

Quantity and Quality of Surface Waters of Alaska, 1959

*Prepared under the direction of J. V. B. WELLS, Chief, Surface Water Branch, S. K. LOVE,
Chief, Quality of Water Branch*

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1640

*Prepared in cooperation with the
State of Alaska*



UNITED STATES DEPARTMENT OF THE INTERIOR

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GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*

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PREFACE

This report was prepared by the Geological Survey in cooperation with the State of Alaska by personnel of the Water Resources Division, L. B. Leopold, chief. The streamflow records were prepared under the general direction of J. V. B. Wells, chief, Surface Water Branch, succeeded by E. L. Hendricks, and F. J. Flynn, chief, Basic Records Section, the data being collected and computed under the supervision of R. E. Marsh, district engineer, Surface Water Branch, Juneau, Alaska. The quality of water records were prepared under the general direction of S. K. Love, chief, Quality of Water Branch, and W. H. Durum, chief, Reports Section, the data being collected and computed under supervision of F. B. Walling, district chemist, Quality of Water Branch, Palmer, Alaska.

CALENDAR FOR WATER YEAR 1959

OCTOBER 1958

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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NOVEMBER 1958

S	M	T	W	T	F	S
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30						

DECEMBER 1958

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JANUARY 1959

S	M	T	W	T	F	S
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FEBRUARY 1959

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MARCH 1959

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APRIL 1959

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MAY 1959

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JUNE 1959

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JULY 1959

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AUGUST 1959

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30	31					

SEPTEMBER 1959

S	M	T	W	T	F	S
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13	14	15	16	17	18	19
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QUANTITY AND QUALITY OF SURFACE WATERS OF ALASKA, 1959

SCOPE OF WORK

This volume contains results of measurements of the flow and the chemical and physical quality of streams in the State of Alaska during the water year ending September 30, 1959. Since the beginning of stream-gaging work in Alaska in 1906, records of flow of streams and ditches have been obtained at about 330 gaging stations for periods ranging from a few months to 40 years. On September 30, 1959, the Geological Survey was maintaining 68 gaging stations. Discharge measurements only were made at many other points in the 1959 water year; these are published near the end of the report.

Prior to 1948, records of chemical and physical composition of surface waters in Alaska consisted of a few turbidity measurements of the Copper River near Copper Center, in 1913, and chemical analyses of some surface waters of the Seward Peninsula, in 1914, of Yukon River basin, in 1915, and of the Yukon River at Anvik, 1915 to 1916. In 1948 a continuing chemical-quality program was started by the Geological Survey. Several miscellaneous samples were collected and analyzed that year, and regular sampling stations were established in 1949. During the 1959 water year records of chemical composition of surface waters were obtained at about 40 sites including 8 sites at which daily samples were collected during the open-water period. Sediment records were obtained at nine sites during the same period.

COOPERATION

Assistance in the form of funds or services was given by the Corps of Engineers, Department of Army, in collecting streamflow records published herein for eight gaging stations.

Assistance was also furnished by the Bureau of Reclamation of the United States Department of the Interior in the operation of one gaging station.

The city of Seward financed the operation of one gaging station.

The Chugach Electric Association financed the operation of two gaging stations.

The Alaska Department of Health and Welfare cooperated in financing the operation of three gaging stations.

DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey under the direction of the personnel shown in the preface. The streamflow data were collected and prepared for publication in the Surface Water Branch district office, the address of which is 111 State Capitol Building, Juneau.

The collection of samples for chemical and suspended sediment analyses and water-temperature measurements was under the direction of personnel of Quality of Water Branch assisted by the Surface Water Branch. Chemical and sediment analyses, computation of data, and preparation of records was done by the Quality of Water district office, Palmer, Alaska.

Information of a more detailed nature than that published for most of the gaging stations or sampling stations given in this report is on file in the district offices shown above. Provisional records of discharge prior to publication and other unpublished data concerning the records may usually be obtained from the district offices.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

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 herein only to those gaging stations where a continuous record of discharge is obtained.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Cubic feet per second per square mile (cfsm) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Runoff in inches (in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

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

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

Part per million (ppm) is a unit weight of constituent in a million unit weights of solution. The unit has a slightly different meaning when applied to sediment concentrations. A part per million of sediment is computed as one million times the ratio of the weight of sediment to the weight of water-sediment mixture.

Hardness as CaCO₃ is the calcium and magnesium expressed as an equivalent amount of calcium carbonate.

Carbonate hardness is the hardness caused by calcium and magnesium equivalent to the carbonate and bicarbonate.

Noncarbonate hardness is the hardness caused by calcium and magnesium in excess of the carbonate hardness.

Particle-size analyses are expressed in percentages finer than indicated sizes in millimeters. The size classification used in this report is that recommended by the American Geophysical Union Subcommittee on sediment terminology.¹

¹Lane, E. W., et al., 1947, Report of the Subcommittee on Terminology: Am. Geophys. Union Trans., V. 28, p. 937.

Specific conductance (micromhos per centimeter at 25°C) is one million times the reciprocal of specific resistance, at 25°C. Specific resistance is the resistance in ohms of a column of water 1 cm long and 1 square cm in cross section.

Suspended sediment or suspended load is sediment that moves in suspension in water and is maintained in suspension by the upward components of turbulent currents or as a colloid. Daily sediment loads are expressed in tons per day, and except for subdivided days are usually obtained by multiplying daily mean sediment concentration in parts per million by the daily mean discharge, and the appropriate conversion factor, normally 0.0027.

pH is the negative logarithm of the hydrogen-ion concentration expressed in grams-moles per liter. However, when determined with a pH meter, which is the procedure normally used in Geological Survey laboratories, pH is an expression of the hydrogen-ion activity or the effective hydrogen-ion concentration.

DOWNSTREAM ORDER AND STATION NUMBERS

Gaging and sampling stations in this report are listed in a downstream direction along the main stem. All stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging or sampling station is situated and the stream to which it is immediately tributary, each indentation in the listing of stations in the table of contents of this report represents one rank. This downstream order and system of indentation show which gaging or sampling stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each station is situated.

As an added means of identification, each gaging station and sampling station has been assigned a station number. The numbers have been assigned in the same downstream order used in this report. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive. In this report the station number is shown just to the left of the station name.

EXPLANATION OF DATA

SURFACE WATER

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording gage or from a water-stage recorder that gives a continuous record of fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge.

Rating tables giving the discharge for any stage are prepared from stage-discharge-relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs, and by other methods), velocity-area studies, and

logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is essentially the shifting-control method.

At many gaging stations in Alaska the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins. If the stage-discharge relation is affected by ice, this information is given in a note to the table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The streamflow data presented herein comprise a description of the station and a table showing the daily discharge and the monthly and yearly discharge of the stream. Records are published on basis of the water year which begins on October 1 and ends on September 30.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given the periods for which there are published records generally equivalent to those at the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). In the first paragraph the data given are for the complete current year unless otherwise specified. In the second paragraph the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record is given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge,

it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published in a subsequent report. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has been added to the description of all stations for which revised records have been published. In this paragraph are listed the reports in which revisions of daily discharge have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. For stations in Alaska, however, monthly discharge for all stations prior to October 1950, were published in Water-Supply Paper 1372. Revisions of many monthly discharges as well as of previously published daily discharges were included in that report. The periods for which monthly discharge only is available and published in Water-Supply Paper 1372, are noted in the "Records available" paragraph. Therefore, the years for which revisions of monthly discharge only were made are not indicated under the "Revisions (water years)" paragraph. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published.

For stations equipped with water-stage recorders, except those on streams subject to sudden or rapid fluctuation, the daily table gives the discharge corresponding to the daily mean gage height. For stations subject to such fluctuation the daily mean gage height may not indicate the true daily mean discharge, which must be obtained by averaging the discharge for parts of the day. For stations equipped with nonrecording gages, the table of daily discharge gives the discharge corresponding to once-daily readings of the gage, or to the mean of twice-daily readings, or to the mean gage height determined from gage-height graphs based on gage readings. For periods of rapidly changing stage, the daily mean discharge is determined from gage-height graphs based on gage readings, the frequency of which is stated in the station description.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Discharge for the month may be expressed in cubic feet per second per square mile (line headed "Cfsm"), or in inches (line headed "In."), or in acre-feet (line headed "Ac-ft"). Figures of cubic feet per second per square mile and runoff in inches are omitted if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record and ice effect, or by other effects that reduce the degree of accuracy of the records. Days on which discharge measurements were made are indicated by asterisk and footnote unless they were made at frequent regular intervals, in which instance the general frequency of discharge measurements is given under "Remarks" in the station description.

QUALITY OF WATER

In general, samples for chemical analysis were collected daily at eight of the regular sampling stations during the open-water period, and periodically during the period of ice cover. For the daily stations analyses were made of 10-day composites of daily samples. Three composites were prepared each month by combining equal volumes of daily samples collected from the 1st to the 10th, from the 11th to the 20th, and for the remainder of the month. Samples were collected less frequently at many other stations in Alaska.

Samples collected for chemical analysis were analyzed according to methods regularly used by the Geological Survey. The methods are essentially the same as or are modifications of methods described in authoritative publications, for mineral analysis of water.^{1, 2}

The values reported for dissolved solids are either calculated from determined constituents or are determined by evaporation of a clear sample of water to dryness and drying the residue for 1 hour at 180°C. Specific conductance is given for most of the analyses and was determined by means of a conductance bridge using a standard potassium chloride solution as reference.

The streamflow data are reported in two ways: For regular daily stations the daily mean discharge is reported, whereas values given for discharge in the tables of miscellaneous analyses are normally the discharge at the time the sample was collected.

Suspended-sediment samples were collected daily during the open-water season at four stations, and periodically at six stations. Samples were collected periodically during periods of ice cover at all stations. Daily samples were collected with a US D-49 depth-integrating sampler from a fixed point at one vertical in the cross section. Depth-integrated samples at three or more verticals in the cross section were collected periodically at all sediment stations. Occasionally point-integrated samples were taken with a US P-46 sampler.

Sediment concentrations were determined by weighing the solid residue after filtration or evaporation of the samples. For stations where samples were collected periodically,

¹ American Public Health Assoc., Standard methods for the examination of water and sewage, 10th ed., p. 1-217, 1955.

² Methods for collection and analyses of water samples; U. S. Geological Survey Water-Supply Paper 1454, 1960.

the concentrations reported are instantaneous concentrations or concentration of composites of several samples. For regular daily stations, daily mean concentrations were obtained for the periods during which samples were taken by plotting the instantaneous concentration on a copy of the gage-height-recorder chart. The plotted concentrations were connected by a continuous curve. Daily mean concentrations were estimated from the graph. Footnotes to daily values in the tables are used to indicate methods of computation.

In addition to sediment concentrations and loads, records of particle size are reported also for most of the sediment stations. Generally particle size was determined by a combination of sieve analysis and bottom-withdrawal tube analysis (U. S. Inter-agency, 1943). Sizes larger than 0.062 mm (sand-size) were determined by sieve analysis and those smaller than 0.062 mm were determined by bottom-withdrawal tube or pipette analysis. Native or distilled water, as noted in the tables of analyses, was used as the settling medium. Usually distilled water with a dispersing agent was used. Results obtained with distilled water and a dispersing agent as a settling medium approximate the ultimate particle size of the finer fractions, whereas results obtained with native water as the settling medium more nearly simulate the particle size existing in the stream.

For most daily stations, water temperatures were obtained at the time the samples for chemical quality were collected. Where practicable, the water temperatures at a station were determined at about the same time each day in order to minimize diurnal variation of temperature. The thermometer used for temperature determinations was accurate to plus or minus 0.5°F.

The description of the station includes a statement giving the periods for which there are published records of water quality.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the discharge records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Figures of cubic feet per second per square mile and runoff in inches are published only for stations in southeastern Alaska; they are not published for stations in the rest of the State, because the annual precipitation is generally less than 20 inches. Discharge at some stations varies widely due to great differences in precipitation not only between sections of the State, but also at different elevations in the same areas. Generally speaking, annual precipitation is much greater in southeastern Alaska and along the coast to Seward than in the rest of the State. Even in southeastern Alaska annual precipitation may range from about 25 inches in the vicinity of Skagway in the northern part to about 150 inches near Ketchikan in the southern part, and may be as high as 180 inches at the southern tip of Baranof Island, all measured at or near sea level. However, precipitation increases with altitude, reaching a maximum at about 4,000 feet

elevation. Consequently, runoff in inches as measured at low elevations on streams draining mountainous areas often totals nearly twice the precipitation measured at or near sea level in the same drainage basin. At nearly every gaging station in southeastern Alaska the measured annual runoff in inches exceeds the annual precipitation as measured at the nearest Weather Bureau station.

PUBLICATIONS

A compilation of records of streamflow in Alaska through September 1950 has been published as WSP 1372. Records prior to 1946 were published in Geological Survey bulletins or water-supply papers or in reports of other agencies. Summary tables in WSP 1372 indicate the reports in which this data was originally published. In some cases the earlier reports contain more detailed information than is published in WSP 1372. That report contains a summary of monthly and annual discharges through September 1945 for all previously published records as well as records of daily and monthly discharge for the years 1946-50, which had not been published previously. All records prior to 1946 were re-examined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical.

Records of daily discharge and records of chemical quality, water temperatures, and suspended sediment from 1946 to date have been published in water-supply papers as shown in the following list. The data for any particular gaging station or sampling station will, in general, be found in the reports covering the years during which the station was maintained.

<u>Water year</u>	<u>WSP</u>
1946-50.....	1372
1951-53.....	1466
1954-56.....	1486
1957.....	1500
1958.....	1570
1959.....	1640

The reports referred to above contain, in addition to records of daily discharge at gaging stations, the results of discharge measurements at many points other than regular gaging stations.

Geological Survey reports containing data on quality of surface waters in Alaska prior to 1948 include the following:

Professional Paper 135, Composition of river and lake waters of the United States, 1924.

Bulletin 770, The data of geochemistry, 1924.

Water-Supply Paper 372, A water-power reconnaissance in south-central Alaska, 1915.

Water-Supply Paper 418, Mineral springs of Alaska, 1917.

Records of chemical quality and water temperature obtained from 1948 to September 1950 are presented in WSP 1372.

SOUTHEASTERN ALASKA

120. Winstanley Creek near Ketchikan

Location.--Lat 55°25'00", long 130°52'05", on right bank 0.3 mile downstream from Lower Winstanley Lake, 1.1 miles upstream from mouth, and 31 miles east of Ketchikan.

Drainage area.--15.5 sq mi (revised).

Records available.--August 1936 to September 1938 (monthly discharge only, published in WSP 1372), August 1947 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 290 ft (by barometer).

Average discharge.--14 years, 154 cfs (111,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,060 cfs Oct. 21 (gage height, 3.88 ft); minimum, 20 cfs Feb. 21 (gage height, 0.99 ft).

1936-38, 1947-59: Maximum discharge, 1,900 cfs Feb. 7 or 8, 1954 (gage height, 5.1 ft); minimum, 6.0 cfs Jan. 12, 1956 (gage height, 0.58 ft).

Flood sometime during period October 1938 to July 1947 reached a stage of 4.85 ft, from high-water mark in gage well (discharge, about 1,800 cfs).

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Upper and Lower Winstanley Lakes above gage have areas of 465 and 175 acres, respectively.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		531	158	292	128		110	106	304	155	160	188
2		566	327	204	315		150	108	323	174	163	214
3		561	292	148	339		201	104	312	207	180	259
4		415	217	112	270		177	97	288	207	188	259
5		285	155	86	201		150	91	312	182	160	220
6		234	114	74	150		126	104	343	186	145	230
7		220	86	62	110		104	191	394	155	128	230
8		315	*71	53	88		88	210	*339	140	124	194
9		511	61	47	*74		83	204	304	128	110	339
10	210	389	54	44	62		97	180	266	124	93	402
11		296	50	40	54		133	155	244	121	81	281
12		224	52	36	49		158	135	241	*150	71	262
13		171	83	34	45		150	145	248	214	65	255
14		130	93	31	40		*130	220	244	411	72	214
15		102	124	35	36	150	106	277	224	456	93	185
16		86	255	36	31		91	274	207	339	210	155
17		102	312	46	28		83	255	201	292	220	128
18	*172	121	372	49	25		78	238	198	292	177	108
19		211	308	47	24		74	204	204	274	138	88
20		290	292	44	23		74	194	230	304	112	77
21		867	315	40	21		81	194	248	255	97	66
22		778	85	292	38	24	99	201	244	210	114	58
23		451	74	288	36	25	110	227	227	188	133	176
24		488	63	255	35	29	108	266	204	174	117	285
25		645	58	194	35	36	97	262	191	191	112	274
26		424	51	148	51	55	97	244	180	244	119	347
27		352	47	112	85	90	104	238	177	207	112	274
28		415	47	91	108	190	97	210	180	171	85	198
29		603	53	99	112	-	89	207	182	150	91	155
30		577	88	160	102	-----	87	188	174	171	150	130
31	463	-----	347	88	-----	-----	-----	214	-----	168	194	-----
Total	10,324	6,140	5,757	2,248	2,582	4,850	3,342	5,946	7,433	6,820	4,024	6,251
Mean	333	205	186	72.5	91.5	150	111	192	248	214	130	208
Cfs/m	21.5	13.2	12.0	4.68	5.90	9.68	7.16	12.4	16.0	13.8	8.39	13.4
In.	24.77	14.73	13.81	5.39	6.15	11.16	8.02	14.27	17.83	15.88	9.66	15.00
Ac-ft	20,480	12,180	11,420	4,460	5,080	9,220	6,630	11,790	14,740	13,130	7,980	12,400
Calendar year 1958: Max	867			Min 14		Mean 164		Cfs/m 10.6	In. 143.23	Ac-ft 118,400		
Water year 1958-59: Max	867			Min 21		Mean 179		Cfs/m 11.5	In. 156.67	Ac-ft 129,500		

Peak discharge (base, 650 cfs).--Oct. 21 (8 p.m.) 1,060 cfs (3.88 ft); Oct. 25 (3 a.m.) 742 cfs (3.35 ft); Oct. 30 (1 a.m.) 650 cfs (3.18 ft); Mar. 17 (time and discharge unknown).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-17, Feb. 26 to Apr. 1; discharge estimated on basis of weather records and records for Fish Creek near Ketchikan.

220. Harding River near Wrangell

Location.--Lat 56°13', long 131°38', on right bank 1 mile upstream from mouth on north shore of Bradfield Canal, 4 miles downstream from Fall Lake, and 34 miles southeast of Wrangell.

Drainage area.--67.4 sq mi (revised).

Records available.--August 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by barometer).

Average discharge.--8 years, 711 cfs (514,700 acre-ft per year).

Extremes.--Maximum discharge during year, 9,900 cfs Oct. 21 (gage height, 13.90 ft), from rating curve extended above 4,500 cfs; minimum not determined.
1951-59: Maximum discharge, that of Oct. 21, 1958; minimum not determined.

Remarks.--Records good except those for periods of ice effect, which are poor. Fall Lake, at elevation 182 ft, has an area of 170 acres.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,180	2,290	334				277	356	1,800	1,300	1,660	1,580
2	7,640	1,850	604				358	334	1,740	1,280	1,940	1,360
3	2,010	1,060	390				317	317	1,700	1,520	1,430	945
4	1,770	679	285				265	301	1,460	1,540	1,060	698
5	1,360	503					234	330	1,600	1,170	1,140	580
6	1,440	508			(*)		242	425	*1,340	1,080	2,200	750
7	1,030	679					207	679	1,310	1,130	1,810	598
8	622	718					201	648	1,140	1,180	1,230	476
9	450	994	170				249	640	1,120	*1,260	1,150	1,130
10	356	569					405	604	1,180	1,420	861	1,250
11	343	486	(*)			170	*586	466	1,520	1,540	750	770
12	705	390					569	415	1,680	1,860	750	1,300
13	622	321	258				395	718	1,490	2,100	917	1,080
14	440	277	360				317	1,740	1,350	3,180	1,700	1,050
15	590	242	430	150	140		265	1,670	1,210	2,210	1,560	875
16	*868	238	698				238	1,330	1,240	1,580	1,550	692
17	910	269	646				269	1,110	1,360	3,300	1,020	586
18	2,030	330	686				289	1,090	1,390	2,650	833	552
19	1,300	257	503				285	952	1,480	2,340	731	520
20	2,610	228	498				343	1,020	1,740	2,600	731	465
21	5,600	214	610				440	980	1,880	1,700	784	425
22	1,370	201	440			186	520	959	1,590	1,570	861	375
23	750	189	552			170	481	1,500	1,520	2,260	833	1,610
24	1,200	180	481			160	370	1,460	1,460	1,680	640	2,330
25	1,500	170	348			158	330	1,300	1,510	2,100	770	1,700
26	931	170	273			165	348	1,340	1,660	1,300	903	1,280
27	896	162	234			170	420	1,420	1,810	559	750	577
28	2,430	172	217			343	1,390	1,880	1,420	566	569	757
29	2,400	165	231			169	305	1,260	1,920	1,750	757	564
30	3,310	165	466			195	338	1,040	1,420	3,220	1,690	686
31	3,530	-----	724		-----	217	-----	1,290	-----	2,210	1,120	-----
Total	54,193	14,476	11,628	4,650	5,920	5,358	10,186	29,102	45,500	55,989	34,777	27,533
Mean	1,748	483	375	150	140	173	340	939	1,517	1,606	1,122	918
Cfsm	25.9	7.17	5.56	2.23	2.08	2.57	5.04	13.9	22.5	26.8	16.6	13.6
In.	29.90	7.99	6.42	2.57	2.16	2.96	5.82	16.06	25.11	30.89	19.19	15.19
Ac-ft	107,500	28,710	23,060	9,220	7,780	10,630	20,200	57,720	90,250	111,100	68,980	54,610

Calendar year 1958: Max 7,640 Min - Mean 761 Cfsm 11.3 In. 153.33 Ac-ft 551,200
Water year 1958-59: Max 7,640 Min - Mean 815 Cfsm 12.1 In. 164.06 Ac-ft 589,800

Peak discharge (base, 3,500 cfs).--Oct. 2 (10:30 a.m.) 9,180 cfs (13.40 ft); Oct. 21 (4:30 a.m.) 9,900 cfs (13.90 ft); Oct. 28 (10 p.m.) 5,860 cfs (11.08 ft); Oct. 31 (4 p.m.) 4,380 cfs (9.90 ft); July 14 (3 p.m.) 4,170 cfs (9.72 ft); July 17 (3 p.m.) 3,970 cfs (9.55 ft); July 30 (2 a.m.) 4,440 cfs (9.95 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-12, Jan. 1 to Mar. 21 (no gage-height record Jan. 19-31, Feb. 15, 18-20, Mar. 6-15, 18-21; discharge estimated on basis of 1 discharge measurement, weather records, and records for Cascade Creek near Petersburg).

260. Cascade Creek near Petersburg

Location.--Lat 57°01', long 132°47', on right bank 0.25 mile upstream from mouth on east shore of south arm of Thomas Bay, 2½ miles downstream from Swan Lake, and 15 miles northeast of Petersburg.

Drainage area.--23.0 sq mi.

Records available.--October 1917 to November 1928, October 1946 to September 1959. Monthly discharge only for some periods, published in WSP 1372. Prior to October 1920, published as "at Thomas Bay, near Petersburg."

Gage.--Water-stage recorder.. Altitude of gage is 120 ft (by barometer). Prior to October 1946, at different datum.

Average discharge.--24 years, 244 cfs (176,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,740 cfs Oct. 2 (gage height, 7.57 ft); minimum, 30 cfs Jan. 29-31 (gage height, 1.86 ft).
1917-28, 1946-59: Maximum discharge, 3,280 cfs Sept. 11, 1947 (gage height, 10.0 ft, from floodmarks), from rating curve extended above 1,000 cfs; minimum, 11 cfs Mar. 27, 1948, Mar. 27, 1954, and Mar. 20, 21, 1956, caused by temporary storage behind ice jam upstream; minimum gage height, 0.68 ft Mar. 27, 1948.

Remarks.--Records fair. Swan Lake, at elevation about 1,500 ft, has an area of 614 acres and a drainage area of 18.9 sq mi.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	794	674	118	93	108	45	48	80		518	1,000	458
2	1,560	524	87	83	76	43	52	80		479	790	431
3	1,010	362	77	77	76	44	45	80	a520	509	540	325
4	722	242	76	73	71	44	41	80		600	419	242
5	515	184	72	68	*73	47	39	80	*440	500	445	196
6	494	166	68	65	71	51	39	87	422	452	996	164
7	355	157	65	62	69	45	38	134	408	440	1,090	145
8	248	148	62	60	67	42	42	132	378	455	818	137
9	177	176	60	58	64	40	53	130	368	461	618	224
10	144	141	58	55	61	38	*66	130	392	470	446	350
11	151	128	57	52	60	40	69	119	446	497	350	304
12	192	114	*56	50	57	37	61	111	491	600	312	322
13	178	100	79	48	55	35	56	133	586	750	379	298
14	148	90	119	47	52	34	52	302	551	1,030	692	308
15	*164	82	125	46	49	45	48	400	488	906	579	292
16	306	78	154	45	48	69	47	428	470	726	470	248
17	278	79	208	44	47	54	49	375	482	1,200	368	202
18	419	76	186	41	44	45	50	348	485	991	306	174
19	419	73	145	38	42	43	59	306	494	826	272	161
20	586	69	182	36	40	42	79	302	537	778	280	147
21	924	67	170	35	39	44	75	312	600	646	325	138
22	530	65	136	34	41	42	76	310	593	632	378	134
23	330	64	130	32	38	41	72	461	565	762	352	312
24	332	62	118	31	37	41	70	506	537	678	300	464
25	390	60	102	31	41	41	71		544	610	322	534
26	315	57	89	32	48	42	79		576	461	320	455
27	266	55	81	32	43	42	83		628	375	278	322
28	352	52	77	31	60	42	80	a400	653	370	232	244
29	527	51	95	30	-	41	80		649	566	302	196
30	762	51	104	30	-----	39	80		582	1,050	402	*250
31	866	-----	104	31	-----	45	-----		1,120	382	-----	-----
Total	14,454	4,247	3,260	1,490	1,577	1,343	1,799	8,226	15,455	20,458	14,753	8,177
Mean	466	142	105	48.1	56.3	43.3	60.0	265	515	660	476	273
Cfs/m	20.3	6.17	4.57	2.09	2.45	1.88	2.61	11.5	22.4	28.7	20.7	11.9
In.	23.37	6.87	5.27	2.41	2.55	2.17	2.91	13.50	24.99	33.08	23.85	13.22
Ac-ft	28,670	8,420	6,470	2,960	3,130	2,660	3,570	16,320	30,650	40,580	25,260	16,220

Calendar year 1958: Max 1,560 Min 23 Mean 238 Cfs/m 10.3 In. 140.47 Ac-ft 172,500
Water year 1958-59: Max 1,560 Min 30 Mean 261 Cfs/m 11.3 In. 153.99 Ac-ft 188,900

Peak discharge (base, 1,100 cfs).--Oct. 2 (10 a.m.) 1,740 cfs (7.57 ft); Oct. 21 (3 a.m.) 1,140 cfs (6.42 ft); July 17 (3 p.m.) 1,300 cfs (6.74 ft); July 31 (8 p.m.) 1,390 cfs (6.92 ft); Aug. 7 (5 a.m.) 1,180 cfs (6.50 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for Gold Creek at Juneau.

340. Long River near Juneau

Location.--Lat 58°10'00", long 133°41'50", on right bank three-eighths of a mile upstream from Indian Lake, 1 mile downstream from Long Lake, and 27 miles southeast of Juneau.

Drainage area.--32.5 sq mi.

Records available.--October 1915 to September 1924, October to December 1926, June 1927 to May 1933, October 1951 to September 1959. Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921, published as "below Second Lake, at Port Snettisham."

Gage.--Water-stage recorder. Altitude of gage is 183 ft (from topographic map). Prior to Oct. 1, 1929, at site 600 ft upstream at different datum.

Average discharge.--22 years (1915-24, 1927-32, 1951-59), 456 cfs (330,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,870 cfs July 30 (gage height, 7.60 ft); minimum not determined.

1915-24, 1927-33, 1951-59: Maximum discharge, 6,000 cfs Sept. 10, 1927 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 1,700 cfs by logarithmic plotting; minimum recorded, 22 cfs Mar. 22, 1933.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,580	989	90					152	730	926		1,090
2	2,180	870	100				(*)	152	734	870		1,020
3	1,660	664	96					148	730	894		758
4	1,570	492	88					146	684	912		597
5	1,080	427						150	660	834		471
6		826	440					177	650	802	1,200	386
7		604	386					150	642	806		359
8		440	312					202	656	822		300
9		334	280					248	702	838		423
10		269	246					248	750	866		966
11		233	233				70	240	798	935		746
12		244	200					220	890		*778	656
13		266	173					233	1,020		782	604
14		231	148					345	953		1,180	562
15		351	133					485	850		1,140	558
16		695	135	70	70	60		513	838			976
17		935	140	(**)				534	912			806
18		1,030	146	150				506	1,140			695
19		862	141					496	1,140			618
20		894	130					510	1,140			600
21		1,160	125					534	1,120	1,400		594
22		766	116				177	588	1,020			618
23		538	107				169	738	962			608
24		417	97				177	750	935			558
25		411	88				168	730	966			611
26		371	81				168	684	1,060			622
27		320	83				168	688	1,140			590
28		474	83				162	702	1,180			527
29		674	78				160	646	1,140			504
30		774	74				160	618	1,020			814
31		1,020	---				---	692	---			846
Total	23,189	7,617	4,424	2,170	1,960	1,860	2,979	13,223	27,162	37,505	27,747	17,483
Mean	748	254	143	70	70	60	99.3	427	905	1,210	895	583
Cfs/m	23.0	7.82	4.40	2.15	2.15	1.85	3.06	13.1	27.8	37.2	27.5	17.9
In.	26.54	8.72	5.06	2.24	2.24	2.13	3.41	15.13	31.08	42.92	31.75	20.01
Ac-ft	45,990	15,110	8,770	4,300	3,890	3,690	5,910	26,230	53,880	74,390	55,040	34,680

Calendar year 1958: Max 2,310 Min - Mean 478 Cfs/m 14.7 In. 199.61 Ac-ft 346,000
 Water year 1958-59: Max - Min - Mean 458 Cfs/m 14.1 In. 191.47 Ac-ft 331,900

Peak discharge (base, 2,000 cfs).--Oct. 2 (11:30 a.m.) 2,530 cfs (6.83 ft); July 17 (time and discharge unknown); July 30 (time unknown) 2,870 cfs (7.60 ft); Aug. 6 (time and discharge unknown).

* Discharge measurement made on this day.

** Field estimate made on this day.

Note.--No gage-height record Dec. 5 to Apr. 21, July 12 to Aug. 11; discharge estimated on basis of 1 discharge measurement, 1 field estimate, recorded range in stage, weather records, and records for Cascade Creek near Petersburg.

400. Dorothy Creek near Juneau

Location.--Lat 58°13'40", long 134°02'25", on left bank 0.7 mile downstream from Lake Bart, 0.8 mile upstream from mouth, 3 miles downstream from Lake Dorothy, and 14 miles south-east of Juneau.

Drainage area.--15.2 sq mi.

Records available.--October 1929 to October 1941, September 1942 to December 1943, June 1944 to September 1959. Monthly discharge only prior to October 1945, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 350 ft (from topographic map). Prior to Sept. 14, 1937, at site 100 ft upstream from mouth at different datum.

Average discharge.--28 years (1929-41, 1942-43, 1944-59), 143 cfs (103,500 acre-ft per year).

Extremes.--Maximum discharge during year, 792 cfs July 18 (gage height, 4.40 ft); minimum, 16 cfs Jan. 28-31.

1929-41, 1942-59: Maximum discharge, 1,780 cfs Nov. 3, 1949 (gage height, 5.85 ft), from rating curve extended above 560 cfs; minimum recorded, 6 cfs Mar. 23, 25, 28, 1933.

Remarks.--Records good. Dorothy Lake (area, 952 acres) lies at an altitude of 2,423 ft, less than 4 miles from mouth of Dorothy Creek; Liewy Lake (area, 80 acres) lies at an altitude of 1,711 ft; and Bark Lake (area, 250 acres) lies at an altitude of 986 ft.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	165	207	39		22	18	21	24	185	*304	535	207
2	258	224	39		21	18	22	24	195	293	477	*220
3	338	217	38			18	22	24	201	275	403	220
4	358	*198	37			20	21	24	201	275	350	214
5	354	179	35			22	20	24	201	268	330	201
6	304	165	34			22	20	26	195	258	398	182
7	264	157	32			22	20	30	188	247	550	171
8	224	144	29			22	20	31	182	237	591	154
9	192	137	28			23	20	32	179	233	540	149
10	168	125	26	a28		23	22	34	182	233	450	152
11	152	117	26		a18	24	22	34	192	237	382	152
12	142	107	26			*24	21	34	204	250	330	152
13	135	100	26			a24	21	38	224	293	304	152
14	125	91	28			a24	20	55	240	366	311	149
15	117	84	33			24	19	69	250	424	330	152
16	115	76	37			26	19	76	258	464	323	149
17	119	71	44				20	84	261	676	304	147
18	132	68	44	22			20	89	282	758	279	142
19	139	66	44	20			22	96	304	658	250	137
20	149	62	44	20			22	101	323	540	227	132
21	171	59	44	20	17	a26	26	107	330	477	220	125
22	171	57	43	19	17		27	119	319	454	220	121
23	165	55	43	18	17		*26	137	311	464	214	125
24	160	52	43	18	17		26	139	297	432	207	132
25	160	50	42	18	17		26	147	286	390	201	144
26	152	47	41	17	17	24	27	154	286	338	195	162
27	144	45	39	17	17	24	28	157	289	300	192	165
28	149	44	38	16	18	23	27	162	293	275	182	162
29	144	42	40	16	-	22	27	162	300	297	185	157
30	157	40	*44	16	-----	22	26	165	304	403	188	162
31	176	-----	41	16	-----	21	-----	176	-----	525	192	-----
Total	5,679	3,086	1,147	722	504	724	680	2,574	7,462	11,624	9,660	4,789
Mean	183	103	37.0	23.3	18.0	23.4	22.7	83.0	249	375	318	160
Cfsm	12.0	6.78	2.43	1.53	1.18	1.54	1.49	5.46	16.4	24.7	20.9	10.5
In.	13.89	7.55	2.81	1.77	1.23	1.77	1.66	6.30	18.26	28.44	24.12	11.72
Ac-ft	11,260	6,120	2,280	1,430	1,000	1,440	1,350	5,110	14,800	23,060	19,560	9,500

Calendar year 1958: Max 540 Min 11 Mean 135 Cfsm 8.88 In. 120.89 Ac-ft 97,990

Water year 1958-59: Max 758 Min 16 Mean 134 Cfsm 8.82 In. 119.52 Ac-ft 96,910

Peak discharge (base, 400 cfs).--July 18 (4 a.m.) 792 cfs (4.40 ft); Aug. 1 (6 a.m.) 550 cfs (3.95 ft); Aug. 8 (1 p.m.) 601 cfs (4.05 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Gold Creek at Juneau.

440. Carlson Creek near Juneau

Location.--Lat 58°19'00", long 134°10'15", on left bank between two unnamed tributaries, $\frac{1}{2}$ miles upstream from mouth, $1\frac{1}{4}$ miles downstream from Sheep Fork, and $8\frac{1}{4}$ miles east of Juneau.

Drainage area.--24.3 sq mi.

Records available.--July 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

Average discharge.--8 years, 322 cfs (233,100 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 3,200 cfs Oct. 1 (gage height, 7.70 ft), from rating curve extended above 2,000 cfs; minimum not determined.
1951-59: Maximum discharge, 4,500 cfs Sept. 30, 1957 (gage height, 9.55 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,120	762	56			66	45	88	843	*590		a600
2	*1,220	564	58			53	83	88	726	630		*420
3	771	350	56			a50	71	90	690	789		291
4	990	*251	52			a95	58	90	646			219
5	467	303	42			121	51	98	674			181
6	538	288				155	46	146	654			159
7	298	322				121	45	165	708			150
8	207	229				76	47	221	686			142
9	165	197				60	49	218	717			608
10	138	162	a35			52	54	197	825			696
11	127	138				48	61	181	915			296
12	149	120				44	61	158	975			298
13	183	106	48			42	58	206	1,030			243
14	151	93	128		a35	a41	57	487	802			279
15	508	89	230			43	54	722	735			218
16	1,210	93	455	a50		90	53	538	820		a600	175
17	895	115	420			a60	61	452	930	a800		156
18	920	97	225			a45	70	408	1,020			150
19	420	90	249			*38	112	411	945			142
20	722	81	147			34	98	430	1,000			131
21	1,200	79	122				104	455	995			115
22	366	74	101			33	106	526	807			161
23	231	70	96				*91	848	762			566
24	187	67	90		(*)		80	856	771			538
25	203	64	78				77	610	870			638
26	191	62	a70			a25	88	646	970			451
27	199	62	a70		66		107	*642	1,000			249
28	296	62	a80		74		98	550	955			219
29	430	58	138		-		98	498	798			225
30	698	57	205		-		98	546	694			553
31	1,020	---	108		---		---	762	---			---
Total	17,220	5,105	3,569	1,550	1,050	1,617	2,179	12,143	24,963	24,409	18,600	9,269
Mean	555	170	115	50	37.5	52.2	72.6	392	832	787	600	309
Cfs/m	22.8	7.00	4.73	2.06	1.54	2.15	2.99	16.1	34.2	32.4	24.7	12.7
In.	26.35	7.81	5.46	2.37	1.61	2.47	3.33	18.58	38.20	37.36	28.47	14.19
Ac-ft	34,160	10,130	7,080	2,070	2,080	3,210	4,320	24,090	49,510	48,410	36,890	18,380

Calendar year 1958: Max 2,120 Min - Mean 324 Cfs/m 13.3 In. 180.82 Ac-ft 234,400
Water year 1958-59: Max - Min - Mean 333 Cfs/m 13.7 In. 186.70 Ac-ft 241,300

Peak discharge (base, 2,500 cfs).--Oct. 1 (3 p.m.) 3,200 cfs (7.70 ft); July 30 (time and discharge unknown); Aug. 6 (time and discharge unknown).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, weather records, and records for Gold Creek at Juneau.

480. Sheep Creek near Juneau

Location.--Lat 58°16'30", long 134°18'50", on right bank 0.3 mile upstream from diversion dam of Alaska-Juneau Gold Mining Co.'s Sheep Creek powerplant, 1 mile northeast of Thane, 1½ miles upstream from mouth, and 4 miles southeast of Juneau.

Drainage area.--4.30 sq mi.

Records available.--January 1911 to December 1913, August 1916 to December 1920, October 1946 to September 1959. Monthly discharge only for some periods, published in WSP 1372. Prior to 1946, published as "near Thane."

Gage.--Water-stage recorder and wooden control. Datum of gage is 643.5 ft above mean sea level (levels by Conservation Division, U. S. Geological Survey). Prior to August 1916, staff gage at same site and datum.

Average discharge.--19 years, 45.9 cfs (33,230 acre-ft per year).

Extremes.--Maximum discharge during year, 606 cfs July 30 (gage height, 2.93 ft); minimum, 3.5 cfs Mar. 31, Apr. 1 (gage height, 0.41 ft).
1911-13, 1916-20, 1946-59: Maximum discharge, 840 cfs Sept. 8, 1948 (gage height, 3.60 ft); no flow at times at gage site but probably some flow at all times at diversion dam 0.3 mile downstream (records for period 1916-20 based on measurements at diversion dam).

Remarks.--Records good except those for period of no gage-height record, which are fair.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	288	100	12	20	5.2	4.2	3.5	22	156	58	130	110
2	219	88	11	18	6.4	4.5	4.0	21	142	56	98	77
3	138	71	11	18	8.1	4.8	4.2	20	125	60	79	62
4	120	58	10	17	8.4	5.2	4.5	20	105	62	77	53
5	82	58	9.5	16		6.4	5.0	*20	105	53	77	44
6		91	58	9.2	15	7.8	5.2	25	98	51	222	38
7	66	56	8.4	14		9.5	5.2	31	95	54	167	36
8	56	51	8.4	13		11	5.2	39	93	*54	140	32
9	48	46	8.1	12		10	5.2	44	98	53	118	42
10	39	39	8.1	12		10	5.2	42	110	54	93	62
11	36	37	7.8	11	a5.5	9.5	5.5	38	115	60	79	42
12	37	32	7.4	10		8.8	6.7	36	115	58	71	42
13	39	27	7.8	9.5		8.4	7.8	62	130	105	93	41
14	34	25	16	9.2		7.8	8.4	156	105	118	98	46
15	56	23	30	*8.4		7.4	9.2	145	91	105	79	37
16	115	22	49	8.4		7.0	10	118	91	115	62	31
17	91	23	64	7.8		6.7	10	102	95	204	54	30
18	102	*22	33	7.4	*4.5	6.7	11	93	105	112	48	29
19	69	20	49	7.4	4.5	6.7	12	86	*100	98	46	28
20	91	19	42	7.4	4.3	6.4	20	88	100	105	46	26
21	134	18	38	7.4	4.3	6.0	35	91	98	86	42	25
22	75	17	32	7.0	4.3	6.0	34	98	82	125	42	25
23	58	16	31	7.0	4.3	5.5	29	132	73	110	36	60
24	53	16	28	7.0	4.3	5.5	25	110	69	86	37	60
25	64	15	25	6.7	4.2	5.2	24	102	75	75	62	77
26	53	14	23	6.7	4.2	5.0	23	102	84	62	48	73
27	49	13	20	6.4	4.2	4.5	25	*105	84	56	39	51
28	58	13	19	6.0	4.2	4.2	24	100	77	75	36	51
29	64	12	23	5.8	-	4.2	23	88	69	281	83	56
30	91	12	28	5.5	-----	*3.8	23	93	62	369	108	95
31	115	-----	24	5.2	-----	3.5	-----	140	-----	170	108	-----
Total	2,631	1,021	712.7	312.2	146.9	202.2	412.8	2,369	2,947	3,130	2,518	1,481
Mean	84.9	34.0	23.0	10.1	5.25	6.52	13.8	76.4	98.2	101	81.2	49.4
Cfsm	19.7	7.91	5.35	2.35	1.22	1.52	3.21	17.8	22.8	23.5	18.9	11.5
In.	22.76	8.83	6.16	2.70	1.27	1.75	3.57	20.49	25.49	27.07	21.78	12.81
Ac-ft	5,220	2,030	1,410	619	291	401	819	4,700	5,850	6,210	4,990	2,940

Calendar year 1958: Max 288 Min 2.0 Mean 40.5 Cfsm 9.37 In. 127.29 Ac-ft 29,190
Water year 1958-59: Max 369 Min 3.5 Mean 49.0 Cfsm 11.4 In. 154.68 Ac-ft 35,480

Peak discharge (base, 460 cfs).--Oct. 1 (3 p.m.) 492 cfs (2.60 ft); July 30 (5 a.m.) 606 cfs (2.93 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Gold Creek at Juneau.

