	35	36	36	36	35	35	35	35	36	36	35	37	36	36	34	34	35
April																																
Maximum	38	40	41	41	39	41	41	41	40	39	41	40	39	40	40	42	42	42	42	39	40	38	40	40	39	42	43	41	41	38	--	40
Minimum	36	35	37	39	38	36	36	36	37	35	38	36	34	36	38	37	36	37	38	35	35	35	35	36	36	34	36	36	36	35	--	36
May																																
Maximum	39	37	36	40	40	44	45	46	44	43	43	43	39	42	44	44	44	44	45	45	46	46	44	46	45	42	44	44	42	42	42	43
Minimum	34	35	35	33	38	37	37	37	37	38	37	36	36	36	35	37	37	37	38	38	38	38	39	39	41	40	39	40	38	40	40	37
June																																
Maximum	44	45	45	46	44	45	46	46	47	44	43	43	42	43	46	48	49	49	46	46	48	48	48	49	48	49	50	48	51	54	--	47
Minimum	38	42	42	42	41	41	38	39	39	38	38	40	40	41	39	40	43	44	44	43	41	42	42	41	42	42	43	43	42	44	--	41
July																																
Maximum	54	54	52	52	51	54	52	54	55	55	53	54	55	54	52	52	52	55	54	52	56	55	55	55	58	57	56	58	57	56	55	54
Minimum	44	45	45	46	46	47	50	50	48	49	50	49	49	50	50	50	48	47	47	48	49	50	52	50	51	52	51	50	52	52	52	49
August																																
Maximum	58	57	55	56	56	57	53	52	51	50	50	50	53	53	51	54	52	50	50	48	49	48	52	52	52	51	50	48	49	49	49	52
Minimum	50	51	51	51	51	51	51	48	50	48	47	48	47	47	47	46	46	47	47	46	46	46	46	47	48	48	46	46	47	47	48	48
September																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO RIVER BASIN

Chemical analyses, in parts per million, water year October 1966 to September 1967

Date of collection	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 180°C) Parts per million	Dissolved solids Tons per acre-foot	Dissolved solids Tons per day	Hardness as $CaCO_3$ Calcium, Magnesium	Hardness as $CaCO_3$ Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
EAGLE RIVER BASIN																						
9-0699. GYPSUM CREEK AT GYPSUM (lat 39°39'00", long 106°57'06")																						
Dec. 1, 1966.....	A25	11		102	27	5.4	1.1	210	0	194	2.2	0.3	1.8	0.05	459	0.62	31.0	366	194	0.1	671	7.8
Mar. 1, 1967.....	20	15		91	29	5.0	1.1	196	0	201	2.4	.4	1.0	.02	460	.63	24.7	346	185	.1	648	7.8
May 22.....	A3.0	14		313	54	14	4.3	256	0	795	10	.6	5.3	.09	B1340	1.82	10.8	1000	790	.2	1560	7.5
Aug. 30.....	A3.0	16		220	35	11	3.5	328	0	449	5.5	.4	.4	.05	951	1.29	7.69	692	423	.2	1170	7.7
COLORADO RIVER MAIN STEM																						
9-0705. COLORADO RIVER NEAR DOTSERO (lat 39°38'40", long 107°04'40")																						
Dec. 1, 1966.....	753	9.9		62	16	27	2.4	148	0	108	33	0.4	0.3	0.04	334	0.45	679	218	97	0.8	536	7.7
Mar. 1, 1967.....	837	10		58	15	27	2.3	130	0	112	34	.4	.3	.03	315	.43	712	204	97	.8	508	7.6
May 22.....	3650	9.9		51	8.8	9.1	1.5	150	0	54	10	.2	.3	.05	231	.31	2280	164	41	.3	351	7.2
Aug. 31.....	1300	8.1		45	14	27	2.0	116	0	86	34	.4	.3	.03	288	.39	1010	169	74	.9	454	7.2
GUNNISON RIVER BASIN																						
9-1495. UNCOMPAHGRE RIVER AT DELTA (lat 38°44'30", long 108°04'50")																						
Dec. 7, 1966.....	452	11		134	65	127	5.8	204	0	658	14	0.9	7.4	0.18	B1120	1.52	1370	602	435	2.3	1480	7.6
Mar. 3, 1967.....	140	18		204	88	180	4.4	266	0	973	21	1.1	11	.18	B1630	2.22	616	870	652	2.7	2010	7.9
June 2.....	420	15		184	63	112	3.7	228	0	752	11	.8	8.4	.15	B1260	1.71	1430	720	533	1.8	1540	7.4
Aug. 8.....	827	16		174	46	102	5.1	228	0	643	14	1.1	7.1	.14	B1120	1.52	2500	624	437	1.8	1430	7.5

A Estimated.
B Calculated from determined constituents.