500. Gold Creek at Juneau

Location.--Lat 58°18'25", long 134°24'05", on left bank 10 ft downstream from highway bridge, 150 ft upstream from Alaska Electric Light and Power Co. dam and diversion, half a mile northeast of Juneau, and 1 mile upstream from mouth.

Drainage area.--9.76 sq mi.

Records available.--July 1916 to December 1920, October 1946 to September 1948, October 1949 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 245 ft (from topographic map). July 20, 1916, to Dec. 31, 1920, water-stage recorder at site 50 ft upstream at different datum. Sept. 11, 1946, to Sept. 30, 1948, staff gage at site 0.7 mile downstream at different datum.

Average discharge.--16 years (1916-20, 1946-48, 1949-59), 104 cfs (75,290 acre-ft per year).

Extremes.--Maximum discharge during year, 1,200 cfs July 30 (gage height, 5.29 ft); minimum recorded, 3.9 cfs Feb. 21 (gage height, 2.12 ft). 1916-20, 1946-48, 1949-59: Maximum discharge, 2,600 cfs Sept. 26, 1918 (gage height, 6.8 ft, site and datum then in use), from rating curve extended above 520 cfs; no flow at times during winters of 1951 and 1958.

Remarks.--Records good except those for periods of no gage-height record, which are poor. One small diversion above station for domestic water supply.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*700	234	16	28			6.5	*25	346	208	284	294
2	480	173	16				11	25	328	200	208	188
3	296	126	16			11	9.1	24	292	247	*161	137
4	310	93	14				7.6	25	252	252	188	*106
5	188	93	11			*18	6.5	27	252	192	234	85
6	*192	93	10		6.5							
7	123	90	10		(*)	26	8.0	40	238	180	*758	70
8	88	77	9			16	8.0	50	242	204	*440	63
9	71	69	9			12	6.0	66	238	216	367	60
10	60	60	10			9.7	*7.6	64	247	212	277	144
						8.5	11	60	274	*216	204	221
11	54	53	11		6.5	8.8	13	53	319	266	188	125
12	82	47	*11		6.2	7.6	12	49	332	247	176	128
13	64	41	40		5.8	7.6	11	*88	350	436	284	112
14	54	37	93		5.5	6.5	11	296	296	476	*288	137
15	101	35	129		5.2	7.9	10	314	242	*386	221	99
16	*247	32	170	10	5.0	17	10	224	256	445	167	76
17	224	36	190		*4.8	12	11	184	274	686	143	69
18	252	32	113		4.3	8.8	12	166	324	276	122	69
19	139	30	100	(*)	4.3	7.6	21	156	310	242	131	63
20	196	*26	75		4.1	*6.8	35	173	324	276	137	50
21	346	26	69		3.9	8.8	47	180	342	192	146	40
22	148	24	54			5.5	*42	192	278	292	125	71
23	96	23	52			5.2	32	274	238	216	99	208
24	80	22	44			5.0	26	224	234	152	125	179
25	103	20	37		5.5	5.0	25	208	252	126	192	204
26	77	19	30			4.5	28	204	292	103	117	179
27	69	18	27			4.5	32	*216	306	96	96	114
28	101	19	28			4.3	29	196	292	166	81	109
29	110	17	42	(*)	-	4.5	27	162	242	555	221	117
30	220	17	*54		-	4.8	27	166	216	*860	287	221
31	288	-----	39	-----	-----	*5.0	-----	270	-----	423	301	-----
Total	5,539	1,682	1,519	328	159.1	281.9	538.3	4,399	8,428	9,008	6,768	3,758
Mean	179	56.1	49.0	10.6	5.68	9.09	17.9	142	281	291	219	125
Cfsm	18.3	5.75	5.02	1.09	0.582	0.931	1.83	14.5	28.8	29.8	22.3	12.8
In.	21.11	6.41	5.79	1.25	0.61	1.07	2.05	16.76	32.11	34.32	25.79	14.24
Ac-ft	10,990	3,340	3,010	651	316	559	1,070	8,730	16,720	17,870	13,420	7,410

Calendar year 1958: Max 700 Min 3.5 Mean 97.9 Cfsm 10.0 In. 136.23 Ac-ft 70,920
 Water year 1958-59: Max 860 Min 3.9 Mean 116 Cfsm 11.9 In. 161.51 Ac-ft 84,090

Peak discharge (base, 600 cfs).--Oct. 1 (3 p.m.) 1,060 cfs (5.18 ft); Oct. 21 (5 a.m.) 635 cfs (4.47 ft); July 13 (4:30 p.m.) 670 cfs (4.46 ft); July 17 (2:30 a.m.) 916 cfs (4.93 ft); July 30 (5 a.m.) 1,200 cfs (5.29 ft); Aug. 6 (2 p.m.) 1,140 cfs (5.26 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 2 to Feb. 10, Feb. 22 to Mar. 4; discharge estimated on basis of 3 discharge measurements and weather records at Juneau.

520. Lemon Creek near Juneau

Location.--Lat 58°23'30", long 134°25'15", on left bank a quarter of a mile upstream from Canyon Creek, 4½ miles upstream from mouth, and 6 miles north of Juneau.

Drainage area.--12.1 sq mi.

Records available.--August 1951 to November 1953, July 1954 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 650 ft (from topographic map).

Average discharge.--7 years, 150 cfs (108,600 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 1,340 cfs July 17 (gage height, 3.48 ft); minimum not determined.

1951-59: Maximum discharge, 2,080 cfs Sept. 14, 1952 (gage height, 4.08 ft), from rating curve extended above 650 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								11	164	319	580	500
2								11	168	304	382	327
3								12	157	382	*301	213
4								13	155	400	422	150
5								16	173	315	560	123
6								27	168	304	924	114
7								34	164	312	840	104
8								35	166	323	945	90
9								27	182	335	698	153
10								25	213	364	422	197
11								20	274	391	396	178
12							8	18	315	386	339	258
13								64	315	656	495	248
14								126	287	740	650	335
15								136	274	585	530	233
16	150	28	7	5	4	4		164	287	746	400	195
17								103	351	1,200	319	218
18		(*)						93	404	722	258	239
19								90	400	555	245	205
20								90	422	600	290	140
21								94	386	550	386	109
22								123	339	628	331	123
23								187	335	515	233	312
24							*11	150	339	351	264	396
25							12	144	373	287	343	368
26								18	155	422	233	335
27								19	164	432	251	294
28								16	140	396	502	210
29								16	*118	351	875	274
30								13	119	*355	1,040	248
31									142		896	368
Total	4,030	840	217	155	112	124	289	2,649	8,767	16,067	13,282	6,726
Mean	130	28	7	5	4	4	9.63	85.5	292	518	428	224
Cfsm	10.7	2.31	0.579	0.413	0.331	0.331	0.796	7.07	24.1	42.8	35.4	18.5
In.	12.39	2.58	0.67	0.48	0.34	0.38	0.89	8.14	26.95	49.38	40.82	20.67
Ac-ft	7,990	1,670	430	307	222	246	573	5,250	17,390	31,870	26,340	13,340

Calendar year 1958: Max - Min - Mean 155 Cfsm 12.8 In. 174.00 Ac-ft 112,300
 Water year 1958-59: Max - Min - Mean 146 Cfsm 12.1 In. 163.69 Ac-ft 105,600

Peak discharge (base, 1,200 cfs).--Oct. 1 (time and discharge unknown); July 17 (10 a.m.) 1,340 cfs (3.48 ft); July 30 (9 a.m.) 1,200 cfs (3.30 ft); Aug. 8 (6:30 a.m.) 1,240 cfs (3.35 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to Apr. 23; discharge estimated on basis of 1 discharge measurement at gage, 27 discharge measurements at site 4½ miles downstream, weather records, and records for Gold Creek at Juneau.

600. Perseverance Creek near Wacker

Location.--Lat 55°24'40", long 131°40'05", on Revillagigedo Island, on right bank 500 ft downstream from Perseverance Lake, half a mile upstream from Connell Lake, 2 miles east of Wacker, and 4 miles north of Ketchikan.

Drainage area.--2.81 sq mi.

Records available.--October 1931 to September 1938, November 1938, June to September 1939, October 1946 to September 1959. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 600 ft (from topographic map). Prior to October 1946, at site 100 ft upstream at different datum.

Average discharge.--20 years (1931-38, 1946-59), 36.5 cfs (26,420 acre-ft per year).

Extremes.--Maximum discharge during year, 510 cfs Oct. 21 (gage height, 5.08 ft), from rating curve extended above 150 cfs; minimum daily, 2.2 cfs Feb. 18.
1931-39, 1946-59: Maximum discharge, 543 cfs Oct. 30, 1949 (gage height, 5.26 ft), from rating curve extended above 150 cfs; minimum daily, 0.4 cfs Sept. 26, 1957.

Remarks.--Records good.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	28	117	77	44	62	71	58	18	105	9.5	8.7	52	
2	105	90	94	21	85	57	109	20	77	12	7.9	50	
3	75	66	42	13	61	50	96	20	74	16	16	48	
4	38	38	20	8.7	35	75	46	18	74	20	16	30	
5	26	24	12	6.0	23	108	41	88	81	25	19	19	
6	109	27	7.5	5.2	15	122	30	119	106	19	26	15	
7	99	32	*5.8	4.8	*11	69	19	69	*122	14	19	11	
8	48	115	4.4	4.2	8.7	42	15	64	76	11	16	9.5	
9	27	123	3.8	4.4	6.8	27	15	48	54	8.3	12	46	
10	18	62	3.8	4.4	5.8	20	23	32	40	7.2	8.7	42	
11	18	44	4.8	4.8	5.2	39	36	25	34	6.2	6.5	35	
12	35	29	7.9	4.8	6.0	29	*40	24	40	15	4.6	125	
13	61	19	42	4.4	5.2	18	27	38	36	*23	4.8	61	
14	39	13	58	3.6	4.2	13	20	60	30	96	44	30	
15	28	9.1	80	7.0	3.8	45	15	64	25	83	100	20	
16	32	9.9	139	25	3.2	180	13	54	22	56	142	14	
17	36	62	108	31	2.3	194	12	52	20	56	59	11	
18	72	77	84	20	2.2	75	12	52	18	42	27	7.9	
19	52	42	56	14	2.4	36	13	40	18	36	15	6.2	
20	204	26	89	9.5	2.4	29	16	34	20	40	11	4.8	
21	*336	21	85	7.0	4.0	34	24	34	21	24	7.9	3.2	
22	113	15	69	6.0	6.0	23	33	35	20	16	9.1	2.3	
23	52	12	78	6.2	8.0	15	31	42	18	12	10	32	
24	159	9.9	53	8.7	12	11	23	41	15	9.9	9.5	27	
25	182	7.9	30	18	36	11	18	41	14	79	11	25	
26	101	6.8	18	72	52	11	32	39	13	68	15	57	
27	89	6.0	12	76	77	14	34	37	13	32	13	29	
28	208	5.5	12	60	143	17	24	35	12	18	9.5	18	
29	170	5.2	57	36	16	18	33	33	12	14	16	15	
30	178	12	135	22	14	16	27	10	13	36	14	14	
31	110	---	104	18	---	29	---	58	---	11	25	---	
Total	2,848	1,126.3	1,602.0	569.7	688.2	1,494	909	1,361	1,220	892.1	725.2	859.9	
Mean	91.9	37.5	51.7	18.4	24.6	48.2	30.3	43.9	40.7	28.8	23.4	28.7	
Cfsm	32.7	13.3	18.4	6.55	8.75	17.2	10.8	15.6	14.5	10.2	8.33	10.2	
In.	37.69	14.91	21.20	7.54	9.11	19.77	12.03	18.01	16.15	11.81	9.60	11.38	
Ac-ft	5,650	2,230	3,180	1,130	1,370	2,960	1,800	2,700	2,420	1,777	1,440	1,710	
Calendar year 1958: Max	336			Min	0.6	Mean	38.4	Cfsm	13.7	In.	185.48	Ac-ft	27,800
Water year 1958-59: Max	336			Min	2.2	Mean	39.2	Cfsm	14.0	In.	189.20	Ac-ft	28,360

Peak discharge (base, 250 cfs).--Oct. 21 (12:30 a.m.) 510 cfs (5.08 ft); Oct. 24 (12 p.m.) 283 cfs (3.76 ft); Oct. 28 (4:30 p.m.) 332 cfs (4.06 ft); Mar. 17 (3 a.m.) 260 cfs (3.62 ft).

* Discharge measurement made on this day.

700. Falls Creek near Ketchikan

Location.--Lat 55°36'50", long 131°20'55", on Revillagigedo Island, on left bank 1,100 ft upstream from mouth on east shore of Carroll Inlet, 1.1 miles downstream from Swan Lake, and 22 miles northeast of Ketchikan.

Drainage area.--36.5 sq mi.

Records available.--August 1916 to January 1926, September 1927 to December 1933, October 1946 to September 1959. (discontinued). Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921, published as Swan Lake Outlet at Carroll Inlet.

Gage.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map). Prior to December 1933, at site about 1,000 ft upstream at different datum.

Average discharge.--28 years (1916-25, 1927-33, 1946-59), 460 cfs (333,000 acre-ft per year).

Extremes.--Maximum discharge during year, 4,430 cfs Oct. 21 (gage height, 6.77 ft); minimum, 105 cfs Jan. 14 (gage height, 2.24 ft).

1916-26, 1927-33, 1946-59: Maximum discharge, about 5,500 cfs Nov. 1, 1917; minimum daily, 19 cfs Feb. 21-25, 1925.

Remarks.--Records good. Swan Lake has an area of 1,050 acres.

Revisions (water years).--WSP 1372: 1918, drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	454	2,100	a300	667	324	535	311	333	1,080	547	447	502
2	1,230	2,050	a850	452	595	469	410	352	1,070	559	410	595
3	1,360	1,520	793	328	547	442	486	375	1,020	628	425	608
4	882	970	547	265	436	430	415	361	1,070	614	395	518
5	674	654	385	214	347	518	370	347	1,360	565	380	442
6	770	535	285	186	285	535	333	420	1,340	496	547	420
7	861	530	217	165	228	469	289	535	1,410	452	518	356
8	661	1,010	183	150	195	380	242	524	1,150	420	430	306
9	488	1,260	162	141	165	319	249	518	1,020	400	356	547
10	378	907	150	135	*150	269	319	496	*824	415	302	614
11	320	681	144	126	144	277	502	447	730	436	253	474
12	410	518	147	120	138	249	496	410	737	530	228	589
13	482	405	204	115	135	220	442	474	758	640	224	654
14	422	519	242	105	132	198	370	779	709	952	302	518
15	350	257	356	123	129	298	324	943	628	997	508	464
16	330	224	832	245	126	1,010	294	898	608	824	1,020	395
17	340	a500	916	298	123	1,380	265	800	608	864	786	324
18	654	a550	856	257	120	943	253	744	608	872	553	269
19	791	a400	660	210	118	628	242	640	654	800	405	231
20	1,170	a300	674	183	115	486	257	614	702	856	328	207
21	3,880	a260	824	165	120	410	319	640	737	709	273	186
22	2,090	224	808	147	141	333	395	647	695	583	253	171
23	1,090	198	988	135	141	277	420	723	660	524	242	277
24	1,430	180	786	129	141	231	385	786	614	474	224	370
25	1,950	162	565	135	189	207	342	751	595	751	224	447
26	1,330	147	410	224	234	195	347	716	595	1,030	234	634
27	1,280	135	315	328	289	195	366	716	621	751	220	524
28	1,920	158	269	333	559	207	333	702	647	577	204	400
29	2,460	144	289	294	-	204	306	660	660	513	257	337
30	2,100	165	571	242	-----	198	311	608	595	559	480	302
31	2,180	-----	934	210	-----	228	-----	709	-----	513	474	-----
Total	34,737	17,443	15,662	6,827	6,366	12,740	10,393	18,668	24,505	19,851	11,902	12,681
Mean	1,121	581	505	220	227	411	346	602	817	640	384	423
Cfsm	30.7	15.9	13.8	6.03	6.22	11.3	9.48	16.5	22.4	17.5	10.5	11.6
In.	35.39	17.77	15.96	6.96	6.49	12.98	10.59	19.02	24.97	20.23	12.13	12.92
Ac-ft	68,900	34,600	31,070	13,540	12,630	25,270	20,610	37,030	48,600	39,370	23,610	25,150

Calendar year 1958: Max 3,880 Min 67 Mean 466 Cfsm 13.3 In. 180.73 Ac-ft 351,900
 Water year 1958-59: Max 3,880 Min 105 Mean 525 Cfsm 14.4 In. 195.41 Ac-ft 380,400

Peak discharge (base, 1,800 cfs).--Oct. 21 (9 a.m.) 4,430 cfs (6.77 ft); Oct. 25 (4 a.m.) 2,280 cfs (5.15 ft); Oct. 28 (10 p.m.) 3,260 cfs (5.92 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Fish Creek near Ketchikan.

720. Fish Creek near Ketchikan

Location.--Lat 55°23'30", long 131°11'40", on Revillagigedo Island, on right bank 50 ft upstream from outlet of Low Lake, 600 ft upstream from mouth at head of Thorne Arm, and 18 miles east of Ketchikan.

Drainage area.--32.1 sq mi, excludes that of Granite Lake drainage basin.

Records available.--May 1915 to October 1935, October 1938 to September 1959. Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921, published as "near sea level, Revillagigedo Island."

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by barometer). May 1915 to November 1935, at same site at different datum.

Average discharge.--41 years, 417 cfs (301,900 acre-ft per year).

Extremes.--Maximum discharge during year, 3,150 cfs Oct. 21 (gage height, 4.14 ft); minimum, 59 cfs Feb. 21 (gage height, 0.73 ft).

1915-35, 1938-59: Maximum discharge, 4,600 cfs Nov. 1, 1917 (gage height, 5.33 ft, datum then in use), from rating curve extended above 1,400 cfs; minimum daily, 20 cfs Sept. 9, 10, 1928.

Remarks.--Records good except those for period of no gage-height record, which are fair. Lakes in the basin are as follows: Basin Lake (240 acres), Mirror Lake (1,350 acres), Third Lake (180 acres), Big Lake (358 acres), and Low Lake (55 acres).

Revisions (water years).--WSP 1372: 1918.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	318	1,600	427	960	394	679	355	325	856	334	349	400
2	1,080	1,680	784	605	748	654	565	319	883	400	307	
3	1,480	1,560	730	407	811	550	837	337	802	448	325	
4	960	1,030	520	290	805	512	498	343	802	462	337	
5	688	670	381	225	455	621	434	313	901	434	307	
6	847	542	278	182	343	679	374	374	1,050	534	349	
7	1,170	520	210	161	268	597	307	542	1,220	343	427	
8	858	970	*165	138	210	476	256	535	1,080	307	381	
9	557	1,500	141	124	*169	374	230	520	*910	234	513	
10	382	1,190	124	110	141	307	235	485	722	*273	262	
11	288	892	116	110	124	588	307	434	613	273	215	
12	320	637	116	106	113	319	414	374	573	313	177	
13	509	483	156	103	103	262	*414	362	573	434	161	
14	485	362	284	93	96	210	362	469	558	713	186	
15	368	278	420	134	86	362	295	629	505	1,010	337	
16	308	251	980	210	79	1,160	262	670	469	892	1,050	
17	301	498	1,220	273	75	1,940	235	645	448	736	940	
18	597	505	1,190	290	70	1,210	225	597	441	775	629	
19	757	448	892	251	64	739	215	528	441	679	441	
20	1,250	381	775	200	60	589	210	476	469	679	331	
21	2,980	351	892	161	59	550	230	462	512	591	278	
22	*2,080	284	1,010	141	72	407	290	462	512	469	246	
23	1,280	230	1,100	124	84	301	331	490	483	400	220	
24	1,500	190	940	120	110	240	325	558	441	335	200	
25	1,650	165	662	148	230	210	295	550	420	512		
26	1,190	158	455	368	295	190	295	528	407	1,070		
27	1,090	120	337	469	414	205	319	520	407	856	260	
28	1,480	127	284	469	696	215	313	512	420	635		
29	2,030	144	388	420	-	205	284	483	441	462		
30	1,830	190	621	337	-----	190	307	462	427	420		
31	1,680	-----	1,220	278	-----	235	-----	555	-----	400		
Total	32,293	17,916	17,818	8,007	6,974	15,576	9,819	14,837	18,786	16,403	10,588	12,000
Mean	1,042	597	575	258	249	502	327	479	626	529	342	400
Cfs/m	32.5	18.6	17.9	8.04	7.76	15.6	10.2	14.9	19.5	16.5	10.7	12.5
In.	37.41	20.76	20.64	9.28	8.08	18.05	11.38	17.19	21.76	19.00	12.27	13.90
Ac-ft	64,050	35,540	35,340	15,880	13,830	30,890	19,480	29,430	37,260	32,530	21,000	23,800

Peak discharge (base, 1,800 cfs).--Oct. 21 (11:50 a.m.) 3,150 cfs (4.14 ft); Oct. 25 (1:50 a.m.) 1,840 cfs (3.08 ft); Oct. 29 (10 p.m.) 2,180 cfs (3.37 ft); Nov. 2 (7 p.m.) 1,840 cfs (3.08 ft); Mar. 17 (7 a.m.) 2,170 cfs (3.56 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 25 to Sept. 30; discharge estimated on basis of recorded range in stage, weather records, and records for Falls Creek near Ketchikan.

760. Manzanita Creek near Ketchikan

Location.--Lat 55°36', long 130°59', on Revillagigedo Island, on right bank a quarter of a mile upstream from mouth at Manzanita Bay, East Behm Canal, 2 miles downstream from Manzanita Lake, and 31 miles northeast of Ketchikan.

Drainage area.--33.9 sq mi.

Records available.--October 1927 to September 1937, August 1947 to September 1959. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 140 ft (by barometer).

Average discharge.--22 years, 465 cfs (336,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,570 cfs Oct. 21 (gage height, 8.57 ft), from rating curve extended above 1,700 cfs by logarithmic plotting; minimum, 142 cfs Feb. 21 (gage height, 1.99 ft).
1927-37, 1947-59: Maximum discharge, 3,870 cfs Oct. 13, 1949 (gage height, 8.19 ft), from rating curve extended above 1,600 cfs by logarithmic plotting; maximum gage height, that of Oct. 21, 1958; minimum discharge not determined.
A discharge of 4,480 cfs occurred sometime during the period of 1938-47 (gage height, 8.7 ft, from floodmark in well).

Remarks.--Records good except those for period of doubtful gage-height record, which are fair. There are two lakes above gage, Manzanita Lake (1,610 acres) and January Lake on North Fork Manzanita Creek.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	625	1,700	677	647	449	342	443	434	868	512	485	587
2	1,100	1,920	644	569	408	365	533	452	822	530	494	545
3	714	1,520	491	503	385	358	458	446	832	524	503	548
4	678	1,200	431	449	338	442	398	422	902	500	455	467
5	612	1,020	385	405	315	440	380	422	924	479	494	458
6	1,110	920	355	372	290	491	370	545	1,020	461	614	464
7	875	972	328	345	268	413	342	566	1,050	440	491	419
8	714	1,380	308	318	*265	382	342	524	*1,000	428	452	395
9	622	1,300	*285	298	242	350	368	539	913	419	413	674
10	556	1,100	268	280	225	328	416	527	857	416	385	497
11	580	984	262	265	217	375	488	497	822	402	358	440
12	793	860	278	250	213	335	476	485	815	452	335	557
13	757	759	350	243	201	305	*413	596	818	458	325	476
14	587	677	365	235	191	282	398	647	748	773	385	479
15	538	605	567	240	183	445	362	680	717	677	518	452
16	594	557	798	372	175	874	350	647	695	617	623	413
17	524	647	680	330	166	798	358	671	674	698	488	380
18	860	623	677	280	160	614	352	638	668	653	440	352
19	*690	554	605	255	152	548	350	623	653	683	400	330
20	2,160	503	717	240	146	536	390	632	665	650	375	310
21	2,300	479	704	227	144	521	443	647	647	593	358	290
22	1,400	431	724	219	172	458	455	641	632	560	352	272
23	1,140	395	798	211	172	416	422	695	606	545	335	512
24	1,530	370	680	205	173	385	390	677	599	542	312	405
25	1,460	342	590	207	289	368	378	677	578	843	322	497
26	1,210	320	524	338	275	355	434	677	575	745	302	548
27	1,150	300	467	350	332	350	413	674	569	650	272	428
28	1,200	305	440	318	500	350	382	662	566	596	255	395
29	1,820	305	554	282	-----	345	372	644	554	578	391	385
30	1,630	335	936	255	-----	332	428	632	527	584	446	362
31	1,700	-----	808	245	-----	382	-----	808	-----	527	362	-----
Total	32,269	23,383	16,696	9,755	7,046	13,285	12,094	16,427	22,318	17,535	12,740	13,337
Mean	1,041	779	539	315	252	429	403	594	744	566	411	445
Cfsm	30.7	23.0	15.9	9.29	7.43	12.7	11.9	17.5	21.9	16.7	12.1	13.1
In.	35.40	25.65	18.32	10.70	7.73	14.57	13.27	20.22	24.48	19.24	13.98	14.63
Ac-ft	64,000	46,380	33,120	19,350	13,980	26,350	23,990	36,550	44,270	34,780	25,270	26,450

Calendar year 1958: Max 2,300 Min 97 Mean 514 Cfsm 15.2 In. 205.64 Ac-ft 371,800
Water year 1958-59: Max 2,300 Min 144 Mean 545 Cfsm 16.1 In. 218.19 Ac-ft 394,500

Peak discharge (base, 1,700 cfs).--Oct. 6 (12 m.), 1,770 cfs (5.90 ft); Oct. 21 (4 a.m.) 3,570 cfs (8.57 ft); Oct. 24 (2 p.m.) 2,040 cfs (6.85 ft); Oct. 29 (9 p.m.) 2,450 cfs (7.37 ft); Nov. 2 (1 p.m.) 2,210 cfs (7.07 ft).

* Discharge measurement made on this day.

Note.--Doubtful gage-height record Jan. 13 to Feb. 7; discharge computed from reconstructed gage-height chart.

940. Deer Lake Outlet near Port Alexander

Location.--Lat 56°31'10", long 134°40'10", on Baranof Island, on right bank at tidewater at Mist Cove, an eighth of a mile downstream from Deer Lake and 19 miles north of Port Alexander.

Drainage area.--7.41 sq mi (revised).

Records available.--June 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is about 1 ft above mean sea level.

Average discharge.--8 years, 156 cfs (112,900 acre-ft per year).

Extremes.--Maximum discharge during year, 561 cfs Nov. 1 (gage height, 3.34 ft); minimum, 40 cfs Feb. 19 (gage height, 1.73 ft), result of freezeup.
1951-59: Maximum discharge, 642 cfs Oct. 22, 1953 (gage height, 3.47 ft); minimum, 9.4 cfs Mar. 23, 1956 (gage height, 0.73 ft), caused by temporary storage behind ice jam upstream.

Remarks.--Records fair. There are two lakes above gage, Deer Lake (968 acres), and Deer Upper Lake (139 acres).

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	129	542	98	192	80	74	96	83	192	178	199	113
2	162	509	96	178	91	83	104	82	218	174	192	113
3	165	434	93	162	101	88	104	80	255	171	196	109
4	168	362	87	148	*101	102	102	80	307	168	192	104
5	162	410	*80	140	99	115	101	78	380	168	203	98
6	165	434	75	131	96	122	96	85	374	165	296	91
7	160	410	70	124	90	120	94	87	368	162	323	85
8	148	476	64	115	88	120	*90	90	380	157	307	85
9	143	440	60	106	83	122	87	94	362	154	278	99
10	129	386	58	98	80	120	84	101	334	151	250	109
11	122	356	58	91	78	120	83	101	312	148	230	117
12	129	318	63	85	75	115	83	102	*287	148	210	160
13	127	282	99	80	71	109	82	111	278	151	210	162
14	*118	250	157	78	65	104	80	120	264	171	222	160
15	118	226	203	87	63	104	76	136	246	185	230	160
16	140	226	238	104	59	106	75	151	234	218	242	157
17	154	230	282	109	56	104	74	160	222	*234	230	151
18	255	226	287	104	52	101	72	162	218	234	210	140
19	268	206	278	99	48	98	71	162	206	239	199	131
20	287	192	296	93	48	102	72	165	203	255	185	122
21	296	181	312	87	49	99	73	168	203	242	171	115
22	282	165	318	84	50	96	76	168	196	230	162	111
23	255	151	339	80	53	93	76	174	192	218	154	118
24	268	136	312	74	55	88	76	181	188	206	145	118
25	278	127	278	72	61	88	80	181	185	210	136	118
26	264	117	250	73	64	84	87	185	181	199	129	122
27	246	113	226	74	68	85	90	185	181	188	122	118
28	255	106	210	72	72	88	88	185	185	181	115	115
29	273	99	210	68	-	87	87	181	181	181	113	113
30	350	94	218	65	-----	83	84	174	178	196	109	111
31	509	-----	210	68	-----	84	-----	178	-----	203	104	-----
Total	6,525	8,204	5,825	3,141	1,996	3,104	2,543	4,190	7,510	5,965	6,064	3,625
Mean	210	273	181	101	71.3	100	84.6	135	250	192	196	121
Cfsm	28.3	36.8	24.4	13.6	9.62	13.5	11.4	18.2	33.7	25.9	26.5	16.3
In.	32.75	41.18	28.23	15.76	10.02	15.58	12.76	21.03	37.69	29.94	30.43	18.19
Ac-ft	12,940	16,270	11,160	6,230	3,960	6,160	5,040	8,310	14,900	11,830	12,030	7,190

Calendar year 1958: Max 542 Min 32 Mean 141 Cfsm 19.0 In. 258.21 Ac-ft 102,000

Water year 1958-59: Max 542 Min 48 Mean 160 Cfsm 21.6 In. 293.56 Ac-ft 116,000

Peak discharge (base, 350 cfs)--Nov. 1 (4 p.m.) 561 cfs (3.34 ft); Nov. 8 (11 a.m.) 502 cfs (3.25 ft); June 8 (12 m.) 392 cfs (3.07 ft).

* Discharge measurement made on this day.

980. Baranof River at Baranof

Location.--Lat 57°05'15", long 134°50'30", on Baranof Island, on left bank at outlet of Baranof Lake, 1,500 ft upstream from mouth and town of Baranof.

Drainage area.--32.0 sq mi.

Records available.--July 1915 to January 1928, October 1957 to September 1959. Monthly discharge only for some periods published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 140 ft (from topographic map). Prior to Oct. 1, 1957, at site 700 ft downstream at different datum.

Average discharge.--14 years (1915-27, 1957-59), 432 cfs (312,800 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 2,170 cfs Aug. 6 (gage height, 8.64 ft); minimum not determined.
1915-28, 1957-59: Maximum discharge recorded, 4,170 cfs Sept. 24, 1922 (gage height, 5.8 ft, site and datum then in use), from rating curve extended above 1,800 cfs; minimum daily, 27 cfs Feb. 13, 14, 1916, Jan. 31, 1923.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Baranof Lake has an area of 698 acres.

Revisions (water years).--WSP 1372: 1918. WSP 1570: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1,480						212	908		752	421
2		1,090						203	1,110		596	452
3		722						197	1,290		522	370
4		480						194	1,510		491	299
5			*69 63			a160	a130	194	1,890		576	242
6								226	1,270		1,890	216
7					a100	182		269	990		1,440	181
8						175		296	990		1,020	178
9						155	*108	329	955		816	464
10						138	118	391	920	a980	618	1,130
11						128	137	382	955		505	800
12						113	147	343	(*)		470	1,140
13						97	146	414			519	836
14	a720				*65	64	86	141	584		740	596
15					59	79	133	940			768	540
16						56	122	908			684	494
17						54	117	864		(*)	700	424
18		a260				52	120	820		1,020	544	352
19			a210			51	132	712		920	452	291
20						50	156	688		940	452	249
21						51	242	704	a980	824	432	210
22						51	349	744		696	446	194
23						55	359	1,060		620	470	421
24						80	307	1,000		560	421	477
25	*488					68	267	920		608	502	536
26	400				70		294	940		548	544	556
27	340				77		304	932		508	484	435
28	421				a105		272	900		632	385	343
29	742				-		242	824		848	352	326
30	1,280				-----		230	728		1,080	361	519
31	1,860				-----		-----	780	-----	1,010	346	-----
Total	22,811	10,532	5,819	2,790	2,188	3,633	5,482	18,698	31,408	27,474	19,496	13,692
Mean	736	351	188	90	78.1	117	183	603	1,047	886	629	456
Cfsm	23.0	11.0	5.88	2.81	2.44	3.66	5.72	18.6	32.7	27.7	19.7	14.2
In.	26.51	12.24	6.76	3.24	2.54	4.22	6.37	21.73	36.50	31.93	22.66	15.91
Ac-ft	45,240	20,890	11,540	5,530	4,340	7,210	10,870	37,090	62,300	54,490	38,670	27,160

Calendar year 1958: Max 1,860 Min 45 Mean 399 Cfsm 12.5 In. 169.25 Ac-ft 288,900
Water year 1958-59: Max 1,890 Min - Mean 449 Cfsm 14.0 In. 190.61 Ac-ft 325,300

Peak discharge (base, 2,000 cfs).--Oct. 30 (8 p.m.) 2,050 cfs (8.63 ft); June 5 (4 a.m.) 2,120 cfs (8.57 ft); Aug. 6 (2 p.m.) 2,170 cfs (8.64 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of 2 discharge measurements, recorded range in stage, weather records, and records for stations on nearby streams.

1000. Takatz Creek near Baranof

Location.--Lat 57°08'35", long 134°51'50", on Baranof Island, on left bank at tidewater at Takatz Bay, 2 miles downstream from Takatz Lake and 4 miles north of Baranof.

Drainage area.--17.5 sq mi.

Records available.--July 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is about 4 ft above mean sea level.

Average discharge.--8 years, 262 cfs (189,700 acre-ft per year).

Extremes.--Maximum discharge during year, 4,170 cfs Oct. 30 (gage height, 5.50 ft), from rating curve extended above 660 cfs by logarithmic plotting; minimum, 26 cfs Feb. 19, 20 (gage height, 1.60 ft).

1951-59: Maximum discharge, 4,820 cfs Sept. 14, 1952 (gage height, 5.79 ft), from rating curve extended above 660 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good. Takatz Lake has an area of 425 acres.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,320	1,680	56	76	84	63	90	82	520	528	420	353
2	1,240	577	56	70	92	82	84	80	696	528	340	310
3	670	316	52	61	75	84	75	83	840	586	316	245
4	628	228	48	55	63	105	65	86	990	580	310	208
5	420	328	43	54	58	107	60	89	1,400	458	496	172
6	334	270	40	53	52	89	56	119	654	420	2,290	153
7	245	310	38	53	47	75	60	119	528	442	894	132
8	190	560	36	47	43	74	56	127	512	472	620	165
9	143	280	34	44	39	64	*60	125	504	488	458	465
10	115	240	33	41	36	61	71	135	512	528	322	670
11	111	208	35	38	38	65	79	123	552	568	292	428
12	235	175	44	37	39	57	75	125	560	560	286	1,010
13	182	137	150	35	36	52	68	190	*568	616	472	488
14	137	105	182	34	33	48	64	255	496	1,700	696	334
15	145	87	169	49	31	50	57	398	480	811	898	328
16	280	105	168	102	30	68	55	386	465	872	780	292
17	514	140	182	76	28	61	58	372	496	1,150	450	250
18	1,950	115	169	60	27	53	60	353	552	*645	354	226
19	480	92	169	51	26	49	64	318	577	662	286	190
20	512	84	153	46	26	57	79	304	628	645	316	169
21	560	79	163	42	27	56	105	298	645	536	292	145
22	286	70	208	40	28	50	113	322	611	428	310	148
23	216	63	286	38	38	47	100	480	586	372	310	292
24	230	58	179	36	41	43	86	504	580	366	270	255
25	*260	55	125	34	49	45	86	480	577	480	340	328
26	208	52	93	35	46	44	130	504	628	360	366	280
27	179	51	79	35	56	52	105	496	696	346	316	230
28	275	53	95	33	69	61	90	450	688	428	250	208
29	328	50	137	32	-	56	87	392	628	645	286	212
30	1,960	49	119	29	---	53	86	353	568	872	260	292
31	2,200	---	93	32	---	69	---	450	---	670	235	---
Total	16,553	6,595	3,432	1,468	1,257	1,940	2,322	8,596	18,717	18,742	14,511	8,978
Mean	534	220	111	47.4	44.9	62.6	77.4	277	624	605	468	299
Cfs/m	30.5	12.6	6.34	2.71	2.57	3.58	4.42	15.8	35.7	34.6	26.7	17.1
In.	35.18	14.02	7.29	3.12	2.67	4.12	4.93	18.27	39.78	39.83	30.84	19.08
Ac-ft	32,830	13,080	6,810	2,910	2,490	3,850	4,610	17,050	37,120	37,170	28,780	17,810

Calendar year 1958: Max 2,200 Min - Mean 258 Cfs/m 14.7 In. 200.39 Ac-ft 187,000
 Water year 1958-59: Max 2,290 Min 26 Mean 282 Cfs/m 18.1 In. 219.13 Ac-ft 204,500

Peak discharge (base, 2,300 cfs).--Oct. 1 (9 p.m.) 2,600 cfs (4.75 ft); Oct. 18 (6:30 a.m.) 3,270 cfs (5.08 ft); Oct. 30 (5 p.m.) 4,170 cfs (5.50 ft); Nov. 1 (12 m.) 3,270 cfs (5.08 ft); Aug. 6 (9 a.m.) 2,680 cfs (4.79 ft); Sept. 12 (10 a.m.) 2,370 cfs (4.62 ft).

* Discharge measurement made on this day.

1020. Hasselborg Creek near Angoon

Location.--Lat 57°39'40", long 134°14'55", on Admiralty Island, on right bank at outlet of Hasselborg Lake, 16 miles northeast of Angoon.

Drainage area.--56.2 sq mi.

Records available.--June 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 295 ft (from topographic map).

Average discharge.--8 years, 311 cfs (225,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,350 cfs Oct. 31 (gage height, 3.09 ft); minimum, 71 cfs Jan. 24, Feb. 19, 20 (gage height, 1.42 ft).
1951-59: Maximum discharge, 2,400 cfs Oct. 23, 1953 (gage height, 3.78 ft), from rating curve extended above 780 cfs; minimum not determined.

Remarks.--Records good. Hasselborg Lake has an area of 3,500 acres.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	360	1,320	150	312	151	175	160	282	698	312	538	342
2	623	1,260	180	264	190	218	212	270	723	288	436	374
3	623	1,080	190	229	207	240	229	258	740	276	430	348
4	583	866	185	196	207	276	224	252	698	264	391	324
5	575	698	170	180	202	306	212	270	639	252	354	294
6	575	631	155	160	180	312	202	318	599	234	493	270
7	545	607	127	135	165	294	190	367	552	218	664	246
8	496	698	107	127	150	270	185	402	530	212	639	234
9	416	812	99	119	135	240	196	430	508	207	639	258
10	354	740	95	111	123	229	229	437	500	202	558	348
11	306	698	99	103	127	212	246	416	500	207	451	367
12	318	615	95	95	123	202	252	402	500	218	398	465
13	360	515	107	92	111	180	252	*395	515	234	390	545
14	336	*437	185	89	92	170	240	486	538	336	430	515
15	318	360	294	95	89	165	229	631	530	402	451	465
16	395	312	342	95	83	160	240	698	493	437	437	416
17	472	300	451	95	77	160	264	698	472	639	398	367
18	583	324	472	92	74	150	282	672	*472	664	*336	318
19	599	324	451	86	71	155	336	631	458	655	294	276
20	583	300	430	83	71	160	398	615	458	664	270	240
21	689	270	430	80	77	150	416	623	458	591	240	212
22	672	240	416	74	80	135	409	607	451	515	234	196
23	583	218	465	74	86	131	391	615	430	465	212	282
24	508	196	465	71	89	119	348	615	409	437	207	324
25	591	170	416	77	92	115	336	607	398	444	252	354
26	623	160	354	80	103	107	348	607	381	423	282	395
27	575	155	300	80	123	107	336	607	374	398	258	402
28	607	145	282	80	145	107	324	591	374	367	218	381
29	758	135	312	77	-	107	312	545	360	409	246	354
30	866	135	360	74	-----	111	294	508	336	522	270	348
31	1,240	-----	360	80	-----	123	-----	568	-----	568	282	-----
Total	17,122	14,721	8,544	3,605	3,403	5,586	8,272	15,423	15,084	12,050	11,718	10,260
Mean	552	491	276	116	122	180	276	498	503	389	378	342
Cfsm	9.82	8.74	4.91	2.06	2.17	3.20	4.91	8.86	8.95	6.92	6.73	6.09
In.	11.33	9.74	5.65	2.39	2.25	3.70	5.47	10.21	9.98	7.97	7.75	6.79
Ac-ft	33,960	29,200	16,950	7,150	6,750	11,080	16,410	30,590	29,920	23,900	23,240	20,350

Calendar year 1958: Max 1,320 Min 55 Mean 304 Cfsm 5.41 In. 73.30 Ac-ft 219,800

Water year 1958-59: Max 1,320 Min 71 Mean 345 Cfsm 6.14 In. 83.23 Ac-ft 249,500

Peak discharge (base, 1,000 cfs).--Oct. 31 (11 p.m.) 1,350 cfs (3.09 ft).

* Discharge measurement made on this day.

1080. Pavlof River near Tenakee

Location.--Lat 57°50'30", long 135°02'10", on Chichagof Island, on left bank 140 ft up stream from falls at outlet of Pavlof Lake and 8 miles northeast of Tenakee.

Drainage area.--24.3 sq mi.

Records available.--June 1957 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is about 15 ft.

Extremes.--Maximum discharge during year, 1,060 cfs Sept. 10 (gage height, 6.39 ft), from rating curve extended above 710 cfs by logarithmic plotting; minimum, 29 cfs Jan. 30 (gage height, 4.00 ft).

1957-59: Maximum discharge, 1,550 cfs (revised) Nov. 2, 1957 (gage height, 7.15 ft), from rating curve extended above 710 cfs by logarithmic plotting; minimum, 22 cfs Aug. 16-18, 1957 (gage height, 3.97 ft).

Revisions.--Figures of maximum discharge for the period June to September 1957 and water year 1958 have been revised to 1,320 cfs Sept. 30, 1957 (gage height, 6.79 ft) and 1,550 cfs Nov. 2, 1957 (gage height, 7.15 ft), from rating curve extended above 710 cfs by logarithmic plotting, superseding those published in WSP 1500 and 1570, respectively.

Remarks.--Records good except those below 60 cfs, which are poor.

Revisions (water years).--Revised figures of discharge, in cubic feet per second, for the water years 1957-58, superseding those published in WSP 1500 and 1570 are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1957		1957-Con.		1958-Con.	
Sept. 29	318	Nov. 26	323	Jan. 17	300
Oct. 30	1,030	28	302	17	749
Nov. 27	394	29	330	18	412
3	1,220			Apr. 11	499
2	917	1958		12	348
4	634	Jan. 3	431	July 31	343
5	375	6	534	Sept. 4	499
25	384	7	686	6	466

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
September 1957.....	3,190	1,010	34	106	4.36	4.88	6,330
October 1957.....	3,551	394	45	115	4.73	5.43	7,040
November.....	8,387	1,220	75	280	11.5	12.84	18,640
January 1958.....	6,433	749	60	208	8.56	9.83	12,760
April.....	4,788	499	58	160	6.58	7.32	9,500
July.....	1,907	343	35	61.5	2.53	2.91	3,730
September.....	3,879	499	45	129	5.31	5.93	7,690
Water year 1957-58....	-	1,220	28	133	5.47	74.43	96,460

Revised peak discharge.--1957: Sept. 30 (6:30 a.m.) 1,320 cfs (6.79 ft).

1957-58: Nov. 2 (6 p.m.) 1,550 cfs (7.15 ft); Jan. 7 (5 a.m.) 928 cfs (6.18 ft); Jan. 17 (4 a.m.) 1,050 cfs (6.37 ft); Sept. 4 (1 p.m.) 783 cfs (5.92 ft).

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	485	465	44	85	529	250	106	118	427	82	210	197
2	624	465	43	66	427	300	219	121	361	75	145	149
3	490	389	*41	63	260	246	185	112	352	73	109	115
4	761	202	34	54	127	226	121	109	230	75	98	90
5	499	206	32	54	90	<u>361</u>	85	121	235	66	95	75
6	412	330	32	48	85	320	73	206	246	63	670	66
7	265	338	33	42	54	202	90	228	210	63	529	61
8	157	436	32	43	54	109	*98	242	214	61	340	63
9	115	280	31	42	46	82	95	242	246	60	202	326
10	<u>92</u>	189	<u>32</u>	40	43	66	124	250	246	60	138	<u>718</u>
11	115	210	33	38	45	88	153	206	246	68	112	255
12	421	181	35	37	44	78	121	168	246	78	92	417
13	250	100	264	34	42	58	121	246	260	244	127	290
14	141	75	436	33	38	52	130	403	*228	<u>534</u>	214	176
15	214	66	<u>446</u>	34	*34	54	92	<u>490</u>	181	275	145	145
16	431	82	408	57	33	305	92	403	172	242	127	115
17	343	130	549	<u>134</u>	33	134	134	389	172	366	95	95
18	320	172	355	<u>70</u>	32	73	141	343	210	193	80	78
19	260	85	246	48	30	63	185	340	189	*246	72	70
20	534	66	185	42	31	57	<u>320</u>	345	189	214	70	63
21	629	60	210	40	31	54	305	345	202	145	66	58
22	270	55	219	38	34	49	246	380	181	127	66	61
23	160	50	534	36	41	46	164	475	202	130	63	153
24	153	49	228	34	52	45	130	366	157	115	63	141
25	265	45	127	34	52	<u>44</u>	153	366	138	145	95	237
26	172	44	90	33	66	45	193	352	134	112	90	202
27	*149	44	72	32	138	49	189	366	127	92	70	141
28	357	48	80	30	260	57	141	124	92	61	109	
29	480	46	529	30	-	63	127	219	100	157	98	115
30	499	45	403	29	-----	61	130	210	92	446	106	153
31	589	-----	206	30	-----	65	-----	366	-----	370	112	-----
Total	10,642	4,953	6,009	1,430	2,751	3,702	4,463	8,807	6,437	5,089	4,560	4,934
Mean	343	165	194	46.1	88.2	119	149	284	215	164	147	164
Cfs/m	14.1	6.79	7.98	1.90	4.04	4.30	6.13	11.7	8.85	6.75	6.05	6.75
In.	16.29	7.58	9.20	2.19	4.21	5.67	6.83	13.48	9.85	7.76	6.98	7.55
Ac-ft	21,110	9,820	11,920	2,840	5,460	7,340	8,850	17,470	12,770	10,050	9,040	9,790

Calendar year 1958: Max 761 Min 28 Mean 151 Cfs/m 6.21 In. 84.1 Ac-ft 109,100
Water year 1958-59: Max 761 Min 28 Mean 175 Cfs/m 7.20 In. 97.55 Ac-ft 126,500

Peak discharge (base, 800 cfs, revised).--Oct. 1 (11:30 p.m.) 934 cfs (6.19 ft); Oct. 4 (10:30 a.m.) 865 cfs (6.07 ft); Dec. 29 (11:30 a.m.) 777 cfs (5.97 ft); Aug. 6 (9 p.m.) 988 cfs (6.28 ft); Sept. 10 (3 a.m.) 1,060 cfs (6.39 ft).

* Discharge measurement made on this day.

1090. Fish Creek near Auke Bay

Location.--Lat 58°19'50", long 134°35'20", on Douglas Island, on right bank 400 ft up-stream from bridge on North Douglas highway and $4\frac{1}{2}$ miles southeast of Auke Bay.

Drainage area.--13.6 sq mi.

Records available.--October 1958 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 17 ft above mean sea level. Prior to Oct. 14, 1958, staff gage at same site and datum.

Extremes.--Maximum discharge observed during year, 1,040 cfs Oct. 1 (gage height, 4.05 ft); minimum observed, 6.1 cfs Jan. 28 (discharge measurement).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	*650	200	18				20	34	284	56	116	*122
2	378	100	20			30	42	33	209	56	72	74
3	166	80	16				32	35	192	61	54	52
4	162	65	14				25	33	154	53	56	41
5	184	60	*12			*63	19	41	158	45	53	33
6	184	130				79	16	82	144	47	*169	30
7	93	108					16	110	146	46	164	31
8	64	77					18	130	144	46	146	29
9	45	86		(*)			*28	106	156	42	91	86
10	*58	59				30	47	100	156	41	59	158
11	39	49	65				48	77	*162	51	45	57
12	60	41	(*)				36	*61	171	61	38	70
13	97	39				*15	31	97	195	165	102	67
14	61	38				15	29	215	142	280	144	60
15	154	38				15	24	280	124	128	77	52
16	*238	39		12	7	43	24	187	128	112	57	38
17	148	*38		(*)		25	29	175	156	190	45	31
18	156	41				30	34	164	190	82	34	28
19	100	38	*132			29	61	164	150	98	33	24
20	224	35	89			24	86	169	150	104	34	23
21	244	33	91			28	120	184	144	74	40	21
22	98	30	61			21	82	280	110	185	40	26
23	*66	28	*97			19	49	248	98	*154	32	142
24	63	26	64			17	*38	177	114	120	39	169
25	146	24	46			13	42	180	102	88	64	146
26	86	23	34			12	56	184	*106	60	41	120
27	74	21	32			*13	66	164	102	53	29	66
28	130	*20	32	(*)		13	*47	148	89	138	25	52
29	124	19	88		-	13	39	138	79	320	100	61
30	180	17	122		-----	13	38	150	70	357	110	120
31	240	-----	61		-----	13	-----	325	-----	192	130	-----
Total	4,692	1,602	1,874	372	196	813	1,242	4,369	4,305	3,505	2,237	2,029
Mean	151	53.4	60.5	12.0	7.0	26.2	41.4	141	144	113	72.2	67.6
Cfs/m	11.1	3.93	4.45	0.882	0.515	1.95	3.04	10.4	10.6	8.31	5.31	4.97
In.	12.83	4.38	5.12	1.02	0.54	2.22	3.40	11.95	11.77	9.58	6.12	5.55
Ac-ft	9,310	3,180	3,720	738	389	1,610	2,460	8,670	8,540	6,950	4,440	4,020

Calendar year 1958: Max - Min - Mean - Cfs/m - In. - Ac-ft -
 Water year 1958-59: Max 650 Min - Mean 74.6 Cfs/m 5.49 In. 74.48 Ac-ft 54,030

Peak discharge (base, 500 cfs).--Oct. 1 (11:30 a.m.) 1,040 cfs (4.05 ft); Oct. 21 (6 a.m.) 565 cfs (3.60 ft); July 14 (12 m.) 608 cfs (3.65 ft); July 29 (2 p.m.) 862 cfs (3.91 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 30 to Nov. 5, Nov. 19-27, Dec. 6-18, Jan. 12 to Feb. 7, Feb. 20-27, Mar. 1-4, 7-12; discharge estimated on basis of 4 discharge measurements, weather records, and records for Gold Creek at Juneau. Stage-discharge relation affected by ice Dec. 4-18, Jan. 1 to Mar. 12.

2000. Gakona River at Gakona

Location.--Lat 62°18'05", long 145°18'20", near center of span on downstream side of bridge on Glenn Highway at Gakona, 500 ft upstream from mouth and 1.9 miles northeast of junction of Richardson and Glenn Highways.

Drainage area.--620 sq mi, approximately.

Records available.--Discharge: August to September 1948, October 1949 to September 1959. Chemical analyses: February 1952 to September 1954, October 1957 to September 1958. Water temperatures: October 1952 to September 1954. Sediment records: May 1953 to September 1958 (periodic); summer months only 1956 and 1958.

Gage.--Wire-weight gage read once daily. Datum of gage is 1,403.03 ft above mean sea level. Aug. 8 to Sept. 13, 1948, staff gage at same site and datum.

Average discharge.--10 years, 919 cfs (665,300 acre-ft per year).

Extremes.--Maximum discharge during year, 3,780 cfs May 18 (gage height, 5.72 ft, from graph based on gage readings); maximum gage height observed, 8.29 ft Apr. 15, back-water from ice; minimum discharge not determined. 1948, 1949-59: Maximum discharge, 10,300 cfs Aug. 1, 1956 (gage height, 7.92 ft, from graph based on gage readings), from rating curve extended above 5,700 cfs by logarithmic plotting; no flow for part of Mar. 25, 1953, caused by temporary storage behind ice jam upstream.

Remarks.--Records fair except those for period of ice effect, which are poor. Some diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	685								2,180	2,940	2,320	*1,880
2	925								2,140	2,950	2,060	1,970
3	903								2,090	3,000	2,070	2,160
4	925								2,360	3,210	2,050	2,080
5	870								2,240	3,480	1,880	1,720
6	702								2,180	3,100	1,720	1,520
7	*523								2,140	2,940	1,550	1,440
8	434				90	80	90	310	2,090	2,740	1,290	1,260
9	392	220							2,070	2,510	1,570	1,140
10	358								1,970	2,460	1,770	1,030
11	335					(*)			1,730	2,380	1,860	992
12	313								1,830	2,380	1,880	969
13	304								*1,810	2,540	1,840	936
14	296								1,840	2,400	1,680	850
15	281							*1,640	1,610	2,270	1,860	790
16	265		150	100					2,540	2,110	2,180	1,980
17	254		(*)						3,530	2,280	1,770	2,010
18	244								3,680	2,090	1,770	2,050
19	234			(*)					3,650	2,440	1,730	1,940
20	229								3,630	2,440	1,810	2,020
21	220				80				3,260	2,300	2,180	1,950
22	215								2,630	2,480	1,880	1,680
23	211	200				70	80		2,330	2,390	1,600	2,280
24	208								2,270	2,390	1,660	2,650
25	211								2,120	2,440	1,720	3,020
26	215								2,240	2,420	1,530	2,600
27	220								2,160	2,400	*1,730	2,300
28	229								2,120	2,420	1,730	2,010
29	236								2,160	2,620	1,770	1,950
30	244								2,160	2,940	1,640	1,900
31	249								2,440		2,020	1,880
Total	11,930	6,300	4,650	3,100	2,390	2,320	2,550	48,900	66,440	70,620	61,600	31,822
Mean	385	210	150	100	85.4	74.8	85.0	1,577	2,215	2,278	1,987	1,061
Ac-ft	23,660	12,500	9,220	6,150	4,740	4,600	5,060	96,990	131,800	140,100	122,200	63,120
Calendar year 1958: Max			3,380		Min -		Mean 709		Ac-ft 513,200			
Water year 1958-59: Max			3,680		Min -		Mean 856		Ac-ft 620,100			

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 5 to May 16 (no gage-height record Dec. 2 to Apr. 14, except occasional days; discharge estimated on basis of 3 discharge measurements and weather records).

2020. Tazlina River near Glennallen

Location.--Lat 63°03'20", long 145°25'35", in W $\frac{1}{2}$ sec. 9, T.3 N., R.1 W., near center of span on downstream side of bridge on Richardson Highway, 2 miles upstream from mouth, 4 miles downstream from Moose Creek, and 5 miles southeast of Glennallen.

Drainage area.--3,670 sq mi, approximately.

Records available.--Discharge: August 1949 to September 1950, October 1951 to September 1959. Discharge measurements only in 1951.

Chemical analyses: February 1952 to August 1953, December 1953 to September 1954, May to August 1956, October 1957 to September 1958.

Sediment records: May 1953 to September 1959 (periodic); summer months only 1956-59.

Gage.--Wire-weight gage read once daily. Datum of gage is 1,109.13 ft above mean sea level, adjustment of 1952.

Average discharge.--9 years, 4,288 cfs (3,061,000 acre-ft per year).

Extremes.--Maximum discharge during year, 22,900 cfs July 11 (gage height, 9.03 ft, from graph based on gage readings); minimum not determined.

1949-50, 1951-59: Maximum discharge, 47,000 cfs Aug. 31, 1955 (gage height, 12.25 ft, from graph based on gage readings); minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,610	1,000	580	360	270		270	400	4,440	13,600	11,700	*9,520
2	2,510						270	460	4,570	13,600	11,400	9,480
3	2,500						280	540	4,660	14,500	11,400	8,700
4	2,500						290	620	4,800	14,900	*11,000	8,420
5	2,400						300	700	5,030	15,600	11,300	8,280
6	2,360	(*)	580	360	270		300	820	5,090	15,700	*11,000	8,070
7	2,170						310	940	5,300	16,000	11,100	7,610
8	2,110						310	1,100	5,690	16,600	11,200	7,280
9	2,010						310	1,200	5,870	19,200	11,100	6,710
10	1,920						310	1,400	6,200	22,100	10,600	6,740
11	1,820	820	(*)	310		(*)	300	1,600	*6,470	22,600	10,500	6,110
12	1,730						300	*1,840	6,750	21,500	10,600	5,870
13	*1,640						300	1,900	a7,000	20,000	10,600	5,580
14	1,510						*290	2,150	a7,200	18,700	10,600	5,380
15	1,510						280	2,460	7,460	16,700	10,300	5,060
16	1,460	780	(*)	370	240		280	2,780	7,490	16,000	10,400	4,880
17	1,400						270	2,970	7,800	15,200	10,200	4,860
18	1,300						260	3,440	7,650	14,500	9,840	a4,700
19	1,300						260	3,700	8,020	13,800	9,970	a4,600
20	1,200						250	3,810	8,260	12,600	10,600	a4,500
21	1,200	780	570	370	240		250	3,790	8,700	12,000	10,200	a4,400
22	1,100						240	3,870	8,940	11,500	10,400	4,270
23	1,000						240	3,910	9,940	11,100	10,300	4,290
24	980						250	4,020	10,200	11,000	10,600	a4,400
25	960						250	4,100	11,000	11,300	10,600	4,520
26	970	780	(*)				260	4,140	11,100	10,800	10,800	4,910
27	1,000						270	4,120	11,500	11,100	10,700	5,480
28	1,000						290	4,190	12,000	10,800	10,200	5,230
29	1,100						320	4,220	12,100	10,600	10,000	9,640
30	1,100						350	4,430	12,100	11,000	9,920	18,200
31	1,200	-----	-----	-----	-----	-----	-----	4,480	-----	11,500	9,560	-----
Total	49,570	26,000	17,820	11,320	8,680	7,880	8,460	80,100	233,360	456,100	328,690	197,690
Mean	1,599	867	575	365	310	255	282	2,584	7,779	14,710	10,600	6,590
Ac-ft	98,320	51,570	35,350	22,450	17,220	15,650	16,780	158,900	462,900	904,700	651,900	392,100
Calendar year 1958: Max		17,200		Min	221		Mean	3,677	Ac-ft	2,662,000		
Water year 1958-59: Max		22,600		Min	-		Mean	3,906	Ac-ft	2,828,000		

* Discharge measurement made on this day.

a No gage-height record; discharge interpolated or estimated on basis of records for stations on nearby streams.

Note.--Stage-discharge relation affected by ice Oct. 18 to May 24 (no gage-height record Nov. 16 to Apr. 11, except occasional days; discharge estimated on basis of 3 discharge measurements and weather records).

2060. Klutina River at Copper Center

Location.--Lat 61°57'10", long 145°18'20", in SW $\frac{1}{4}$ sec.18, T.2 N., R.1 E., near left bank on downstream side of bridge on Richardson Highway, 0.7 mile south of Copper Center, three-quarters of a mile upstream from mouth, and 24 miles downstream from Klutina Lake.

Drainage area.--880 sq mi, approximately.

Records available.--Discharge: May to August 1908 (gage heights only), June to October 1913, August 1949 to September 1959.

Chemical analyses: March 1952 to September 1954, May to August 1956, October 1957 to September 1958.

Water temperatures: October 1952 to September 1953.

Sediment records: May 1953 to September 1958 (periodic); summer months only 1956-58.

Gage.--Wire-weight gage read once daily. Datum of gage is 1,011.26 ft above mean sea level. May 19 to Aug. 31, 1908, and June 17 to Oct. 31, 1913, staff gages at sites a quarter of a mile downstream at different datums.

Average discharge.--10 years (1949-59), 1,734 cfs (1,248,000 acre-ft per year).

Extremes.--Maximum discharge observed during year, 7,520 cfs July 3 (gage height, 8.38 ft); minimum not determined.

1913, 1949-59: Maximum discharge observed, 9,040 cfs June 29, 1953 (gage height, 9.24 ft); maximum gage height observed, 15.55 ft May 9, 1953 (backwater from ice); minimum discharge not determined.

Remarks.--Records fair except those for period of ice effect, which are poor.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,170	630						150	2,340	7,290	4,540	3,100
2	1,140							160	2,580	7,360	4,320	3,010
3	1,230							170	2,810	7,520	4,250	2,790
4	1,170							190	2,970	7,420	*4,280	2,740
5	1,140							210	3,010	6,870	4,120	2,500
6	1,110		230	150	170	190	150	230	3,170	6,320	4,100	2,310
7	1,050							260	3,240	6,270	4,210	2,230
8	1,020							300	3,360	6,480	4,100	2,130
9	979							340	3,840	6,530	4,210	1,940
10	951							400	3,900	6,010	4,170	1,880
11	930	520	(*)			(*)	(*)	460	*4,450	5,820	4,100	1,820
12	874							539	4,670	5,820	4,120	1,740
13	834							629	4,860	5,740	4,030	1,700
14	*881							*710	5,100	5,720	4,100	1,540
15	802							951	4,980	5,670	4,140	1,500
16	762	420	(*)					1,090	5,290	5,070	4,210	1,520
17	704							1,110	5,340	4,630	4,190	1,480
18	736							1,280	5,190	5,120	4,120	1,430
19	724							1,420	5,290	4,950	4,140	1,340
20	684							1,390	6,060	4,610	4,210	1,340
21	641		200	170		160	130	1,470	5,580	4,720	4,300	1,290
22	599							1,370	7,050	4,390	4,340	1,230
23	569							1,480	7,310	4,140	4,410	1,250
24	563							1,740	7,420	4,200	4,250	1,230
25	563							1,820	7,180	4,100	4,250	1,240
26	575							1,740	7,230	4,100	4,080	1,210
27	593							1,800	7,360	4,300	3,880	1,220
28	623							1,930	7,080	3,950	3,860	1,160
29	653							2,090	7,360	3,970	3,860	1,100
30	680							2,260	7,490	4,230	3,780	1,410
31	690							2,310	-----	4,430	*3,150	-----
Total	25,640	15,700	6,650	4,970	4,630	5,250	4,200	31,999	153,510	167,750	127,780	52,380
Mean	827	525	215	160	165	169	140	1,032	5,117	5,411	4,122	1,746
Ac-ft	50,860	31,140	13,190	9,860	9,180	10,410	8,330	65,470	304,500	332,700	253,400	103,900
Calendar year 1958: Max	6,510							Mean	1,667	Ac-ft	1,207,000	
Water year 1958-59: Max	7,520							Mean	1,645	Ac-ft	1,191,000	

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 24 to May 23 (no gage-height record Oct. 30 to May 11, except occasional days; discharge estimated on basis of 4 discharge measurements, weather records, and records for stations on nearby streams).

2080. Tonsina River at Tonsina

Location.--Lat 61°39'50", long 145°10'50", near left bank on downstream side of bridge on Richardson Highway at Tonsina, 0.4 mile upstream from Bernard Creek and 0.6 mile upstream from Squirrel Creek. Prior to Apr. 13, 1959, on upstream side of bridge.

Drainage area.--420 sq mi, approximately.

Records available.--Discharge: May 1950 to December 1954, January to September 1955 (fragmentary), October 1955 to September 1959.

Chemical analyses: February 1952 to September 1953, January to September 1954,

May to August 1956, October 1957 to September 1959.

Water temperatures: October 1952 to September 1953, November 1958 to September 1959.

Sediment records: May 1953 to September 1959 (periodic); summer months only 1956-59.

Gage.--Wire-weight gage read once daily. Altitude of gage is 1,500 ft (from topographic map). Prior to Oct. 16, 1957, at site 200 ft upstream at same datum.

Average discharge.--8 years (1950-54, 1955-59), 923 cfs (668,200 acre-ft per year).

Extremes.--Maximum discharge observed during year, 5,800 cfs June 18 (gage height, 4.30 ft); minimum not determined.

1950-54, 1955-59: Maximum discharge, 7,910 cfs June 8, 1957 (gage height, 7.00 ft, from graph based on gage readings, site then in use); minimum not determined.

Remarks.--Records fair except those for period of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	503							76	1,940	3,490	2,870	*1,190
2	557							80	2,140	3,510	2,650	1,120
3	585							88	2,420	3,540	2,440	1,050
4	589							97	2,870	3,560	*2,340	967
5	561							110	2,980	3,440	2,300	890
6	524							120	3,090	3,320	2,260	830
7	489							140	3,200	3,090	2,300	745
8	467	220	120	78	75	85	66	160	3,300	3,090	2,240	718
9	435					(*)		190	3,440	2,980	2,140	700
10	420							230	3,560	2,910	2,020	660
11	417							280	3,580	2,850	1,980	660
12	402						(*)	350	*3,390	2,760	2,020	584
13	378							430	3,800	2,650	1,940	516
14	*364							*502	4,180	2,540	1,980	516
15	350							620	4,700	2,420	2,000	516
16	340	(*)	(*)					636	5,380	2,340	2,020	496
17	320							620	5,690	2,240	2,020	477
18	310							598	5,800	2,140	2,040	465
19	300							606	5,520	1,940	2,060	454
20	280							620	5,240	1,850	2,100	454
21	270							598	4,800	1,760	2,020	454
22	250				71			620	5,100	1,670	1,980	454
23	240	182					62	684	5,380	1,670	1,900	442
24	230		110	83				745	4,700	1,760	1,850	442
25	230							763	4,280	1,760	1,800	442
26	230							810	4,600	1,850	1,710	436
27	240							850	4,180	1,940	1,650	436
28	250			(*)				1,120	3,920	1,980	1,580	448
29	260							1,450	4,080	2,020	1,500	448
30	270							1,620	3,680	2,440	1,420	509
31	280							1,760		2,670	1,340	
Total	11,341	6,030	3,560	2,498	2,048	2,267	1,920	17,573	120,940	78,180	62,470	18,519
Mean	366	201	115	80.6	73.1	73.1	64.0	567	4,031	2,522	2,015	617
Ac-ft	22,490	11,960	7,060	4,950	4,060	4,500	3,810	34,860	239,900	155,100	123,900	36,730
Calendar year 1958: Max	-	-	-	-	-	-	-	875	Ac-ft	633,700		
Water year 1958-59: Max	5,800							897	Ac-ft	649,300		

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 5 to May 13 (no gage-height record Nov. 11 to May 13, except occasional days; discharge estimated on basis of 6 discharge measurements, weather records, and records for Tazlina River near Glennallen and Klutina River at Copper Center).

2080. TONSINA RIVER AT TONSINA--Continued

Chemical analyses, in parts per million, November 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Nov. 26, 1958	a 182	6.5	0.69	14	1.7	2.1	0.5	48	7.0	1.0	0.0	0.0	57	42	2	99	6.5	0
Dec. 12	b 111	6.7	.00	12	5.2	2.5	1.1	50	8.0	4.0	.0	.1	65	52	10	98	7.1	0
Jan. 28, 1959	b 90	7.8	.02	17	2.8	2.8	.6	64	6.0	2.0	.0	.0	71	54	2	121	7.0	0
Mar. 10	b 88	7.8	.38	16	4.2	3.1	.7	63	9.0	4.5	.1	.2	77	57	6	118	7.3	0
Apr. 28	c 62	7.7	.28	16	4.0	3.2	.7	67	8.0	3.0	.0	.1	76	56	2	116	7.2	10
May 16	636	6.0	.12	11	3.1	1.7	.8	42	5.0	4.0	.1	.6	53	40	6	76	6.8	60
May 17-24	636	6.0	.12	12	1.9	1.6	.7	45	4.0	1.0	.0	.3	50	38	1	82	7.2	30
May 25-31	1,200	5.2	.12	10	1.4	1.2	.6	36	4.0	1.0	.0	.2	42	31	2	71	7.1	20
June 1-10	2,890	4.5	.05	9.5	1.2	1.1	.3	33	4.0	1.0	.0	.2	39	28	2	64	7.0	10
June 11-20	4,730	4.0	.09	8.7	1.2	1.0	.4	30	4.0	1.0	.0	.2	36	26	2	61	7.3	10
June 21-30	4,470	4.3	.09	9.1	1.2	1.0	.4	31	4.0	1.0	.0	.2	36	28	2	60	7.2	20
July 1-9	3,340	5.7	.02	10	.7	1.1	.3	29	6.0	.5	.0	.0	38	28	4	63	7.2	0
July 16-31	2,000	4.5	.03	11	.7	1.2	.4	32	7.0	.5	.0	.1	41	30	4	65	7.5	0
Aug. 1-10	2,860	5.2	.03	11	.7	1.1	.3	31	7.0	.5	.0	.1	41	30	5	65	7.1	0
Aug. 11-20	2,020	4.8	.05	10	.7	1.2	.3	31	4.0	1.0	.0	.0	37	28	2	64	7.2	5
Aug. 21-31	1,700	4.9	.02	9.9	1.0	1.1	.3	32	4.0	1.0	.0	.2	38	28	2	64	7.1	5
Sept. 1-12	843	5.0	.02	11	1.0	1.4	.5	35	6.0	1.0	.0	.0	43	32	3	71	7.1	5
Sept. 14	516	5.0	.13	12	3.3	1.5	.3	39	8.0	2.5	.0	.2	52	44	12	78	7.3	0
Sept. 17-30	454	7.5	.03	12	1.4	1.7	.6	40	6.0	1.0	.1	.2	50	36	3	78	7.1	5

a Mean discharge for period Nov. 16-30, 1958.

b Discharge at time of sampling.

c Mean discharge for period Apr. 16-30, 1959.

2080. TONSINA RIVER AT TONSINA--Continued

Temperature (°F) of water, November 1958 to September 1959
 /Once-daily measurement at approximately 12 m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								--	42	51	48	48
2								--	43	52	49	48
3								--	41	49	48	48
4								--	42	46	48	48
5								--	43	49	47	47
6												
7								--	43	49	46	46
8								--	42	49	47	45
9								--	42	48	49	45
10						32		--	43	--	48	44
11												
12			32					--	42	--	47	44
13								--	44	--	49	46
14								--	45	--	49	--
15								--	45	--	49	48
16								--	44	--	50	--
17								45	46	48	48	45
18								47	44	46	50	45
19								44	45	52	52	45
20								42	46	50	51	45
21												
22								42	47	47	50	42
23								43	47	46	50	42
24								44	48	47	--	42
25								44	48	48	50	42
26								46	48	49	50	44
27		32						44	49	49	50	43
28								45	50	48	50	45
29				32			32	46	48	48	49	42
30								41	49	48	48	42
31								41	49	48	48	45
								42	--	47	48	--
Average								--	45	48	49	45

2120. Copper River near Chitina

Location.--Lat 61°28', long 144°28', on right bank at head of Woods Canyon, half a mile downstream from Taral Creek and abandoned Indian village of Taral, $\frac{1}{4}$ miles upstream from Tenas Creek, and $3\frac{1}{4}$ miles south of Chitina.

Drainage area.--20,600 sq mi, approximately.

Records available.--Discharge: July to September 1950, May to November 1952, October 1955 to September 1959.

Chemical analyses: June to November 1950, January 1954 to September 1957.

Water temperatures: June to September 1957.

Sediment records: January 1954 to September 1956 (periodic); June to September 1957 (daily); summer months only 1955-57.

Gage.--Water-stage recorder. Altitude of gage is 400 ft (from topographic map). Prior to June 2, 1952, staff gage at site a quarter of a mile upstream at datum 1.4 ft higher. June 2 to Nov. 30, 1952, water-stage recorder at same site and datum.

Extremes.--Maximum discharge during year, 165,000 cfs July 10, 11, or 12 (gage height, 21.0 ft, from floodmarks); minimum not determined.

1950, 1952, 1955-59: Maximum discharge recorded, 172,000 cfs June 10, 1958 (gage height, 22.52 ft); minimum not determined.

Maximum stage known since 1950, 28.3 ft, in July 1951, at present datum, from flood-marks (discharge, 220,000 cfs).

Remarks.--Records fair except those for periods of ice effect, doubtful or no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19,600							3,800	48,800	140,000	94,000	*69,500
2	24,900							4,200	50,000	140,000	90,000	67,000
3	27,400							4,800	56,300	140,000	89,000	63,000
4	26,800							5,400	59,900	150,000	87,000	60,000
5	25,900							6,000	62,100	150,000	*87,400	56,000
6	23,200							6,900	63,000	140,000	84,000	52,000
7	20,700							7,900	64,800	140,000	85,000	49,000
8	18,900							9,200	67,800	150,000	87,000	46,200
9	17,100							10,000	81,500	160,000	84,000	43,900
10	16,400							12,000	109,000	160,000	82,000	41,600
11	15,800							14,000	99,200	160,000	81,000	39,800
12	15,100							17,000	*91,800	160,000	82,000	37,900
13	14,600							(*)	*20,000	96,000	150,000	81,000
14	*14,300								d24,000	100,000	140,000	81,000
15	14,000								d30,000	110,000	130,000	81,000
16	13,000	10,000	7,600	4,400	3,400	3,000	3,000	d37,000	114,000	120,000	82,000	33,600
17	13,000							d44,000	130,000	110,000	81,000	33,500
18	12,000							d48,000	139,000	110,000	79,000	32,800
19	12,000							d50,000	138,000	100,000	80,000	32,500
20	11,000							d50,000	146,000	98,000	83,000	32,700
21	11,000							d49,000	142,000	97,000	81,000	31,900
22	11,000							d46,000	140,000	91,000	81,000	30,900
23	10,000							44,400	147,000	86,000	83,000	33,900
24	9,700							46,200	153,000	86,000	85,000	41,500
25	9,600							46,200	155,000	87,000	87,000	38,900
26	9,700							45,100	150,000	86,000	84,000	36,800
27	10,000							45,100	143,000	86,000	81,000	35,400
28	11,000							45,100	140,000	83,000	78,000	33,500
29	11,000							44,800	140,000	83,000	76,000	37,800
30	12,000							45,800	140,000	87,000	75,000	47,800
31	12,000							49,500	-----	93,000	70,000	-----
Total	472,700	300,000	235,600	136,400	95,200	93,000	90,000	911,400	*3,276.2	*3,713	*2,561.4	*1,263.8
Mean	15,250	10,000	7,600	4,400	3,400	3,000	3,000	29,400	109,200	119,800	82,630	42,130
Ac-ft	937,600	595,000	467,300	270,500	188,800	184,500	178,500	*1,808	*6,498	*7,365	*5,080	*2,507

Calendar year 1958: Max 155,000 Min - Mean 37,750 Ac-ft 27,330,000
 Water year 1958-59: Max 160,000 Min - Mean 36,020 Ac-ft 26,080,000

* Discharge measurement made on this day.

* Expressed in thousands.

d Doubtful gage-height record; discharge computed on basis of gage-height record, weather records, and records for tributary streams.

Note.--Stage-discharge relation affected by ice Oct. 15 to about May 10 (no gage-height record Nov. 20 to Dec. 14, Jan. 9 to May 10; discharge estimated on basis of 2 discharge measurements, weather records, and records for tributary streams). No gage-height record May 11-13, June 28 to Aug. 4, Aug. 6-31, Sept. 2-7; discharge estimated on basis of 3 discharge measurements and records for tributary streams.

2160. Power Creek near Cordova

Location.--Lat 60°35'15", long 145°37'05", on left bank at old bridge site, 1 mile upstream from Eyak Lake and $5\frac{1}{2}$ miles northeast of Cordova.

Drainage area.--20.5 sq mi.

Records available.--July to November 1913 (fragmentary), August 1947 to September 1959.

Gage.--Water-stage recorder. Datum of gage is 33.5 ft above mean sea level (river profile survey). July to November 1913, staff gage half a mile upstream at different datum.

Average discharge.--12 years, 255 cfs (184,600 acre-ft per year).

Extremes.--Maximum discharge during year, 4,590 cfs Oct. 2 (gage height, 7.10 ft), from rating curve extended above 1,450 cfs by logarithmic plotting; minimum daily, 20 cfs Mar. 18-20; minimum gage height, 1.42 ft Feb. 1.
1947-59: Maximum discharge recorded, 5,540 cfs Sept. 25, 1949 (gage height, 7.65 ft), from rating curve extended above 1,450 cfs by logarithmic plotting; minimum recorded, 13 cfs Apr. 29, 1950 (gage height, 1.50 ft), but may have been less during periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		234	*65	54	48	26	28	46	346	358	512	506
2		188	59	51	47	26	28	48	365	339	428	277
3	al, 400	145	56	49	41	26	28	50	*441	328	401	209
4		129	53	46	*39	26	27	51	393	423	393	183
5		157	51	47	36	25	26	58	365	346	393	169
6		393	50	*47	35	25	26	84	358	358	332	151
7		248	49	46	35	25	35	94	346	365	332	136
8	a270	149	48	47	35	24	58	122	328	346	291	*130
9		115	43	47	35	24	88	115	393	335	284	120
10		103	41	46	35	24	57	114	436	354	295	162
11		90	40	45	35	23	45	132	475	470	321	145
12		83	45	44	35	23	40	114	560	634	291	132
13	a130	78	56	43	34	22	34	117	548	542	321	136
14		74	50	41	34	22	32	348	518	385	291	132
15		72	62	41	34	22	32	480	512	620	291	130
16		103	60	40	34	21	31	385	512	998	306	120
17		88	76	39	34	*21	30	377	596	2,260	346	112
18	a310	76	95	40	34	20	30	328	596	1,560	310	110
19		69	147	40	32	20	30	306	560	602	373	103
20		65	135	40	31	20	29	281	634	711	339	99
21	*180	61	171	40	30	21	29	254	602	518	271	94
22	145	60	136	40	30	21	*30	328	512	490	245	131
23	130	57	193	39	29	22	32	313	465	385	510	559
24	115	54	220	39	32	22	36	298	450	321	385	732
25	104	51	120	38	29	23	42	343	465	291	346	441
26	99	68	92	36	28	23	42	385	460	*288	313	264
27	96	115	80	36	28	24	43	361	450	281	260	201
28	102	99	74	37	27	26	43	365	432	346	218	220
29	115	76	74	37	-	27	45	358	405	606	226	851
30	122	69	64	37	-----	28	46	324	365	1,720	208	1,190
31	280	-----	57	43	-----	29	-----	332	-----	986	629	-----
Total	12,036	3,369	2,562	1,321	956	731	1,122	7,311	13,908	18,366	10,259	7,945
Mean	388	112	82.6	42.6	34.1	23.6	37.4	236	464	592	311	285
Cfsm	18.9	5.46	4.03	2.08	1.66	1.15	1.82	11.5	22.6	28.9	16.1	12.9
In.	21.84	6.11	4.65	2.40	1.73	1.33	2.04	13.26	25.23	33.32	18.61	14.41
Ac-ft	23,880	6,680	5,080	2,620	1,900	1,450	2,230	14,500	27,590	36,430	20,350	15,760

Calendar year 1958: Max 3,340 Min 33 Mean 303 Cfsm 14.8 In. 200.42 Ac-ft 219,100
Water year 1958-59: Max - Min 20 Mean 219 Cfsm 10.7 In. 144.93 Ac-ft 158,500

Peak discharge (base, 2,000 cfs).--Oct. 2 (time unknown) 4,590 cfs (7.10 ft); July 17 (9 p.m.) 3,600 cfs (6.51 ft); July 30 (11 a.m.) 2,340 cfs (5.59 ft); Sept. 29 (7 p.m.) 2,090 cfs (5.39 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and weather records.

Note.--Stage-discharge relation affected by ice Mar. 4-30.

2390. Bradley River near Homer

Location.--Lat 59°45'25", long 150°51'00", on right bank about 800 ft downstream from Bradley Lake Outlet, $3\frac{1}{2}$ miles upstream from unnamed tributary, and 26 miles northeast of Homer.

Drainage area.--54.0 sq mi.

Records available.--July to August 1955, October 1957 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 1,050 ft (from topographic map). July 13-22, 1955, staff gage at site 1 mile upstream, and July 23 to Aug. 5, 1955, staff gage at site 3 miles upstream at different datum.

Extremes.--Maximum discharge during year, 1,260 cfs Aug. 26 (gage height, 5.19 ft); minimum not determined.

1955, 1957-59: Maximum discharge, 3,470 cfs Aug. 12, 1958 (gage height, 8.20 ft); minimum not determined.

Remarks.--Records good except those for periods of shifting-control, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	521	94					(*)	48	806	709	786	639
2	664	94						52	822	686	750	562
3	668	94						55	651	660	732	481
4	594	109						59	851	651	745	450
5	484	135						63	668	580	704	392
6	402	145						69	704	740	673	362
7	342	144						76	709	840	643	337
8	301	137		34			30	87	700	840	614	312
9	265	131						93	704	800	589	284
10	230	125	61					103	727	760	562	269
11	205	120						110	768	730	565	261
12	185	112						114	*790	720	594	253
13	170	109						121	795	720	740	249
14	168	107						130	795	620	850	245
15	168	110				25	22	151	805	960	885	245
16	166	104						210	820	1,000	910	245
17	157	100						266	885	*1,060	*920	*241
18	147	95						364	985	1,020	905	240
19	137	92	59	(*)				430	1,000	955	855	236
20	130	89	62					456	1,010	925	776	234
21	122	86	66					465	1,020	900	696	240
22	117	84						456	1,040	880	610	314
23	111	82		31			36	465	1,020	776	594	270
24	108	80						476	965	709	781	250
25	105	80						510	945	700	1,110	240
26	100	80	56					639	920	673	1,230	250
27	97	80						722	855	655	1,130	250
28	94	82						718	815	660	970	240
29	93	84						718	790	714	795	260
30	90	85						682	768	750	673	340
31	94							626		763	622	
Total	7,233	3,069	1,845	1,006	700	682	990	9,556	24,513	24,436	24,009	9,171
Mean	233	102	59.5	32.5	25	22	33.0	308	817	788	774	306
Cfsm	4.31	1.89	1.10	0.602	0.463	0.407	0.611	5.70	15.1	14.6	14.3	5.67
In.	4.98	2.11	1.27	0.69	0.46	0.47	0.68	6.58	16.88	16.85	16.54	6.32
Ac-ft	14,350	6,090	3,680	2,000	1,390	1,350	1,960	18,950	48,620	48,470	47,620	18,190

Calendar year 1958: Max 3,550 Min - Mean 410 Cfsm 7.59 In. 102.99 Ac-ft 296,600
 Water year 1958-59: Max 1,230 Min - Mean 294 Cfsm 5.44 In. 75.83 Ac-ft 212,600

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to May 6 (no gage-height record Nov. 18-24, Nov. 30 to May 6, except on occasional days; discharge estimated on basis of 2 discharge measurements, weather records, and records for nearby stations). No gage-height record July 5-16, Sept. 23-30; discharge estimated on basis of 1 discharge measurement, recorded range in stage, and records for nearby stations. Shifting-control method used Oct. 1 to Nov. 17, May 7-20.