CHEMICAL ANALYSES OF GROUND WATER IN COLORADO

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million

Well number	Geologic source 1/	Depth of well (feet)	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
PART 6. MISSOURI RIVER BASIN																									
SOUTH PLATTE RIVER BASIN																									
DENVER AREA (SURFICIAL DEPOSITS)																									
(C-2-67)30dcbc	Qpp,Ql	--	6- 1-67	53	18	0.00		144	24	162	5.6	312	0	320	140	1.7	27	0.22	A996	460	204	43	3.3	1490	7.7
(C-3-67)18abcd	Qpp,Qb, Ql	32	6- 1-67	53	18	.01		162	38	187	12	464	0	397	102	1.2	48	.37	A1200	580	180	41	3.4	1710	7.8
(C-3-68)3cddc	Qb,Ql	33	6- 1-67	56	17	.01		140	19	111	3.2	336	0	170	136	1.6	31	.10	836	430	154	36	2.3	1270	7.6
14acbc2	Qb,Ql	34	6- 1-67	59	21	.05		120	24	199	11	384	0	155	220	1.4	33	.06	998	400	85	51	4.3	1560	7.8
(C-3-69)20acc	Qpp,Qb, Ql	32	6- 1-67	55	16	.01		65	18	37	2.5	192	0	118	21	.5	20	.06	402	236	79	25	1.1	594	7.6
DENVER AREA (BEDROCK)																									
(C-1-66)4cdcd	Kdlc	360	6- 1-67	61	8.6	0.02		5.2	1.2	157	0.7	400	0	20	5.1	3.7	1.5	0.04	408	18	0	95	16	641	8.0
4dcad	Kdmc	188	6- 1-67	55	11	.02		58	14	130	2.6	318	0	170	44	.8	5.8	.11	592	202	0	58	4.0	916	7.8
(C-1-67)3dccb	Klb, Kla, Kfm	1100	6- 1-67	63	12	.02		2.8	1.7	232	.6	522	8	3.8	48	1.2	1.1	.19	578	14	0	97	27	927	8.3
(C-2-68)33abdb	Klb, Kla, Kfm	1560	4-29-67	76	17	.00		5.6	1.5	243	1.1	540	0	5.0	63	2.6	.1	.25	612	20	0	96	24	980	8.1
(C-3-68)6dccb	Kdmc	105	6- 1-67	55	16	.07		417	49	557	1.9	364	0	1960	100	1.9	57	.37	A3340	1240	942	49	6.9	3800	7.6
12dcaa	Klb, Kla, Kfm	1626	6- 1-67	85	12	.03		5.2	.7	299	1.2	666	14	3.8	73	4.3	.2	.46	757	16	0	97	33	1210	8.4
SOUTH PLATTE VALLEY AREA																									
(B-8-53)25db	Qal	80	5-31-67	57	37	0.00		188	61	127	15	302	0	636	58	1.0	14	0.22	A1290	720	472	27	2.1	1610	8.0
(B-8-52)34abb	Qal,Qds	89	5-31-67	58	40	.01		70	9.2	40	6.7	218	0	92	9.9	.6	20	.02	416	212	35	28	1.2	576	7.5
(B-10-49)11bcd	Qal	55	9-12-67	56	33	.00		204	85	226	16	332	0	872	108	1.7	3.9	.24	A1710	860	588	36	3.4	2250	7.8
CACHE LA POUDRE AREA																									
(B-5-65)2bbb	Qt	123	8-30-67	53	32	0.01		253	58	139		320	0	775	37	--	63	--	A1510	870	608	--	2.0	1820	7.9
(B-6-64)24daa	Qal	37	8-30-67	53	39	--		296	99	458		496	0	1490	86	--	76	--	A2790	1140	738	--	5.9	3270	7.8
31ccd	Qt(?)	100	8-31-67	55	28	--		204	63	149		288	0	742	32	--	50	--	A1410	770	501	--	7.3	1700	7.8
32dab	Qt	43	8-30-67	53	23	--		248	148	244		368	0	1260	61	--	76	--	A2240	1230	928	--	3.0	2530	7.7
35baa	Qal	42	8-30-67	55	33	.02		353	615	1590		660	0	5750	235	--	4.9	--	A8910	3410	2870	--	12	8850	8.0

See footnotes at end of table.

CHEMICAL ANALYSES OF GROUND WATER IN COLORADO--Continued

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million--Continued

Well number	Geologic source 1/	Depth of well (feet)	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
PART 6. MISSOURI RIVER BASIN--Continued																									
SOUTH PLATTE RIVER BASIN--Continued																									
CACHE LA POUDRE AREA--Continued																									
(B-6-64)35ddb	Qal	41	8-30-67	54	35	0.02		433	109	697		506	0	2340	125	--	23	--	A4010	1530	1120	--	7.8	4490	8.0
(B-6-65)4baa1	Qal	42	8-30-67	53	33	--		281	72	171	12	408	0	954	45	0.8	53	0.51	A1820	995	660	27	2.4	2170	7.8
22cbb	Qt	64	8-30-67	55	33	.01		297	63	167		362	0	933	40	--	49	--	A1760	1000	703	--	2.3	2070	7.8
35bba	Qt	57	8-30-67	54	33	.01		188	96	123		342	0	731	35	--	51	--	A1430	865	585	--	1.8	1770	7.8
(B-6-66)19dcb	Kf	487	8-31-67	54	19	.01		188	129	172		368	0	934	40	--	55	--	A1720	1000	698	--	2.4	2080	7.9
(B-6-67)1bbc	Qal	51	8-31-67	54	16	--		92	104	104	1.5	456	0	465	20	2.3	30	.24	A1060	656	282	26	1.8	1450	7.9
7cbd	Qt	29	8-31-67	58	16	.01		136	80	79		318	0	519	15	--	24	--	A1030	670	409	--	1.3	1340	7.9
(B-7-65)15bba	Qal	29	8-30-67	52	31	--		230	49	122		392	0	590	32	--	74	--	A1320	775	454	--	1.9	1650	7.8
(B-7-66)3aad	Qal	42	8-31-67	55	22	--		148	39	68		364	0	296	38	--	22	--	812	530	232	--	1.3	1100	7.8
7add	Kl	150	8-30-67	66	19	.02		140	61	49	1.9	356	0	350	.16	1.7	15	.12	875	600	308	15	.9	1170	7.6
36cbb	Qal	60	8-30-67	53	23	--		228	146	177		392	0	1130	24	--	28	--	A1950	1170	849	--	2.2	2190	7.9
(B-7-69)24daa	Qp	31	8-31-67	58	14	--		93	32	50		413	0	100	8.5	--	21	--	512	362	23	--	1.2	804	7.8
(B-8-65)29bbb	Qal	22	8-31-67	52	31	--		189	64	148		504	0	579	16	--	24	--	A1300	735	322	--	2.4	1640	7.9
(B-8-66)22aab	Qal	38	8-30-67	53	26	--		77	15	39		253	0	54	19	--	58	--	402	253	46	--	1.1	618	7.6
(B-8-68)15bcb	Qal	52	8-30-67	53	18	--		275	86	118		298	0	961	18	--	32	--	A1660	1040	796	--	1.6	1930	7.6
28bbb1	Qal	72	8-30-67	53	18	.02		441	151	191		286	0	1760	32	--	30	--	A2760	1720	1490	--	2.0	2880	7.8
32aba1	Qal	90	8-30-67	52	19	--		521	173	303		340	0	2220	40	--	28	--	A3470	2010	1730	--	2.9	3350	7.7
(B-8-69)12bdd	Kprr	206	8-30-67	65	8.6	--		24	2.7	794		200	0	1550	14	--	.7	--	A2490	72	0	--	41	3300	7.6
27dbb	Qal	38	8-30-67	54	13	--		123	59	22		318	0	300	5.2	--	21	--	755	550	289	--	.4	987	7.8
(B-9-66)33cac	Qal	40	8-30-67	59	24	--		92	18	43		197	0	67	16	--	180	--	516	304	142	--	1.1	710	7.6
(B-9-68)8dcb	Kpl(?)	700	8-30-67	54	13	.02		56	47	362		146	0	948	7.0	--	5.6	--	A1510	334	214	--	8.6	1970	7.5
19bbb	Qp	41	8-30-87	52	14	--		113	45	80		350	0	306	12	--	19	--	770	464	177	--	1.6	1060	7.8
33cab2	Qal	90	8-30-67	52	17	--		257	75	89		296	0	826	14	--	26	--	A1450	950	707	--	1.3	1730	7.9
(B-9-69)14ada1	Qp	22	8-30-67	54	14	--		77	32	63		340	0	136	14	--	28	--	521	324	45	--	1.5	802	7.8
NORTHERN TRIBUTARY AREA																									
(B-8-55)33ddd	Kp	590	5-31-67	54	8.3	0.00		8.4	3.2	410	4.2	604	4	31	268	1.8	0.2	1.4	A1040	34	0	96	31	1750	8.3
(B-11-51)6bba	To	240	5-31-67	54	47	.00		52	18	19	8.3	172	0	34	36	.7	29	.02	356	204	63	16	.6	495	7.8