2400. Anchor River at Anchor Point

Location.--Lat 59°46'10", long 151°50'00", in SE $\frac{1}{4}$ sec.4, T.5 S., R.15 W., near right bank on downstream side of Sterling Highway Bridge at Anchor Point, 0.1 mile downstream from North Fork and 1 mile upstream from mouth.

Drainage area.--226 sq mi.

Records available.--Discharge: June 1953 to September 1959.

Chemical analyses: May 1953 to September 1954, October 1957 to September 1959.

Water temperatures: May 1953 to September 1954, December 1958 to September 1959.

Sediment records: July 1953 to August 1954 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 24 ft above mean sea level (river-profile survey).

Average discharge.--6 years, 282 cfs (204,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,300 cfs Apr. 29 (gage height, 4.85 ft, from graph based on gage readings); maximum gage height observed, 6.95 ft Apr. 24 (ice jam); minimum discharge observed, 77 cfs July 10.

1953-59: Maximum discharge, 2,320 cfs May 7, 1954 (gage height, 4.95 ft, from graph based on gage readings); maximum gage height observed, that of Apr. 24, 1959; minimum discharge observed, 28 cfs July 28, 1953 (gage height, 1.81 ft), but may have been less during periods of no gage-height record.

Remarks.--Records fair except those for period of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	452	110						1,550	540	83	565	572
2	662	96						1,210	534	83	516	447
3	669	91						1,080	522	83	425	304
4	528	167						1,060	584	89	278	295
5	359	516						350	486	83	223	295
6	245	430					160	860	409	83	184	223
7	181	316						868	404	83	171	152
8	177	286	140					868	290	81	137	126
9	171	266						950	266	79	135	118
10	162	249						860	212	77	132	118
11	140	226						801	191	143	129	121
12	135	191						*860	*219	168	126	121
13	212	191						838	146	137	123	121
14	591	158						875	126	129	121	121
15	388	150						950	108	132	98	121
16	373	140		90				905	105	174	96	*126
17	*326	140						981	105	321	*101	123
18	191	140						912	105	249	91	123
19	137	140	(*)					1,040	113	162	113	123
20	121	140						942	98	156	115	123
21	91	140						935	96	206	113	118
22	81	*150						935	96	356	115	155
23	93	150						1,110	93	270	140	152
24	93	160	150	(*)				890	93	230	171	155
25	96	170						1,000	91	146	140	155
26	110	180						700	920	89	105	113
27	121	170						900	890	89	105	113
28	143	160						1,300	696	85	105	113
29	115	150						2,230	642	83	*196	93
30	115	150						1,890	591	83	*642	93
31	96	---						534	---	745	230	---
Total	7,374	5,718	4,500	2,790	2,632	2,945	13,720	28,503	6,461	5,704	5,313	6,565
Mean	238	191	145	90.0	94.0	95.0	457	919	215	184	171	219
Cfsm	1.05	0.845	0.642	0.398	0.416	0.420	2.02	4.07	0.951	0.814	0.757	0.969
In.	1.21	0.94	0.74	0.46	0.43	0.48	2.26	4.69	1.06	0.94	0.87	1.08
Ac-ft	14,630	11,340	8,930	5,530	5,220	5,840	27,210	56,530	12,820	11,310	10,540	13,020

Calendar year 1958: Max 1,450 Min - Mean 300 Cfsm 1.53 In. 18.04 Ac-ft 217,300
 Water year 1958-59: Max 2,230 Min - Mean 253 Cfsm 1.12 In. 15.16 Ac-ft 182,900

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8 to Apr. 28 (no gage-height record Nov. 23 to Apr. 9, except occasional days; discharge estimated on basis of 4 discharge measurements and weather records).

2400. ANCHOR RIVER AT ANCHOR POINT--Continued

Chemical analyses, in parts per million, December 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Dec. 2, 1958	a 140	30	0.33	6.0	3.8	4.8	1.3	40	1.0	4.5	0.0	0.6	72	30	0	81	6.8	20
Jan. 23, 1959	b 91	34	.02	6.7	4.5	5.6	1.6	50	2.0	4.0	.1	.1	84	35	0	92	7.0	0
Jan. 12, 14-22	340	25	.32	5.2	3.8	6.1	2.0	42	.0	6.5	.2	.8	71	28	0	85	7.1	30
Apr. 23-28	653	14	.14	4.4	1.2	3.7	1.6	23	.0	4.5	.0	.8	41	16	0	52	6.5	30
May 9-12	868	19	.27	4.4	1.7	4.2	1.4	26	.0	4.5	.0	1.4	50	18	0	57	7.1	40
May 14-20	944	18	.16	3.6	1.4	3.6	1.3	22	.0	4.0	.0	1.2	44	15	0	48	7.1	30
May 21, 23-31	821	19	.16	3.6	1.4	3.6	1.3	24	.0	3.5	.0	.9	46	15	0	49	6.9	30
June 1-12	388	25	.48	4.8	2.4	4.8	1.6	35	.0	4.0	.0	.4	60	22	0	65	7.1	30
June 15, 18-21	103	29	.36	6.0	3.3	5.9	1.8	47	.0	3.5	.0	.3	73	28	0	85	7.4	20
June 22-25	93	31	.33	5.2	3.6	5.7	2.0	44	1.0	3.0	.0	.6	74	28	0	84	7.6	10
July 3-10	82	29	.28	6.4	4.0	6.0	2.0	50	1.0	3.0	.0	.5	77	32	0	93	7.1	10
July 14-20	189	30	.29	5.6	3.6	5.6	1.7	44	1.0	3.0	.0	.8	74	29	0	85	6.9	20
July 21-29	191	27	.45	7.1	2.6	5.8	1.7	45	1.0	3.0	.0	.8	72	28	0	86	7.1	20
July 30-Aug. 4	523	28	.26	6.4	1.9	5.2	1.4	38	1.0	3.0	.0	.5	87	24	0	72	7.0	20
Aug. 5-10	164	29	.45	6.7	3.6	6.0	1.9	49	1.0	3.0	.0	.9	77	32	0	91	7.1	20
Aug. 11-20	111	30	.54	7.5	3.6	6.2	2.0	52	1.0	3.0	.0	.8	81	34	0	97	7.3	20
Aug. 21-31	130	30	.55	7.5	3.8	6.1	2.0	53	1.0	4.0	.0	.6	82	34	0	96	7.3	20
Sept. 1-2	510	27	.40	6.0	1.9	4.8	1.6	34	1.0	3.5	.0	1.1	64	23	0	69	7.0	40
Sept. 3-7	254	31	.50	7.5	2.8	5.5	1.6	44	1.0	4.0	.0	.8	77	30	0	83	7.2	30
Sept. 8-20	122	31	.62	7.9	2.8	6.2	2.3	50	3.0	4.0	.0	.7	85	35	0	96	7.2	25
Sept. 21-28	152	32	.61	7.9	4.0	6.1	2.2	51	2.0	4.5	.0	.7	85	36	0	97	7.3	25
Sept. 29-30	736	25	.26	6.0	2.4	4.9	1.9	29	3.0	6.0	.0	.6	64	25	1	74	7.0	30

a Mean discharge for period December 1-15.

b Discharge at time of sampling.

2400. ANCHOR RIVER AT ANCHOR POINT--Continued

Temperature (°F) of water, December 1958 to September 1959
 /Once-daily measurement, at approximately 6 p. m./

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

2420. Kasilof River near Kasilof

Location.--Lat 60°19'05", long 151°15'35", in SW¹/₄ sec.30, T.3 N., R.11 W., near center of span on downstream side of bridge on Sterling Highway, 0.9 mile upstream from Crooked Creek, 4 miles downstream from Moosehead Rapids, 5 miles south of Kasilof, and 10 miles downstream from Tustumena Lake.

Drainage area.--738 sq mi.

Records available.--Discharge: July 1949 to September 1959.

Chemical analyses: March to September 1952, October 1957 to August 1958.

Sediment records: June 1953 to August 1954 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 23.37 ft above mean sea level (Corps of Engineers bench mark).

Average discharge.--10 years, 2,391 cfs (1,731,000 acre-ft per year).

Extremes.--Maximum discharge during year, 8,150 cfs Sept. 1 (gage height, 6.22 ft, from graph based on gage readings); minimum daily, 370 cfs Mar. 23-26.

1949-59: Maximum discharge, 12,300 cfs Sept. 14, 1957 (gage height, 7.90 ft, from graph based on gage readings); maximum gage height observed, 8.62 ft Nov. 25, 1955 (backwater from ice); minimum discharge not determined.

Remarks.--Records good except those for period of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	4,150	1,880	1,200	560	360	310	310	633	958	2,772	5,530	8,100	
2	4,080	1,870	1,100	540	370	310	320	646	976	2,887	5,550	7,840	
3	4,020	1,870	1,100	530	360	300	330	652	1,010	2,957	5,530	7,550	
4	4,000	1,870	1,000	510	350	300	340	652	1,040	3,070	5,610	7,480	
5	3,890	1,810	990	500	340	300	350	659	1,070	3,170	5,720	7,280	
6	3,790	1,860	950	490	330	300	360	659	1,090	3,220	5,690	7,110	
7	3,760	1,780	930	470	320	290	370	666	1,160	3,290	5,650	6,860	
8	3,590	1,760	900	450	310	290	370	672	1,160	3,430	5,590	6,350	
9	3,560	1,680	880	430	310	290	380	666	1,170	3,530	5,610	6,410	
10	3,410	1,610	860	410	300	290	390	672	1,170	3,740	5,630	6,120	
11	3,360	1,550	860	400	300	280	400	666	*1,200	3,920	5,670	6,130	
12	3,220	1,500	860	390	300	280	410	*659	1,250	4,100	5,670	6,040	
13	3,120	1,430	870	380	290	280	420	652	1,260	4,210	5,620	5,860	
14	3,030	1,400	880	370	290	280	440	639	1,340	4,340	5,330	5,760	
15	2,980	1,360	890	360	290	280	460	646	1,380	4,460	5,970	5,610	
16	2,910	1,330	900	360	290	*280	490	646	1,430	4,560	*6,040	*5,400	
17	2,850	1,310	910	350	290	280	520	699	1,450	4,640	6,130	5,270	
18	*2,710	1,260	*900	350	290	280	560	706	1,510	4,780	6,190	5,190	
19	2,640	1,190	870	350	290	280	600	721	1,550	4,860	6,170	4,920	
20	2,610	*1,140	840	350	300	280	620	743	1,640	4,960	6,300	4,820	
21	2,520	1,100	820	360	300	280	620	758	1,710	4,960	6,280	4,760	
22	2,430	1,000	790	370	310	280	630	750	1,830	5,000	6,330	4,580	
23	2,350	1,000	760	*360	310	270	*639	758	1,910	4,940	6,410	4,540	
24	2,280	1,100	730	360	320	270	659	765	2,010	4,960	6,720	4,560	
25	2,210	1,100	700	390	320	270	646	780	2,120	5,110	7,040	4,480	
26	2,180	1,200	680	400	320	270	652	773	2,220	5,210	7,490	4,400	
27	2,110	1,200	660	400	310	280	652	796	2,380	5,380	7,860	4,320	
28	2,050	1,200	640	410	310	280	639	828	2,480	5,340	7,960	4,300	
29	2,000	1,200	620	400	-	280	627	844	2,550	*5,250	8,030	4,320	
30	1,960	1,200	600	400	-----	290	627	892	2,640	*5,230	7,960	4,380	
31	1,920	-----	580	390	-----	300	-----	340	-----	5,270	7,840	-----	
Total	91,690	42,760	26,270	12,830	2,800	8,800	14,831	22,238	46,684	133,630	195,910	170,740	
Mean	2,958	1,425	847	414	314	285	494	717	1,556	4,311	6,320	5,691	
Cfsm	4.01	1.93	1.15	0.561	0.425	0.366	0.669	0.972	2.11	5.94	8.56	7.71	
In.	4.62	2.15	1.32	0.65	0.44	0.45	0.75	1.12	2.35	6.73	9.87	8.60	
Ac-ft	181,900	84,810	52,110	25,450	17,450	17,550	29,420	44,110	92,600	265,100	368,600	338,700	
Calendar year 1958: Max			10,800	Min	531	Mean	2,676	Cfsm	3.63	In.	49.20	Ac-ft	1,937,000
Water year 1958-59: Max			8,100	Min	270	Mean	2,124	Cfsm	2.88	In.	39.05	Ac-ft	1,538,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 10 to Apr. 22 (no gage-height record Mar. 15 to Apr. 22, except occasional days; discharge estimated on basis of 2 discharge measurements and weather records).

2480. Trail River near Lawing

Location.--Lat 60°26'00", long 149°22'20", near center of stream on downstream end of pier at bridge site on old Seward-Anchorage highway, 0.3 mile upstream from Falls Creek, 0.2 mile downstream from Lower Trail Lake, 1.9 miles upstream from mouth, and 2.1 miles north of Lawing.

Drainage area.--195 sq mi.

Records available.--Discharge: May 1947 to September 1959.

Chemical analyses: November 1951 to September 1952, October 1957 to September 1959.

Water temperatures: December 1958 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 460 ft (from topographic map). Prior to Sept. 13, 1952, staff gage at same site and datum.

Average discharge.--12 years, 782 cfs (566,100 acre-ft per year).

Extremes.--Maximum discharge during year, 3,030 cfs June 21 (gage height, 8.26 ft); minimum daily, 64 cfs Mar. 22, 23.

1947-59: Maximum discharge, 5,860 cfs June 28, 1953 (gage height, 10.16 ft); minimum daily, 48 cfs Feb. 9, 10, 1949.

1958-59: Maximum water temperature, 54°F June 16, 17, 18.

Remarks.--Records good except those for period of ice effect, which are fair.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	465	297	204	160	101	77	91	389	1,700	2,120	1,760	1,240
2	576	314	190	149	102	78	92	413	1,740	2,010	1,660	1,170
3	700	314	179	143	102	79	91	433	1,840	1,940	1,600	1,070
4	825	314	172	138	102	83	90	453	1,850	1,820	1,630	956
5	815	350	162	136	99	83	87	490	1,770	1,690	1,680	875
6	745	373	160	134	97	83	83	507	1,760	1,750	1,670	805
7	684	365	154	133	96	82	87	515	1,790	1,900	1,560	745
8	588	350	151	126	93	83	116	537	*1,740	1,990	1,450	700
9	533	324	145	120	92	83	149	541	1,730	1,910	1,380	660
10	490	300	141	116	90	82	175	533	1,880	1,730	1,330	614
11	453	284	138	110	87	79	183	*524	2,000	1,680	1,320	567
12	417	268	138	107	85	77	188	528	2,000	1,810	1,370	537
13	381	253	141	104	85	*73	192	533	2,040	1,810	1,450	511
14	369	237	147	103	80	72	190	580	2,120	1,670	1,720	*498
15	381	228	*154	102	79	70	188	722	2,120	1,540	*1,820	494
16	377	248	158	101	76	69	179	989	2,170	1,650	1,760	485
17	*369	*253	156	99	74	67	177	1,170	2,250	2,490	1,740	469
18	361	249	158	97	73	66	175	1,280	2,380	2,500	1,740	461
19	342	242	160	94	71	65	170	1,310	2,650	2,070	1,690	449
20	324	234	164	*91	72	65	*154	1,260	2,910	1,860	1,530	433
21	307	221	166	89	73	65	151	1,220	2,990	1,800	1,360	413
22	278	208	172	88	74	64	147	1,160	2,980	1,640	1,260	413
23	262	201	188	87	75	64	160	1,090	2,900	1,580	1,220	433
24	253	194	188	88	75	65	181	1,080	2,830	1,420	1,440	469
25	242	192	190	89	76	67	206	1,130	2,650	1,360	1,850	511
26	234	206	188	91	76	69	234	1,280	2,560	1,350	2,030	511
27	237	221	179	92	76	72	256	1,510	2,490	*1,360	1,910	477
28	242	231	170	94	77	76	293	1,570	2,390	1,400	1,720	453
29	245	226	166	96	---	83	331	1,690	2,320	1,500	1,460	473
30	245	214	162	98	-----	90	361	1,720	2,260	1,610	1,270	696
31	259	---	158	100	-----	92	---	1,690	---	1,810	1,200	---
Total	12,979	7,911	5,099	3,375	2,356	2,323	5,177	28,847	66,810	54,770	48,580	18,588
Mean	419	264	164	109	84.1	74.9	173	931	2,227	1,767	1,567	620
Cfs/m	2.15	1.35	0.841	0.559	0.431	0.384	0.887	4.77	11.4	9.06	8.04	3.18
In.	2.48	1.51	0.97	0.64	0.45	0.44	0.99	5.50	12.74	10.45	9.27	3.55
Ac-ft	25,740	15,690	10,110	6,690	4,670	4,610	10,270	57,220	132,500	108,600	96,360	36,670
Calendar year 1958: Max			3,930	Min 84	Mean 766		Cfs/m 3.93	In. 53.31	Ac-ft 554,400			
Water year 1958-59: Max			2,990	Min 64	Mean 704		Cfs/m 3.61	In. 48.99	Ac-ft 509,300			

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 13 to Apr. 30 (no gage-height record Jan. 21 to Feb. 3; discharge estimated on basis of 1 discharge measurement, weather records, and records for Kenai River near Cooper Landing).

2480. TRAIL RIVER NEAR LAWING--Continued

Chemical analyses, in parts per million, December 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Dec. 3, 1958	179	4.5	0.12	14	1.7	1.2	0.6	38	13	1.0	0.0	0.0	55	42	11	91	6.6	0
Jan. 20, 1959	91	4.9	.02	15	1.0	1.1	.5	36	11	1.5	.0	.1	53	42	12	87	6.2	0
Mar. 13	73	5.8	.10	18	2.8	1.6	.7	44	15	4.0	.0	1.5	70	52	16	104	7.4	0
Mar. 7	87	5.1	.12	18	1.4	1.6	.6	43	12	3.0	.0	1.1	62	46	11	105	7.3	0
Apr. 8-20	172	7.7	.03	18	1.2	1.6	.7	47	7.0	2.0	.0	1.3	61	45	6	102	7.3	5
Apr. 21-30	232	7.5	.05	18	1.4	1.7	.7	46	8.0	2.5	.0	1.3	62	46	8	100	7.2	5
May 1-10	481	7.7	.07	15	1.4	1.6	.6	44	8.0	2.0	.0	1.5	60	44	8	98	7.2	5
May 11-20	890	6.1	.07	14	1.4	1.5	.7	40	8.0	1.5	.0	1.7	55	41	8	91	7.4	5
May 21-22, 24-31	1,400	5.7	.07	13	1.2	1.3	.7	36	9.0	1.5	.0	1.8	52	38	8	86	7.2	5
June 1-10	1,780	6.4	.08	13	1.2	1.2	.6	36	9.0	1.5	.0	2.0	53	38	8	85	7.2	5
June 11-20	2,260	6.0	.07	13	1.0	1.0	.7	35	8.0	1.5	.0	1.9	50	36	8	82	7.3	5
June 21-30	1,890	5.5	.07	12	1.2	1.0	.7	31	10	.5	.1	1.3	47	35	10	78	6.7	5
July 1-10	1,890	5.4	.10	11	1.2	1.1	.6	30	10	.5	.1	1.0	46	32	8	76	7.0	5
July 11-18	1,890	4.2	.03	11	1.2	1.1	.4	30	10	.5	.1	.9	44	32	8	73	7.3	5
July 21-31	1,530	3.3	.05	11	1.7	.8	.3	31	9.0	.5	.1	.8	42	34	9	72	7.3	5
Aug. 1-10	1,570	3.7	.07	12	1.7	.8	.4	30	9.0	.5	.1	.9	43	33	8	72	7.3	5
Aug. 11-20	1,610	3.7	.05	11	1.0	.8	.2	29	8.0	.5	.1	.6	40	32	8	70	7.7	5
Aug. 21-31	1,520	3.5	.06	11	1.2	.8	.4	30	8.0	.5	.1	.6	41	32	8	68	7.5	5
Sept. 1-10	883	3.8	.08	9.9	1.7	.7	.3	30	8.0	.5	.1	.8	41	32	7	70	7.3	10
Sept. 11-17	509	3.5	.05	12	.7	.8	.6	29	10	.5	.0	.6	43	33	9	70	7.1	0
Sept. 20-30	480	3.2	.03	12	.7	.8	.6	30	9.0	1.0	.0	.5	43	33	8	72	7.2	0

2480. TRAIL RIVER NEAR LAWING--Continued

Temperature (°F) of water, December 1958 to September 1959

/Once-daily measurement at approximately 12 m./

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

3530. Crescent Creek near Moose Pass

Location.--Lat 60°28'45", long 149°34'25", on left bank 90 ft downstream from Crescent Lake Outlet and 7 miles west of Moose Pass.

Drainage area.--21.4 sq mi.

Records available.--May 1957 to September 1959.

Gage.--Water-stage recorder. Datum of gage is 1,452.5 ft above mean sea level (river-profile survey).

Extremes.--Maximum discharge during year, 190 cfs June 21 (gage height, 2.55 ft); minimum not determined.

1957-59: Maximum discharge, 210 cfs June 9, 1957; June 8, 1958; maximum gage height, 2.85 ft Sept. 15, 1957; minimum discharge not determined.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	42	34	15				20	142	123	80	63
2	74	42	32					21	144	119	76	62
3	77	42	30					23	146	109	74	60
4	80	44	29					25	146	104	79	59
5	77	44	28					26	146	98	79	58
6	76	46	26			15		26	149	98	74	55
7	74	43	25					27	149	98	73	54
8	73	42	26					29	153	95	71	53
9	70	42	24					30	155	91	70	50
10	69	40	22					31	*158	88	69	49
11	66	39	21				18	32	160	88	69	47
12	63	40	21					33	165	93	67	46
13	62	37	20					34	170	95	64	46
14	66	36	19					36	170	98	60	44
15	*63	34	20					41	170	95	56	*43
16	63	35	21	16	14			49	167	102	*56	44
17	62	35	*20					67	170	106	58	43
18	59	34	19					70	175	102	58	42
19	56	33	19					77	180	98	56	41
20	53	34	19					82	182	95	54	41
21	51	33	20	*16			14	85	185	92	54	41
22	49	32	20					18	182	93	55	39
23	46	29	21					18	180	86	58	38
24	43	30	22					18	172	*85	59	38
25	41	32	22					18	91	165	82	37
26	39	34	21	15				18	106	160	77	63
27	38	37	20					18	121	149	74	63
28	37	36	19					18	133	142	77	60
29	37	36	18					19	144	138	77	58
30	38	35	17					20	146	131	80	58
31	40	---	17					144	---	82	59	---
Total	1,810	1,118	692	476	392	447	543	2,011	4,801	2,900	1,992	1,385
Mean	58.4	37.3	22.3	15.4	14.0	14.4	18.1	64.9	160	93.5	64.3	46.2
Cfsm	2.73	1.74	1.04	0.720	0.654	0.673	0.846	3.03	7.48	4.37	3.00	2.16
In.	3.15	1.94	1.20	0.83	0.68	0.78	0.94	3.49	8.34	5.04	3.46	2.41
Ac-ft	3,590	2,220	1,370	944	778	887	1,080	3,990	9,520	5,750	3,950	2,750

Calendar year 1958: Max 206 Min 14 Mean 53.4 Cfsm 2.50 In. 33.89 Ac-ft 38,690
 Water year 1958-59: Max 185 Min - Mean 50.9 Cfsm 2.38 In. 32.26 Ac-ft 36,830

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 27 to May 14, except occasional days, July 20-23; discharge estimated on basis of 4 discharge measurements, weather records, and records for nearby stations.

2540. Crescent Creek near Cooper Landing

Location.--Lat 60°29'50", long 149°40'40", on left bank at bridge on old Seward-Kenai highway, 0.3 mile upstream from mouth, and 5.3 miles east of Cooper Landing.

Drainage area.--31.7 sq mi.

Records available.--Discharge: July 1949 to September 1959.

Chemical analyses: April to September 1952, October 1957 to August 1958.

Gage.--Water-stage recorder. Altitude of gage is 550 ft (from topographic map). Prior to Aug. 19, 1949, staff gage at same site and datum.

Average discharge.--10 years, 72.2 cfs (52,270 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 216 cfs June 10 (gage height, 1.36 ft); maximum gage height observed, 1.95 ft Nov. 16 (backwater from ice); minimum discharge not determined.

1949-59: Maximum discharge, 820 cfs June 28, 1953; maximum gage height observed, 3.09 ft Dec. 18, 1957 (backwater from ice); minimum discharge observed, 2.7 cfs Mar. 8, 1954 (discharge measurement) caused by storage behind ice jam upstream.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	50						27	203			
2	94	50						29	206			
3	95	50						32	210			
4	100	51						33	206			
5	95	52						34	203			
6	94	54						37	210			
7	92	52						40	206			
8	92	51				17		41	*203	160	100	
9	92	50	30					42	213			
10	89	48					22	44	213			
11	87	47		20				46				
12	85	47						*50				
13	81	45						58				
14	85	44				*12		71				
15	89	42			18			110			*76	
16	89	41						*124				*61
17	87	41	*27					132				61
18	*85	41						138				60
19	81	40						138				60
20	72	*40						140				60
21	69	39						138				58
22	64	38		*20			*22	138		140	80	60
23	58	36				17	22	143				56
24	55	37					22	146				55
25	51	39	26				22	160				54
26	48	41					23	172				52
27	47	43		19			23	184				54
28	46	42					24	197		*120		54
29	45	42				-	24	206		120		67
30	46	41					26	210		120		69
31	48							206		120		
Total	2,361	1,334	871	611	504	522	670	3,266	6,673	4,560	2,756	1,991
Mean	76.2	44.5	28.1	19.7	18.0	16.8	22.3	105	222	147	88.9	66.4
Cfsm	2.40	1.40	0.886	0.621	0.568	0.530	0.703	3.31	7.00	4.64	2.80	2.09
In.	2.77	1.57	1.02	0.72	0.59	0.61	0.79	3.83	7.83	5.35	3.23	2.34
Ac-ft	4,680	2,650	1,730	1,210	1,000	1,040	1,330	6,480	13,240	9,040	5,470	3,950

Calendar year 1958: Max 280 Min 8 Mean 75.1 Cfsm 2.37 In. 32.18 Ac-ft 54,410

Water year 1958-59: Max - Min - Mean 71.6 Cfsm 2.26 In. 30.65 Ac-ft 51,820

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 27 to May 10 (no gage-height record Nov. 17 to Apr. 24, except occasional days; discharge estimated on basis of 5 discharge measurements, weather records, and records for nearby stations). No gage-height record June 11 to Sept. 15, except occasional days; discharge estimated on basis of 3 discharge measurements, weather records, and records for nearby stations.

5580. Kenai River at Cooper Landing

Location.--Lat 60°29'35", long 149°48'15", near center of span on downstream side of bridge on Sterling Highway, 0.9 mile east of Cooper Landing, 0.9 mile upstream from Bean Creek, and 1.3 miles downstream from Jug Harbor.

Drainage area.--634 sq mi.

Records available.--Discharge: May 1947 to September 1959.

Chemical analyses: July to September 1950, April to September 1952, October 1957 to August 1958.

Sediment records: July to September 1959 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 429.27 ft above mean sea level (river-profile survey). May 11, 1947, to Mar. 10, 1949, staff gage and Mar. 11, 1949, to Apr. 13, 1950, wire-weight gage, at bridge 0.9 mile downstream at different datum.

Average discharge.--13 years, 2,699 cfs (1,354,000 acre-ft per year).

Extremes.--Maximum discharge during year, 8,980 cfs June 24 (gage height, 8.71 ft); minimum observed, 265 cfs Mar. 31 (gage height, 1.29 ft).

1947-59: Maximum discharge, 20,600 cfs June 29, 1953 (gage height, 12.36 ft, from graph based on gage readings), from rating curve extended above 10,000 cfs by logarithmic plotting; minimum daily, 190 cfs Mar. 15-24, 1951.

Remarks.--Records good.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	2,310	1,540	840	563	400	332	281	635	5,110	7,730	5,720	4,800	
2	2,430	1,550	818	563	397	320	281	684	5,290	7,340	5,680	4,750	
3	2,760	1,560	800	555	394	332	281	751	5,460	6,400	5,540	4,480	
4	2,900	1,520	786	555	387	326	281	764	5,660	6,280	5,580	4,350	
5	2,900	1,480	764	548	381	317	278	764	5,800	6,500	5,680	4,000	
6	2,900	1,460	742	514	374	338	278	818	5,860	6,080	5,680	4,110	
7	2,900	1,420	701	510	365	338	281	904	5,880	6,160	5,500	3,630	
8	2,880	1,360	705	507	358	326	323	948	5,820	6,280	5,380	3,300	
9	2,880	1,290	709	507	349	323	338	982	*5,780	6,240	5,030	3,300	
10	2,920	1,300	709	493	340	326	378	1,070	5,880	6,000	5,070	3,100	
11	3,060	1,350	696	482	332	317	410	1,160	6,040	5,700	5,050	2,760	
12	3,100	1,250	701	479	329	306	397	1,190	6,260	5,900	5,140	2,620	
13	3,480	1,060	672	423	320	308	394	1,240	6,360	5,920	4,960	2,490	
14	4,400	1,070	643	410	314	297	420	1,330	6,420	5,920	5,160	*2,400	
15	5,390	1,090	639	406	311	*311	430	1,390	6,480	5,720	5,440	2,340	
16	*6,600	1,060	647	462	308	297	430	*1,620	6,580	5,860	*5,620	2,240	
17	8,350	1,050	612	451	306	297	440	1,860	6,900	6,560	5,800	2,110	
18	8,040	1,050	*620	426	303	303	444	2,130	7,380	7,250	6,140	2,080	
19	7,010	*1,020	578	426	300	297	448	2,440	7,710	7,090	5,780	2,020	
20	5,340	977	601	*437	300	289	448	2,700	8,220	7,010	5,230	1,950	
21	4,690	953	601	426	303	289	448	2,890	8,530	6,620	5,050	2,040	
22	4,040	938	578	430	306	289	*454	2,970	8,770	6,500	4,800	2,010	
23	3,450	909	601	426	314	286	462	3,010	8,890	6,180	4,910	1,920	
24	3,080	894	597	426	320	289	472	3,240	8,890	5,840	4,870	1,940	
25	2,640	876	586	403	323	276	486	3,310	8,820	5,620	5,160	1,930	
26	2,190	894	589	406	329	273	507	3,580	8,650	5,340	6,020	1,950	
27	1,890	894	605	413	332	271	529	4,240	8,370	5,120	6,140	2,030	
28	1,770	872	601	397	335	268	536	4,640	8,170	*5,050	5,800	1,970	
29	1,760	867	593	397	-	268	548	4,800	8,150	5,000	5,070	2,170	
30	1,760	849	574	397	-----	268	586	4,980	7,890	5,200	5,070	2,600	
31	1,680	-----	574	413	-----	265	-----	5,050	-----	5,460	4,940	-----	
Total	111,490	34,403	20,482	14,251	9,430	9,342	12,289	68,090	210,020	189,870	167,010	83,390	
Mean	3,596	1,147	661	460	337	301	410	2,196	7,001	6,125	5,387	2,780	
Cfs/m	5.67	1.61	1.04	0.726	0.532	0.475	0.647	3.46	11.0	9.66	8.50	4.38	
In.	6.54	2.02	1.20	0.84	0.55	0.55	0.72	3.99	12.32	11.14	9.80	4.89	
Ac-ft	221,100	68,240	40,630	28,270	18,700	18,530	24,370	135,100	416,800	376,800	331,300	165,400	
Calendar year 1958: Max			10,800	Min	352	Mean	2,825	Cfs/m	4.46	In.	60.49	Ac-ft	2,045,000
Water year 1958-59: Max			8,890	Min	265	Mean	2,548	Cfs/m	4.02	In.	54.56	Ac-ft	1,845,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Feb. 5-25, Mar. 26-29.

2580. KENAI RIVER AT COOPER LANDING--Continued

Periodic determinations of suspended-sediment discharge, July to September 1959

Date	Water discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
July 24, 1959	6,180	9	150
Aug. 19	5,660	10	153
Sept. 20	1,980	10	53

2600. Cooper Creek near Cooper Landing

Location.--Lat 60°26'00", long 149°43'15", on left bank 125 ft downstream from Cooper Lake Outlet, 1.4 miles upstream from Stetson Creek, and 4 miles south of Cooper Landing.

Drainage area.--31.8 sq mi.

Records available.--August 1949 to July 1959 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 1,165.5 ft above mean sea level (river-profile survey).

Average discharge.--9 years (1949-58), 90.0 cfs (65,160 acre-ft per year).

Extremes.--Maximum discharge during period October 1958 to July 1959, 269 cfs June 22 (gage height, 3.48 ft); no flow July 31.
1949-53: Maximum discharge, 729 cfs June 29, 1953 (gage height, 4.02 ft); minimum, that of July 31, 1959.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, October 1958 to July 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	99	55							226				
2	102	55							223				
3	108	55							226	180			
4	111	56							219				
5	108	56							207				
6	104	56							197				
7	96	55				18			186				
8	85	53	38						179	170			
9	82	52							180				
10	78	53							*199				
11	75	52		23			29	70	211				
12	73	51							221				
13	71	50				*16			226	150			
14	72	50							226				
15	*73	50			18				226				
16	75	49	*34						226				
17	75	49							233				
18	73	*49							240	170			
19	71	48							247				
20	69	48							259				
21	68	45		*22				99	267				
22	66	45					*32	102	267				
23	65	45				18		110	257	90			
24	62	45	32					123	250	(*)			
25	61	45						135	245				
26	58	46		21			34	149	235				
27	58	48						173	228				
28	57	49						199	220	10			
29	56	49						216	210				
30	53	48						221	200				
31	55							226		0			
Total	2,359	1,507	1,084	692	504	556	918	3,153	6,736	3,860			
Mean	76.1	50.2	35.0	22.3	18	17.9	30.6	102	225	125			
Cfsm	2.39	1.58	1.10	0.701	0.566	0.563	0.962	3.21	7.08	3.93			
In.	2.76	1.76	1.27	0.81	0.59	0.85	1.07	5.69	7.98	4.51			
Ac-ft	4,680	2,990	2,150	1,370	1,000	1,100	1,820	6,250	13,360	7,660			
Calendar year 1958: Max	419			Min	-	Mean	102	Cfsm	3.21	In.	43.68	Ac-ft	74,100
Water year 1958-59: Max	-			Min	-	Mean	-	Cfsm	-	In.	-	Ac-ft	-

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 1 to May 20, except occasional days, June 28 to July 30; discharge estimated on basis of 5 discharge measurements, weather records, and records for nearby stations.

2605. Stetson Creek near Cooper Landing

Location.--Lat 60°26'30", long 149°51'05", on left bank 0.3 mile upstream from mouth and 3.4 miles southwest of Cooper Landing.

Drainage area.--8.6 sq mi.

Records available.--May 1958 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 1,100 ft (from topographic map).

Extremes.--Maximum discharge during year, 150 cfs June 18 (gage height, 2.75 ft), from rating curve extended above 60 cfs by logarithmic plotting; minimum daily, 5 cfs Feb. 6-20, Mar. 9-28.
1958-59: Maximum discharge, 193 cfs June 21, 1958 (gage height, 3.13 ft), from rating curve extended above 60 cfs by logarithmic plotting; minimum daily, that of Feb. 6-20, Mar. 9-28, 1959.

Remarks.--Records good except those for periods of ice effect, no gage-height record, and those above 60 cfs, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	12	10	6	6	6	6	13	62	51	42	41
2	31	12	10	6	6	6	6	15	72	51	39	38
3	33	13	9	6	6	6	6	17	74	48	38	38
4	31	14	9	6	6	6	6	18	69	44	38	37
5	30	14	9	6	6	6	6	19	77	50	37	36
6	29	14	9	6	5	6	6	20	78	54	36	34
7	27	13	8	6	5	6	6	21	72	52	33	32
8	25	13	8	6	5	6	7	21	78	50	33	31
9	23	13	8	6	5	5	8	21	91	42	32	30
10	21	12	8	6	5	5	8	21	110	41	32	28
11	20	12	8	6	5	5	7	20	96	43	32	28
12	19	12	7	6	5	5	7	20	95	46	30	27
13	18	11	7	6	5	5	7	21	108	40	29	26
14	17	11	7	6	5	5	6	22	95	41	28	25
15	16	11	7	6	5	5	6	24	95	37	28	*25
16	*16	11	*8	6	5	5	6	25	96	48	*28	25
17	16	10	8	6	5	5	6	*26	98	58	27	25
18	16	*10	8	6	5	5	6	28	123	48	27	24
19	15	10	7	6	5	5	6	28	131	46	27	24
20	15	10	7	6	5	5	6	29	119	43	26	23
21	14	9	7	*6	6	5	*6	27	101	39	25	22
22	14	9	7	6	6	5	6	26	85	37	25	23
23	14	9	7	6	6	5	7	28	75	36	31	23
24	13	10	7	6	6	5	7	34	69	*36	46	23
25	13	10	7	6	6	5	7	48	69	36	44	23
26	13	11	7	6	6	5	7	55	62	36	37	22
27	13	12	7	6	6	5	8	67	58	34	35	22
28	12	11	6	6	6	5	8	67	56	35	30	22
29	12	11	6	6	-	6	9	64	55	36	29	24
30	12	11	6	6	-	6	11	55	56	43	28	28
31	12	-	6	6	-	6	-	55	-	46	33	-
Total	593	341	235	186	153	166	204	955	2,525	1,343	1,003	829
Mean	19.1	11.4	7.6	6.0	5.5	5.4	6.8	30.8	84.2	43.3	32.4	27.6
Cfs/m	2.22	1.33	0.884	0.698	0.640	0.628	0.791	3.58	9.79	5.03	3.77	3.21
In.	2.56	1.47	1.02	0.80	0.66	0.72	0.88	4.13	10.92	5.81	4.34	3.58
Ac-ft	1,180	676	466	369	303	329	405	1,890	5,010	2,680	1,990	1,640

Calendar year 1958: Max - Min - Mean - Cfs - In. - Ac-ft -
Water year 1958-59: Max 131 Min 5 Mean 23.4 Cfs 2.72 In. 36.89 Ac-ft 16,920

Peak discharge (base, 100 cfs).--June 10 (5:30 p.m.) 127 cfs (2.64 ft); June 13 (6:30 p.m.) 123 cfs (2.62 ft); June 18 (9:30 p.m.) 150 cfs (2.75 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-9, 18-24, Nov. 30 to Apr. 3. No gage-height record Oct. 25 to Nov. 5, Nov. 10-17, Apr. 4-20, Apr. 22 to May 16; discharge estimated on basis of 3 discharge measurements, weather records, and records for nearby stations.

2610. Cooper Creek at mouth, near Cooper Landing

Location.--Lat 60°28'30", long 149°55'30", on right bank 0.7 mile upstream from mouth, 0.9 mile downstream from unnamed tributary, 1.6 miles west of Cooper Landing, and ½ miles downstream from Cooper Lake Outlet.

Drainage area.--48.0 sq mi.

Records available.--Discharge: October 1957 to September 1959.

Chemical analyses: October 1957 to August 1958.

Gage.--Water-stage recorder. Altitude of gage is 450 ft (from topographic map).

Extremes.--Maximum discharge during year, 355 cfs June 10 (gage height, 3.00 ft); maximum gage height recorded, 3.75 ft Dec. 9 (ice jam); minimum discharge observed, 23 cfs Mar. 15.

1957-59: Maximum discharge, 608 cfs June 22, 1958 (gage height, 3.91 ft); maximum gage height recorded, that of Dec. 9, 1958; minimum discharge observed, that of Mar. 15, 1959.

Remarks.--Records fair except those for periods of ice effect or doubtful gage-height record, which are poor. July 31 to Sept. 30, flow partly regulated by dam at Cooper Lake outlet.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	150	75						52	320	294	66	76	
2	150	75						61	362	275	60	65	
3	156	75						64	398	272	57	61	
4	158	76						72	382	265	58	60	
5	150	76						72	392	259	55	55	
6	143	76						73	420	283	52	52	
7	125	75				25		78	408	296	48	49	
8	113	72			27			82	373	283	46	47	
9	112	70	52					84	*354	254	44	45	
10	108	72						87	370	238	43	42	
11	105	70		33			35	87	375	235	43	40	
12	102	68						*92	378	258	41	39	
13	105	65						107	382	250	39	38	
14	110	66						116	378	224	39	*37	
15	116	66				*23		162	390	210	*38	36	
16	*115	65						*182	395	246	36	35	
17	113	65	*46					198	408	274	35	34	
18	105	63						216	430	250	35	33	
19	98	62						220	442	230	35	33	
20	94	*62						228	448	206	33	32	
21	89	61						216	458	170	32	31	
22	89	60		*52	25		*35	208	425	103	32	34	
23	87	60				25		224	408	122	44	33	
24	84	60	45					244	388	149	67	33	
25	82	60						267	375	109	62	32	
26	81	61		30			40	296	363	87	50	32	
27	80	63						329	345	67	44	32	
28	77	66						362	327	*54	42	33	
29	75	66						340	318	54	40	37	
30	72	65						300	309	72	39	42	
31	75	---						309	---	75	52	---	
Total	3,319	2,016	1,508	995	730	773	1,090	5,428	11,501	6,122	1,407	1,248	
Mean	107	67.2	48.6	32.1	28.1	24.9	36.3	175	383	197	45.4	41.6	
Cfs/m	2.23	1.40	1.01	0.669	0.544	0.519	0.756	3.65	7.98	4.10	0.946	0.867	
In.	2.57	1.56	1.17	0.77	0.57	0.60	0.84	4.21	8.91	4.74	1.09	0.97	
Ac-ft	6,580	4,000	2,990	1,970	1,450	1,530	2,160	10,770	22,810	12,140	2,790	2,480	
Calendar year 1958: Max	596			Min	-	Mean	140	Cfs/m	2.92	In.	39.59	Ac-ft	101,400
Water year 1958-59: Max	448			Min	23	Mean	99.0	Cfs/m	2.06	In.	28.00	Ac-ft	71,670

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11 to Apr. 30 (no gage-height record Nov. 23-30, Dec. 12 to Apr. 30, except occasional days; discharge estimated on basis of 4 discharge measurements, weather records, and records for nearby streams). Doubtful gage-height record Oct. 8 to Nov. 22, Dec. 1, May 1-24; discharge computed from reconstructed gage-height graph based on recorded graph, weather records, and records for nearby streams.