See footnotes at end of table.

CHEMICAL ANALYSES OF GROUND WATER IN COLORADO--Continued

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million--Continued

Well number	Geologic source 1/	Depth of well (feet)	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
PART 6. MISSOURI RIVER BASIN--Continued																									
KANSAS RIVER BASIN																									
HIGH PLAINS AREA																									
(B-2-44)36bbb2	To	180	9-12-67	61	55	0.01		34	12	17	7.3	188	0	12	2.4	1.2	5.4	0.04	238	136	0	20	0.6	335	7.8
(B-2-50)9ddd	To	218	5-31-67	56	49	.03		35	12	8.6	7.6	164	0	12	6.0	.8	7.7	.02	230	136	2	11	.3	301	7.8
(B-7-43)27bbb	To	215	9-12-67	58	43	.00		38	9.7	11	6.1	176	0	12	5.4	1.0	5.0	.04	215	136	0	14	.4	310	7.6
(B-8-47)19bbd	To	272	9-13-67	59	39	.00		26	14	11	6.4	160	0	16	3.7	1.0	8.0	.04	205	124	0	15	.4	301	7.8
(B-10-43)3dcb	To	400	9-12-67	60	40	.00		35	15	16	7.0	196	0	13	5.1	.9	7.5	.04	240	148	0	18	.6	354	7.7
(C-1-44)27bbb	To	263	9-12-67	59	50	.01		30	19	15	7.6	206	0	9.0	3.8	1.9	9.1	.03	250	156	0	16	.5	370	7.7
(C-9-51)2acc	To	103	5-30-67	56	43	.00		34	19	28	3.1	222	0	24	9.4	1.4	17	.04	304	164	0	27	1.0	430	7.7
(C-12-47)10aad	To	183	9-12-67	58	24	.00		37	19	22	2.3	212	0	24	8.0	.8	13	.03	261	172	0	21	.7	418	7.5
PART 7. LOWER MISSISSIPPI RIVER BASIN																									
ARKANSAS RIVER BASIN																									
NORTHERN TRIBUTARY AREA																									
(C-20-42)36cdc	To	187	9-12-67	60	22	0.01		82	35	87	3.8	192	0	286	41	3.5	11	0.27	709	348	191	35	2.0	994	7.7
ARKANSAS VALLEY AREA																									
(C-20-63)36dca	Qvf	39	4-24-67	55	16			253	122	338	4.2	432	0	1370	50	1.4	41	0.24	A2410	1130	776	39	4.4	2820	7.6
(C-20-64)36bcd	Qvf	37	4-24-67	55	12			176	57	96	6.1	306	0	581	35	1.6	7.8	.12	A1020	676	425	23	1.6	1480	7.5
(C-21-48)24dba	Qvf	--	4-27-67	58	24			353	224	476	4.7	284	0	2350	9.2	3.2	18	.99	A3690	1800	1570	36	4.9	4200	7.6
(C-21-61)7aaa	Qvf	35	8-31-67	57	13			71	30	351	2.1	364	0	686	45	3.6	.3	.11	A1380	300	2	72	8.8	1910	8.1
(C-21-62)4bab	Qvf	46	4-24-67	57	16			147	44	212	4.3	302	0	662	50	1.1	21	.19	A1310	550	302	45	3.9	1710	7.6
(C-22-44)35dcc	Qvf	64	4-27-67	56	17			419	169	620	8.9	360	0	2430	158	1.0	11	.46	A4010	1740	1440	44	6.5	4660	7.7
(C-22-45)3ddc	Qvf	125	8-31-67	60	16			156	49	240	7.8	202	0	868	50	1.5	5.8	.25	A1490	590	424	47	4.3	1920	7.8
23bbb	Qvf	109	8-31-67	60	18			305	102	327	13	240	0	1550	95	1.4	26	.43	A2560	1180	983	37	4.1	2950	7.9
(C-22-46)33abc	Qvf	53	4-28-67	57	16			321	170	450	6.5	352	0	1900	108	1.7	11	.50	A3160	1500	1210	39	5.1	3800	7.6
(C-22-47)17cdd2	Qvf	52	4-27-67	57	24			369	207	611	7.6	350	0	2460	198	1.6	29	.97	A4080	1770	1480	43	6.5	4690	7.6
28dab	Qvf	--	4-27-67	54	26			401	287	919	12	458	0	3470	250	1.7	18	1.4	A5610	2180	1800	48	8.6	6150	7.7
(C-22-51)21dbb	Qvf	48.9	4-26-67	57	18			401	136	250	3.4	274	0	1750	57	3.2	21	.29	A2770	1560	1340	26	2.8	3090	7.6
29cbc	Qvf	78.6	4-26-67	57	18			469	143	338	2.8	274	0	2040	87	8.9	29	.41	A3270	1760	1540	29	3.5	3570	7.7