2740. South Fork Campbell Creek near Anchorage

Location.--Lat 61°10'00", long 149°46'30", in NE¼ sec.3, T.12 N., R.3 W., on right bank a quarter of a mile downstream from bridge on road leading to Campbell Airstrip, 2.0 miles upstream from confluence with North Fork Campbell Creek, and 5½ miles south-east of Anchorage Post Office.

Records available.--Discharge: July 1947 to September 1959.

Chemical analyses: October 1958 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 260 ft (from topographic map). Prior to Aug. 20, 1952, at site a quarter of a mile upstream at different datum. Aug. 20, 1952, to July 15, 1958, at site 70 ft downstream from previous site at different datum.

Average discharge.--12 years, 38.3 cfs (27,730 acre-ft per year).

Extremes.--Maximum discharge during year, 173 cfs Aug. 25 (gage height, 2.54 ft); maximum gage height observed, 5.30 ft Nov. 18 (backwater from ice); no flow part of Oct. 12, caused by temporary storage behind snowslide upstream.

1947-59: Maximum discharge, 891 cfs June 21, 1949 (gage height, 3.30 ft. site and datum then in use), from rating curve extended above 110 cfs by logarithmic plotting; maximum gage height, that of Nov. 18, 1958; no flow part of Oct. 12, 1958, caused by temporary storage behind snowslide upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	31			11	9	7	8	103	72	74	138
2	73	30			11	9	7	10	*124	69	68	112
3	85	30			*10	9	7	11	126	68	63	105
4	71	29			10	9	7	13	110	66	69	97
5	42	29			10	9	7	13	97	79	63	93
6	39	*29			10	10	7	13	105	76	60	83
7	38				10	10	7	*14	101	*71	55	80
8	37			10	10	10	7	14	93	66	51	74
9	54			11	11	10	8	14	105	60	51	89
10	*47			11	11	*10	8	14	*124	55	48	83
11	26		(*)		11	10	8	15	124	58	47	60
12	53				*11	10	8	16	124	103	44	59
13	68				11	10	7	17	124	87	*44	58
14	37			(*)	10	9	7	23	126	81	44	56
15	34				9	9	7	29	124	76	42	52
16	39		13		9	9	8	38	126	76	41	51
17	35				8	8	8	48	126	89	41	51
18	30	(*)	(*)		8	7	8	60	*138	80	41	50
19	28	24			8	7	8	*60	140	69	41	52
20	27				*8	*8	*8	59	140	87	50	48
21	27				8	7	8	53	140	*81	46	46
22	27				8	6	7	48	130	73	45	46
23	28			(*)	8	6	7	51	120	80	66	45
24	29			11	9	6	7	55	110	74	140	48
25	29				9	6	7	66	100	66	*146	50
26	30				*9	8	7	81	100	63	97	51
27	31				9	*6	7	91	96	59	80	46
28	32				9	7	*7	101	90	84	80	44
29	*33				-	7	8	114	84	93	83	*47
30	33		(*)		-	7	8	101	78	97	74	50
31	32				-	7	-	91	-	*87	139	-
Total	1,242	754	403	326	266	253	222	1,341	3,428	2,347	2,033	1,924
Mean	40.1	25.1	13	10.5	9.5	8.2	7.4	43.3	114	75.7	65.6	64.1
Ac-ft	2,460	1,500	799	647	528	502	440	2,660	6,800	4,660	4,030	3,820
Calendar year 1958: Max 147 Min 9 Mean 35.0 Ac-ft 25,310												
Water year 1958-59: Max 146 Min 6 Mean 39.8 Ac-ft 28,850												

Peak discharge (base, 150 cfs).--Aug. 25 (5 a.m.) 173 cfs (2.54 ft); Sept. 1 (1 a.m.) 160 cfs (2.49 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 6-9, June 19 to July 6; discharge estimated on basis of 3 discharge measurements, recorded range in stage, weather records, and records for Ship Creek near Anchorage, and Little Susitna River near Palmer. Stage-discharge relation affected by ice Oct. 13 to May 12 (no gage-height record Oct. 24 to Apr. 30, except occasional days; discharge estimated on basis of 17 discharge measurements, weather records, and records for Ship Creek near Anchorage).

2740. SOUTH FORK CAMPBELL CREEK NEAR ANCHORAGE--Continued

Chemical analyses, in parts per million, water year October 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 10, 1958.....	47	7.0	0.05	12	1.6	1.3	0.7	28	15	3.0	0.0	0.2	55	36	14	84	7.1	10
Dec. 18.....	a14	8.4	8.4	13	2.4	1.2	3	39	12	2.0	0	.8	59	42	10	96	6.6	0
Feb. 20, 1959.....	a8	8.8	--	13	2.8	1.4	--	43	11	2.0	0	.5	60	44	9	99	6.9	0
Apr. 20.....	8	9.1	.11	15	3.1	1.8	3	43	14	3.5	0	1.1	69	50	15	105	7.2	5
Apr. 28.....	7	8.8	.04	14	4.3	1.8	4	46	14	3.0	.1	1.1	70	52	15	104	7.2	5
May 7.....	14	10	.07	16	2.8	1.4	4	44	14	1.0	.2	3.0	71	52	16	108	7.1	10
June 2.....	124	--	--	--	--	--	--	22	10	--	--	--	--	--	--	66	7.4	5
June 6.....	105	6.0	--	9.1	1.2	.7	4	22	11	1.0	0	.4	41	28	10	64	7.2	0
June 10.....	124	6.7	--	9.1	1.7	.7	4	24	12	1.0	0	.1	44	30	10	67	6.9	0
June 15.....	124	6.0	.03	10	1.2	.7	4	23	11	1.0	0	.1	41	30	11	67	7.2	0
June 18.....	138	5.8	.02	9.5	2.6	6	.2	24	14	1.0	0	.1	46	34	14	66	7.2	0
June 30.....	78	--	--	--	--	--	--	26	--	--	--	--	--	38	16	70	7.2	--
July 21.....	81	--	--	11	2.6	1.2	.1	28	--	2.0	--	--	--	--	--	75	7.1	5
July 31.....	87	--	--	--	--	--	--	27	--	--	--	--	--	42	20	77	7.2	--
Aug. 13.....	44	--	--	--	--	--	--	27	--	--	--	--	--	44	22	91	7.3	--
Sept. 29.....	47	--	--	--	--	--	--	31	--	--	--	--	--	41	16	88	7.3	--

a Discharge at time of sampling.

2742. NORTH FORK CAMPBELL CREEK NEAR ANCHORAGE

LOCATION.--At bridge on gravel road 2½ miles upstream from South Fork Campbell Creek, and 5½ miles southeast of Anchorage Post Office.
 DRAINAGE AREA.--13 square miles, approximately.
 RECORDS AVAILABLE.--Chemical analyses: October 1958 to August 1959.
 REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, October 1958 to August 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 10, 1958.....		7.7	0.18	17	5.3	1.5	0.4	47	23	3.0	0.0	0.5	81	64	26	132	7.2	20
Dec. 18.....		9.8	--	21	4.1	1.6	.4	60	22	2.0	.0	1.2	92	70	20	148	7.2	5
Feb. 20, 1959.....		10	--	19	6.0	2.0	--	66	18	3.5	.0	1.8	92	72	18	152	7.2	0
May 7.....		9.8	.07	17	3.1	1.5	.8	52	15	.5	.1	3.4	77	55	12	124	7.6	10
June 2.....		--	--	--	--	--	--	48	6.0	--	--	--	--	52	13	120	7.5	5
June 6.....		6.9	.02	15	3.1	1.1	.4	40	18	1.0	.0	1.0	66	50	17	107	7.2	0
June 10.....		7.0	.03	16	2.8	1.0	.4	40	21	1.0	.0	.1	69	52	18	111	7.1	0
June 15.....		6.3	.02	16	3.3	1.0	.4	41	20	1.0	.0	.4	68	54	20	112	7.2	0
June 18.....		6.3	.02	16	3.3	1.4	.5	39	21	1.0	.0	.5	69	54	22	112	7.2	0
June 30.....		--	--	--	--	--	--	42	--	--	--	--	--	62	28	117	7.4	--
July 21.....		--	--	--	2.6	1.3	--	48	--	2.0	--	--	--	--	--	119	7.0	0
July 31.....		--	--	--	--	--	--	43	--	--	--	--	--	66	31	116	7.2	--
Aug. 13.....		--	--	--	--	--	--	48	--	--	--	--	--	66	26	125	7.2	--

ALASKA WEST OF LONGITUDE 141°

2750. Chester Creek at Anchorage

Location.--Lat 61°13'00", long 149°50'10", in SW $\frac{1}{4}$ sec. 21, T.13 N., R.3 W., on right bank 50 ft upstream from bridge on Lake Otis Road, 2.3 miles southeast of post office in Anchorage, and 3.2 miles upstream from mouth.

Drainage area.--21.3 sq mi.

Records available.--Discharge: July 1958 to September 1959.

Chemical analyses: October 1958 to September 1959.

Gage.--Staff gage read twice daily. Altitude of gage is 100 ft (from topographic map).

Extremes.--Maximum discharge during year, 94 cfs Apr. 27 (gage height, 2.75 ft, from graph based on gage readings); minimum daily, 10 cfs Mar. 17-22.
1958-59: Maximum discharge, that of Apr. 27, 1959; minimum daily, that of Mar. 17-22, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	23	15	13	13	12	12	62	31	23	33	49
2	25	22	14	12	14	12	12	60	*30	23	28	51
3	27	22	14	12	*14	12	12	54	33	23	31	46
4	33	22	13	12	13	13	12	48	33	25	31	44
5	29	21	13	13	13	13	12	46	32	23	31	42
6	24	*21	13	12	13	13	12	42	31	23	30	39
7	23	21	13	11	13	13	12	*40	31	*22	29	37
8	24	20	14	11	14	14	13	39	30	22	29	37
9	24	19	15	11	14	14	14	35	29	22	28	35
10	*24	17	16	11	14	*14	14	34	*29	21	28	35
11	23	16	*17	12	14	13	16	33	29	26	28	34
12	23	15	18	13	*14	13	16	33	28	30	27	34
13	23	15	18	14	14	13	14	31	28	31	*28	33
14	23	16	17	*15	14	12	14	33	28	30	27	33
15	24	17	16	15	13	11	15	33	28	28	26	32
16	24	18	16	14	12	11	17	33	28	27	25	*33
17	24	18	16	14	12	10	20	33	27	26	25	32
18	23	*17	*16	13	12	10	19	36	*26	26	25	32
19	22	17	15	12	12	10	16	*35	26	25	25	31
20	22	16	15	12	13	*10	*17	34	26	30	25	31
21	20	15	15	11	*13	10	17	32	25	*28	25	31
22	19	15	14	11	13	10	19	31	25	28	27	31
23	19	16	14	*11	13	11	24	31	26	33	31	31
24	20	17	14	11	13	11	30	31	26	30	35	31
25	20	18	14	11	13	11	40	31	25	29	*32	30
26	21	18	14	12	*13	11	64	31	25	27	29	30
27	21	17	15	12	13	*11	*86	31	25	26	30	a30
28	22	17	15	12	12	12	78	31	24	31	30	a30
29	*22	17	15	13	-	12	75	31	24	37	29	*33
30	23	16	*14	13	-----	12	*64	31	23	38	29	a37
31	23	-----	13	13	-----	12	-----	31	-----	*37	40	-----
Total	719	539	461	382	368	366	786	1,136	831	850	896	1,054
Mean	23.2	18.0	14.9	12.3	13.1	11.8	26.2	36.6	27.7	27.4	28.9	35.1
Ac-ft	1,430	1,070	914	758	750	726	1,560	2,250	1,650	1,690	1,780	2,090

Calendar year 1958: Max - Min - Mean - Ac-ft -
Water year 1958-59: Max 86 Min 10 Mean 23.0 Ac-ft 16,650

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement and records for Ship Creek near Anchorage.

Note.--Stage-discharge relation affected by ice Oct. 17 to Feb. 20, Mar. 1-24 (no gage-height record Nov. 9, 12-15, 21-24, Nov. 30 to Dec. 10, Dec. 12, 13, Dec. 31 to Jan. 13, Feb. 13-20, Mar. 4-9, 11-13, 17-19, 21-24; discharge estimated on basis of 6 discharge measurements, observer's notes, and weather records).

2750. CHESTER CREEK AT ANCHORAGE--Continued

Chemical analyses, in parts per million, water year October 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 10, 1958	24	13	0.38	21	8.2	2.6	0.5	84	13	5.0	0.1	0.9	108	86	17	167	7.3	10
Dec. 18	16	13	--	24	5.8	2.8	.6	90	13	1.5	.0	1.8	106	84	10	179	7.2	0
Feb. 20, 1959	13	13	--	23	8.3	3.0	--	96	15	4.0	.0	2.0	114	89	10	178	7.6	0
Apr. 20	17	12	.07	22	5.5	3.1	.8	82	15	4.0	.0	2.1	104	78	10	164	7.0	10
Apr. 27	86	6.5	.36	7.9	2.1	1.3	1.5	27	6.0	3.5	.0	.6	43	28	8	68	6.4	50
May 7	40	11	.05	18	4.3	2.0	.9	67	10	2.0	.0	.6	82	62	8	135	7.1	25
June 2	30	--	--	--	--	--	--	75	12	--	--	--	--	--	--	152	7.5	20
June 6	31	12	.08	21	5.5	1.9	.6	73	14	2.5	.1	1.5	95	75	15	147	7.5	10
June 10	29	12	.08	21	5.2	2.2	.6	79	14	2.0	.0	1.2	96	74	10	150	7.4	10
June 15	28	10	.07	18	5.2	1.6	.5	62	13	1.5	.1	1.1	81	66	16	129	7.5	10
June 18	26	13	.10	21	5.7	2.2	.6	79	15	3.0	.1	1.3	101	76	12	156	7.6	10
June 30	23	--	--	--	--	--	--	80	--	--	--	--	--	78	12	156	7.8	--
July 21	28	--	--	22	5.0	2.6	--	81	--	2.0	--	--	--	--	--	160	7.4	20
July 30	38	--	--	--	--	--	--	73	--	--	--	--	--	76	16	144	7.4	--
Sept. 16	33	--	--	--	--	--	--	81	--	--	--	--	--	88	22	158	7.4	--
Sept. 29	33	--	--	--	--	--	--	81	--	--	--	--	--	79	12	164	7.9	--

2760. Ship Creek near Anchorage

Location.--Lat 61°13'25", long 149°38'00", in Fort Richardson Military Reservation, at new diversion dam and Fort Richardson water-supply intake building, 0.2 mile upstream from abandoned dam and water-supply intake building, 3.5 miles upstream from North Fork Ship Creek, and 8½ miles east of Anchorage.

Drainage area.--91.2 sq mi.

Records available.--Discharge: October 1946 to September 1959.

Chemical analyses: April 1949 to July 1951, October 1958 to August 1959.

Water temperatures: May 1949 to September 1950.

Gage.--Water-stage recorder and masonry dam. Datum of gage is 530 ft above mean sea level (levels by Corps of Engineers). Oct. 1, 1946, to Apr. 30, 1947, staff gage and May 1, 1947, to Apr. 19, 1954, water-stage recorder, at site 0.2 mile downstream at different datum. June 18, 1953, to Sept. 30, 1954, supplementary water-stage recorder at site 2.7 miles downstream at different datum.

Extremes.--Maximum discharge during year, 670 cfs June 3 (gage height, 2.85 ft); maximum gage height, 2.99 ft Dec. 31 (backwater from ice); no flow for parts of several days. 1946-59: Maximum discharge, 1,860 cfs June 31, 1949 (gage height, 3.44 ft, site and datum then in use); no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge data represent net flow remaining after diversion for water supply of Fort Richardson, Elmendorf Air Force Base, and city of Anchorage. Average annual diversion 17.7 cfs.

Cooperation.--Gage inspected and records of diversion furnished by Office of Post Engineers, Fort Richardson.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	163	92	51	15	26	14	15	45	496	287	241	409
2	176	90	49	15	23	13	15	50	*538	276	228	379
3	230	83	48	16	*25	12	15	56	643	270	218	367
4	228	80	46	17	22	12	15	62	615	276	218	343
5	188	78	45	17	19	12	15	59	587	257	210	319
6	161	*78	44	16	17	12	15	64	601	257	200	295
7	148	70	44	14	16	11	15	*70	580	*257	190	273
8	140	54	45	11	15	11	16	77	570	238	183	257
9	138	53	46	11	14	11	17	82	601	220	179	241
10	*138	53	47	12	13	*11	18	86	*604	200	174	223
11	129	53	*48	21	13	11	19	89	590	213	167	213
12	123	56	49	22	*13	11	19	90	576	303	163	203
13	120	59	49	23	12	11	18	95	580	276	*163	196
14	123	62	48	*24	10	11	18	136	576	260	157	183
15	125	65	46	24	8	11	20	161	566	236	157	183
16	129	66	44	23	8	10	22	181	566	228	152	*172
17	118	67	42	22	8	10	23	200	590	262	146	165
18	115	*67	*40	20	14	9	22	254	*822	246	152	159
19	103	63	39	19	25	7	21	*278	636	208	161	157
20	98	58	38	17	*27	*7	*20	278	622	223	152	150
21	76	56	37	20	25	8	17	265	612	*230	152	140
22	76	54	36	20	22	10	20	246	590	208	148	134
23	77	54	35	*18	20	11	25	252	510	223	234	133
24	61	56	32	18	19	12	30	273	455	208	455	133
25	84	57	29	16	18	13	32	308	419	206	*542	129
26	87	58	24	17	*17	15	34	406	403	200	442	127
27	90	57	22	15	16	*15	*35	482	379	198	379	118
28	93	56	19	14	15	16	37	524	352	236	340	116
29	*97	55	18	14	-	16	39	545	334	254	316	*116
30	98	53	*25	12	-----	16	42	500	314	232	289	127
31	98	-----	16	18	-----	16	-----	486	-----	*289	385	-----
Total	3,850	1,903	1,201	543	480	365	669	6,700	16,127	7,537	7,293	6,158
Mean	124	63.4	38.7	17.5	17.1	11.8	22.3	216	538	243	235	205
Ac-ft	7,640	3,770	2,380	1,080	952	724	1,330	13,290	31,990	14,950	14,470	12,210
Calendar year 1958: Max 798 Min 10 Mean 130 Ac-ft 93,800												
Water year 1958-59: Max 643 Min 7 Mean 145 Ac-ft 104,800												

* Discharge measurement made on this day.

Note.--No gage-height record Apr. 2-19; discharge estimated on basis of 1 discharge measurement, weather records, and records for Chester Creek at Anchorage. Stage-discharge relation affected by ice Oct. 8-11, Oct. 22 to Apr. 1 (no gage-height record Nov. 12, Mar. 19-21, 23, 24; discharge interpolated or estimated on basis of 1 discharge measurement, weather records, and records for Chester Creek at Anchorage).

2760. SHIP CREEK NEAR ANCHORAGE--Continued

Chemical analyses, in parts per million, October 1958 to August 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium magnesium	Non-carbonate			
Oct. 10, 1958	138	6.5	0.04	19	4.5	1.8	0.5	49	24	2.5	0.0	0.3	83	66	26	136	7.4	0
Dec. 18	40	7.7	--	21	5.2	2.0	.3	64	22	2.5	.0	.5	93	74	22	147	6.9	5
Feb. 20, 1959	27	8.3	--	20	5.2	2.4	--	66	18	2.5	.0	.8	89	72	18	149	6.8	0
Apr. 27	35	9.1	.04	21	4.3	2.8	.5	68	18	1.0	.0	2.1	92	70	14	145	6.8	20
May 7	70	9.0	.07	18	3.8	2.0	.6	60	15	1.0	.2	1.3	81	60	12	131	7.0	20
June 2	538	--	--	--	--	--	--	40	14	--	--	--	--	42	9	100	7.4	10
June 6	601	6.5	.02	14	2.4	1.2	.4	42	15	1.0	.0	.1	62	45	10	101	7.5	0
June 10	604	5.1	--	16	2.8	1.4	.4	44	17	1.0	.0	.1	66	52	16	108	7.2	0
June 15	566	6.0	--	16	3.3	1.4	.4	42	19	1.0	.0	.1	68	54	19	110	7.5	0
June 18	622	5.8	.02	15	3.8	1.4	.4	44	19	1.0	.0	.0	68	53	17	107	7.2	0
June 22	590	--	--	--	--	--	--	45	--	--	--	--	--	55	18	116	7.3	--
June 30	314	--	--	--	--	--	--	44	--	--	--	--	--	62	26	120	7.3	--
July 21	230	--	--	17	3.1	1.9	.1	49	--	2.5	--	--	--	--	--	127	7.1	0
July 31	289	--	--	--	--	--	--	48	--	--	--	--	--	72	32	127	7.5	--
Aug. 13	163	--	--	--	--	--	--	52	--	--	--	--	--	74	32	137	7.5	--

2780. Eklutna Lake near Palmer

Location.--Lat 61°24'05", long 149°09'00", 100 ft upstream from dam at outlet of Eklutna Lake, 8 miles upstream from abandoned Eklutna power diversion dam, 11 miles upstream from mouth of Eklutna Creek, and 14 miles south of Palmer.

Drainage area.--119 sq mi.

Records available.--November 1946 to September 1959 (fragmentary since January 1955).

Gage.--Staff gage. Datum of gage is 859.8 ft above mean sea level (Corps of Engineers bench mark). Prior to May 5, 1947, reference point at same site and datum.

Extremes.--Maximum gage height observed during year, 8.31 ft Sept. 4; minimum observed, -31.28 ft May 15.

1946-59: Maximum gage height observed, 12.00 ft Sept. 18, 1951; minimum observed, that of May 15, 1959.

Remarks.--Outflow from lake controlled by stoplogs and sluice gates in dam at outlet. Gates fully open during flood season each year. Prior to December 1954, stored water released during winter period for power purposes. Since December 1954, direct withdrawals from Eklutna Lake for power purposes; flow then diverted into Knik River basin.

Gage height, in feet, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	-	-	-	-	-29.19	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	7.29	-	-	-	-	-	-24.78	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	8.31
5	-	-	-2.52	-	-	-	-	-	-30.00	-	-	-
6	6.91	-	-	-7.59	-13.56	-18.95	-	-	-	-14.62	-	-
7	-	2.47	-	-	-	-	-	-	-	-	2.74	-
8	-	-	-	-	-	-	-	-30.24	-	-	-	-
9	6.51	-	-	-	-	-	-	-	-29.33	-	-	-
10	-	-	-	-	-	-	-25.83	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	8.27
12	-	-	-3.73	-	-	-	-	-	-28.87	-	-	-
13	-	-	-	-	-15.02	-19.45	-	-	-	-10.93	-	-
14	-	1.16	-	-	-	-	-	-	-	-	-0.19	-
15	-	-	-	-9.36	-	-	-	-31.28	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	5.77	-	-	-	-	-	-27.02	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	7.91
19	-	-	-5.00	-	-	-	-	-	-26.48	-	-	-
20	-	-	-	-	-16.19	-21.99	-	-	-	-8.78	-	-
21	-	-0.09	-	-	-	-	-	-	-	-	2.66	-
22	-	-	-	-	-	-	-	-31.00	-	-	-	-
23	-	-	-	-10.95	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-28.33	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	7.61
26	-	-	-	-	-	-	-	-	-	-	-	-
27	4.25	-	-	-	-17.55	-23.47	-	-	-	-7.14	-	-
28	-	-1.34	-	-	-	-	-	-	-	-	7.46	-
29	-	-	-6.04	-	-	-	-	-30.79	-18.40	-	-	-
30	-	-	-	-12.34	-	-	-29.19	-	-	-	-	7.31
31	3.49	-	-6.31	-	-	-24.33	-	-	-	-5.55	8.21	-

2800. Eklutna Creek near Palmer

Location.--Lat 61°24'05", long 149°09'00", on right bank 200 ft downstream from dam at outlet of Eklutna Lake, 8 miles upstream from abandoned Eklutna power diversion dam, 11 miles upstream from mouth, and 14 miles south of Palmer.

Drainage area.--119 sq mi.

Records available.--Discharge: October 1946 to September 1959.

Chemical analyses: April 1949 to September 1950, December 1950 to August 1952.

Water temperatures: May 1949 to September 1950, December 1950 to July 1951.

Gage.--Water-stage recorder. Datum of gage is 856.53 ft above mean sea level (Corps of Engineers bench mark). Prior to Aug. 31, 1948, staff gage at site 100 ft upstream at datum 1.96 ft higher. Aug. 31, 1948, to Sept. 30, 1953, at datum 1.96 ft higher.

Average discharge.--8 years (1946-54), 346 cfs (250,500 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 162 cfs Aug. 30-31 (gage height, 1.57 ft); no flow Oct. 1 to Aug. 27.

1946-59: Maximum discharge, 2,530 cfs Sept. 18, 1951 (gage height, 8.06 ft in gage well, present datum); no flow for long periods since December 1954.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by Eklutna Lake (usable capacity, 160,000 acre-ft). Since December 1954, entire flow, except for periods of spilling, diverted from Eklutna Lake into Knik River basin by Eklutna powerplant.

Discharge, in cubic feet per second, water year October 1958 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1											0	155
2											0	*87
3											0	12
4											0	12
5											0	11
6											*0	10
7											0	9
8											0	8
9											0	7
10											0	6
11											*0	5
12											0	4
13											0	4
14											0	4
15											0	*4
16											0	3
17											0	3
18											0	3
19											0	3
20											0	3
21											0	2
22											0	2
23											0	2
24											0	2
25											0	2
26											0	1
27											0	1
28											18	1
29											*85	1
30											136	1
31											*156	
Total	0	0	0	0	0	0	0	0	0	0	395	368
Mean	0	0	0	0	0	0	0	0	0	0	12.7	12.3
(†)	19,190	20,190	18,210	20,160	17,580	20,620	17,060	16,620	22,330	22,860	17,540	19,500
Ac-ft	0	0	0	0	0	0	0	0	0	0	783	730

Calendar year 1958: Max 866

Min 0

Mean 28.8

† 231,600 Ac-ft 20,810

Water year 1958-59: Max 156

Min 0

Mean 2.09

† 231,900 Ac-ft 1,510

* Discharge measurement or observation of no flow made on this day.

† Diversion above station, in acre-ft, for Eklutna powerplant; records furnished by Bureau of Reclamation.

Note.--No gage-height record Sept. 3-14, 16-30; discharge estimated on basis of 2 discharge measurements.

2820. Caribou Creek near Sutton

Location.--Lat 61°48'10", long 147°41'00", on downstream side of left pier of bridge on Glenn Highway, 1.4 miles downstream from Dan Creek, 1½ miles upstream from mouth, and 40 miles east of Sutton.

Drainage area.--289 sq mi.

Records available.--Discharge: May 1955 to September 1959.

Chemical analyses: October 1957 to August 1958.

Sediment records: June to September 1959 (periodic).

Gage.--Water-stage recorder. Datum of gage is 1,767 ft above mean sea level.

Extremes.--Maximum discharge during year, 3,950 cfs June 7 (gage height, 5.25 ft); minimum not determined.

1955-59: Maximum discharge, 5,060 cfs June 18, 1955 (gage height, 5.92 ft); minimum observed, 0.23 cfs Mar. 9, 1956 (discharge measurement), caused by temporary storage upstream.

Remarks.--Records fair except those for period of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	159							35	943	1,240	1,570	795
2	151					(*)		39	1,410	1,610	1,150	756
3	141							44	1,940	1,460	893	719
4	131							51	2,320	1,080	1,030	712
5	129							*59	*1,870	810	1,210	705
6	128							62	1,680	663	1,270	677
7	129							64	2,120	562	1,350	650
8	129	63	(*)	18	18	23	(*)	66	2,510	502	1,150	605
9	124		38				16	69	2,160	449	955	568
10	118							73	1,580	414	842	524
11	109							120	1,090	387	741	492
12	102							200	1,340	387	636	463
13	100							314	1,470	454	605	436
14	102							361	1,310	562	562	410
15	104							*767	1,240	534	562	387
16	100							*1,080	1,030	492	551	372
17	93							1,400	1,090	482	524	358
18	85							2,680	857	463	507	340
19	78					(*)		1,910	*698	445	518	340
20	72							1,060	674	423	551	311
21	70							705	718	402	623	302
22	70					21		551	700	379	605	290
23	71							538	942	571	899	281
24	73							736	1,280	876	*1,610	275
25	76	51 (*)	32	14			16	1,270	928	726	1,920	264
26	79							1,320	714	580	1,420	261
27	81							1,110	599	*502	1,120	247
28	84							1,280	599	497	918	*242
29	86							1,200	771	546	884	256
30	88							842	779	1,150	834	264
31	87							810		1,740	*810	
Total	3,149	1,710	1,082	494	543	601	555	20,816	37,362	21,388	28,820	13,302
Mean	102	57.0	34.9	15.8	19.4	19.4	18.5	671	1,245	690	930	445
Ac-ft	6,250	3,390	2,150	980	1,080	1,190	1,100	41,290	74,110	42,420	57,160	26,380
Calendar year 1958: Max			1,820	Min	-	Mean	160	Ac-ft	115,700			
Water year 1958-59: Max			2,680	Min	-	Mean	356	Ac-ft	257,500			

Peak discharge (base, 2,000 cfs).--May 18 (3 a.m.) 3,070 cfs (4.80 ft); May 25 (10 p.m.) 2,240 cfs (4.33 ft); May 28 (9:30 p.m.) 2,300 cfs (4.37 ft); June 7 (9:30 p.m.) 3,950 cfs (5.25 ft); July 31 (9 p.m.) 2,110 cfs (4.25 ft); Aug. 25 (6 p.m.) 2,110 cfs (4.25 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 1 to May 12 (no gage-height record Oct. 21 to May 4, except occasional days; discharge estimated on basis of 6 discharge measurements, weather records, and records for Little Susitna River near Palmer).

2840. Matanuska River at Palmer

Location.--Lat 61°36'35", long 149°04'15", in N $\frac{1}{2}$ sec.34, T.18 N., R.2 E., on left bank 100 ft downstream from bridge on Glenn Highway and 1 mile east of Palmer.

Drainage area.--2,070 sq mi, approximately.

Records available.--Discharge: April 1949 to September 1959.

Chemical analyses: May 1949 to October 1950, April to June 1951, October 1951 to July 1953, October 1957 to September 1959.

Water temperatures: March to August 1952, April to September 1953, December 1958 to September 1959.

Sediment records: April 1953 to September 1954, April to September 1959.

Gage.--Water-stage recorder. Datum of gage is 170.92 ft above mean sea level (Alaska Road Commission bench mark). Prior to Nov. 2, 1950, wire-weight gage at bridge 120 ft upstream at same datum. Nov. 2, 1950, to Apr. 30, 1952, wire-weight gage at bridge 100 ft upstream at same datum.

Average discharge.--10 years, 4,043 cfs (2,927,000 acre-ft per year).

Extremes.--Maximum discharge during year, 37,300 cfs Aug. 24 (gage height, 10.82 ft); minimum not determined.

1949-59: Maximum discharge, that of Aug. 24, 1959; maximum gage height observed, 12.03 ft July 11, 1949; minimum daily discharge, 234 cfs Apr. 25, 1956.

1958-59: Maximum water temperature, 56°F June 16, 25. Maximum daily sediment concentration, 16,100 ppm Aug. 25. Maximum daily sediment load, 1,300,000 tons Aug. 25.

Remarks.--Records fair except those for period of ice effect, which are poor. Large diurnal fluctuation caused by glacier melt at the source. Records of specific conductance of daily samples available in district office, Quality of Water Branch, Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,270	920					454	*1,140	5,090	12,800	11,500	9,010
2	2,460	986					445	1,200	5,980	13,470	10,700	8,170
3	2,580	920					437	1,210	8,480	14,700	9,880	7,450
4	2,720	846					430	1,170	9,960	12,700	9,160	6,890
5	2,090	815	(*)				429	1,140	8,620	11,600	8,240	6,450
6	1,780	785					437	1,170	8,690	*12,100	9,240	5,770
7	1,640	735					454	*1,310	9,350	12,800	8,550	5,390
8	*1,420	680		390	450	390	*462	1,340	10,800	12,670	7,510	5,090
9	1,420	640	350	(*)			470	1,400	11,400	12,270	6,680	4,810
10	1,500	600					479	1,110	10,400	11,970	6,890	*4,530
11	1,570	540					490	1,040	9,760	12,270	8,200	4,360
12	1,600	*496					500	990	9,010	11,670	8,730	4,180
13	1,520	490					504	1,000	10,700	10,070	8,170	4,020
14	1,540	490					513	1,150	12,100	9,570	8,030	3,920
15	1,580	510					513	1,790	12,200	9,120	8,870	3,750
16	1,660	520				(*)	522	2,900	12,200	8,630	9,760	3,620
17	1,620	520			(*)		513	3,800	12,500	8,930	10,000	3,450
18	1,540	504					510	5,460	13,400	7,740	*10,200	3,380
19	1,460	460					510	5,560	12,700	7,070	10,800	3,380
20	1,230	429					513	*4,620	12,200	7,930	10,200	3,210
21	1,100	400					522	3,560	13,100	8,310	9,530	3,060
22	1,000	400			430		539	3,020	13,200	*8,170	9,120	2,940
23	960	410	(*)	310			548	2,630	13,100	8,830	11,200	2,840
24	900	420	590			410	*630	3,040	*15,000	9,920	25,200	2,770
25	830	440					795	3,710	14,800	10,900	*30,000	2,710
26	820	450				(*)	899	4,900	15,700	10,700	*20,600	2,680
27	*846	440					910	5,160	15,000	10,600	16,000	2,530
28	836	420					878	5,140	14,500	10,600	14,600	2,390
29	868	400					805	*6,010	14,500	*10,600	12,200	2,420
30	805	380		(*)			920	4,960	13,000	10,600	10,400	2,630
31	820	-----					-----	4,680	-----	11,500	9,350	-----
Total	44,985	17,046	14,690	10,810	12,340	12,410	17,031	87,300	347,440	330,230	349,310	127,780
Mean	1,451	568	474	349	441	400	568	2,816	11,580	10,650	11,270	4,259
Ac-ft	89,230	33,810	29,140	21,440	24,480	24,610	33,780	173,200	689,100	655,000	692,800	253,400
Calendar year 1958: Max	15,600			Min	-		Mean	3,392	Ac-ft	2,456,000		
Water year 1958-59: Max	30,000			Min	-		Mean	3,757	Ac-ft	2,720,000		

Peak discharge (base, 16,500 cfs).--Aug. 24 (10:30 p.m.) 37,300 cfs (10.82 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 6 to Apr. 30 (no gage-height record Oct. 21-26, 31, Nov. 8 to Feb. 1, except occasional days, Feb. 7, 8, 13-15, 21-23, 25, 28, Mar. 1, 3-6, 14, 15, 17, 18, 20-22, 27-30, Apr. 4, 11, 12, 18, 19; discharge estimated on basis of 9 discharge measurements and weather records).

2840. MATANUSKA RIVER AT PALMER--Continued

Chemical analyses, in parts per million, November 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Nov. 12, 1958	486	6.2	0.04	33	10	7.6	0.7	95	52	7.0	0.1	0.9	165	124	46	278	7.7	5
Dec. 8	a 350	5.3	.03	36	5.0	5.7	.3	83	46	5.5	.0	1.0	146	110	42	245	7.6	0
Dec. 16	b 590	6.3	.02	40	8.4	7.5	.9	97	54	10	.2	.9	176	134	55	280	7.4	0
Feb. 3, 1959	c 450	6.4	.02	31	11	7.1	.3	98	36	10	.0	1.2	151	122	42	271	7.4	0
Mar. 18	d 410	6.4	.02	32	10	7.4	.2	99	44	9.5	.0	1.1	160	121	40	277	7.7	0
Mar. 27	d 410	6.3	.02	38	6.2	7.6	1.0	94	48	9.0	.1	.8	163	120	44	278	7.6	0
Apr. 13-17, 20-22	517	8.9	.02	29	12	7.6	.7	100	46	7.5	.0	1.4	162	122	40	279	7.5	0
Apr. 23-24, 27-30	782	8.3	.02	22	11	6.9	.7	83	40	6.5	.0	1.2	138	100	32	241	7.4	0
May 1, 4-8	1,210	10	.05	27	7.4	7.4	.8	82	37	6.0	.0	1.6	137	98	31	232	7.7	5
May 11-13, 15-18	2,050	11	.08	26	7.8	7.2	.8	84	37	4.0	.0	1.6	136	97	28	227	7.6	10
May 19-22, 26-29	4,750	6.5	.13	23	4.3	5.7	.9	70	29	2.5	.0	1.0	107	75	18	179	7.5	30
June 1-5, 8-10	8,640	5.9	.07	23	3.8	4.7	.8	69	26	2.0	.0	.6	101	73	16	173	7.7	10
June 11-12, 15-20	11,700	6.1	.03	21	4.3	3.7	.8	67	22	2.0	.0	.5	93	70	15	165	7.8	5
June 23-30	14,400	5.2	.05	22	4.5	3.3	.8	68	26	1.0	.0	.0	96	74	18	166	7.3	0
July 1-4, 6-10	12,800	4.6	.02	20	5.2	3.4	.6	64	26	2.0	.0	.2	94	72	19	163	7.6	5
July 11-16, 18, 20	9,590	4.6	.04	19	6.7	3.6	.6	65	28	2.0	.0	.3	97	75	22	169	7.6	5
July 21-31	10,100	4.6	.02	18	6.7	3.8	.5	60	30	2.0	.0	.3	96	72	24	168	7.9	5
Aug. 1-14	8,660	5.2	.03	28	4.8	4.7	.7	84	30	1.5	.0	.6	116	88	18	183	7.4	0
Aug. 16-18, 20-23	10,000	4.3	.02	26	2.8	3.6	.7	63	30	1.5	.0	.6	100	76	25	168	7.7	0
Aug. 25-26	25,300	7.6	.02	31	4.5	5.0	.9	84	33	1.0	.0	.6	125	96	27	200	7.7	0
Aug. 28-29, 31-Sept. 1	11,300	6.2	.02	28	3.6	4.9	.8	68	34	1.5	.0	.7	113	85	30	191	7.8	0
Sept. 2-10	6,060	6.4	.02	32	4.0	6.0	.4	72	43	2.0	.0	.7	130	96	38	215	7.5	0
Sept. 11-15, 17-18	3,860	6.6	.02	33	4.8	6.8	.8	77	49	3.0	.0	.8	143	102	39	229	7.6	0
Sept. 21-31	2,700	7.5	.02	36	5.2	7.1	.7	82	52	3.0	.0	1.0	152	112	44	246	7.6	0

a Mean discharge for period Dec. 1-15.

b Mean discharge for period Dec. 16-31.

c Mean discharge for period Feb. 1-15.

d Mean discharge for period Mar. 16-31.

2840. MATANUSKA RIVER AT PALMER--Continued

Temperature (°F) of water, December 1958 to September 1959

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

2840. MATANUSKA RIVER AT PALMER--Continued

Suspended sediment, April to September 1959

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	--	--	--	1,140	759	2,340	5,090	925	12,700
2.....	--	--	--	1,200	903	a 2,920	5,980	1,530	24,700
3.....	--	--	--	1,210	790	a 2,580	8,480	3,670	84,000
4.....	--	--	--	1,170	644	2,030	9,960	4,660	126,000
5.....	--	--	--	1,140	478	1,470	8,620	2,560	60,000
6.....	--	--	--	1,170	563	1,780	8,690	1,760	a 41,800
7.....	--	--	--	1,310	890	3,150	9,350	2,860	a 72,700
8.....	--	--	--	1,340	668	2,420	10,800	3,910	114,000
9.....	--	--	--	1,400	402	a 1,520	11,400	3,800	117,000
10.....	479	193	250	1,110	499	a 1,500	10,400	2,890	81,200
11.....	490	146	a 193	1,040	508	1,430	9,760	2,240	59,000
12.....	500	120	a 162	980	521	1,380	9,010	1,520	37,000
13.....	504	100	136	1,000	465	1,260	10,700	1,810	a 52,300
14.....	513	118	163	1,150	490	a 1,520	12,100	1,810	a 59,100
15.....	513	102	141	1,790	660	3,190	12,200	1,960	64,200
16.....	522	87	123	2,900	1,180	a 9,240	12,200	2,070	66,900
17.....	513	79	198	3,800	2,280	a 23,400	12,500	2,520	85,000
18.....	510	68	a 94	5,460	3,610	53,200	13,400	2,580	93,300
19.....	510	57	a 78	5,560	2,340	35,100	12,700	1,980	67,900
20.....	513	49	68	4,620	1,400	17,500	12,200	2,180	71,800
21.....	522	56	79	3,560	860	8,270	13,100	2,590	a 91,600
22.....	539	72	105	3,020	530	a 4,320	13,200	3,200	115,000
23.....	548	141	209	2,630	525	3,730	13,100	2,900	105,000
24.....	630	246	418	3,040	760	6,240	15,000	4,490	182,000
25.....	752	347	a 745	3,710	1,580	a 15,800	14,800	2,990	116,000
26.....	899	417	a 1,010	4,900	2,130	28,200	15,700	3,500	148,000
27.....	910	418	1,030	5,160	1,100	15,300	15,000	3,120	a 126,000
28.....	878	355	842	5,140	980	13,600	14,500	2,970	116,000
29.....	805	315	685	6,010	1,840	29,800	14,500	2,800	110,000
30.....	920	458	1,140	4,960	1,930	a 25,800	13,000	2,530	88,400
31.....	--	--	--	44,680	1,350	a 17,000	--	--	--
Total..	13,013	--	7,780	87,300	--	336,990	347,440	--	2,588,600
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	12,800	2,280	78,800	11,300	2,380	72,600	9,010	738	19,400
2.....	13,400	2,260	81,800	10,700	1,870	54,000	8,170	644	14,200
3.....	14,700	3,210	127,000	9,880	1,490	39,700	7,450	544	10,900
4.....	12,700	2,390	82,000	9,160	1,470	36,400	6,890	472	8,780
5.....	11,600	1,920	a 60,100	8,240	1,160	25,800	6,450	472	8,390
6.....	12,100	1,800	58,800	9,240	1,300	32,400	5,770	370	5,920
7.....	12,800	2,160	74,600	8,550	2,000	46,200	5,390	276	4,310
8.....	12,600	2,160	73,500	7,510	1,570	31,800	5,090	278	4,100
9.....	12,200	1,930	63,600	6,680	1,290	23,300	4,810	278	3,450
10.....	11,900	1,910	61,400	6,890	1,320	24,600	4,530	235	2,870
11.....	12,200	1,960	64,600	8,200	1,380	30,600	4,360	239	2,810
12.....	11,600	1,700	53,200	8,730	1,310	30,900	4,160	240	2,700
13.....	10,000	1,310	35,400	8,170	1,180	26,000	4,020	198	2,150
14.....	9,500	1,060	27,200	8,030	985	21,400	3,920	175	2,060
15.....	9,120	988	24,300	8,870	1,190	a 28,500	3,750	202	2,040
16.....	8,620	1,120	26,100	9,760	1,840	48,500	3,620	210	a 2,050
17.....	8,980	1,100	a 26,700	10,000	1,920	51,800	3,450	144	1,340
18.....	7,740	701	14,600	10,200	1,970	54,200	3,380	60	548
19.....	7,010	685	a 13,000	10,800	2,140	a 62,400	3,380	24	a 219
20.....	7,930	714	15,300	10,200	1,700	46,800	3,210	71	a 615
21.....	8,310	860	19,300	9,530	1,020	26,200	3,060	152	1,260
22.....	8,170	885	19,500	9,120	885	21,800	2,940	146	1,160
23.....	8,830	1,060	25,300	11,200	2,830	85,600	2,840	136	1,040
24.....	9,920	1,660	44,500	25,200	10,500	a 644,000	2,770	89	666
25.....	10,900	1,500	44,100	30,000	16,100	1,300,000	2,710	61	446
26.....	10,700	1,870	54,000	20,600	5,350	298,000	2,680	89	644
27.....	10,600	1,660	47,500	16,000	3,600	156,000	2,530	71	485
28.....	10,600	1,540	44,100	14,600	2,800	110,000	2,390	56	361
29.....	10,600	1,310	37,500	12,200	2,000	65,900	2,420	665	425
30.....	10,600	1,240	35,500	10,400	1,350	a 37,900	2,630	144	1,020
31.....	11,500	2,020	62,700	9,350	1,000	25,200	--	--	--
Total..	330,230	--	1,496,000	349,310	--	3,558,500	127,780	--	106,359

Total discharge for period April to September 1959 (cfs-days) 1,255,073

Total load for period April to September 1959 (tons) 8,094,229

s Computed by subdividing day.

a Computed from estimated concentration graph.

2840. MATANUSKA RIVER AT PALMER--Continued

Particle-size analyses of suspended sediment, May to August 1959
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water tem- per- ature (° F)	Suspended sediment												Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
May 19, 1959 . . .	4:30 p.m.	6,040	44	1,640	1,790	27	34	50	61	70	78	78	90		99	100	SBWCM
June 15	7:00 p.m.	a 12,200	--	1,640	2,990	17	26	36	46	55	64	76	88		97	99	SPWCM
July 27	4:00 p.m.	10,400	44	1,530	4,110	17	25	38	49	59	68	75	90		99	100	SPWCM
Aug. 24	1:45 p.m.	33,400	47	9,350	5,340	18	21	29	37	50	61	74	87		96	99	SPWCM
Aug. 26	11:30 a.m.	21,100	48	4,730	3,010	28	35	49	62	72	80	89	96		99	100	SPWCM

a Daily mean discharge.

2900. Little Susitna River near Palmer

Location.--Lat 61°42'40", long 149°13'40", in NW $\frac{1}{4}$ sec. 26, T.19 N., R.1 E., on left bank 15 ft downstream from highway bridge on Wasilla-Fishhook road, 1.5 miles north of road junction, 1.8 miles downstream from unnamed tributary, and 8 miles northwest of Palmer.

Drainage area.--61.9 sq mi.

Records available.--Discharge: July 1948 to September 1959.

Chemical analyses: February to August 1952.

Gage.--Water-stage recorder. Datum of gage is 920.6 ft above mean sea level (river-profile survey). Prior to Aug. 16, 1948, staff gage at same site and datum.

Average discharge.--11 years, 203 cfs (147,000 acre-ft per year).

Extremes.--Maximum discharge during year, 5,160 cfs Aug. 24 (gage height, 7.39 ft); minimum not determined.

1948-59: Maximum discharge, that of Aug. 24, 1959; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Large diurnal fluctuation caused by glacier melt at source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	162	77						30	559	378	404	870
2	179	75						35	685	382	378	800
3	223	70						38	866	370	378	698
4	196	67						41	806	500	400	617
5	149	66						40	740	476	370	540
6	a140	62						43	794	421	357	474
7	a140	54						*47	896	382	325	415
8	*146	45	34	(*)	16	16	(*)	46	983	*332	295	372
9	a140	37						51	969	306	288	356
10	a130	36					15	51	896	288	288	*299
11	a130	36						53	848	420	284	281
12	a120	*37						59	890	824	268	257
13	a110	38						69	941	604	249	244
14	*112	39						87	962	620	243	228
15	116	40	(*)					160	969	543	249	214
16	108	41				(*)		188	955	458	246	198
17	98	41						227	1,060	490	243	190
18	90	40						292	1,060	467	*305	183
19	80	38						284	*1,020	434	590	178
20	72	37						*230	997	579	554	169
21	66	36					14	209	890	486	445	158
22	66	35			15		14	206	866	*443	378	163
23	68	35				13	15	230	646	490	1,410	156
24	70	35	30	16			*15	268	574	434	3,600	158
25	73	36					18	352	569	404	*3,110	156
26	75	*37				(*)	21	472	584	374	*1,860	163
27	*76	37					22	548	523	357	1,330	150
28	78	38					22	620	486	514	1,150	a150
29	80	37					25	569	481	439	1,020	a150
30	80	35	(*)	(*)			28	509	408	*564	828	a190
31	80	-----						*519	-----	448	964	-----
Total	3,453	1,335	990	541	435	448	494	6,573	23,923	14,227	22,807	9,157
Mean	111	44.5	31.9	17.5	15.5	14.5	16.5	212	737	459	736	305
Ac-ft	6,850	2,650	1,960	1,070	863	889	980	13,040	47,450	28,220	45,240	18,160

Calendar year 1958: Max 1,020 Min - Mean 125 Ac-ft 90,570

Water year 1958-59: Max 3,600 Min - Mean 231 Ac-ft 167,400

Peak discharge (base, 1,500 cfs).--Aug. 24 (8 p.m.) 5,160 cfs (7.39 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 2 discharge measurements, weather records, and records for Ship Creek near Anchorage.

Note.--Stage-discharge relation affected by ice Oct. 17 to May 15 (no gage-height record Nov. 15 to Apr. 23, except occasional days; discharge estimated on basis of 11 discharge measurements, weather records, and records for Ship and Chester Creeks near Anchorage).

2910. Susitna River near Denali

Location.--Lat 63°04'40", long 147°31'20", on left bank 1.4 miles upstream from Butte Creek, 2.3 miles downstream from bridge on Denali Highway, 2.6 miles downstream from Windy Creek, and 7½ miles south of Denali.

Drainage area.--950 sq mi, approximately.

Records available.--Discharge: May 1957 to September 1959.

Chemical analyses: December 1957 to September 1958.

Sediment records: June 1958 to September 1959 (periodic, summer months only).

Gage.--Water-stage recorder. Altitude of gage is 2,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 14,800 cfs Aug. 25 (gage height, 4.43 ft); minimum not determined.

1957-59: Maximum gage height, 5.54 ft June 7, 1957, from floodmarks (discharge not determined); minimum discharge not determined.

Remarks.--Records poor. Large diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*1,200						(*)		3,860	12,100	8,360	6,580
2	1,230								4,200	11,800	8,000	5,900
3	1,290								4,580	11,800	*6,970	5,320
4	1,200								4,680	11,500	5,200	4,520
5	1,200								4,870	10,300	4,460	3,750
6								270	5,110	11,500	4,290	3,500
7									5,480	12,600	4,000	*3,110
8		490	160	140	87	50			5,700	11,500	4,400	2,830
9				(*)					6,140	10,400	4,930	2,410
10	1,100						36		6,370	7,690	6,070	2,100
11									7,040	7,560	6,860	1,840
12		(*)							7,760	9,100	*7,230	1,780
13									8,360	8,600	7,100	1,780
14									9,400	8,000	6,800	1,700
15								1,600	9,800	7,200	7,300	1,800
16									10,000	6,900	8,200	*1,820
17									*11,000	7,200	9,000	1,840
18					(*)				13,000	6,600	9,200	1,900
19									13,300	*5,670	13,400	1,920
20									12,500	6,790	12,100	1,780
21									4,600	12,700	6,930	10,000
22									4,600	12,300	5,610	9,020
23					74				*4,370	12,100	5,670	11,700
24	750	290	180	100		34			3,180	10,900	6,200	13,800
25									2,640	10,400	5,930	12,300
26								57	2,070	10,600	5,540	9,020
27									2,410	10,800	5,900	6,720
28									2,810	10,500	7,190	7,690
29					-				2,980	11,100	7,640	8,000
30									3,180	12,200	8,000	6,030
31									3,690		9,310	6,200
Total	29,120	11,700	5,280	3,700	2,267	1,294	1,290	55,230	266,730	258,330	244,350	74,940
Mean	939	390	170	119	81.0	41.7	43.0	1,782	8,891	8,333	7,882	2,498
Ac-ft	57,760	23,210	10,470	7,340	4,500	2,570	2,560	109,500	529,100	512,400	484,700	148,600
Calendar year 1958: Max	12,200				Min -		Mean 2,457	Ac-ft 1,779,000				
Water year 1958-59: Max	13,800				Min -		Mean 2,614	Ac-ft 1,893,000				

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 4 to May 22, except occasional days (stage-discharge relation affected by ice during most of period); June 14-16, July 12-18, Aug. 13-18, Sept. 6; discharge estimated on basis of 9 discharge measurements, weather records, and records for station at Gold Creek, Matanuska River at Palmer, and Nenana River near Healy.

2910. SUSITNA RIVER NEAR DENALI--Continued

Periodic determinations of suspended-sediment discharge and particle-size analyses of suspended sediment, July to September 1959
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipet; S, sieve; N, in native water;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment															Methods of analysis
				Concentration of sample (ppm)	Discharge (tons per day)	Concentration of suspension (ppm)	Percent finer than indicated size, in millimeters												
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000		
July 19, 1959.....	1:30 p.m.	5,610	42	592	8,970	1,360	12	14	21	27	34	47	61	82			93	100	SBWCM
Aug. 12	5:00 p.m.	6,640	51	1,400	25,100	3,490	15	21	27	38	51	67	79	93			100	--	SPWCM
Sept. 16	2:00 p.m.	1,970	43	438	2,330	--	--	--	--	--	--	44	52	81			98	100	S

2912. MacIaren River near Paxson

Location.--Lat 63°07'05", long 146°31'40", on left bank 1.5 miles downstream from Boulder Creek and 34 miles west of Paxson.

Drainage area.--280 sq mi, approximately.

Records available.--Discharge: June 1958 to September 1959.

Chemical analyses: June to September 1958.

Sediment records: June 1958 to September 1959 (periodic, summer months only).

Gage.--Water-stage recorder. Altitude of gage is 2,900 ft (from topographic map).

Extremes.--Maximum discharge during year, 4,410 cfs June 22 (gage height, 5.02 ft); minimum not determined.

1958-59: Maximum discharge, 5,770 cfs Aug. 4, 1958 (gage height, 5.64 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	600						(*)		1,200	3,520	2,410	2,320
2	*610								1,300	3,480	2,300	2,010
3									1,400	3,500	*1,990	1,760
4									1,500	3,440	1,660	1,520
5									1,500	3,420	1,580	1,320
6									1,600	3,540	1,510	*1,100
7									1,700	3,840	1,470	970
8									1,800	3,560	1,470	870
9		500	130	84	150	64	69	190	1,900	3,360	1,680	790
10				(*)	100				2,100	3,150	1,800	700
11									2,300	2,990	1,960	620
12			(*)						2,600	3,160	2,050	600
13									2,900	2,900	2,000	600
14									3,100	2,600	1,960	570
15									3,400	2,300	2,220	600
16									3,700	2,200	2,210	620
17									3,720	2,300	1,930	630
18					(*)				*3,720	2,100	2,060	650
19									3,880	*1,800	3,150	660
20									3,930	2,200	2,520	620
21									4,180	2,300	2,180	530
22					90				4,160	2,000	2,020	510
23									3,860	1,800	2,640	600
24	250	100	160	110		61	86	(*)	3,900	2,000	3,250	660
25								960	3,630	1,900	3,090	690
26									3,460	1,800	2,300	570
27									3,480	2,180	1,910	540
28									3,480	2,320	1,880	540
29									3,500	2,170	1,820	*675
30									3,460	2,490	1,640	830
31										2,760	1,920	-----
Total	11,710	3,450	3,820	4,010	2,670	1,936	2,325	18,210	86,360	83,080	64,580	25,675
Mean	378	115	123	129	95.4	62.5	77.5	587	2,879	2,680	2,083	856
Ac-ft	23,230	6,840	7,580	7,950	5,300	3,840	4,610	36,120	171,300	164,800	128,100	50,930

Calendar year 1958: Max - Min - Mean - Ac-ft -
 Water year 1958-59: Max 4,180 Min - Mean 843 Ac-ft 610,600

Peak discharge (base, 5,400 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to June 16, except occasional days (stage-discharge relation affected by ice during most of period), July 13-18, 20-26, Sept. 7-28, 30; discharge estimated on basis of 9 discharge measurements, weather records, and records for Susitna River near Denali and Matanuska River at Palmer.

2920. Susitna River at Gold Creek

Location.--Lat 62°46'15", long 149°41'20", on right bank 0.2 mile upstream from Gold Creek, 0.3 mile upstream from Alaska Railroad bridge, 1 mile north of Gold Creek railroad station, and 1.7 miles downstream from Indian River.

Drainage area.--6,160 sq mi, approximately (includes that of Gold Creek).

Records available.--Discharge: August 1949 to September 1959.

Chemical analyses: May 1951 to October 1952, October to November 1953, June to September 1955, June 1956, January to September 1957.

Water temperatures: June to September 1957.

Sediment records: April to September 1952 and June to September 1957 (daily);

May 1953 to August 1956 (periodic, summer months only).

Gage.--Water-stage recorder. Datum of gage is 676.50 ft above mean sea level. Prior to June 6, 1957, wire-weight gage at site 0.3 mile downstream at same datum.

Average discharge.--10 years, 9,856 cfs (7,135,000 acre-ft per year).

Extremes.--Maximum discharge during year, 62,300 cfs Aug. 25 (gage height, 15.42 ft); minimum not determined.

1949-59: Maximum discharge, that of Aug. 25, 1959; maximum gage height observed, 24.48 ft May 10, 1954 (ice jam), site then in use; minimum discharge not determined.

Flood in May 1919 reached a stage of 19.2 ft, result of ice jam, from information by Bureau of Reclamation.

Remarks.--Records poor. Large diurnal fluctuation caused by glacier melt at source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,900								18,100	30,200	25,400	41,000
2	6,200						(*)		19,600	27,800	25,000	38,000
3	6,600								22,400	27,400	24,000	*35,000
4	6,400								27,800	23,800	24,000	32,000
5	6,000								28,000	23,000	22,000	27,400
6	5,600							3,400	28,000	26,000	19,700	24,600
7	*5,240								27,000	26,600	18,600	22,600
8	5,100	2,600	1,100	(*)	1,400		1,000		26,000	25,000	*16,700	21,300
9	5,200			1,500					23,000	23,900	17,000	19,800
10	5,400								20,000	21,300	17,600	16,700
11									19,000	19,900	18,800	15,100
12			(*)						18,000	24,300	20,200	13,900
13									18,100	32,000	21,100	15,200
14									19,200	31,000	22,800	12,700
15	5,300					980			20,400	25,000	23,300	12,400
16								15,000	21,400	*27,200	25,000	12,200
17								22,000	22,200	28,000	26,000	12,000
18								37,000	23,000	30,000	29,000	11,300
19					(*)			39,600	23,000	25,000	38,000	11,000
20								34,900	22,000	25,000	41,400	11,000
21								29,100	23,000	24,000	40,000	10,500
22					1,200			*26,000	24,000	23,000	31,000	9,960
23		1,700	1,900	1,400			1,500	23,000	25,000	21,000	40,000	10,100
24								25,000	27,000	22,000	59,700	10,500
25								27,000	*27,600	22,200	59,100	10,800
26	3,500							27,400	25,000	22,000	51,200	11,000
27								23,200	23,500	21,000	45,000	10,400
28								23,700	23,700	20,600	43,000	10,400
29								27,600	25,400	21,400	46,000	9,650
30								24,200	29,300	21,600	37,000	11,200
31								20,400	-----	25,800	39,000	-----
Total	149,140	64,500	46,900	44,900	36,600	30,380	37,500	495,600	699,700	775,000	966,600	507,710
Mean	4,811	2,150	1,513	1,448	1,307	980	1,250	15,990	23,320	25,000	31,180	16,920
Ac-ft	295,800	127,900	93,020	89,060	72,600	60,260	74,380	983,000	*1,398	*1,537	*1,917	*1,007

Calendar year 1958: Max 47,800 Min - Mean 8,890 Ac-ft 6,456,000

Water year 1958-59: Max 59,700 Min - Mean 10,560 Ac-ft 7,645,000

* Discharge measurement made on this day.

* Expressed in thousands.

Note.--No gage-height record Oct. 1-6, 8-10, Oct. 17 to May 18, except occasional readings (stage-discharge relation affected by ice during most of periods), May 23-25, June 5-11, 18-24, July 13-15, 17-24, 26, 27, Aug. 2, 3, 9, 16-19, 21-23, Aug. 27 to Sept. 2. Discharge estimated on basis of 10 discharge measurements, weather records, and records for station near Denali, Matanuska River at Palmer, Chulitna River near Talkeetna, and Nenana River near Healy.

2924. Chulitna River near Talkeetna

Location.--Lat 62°29', long 150°15', on right bank $1\frac{1}{2}$ miles downstream from small tributary, 11 miles upstream from mouth, and 12 miles northwest of Talkeetna.

Drainage area.--2,570 sq mi, approximately.

Records available.--February 1958 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 500 ft (from topographic map).

Extremes.--Maximum discharge during year, 38,800 cfs July 12 (gage height, 15.11 ft); minimum not determined.

1958-59: Maximum discharge, that of July 12, 1959; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Large diurnal fluctuation caused by glacier melt at source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a5,400	3,400	1,100	1,200 (*)	1,100	790	780	a3,400	a11,000	28,200	21,600	20,200
2	a5,800	3,280	1,100						a14,000	28,700	21,200	17,800
3	a6,200	3,100	1,100						*16,000	a29,000	21,470	*17,900
4	a5,000	2,800	1,000						18,100	a29,000	19,600	15,700
5	a5,600	2,500	1,000						18,200	a50,000	18,470	15,900
6	a5,200	2,310	970	1,000	990	690	1,000	*10,800	18,500	32,600	17,600	12,600
7	a5,000	2,170	950						19,100	31,500	16,500	11,600
8	*5,000	2,090	930						19,800	30,400	*16,000	10,900
9	4,760	2,020	910						20,300	29,200	16,600	10,300
10	4,780	1,980	900						19,900	25,100	17,600	9,780
11	4,590	*1,940	910	1,000	990	690	1,000	*10,800	18,000	25,800	19,000	9,570
12	4,310	1,900	920						17,100	36,400	19,900	9,240
13	4,180	1,900	950						17,900	30,300	19,700	9,130
14	4,290	1,900	980						19,500	25,900	19,400	a8,800
15	4,360	1,900	1,000						20,200	*24,400	21,000	a8,600
16	4,330	1,800	1,100	1,000	990	690	1,000	*10,800	21,800	23,400	22,300	a8,300
17	4,230	1,700	1,100						23,100	25,500	23,000	a8,100
18	3,900	1,600	1,200						26,200	26,100	23,400	a7,800
19	3,510	1,500	1,300						a29,000	22,600	31,100	a7,600
20	3,170	1,500	1,400						a31,000	21,800	30,400	a7,600
21	3,100	1,400	1,500	1,000	990	690	1,000	*10,800	a32,000	21,800	25,600	a7,400
22	2,940	1,400	1,600						a33,000	20,300	21,700	a7,200
23	2,910	1,400	1,700						a33,000	20,300	a28,000	a7,000
24	2,980	1,400	1,800						*33,400	22,800	a34,000	a7,200
25	3,120	1,400	1,800						32,700	23,500	25,200	a7,600
26	3,170	1,400	1,800	1,000	990	690	1,000	*10,800	31,100	21,500	23,600	a7,700
27	3,300	1,300	1,700						29,600	21,200	21,600	a7,300
28	3,400	1,200	1,700						28,800	23,100	24,600	a6,900
29	3,510	1,200	1,600						29,300	21,600	24,100	a6,800
30	3,540	1,100	1,600						28,100	21,400	20,300	a6,200
31	3,540	-----	1,500						-----	21,800	20,500	-----
Total	130,120	56,490	39,120	34,000	29,370	22,890	26,700	229,800	709,700	795,200	685,100	298,720
Mean	4,197	1,883	1,262	1,097	1,049	738	890	7,413	23,660	25,650	22,100	9,957
Ac-ft	258,100	112,000	77,590	67,440	58,250	45,400	52,960	455,800	1,408,000	1,577,000	1,359,000	592,500
Calendar year 1958: Max												
Water year 1958-59: Max			36,400									
				Min		Mean	8,376	Ac-ft	6,064,000			

Peak discharge (base, 30,000 cfs),--June 22 (1:30 p.m.), 33,900 cfs (13.74 ft); July 12 (8:30 a.m.), 38,800 cfs (15.11 ft); Aug. 19 (6 p.m.), 33,500 cfs (13.64 ft); Aug. 24 (time unknown) 37,300 cfs (14.7 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 4 discharge measurements, weather records, and records for other stations.

Note.--Stage-discharge relation affected by ice Oct. 27 to about Apr. 30 (no gage-height record Jan. 9 to Apr. 30; discharge estimated on basis of 3 discharge measurements, weather records, and records for Matanuska River at Palmer).

2945. Chakachatna River near Tyonek

Location.--Lat 61°13', long 152°22', on right bank just downstream from outlet of Lake Chakachamna, opposite Barrier Glacier, 19 miles upstream from Straight Creek and 38 miles northwest of Tyonek.

Drainage area.--1,120 sq mi, approximately.

Records available.--June to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 1,150 ft (from topographic map).

Extremes.--Maximum discharge recorded during period, 17,400 cfs Aug. 28 (gage height, 22.53 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, June to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										13,000	9,420	14,000
2										13,000	9,290	13,000
3									3,900	13,000	9,220	12,000
4										13,000	9,200	10,000
5										13,000	9,130	9,000
6										13,000	9,070	8,000
7										14,000	*9,040	7,300
8									4,500	14,000	8,990	6,900
9										*13,700	9,080	6,400
10										13,400	9,160	*6,150
11									5,100	13,200	9,330	
12									5,300	12,800	9,430	
13				†467					5,600	12,400	9,550	5,200
14									5,830	11,800	9,550	
15									6,140	11,200	9,520	
16									*6,450	10,800	9,650	
17									6,860	10,500	9,780	
18									7,460	10,100	9,950	4,100
19									8,280	9,680	10,300	
20									9,330	9,250	10,300	
21									10,200	8,860	10,200	
22									11,000	8,520	9,970	
23									11,700	8,250	9,940	3,500
24									12,300	8,180	10,800	
25									12,600	8,290	13,300	
26									12,700	8,390	15,600	
27									12,700	8,560	16,900	
28									13,000	8,860	17,300	3,200
29									13,000	9,160	16,600	
30									13,000	9,380	15,600	
31										9,470	14,500	
Total									230,550	340,750	339,850	172,750
Mean									7,685	10,990	10,960	5,758
Ac-ft									457,300	675,900	674,100	342,600
Calendar year	: Max			Min	Mean		Cfm		In.	Ac-ft		
Water year	: Max			Min	Mean		Cfm		In.	Ac-ft		

* Discharge measurement made on this day.

† Result of discharge measurement

Note.--No gage-height record June 1-13, June 28 to July 8, Sept. 1-9, 11-30; discharge estimated on basis of 2 discharge measurements, weather records, and records for other stations.

2960. Uganik River near Kodiak

Location.--Lat 57°41'05", long 153°25'10", on Kodiak Island, on right bank half a mile upstream from tidewater of East Arm Uganik Bay, 1 mile downstream from Mush La've tributary, 4 miles downstream from Uganik Lake, and 40 miles west of Kodiak.

Drainage area.--123 sq mi.

Records available.--May 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map).

Average discharge.--8 years, 611 cfs (442,300 acre-ft per year).

Extremes.--Maximum discharge during year, 3,830 cfs Sept. 29 (gage height, 7.68 ft), from rating curve extended above 2,500 cfs by logarithmic plotting; minimum not determined. 1951-59: Maximum discharge, 13,700 cfs Oct. 3, 1952 (gage height, 10.65 ft), from rating curve extended above 2,500 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those above 2,500 cfs and those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	890	386	275	b160			*135	445	2,110	1,030	880	296
2	726	335	244	150			130	465	2,820	996	985	279
3	611	305	229	150			130	512	2,850	900	930	258
4	480	404	229	b150			130	552	2,450	840	860	236
5	380	459	226	b160			120	654	2,140	900	762	222
6	315	424	216	b160			120	963	1,900	1,150	699	212
7	279	374	206	b160			130	900	1,630	1,350	636	203
8	251	330	200	b160	140	120	135	792	1,530	1,250	568	206
9	240	287	195	b150			160	699	1,700	1,170	520	212
10	229	262	209	b150			190	620	1,900	1,360	480	206
11	222	233	287	b140			187	560	2,110	1,350	452	206
12	219	226	345	b140			173	560	2,060	1,040	1,230	212
13	209	212	345	b130			160	602	1,950	870	1,460	209
14	209	212	310	b130			150	*628	1,920	708	963	200
15	216	219	296				150	782	1,950	594	764	193
16	222	219	279				150	1,090	2,050	636	717	190
17	216	209	258				157	1,390	2,260	*717	*663	216
18	203	193	240				168	1,330	2,520	628	628	233
19	190	184	240				190	1,140	2,580	1,160	708	229
20	173	182	236				206	974	2,170	1,240	577	212
21	160	170	219				229	930	2,050	974	488	237
22	147	168	212	130	120		315	1,100	2,090	1,010	445	1,280
23	157	168	216			130	577	1,200	2,090	974	445	1,160
24	160	170	206				650	1,330	1,950	920	568	*611
25	168	244	196				782	1,620	1,820	930	773	586
26	330	717	200				628	1,920	1,630	1,140	830	459
27	654	602	196				536	2,030	1,470	1,050	611	507
28	672	459	190				520	2,060	1,330	930	459	782
29	552	356	b180				504	1,930	1,240	930	368	2,850
30	*496	296	b170				452	1,820	1,120	1,090	325	1,980
31	445	---	b160				---	1,800	---	985	305	---
Total	10,421	9,005	7,208	4,300	3,660	3,880	8,464	33,399	59,350	30,822	21,119	15,082
Mean	336	300	233	139	131	125	282	1,077	1,978	994	681	503
Cfsm	2.73	2.44	1.89	1.13	1.07	1.02	2.29	8.76	16.1	8.08	5.54	4.09
In.	3.15	2.72	2.18	1.30	1.11	1.17	2.56	10.10	17.94	9.32	6.39	4.56
Ac-ft	20,670	17,860	14,300	8,530	7,260	7,700	16,790	66,250	117,700	61,130	41,890	29,910
Calendar year 1958: Max	5,470			Min 130		Mean 632	Cfsm 5.14	In. 69.71	Ac-ft 457,400			
Water year 1958-59: Max	2,850			Min -		Mean 566	Cfsm 4.60	In. 62.50	Ac-ft 410,000			

Peak discharge (base, 3,400 cfs).--Sept. 29 (2 p.m.) 3,830 cfs (7.68 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 2, 3, Jan. 15 to Mar. 31 (stage-discharge relation affected by ice during part of periods), Apr. 2-7; discharge estimated on basis of 1 discharge measurement and weather records.

3000. Newhalen River near Iliamna

Location.--Lat 59°52', long 154°52', on left bank 1 mile upstream from rapids, 1 mile downstream from old portage dock, 8 miles downstream from Fish Village, 8 miles downstream from outlet of Sixmile Lake, and 8 miles north of Iliamna.

Drainage area.--3,300 sq mi, approximately.

Records available.--July 1951 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 210 ft (from topographic map).

Average discharge.--8 years, 8,976 cfs (6,498,000 acre-ft per year).

Extremes.--Maximum discharge during year, 36,000 cfs Aug. 30 (gage height, 9.19 ft); minimum not determined.

1951-59: Maximum discharge, that of Aug. 30, 1959; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10,200	*7,250	(*)						7,410	18,200	16,100	34,400
2	10,200								7,570	18,100	16,000	33,700
3	10,200								7,800	18,200	15,900	33,500
4	10,200								8,130	18,400	15,700	32,700
5	10,200								8,400	18,400	15,600	31,900
6	9,980								8,760	18,700	15,500	30,800
7	9,800								9,120	18,500	15,300	29,800
8	9,580							1,600	9,400	19,100	15,100	28,800
9	9,440	5,100							9,730	19,100	15,100	27,700
10	9,330								10,100	19,000	15,000	26,600
11	9,150								10,400	18,800	14,800	25,700
12	9,150								10,600	18,600	14,900	24,700
13	9,010								10,800	18,400	15,300	23,600
14	9,330								11,000	18,000	14,900	22,800
15	9,730								11,200	17,600	14,800	21,800
16	9,870		2,500	2,300	1,800	1,400	1,400		11,500	*17,300	14,700	20,900
17	9,910								12,000	17,000	*14,600	20,200
18	9,940								12,300	16,800	14,800	19,500
19	9,780								12,900	16,700	14,900	18,700
20	9,370								13,700	16,700	15,400	17,900
21	8,970								14,500	16,700	16,000	17,100
22	8,760							3,500	15,300	16,600	16,300	16,900
23	8,470	3,000							16,000	16,400	17,300	16,300
24	8,200								16,800	16,100	20,100	15,500
25	8,100								17,300	15,500	27,200	*15,000
26	7,960								17,600	15,500	32,600	14,600
27	7,700								17,900	15,500	34,100	14,000
28	7,570								18,100	15,500	35,600	13,300
29	7,440								*5,910	18,200	16,000	35,900
30	7,380								6,290	18,200	16,000	35,900
31	7,280								6,860	18,300	16,200	36,000
									7,250		16,200	35,800
Total	282,180	123,650	77,500	71,300	50,400	43,400	42,000	92,310	372,820	539,800	611,300	673,400
Mean	9,103	4,122	2,500	2,300	1,800	1,400	1,400	2,978	12,430	17,410	19,720	22,450
Ac-ft	559,700	245,300	153,700	141,400	99,970	86,080	83,310	183,100	739,500	1,071,000	1,212,000	1,336,000
Calendar year 1958: Max	25,100											
Water year 1958-59: Max	36,000											
Min												
Mean												
Ac-ft												

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 20 to Nov. 1, Nov. 18-28. No gage-height record Nov. 2-17, Nov. 29 to May 27, except occasional days (stage-discharge relation affected by ice during part of period); discharge estimated on basis of 5 discharge measurements, weather records, and records for Nuyakuk River near Dillingham and Wood River at Aleknagik.

3020. Nuyakuk River near Dillingham

Location.--Lat 59°56', long 158°12', on left bank 1,000 ft downstream from outlet of Tikchik Lake, half a mile upstream from unnamed tributary, and 62 miles north of Dillingham.

Drainage area.--1,490 sq mi, approximately.

Records available.--May 1953 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 350 ft (from topographic map). Prior to Oct. 1, 1957, at datum 2.00 ft higher.

Average discharge.--6 years, 5,701 cfs (4,127,000 acre-ft per year).

Extremes.--Maximum discharge during year, 16,700 cfs June 25 (gage height, 6.80 ft); minimum not determined.

1953-59: Maximum discharge, 29,000 cfs June 25, 1958 (gage height, 9.65 ft); minimum not determined.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,720								8,300	15,300	7,900	5,210
2	7,170		(*)						8,750	15,000	7,770	5,010
3	7,420								9,330	14,600	7,510	4,990
4	7,390						(*)		9,320	14,400	7,360	4,960
5	7,420								10,500	13,900	7,080	4,900
6	7,360								11,100	13,600	6,840	4,830
7	7,290								11,400	13,200	6,670	4,750
8	7,140	4,000						1,800	11,900	12,800	6,520	4,680
9	7,050								12,300	12,600	6,330	4,750
10	7,020								12,600	12,200	6,190	4,900
11	7,080								12,900	11,900	5,800	5,010
12	6,870								13,100	11,500	5,600	5,000
13	6,670								13,400	11,100	5,800	5,000
14	6,580						(*)		13,800	10,700	5,740	4,900
15	6,610								14,100	10,300	5,670	4,900
16	6,550		2,600	2,300	1,700	1,300	1,400		14,300	*9,960	5,540	5,100
17	6,440								14,700	9,590	*5,300	5,200
18	6,440								15,000	9,250	5,230	5,200
19	6,160								15,300	9,160	5,160	5,100
20	5,980							3,700	15,600	9,330	5,120	4,800
21	5,600								16,000	9,510	5,010	4,800
22	5,570								16,300	9,510	4,920	4,900
23	5,540	2,900							16,500	9,290	4,900	5,190
24	5,400								16,500	9,040	4,900	5,540
25	5,280							5,210	16,500	9,000	5,010	*5,740
26	5,160				(*)			5,700	16,400	8,960	5,120	5,720
27	4,980							6,160	16,300	8,780	5,210	5,540
28	4,830							*6,550	16,100	8,640	5,230	5,950
29	4,720							6,840	15,900	8,580	5,230	6,750
30	*4,770							7,320	15,600	8,370	5,070	8,820
31	4,700							7,800	-----	8,060	5,190	-----
Total	193,910	103,500	80,600	71,500	47,600	40,300	42,000	105,880	410,400	338,150	180,920	158,140
Mean	6,255	3,450	2,600	2,300	1,700	1,300	1,400	3,415	13,680	10,910	5,836	5,271
Ac-ft	584,600	205,300	159,900	141,400	94,410	79,930	83,310	210,000	814,000	670,700	358,800	313,700
Calendar year 1958: Max			28,900		Min -		Mean 7,202		Ac-ft 5,214,000			
Water year 1958-59: Max			16,500		Min -		Mean 4,857		Ac-ft 3,516,000			

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 31 to May 24, except occasional days (stage-discharge relation affected by ice during part of period), Sept. 12-22; discharge estimated on basis of 5 discharge measurements, weather records, and records for Newhalen River near Iliamna and Wood River at Aleknagik.

3030. Wood River at Aleknagik

Location.--Lat 59°17', long 158°35', on left bank at outlet of Lake Aleknagik, 1 mile east of Aleknagik and 5 miles upstream from Arcana Creek.

Drainage area.--1,110 sq mi, approximately.

Records available.--September 1957 to September 1959.

Gage.--Staff gage read once daily. Altitude of gage is 20 ft (by barometer).

Extremes.--Maximum discharge during year, 9,580 cfs June 10 (gage height, 9.58 ft, from graph based on gage readings); minimum not determined.

1957-59: Maximum discharge, 16,000 cfs June 25, 1958 (gage height, 12.62 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,030	4,600	*3,470				1,300	1,420	8,880	8,430	5,390	4,400
2	6,150	4,540	3,470				1,300	1,460	9,030	8,190	5,230	4,330
3	6,580	4,360	3,320			(*)	1,300	1,500	9,110	8,070	5,180	4,260
4	6,790	4,330	3,340				1,300	1,550	9,260	7,830	5,160	4,220
5	6,660	4,390	3,390				1,300	1,600	9,410	7,550	4,920	4,080
6	6,620	4,330	3,300				1,300	1,670	9,450	7,390	4,820	4,050
7	6,580	4,300	3,220				1,300	1,760	9,470	7,150	4,820	4,050
8	6,470	4,210	3,010	2,000	1,700	1,300	1,300	1,850	9,490	6,960	4,620	4,000
9	6,580	4,090	2,980				1,300	2,000	9,520	6,860	4,620	4,020
10	6,430	3,990					1,300	2,140	9,560	6,710	4,500	3,940
11	6,470	3,830					1,340	2,240	9,410	6,500	4,480	3,910
12	6,310	3,800					1,350	2,400	9,370	6,390	4,480	3,880
13	6,200	3,620					*1,360	2,600	9,340	6,240	4,500	3,910
14	6,540	3,600					1,360	2,840	9,410	6,140	4,460	3,910
15	6,660	3,600					1,350	3,080	9,410	6,060	4,510	3,800
16	6,660	3,500					1,330	3,420	9,390	*5,930	4,580	3,940
17	6,690	a3,400					1,310	3,830	9,370	5,930	4,560	4,050
18	6,690	a3,200					1,300	4,240	9,370	5,960	*4,560	4,090
19	6,580	a3,100					1,280	4,630	9,340	6,170	4,540	3,880
20	6,540	a3,100	2,600				1,260	4,990	9,300	6,280	4,500	3,770
21	6,220	a3,000					1,270	5,280	9,280	6,460	4,460	3,660
22	6,170	a3,000			1,500		1,300	5,640	9,410	6,460	4,440	3,680
23	6,100	a3,100		1,900		1,200	1,300	6,010	9,450	6,460	4,400	3,910
24	5,890	a3,100					1,310	6,450	9,520	6,240	4,560	*4,110
25	5,620	3,200					1,320	6,860	9,520	6,320	4,620	4,260
26	5,490	3,360			(*)		1,340	7,320	9,490	6,170	4,620	4,160
27	5,210	3,500					1,350	7,740	9,340	5,990	4,640	4,080
28	4,940	3,600					1,360	*8,080	9,180	5,900	4,680	4,820
29	4,840	3,660					1,380	8,380	8,920	5,710	4,600	5,710
30	4,810	3,570					1,400	8,540	8,670	5,580	4,500	7,590
31	*4,680	-----					-----	8,650	-----	5,480	4,400	-----
Total	190,200	110,980	86,700	60,400	45,000	38,700	39,570	130,160	279,670	203,510	144,350	126,450
Mean	6,155	3,699	2,797	1,948	1,607	1,248	1,319	4,199	9,322	6,565	4,656	4,215
Cfsm	5.53	3.33	2.52	1.75	1.45	1.12	1.19	3.78	8.40	5.91	4.19	3.80
In.	6.37	3.72	2.90	2.02	1.51	1.30	1.33	4.36	9.37	6.82	4.84	4.24
Ac-ft	377,300	220,100	172,000	119,800	89,260	76,760	78,490	258,200	554,700	403,700	286,300	250,800

Calendar year 1958: Max 16,000 Min 1,400 Mean 5,497 Cfsm 4.95 In. 67.23 Ac-ft 3,979,000
 Water year 1958-59: Max 9,560 Min - Mean 3,988 Cfsm 3.59 In. 48.78 Ac-ft 2,887,000

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records.

Note.--Stage-discharge relation affected by ice Nov. 14-16, 27, 28, Dec. 10 to May 14 (no gage-height record Dec. 17-23).

3040. Kuskokwim River at Crooked Creek

Location.--Lat 61°52', long 158°07', on right bank at Parent's Trading Post, 0.2 mile upstream from Crooked Creek and 0.7 mile upstream from village of Crooked Creek.

Drainage area.--31,100 sq mi, approximately.

Records available.--Discharge: June 1951 to September 1959.

Chemical analyses: May 1957 to September 1959.

Water temperatures: May 1957 to September 1959 (seasonal).

Gage.--Staff gage read twice daily. Altitude of gage is 200 ft (from topographic map).

Average discharge.--8 years, 41,510 cfs (29,420,000 acre-ft per year).

Extremes.--Maximum discharge during year not determined; maximum gage height, 20.52 ft sometime in May (ice jam), from floodmarks; minimum discharge not determined.

1951-59: Maximum discharge not determined; maximum daily discharge, 260,000 cfs

May 7, 1957; maximum gage height, 25.4 ft May 1, 1953 (ice jam), from floodmarks; minimum discharge not determined.

1958-59: Maximum water temperature, 68°F June 21.

1956-59: Maximum water temperature, that of June 21, 1959.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68,600								54,400	48,000	47,800	4150,000
2	72,800		(*)						50,900	50,000	45,900	4150,000
3	78,800								50,100	51,200	45,300	4140,000
4	87,100						(*)		49,000	53,700	43,000	4130,000
5	87,700								47,200	59,100	41,400	4120,000
6	79,700								47,800	68,000	39,700	4110,000
7									50,200	69,400	38,000	408,000
8									50,600	66,800	36,600	90,000
9									49,200	66,400	35,800	84,000
10									48,600	66,500	35,200	80,000
11												
12								94,000	46,200	62,600	34,600	76,000
13									44,700	62,600	33,900	73,000
14							(*)		41,600	62,100	33,600	71,000
15									40,000	60,700	33,600	70,000
16		24,000	18,000	14,000	11,000	7,600	9,000		38,600	*56,400	33,400	69,000
17									39,200	54,200	33,200	67,600
18									37,000	54,400	33,100	60,700
19	41,000								36,000	53,400	*33,300	59,500
20									35,500	55,000	34,000	57,000
21									37,400	55,100	38,000	54,300
22												
23									41,400	55,200	47,300	53,400
24									42,200	58,400	66,000	50,700
25									88,400	45,600	58,300	86,000
26									81,300	46,800	56,200	110,000
27									74,500	48,000	54,500	140,000
28												
29									69,700	50,000	52,500	160,000
30									*65,700	51,000	50,900	170,000
31									61,700	52,000	49,900	4170,000
									57,400	51,600	49,000	4170,000
									55,600	50,100	48,800	4160,000
									56,200	-----	48,200	4160,000
Total	*1,499.7	720,000	558,000	434,000	308,000	235,600	270,000	*2,678.5	*1,372.9	*1,758.5	*2,188.7	*2,291.2
Mean	48,380	24,000	18,000	14,000	11,000	7,600	9,000	86,400	45,760	56,730	70,600	76,370
Ac-ft	*2,975	*1,428	*1,107	860,800	610,900	467,300	535,500	*5,313	*2,723	*3,488	*4,341	*4,545
Calendar year 1958: Max	115,000								Mean 38,050	Ac-ft 27,550,000		
Water year 1958-59: Max	-								Mean 39,220	Ac-ft 28,390,000		

* Discharge measurement made on this day.