See footnotes at end of table.

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million--Continued

Well number	Geologic source 1/	Depth of well (feet)	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	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 $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
PART 7. LOWER MISSISSIPPI RIVER BASIN--Continued																									
ARKANSAS RIVER BASIN--Continued																									
ARKANSAS VALLEY AREA--Continued																									
(C-22-53)26acc	Qvf	41	4-26-67	55	17			285	126	250	3.8	344	0	1320	68	0.6	9.0	0.43	A2250	1230	948	31	3.1	2600	7.8
(C-22-57)31aba	Qvf	40	4-25-67	57	20			361	124	166	2.6	324	0	1400	34	1.3	24	.25	A2290	1410	1140	20	1.9	2570	7.5
(C-22-58)3cbc	Qvf	--	4-25-67	59	21			273	156	366	2.2	352	0	1640	99	4.6	27	.45	A2760	1320	1030	38	4.4	3260	7.9
22cbd	Qvf	36	4-25-67	57	21			329	112	139	2.7	334	0	1180	60	1.2	46	.18	A2060	1280	1010	19	1.7	2340	7.6
C-22-59)13abc	Qvf	44.4	4-25-67	57	12			261	198	395	5.3	278	0	1910	54	1.2	.3	.34	A2970	1470	1240	37	4.5	3570	7.6
17ccc	Qvf	--	4-24-67	55	22			265	97	128	2.3	382	0	937	45	2.3	34	.17	A1720	1060	747	21	1.7	2050	7.6
24bbb	Qvf	--	4-25-67	57	21			289	122	141	2.9	366	0	1130	40	1.9	29	.16	A1960	1220	920	20	1.8	2270	7.6
(C-22-60)1dda	Qvf	--	4-24-67	60	14			369	326	409	4.2	330	0	2620	38	1.6	3.0	.48	A3950	2260	1990	28	3.7	4420	7.6
(C-23-41)29bbc	Qvf	33	4-27-67	57	15			513	117	468	13	164	0	2310	215	1.9	12	.07	A3750	1760	1610	36	4.9	4070	7.5
(C-23-42)3dad	Qvf	--	4-27-67	59	29			345	151	422	15	298	0	1850	122	1.2	12	.91	A3100	1480	1240	38	4.8	3730	7.5
4bcb	Qvf	138	4-27-67	59	23			257	204	402	10	256	0	1690	122	1.8	19	.87	A3060	1480	1270	37	4.5	3630	7.6
30ddd	Qvf	120	4-27-67	60	22			216	78	200	7.6	162	0	1000	60	1.2	19	.19	A1710	860	711	33	3.0	2160	7.6
(C-23-43)13daa	Qvf	--	4-27-67	56	13			377	173	678	9.2	312	0	2600	182	.9	7.9	.56	A4190	1650	1390	47	7.3	4850	7.7
(C-23-44)10acc	Qvf	54	8-31-67	59	22			246	100	305	6.9	300	0	1340	70	.8	5.7	.36	A2240	1020	779	39	4.1	2670	8.0
(C-23-46)22bad	Qvf	66	4-28-67	61	17			84	19	21	5.0	146	0	186	14	.8	20	.04	444	288	168	13	.5	631	7.6
(C-23-48)5adc	Qvf	--	4-28-67	57	15			361	139	366	5.9	324	0	1600	110	1.2	15	.32	A2990	1520	1250	34	4.1	3580	7.3