† Expressed in thousands.

d Doubtful gage-height record; discharge computed on basis of gage-height record and weather records.

Note.--No gage-height record Oct. 7 to May 22, except occasional days (stage-discharge relation affected by ice during most of period), June 25, 26, Aug. 20, 22-27, Sept. 8-15; discharge estimated on basis of 4 discharge measurements, high-water mark, and weather records.

3040. KUSKOKWIM RIVER AT CROOKED CREEK--Continued

Chemical analyses, in parts per million, October 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg./nesium	Non-carbonate			
Oct. 7, 1958.....	341,000	10	0.05	21	5.7	1.8	0.3	83	11	0.5	0.1	1.1	92	76	8	159	7.4	20
May 7, 1959.....	57,800	13	.10	38	9.8	2.8	1.4	149	18	3.5	.3	1.6	182	135	13	266	7.6	0
Apr. 14.....	8,930	12	.02	34	13	3.1	.9	150	17	3.5	.2	1.6	159	138	16	265	6.9	0
May 24-June 1.....	64,000	9.6	.12	19	5.5	2.2	1.1	79	11	1.0	.1	.9	90	70	6	146	7.0	30
June 2-10.....	49,300	10	.18	19	9.0	2.6	1.3	94	14	1.0	.1	.9	104	84	8	176	7.2	20
June 11-22.....	40,000	9.5	.07	20	11	2.6	1.1	97	20	1.0	.1	.9	114	95	16	199	7.5	10
June 30-July 10.....	59,100	8.1	.09	17	13	2.2	1.2	98	21	4.5	.1	.7	113	96	16	200	7.9	10
July 11-13-22.....	57,000	8.2	.07	19	14	2.7	1.4	98	25	4.5	.1	.8	124	105	24	221	7.7	20
July 23-31.....	52,000	12	.09	31	6.4	2.6	1.2	106	20	.5	.2	1.3	127	104	17	215	7.6	10
Aug. 1-8.....	42,200	12	.05	34	6.4	2.7	1.3	114	24	.5	.1	1.4	138	112	18	233	7.7	5
Sept. 1-5, 7-11.....	112,000	14	.02	31	6.4	3.0	1.2	106	25	1.0	.2	.8	135	104	17	208	8.0	10
Sept. 12-20.....	64,700	16	.02	32	7.4	3.5	1.3	109	27	1.5	.2	.8	144	110	21	216	7.9	10
Sept. 21-30.....	48,300	16	.04	32	7.6	4.1	1.4	118	21	1.0	.2	.8	142	111	14	223	8.1	5

a Mean discharge for period Oct. 7-31.

b Mean discharge for period Mar. 1-31.

c Discharge at time of sampling.

3040. KUSKOKWIM RIVER AT CROOKED CREEK--Continued

Temperature (°F) of water, water year October 1958 to September 1959
 [Once-daily measurement at approximately 7 a. m.]

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

3560. Yukon River at Eagle

Location.--Lat 64°47'30", long 141°12'00", on left bank at Eagle, an eighth of a mile upstream from Mission Creek, 1.1 miles downstream from Castalia Creek, and 11 miles downstream from international boundary.

Drainage area.--113,500 sq mi, approximately.

Records available.--Discharge: January 1911 to December 1913, June 1950 to September 1959. Monthly discharge only for some periods, published in WSP 1372.

Chemical analyses: April to October 1951, June to September 1952.

Water temperatures: May to October 1951, June to August 1952.

Sediment records: July and October 1954, April and August 1955 (periodic).

Gage.--Water-stage recorder. Altitude of gage is 750 ft (from topographic map). January 1911 to December 1913 staff gage at site half a mile downstream at different datum. June 22, 1950, to Sept. 30, 1955, staff gage at site 1.1 miles upstream at datum 10 ft higher. Oct. 1, 1955, to Aug. 10, 1957, staff gage at present site at datum 10 ft higher.

Average discharge.--11 years, 70,460 cfs (51,010,000 acre-ft per year).

Extremes.--Maximum discharge: during year, 307,000 cfs May 24 (gage height, 23.89 ft), from rating curve extended above 250,000 cfs by logarithmic plotting; maximum gage height, 27.11 ft May 15 (ice jam); minimum discharge not determined. 1911-13, 1950-59: Maximum discharge, 561,000 cfs May 30, 1957 (gage height, 33.01 ft, present datum), from rating curve extended above 250,000 cfs by logarithmic plotting; minimum discharge not determined.

Remarks.--Records good except those for period of shifting-control, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Revisions (water years).--WSP 1372: 1911-14, drainage area.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a68,000								177,000	197,000	147,000	133,000
2	a67,000								168,000	199,000	152,000	129,000
3	a66,000								164,000	199,000	153,000	*127,000
4	a64,000								163,000	205,000	150,000	126,000
5	*62,900								166,000	229,000	147,000	128,000
6	62,300						(*)		171,000	224,000	146,000	127,000
7	61,800							36,000	179,000	205,000	143,000	124,000
8	60,000								194,000	a190,000	138,000	121,000
9	57,000								208,000	a180,000	134,000	119,000
10	53,000								221,000	a180,000	132,000	115,000
11	50,000						(*)		236,000	a180,000	131,000	111,000
12	47,000		(*)						247,000	a170,000	130,000	108,000
13	46,000								247,000	a170,000	131,000	105,000
14	45,000							64,000	243,000	a170,000	132,000	104,000
15	44,000							72,000	*239,000	168,000	132,000	103,000
16	43,000	24,000	21,000	15,000	15,000	13,000	14,000		82,000	241,000	162,000	109,000
17	42,000								94,000	244,000	156,000	116,000
18	41,000								110,000	a240,000	148,000	132,000
19	40,000								130,000	a240,000	144,000	132,000
20	39,000								180,000	a234,000	141,000	131,000
21	38,000							250,000	a216,000	138,000	130,000	108,000
22	37,000							300,000	a200,000	138,000	131,000	107,000
23	35,000							306,000	a203,000	139,000	132,000	105,000
24	34,000			(*)				306,000	a190,000	142,000	136,000	102,000
25	33,000							306,000	166,000	144,000	141,000	99,800
26	32,000							300,000	187,000	140,000	142,000	97,900
27	31,000							284,000	189,000	139,000	140,000	95,600
28	31,000							254,000	189,000	141,000	143,000	93,400
29	31,000							223,000	188,000	*138,000	144,000	90,100
30	31,000							201,000	190,000	137,000	141,000	88,000
31	30,000							190,000	-----	138,000	158,000	-----
Total	11,422	720,000	651,000	465,000	420,000	403,000	420,000	*4,114	*6,147	*5,149	*4,273	*3,266.8
Mean	45,870	24,000	21,000	15,000	15,000	13,000	14,000	132,700	204,900	166,100	137,800	110,900
Ac-ft	*2,820	*1,428	*1,291	922,300	833,100	799,300	833,100	*8,160	*12,190	*10,210	*8,475	*6,599

Calendar year 1958: Max 201,000 Min - Mean 60,020 Ac-ft 43,450,000
 water year 1958-59: Max 306,000 Min - Mean 75,370 Ac-ft 54,560,000

* Discharge measurement made on this day.

Expressed in thousands.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, weather records, and records for stations at Rampart, Ruby, and Kaltag.

Note.--Stage-discharge relation affected by ice Oct. 8 to May 23 (no gage-height record Oct. 14 to May 13, except occasional days; discharge estimated on basis of 4 discharge measurements, weather records, and records for stations at Rampart, Ruby, and Kaltag). Shifting-control method used Sept. 11-30.

4680. Yukon River at Rampart

Location.--Lat 65°31', long 150°11', on left bank at Rampart, half a mile downstream from Squaw Creek, $1\frac{1}{4}$ miles downstream from Minook Creek, and $3\frac{1}{4}$ miles upstream from Russian Creek.

Drainage area.--199,400 sq mi, approximately.

Records available.--Discharge: June 1955 to September 1959.

Chemical analyses: June to September 1954, June to October 1955, June to September 1956, October 1958 to September 1959.

Water temperatures: June to August 1954, June, August, September 1955, May to September 1956.

Gage.--Staff gage read twice daily. Altitude of gage is 300 ft (from topographic map).

Extremes.--Maximum discharge during year, 530,000 cfs May 31 (gage height, 39.37 ft, from graph based on gage readings), from rating curve extended above 350,000 cfs by logarithmic plotting; maximum gage height observed, 39.61 ft May 30 (backwater from ice jam); minimum discharge not determined.

1955-59: Maximum discharge, 686,000 cfs June 2, 1957 (gage height, 46.40 ft, from graph based on gage readings), from rating curve extended above 350,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for period of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89,300								502,000	248,000	*195,000	181,000
2	87,900								465,000	246,000	202,000	183,000
3	86,600								409,000	242,000	212,000	184,000
4	*85,600								365,000	240,000	223,000	181,000
5	84,500								331,000	238,000	230,000	*177,000
6	82,000								303,000	237,000	228,000	180,000
7	82,000						(*)		288,000	238,000	222,000	181,000
8	78,000								281,000	239,000	216,000	169,000
9	74,000								284,000	253,000	209,000	164,000
10	69,000							(*)	286,000	270,000	204,000	162,000
11	65,000									291,000	272,000	201,000
12	63,000		(*)					110,000	300,000	268,000	195,000	153,000
13	61,000								313,000	263,000	188,000	149,000
14	59,000								328,000	255,000	181,000	144,000
15	58,000								*328,000	241,000	176,000	140,000
16	56,000	31,000	28,000	20,000	18,000	14,000	16,000		332,000	236,000	172,000	136,000
17	55,000								328,000	234,000	171,000	132,000
18	53,000								326,000	233,000	172,000	130,000
19	52,000								328,000	227,000	176,000	130,000
20	51,000								328,000	223,000	179,000	129,000
21	49,000								325,000	218,000	178,000	134,000
22	48,000				(*)				318,000	214,000	174,000	137,000
23	46,000							480,000	307,000	208,000	172,000	137,000
24	45,000							490,000	292,000	199,000	169,000	137,000
25	43,000							500,000	281,000	194,000	166,000	135,000
26	42,000							490,000	267,000	190,000	164,000	133,000
27	42,000							490,000	257,000	182,000	166,000	132,000
28	41,000							500,000	255,000	180,000	169,000	130,000
29	41,000							510,000	251,000	179,000	175,000	129,000
30	40,000							520,000	249,000	180,000	180,000	128,000
31	40,000							526,000	249,000	187,000	181,000	128,000
Total	*1,868.9	930,000	868,000	620,000	504,000	434,000	480,000	*6,926	*9,518	*7,032	*5,846	*4,495
Mean	60,290	31,000	28,000	20,000	18,000	14,000	16,000	223,400	317,300	226,800	188,600	149,800
Ac-ft	*3,707	*1,845	*1,722	*1,230	*1,000	860,800	952,100	*13,740	*18,880	*13,950	*11,600	*8,916

Calendar year 1958: Max 435,000 Min - Mean 89,840 Ac-ft 65,040,000

Water year 1958-59: Max 526,000 Min - Mean 108,300 Ac-ft 78,400,000

* Discharge measurement made on this day.

† Expressed in thousands.

Note.--Stage-discharge relation affected by ice Oct. 6 to May 30 (no gage-height record most of period Nov. 22 to May 22; discharge estimated on basis of 4 discharge measurements, weather records, and records for stations at Eagle, Ruby, and Kaltag).

4700. Tanana River at Northway Junction

Location.--Lat 63°00', long 141°48', near left bank on downstream side of bridge on highway from Northway Junction to Northway, half a mile southwest of Northway Junction and 4 miles upstream from Nabesna River.

Drainage area.--3,280 sq mi. approximately.

Records available.--Discharge: July 1949 to September 1959.

Chemical analyses: October 1957 to September 1958.

Sediment records: June 1953 to September 1959 (periodic); summer months only 1956-59.

Gage.--Wire-weight gage read once daily. Datum of gage is 1,682.85 ft above mean sea level.

Average discharge.--10 years, 2,326 cfs (1,612,000 acre-ft per year).

Extremes.--Maximum discharge during year, 9,750 cfs July 5 (gage height, 12.40 ft. from graph based on gage readings); minimum not determined.
1949-59: Maximum discharge, that of July 5, 1959; minimum not determined.

Remarks.--Records good except those for period of ice effect, which are poor. Large diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,460							930	4,200	7,020	5,080	4,070
2	1,300							970	4,290	8,230	5,070	*3,980
3	1,200						(*)	1,040	4,290	8,830	5,060	3,910
4	1,100							1,120	4,410	9,030	5,040	3,760
5	1,000							1,170	4,470	9,060	4,760	3,520
6		910						1,250	4,520	7,760	4,520	3,360
7		*870						1,380	4,530	7,640	4,460	3,350
8								1,660	4,470	7,760	4,220	3,280
9								1,980	4,430	7,920	3,940	3,190
10			(*)					2,260	4,550	7,880	3,780	3,090
11									2,420	4,940	7,880	*3,670
12			(*)						*2,410	5,150	7,880	3,850
13									2,520	*4,860	7,700	3,910
14									2,600	4,720	7,130	3,960
15									2,840	4,720	6,720	3,970
16		900	850	720	760	710	820	3,460	4,760	6,190	4,010	2,960
17								4,610	4,890	*5,500	4,170	3,010
18								5,150	5,190	5,100	4,340	3,290
19								5,330	5,100	4,500	4,440	3,280
20	820			(*)				5,680	4,930	4,160	4,480	2,970
21								5,530	4,920	4,100	4,540	2,890
22								5,200	4,390	4,100	4,660	2,890
23								4,820	4,980	4,010	4,400	2,740
24								4,480	4,970	3,910	4,440	2,700
25								4,600	5,070	3,880	4,530	2,700
26								4,580	5,300	4,300	4,750	2,520
27								4,480	5,300	4,420	4,900	2,470
28								4,160	5,640	4,620	4,840	2,440
29								3,330	5,910	4,980	4,720	2,420
30								4,100	6,280	*5,070	4,530	2,240
31								4,160	-----	5,040	4,320	-----
Total	27,520	27,000	26,350	22,320	21,280	22,010	24,600	100,820	146,780	192,320	137,360	91,680
Mean	888	900	850	720	760	710	820	3,252	4,893	6,204	4,431	3,056
Ac-ft	54,590	53,550	52,260	44,270	42,210	43,660	48,790	200,000	291,100	381,500	272,400	181,800
Calendar year 1958: Max	7,010						Mean	2,137	Ac-ft	1,547,000		
Water year 1958-59: Max	9,060					Min	-	Mean	2,301	Ac-ft	1,666,000	

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 2 to May 5 (no gage-height record Oct. 8 to May 2, except on occasional days; discharge estimated on basis of 6 discharge measurements, weather records, and records for station near Tanacross).

4760. Tanana River near Tanacross

Location.--Lat 63°23'20", long 143°44'45", on right bank a quarter of a mile downstream from unnamed tributary, a quarter of a mile north of Cathedral Rapids, 9 (revised) miles upstream from Robertson River, and 13 miles west of Tanacross. Prior to June 13, at site 120 ft upstream.

Drainage area.--8,550 sq mi, approximately.

Records available.--Discharge: June 1953 to September 1959.

Chemical analyses: December 1953 to October 1954, May 1957 to September 1959 (seasonal).

Water temperatures: June to September 1954, May 1957 to September 1959 (seasonal).

Sediment records: October 1953 to September 1954, May 1957 to September 1959 (daily, seasonal); October 1954 to September 1956 (periodic).

Gage.--Water-stage recorder. Datum of gage is 1,489.58 ft above mean sea level. Prior to June 13, 1959, water-stage recorder on left bank at site 120 ft upstream at same datum.

Average discharge.--6 years, 7,657 cfs (5,543,000 acre-ft per year).

Extremes.--Maximum discharge during year, 30,100 cfs July 6 (gage height, 10.06 ft); minimum not determined.

1953-59: Maximum discharge, 35,500 cfs Aug. 9, 1953 (gage height, 11.04 ft); minimum not determined.

1958-59: Maximum water temperature, 63°F June 18. Maximum daily sediment concentration, 2,780 ppm July 2. Maximum daily sediment load, 209,000 tons July 2.

1956-59: Maximum water temperature, 65°F June 2, 7, July 3, 1958. Maximum daily sediment concentration, 3,740 ppm July 7, 1958. Maximum daily sediment load, 266,000 tons July 7, 1958.

Remarks.--Records good except those for period of no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								2,400	9,800	26,000	17,900	15,700
2								2,500	10,000	27,800	18,400	15,300
3								2,700	10,200	27,800	18,600	14,900
4							(*)	2,900	10,600	27,100	18,600	*14,400
5								3,100	11,600	28,500	18,700	13,700
6		(*)						3,500	13,000	29,200	18,100	13,100
7								*3,890	12,500	24,300	17,600	13,000
8								3,910	12,600	22,000	17,200	12,500
9			(*)				(*)	4,250	13,400	22,400	15,500	11,600
10								4,600	14,100	22,700	13,800	10,800
11								5,330	14,500	23,200	13,100	10,200
12								7,140	14,200	22,700	12,800	9,800
13		(*)						*7,200	14,400	23,200	13,100	9,460
14								7,060	*14,800	23,400	13,700	9,190
15								8,320	15,100	22,700	14,400	8,980
16	2,600	2,800	2,600	2,200	2,000	1,800	2,000	8,020	16,000	22,100	14,800	8,710
17								9,640	16,800	20,000	15,600	8,620
18								12,200	17,300	*17,100	16,500	8,500
19								13,700	17,700	15,700	16,800	8,470
20								14,300	18,000	14,400	16,800	8,470
21				(*)				13,700	18,200	13,700	17,400	8,440
22								13,500	18,600	13,800	18,200	8,320
23								12,400	18,900	15,400	18,900	8,140
24								11,700	19,100	15,900	19,800	7,960
25								10,600	19,300	16,700	18,600	7,790
26								10,600	20,200	16,100	17,300	7,560
27								10,100	22,200	15,300	19,400	7,400
28								9,860	22,900	15,600	20,500	7,260
29								9,550	23,200	16,100	19,300	7,120
30								9,310	24,500	16,600	18,300	7,060
31								9,550	-----	*17,400	16,600	-----
Total	80,600	84,000	80,600	68,200	56,000	55,800	60,000	247,730	483,700	634,800	526,200	302,450
Mean	2,600	2,800	2,600	2,200	2,000	1,800	2,000	7,991	16,120	20,480	16,970	10,080
Ac-ft	159,900	166,600	159,900	135,300	111,100	110,700	119,000	491,400	959,400	*1,259	*1,044	599,900
Calendar year 1958: Max	27,000							Mean 7,642	Ac-ft 5,533,000			
Water year 1958-59: Max	29,200							Mean 7,343	Ac-ft 5,316,000			

* Discharge measurement made on this day.

† Expressed in thousands.

Note.--No gage-height record Oct. 1 to May 6, except occasional days (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 7 discharge measurements, weather records, and records for station at Northway Junction.

4760. TANANA RIVER NEAR TANACROSS--Continued
Chemical analyses, in parts per million, December 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg./l.	Non-carbonate			
Dec. 9, 1958	a 2,450	16	0.02	28	12	4.5	1.6	120	20	4.5	0.1	0.3	146	120	21	229	7.6	15
Mar. 10, 1959	b 1,800	17	.31	26	9.9	3.9	1.6	111	17	4.5	.2	1.5	137	106	14	209	7.7	5
Apr. 9	a 1,960	17	.02	46	10	5.5	2.0	168	26	3.0	.1	.6	193	156	18	322	6.6	0
Apr. 28	c 2,000	15	.02	45	9.5	5.7	1.7	172	21	4.0	.0	.4	187	151	10	300	7.4	0
May 1-10	3,380	18	.07	39	8.3	5.5	1.7	152	18	2.0	.0	.6	168	132	7	277	7.6	0
May 11-17	7,530	13	.07	34	6.9	5.2	1.6	129	20	2.0	.0	.6	147	114	8	240	7.4	10
May 18-31	11,500	8.7	.08	29	6.2	4.8	1.5	112	16	2.5	.0	.5	124	98	6	211	7.4	40
June 1-10	11,890	11	.07	32	5.2	5.0	1.5	108	22	3.5	.2	.7	134	102	13	220	7.5	20
June 11-22	16,300	13	.07	29	5.5	5.4	1.5	98	20	2.5	.2	.5	126	95	14	210	7.7	10
June 23-July 6	24,000	9.8	.03	26	5.0	5.2	1.5	91	19	3.0	.2	.8	116	86	11	197	7.6	5
July 7	24,300	14	.07	37	6.0	5.8	1.8	120	22	3.0	.2	2.5	151	117	18	249	7.6	5
July 18-31	15,700	10	.25	32	5.7	6.1	1.4	109	22	2.5	.2	.3	134	104	14	228	7.6	5
Aug. 1-10	17,400	11	.05	31	5.7	5.4	1.2	104	24	2.5	.2	.3	132	101	16	219	7.7	5
Aug. 11-20	14,800	10	.05	30	5.7	6.1	1.6	101	22	3.5	.2	.7	130	98	16	218	7.7	5
Aug. 21-31	18,600	10	.07	28	5.5	5.7	1.4	99	21	2.5	.2	.6	124	92	12	210	7.7	5
Sept. 1-10	13,500	11	.05	32	6.2	5.9	1.2	112	25	3.0	.2	.8	140	106	14	237	7.7	10
Sept. 11-20	9,040	13	.02	39	8.3	6.3	1.4	132	30	3.0	.1	.8	167	132	24	287	7.4	5
Sept. 21-30	7,700	13	.02	32	14	5.8	1.4	134	30	3.5	.2	1.0	167	138	28	272	7.4	40

a Discharge at time of sampling.

b Mean discharge for period Mar. 1-31.

c Mean discharge for period Apr. 1-23.

4760. TANANA RIVER NEAR TANACROSS--Continued

Temperature (°F) of water, May to September 1959
 [Once-daily measurement at approximately 6 p.m.]

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

4760. TANANA RIVER NEAR TANACROSS--Continued

Suspended sediment, May to September 1959

Day	May			June			July		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	2,400	130	842	9,800	600	15,900	26,000	2,230	156,000
2.....	2,500	139	938	10,000	658	17,800	27,800	2,780	209,000
3.....	2,700	132	962	10,200	717	19,700	27,800	2,660	200,000
4.....	2,900	149	1,170	10,600	678	19,400	27,100	2,160	158,000
5.....	3,100	158	1,320	11,600	914	28,600	28,500	2,390	184,000
6.....	3,500	163	1,540	13,000	1,100	38,600	29,200	2,520	199,000
7.....	3,890	185	1,940	12,500	958	32,300	24,300	1,970	129,000
8.....	3,910	261	2,760	12,600	844	28,700	22,000	1,530	90,900
9.....	4,250	310	3,560	13,400	893	32,300	22,400	1,460	a 88,300
10.....	4,600	388	4,820	14,100	1,050	39,900	22,700	1,540	a 94,400
11.....	5,330	652	9,380	14,500	1,100	43,100	23,200	1,570	a 98,300
12.....	7,140	709	13,700	14,200	987	37,800	22,700	1,530	a 93,800
13.....	7,200	703	13,700	14,400	906	35,200	23,200	1,580	a 99,000
14.....	7,080	706	13,500	14,800	942	37,600	23,400	1,630	a 103,000
15.....	8,320	1,230	28,600	15,100	1,060	43,200	22,700	1,530	a 93,800
16.....	8,020	1,300	28,200	16,000	1,300	56,200	22,100	1,440	a 85,900
17.....	9,640	1,460	38,000	16,800	1,460	66,200	20,000	1,360	a 73,400
18.....	12,200	1,690	55,700	17,300	1,480	69,100	17,100	1,270	58,600
19.....	13,700	1,560	57,700	17,700	1,480	70,700	15,700	1,160	49,200
20.....	14,300	1,340	51,700	18,000	1,520	73,900	14,400	1,120	43,500
21.....	13,700	1,100	40,700	18,200	1,600	78,600	13,700	1,060	39,200
22.....	13,500	1,120	40,800	18,600	1,600	80,400	13,800	1,040	38,800
23.....	12,400	1,020	34,100	18,900	1,560	79,600	15,400	1,150	47,800
24.....	11,700	888	28,000	19,100	1,510	77,900	15,800	1,230	52,500
25.....	10,800	755	22,000	19,300	1,520	79,200	16,700	1,410	63,600
26.....	10,600	718	20,500	20,200	1,710	93,300	16,100	1,180	51,300
27.....	10,100	704	19,200	22,200	2,020	121,000	15,300	1,020	42,100
28.....	9,860	668	17,800	22,900	2,130	132,000	15,600	963	40,600
29.....	9,550	595	15,300	23,200	1,960	123,000	16,100	981	42,600
30.....	9,310	564	14,200	24,500	2,120	140,000	16,600	1,040	46,600
31.....	9,550	618	15,900	--	--	--	17,400	1,130	53,100
Total.	247,730	--	598,532	483,700	--	1,811,200	734,800	--	825,300
Day	August			September					
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1.....	17,900	1,080	52,200	15,700	796	33,700			
2.....	18,400	1,120	55,600	15,300	668	27,600			
3.....	18,600	1,340	67,300	14,900	774	31,100			
4.....	18,600	1,210	60,800	14,400	670	26,000			
5.....	18,700	1,050	53,000	13,700	553	20,400			
6.....	18,100	990	48,400	13,100	505	17,900			
7.....	17,600	867	41,200	13,000	495	17,400			
8.....	17,200	862	40,000	12,500	488	16,500			
9.....	15,500	727	30,400	11,600	477	14,900			
10.....	13,800	682	25,400	10,800	485	14,100			
11.....	13,100	651	23,000	10,200	501	13,800			
12.....	12,800	712	24,600	9,800	558	14,800			
13.....	13,100	775	27,400	9,460	519	13,200			
14.....	13,700	687	25,400	9,190	577	14,300			
15.....	14,400	828	32,200	8,980	549	13,300			
16.....	14,800	975	39,000	8,710	435	10,200			
17.....	15,600	1,090	45,900	8,620	404	9,400			
18.....	16,500	1,100	49,000	8,500	472	10,800			
19.....	16,800	1,170	53,100	8,470	479	11,000			
20.....	16,800	1,160	52,600	8,470	430	9,830			
21.....	17,400	1,280	60,100	8,440	358	8,160			
22.....	18,200	1,300	63,900	8,320	356	8,000			
23.....	18,900	1,320	67,400	8,140	342	7,520			
24.....	19,800	1,220	65,200	7,960	318	6,830			
25.....	18,600	1,200	60,300	7,790	304	6,390			
26.....	17,300	1,100	51,400	7,560	342	6,980			
27.....	19,400	1,240	65,000	7,400	346	6,910			
28.....	20,500	1,310	72,500	7,260	388	7,600			
29.....	19,300	1,260	65,600	7,120	412	7,920			
30.....	18,200	1,020	50,100	7,060	386	7,360			
31.....	16,600	917	41,100	--	--	--			
Total.	528,200	--	1,509,800	302,450	--	413,200			
Total discharge for period May to September (cfs-days)								2,194,880	
Total load for period May to September (tons)								7,157,332	

a Computed from estimated concentration graph.

4760. TANANA RIVER NEAR TANACROSS--Continued

Particle-size analyses of suspended sediment, May to August 1959
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water tem- per- ature (°F)	Suspended sediment											Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
May 15, 1959	10:00 a. m.	8,170	34	1,360	3,100	8	12	19	29	40	61	76	92		100	SBWCM
June 9	9:00 a. m.	13,400	54	916	2,850	11	15	20	29	39	63	78	96		100	SBWCM
July 18	11:45 a. m.	17,300	50	1,170	2,520	21	27	34	43	52	66	77	96		100	SPWCM
Aug. 11	3:45 p. m.	14,100	54	616	1,810	22	25	33	40	45	62	76	94		100	SBWCM

4840. Salcha River near Salchaket

Location.--Lat 64°28'15", long 146°55'45", in sec.22, T.5 S., R.4 E., near right bank on downstream side of bridge on Richardson Highway, half a mile east of Aurora Lodge, 2 miles upstream from mouth, and 6 miles southeast of Salchaket.

Drainage area.--2,170 sq mi, approximately.

Records available.--Discharge: July 1909 to August 1910 (no winter records), October 1948 to September 1959. Published as "at mouth" 1909-10.

Chemical analyses: October 1957 to May 1958.

Gage.--Water-stage recorder. Datum of gage is 631.85 ft above mean sea level. July 1909 to August 1910 staff gage at site $\frac{1}{4}$ miles downstream at different datum. Sept. 7, 1948, to Apr. 24, 1953, wire-weight gage at present site and datum.

Average discharge.--11 years (1948-59), 1,636 cfs (1,184,000 acre-ft per year).

Extremes.--Maximum discharge during year, 18,700 cfs May 23 (gage height, 12.88 ft); minimum not determined.

1909-10, 1948-59: Maximum discharge, 36,500 cfs June 23, 1956 (gage height, 16.13 ft), from rating curve extended above 16,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	b660									2,420	6,580	4,600
2	b645									2,240	*8,240	4,300
3	b630									2,350	4,790	4,100
4	b615									2,460	3,900	4,000
5	b608					(*)				4,140	3,330	3,900
6	*b585							870		10,700	2,990	*3,880
7										14,500	2,700	3,400
8		330	220	140	140	130	120		1,600	10,300	2,460	3,070
9			(*)				(*)			7,450	2,270	2,840
10										5,330	2,140	2,630
11								2,880		4,100	2,010	2,440
12								2,520		3,540	1,900	2,280
13								2,820		3,230	1,820	2,170
14								3,680		3,880	1,730	2,060
15		(*)						*5,540		2,700	1,650	1,980
16								9,270	*1,870	2,850	1,600	1,920
17								10,500	1,730	2,520	1,540	1,840
18								11,600	1,600	2,270	1,500	1,790
19	450							11,700	1,430	2,080	1,400	1,820
20								11,800	1,280	1,900	1,300	2,350
21								14,300	1,170	1,800	1,400	2,880
22				130	130			17,800	1,100	1,730	1,400	2,730
23		270	200	(*)					1,060	1,720	1,400	2,460
24							120		1,150	1,870	1,400	2,310
25									1,380	1,920	1,500	2,240
26									1,930	2,020	1,500	2,170
27								5,600	2,150	2,010	1,800	2,060
28									2,230	4,200	1,800	1,970
29									2,530	4,850	2,200	1,900
30									2,490	3,700	3,000	1,840
31										3,790	4,000	
Total	14,993	9,000	6,500	4,180	3,790	3,870	4,200	163,510	49,100	119,570	75,050	79,930
Mean	484	300	210	135	135	125	140	5,275	1,637	3,857	2,421	2,664
Ac-ft	29,740	17,850	12,890	8,290	7,520	7,680	8,330	324,300	97,390	237,200	148,900	158,500

Calendar year 1958: Max 18,300 Min - Mean 830 Ac-ft 600,900
 Water year 1958-59: Max 17,800 Min - Mean 1,462 Ac-ft 1,059,000

Peak discharge (base, 10,000 cfs).--May 23 (2 a.m.) 18,700 cfs (12.88 ft); July 7 (11 a.m.) 15,900 cfs (12.21 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 7 to May 10, except occasional days (stage-discharge relation affected by ice during most of period), May 23 to June 15, Aug. 18 to Sept. 5; discharge estimated on basis of 8 discharge measurements, weather records, recorded range in stage, and records for Chena River at Fairbanks.

5140. Chena River at Fairbanks

Location.--Lat 64°50'50", long 147°42'20", in NW¼ sec.11, T.1 S., R.1 W., on downstream side of second pier from right bank of bridge on Steese Highway (U. S. Highway 97) in Fairbanks, 0.15 mile upstream from Noyes Slough, 11 miles upstream from mouth, and 11 miles downstream from Chena Slough.

Drainage area.--1,980 sq mi, approximately.

Records available.--Discharge: July 1947 to September 1948 (no winter records), October 1948 to September 1959.

Chemical analyses: May to September 1953, April to September 1955, October 1957 to May 1958.

Water temperatures: May to September 1953.

Sediment records: January to August 1954, April to September 1955 (periodic).

Gage.--Water-stage recorder. Datum of gage is 422.72 ft above mean sea level. Prior to May 3, 1948, staff gage and May 4, 1948, to Nov. 17, 1957, wire-weight gage, at bridge 0.5 mile downstream at datum 0.96 ft higher.

Average discharge.--11 years, 1,365 cfs (988,200 acre-ft per year).

Extremes.--Maximum discharge during year, 15,800 cfs May 21 or 22 (gage height, 11.18 ft); minimum daily, 146 cfs Mar. 18-20.

1947-59: Maximum discharge, 24,200 cfs May 21, 1948 (gage height, 14.17 ft, site and datum then in use, from graph based on gage readings); minimum not determined.

Flood in August 1930 reached a stage of about 15.2 ft, present datum, from information by local residents.

Flood of May 11-14, 1937, reached a stage of 15.9 ft, present datum, ice jam, from floodmarks.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	779		280	224	196	168	221	327		1,430	*2,300	3,460
2	772		270	221	196	172	217	358		1,440	2,550	3,120
3	*764		260	217	221	182	206	448		1,520	2,630	2,870
4	764		260	213	221	179	196	580		1,790	2,450	2,720
5	757		250	210	206	*182	189	757		2,580	2,260	2,670
6			250	206	199	192	182	943		5,150	2,100	*2,640
7		320	250	203	206	189	175	1,390	1,400	8,130	1,960	2,510
8			250	199	210	179	175	2,080		8,930	1,840	2,360
9			250	196	203	172	196	2,630		7,430	1,740	2,200
10			260	192	206	165	189	2,990		5,570	1,660	2,080
11			260	192	199	162	185	3,620		4,420	1,590	1,970
12			270	192	182	155	*192	3,690		3,890	1,540	1,880
13			*281	192	179	152	192	*3,520		3,760	1,490	1,800
14		*269	300	192	185	149	192	4,060	*1,690	3,430	1,450	1,730
15			330	192	172	149	192	*5,310	1,560	3,110	1,410	1,660
16			336	192	179	149	192	7,600	1,440	2,910	1,370	1,610
17			318	192	185	149	196	9,090	1,360	2,820	1,330	1,580
18			310	196	165	146	196	8,810	1,290	2,580	1,290	1,530
19		530	302	199	165	146	199	9,090	1,230	2,440	1,280	1,510
20			302	203	159	146	203	9,850	1,160	2,320	1,310	1,530
21			297	206	159	149	206		1,110	2,150	1,480	1,630
22			285	210	152	149	213		1,070	2,040	1,510	1,690
23			289	*213	152	152	224		1,030	1,950	1,460	1,690
24			294	213	155	159	243		1,010	1,930	1,470	1,650
25			285	213	159	165	254		1,030	1,980	1,570	1,680
26			273	206	168	175	254	5,900	1,110	2,020	1,580	1,740
27			265	203	168	185	254		1,180	1,950	1,580	1,730
28			254	199	165	196	265		1,270	1,960	1,560	1,680
29			250	199	-	206	273		1,290	2,380	1,630	1,630
30			239	196	-----	213	296		1,420	2,600	1,950	1,590
31			231	192	-----	221	-----		-----	2,320	3,040	-----
Total	17,616	8,909	8,551	6,273	5,112	5,253	6,369	142,053	39,530	98,890	54,400	60,140
Mean	568	297	276	202	183	169	212	4,582	1,318	3,190	1,755	2,005
Ac-ft	34,940	17,670	16,960	12,440	10,140	10,420	12,630	281,800	78,410	196,100	107,900	119,300
Calendar year 1958: Max		5,810					723		523,500			
Water year 1958-59: Max					146		1,241		898,700			

Peak discharge (base, 5,000 cfs).--May 21 or 22 (time unknown) 15,800 cfs (11.18 ft); July 8 (6 a.m.) 9,250 cfs (8.20 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 6 to Apr. 22 (no gage-height record Oct. 6 to Nov. 13, Nov. 15 to Dec. 12, Dec. 14, 15; discharge estimated on basis of 2 discharge measurements, weather records, and records for other stations). No gage-height record May 21 to June 13; discharge estimated on basis of 1 discharge measurement, weather records, and recorded range in stage.

5160. Nenana River near Windy

Location.--Lat 63°27'15", long 148°48'10", on left bank 400 ft upstream from bridge on Denali Highway, three-quarters of a mile upstream from Jack River, 1 mile southeast of Windy railroad station, and 2 miles downstream from Schist Creek. Prior to June 4, 1959, at site 300 ft downstream.

Drainage area.--710 sq mi, approximately.

Records available.--June 1950 to September 1956, October 1958 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 2,100 ft (from topographic map). Prior to July 27, 1950, staff gage, July 27, 1950, to Sept. 30, 1956, Oct. 1, 1958, to June 3, 1959, water-stage recorder, 300 ft downstream at same datum.

Average discharge.--7 years, 1,178 cfs (852,800 acre-ft per year).

Extremes.--Maximum discharge during year, 4,380 cfs July 6 (gage height, 5.95 ft); minimum not determined.
1950-56, 1958-59: Maximum discharge, 7,640 cfs Aug. 25, 1955 (gage height, 7.90 ft); minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	*990								3,080	2,410	3,510	3,040
2	1,120								2,900	2,350	2,980	2,850
3	1,180								*3,190	2,590	2,610	2,650
4	1,030								3,960	2,630	2,260	2,390
5	802								3,920	3,110	2,020	2,120
6	b736							440	4,100	4,220	1,870	1,900
7	b736								3,990	3,980	1,720	1,750
8	b708	450	180	220	170	130	140		4,160	3,390	1,650	1,610
9	b676								3,650	2,750	*1,560	1,520
10	b650								3,090	2,270	1,600	1,420
11	b655								2,460	2,160	1,580	*1,330
12	b655								2,310	3,260	1,870	1,310
13	b630	(*)							2,460	3,060	1,580	1,280
14	b620								2,660	3,260	1,530	1,250
15	b650								2,670	3,700	1,500	1,230
16	b682								2,850	3,460	1,520	1,250
17	b660				(*)			2,300	*2,870	3,490	1,520	1,260
18	b620								2,880	*3,320	1,500	1,240
19	b580								2,850	2,810	2,530	1,240
20	b560								2,670	2,740	2,530	1,230
21	b540								2,600	2,750	2,090	1,220
22	b520					160			2,460	2,430	1,980	1,190
23	b510	270	260	170			120	180	3,040	2,880	2,100	1,230
24	500								*4,200	3,040	3,050	1,300
25	490								4,190	3,100	2,610	1,370
26	490								4,200	2,710	2,330	1,300
27	510								4,170	2,530	2,270	1,230
28	540								3,910	2,470	2,400	1,200
29	570								3,810	2,430	2,140	1,200
30	600								3,740	2,470	2,220	2,700
31	610						(*)		3,400		3,520	2,790
Total	20,818	10,800	6,860	6,020	4,630	3,870	4,800	65,920	89,560	89,560	69,350	46,440
Mean	672	360	221	194	165	125	160	2,126	2,985	2,889	2,237	1,548
Ac-ft	41,290	21,420	13,610	11,940	9,180	7,680	9,520	130,800	177,600	177,600	137,600	92,110

Calendar year 1958: Max - Min - Mean - Ac-ft -
Water year 1958-59: Max 4,220 Min - Mean 1,147 Ac-ft 850,400

Peak discharge (base, 4,200 cfs).--May 26 (6 p.m.) 4,200 cfs (5.53 ft); June 8 (8:30 a.m.) 4,270 cfs (5.75 ft); July 6 (1 p.m.) 4,380 cfs (5.95 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 24 to May 23, except occasional days (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 4 discharge measurements, weather records, and records for station near Healy.

5180. Nenana River near Healy

Location.--Lat 63°50'40", long 148°56'35", in W $\frac{1}{2}$ sec.28, T.12 S., R.7 W., on right bank half a mile upstream from Healy Creek, 1.1 miles southeast of Healy, and 1.2 miles upstream from railroad bridge.

Drainage area.--1,910 sq mi, approximately.

Records available.--Discharge: October 1950 to September 1959.

Chemical analyses: October 1953 to September 1955, May 1956 to September 1957, May 1958 to October 1959.

Water temperatures: May 1957 to September 1959 (seasonal 1956-59).

Sediment records: 1953-59 (summer months only).

Gage.--Water-stage recorder. Datum of gage is 1,270.22 ft above mean sea level.

Average discharge.--9 years, 3,563 cfs (2,579,000 acre-ft per year).

Extremes.--Maximum discharge during year, 16,900 cfs July 6 (gage height, 8.88 ft); minimum not determined.

1950-59: Maximum discharge, 28,500 cfs July 29, 1952; maximum gage height, 10.86 ft Aug. 25, 1955; minimum discharge not determined.

1958-59: Maximum water temperature, 51°F June 23. Maximum daily sediment concentration, 2,020 ppm July 2. Maximum daily sediment load, 60,700 tons July 4.

1957-59: Maximum water temperature, 56°F Aug. 9, 1957.

1953-59: Maximum daily sediment concentration, 7,910 ppm June 25, 1953. Maximum daily sediment load, 585,000 tons July 25, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,290								6,680	10,300	10,900	9,600
2	2,510								6,680	10,500	9,860	8,600
3	2,700								7,630	11,000	9,080	7,800
4	2,640								9,150	11,300	8,000	7,100
5	2,440			(*)					9,360	12,700	7,340	6,600
6	1,800							1,100	9,200	16,000	6,780	6,100
7	1,600								9,000	15,800	5,960	5,400
8	1,500	930	430	630	500	370	350		9,100	12,300	5,370	5,000
9	1,500								8,400	10,500	*5,320	4,700
10	*bl,500	(*)							7,600	10,400	5,200	4,400
11	bl,400								7,300	9,740	5,200	*4,290
12	bl,400								6,900	13,100	5,100	4,080
13	bl,400								7,400	11,500	5,000	3,910
14	bl,400								8,000	11,000	5,000	3,790
15	bl,500								8,600	11,300	4,900	3,670
16	bl,500				(*)			4,000	9,200	11,300	4,900	3,600
17	bl,500								9,500	*12,800	4,900	3,580
18	bl,400								9,600	12,000	4,900	3,450
19	bl,300								9,700	9,950	8,200	3,450
20	bl,200								9,400	9,710	8,200	3,310
21	bl,200							*7,520	9,200	9,580	6,700	3,150
22	bl,100				460			8,080	9,100	8,700	6,400	3,040
23	bl,100	560	660	510		310	450	8,300	*10,500	11,100	7,000	3,040
24	bl,000							8,790	10,900	13,000	10,000	3,130
25	bl,000							8,380	11,000	11,000	14,000	3,280
26	1,000							8,500	10,400	9,620	11,000	3,160
27	1,000							7,960	10,100	10,100	10,100	3,020
28	1,100							7,350	9,900	12,400	8,900	2,820
29	1,100							8,020	9,390	10,500	9,300	2,920
30	1,200					(*)		7,770	9,800	9,530	8,900	4,270
31	1,300							6,950		10,900	9,100	
Total	46,580	22,350	17,010	17,610	13,480	10,510	12,000	138,620	268,890	349,640	230,010	134,260
Mean	1,503	745	549	568	461	339	400	4,472	8,963	11,280	7,420	4,475
Ac-ft	92,390	44,330	33,740	34,930	26,740	20,850	23,800	274,900	533,300	693,500	456,200	266,300

Calendar year 1958: Max 15,700 Min - Mean 3,107 Ac-ft 2,249,000

Water year 1958-59: Max 16,000 Min - Mean 3,455 Ac-ft 2,501,000

Peak discharge (base, 12,000 cfs)--July 6 (12 m.) 16,900 cfs (8.88 ft); July 12 (8:30 a.m.) 13,700 cfs (8.18 ft); July 24 (3:30 a.m.) 13,800 cfs (8.21 ft); July 28 (9 a.m.) 13,000 cfs (8.02 ft); Aug. 25 (time and discharge unknown).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 6-9, Oct. 26 to May 20, except occasional days (stage-discharge relation affected by ice during most of periods), June 6-22, Aug. 10 to Sept. 10; discharge estimated on basis of 9 discharge measurements, weather records, and records for station near Windy, Chulitna River near Talkeetna, and Matanuska River at Palmer.

5180. NENANA RIVER NEAR HEALY--Continued
Chemical analyses, in parts per million, water year October 1958 to September 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Oct. 1, 1958	2,290	9.1	--	32	7.9	3.6	1.7	90	45	1.0	--	0.7	145	112	38	249	7.8	0
Feb. 16, 1959	4,497	8.2	0.00	36	10	5.6	2.6	102	51	5.0	0.0	.5	189	131	48	282	7.0	0
May 21-24	8,170	7.6	.05	17	1.9	2.8	2.8	54	15	1.0	.2	.8	74	60	6	124	7.0	20
May 25-June 6	7,970	7.3	.07	19	4.5	2.3	1.8	57	26	1.0	.2	.6	90	66	20	155	6.9	10
June 7-15	8,030	7.1	.03	22	4.8	2.1	1.6	58	30	1.5	.2	.6	98	74	20	166	7.3	0
June 16-23	9,530	7.0	.05	23	5.0	2.2	2.4	67	35	2.5	.2	.3	112	83	28	188	7.0	5
June 24-30	10,200	11	.05	27	6.9	4.0	2.0	77	42	2.0	.1	.2	133	96	33	206	8.0	0
July 1-10	12,100	9.0	.02	26	6.2	3.2	1.7	75	34	1.5	.1	.4	119	80	29	192	7.4	0
July 11-20	11,200	11	.03	26	6.7	3.7	1.9	68	39	3.0	.1	.4	138	82	37	183	7.9	0
July 21-31	10,600	11	.03	27	6.9	3.7	1.7	77	37	3.0	.1	.3	129	86	33	207	7.7	0
Aug. 1-10	7,380	13	.03	28	7.6	4.4	1.7	80	41	3.0	.1	.3	140	101	36	219	8.0	0
Aug. 11-20	5,630	12	.03	27	6.9	3.6	1.9	78	38	3.0	.1	.3	131	96	32	212	7.7	0
Aug. 21-31	9,080	9.9	.03	28	7.6	3.6	1.5	80	42	2.0	.1	.3	134	101	36	215	8.0	0
Sept. 1-10	6,530	11	.02	32	8.1	4.3	1.3	92	42	2.0	.2	.3	146	114	38	239	8.0	0
Sept. 11-20	3,710	10	.02	33	8.8	4.4	1.6	92	44	4.0	.2	.6	152	116	43	247	7.8	0
Sept. 21-27	3,120	10	.02	32	7.6	4.0	1.4	87	43	2.5	.2	.3	144	111	40	232	7.9	0

a Discharge at time of sampling.

5180. NENANA RIVER NEAR HEALY--Continued

Temperature (°F) of water, May to September 1959

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

5180. NENANA RIVER NEAR HEALY--Continued

Suspended sediment, May to September 1959

Day	May			June			July		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1.....	--	--	--	6,680	1,050	18,900	10,300	950	26,400
2.....	--	--	--	6,680	555	10,000	10,500	2,020	57,300
3.....	--	--	--	7,630	325	6,700	11,000	828	24,600
4.....	--	--	--	9,150	950	23,500	11,300	1,990	60,700
5.....	--	--	--	9,360	870	22,000	12,700	1,000	34,300
6.....	--	--	--	9,200	240	5,960	16,000	452	19,500
7.....	--	--	--	9,000	800	19,400	15,800	227	9,680
8.....	--	--	--	9,100	290	7,120	12,300	210	6,970
9.....	--	--	--	8,400	225	5,100	10,500	285	8,080
10.....	--	--	--	7,600	192	3,940	10,400	323	9,070
11.....	--	--	--	7,300	740	14,600	9,740	287	7,550
12.....	--	--	--	6,900	740	13,800	13,100	309	10,900
13.....	--	--	--	7,400	408	8,150	11,500	282	8,760
14.....	--	--	--	8,000	882	19,000	11,000	435	12,900
15.....	--	--	--	8,600	1,200	27,900	11,300	572	17,400
16.....	--	--	--	9,200	518	12,900	11,300	266	8,120
17.....	--	--	--	9,500	1,020	26,200	12,800	349	12,100
18.....	--	--	--	9,800	1,350	35,700	12,000	270	8,750
19.....	--	--	--	9,700	1,020	26,700	9,950	114	3,060
20.....	--	--	--	9,400	458	11,600	9,710	96	2,520
21.....	7,520	625	12,700	9,200	931	23,100	9,590	203	5,260
22.....	8,080	755	16,500	9,100	830	20,400	8,700	330	7,750
23.....	8,300	605	13,600	10,500	988	28,000	11,100	1,170	35,100
24.....	8,790	462	11,000	10,900	472	13,900	13,000	1,260	44,200
25.....	8,380	210	4,750	11,000	922	27,400	11,000	490	14,600
26.....	8,500	161	3,690	10,400	782	22,000	9,620	272	7,060
27.....	7,960	565	12,100	10,100	842	23,000	10,100	595	16,200
28.....	7,350	798	15,800	9,900	662	17,700	12,400	1,040	34,800
29.....	8,020	678	14,700	9,390	718	18,200	10,500	700	19,800
30.....	7,770	305	6,400	9,800	410	10,800	9,530	467	12,000
31.....	6,950	730	13,700	--	--	--	10,900	638	18,800
Total.	87,620	--	124,940	268,890	--	523,670	349,640	--	564,230
	August			September					
1.....	10,900	530	15,600	9,600	43	1,110			
2.....	9,860	462	12,300	8,600	45	1,040			
3.....	9,080	363	8,900	7,800	45	948			
4.....	8,000	285	6,160	7,100	37	709			
5.....	7,340	210	4,160	6,600	66	1,180			
6.....	6,780	155	2,840	6,100	98	1,610			
7.....	5,960	118	1,900	5,400	62	904			
8.....	5,370	110	1,590	5,000	32	432			
9.....	5,320	91	1,310	4,700	28	355			
10.....	5,200	109	1,530	4,400	22	261			
11.....	5,200	153	2,150	4,290	26	301			
12.....	5,100	228	3,140	4,080	25	275			
13.....	5,000	285	3,850	3,910	22	232			
14.....	5,000	326	4,400	3,790	23	235			
15.....	4,900	390	5,160	3,670	15	149			
16.....	4,900	460	6,080	3,600	30	292			
17.....	4,900	420	5,560	3,580	39	377			
18.....	4,900	484	6,400	3,450	27	252			
19.....	8,200	381	8,440	3,450	22	205			
20.....	8,200	683	15,100	3,310	37	331			
21.....	6,700	797	14,400	3,150	34	289			
22.....	6,400	542	9,360	3,040	37	304			
23.....	7,000	340	6,430	3,040	40	328			
24.....	10,000	167	4,510	3,130	38	321			
25.....	14,000	142	5,370	3,280	35	310			
26.....	11,000	142	4,220	3,160	37	316			
27.....	8,600	108	2,510	3,020	43	351			
28.....	8,900	99	2,380	--	--	--			
29.....	9,300	73	1,830	--	--	--			
30.....	8,900	93	2,230	--	--	--			
31.....	9,100	85	2,090	--	--	--			
Total.	230,010	--	171,900	124,250	--	13,417			
Total discharge for period May to September (cfs-days).....							1,260,960		
Total load for period May to September (tons).....							1,398,157		

5180. NENANA RIVER NEAR HEALY--Continued

Particle-size analysis of suspended sediment, August 1959

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

W. in disturbed water, C. Chemically analyzed, and ultimately analyzed																		
Date of collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment														Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000		
Aug. 28, 1959 ...	6:00 a. m.	8,320	44	366	946	14	18	24	32	37	46	54	69		89	100	SBWCM	

5648. Yukon River at Ruby

Location.--Lat 64°44'25", long 155°29'55", on left bank at Ruby, 300 ft downstream from Ruby Creek, 2 miles downstream from Melozitna River, and 2½ miles upstream from Ruby Slough.

Drainage area.--259,000 sq mi, approximately.

Records available.--October 1956 to September 1959.

Gage.--Staff gage read twice daily. Altitude of gage is 150 ft (from topographic map).

Extremes.--Maximum discharge during year, 537,000 cfs May 31 (gage height, 27.13 ft); minimum not determined.

1956-59: Maximum discharge, 753,000 cfs June 3 or 4, 1957 (gage height, 32.4 ft, from floodmarks), from rating curve extended above 570,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge. in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138,000								534,000	330,000	266,000	271,000
2	137,000								522,000	332,000	274,000	271,000
3	136,000								497,000	331,000	278,000	269,000
4	135,000		(*)			(*)			465,000	335,000	279,000	269,000
5	130,000								426,000	334,000	285,000	271,000
6	125,000								393,000	331,000	293,000	270,000
7	b120,000								369,000	331,000	294,000	265,000
8	b110,000						17,000		351,000	336,000	289,000	260,000
9	b110,000								341,000	349,000	281,000	252,000
10	b100,000								336,000	359,000	272,000	249,000
11	b98,000								336,000	375,000	266,000	242,000
12	b94,000								339,000	389,000	258,000	235,000
13	b91,000								344,000	387,000	255,000	227,000
14								200,000	353,000	379,000	249,000	219,000
15									362,000	*368,000	243,000	211,000
16		47,000	43,000	33,000	26,000	17,000			371,000	355,000	237,000	204,000
17									376,000	336,000	234,000	198,000
18									375,000	326,000	232,000	194,000
19									374,000	319,000	*231,000	188,000
20									376,000	314,000	234,000	184,000
21									379,000	310,000	246,000	181,000
22	71,000								382,000	304,000	251,000	181,000
23							20,000		381,000	298,000	258,000	184,000
24									377,000	291,000	259,000	187,000
25									372,000	281,000	257,000	189,000
26								*516,000	364,000	273,000	251,000	187,000
27								512,000	354,000	268,000	246,000	184,000
28				(*)				515,000	345,000	268,000	249,000	181,000
29					-			525,000	335,000	267,000	254,000	181,000
30								532,000	331,000	264,000	261,000	*184,000
31								536,000	-----	262,000	266,000	-----
Total	\$2,800	\$1,410	\$1,333	\$1,023	728,000	527,000	555,000	\$8,136	\$11,458	\$10,002	\$8,048	\$6,588
Mean	90,320	47,000	43,000	33,000	26,000	17,000	18,500	262,500	381,900	322,600	259,600	219,600
Ac-ft	\$5,554	\$2,797	\$2,644	\$2,029	\$1,444	\$1,045	\$1,101	\$16,140	\$22,730	\$19,840	\$15,960	\$13,070
Calendar year 1958: Max	460,000				Min -		Mean 125,900	Ac-ft 91,110,000				
Water year 1958-59: Max	536,000				Min -		Mean 144,100	Ac-ft 104,400,000				

* Discharge measurement made on this day.

† Expressed in thousands.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 13 to May 25, except occasional days (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 4 discharge measurements, weather records, and records for other stations on Yukon River.

5652. Yukon River at Kaltag

Location.--Lat 64°19'40", long 158°43'10", on right bank at Kaltag, 0.5 mile downstream from Kaltag River.

Drainage area.--296,000 sq mi, approximately.

Records available.--October 1956 to September 1959.

Gage.--Staff gage read twice daily. Altitude of gage is 100 ft (from topographic map). Prior to Oct. 1, 1957, at site 4.3 miles downstream at different datum.

Extremes.--Maximum discharge during year, 734,000 cfs June 1 (gage height, 19.02 ft); minimum not determined.

1956-59: Maximum discharge, 1,020,000 cfs June 5, 1957 (gage height, 30.02 ft, from graph based on gage readings), from rating curve extended above 860,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those above 470,000 cfs, which are fair, and those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1958 to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	171,000								733,000	394,000	326,000	334,000
2	169,000								731,000	392,000	326,000	340,000
3	167,000		(*)						724,000	389,000	323,000	347,000
4	164,000								719,000	387,000	324,000	351,000
5	160,000								692,000	394,000	330,000	348,000
6							(*)		663,000	391,000	333,000	349,000
7	154,000								614,000	385,000	336,000	343,000
8	149,000								572,000	387,000	336,000	338,000
9	142,000						19,000	86,000	550,000	384,000	340,000	334,000
10									534,000	388,000	329,000	324,000
11									510,000	404,000	320,000	315,000
12									498,000	421,000	314,000	308,000
13									492,000	436,000	305,000	302,000
14							(*)		501,000	439,000	294,000	289,000
15									493,000	442,000	285,000	277,000
16		60,000	56,000	41,000	32,000	20,000			492,000	436,000	280,000	269,000
17									497,000	434,000	269,000	257,000
18									495,000	429,000	266,000	250,000
19									481,000	422,000	260,000	228,000
20	97,000								483,000	414,000	260,000	221,000
21												
22								560,000	474,000	403,000	259,000	224,000
23							24,000		472,000	396,000	260,000	216,000
24									467,000	388,000	270,000	221,000
25									458,000	382,000	281,000	216,000
26									453,000	379,000	286,000	215,000
27												
28				(*)					444,000	376,000	287,000	214,000
29									432,000	370,000	283,000	214,000
30									722,000	421,000	355,000	299,000
31									723,000	411,000	346,000	304,000
									729,000	401,000	342,000	318,000
									729,000	334,000	327,000	---
Total	\$3,507	\$1,800	\$1,736	\$1,271	896,000	620,000	645,000	\$11,078	\$15,918	\$12,239	\$9,330	\$8,281
Mean	113,100	60,000	56,000	41,000	32,000	20,000	21,500	357,400	550,600	394,800	301,000	276,000
Ac-ft	\$6,956	\$3,570	\$3,443	\$2,521	\$1,777	\$1,230	\$1,279	\$21,970	\$31,570	\$24,280	\$18,510	\$16,430
Calendar year 1958: Max	520,000						Mean 157,500	Ac-ft 114,000,000				
Water year 1958-59: Max	733,000						Mean 184,400	Ac-ft 133,500,000				

* Discharge measurement made on this day.

† Expressed in thousands.

Note.--No gage-height record Oct. 9 to May 26, except occasional days (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 5 discharge measurements, weather records, and records for stations at Eagle, Rampart, and Ruby.

7480. Ogotoruk Creek near Point Hope, Alaska

Location.--Lat 68°06'40", long 165°45'10", on right bank 0.3 mile downstream from small tributary, 0.4 mile upstream from small tributary, 1.2 miles upstream from mouth, 6 miles southeast of Cape Thompson, and 32 miles southeast of Point Hope.

Drainage area.--35 sq mi, approximately.

Records available.--August 1958 to September 1959 (no winter records).

Gage.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map). Prior to July 17, 1959, at different datum.

Extremes.--1958: Maximum discharge during period August to September, 876 cfs Sept. 8 (gage height, 5.18 ft, datum then in use), from rating curve extended above 200 cfs by logarithmic plotting; minimum daily, 6 cfs Sept. 30.

1959: Maximum discharge during period May to September, 1,260 cfs July 9 (gage height, 4.3 ft, from floodmarks), from rating curve extended above 40 cfs by logarithmic plotting; minimum daily, 1 cfs Sept. 17-25.

Remarks.--Records poor. Observation of no flow made Oct. 30, 1958. Very little, if any flow, during period Oct. 1, 1958, to May 20, 1959. Records of specific confluence of daily samples available in district office, Branch of Quality of Water, Palmer, Alaska.

Discharge, in cubic feet per second, 1958

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	-	276	7	-	207	13	-	105	19	-	195
2	-	256	8	-	522	14	-	78	20	-	134
3	-	148	9	-	225	15	-	51	21	-	94
4	-	91	10	-	129	16	-	42	22	-	68
5	-	105	11	-	86	17	-	221	23	-	68
6	-	391	12	-	69	18	-	384	24	-	b56
											31
Total											
Mean											
Runoff in acre-feet											

4,128

138

8,190

Peak discharge (base, 400 cfs).--Sept. 1 (4 p.m.) 416 cfs (4.09 ft); Sept. 8 (3:30 a.m.) 876 cfs (5.18 ft); Sept. 17 (11:30 p.m.) 600 cfs (4.55 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Discharge, in cubic feet per second, May to September 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								-	b240	80	14	87
2								-	b222	51	11	59
3								-	b204	48	7	35
4								-	b268	37	*6	29
5								-	312	a38	5	21
6								-	316	a60	5	16
7								-	240	a110	4	14
8								-	183	210	4	*12
9								-	195	a700	6	10
10								-	180	a500	6	7
11								-	171	a380	5	6
12								-	256	a270	4	5
13								-	377	a200	3	3
14								-	276	a140	2	2
15								-	319	a100	2	2
16								-	370	a70	2	2
17								-	266	*51	2	1
18								-	216	21	2	1
19								-	198	18	2	1
20								-	256	16	2	1
21								-	180	16	2	1
22								-	*148	17	7	b1
23								-	148	18	16	a1
24								-	126	95	21	a1
25								-	118	75	18	a1
26								-	124	69	29	a2
27								-	*b41	153	59	a3
28								-	b63	137	45	144
29								-	b83	102	33	134
30								-	b113	86	25	125
31								-	b156	18	116	53
Total								-	6,385	3,570	798	397
Mean								-	213	115	25.7	13.2
Ac-ft								-	12,660	7,080	1,580	787

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 400 cfs).--June 13 (2 p.m.) 436 cfs (4.39 ft); June 15 (9 p.m.) 504 cfs (4.56 ft); July 9 (time unknown) 1,260 cfs (4.3 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated.

b Stage-discharge relation affected by ice.

7480. OGOTORUK CREEK NEAR POINT HOPE--Continued

Chemical analyses, in parts per million, July to August 1959

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
													Calcium	Non-carbonate			
July 8, 10-11, 1959 ...	280	2.6	0.02	4.0	1.9	3.2	0.5	16	7.0	3.5	0.0	0.3	18	5	52	6.8	20
July 13-20.....	74	2.9	.05	4.8	1.7	3.7	.5	16	9.0	4.0	.0	.2	19	6	61	6.8	10
July 22, 24-31,																	
Aug. 1-2.....	42	3.2	.05	5.2	2.1	4.1	.6	18	10	4.0	.0	.1	22	6	69	7.0	10
Aug. 4-11.....	5	3.3	.05	6.0	2.4	4.5	.4	18	16	4.0	.0	.1	25	10	79	7.0	5
Aug. 15-24, 26-30.....	46	3.3	.03	7.1	3.1	5.0	.6	20	19	5.0	.0	.2	30	14	94	7.0	5

Temperature °F of water, July to August 1959

	July		Aug.		Day		July		Aug.		Day		July		Aug.	
	Day	July	Aug.	July	Day	Aug.	Day	July	Aug.	Day	Aug.	Day	July	Aug.	Day	Aug.
1	--	--	49	7	--	48	13	43	--	19	60	54	25	50	--	--
2	--	46	8	48	--	48	14	48	--	20	54	50	26	49	--	--
3	--	--	--	9	--	46	15	45	52	21	--	45	27	46	47	47
4	--	51	10	44	--	45	16	47	49	22	--	46	28	--	--	--
5	--	--	51	11	--	48	17	55	53	23	--	42	29	44	42	42
6	--	--	47	12	--	--	18	49	53	24	--	44	30	45	45	42
													31	53	--	--

7480. OGOTORUK CREEK NEAR POINT HOPE--Continued

Suspended sediment, July to September 1959

Day	July			August					
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	--	--	--	14	1	0			
2.....	--	--	--	11	70	2.1			
3.....	--	--	--	7	120	a 2.3			
4.....	--	--	--	6	65	1.0			
5.....	--	--	--	5	12	.2			
6.....	--	--	--	5	4	.0			
7.....	--	--	--	4	4	a .0			
8.....	210	70	40	4	1	.0			
9.....	700	142	268	6	0	.0			
10.....	500	30	40	6	1	.0			
11.....	380	17	17	5	1	.0			
12.....	270	17	a 12	4	0	a .0			
13.....	200	10	5.4	3	0	a .0			
14.....	140	12	4.5	2	0	a .0			
15.....	100	8	2.2	2	0	.0			
16.....	70	5	.9	2	0	.0			
17.....	51	5	.7	2	0	.0			
18.....	21	3	.2	2	0	.0			
19.....	18	2	.1	2	0	.0			
20.....	16	2	.1	2	1	.0			
21.....	16	1	a .0	2	3	.0			
22.....	17	1	.0	7	1	.0			
23.....	18	2	.1	16	1	.0			
24.....	95	15	3.8	21	0	.0			
25.....	75	4	.8	18	0	a .0			
26.....	69	3	.6	29	0	.0			
27.....	59	2	.3	92	1	.2			
28.....	45	1	.1	144	4	1.6			
29.....	33	1	.1	134	4	1.4			
30.....	25	3	.2	125	4	1.4			
31.....	18	2	.1	116	2	a .6			
Total.	3,146	--	397	798	--	11			
Total discharge for period July to August (cfs-days)									3,944
Total load for period July to August (tons)									408

a Computed from estimated concentration graph.

Particle-size analysis of suspended sediment, July 8, 1959

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

Time	Dis-charge (cfs)	Suspended Sediment												Methods of analysis
		Concen- tration of sus- pension analyzed (ppm)	Concen- tration of sample (ppm)	Percent finer than indicated size, in millimeters										
				0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000
11:20 a. m.	210	48	150	30	38	50	60	79	87	96	100			SBWCM

DISCHARGE MEASUREMENTS AT POINTS OTHER THAN GAGING STATIONS

Measurements of streamflow in Alaska made at points other than regular gaging stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. Measurements believed to have been made under base-flow conditions are identified by an asterisk (*) to the left of the discharge figure. These measurements when correlated with the simultaneous discharge of a nearby stream where continuous records are available will give a picture of the low-flow potentiality of stream. The column headed "Measured previously" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at points other than gaging stations during water year 1959						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Southeastern Alaska						
Sheep Creek..	Gastineau Channel.	Lat 58°16'20", long 134°19'10", 100 ft above diversion dam, 1.0 mile above mouth, and 4 miles southeast of Juneau.	4.57	1951-53, 1954-57	Feb. 18	8.00
Gold Creek...	....do.....	Lat 58°18'30", long 134°22'35", in canyon above Alaska-Juneau mine (at head of Last Chance Basin), 1½ miles east of Juneau.	8.02	1950	Jan. 29 Feb. 17 Mar. 31	7.74 8.31 8.00
Lemon Creek..	....do.....	Lat 58°21'35", long 134°29'50", at highway bridge, 5 miles northwest of Juneau.	24.4	1951-58	Oct. 3 Oct. 10 Oct. 16 Oct. 24 Nov. 3 Nov. 7 Nov. 20 Dec. 5 Dec. 12 Dec. 19 Dec. 23 Jan. 8 Jan. 16 Jan. 23 Jan. 30 Feb. 6 Feb. 13 Feb. 20 Mar. 5 Mar. 13 Mar. 20 Mar. 27 Apr. 8 Apr. 16 Apr. 24 May 1 May 8 June 2 June 10 June 19 July 2 July 24 Aug. 21 Sept. 4	749 138 281 153 178 145 55.5 33 35.9 141 81.0 35.8 34.8 25.6 20.9 25.6 21 19.1 39.6 20.0 20.8 19.2 29.5 26.7 45.7 38.3 87.8 335 359 594 407 558 480 246
Chilkoot River.	Lutak Inlet.	Lat 59°19'30", long 135°33'20", at highway bridge, 7½ miles northwest of Haines.	-		June 17 Sept. 21	3,250 735
Alaska west of longitude 141°						
Gulkana River	Copper River	Lat 62°16'10", long 145°22'50", at bridge on Richardson Highway, at Gulkana.	al,980	1948-50, 1954, 1957-58	Aug. 13 Sept. 17	1,210 2,170
Nuka River...	Nuka Bay....	Lat 59°39'05", long 150°40'05", 3 miles below Nuka Glacier, 8 miles above mouth, and 30 miles east of Homer.	-	1958	Oct. 17 Nov. 21 Apr. 2 Apr. 24 May 13	42.2 14.4 *2.23 *2.75 13.6
Deep Creek...	Cook Inlet..	On line between secs. 3 and 4, T.2 S., R.14 W., at bridge on Sterling Highway, ¼ mile above mouth and 1½ miles southwest of Ninilchik.	-	1951-52, 1954	July 22 Aug. 20 Sept. 20	316 116 157
Snow River...	Kenai Lake..	Lat 60°20', long 149°21', at bridge on Seward-Anchorage highway, 0.3 mile upstream from mouth and 5 miles south of Lawing.	-		July 21 Aug. 19 Sept. 20	221 1,510 455
Quartz Creek.	....do.....	Lat 60°28'50", long 149°43'05", at old highway bridge, about ½ mile above mouth and about 4 miles east of Cooper Landing.	-	1947-50, 1957-58	Dec. 17 Apr. 22	*104 *71.8
Resurrection Creek.	Cook Inlet..	Lat 60°55'10", long 149°38'40", at bridge at Hope, ½ mile upstream from mouth.	-		Aug. 19 Sept. 19	409 384
South Fork Campbell Creek.	Campbell Creek.	Lat 61°09'20", long 149°44'40", in SW¼ sec.1, T.12 N., R.3 W., 1 mile above bridge on gravel road, 3.2 miles above confluence with North Fork, and 6½ miles southeast of Anchorage Post Office.	-	1958	Apr. 28	10.4

* Base flow.
a Approximately.

Discharge measurements made at points other than gaging stations during water year 1959--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Alaska west of longitude 141°--Continued						
North Fork Campbell Creek.	Campbell Creek.	Lat 61°10'20", long 149°42'30", in SW $\frac{1}{4}$ sec.31, T.13 N., R.2 W., 5 miles above confluence with South Fork and 7 miles southeast of Anchorage Post Office.	-	1958	Apr. 28	4.14
Do. ....	....do.....	Lat 61°10'10", long 149°45'40", in SW $\frac{1}{4}$ sec.35, T.13 N., R.3 W., at bridge on gravel road, 2 $\frac{1}{2}$ miles above confluence with South Fork and 5 $\frac{1}{2}$ miles southeast of Anchorage Post Office.	-	1947-50, 1952,1954, 1955,1958	Apr. 28	12.1
Do.....	....do.....	Lat 61°10'35", long 149°47'00", in NE $\frac{1}{4}$ sec.34, T.13 N., R.3 W., 1 $\frac{1}{2}$ miles above confluence with South Fork and 4 $\frac{1}{2}$ miles southeast of Anchorage Post Office.	-	1958	Apr. 28	23.2
Do.....	....do.....	Lat 61°10'50", long 149°49'05", in NE $\frac{1}{4}$ sec.33, T.13 N., R.3 W., 600 ft above confluence with South Fork and 4 miles southeast of Anchorage Post Office.	-	1958	Apr. 28	27.8
Campbell Creek.	Cook Inlet..	Lat 61°10'35", long 149°49'20", in NW $\frac{1}{4}$ sec.33, T.13 N., R.3 W., 400 ft below confluence of North Fork and South Fork, $\frac{1}{2}$ mile upstream from bridge on Lake Otis Rd., and 3 $\frac{1}{2}$ miles southeast of Anchorage Post Office.	-	1958	Apr. 28	55.2
Do.....	....do.....	Lat 61°10'40", long 149°50'10", in NE $\frac{1}{4}$ sec.32, T.13 N., R.3 W., at bridge on Lake Otis Rd., 3 $\frac{1}{2}$ miles southeast of Anchorage Post Office.	-	1958	Apr. 28	47.1
Russian Jack Springs.	Chester Creek.	Lat 61°12'25", long 149°48'55", in NE $\frac{1}{4}$ sec.22, T.13 N., R.3 W., at Anchorage prison farm, 3 $\frac{1}{2}$ miles east of Anchorage.	-	1948-49, 1952-58	Oct. 10 Nov. 6 Dec. 11 Dec. 30 Feb. 3 Feb. 21 Mar. 10 Mar. 21 Apr. 20 Apr. 27 May 19 June 2 July 7 July 21 July 31 Aug. 13 Sept.16	5.90 5.72 5.59 5.27 4.39 4.25 3.96 4.59 4.67 5.86 5.83 6.34 4.82 6.91 6.59 7.36 7.32
Chester Creek	Cook Inlet..	Lat 61°12'10", long 149°52'00", on line between sec. 19, 20, T.13 N., R.3 W., at culvert on Seward-Anchorage highway at Anchorage, 2 $\frac{1}{4}$ miles above mouth.	-	1947-49, 1952, 1954-55	Apr. 27	102
Do.....	....do.....	Lat 61°12'20", long 149°54'10", in NE $\frac{1}{4}$ sec.24, T.13 N., R.3 W., at culvert on Spenard Rd., at Anchorage, 1 mile above mouth.	-	1947	Apr. 27	92.0
Ship Creek...	....do.....	Lat 61°14'20", long 149°41'40", in SE $\frac{1}{4}$ sec.6, T.13 N., R.2 W., at Glenn Bypass Highway, 7 miles east of Anchorage Post Office.	-		Apr. 27	27.8
Do.....	....do.....	Lat 61°14'40", long 149°43'20", in SE $\frac{1}{4}$ sec.1, T.13 N., R.3 W., $\frac{1}{2}$ mile below North Fork and 6 miles east of Anchorage Post Office.	-		Apr. 27	29.8
Do.....	....do.....	Lat 61°14'20", long 149°46'35", on line between secs. 10, 11, T.13 N., R.3 W., at bridge on Glenn (Davis) Highway, 4 miles northeast of Anchorage Post Office.	-	1958	Apr. 27	28.3
Do.....	....do.....	Lat 61°13'25", long 149°51'25", in NW $\frac{1}{4}$ sec.17, T.13 N., R.3 W., at bridge on Post Rd., at Anchorage, 1 mile above mouth.	-		Apr. 27	80.8
Palmer Creek.	Knik River..	Lat 61°33'40", long 149°02'15", 1 mile north of Bodenbug Butte and 3 $\frac{1}{2}$ miles southeast of Palmer.	-		Dec. 23	40.4

DISCHARGE MEASUREMENTS AT POINTS OTHER THAN GAGING STATIONS

Discharge measurements made at points other than gaging stations during water year 1959--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Alaska west of longitude 141°--Continued						
Knik River...	Cook Inlet..	Lat 61°30'15", long 149°01'45", in SE¼ sec. 2, T.16 N., R.2 E., at bridge on Glenn Highway, 7 miles south of Palmer.	a1,180	1948-58	June 26	9,390
					June 28	24,900
					June 28	39,300
					June 29	65,900
					June 29	74,000
					June 30	125,000
					June 30	141,000
					July 1	208,000
					July 2	89,900
					July 4	30,800
					July 8	28,400
					July 13	20,000
					Aug. 4	20,100
Skwentna River.	Yentna River	Lat 61°53', long 151°20', 3 miles below Shell Creek, 7.5 miles southwest of Skwentna, and 12 miles up- stream from mouth.	a2,250		Aug. 14	8,900
					Sept. 4	6,760
Buskin River.	Chiniak Bay.	Lat 57°46'35", long 152°31'20", ½ mile below Buskin Lake and 4½ miles west of Kodiak.	-		July 17	43.2
West Fork....	Denison Fork	Lat 63°54', long 142°08', at bridge on Taylor Highway, 5 miles above mouth and 15 miles southwest of Chicken.	-	1954-55, 1957	July 28	201
					Sept. 2	367
Mosquito Fork.	South Fork..	Lat 64°04', long 141°57', at bridge on Taylor Highway, 1 mile west of Chicken and 2½ miles above mouth.	-	1954-55, 1957	July 28	303
					Sept. 2	725
South Fork...	Forty Mile River.	Lat 64°06', long 141°47', at bridge on Taylor Highway, 5 miles east of Chicken.	-	1954-55, 1957	July 28	808
					Sept. 2	1,280
Forty Mile River.	Yukon River.	Lat 64°18', long 141°24', at bridge on Taylor Highway, ¼ mile below O'Brien Creek 4½ miles northwest of Steel Creek.	a5,880	1954-58	July 30	2,060
Melozitna River.	....do.....	Lat 64°46', long 155°29', ¾ mile above mouth and 2 miles northeast of Ruby.	-	1957-58	Dec. 4	358
					Jan. 28	*49.8
					Mar. 6	*46.0
					Apr. 15	*28.6
					May 26	10,800
					July 14	6,810
Covreruk Springs.	Chukchi Sea.	Lat 67°53', long 164°53', ¼ mile above mouth and 14 miles northwest of Kivalina.	-		Aug. 19	868
					Sept. 9	22.7

* Base flow.
a Approximately.

Chemical analyses, in parts per million, water year October 1958 to September 1959

Date of collection	Bicar- bonate (HCO ₃)	Dissolved solids (residue on evapor- ation at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
			Calcium, magne- sium	Non- carbonate			

OLD TOM CREEK NEAR KASAAN

May 13, 1959	16		12	0	35	7.3	
July 15	22		18	0	43	7.3	
Aug. 24	28		24	1	54	7.3	
Sept. 23	25		20	0	48	7.3	

TWELVEMILE CREEK NEAR HOLLIS

May 5, 1959	66		59	5	119	8.0	
June 8	50		49	8	90	7.6	
July 1	80		75	10	139	7.8	
July 15	55		48	3	96	7.7	
July 20	62		57	6	113	7.9	
Aug. 3	66		61	7	117	7.8	
Aug. 18	74		65	4	129	8.2	
Sept. 4	75		68	6	130	8.1	
Sept. 25	67		59	4	119	8.0	

INDIAN CREEK NEAR HOLLIS

June 8, 1959	12		10	0	24	7.2	
June 29	23		18	0	44	7.0	
July 14	11		8	0	22	6.9	
July 20	17		13	0	33	7.3	
July 29	22		18	0	40	7.0	
Aug. 20	23		19	0	44	7.1	
Sept. 11	10	25	9	1	23	6.8	
Sept. 18	20		18	2	41	7.3	
Sept. 24	17		14	0	35	7.1	60

HARRIS RIVER NEAR HOLLIS

May 27, 1959	14		13	2	39	7.2	
June 9	14		12	0	33	7.2	
June 29	17		13	0	41	7.3	
July 14	11		10	1	25	7.1	
July 20	16		14	1	38	7.1	
July 29	17		14	0	47	7.1	
Aug. 20	18		17	2	47	7.1	
Sept. 8	18		18	3	40	7.1	
Sept. 11	12		12	2	32	7.0	
Sept. 24	17		16	2	41	7.2	
Sept. 25	12	40	18	8	40	7.1	85
Sept. 29	12	46	15	5	44	7.1	90

MAYBESO CREEK NEAR HOLLIS

May 18, 1959	19		17	2	43	7.4	
May 27	18		16	1	42	7.3	
June 4	14		12	0	33	7.2	
June 30	24		21	2	50	7.2	
July 15	20		21	4	44	7.7	
July 20	23		22	3	62	7.3	
July 26	20		22	6	53	7.1	
Aug. 3	28		20	0	46	7.2	
Aug. 24	29		27	3	62	7.3	
Sept. 8	28		26	3	58	7.2	
Sept. 18	28		32	9	61	7.2	
Sept. 24	24		23	4	58	7.1	
Sept. 25	16	45	16	3	42	7.3	65

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1958 to September 1959--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium-magnesium	Non-carbonate			
2390. BRADLEY RIVER NEAR HOMER																		
Aug. 17, 1959		2.3	0.07	8.7	1.4	0.9	0.5	28	5.0	1.0	0.0	0.0	34	28	4	61	7.0	10
Sept. 17		2.3	.10	8.7	1.0	.9	.7	23	5.0	1.0	.0	.1	34	26	2	61	7.1	30
5646. MELOZITNA RIVER NEAR RUBY																		
Mar. 7, 1959		9.5	0.03	16	7.3	4.6	0.9	75	12	3.5	0.2	1.4	92	70	8	152	7.4	0
Apr. 15		9.0	.00	19	8.3	6.6	.2	97	16	3.0	.2	.8	111	82	2	189	7.0	5
May 26		3.6	.41	3.2	2.1	1.2	.7	12	3.0	4.5	.1	.3	25	16	6	43	6.2	140
NOATAK RIVER AT MOUTH OF KELLEY RIVER, NEAR KOTZEBUE																		
Sept. 9, 1959	e 2,000	2.4	0.06	39	7.3	1.2	0.4	131	22	1.0	0.1	0.0	137	127	20	251	7.9	0
WULIK RIVER NEAR KIVALINA																		
Aug. 7, 1959	e 300	3.1	0.04	44	5.6	6.0	0.4	127	24	11	0.1	0.0	156	133	29	283	7.8	0
SINGOALIK RIVER 1.5 MILES ABOVE MOUTH, NEAR KIVALINA																		
Aug. 19, 1959		3.0	0.03	23	8.1	3.8	0.7	91	17	3.0	0.0	0.2	104	91	16	191	7.7	5
KISNULOWK CREEK AT MOUTH, NEAR POINT HOPE																		
Aug. 15, 1959	e 1	2.8	0.03	2.4	1.0	4.5	0.6	12	6.0	4.0	0.0	0.2	28	10	0	46	6.8	5
NUSOARIK CREEK AT MOUTH, NEAR POINT HOPE (100 feet above sea level)																		
Aug. 17, 1959	e 0.07	4.8	0.02	53	54	430	22	138	88	814	0.1	0.9	1,530	354	241	2,950	7.7	5

e Estimated.

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1958 to September 1959--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
ANGAHYOUK CREEK NEAR POINT HOPE																		
Aug. 25, 1959	e 5	2.1	0.01	64	7.8	2.7	0.6	197	30	4.0	0.1	0.0	208	192	30	365	7.8	0
KUKPUK RIVER ABOVE IPEWIK RIVER, NEAR POINT HOPE																		
Sept. 1, 1959	e 1,000	1.0	0.28	32	9.7	5.7	0.6	105	42	1.0	0.3	0.0	145	120	34	260	7.7	30
EAST FORK IPEWIK RIVER NEAR POINT HOPE																		
Sept. 7, 1959	e 200	0.2	0.16	45	12	9.6	0.6	157	51	1.0	0.1	0.0	197	162	33	348	8.0	10
IPEWIK RIVER AT MOUTH, NEAR POINT HOPE																		
Sept. 1, 1959	e 1,600	4.3	0.18	27	5.8	6.2	0.6	85	31	2.0	0.0	0.0	119	91	22	212	7.7	25
KUKPUK RIVER 16 MILES ENE OF POINT HOPE																		
Aug. 29, 1959	3,000	0.0	0.49	30	7.5	6.6	0.6	94	37	4.0	0.1	0.0	132	106	29	242	7.7	15
Estimated.																		

e Estimated.

Periodic determination of suspended-sediment discharge, water year October 1958 to September 1959

Date	Water discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
2004. GULKANA RIVER AT GULKANA			
May 15, 1959	e 5,330	1,220	17,600
June 9	e 4,000	95	1,030
July 19	e 3,120	51	430
Aug. 13	1,210	8	26
Sept. 17.....	2,170	12	70
2415. DEEP CREEK NEAR NINILCHICK			
July 23, 1959	316	19	16
Aug. 20	116	3	0.9
Sept. 20.....	157	4	2
2439. SNOW RIVER NEAR LAWING			
Aug. 19, 1959	1,510	188	766
Sept. 20.....	453	22	27
2680. RESURRECTION CREEK AT HOPE			
Aug. 19, 1959	409	2	2
Sept. 19.....	384	3	3
2722. PLACER RIVER AT PORTAGE			
July 21, 1959	919	285	707
Aug. 18.....	3,310	209	1,870
Sept. 19.....	856	45	104

e Estimated.

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