(C-23-51)4bbb	Qvf	24	4-26-67	57	20			353	141	287	3.7	320	0	1580	76	1.1	56	.36	A2680	1460	1200	30	3.3	3090	7.6
18bba	Qvf	--	4-26-67	58	15			341	168	385	3.6	454	0	1860	94	1.1	5.8	.35	A3100	1540	1170	35	4.3	3600	7.6
(C-23-52)7ccc	Qvf	37.8	4-26-67	57	16			349	114	420	6.7	366	0	1730	103	4.0	9.2	.33	A2930	1340	1040	40	5.0	3470	7.8
10bbb	Qvf	24	4-26-67	56	16			385	170	416	7.9	384	0	1990	154	1.5	5.6	.37	A3340	1660	1350	35	4.4	3860	7.5
(C-23-53)4cbb2	Qvf	25.7	4-26-67	54	21			369	151	390	2.7	398	0	1830	96	5.5	16	.42	A3080	1490	1160	35	4.3	3500	7.9
(C-23-54)14aad	Qvf	35	4-25-67	58	19			253	73	149	2.3	278	0	922	50	1.9	12	.27	A1620	930	702	26	2.1	1960	7.5
29aad	Qvf	49.8	4-26-67	58	21			473	195	395	4.6	354	0	2200	144	1.8	26	.38	A3630	1980	1690	30	3.9	4110	7.5
(C-23-55)31abc	Qvf	42	4-25-67	57	21			441	122	250	3.8	340	0	1700	83	3.5	55	.39	A2850	1600	1320	25	2.7	3170	7.7
34dca	Qvf	40	4-25-67	58	15			248	92	160	5.6	354	0	965	55	1.2	9.7	.23	A1730	1000	710	26	2.2	2070	7.6
(C-23-56)26bcb	Qvf	50	8-31-67	57	20			265	84	160	2.3	306	0	1060	45	2.2	37	.15	A1850	1060	802	25	2.1	2160	7.8
35ada	Qvf	50.5	8-31-67	57	19			457	117	275	2.1	266	0	1850	82	2.3	53	.31	A2990	1620	1400	27	3.0	3240	7.8
(C-23-57)3dbb	Qvf	62	4-25-67	57	21			273	112	191	2.1	356	0	1150	50	1.6	21	.27	A2000	1140	848	27	2.5	2370	7.6
(C-23-43)21abb	Qvf	--	4-27-67	57	36			433	131	568	16	252	0	2350	170	2.1	8.5	.93	A3840	1620	1410	43	6.1	4310	7.5

1 Qal, alluvial deposits; Qds, dune sand; Qvf, valley fill deposits; Qt, terrace deposits; Ql, Louviers Alluvium; Qb, Broadway Alluvium; Qp, Piney Creek Alluvium; Qpp, post-Piney Creek Alluvium; To, Ogallala Formation; Kdmc, middle conglomerate of the Dawson Formation; Kdlc, lower conglomerate of the Dawson Formation; Kp, Pierre Shale; Kpl, Larimer Sandstone Member of the Pierre Shale; Kprr, Rocky Ridge Sandstone Member of the Pierre Shale; Kf, Fox Hills Sandstone; Kfm, Milliken Sandstone Member of the Fox Hills Sandstone; Kl, Laramie Formation; Kla, A sandstone of the Laramie Formation; Klb, B sandstone of the Laramie Formation.
2 In solution at time of sampling, unless otherwise indicated.
A Calculated from determined constituents.

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